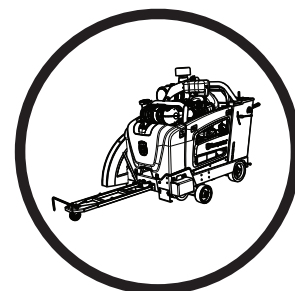




Workshop manual
FS 7000D



115 63 33-26

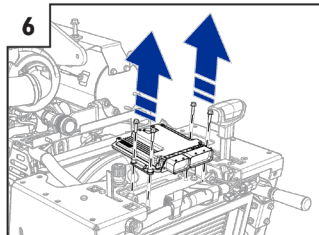
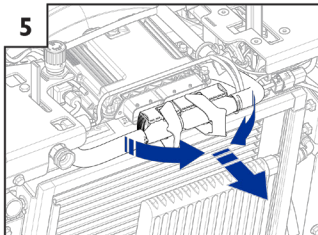
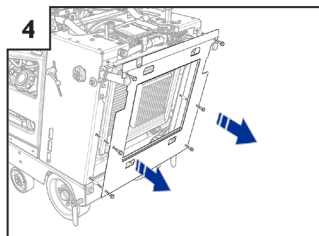
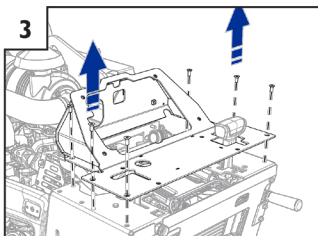
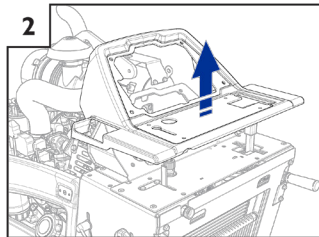
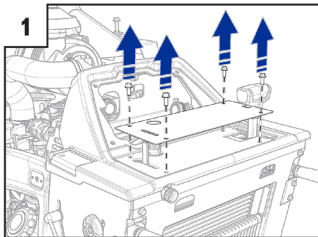
LEGEND

Clicking the title will bring you to the beginning of that chapter.

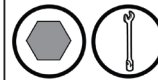
Clicking the blue links will bring you to that section of the manual

12

COWLING

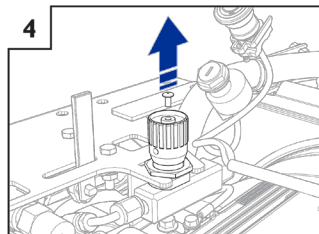
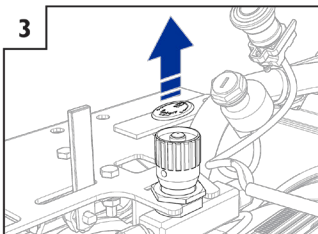
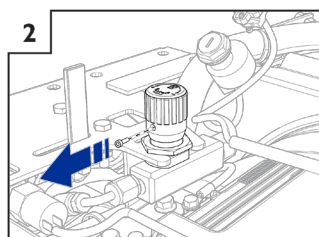
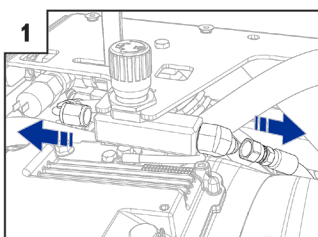


Removing the ECU



First see [Removing the HMI Board \(p. 31\)](#) and steps 4 & 6 in [Removing the Lift Bail \(p. 48\)](#).

1. Remove the four screws and lift the panel.
2. Remove the plastic cover.
3. Remove the six screws and lift up the bracket.
4. Remove the six screws and the back cover.
5. First lift the handle then disconnect the contacts by pulling them outwards.
6. Remove the four screws and lift out the ECU.



Removing the Lowering Speed Valve



First see steps 1-3 in [Removing the ECU \(p. 32\)](#).

1. Unscrew the hydraulic clutches.
2. Remove the set screw of the control.
3. Flip the top off.
4. Remove the screw located underneath.

32

Alt + Left arrow = Back
Ctrl + L = Fullscreen

Clicking a tool icon will bring you to the Tools section.

3. Literature

Workshop Manual	6
Spare Parts Catalog	6
Operator's Manual	7
Engine Catalog	7

4. Safety Instructions

General	8
Warning and Information	8
ESD general notice	8
Welding work on the machine	9
Machine Stop Button	9
Lifting the Road Saw	9

5. Specification

Technical Data	10
----------------------	----

6. Tools and Special Tools

Tools	12
Special Tools	13

7. Components - Navigation

FS 7000D	14
----------------	----

8. Function Test

Function Test	15
---------------------	----

9. Service and Maintenance

FS 7000D	16
Daily Service	17
50 h Service	19
100 h Service	22
250 h Service	23
500 h Service	24
Yearly Service	25

10. HMI - Display

Display text	26
FS 7000D Fault Codes	28
Service Menu	29
Setting Menu	29

11. Fault Codes

Error Messages	30 - 34
----------------------	---------

12. Fault Tracing

Blade Depth sensor	35
Lowering.....	37
Neutral.....	39
Blade Speed Sensor.....	41
Water Pressure Switch.....	43

13. Repair Instructions

Table of Content	44
------------------------	----

13.1. Covers

Removing the Front Cover.....	46
Removing the Side Covers.....	46
Removing the Fan Protection	47

13.2. Electric /Hydraulics

Removing the Battery	48
Removing the Wiring Harnesses	48
Change Lift Cylinder	50
Dismantling the Rear Axle - Hydraulic Motor.....	51

13.3. Cowling

Changing the Radiator Filter	52
Emptying/Refilling the Radiator	52
Removing the HMI Board.....	53
Removing the ECU.....	54
Removing the Lowering Speed Valve.....	54
Removing the Speed Control.....	55
Replacing the Radiator	57

13.4. Engine

Engine Lift.....	58
Changing the DOC.....	59
Replacing the Fan	60
Replacing the Fan Belt	61
Replacing the Generator Belt	61

13.5. Gearbox / Clutch / Blade shaft

Blade Shaft Drive Belts.....	62
Removing the Blade Shaft Drive Belts.....	62
Attaching the Blade Shaft Drive Belts	62
Changing the Pulleys.....	63
Gear Box	65
Removing the Gear Box.....	65
Mounting the Gearbox	66

The Clutch.....	68
Disassembling the Clutch	68
Reassembling the Clutch.....	68
Replacing the Clutch Armature.....	69
13.6. Baseplate / Frame	
Lifting the Road Saw.....	70
Removing the Lift Bail	70
13.7. Front-/Rear Axle / Lift Cylinder	
Rear Axle.....	72
Removing the Rear Axle	72
Reattaching the Rear Axle	72
Replacing the Blade Depth Sensor.....	73
Removing the Front Axle	74
Replacing the Bearing Bracket	75
Replacing the Wheels	75
Changing the Blade Shaft.....	76
Replacing the E-track.....	76
Replacing the Proximity Sensor.....	77
Change Idler Shaft/Gear.....	78
Blade Shaft/Gear.....	78
14. Software - Download	
Software update FS HMI.....	79
Connections	80
Ignition Key	80
HMI-2	80
USB	80
“0” button	80
HMI-1	80
Downloading HMI software.....	81
Verify Software download	82
14. Electrical Drawings	
Cowl Harness	83
ECU.....	84
Relay	85
HMI.....	86
Power	87
Fuses	88
16. Hydraulic Drawings	
Hydraulic Schematic FS 7000D	89



3. LITERATURE

Workshop Manual

The workshop manual covers all workshop maintenance for the FS 7000D. Some very simple and obvious repair work has been omitted.

The manual is divided into numbered chapters as well as chapter headings that are specified in bold at the top of each page .

The table of contents at the beginning of the manual also has a page reference to the beginning of each chapter.



Spare Parts Catalog

These catalogs include all the spares for Husqvarna FS 7000D.

The catalogs contain complete exploded drawings for each product and the location, spare part number, and appearance of each component is easy to identify.

Link to EPC
<http://parts.husqvarna.com>

Operator's manual
FS5000 D
FS7000 D korrr8

Please read the operator's manual carefully and make sure you understand the instructions before using the machine.



Operator's Manual

The operator's manual describes how the machine is to be used, the functions of the machine, and the maintenance the operator normally carries out.

This manual also contains important instructions for the safe handling of the machine.

It is extremely important that service personnel are well acquainted with how the machine is used and follow the instructions given in the manual.

TCD 2.9

For mobile machinery **30 - 55.4 kW/40 - 75 hp at 2200 - 2600 rpm**
EU Stage IIB / US EPA Tier 4

Newly-designed, water-cooled 4-cylinder inline engine with cooled, external exhaust gas recirculation with and without turbocharging and optionally with and without charge air cooling.

Use of DIVERST[®] variable catalyst (DOC) enables maintenance-free operation under all application and ambient conditions. A DIVERST[®] particulate filter (DPF) is available as an option.

The engines come with a modular exhaust aftertreatment system (EAT) configuration including the option of engine mounted systems. This simplifies machine integration for the OEM considerably and virtually means a drop-in solution.



The powerful Common Rail injection system and highly efficient combustion process with cooled external exhaust gas recirculation ensure optimum engine performance at low fuel consumption and exhaust emissions.

Best cold starting performance even under extreme conditions.

500 h oil change intervals and a maintenance-free valve train result in low maintenance costs and increased machine availability.

The extremely compact engine design and customer-friendly accessories reduce the installation costs and increase the number of applications.

100% power take-off at flywheel and front and additional side PTO drive with up to 120 Nm for the mounting of up to two hydraulic pumps.

The DIVERST[®] variable catalyst enables the engine to meet the requirements of the EU Stage IIB and US EPA Tier 4.

A variant without EAT is optionally available for EU Stage II A, US EPA Tier 4 and for less regulated markets.

Technical data

Engine type	D 2214	TD 2214	TCD 2214
Max. oil capacity	4	4	4
Bore/stroke	mm/in	80/110 (3.14/4.3)	80/110 (3.14/4.3)
Displacement	l/cu in	2.2/137	2.2/137
Max. nominal speed	min ⁻¹ /rpm	2600	2600

Power take-off	D 2214	TD 2214	TCD 2214
Power output per ISO 14396 ¹⁾	kW/hp	36.4/50	54.7/75
at speed	min ⁻¹ /rpm	2600	2600
Max. torque	Nm/lbf	147/108	240/175
at speed	min ⁻¹ /rpm	1800	1800 - 1900
Minimum idling speed	min ⁻¹ /rpm	500	500
Specific fuel consumption ²⁾	g/kWh	200 (0.36)	227 (0.37)
Weight as per DIN 70100 Part 7A ³⁾	kg/lb	220/485	237/522

1) Power take-off without deduction of fan power.
2) Best fuel consumption refers to diesel with a density of 0.85 kg/dm³ at 15°C (59°F) and 0.06 MPa (0.9 bar) at 80°C.
3) Without alternator, cooler and fuel but with flywheel and flywheel housing.

The engine company.



Engine Catalog

For problems related to the engine, see Deutz engine manufacturer's service manual.

This catalog includes all information regarding the engine.

Link to engine supplier.
<http://www.deutz.com>

4. SAFETY INSTRUCTIONS

General

- No one may repair the FS 7000D unless they have read and understood the contents of this workshop manual.
- This workshop manual is written for personnel with general knowledge about the repair and service of FS 7000D.
- The workshop where the FS 7000D is to be repaired must be equipped with safety equipment in accordance with local bylaws.
- The machine is tested and approved only with equipment originally provided or recommended by the manufacturer.
- It is the responsibility of the user of this workshop manual to ensure that the service and repairs are carried out according to legal requirements to protect the health and safety of the personnel undertaking the work.
- Always read the warning label on the packaging for Loctite and oil, and act according to its instructions.
- Always stop the FS 7000D before carrying out any service or repairs.
- When using compressed air, do not direct the jet towards the body. Air can penetrate into the blood circulation system, which could be fatal.
- Observe local waste regulations.
- Electric shock could cause injury. Do not touch the cables while the FS 7000D is operational.
- Always remove the battery prior to performing a service.
- Always make sure all nuts and bolts are correctly tightened.
- Wear personal protective equipment.
- Never use the machine if any cable is damaged.
- Tighten all screws to the torque recommended for its dimension.

Warning and Information



Warning!

The warning box indicates that there is a risk of injury if the instructions are not followed.



Information!

The information box provides instructions for the reader.

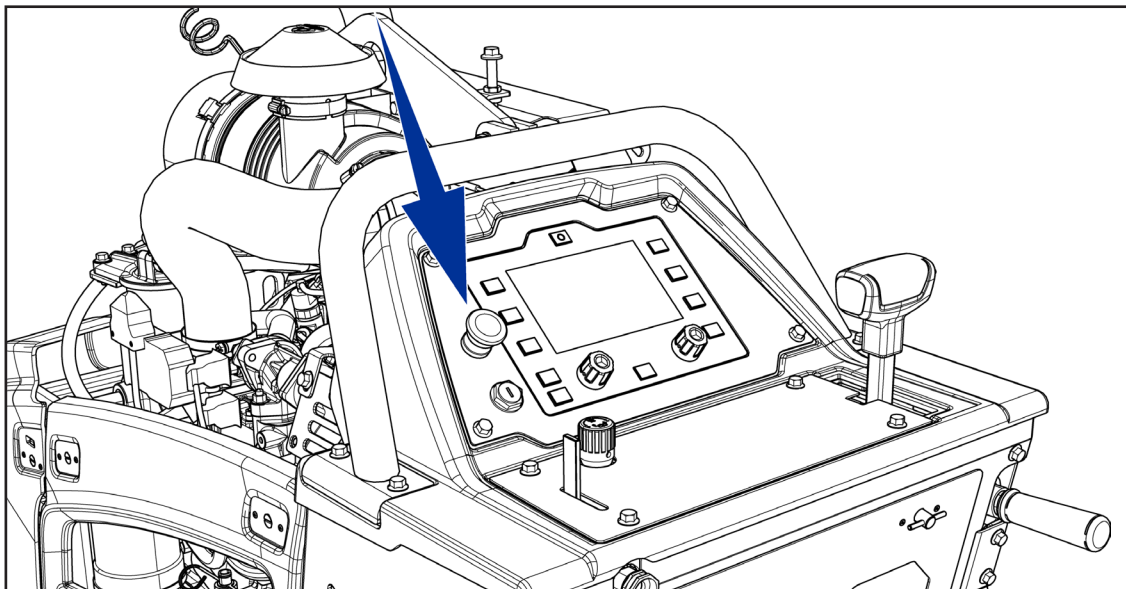


ESD general notice

All electrical devices are sensitive to ElectroStatic Discharges (ESD). A person may carry thousands of volts from being charged sitting in a car seat, wearing shoes with synthetic soles or a synthetic jacket. All discharges one can feel is certain to destroy electronic components. Even those discharges one can't feel may still damage or destroy electronic components. When working with electronic components in our products, always use proper ESD protection!

Machine Stop Button

The FS 7000D is equipped with a machine stop button which will quickly shut down power to the FS 7000D. Note that voltage will still be present inside the FS 7000D unit after activating this button.

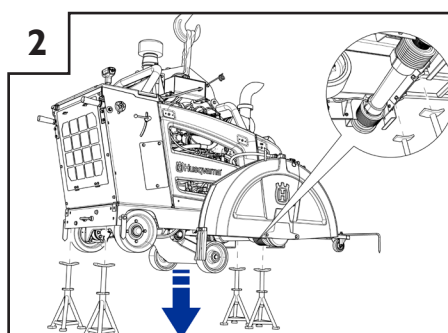
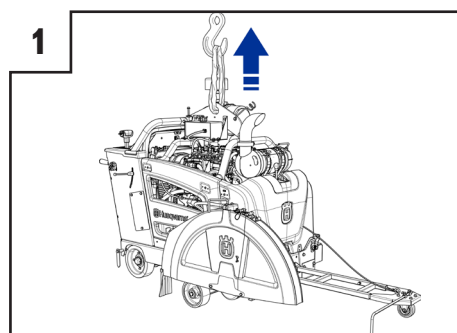


Welding work on the machine

General	Only qualified welders should carry out welding operations on the machine.
Important!	Risk of fire. The machine contains flammable liquids and components. - Do not undertake any welding in direct connection with flammable liquids, e.g. hydraulic fluid, hydraulic tank or hoses. - Ensure that there is a fire-extinguisher on site at the workplace. Risk of inhaling harmful substances. Toxic gases can be formed. - When welding indoors, use equipment to extract welding fumes. - Never weld in the vicinity of rubber or plastic material. Use a breathing mask.
Battery	Make sure to always disconnect the battery before welding.
Other	Do not weld on parts which are already mounted.

Lifting the Road Saw

Always make sure to secure the saw using the method mentioned below.



1. Use a travers and attach it to the hole on top of the lift bail and lift it up.
2. Put four axle stands beneath the saw and Lower the saw on top of the axle stands.

5. SPECIFICATION

Technical Data

FS7000 Diesel Model		FS7000 20"	FS7000 26"	FS7000 30"	FS7000 36"	FS7000 42"
FS7000 Diesel Model CE		FS7000 500mm	FS7000 650mm	FS7000 750mm	FS7000 900mm	FS7000 1000mm
ALL SAWS FEATURE:						
Blade Guard Capacity - in. (mm)		20 (500)	26 (650)	30 (750)	36 (900)	42 (1000)
Max. Depth of Cut - in. (mm)		7.75 (193)	10.5 (262)	12.5 (312)	15 (374)	17.5 (411)
Blade Shaft RPM		2,362	1,794	1,577	1,345	1,131
Approximate Blade Shaft HP		42/31 Horsepower				
Arbor Size - in. (mm)		1" (25.4) with single drive pin				
Quick Disconnect Blade Flange Diameter - in. (mm)		4.5 (114,5)	5 (127)	5 (127)	6 (152,5)	7 (178)
Blade Shaft Diameter - in. (mm)		1-3/4 (45)				
Blade Shaft Bearings		Cast Sealed blade shaft with 4 maintenance-free ball bearings				
Blade Shaft Drive		Dual 8-groove banded 3VX V-belts (16 grooves total)				
Blade Coolant		Zinc plated dual multiple-jet water spray tubes				
Blade Guard Attachment		Slip-on and auto-latch up to 36", slip-on and brace on 42"				
Blade Control		Electro-hydraulic pump raises blade; switch controlled raise/lower on speed control handle; switch controlled positive depth stop; cutting depth indicator; blade drive disengagement system (clutch); quick disconnect blade flanges				
Axle	Front Rear	1" (25 mm) diameter Easy Adjust Center Pivot w/2 Hydraulic Powered Wheel Motors				
Wheels	Front Rear	8" x 3" x 1" (203mm x 76mm x 25mm) Thick polyurethane tread; sealed ball bearing requiring less maintenance 10" x 3" x 1.25" (254mm x 76mm x 32mm) Solid rubber, Quick disconnect				
Transmission		Hydrostatic Pump, w/2 Hydraulic Wheel Motors connected with hoses, neutral start switch, single handle speed control, Hydraulic bypass valve for pushing.				
Max. Ground Speed		Infinitely variable: 0 – 250 FPM forward & reverse. (25 M/min maximum reverse speed on CE models)				
Chassis		Heavy-duty, rigid, box and channel section construction				
Weight - lb. (Kg) - Uncrated		2103 (954)	2114 (959)	2123 (963)	2136 (969)	2275 (1032)
POWER SOURCE:						
Engine		Deutz				
Specifications		C 4 D 1 5 5 , 4				
Max. Horsepower		75@2600 RPM (55,9kW)				
Displacement cu. in. (l)		178 (2,92)				
Bore / Stroke - in. (mm)		3, 6 / 4, 3 (92 / 110)				
Cylinders / Stroke		4				
Fuel Capacity - gal. (l)		10,6 (40)				
Oil Capacity - qt. (l)		9 (8,51)				
Air Filter		Radial Seal with pre-cleaner and restriction indicator				
Starter		Electric				
Engine Coolant		50/50 Water/Ethyl Glycol Mix				
SAW DIMENSIONS w/36" (900mm) blade guard:						
		Inches	Metric mm			
A	Saw Width	38-3/8	974			
B	Center to Center Wheel Width (track) — FRONT	23-3/4	604			
	Center to Center Wheel Width (track) — REAR	25-3/8	646			
C	Outside to Outside Wheel Width — FRONT	26-3/4	680			
	Outside to Outside Wheel Width — REAR	28-3/8	722			
D	Frame Width	29-1/2	750			
E	Inner Flange to Inner Flange Width	32-5/8	829,5			
F	Handle Extension	31-7/8	809			
G	Min Saw Length (handles removed, pointer & guard up)	64-5/8	1642			
H	Saw Length (pointer up, handles extended)	95-1/8	2417			
I	Maximum Overall Height	59	1499			
	Max Overall Height (top of pre-cleaner)	51-7/8	1319			
K	Min. Overall Height (rotate pre-cleaner)	51-7/8	1319			
L	Wheel Base Length	23-1/2	597			
M	Guard to Handle Length (handles in)	77-1/4	1961			
N	Maximum Overall Length (handles in)	98-3/8	2500			
O	Maximum Overall Length (handles extended, pointer down)	125-5/8	3190			

TECHNICAL DATA

Battery

	FS5000 D	FS7000 D
Terminal type	Standard SAE	Standard SAE
Voltage, V	12	12
CCA, A	700	765
Maximum size (LxWxH), mm/inch	280x175x175 / 11x6-7/8x6-7/8	316x175x190 / 12x6-7/8x7-1/2

Hydraulic fluid and lubricants

Hydraulic fluid

Quality	Standard
SAE 15W40	API Class SE
	API Class CC
	API class CD

Lubricants

Component	Model	Quality	Standard	Oil tank capacity, l (qt.)
Engine oil (low ash oil only)	FS5000 D	SAE 15W40/SAE 10W30	API CJ-4	7,1/7.5
			ACEA E6-08	
			ACEA E9-08	
Engine oil (low ash oil only)	FS7000 D	SAE 15W40/SAE 10W30	API CJ-4	8,5/9
			ACEA E6-08	
			ACEA E9-08	
Gearbox oil	1-Speed Gearbox models	SAE 75W90		0,95/1
	3-Speed Gearbox models			1,77/1,87
Lubrication points (baseplate)*		NLGI 2	SAE J310	

* See instructions in section "Maintenance and service"

Coolant fluid

Ethylene glycol and water, 50/50 mixture (coolant at delivery)
Propylene glycol and water, 50/50 mixture



CAUTION! Do not mix directly into the machine's tank, it is difficult to determine when it's 50/50 mixture. Mix 50/50 for best cooling performance and corrosion protection of the engine.

6. TOOLS AND SPECIAL TOOLS

In the list below you will find the tools and the special tools used in this workshop manual.

Tools

Tool	Tool no.	Description
		Ratchet Wrench
		Wrench
		Mandrel
		Allen Key, Kit 2.5 - 10 mm
		Torx Key, Kit 2.5 - 10 mm
		Big Puller
		Grease Gun
		Socket, 37/38 mm
		Universal Pliers
		Pliers
		Diagonal Pliers
		Screwdriver

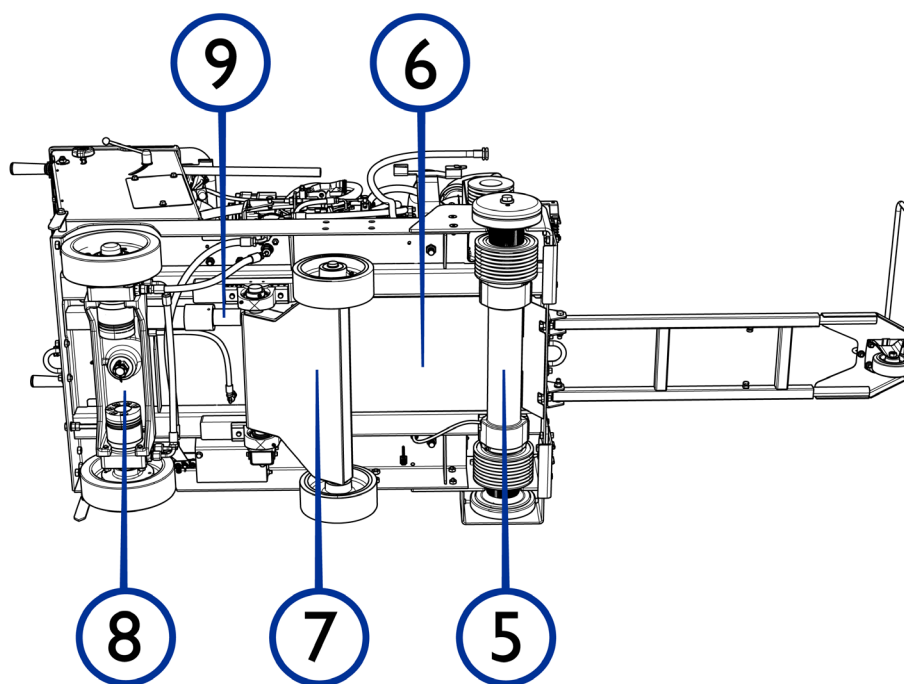
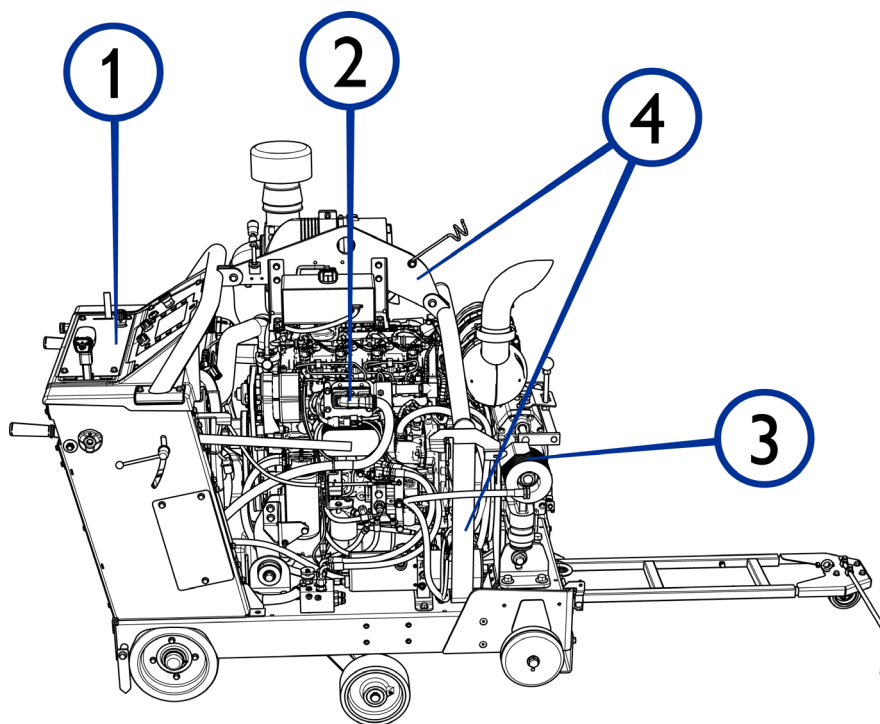
Tool	Tool no.	Description
		Axle Stand
		Steel Ruler, 0 - 300 mm
		Rubber Mallet
		Loctite
		Plug
		Grease Gun
		Oil Extractor

Special Tools

Tool	Tool no.	Description
	541207100	Special Tool
		Special Tool/Lift strap
	586 39 05-01	Breakout Harness

7. COMPONENTS - NAVIGATION

FS 7000D



1. Cowling
2. Engine
3. Gearbox and Clutch
4. Frame
5. Blade Shaft / Saw Axis

6. Baseplate
7. Front Axle
8. Rear Axle
9. Lift Cylinder

8. FUNCTION TEST

Function Test

Follow these steps to make sure that every function of the flat saw works properly before service and maintenance is carried out.

- Start the Engine.
- Turn the Rev UP Knob and verify that the engine rev up.
- Slowly pull the Speed Control forward. The saw should gently start to go forward.
- Slowly pull the Speed Control backward. The saw should gently start to go backwards.
- Put the Speed Control in (P)
- For saws equipped with a clutch. Engage the clutch. Verify that the blade starts turning, and make sure that the blade stops turning when the clutch is disengaged.
- Turn off the engine.
- For saws equipped with E-track. Make sure that the E-Track function moves according to the Operators manual.
- Raise the saw to its maximum height. Verify that it sets in that position.
- Turn the lowering speed valve knob clockwise to its closed position. Try to lower the saw. The saw should not start to lower with the valve in this position.
- Turn the lowering speed valve knob counterclockwise 1/8 of a turn. And try to lower the saw. The saw should now slowly lower itself.
- Make sure that the Blade depth guard works according to the OM and stops at the set value.

9. SERVICE AND MAINTENANCE

The following lists contains service procedures to be performed on the FS 5000D by the servicing workshop. Maintenance procedures normally performed by the owner (daily service) are described in the Operator's manuals.

FS 7000D

	Daily	50 h	100 h	250h	500h	Yearly	Page
Check engine oil level.	X						17
Check blade guard for damage.	X						17
Check hoses and clamps for damage or looseness. Look for leakage on fuel, hydraulics and cooling system. Tighten or replace as necessary.	X						18
Check air cleaner restriction indicator. Replace primary air filter if indicator is red.	X						17
Drain fuel filter/water separator.	X						18
Check radiator coolant level	X						18
Replace engine oil and filter		X					19
Inspect radiator air filter and clean or replace if necessary.		X					19
Check blade drive V-belt tension. Tension both sides evenly. DO NOT over tension.		X					20
Lubricate front wheel bearings.		X					21
Replace hydraulic system filter. (First 50 hours only)		X					21
Replace engine oil and filter.			X				23
Lubricate front axle pivot bearings.			X				22
Check wheels for wear or damage.			X				22
Check rear wheel hubs and wheels for looseness.			X				22
Check engine air cleaner hose and clamps.			X				23
Check hydraulic system fluid level.			X				23
Replace hydraulic system filter.				X			23
Grease blade shaft 2 pumps each end.				X			24
Replace engine gearbox fluid.					X		24
Replace hydraulic system fluid.					X		25
Replace engine fuel filter (spin-on-type).					X		25
Replace air filter primary and safety element.						X	25

Daily Service

Oil Level

First see [Removing the Side Covers \(p. 46\)](#). Only left side needed.

1. First make sure the engine is level. On the left side of the saw, remove the dipstick and wipe it clean with a cloth before reinsert the dipstick.
2. Remove the dipstick. The oil level should be between the lines.

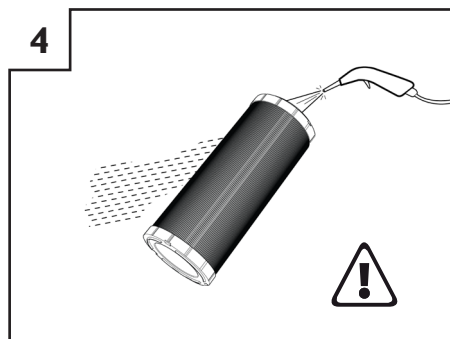
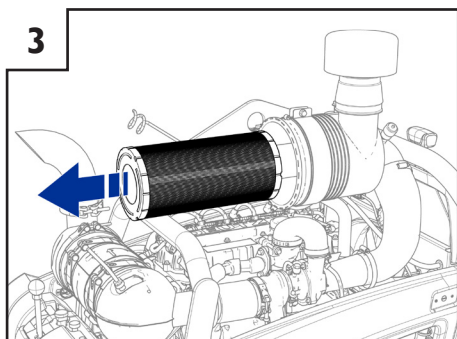
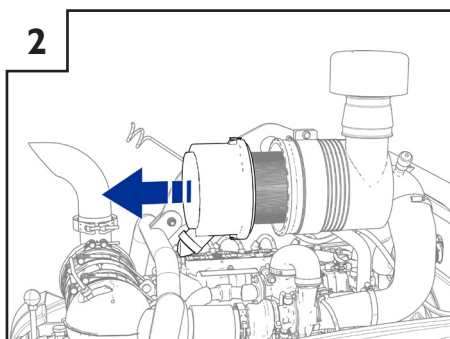
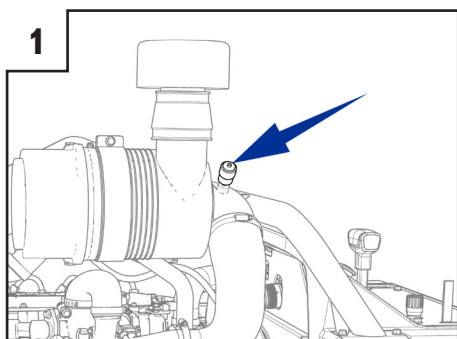
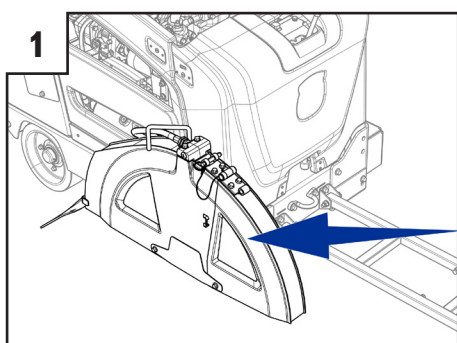
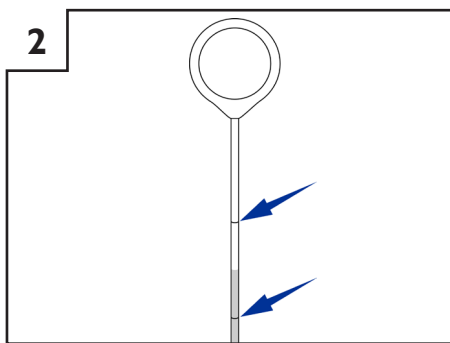
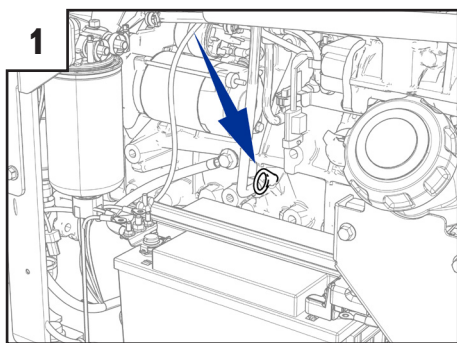
Blade Guard

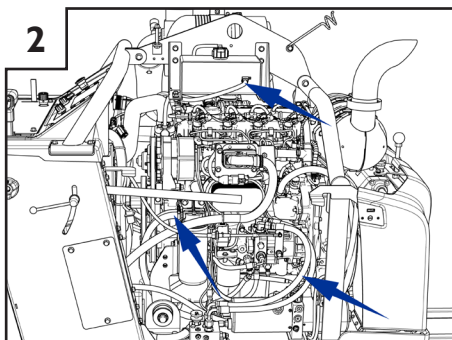
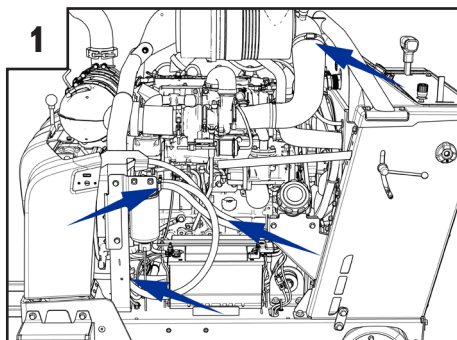
1. Check the Blade Guard for damage.

Air Cleaner Restriction Indicator

1. Check air cleaner restriction indicator. If indicator is red, continue with steps 2-3.
2. Remove the rear cover.
3. Remove the primary air filter.
4. Clean the filter by blowing air through the element from the inside out.

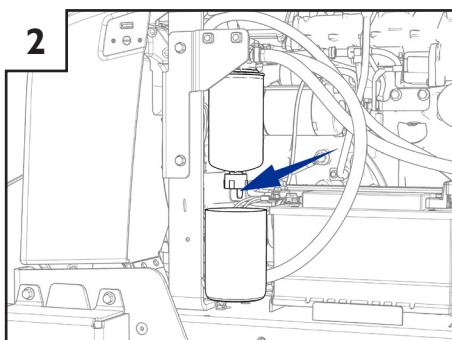
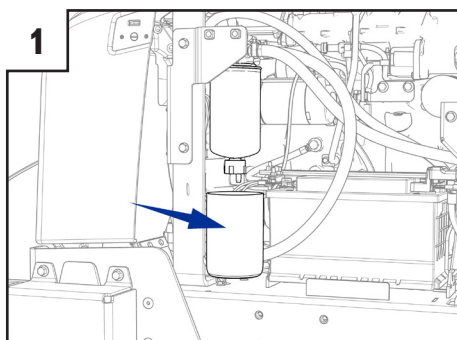
Warning! Only use the lowest possible air pressure to remove the dust without damaging the element.
Use 42 - 71 PSI (0,29 - 0,49 MPa; 3,0 - 5,0 kgf/cm²) compressed air to remove the particles
Replace if damaged.





Hoses and Clamps

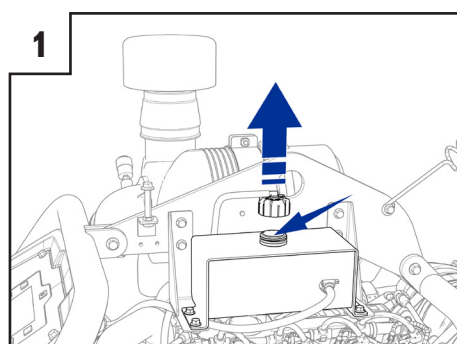
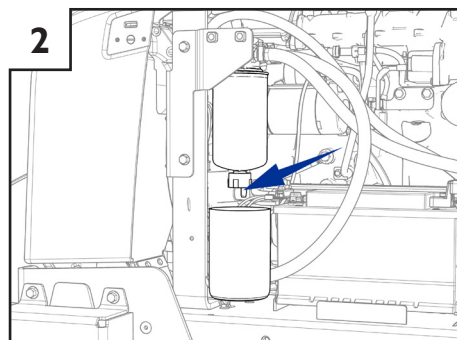
1. Check hoses and clamps for damage or looseness.
2. Look for leakage on fuel, hydraulics and cooling system. Tighten or replace if necessary.



Drain Fuel Filter/Water Separator

First see [Removing the Side Covers \(p. 46\)](#) (Only left side needed).

1. Position an approved container under the fuel filter/water separator to collect the contaminants.
2. Loosen the drain valve at the bottom of the fuel filter/water separator. Drain any water collected inside.
3. Hand-tighten the drain valve. Torque 1-2 Nm. Then check for leaks.



Check Radiator Coolant Level



Warning!

Do not open lid when hot, make sure that the coolant is cold first..

1. Remove the lid and look down. If needed, fill with coolant mix until the level reaches the start of the tube inside.

50 h Service

Replace Engine oil and filter

First see [Removing the Side Covers \(p. 46\)](#) (only left side needed).

1. Remove the top from the hose and bend it down to empty the system.
2. Unscrew and replace the filter, make sure to fill the new filter with oil..
3. Refill the system either here.
4. Or here.

Only use an engine oil that meet or exceeds the following guidelines and classifications:

- API service categories CJ-4
- ACEA service categories E6
- JASO service category DH-2

Radiator Air Filter

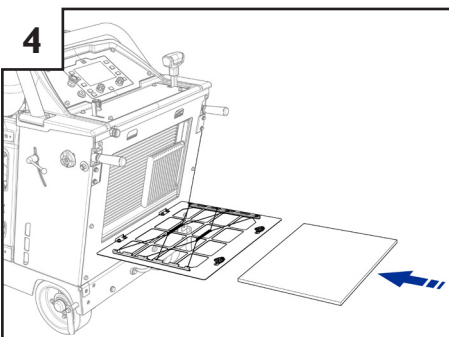
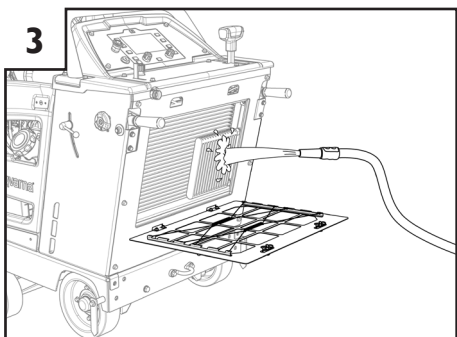
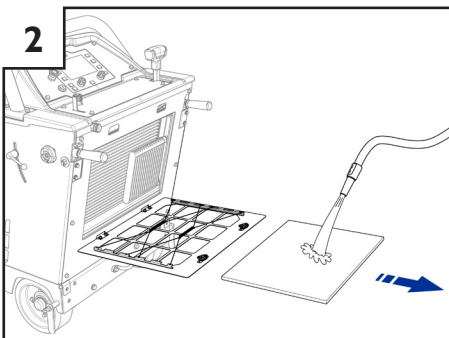
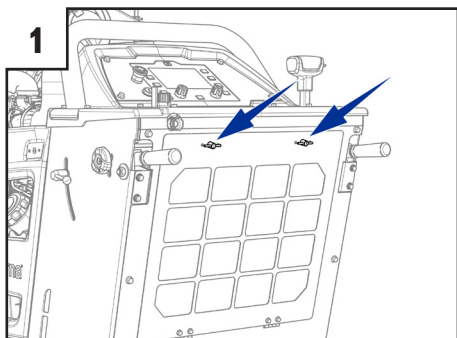
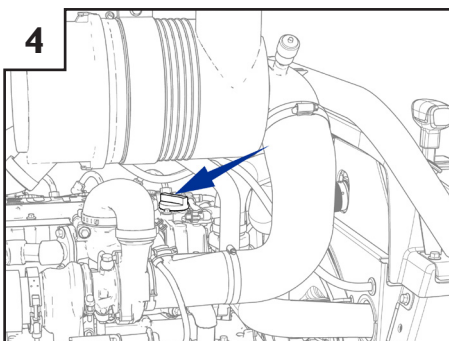
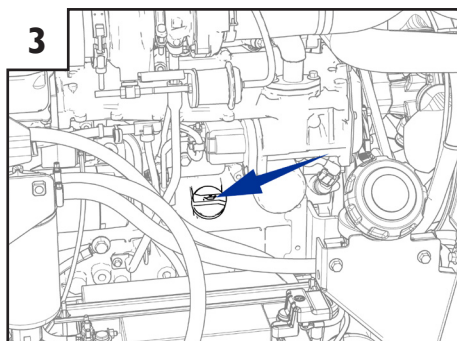
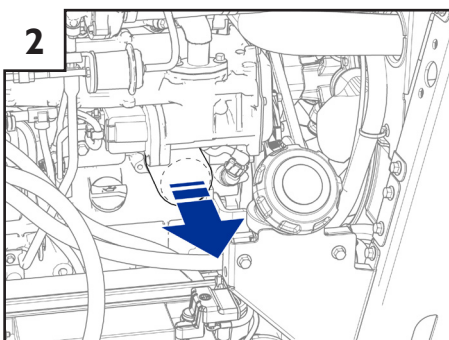
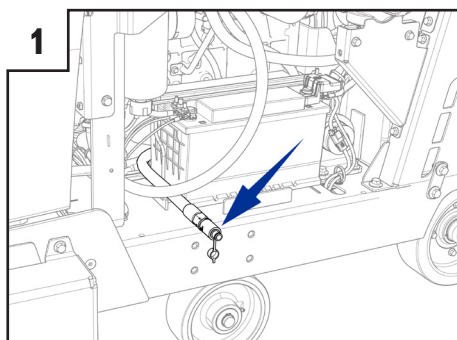
1. Open the back cover by turning the screws.
2. Inspect radiator air filter and clean or replace if necessary..

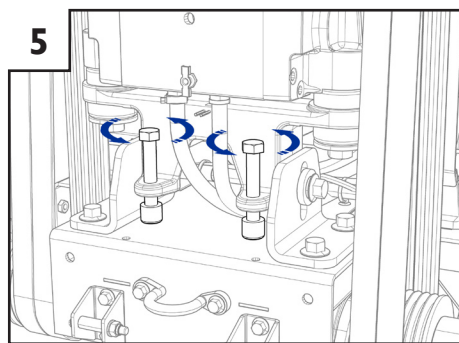
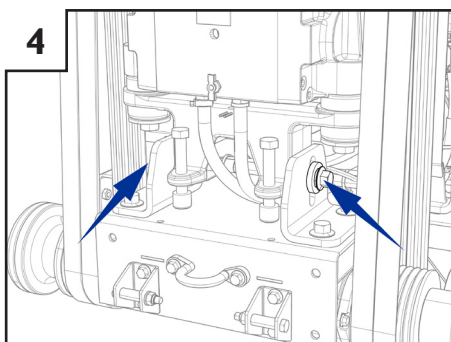
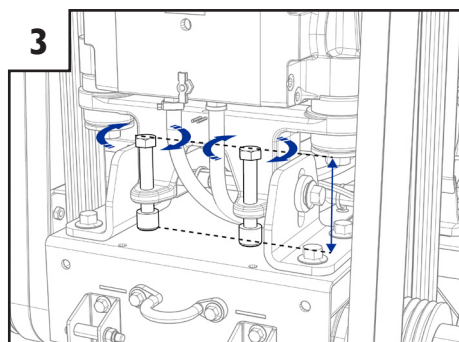
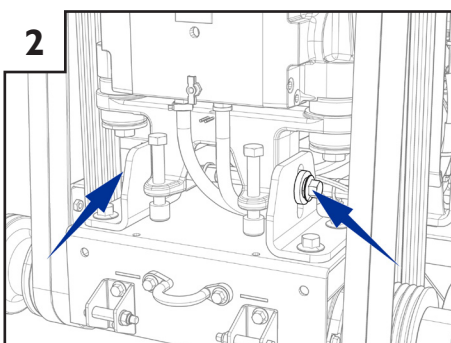
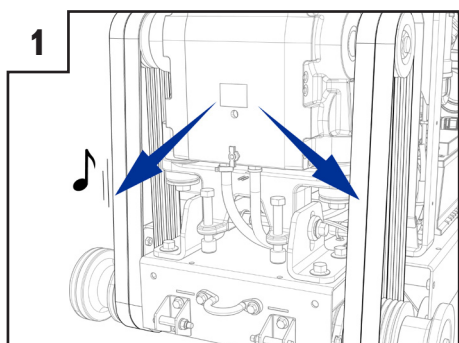


Warning!

Do not use a pressure washer!

3. Rinse the radiator with water.
4. Put the radiator filter back and close the back cover.



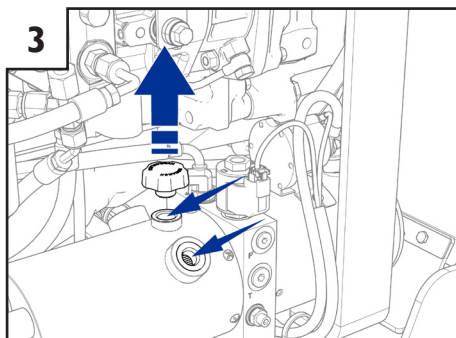
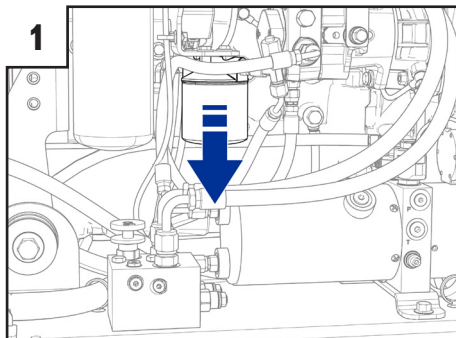
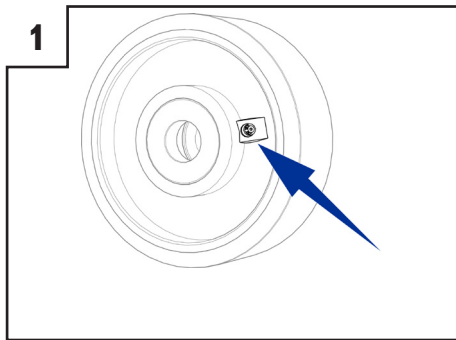


Blade Drive V-belt tension



First see [Removing the Front Cover \(p. 46\)](#)

1. Check blade drive V-belt tension by plucking the edge of the belt, like a string. The tone should be a low C.
2. To tension the belts, first loosen the two locking bolts.
3. Raise the gearbox and engine using the jacking screws. Be sure to tension both sides evenly. DO NOT over tension. Check the tension of the belts according to step 1.
4. Fasten the two locking bolts again
5. Loosen the jacking screws approximately 1/16 of a turn.



Front Wheel Bearings



First see [Replacing the Wheels \(p. 53\)](#).

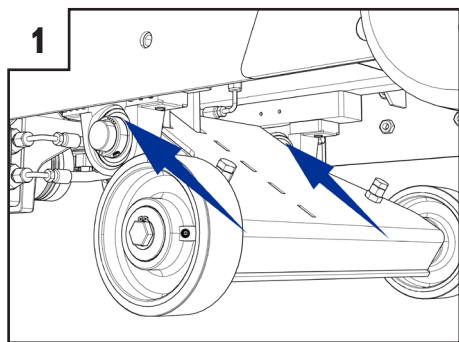
1. Lubricate the Front Wheel Bearings using the grease nipples. There are two in each wheel

Hydraulic System Filter (first 50 hours only)

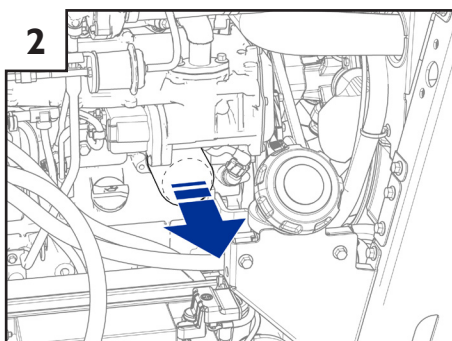
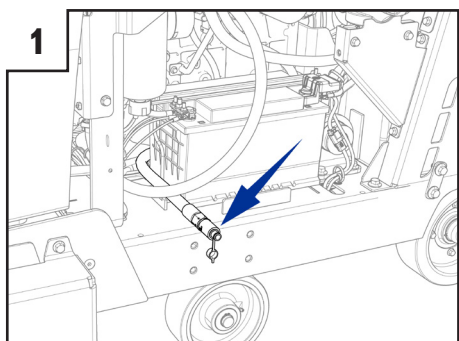


1. Replace hydraulic system filter. Fill the new filter with oil before assembly.
2. Unscrew the window on the hydraulic pump and check the oil level. The level should be up to the window.
3. If the level is below the window then remove the lid and fill with oil to the window.

100 h Service

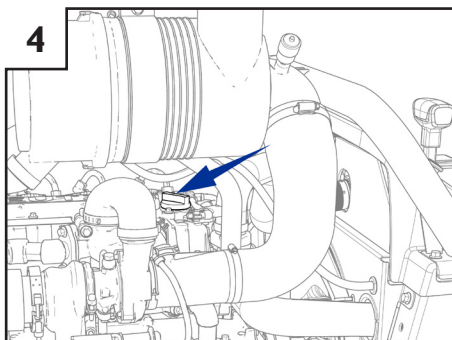
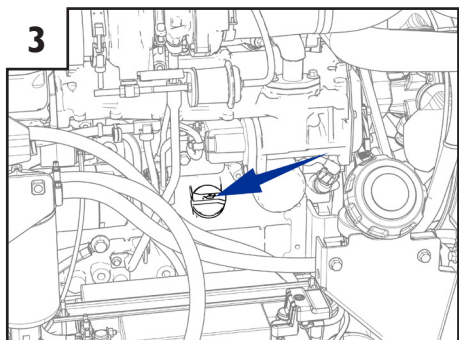
**Front Axle Pivot Bearings**

1. Lubricate the front axle pivot bearings using the grease nipples.

**Replace Engine oil and filter**

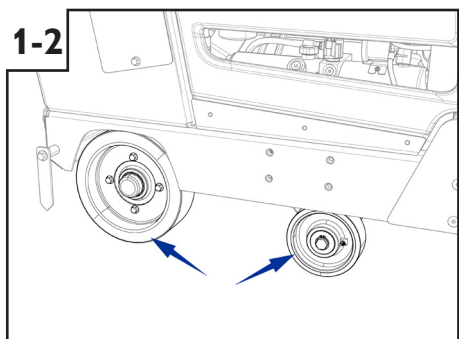
First see **Removing the Side Covers (p. 46)** (only left side needed).

1. Remove the top from the hose and bend it down to empty the system.
2. Unscrew and replace the filter.
3. Refill the system either here.
4. Or here.

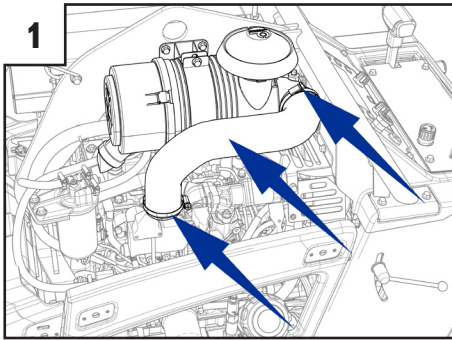


Only use an engine oil that meet or exceeds the following guidelines and classifications:

- API service categories CJ-4
- ACEA service categories E6
- JASO service category DH-2

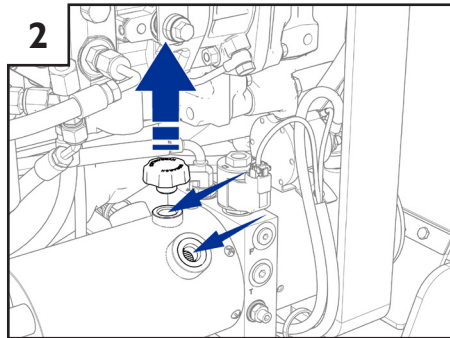
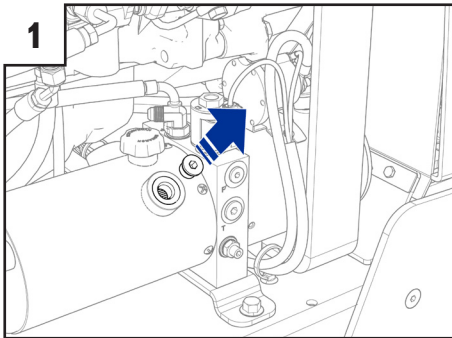
**Wheels and Rear Wheel hub**

1. Check wheels for wear or damage.
2. Check rear wheel hubs and wheels for looseness.

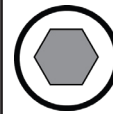


Engine air cleaner hose and clamps

1. Check the engine air cleaner hose and clamps.



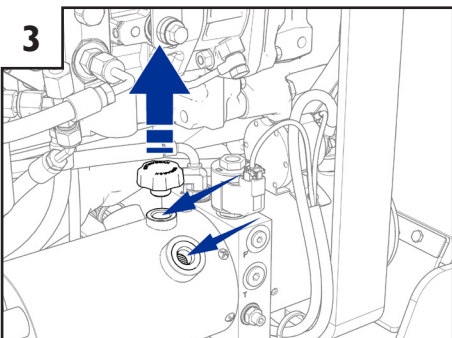
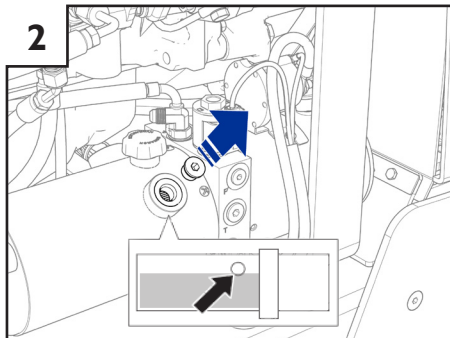
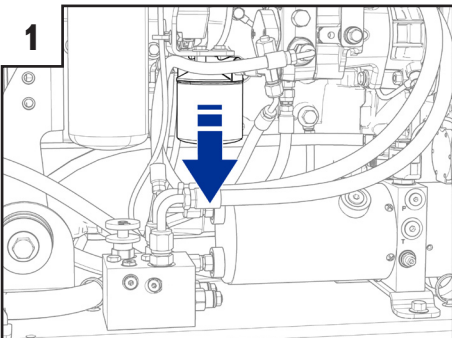
Hydraulic System Fluid Level



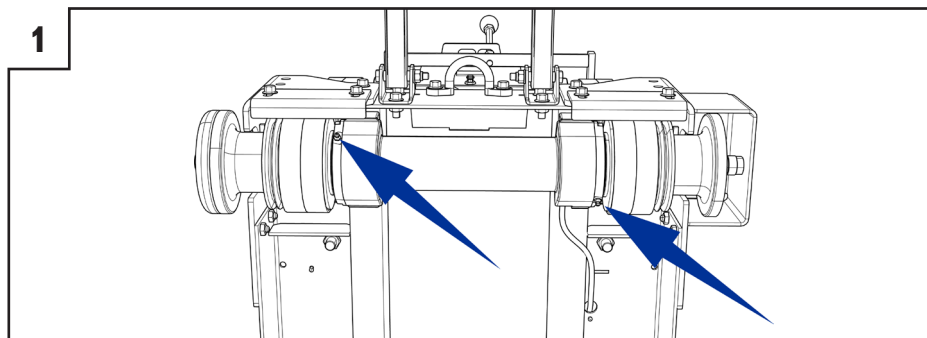
1. Unscrew the window on the hydraulic pump and check the oil level. The level should be up to the window.
2. If the level is below the window then remove the lid and fill with oil to the window.

250 h Service

Hydraulic System Filter



1. Replace hydraulic system filter. Fill the new filter with oil before attaching it.
2. Unscrew the window on the hydraulic pump and check the oil level. The level should be up to the window.
3. If the level is below the window then remove the lid and fill with oil to the window.



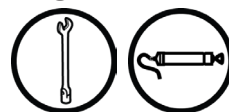
Blade Shafts



1. Grease blade shaft. Two pumps at each end. Image shows the saw from underneath.

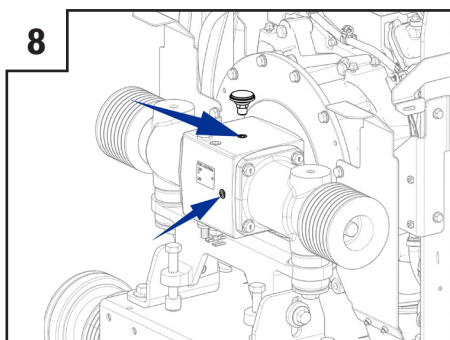
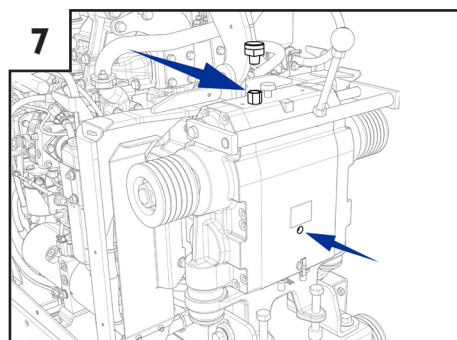
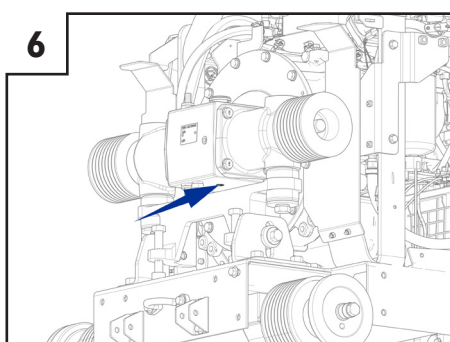
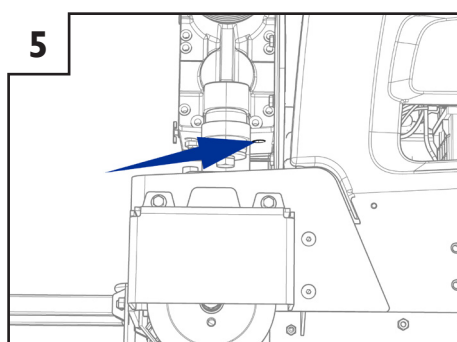
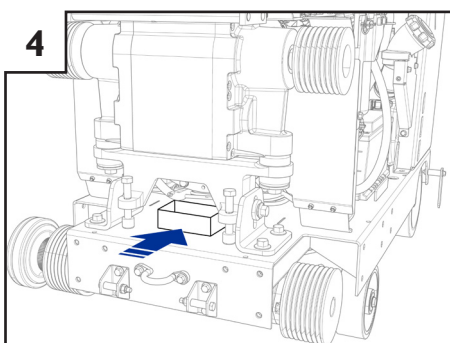
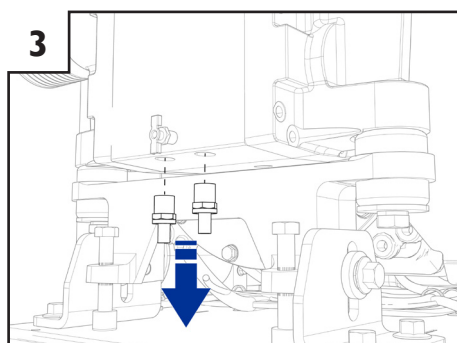
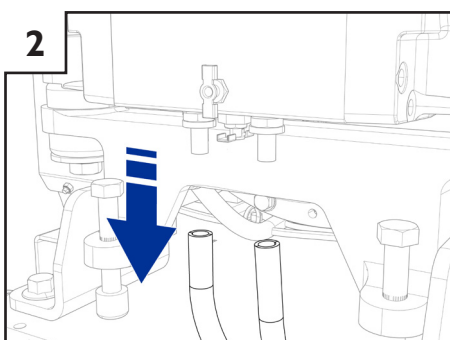
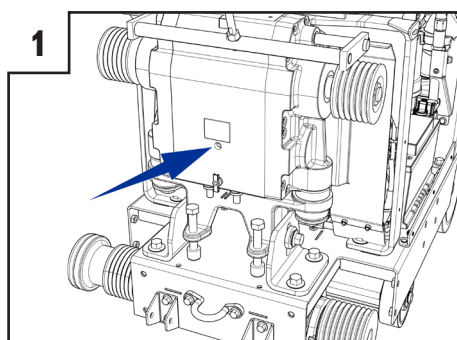
500 h Service

Engine Gearbox Fluid



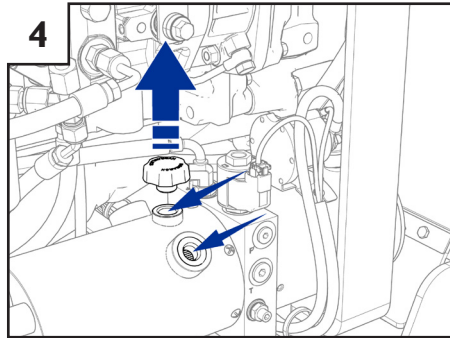
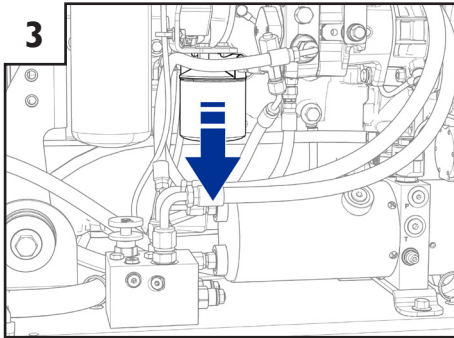
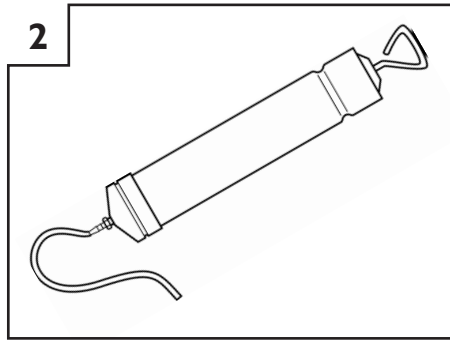
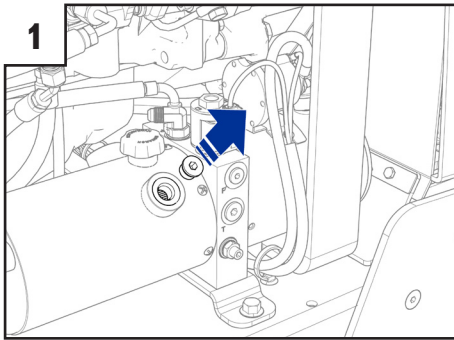
1. Open the hole and suck the oil out with an oil extractor.

Or.

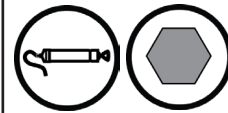


2. Disconnect the water hoses and drain fittings from the gearbox.
3. Disconnect the water hose connections.
4. Slip a vessel under the bell housing of the engine.
5. Loosen the screw and drain the oil. (Image shows 3-speed)
6. Same step on 1-speed.
7. Once the system is empty, fasten the screw.
Refill the system by removing the left screw and pour oil into the tube. At the same time look in the window until the correct level is reached. (Image shows 3-speed)
8. Same step on 1-speed

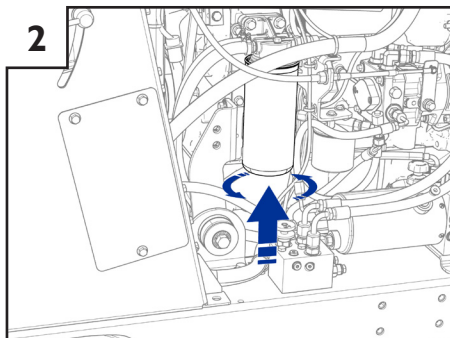
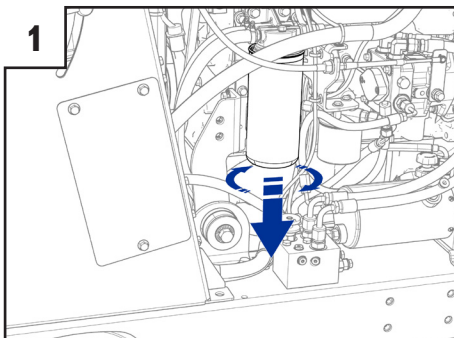
See step 7..



Hydraulic System Fluid



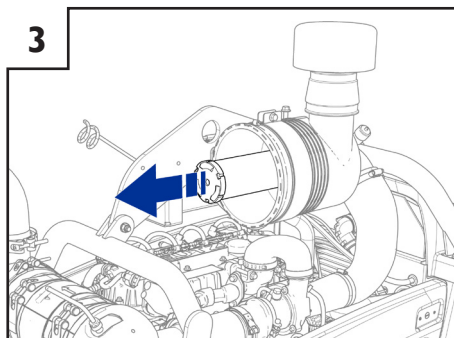
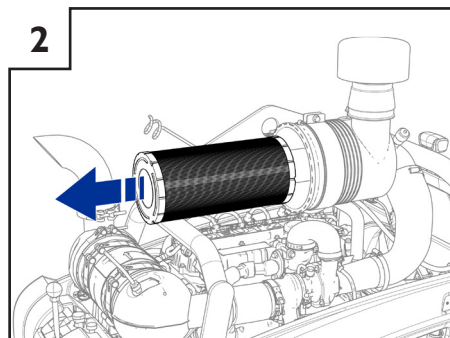
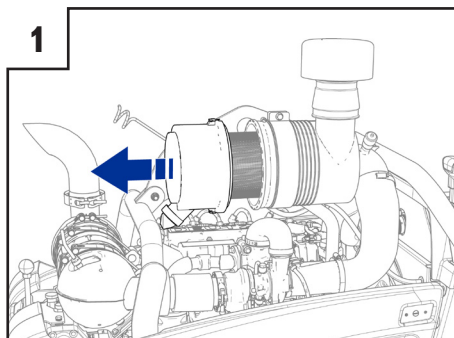
1. Unscrew the window on the hydraulic pump.
2. Use an oil extractor to suck the fluid out from the hydraulic pump.
3. Replace hydraulic system filter. Fill up the new filter before attaching it.
4. Fill with oil until you reach the window.



Fuel Filter

1. Unscrew the fuel filter (spin-on-type). Beware of diesel that may spill.
2. Replace the filter and fasten the new.

Yearly Service



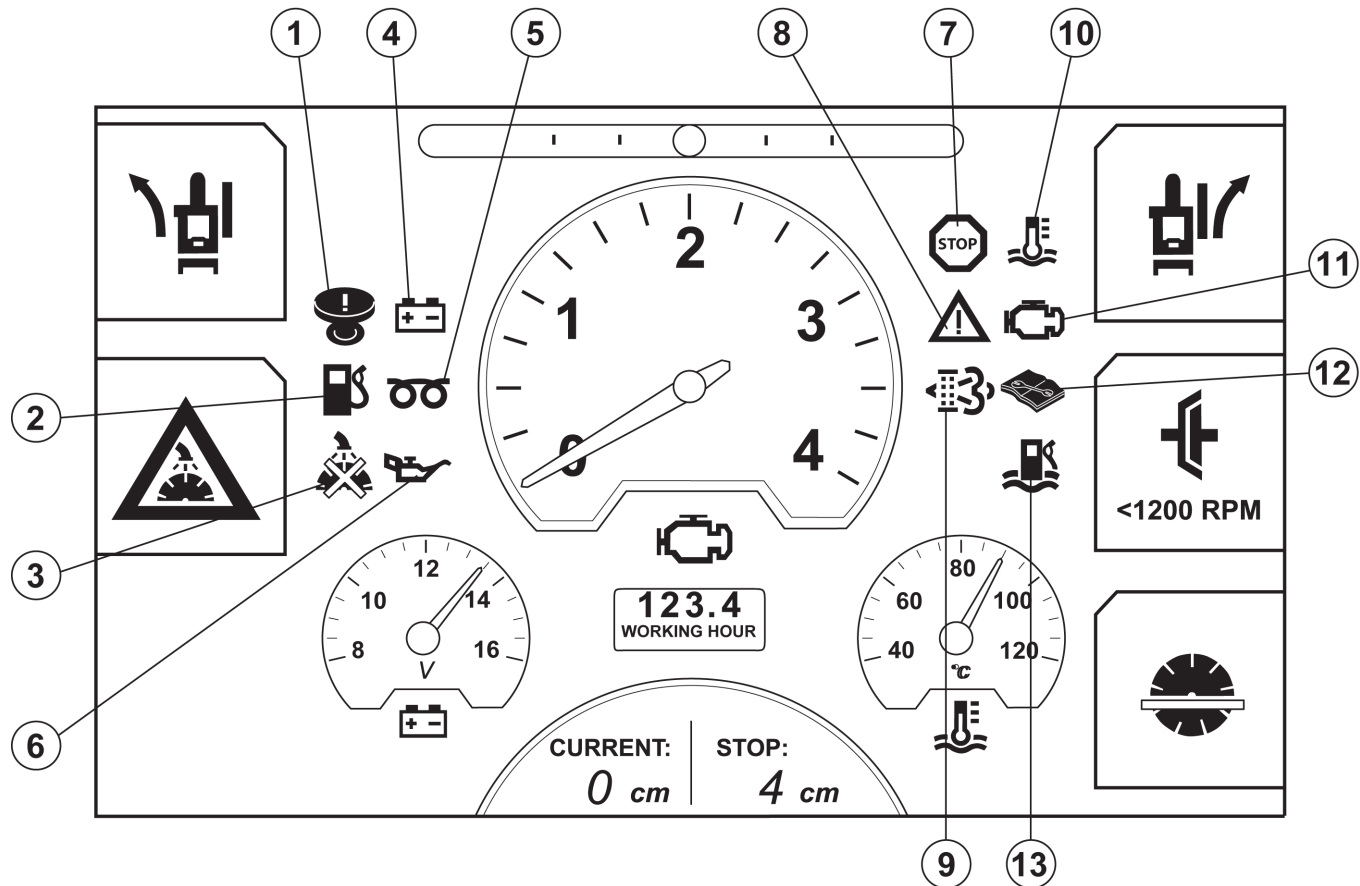
Air Filter

1. Remove the rear cover.
2. Remove the primary air filter.
3. Remove the inner element.

Replace both filters and reattach them in reverse order.

10. HMI - DISPLAY

Display text



- Machine in emergency stop state (Release emergency stop and cycle ignition to regain full functionality.)
Turned on when machine stop is pressed. Turned off when all of the following 3 conditions are met:
 - Ignition key is turned off
 - Engine speed received from ECU equals 0 RPM for 1 second or more
 - Blade speed are 0 RPM
- Low fuel level. Turned on after 8sec without fuel. Turned off after 5sec with fuel present.
- No blade water pressure. Turned on when pressure switch is open (no water pressure) and blade water safety function is selected. Else turned off.
- No charging. Always turned on lamp when engine stand still. Always turn off lamp for 15sec after engine is started (this to prevent that lamp is turned on if battery should be difficult to charge). Turn on lamp if battery voltage has not increase after 15sec since the engine was started or of battery voltage rise above 15V. Always turn off lamp if battery voltage is higher then battery voltage before engine was started or if battery voltage is above 12.8V. Battery voltage is not checked while hydraulic pump is running or for 15sec after the pump have stopped running. This since battery voltage always drop when pump is running.
- Pre heat. Turned on by message. Turned on by Yanmar ECU CAN message ECACK1 or by Deutz ECU CAN message SO1 (please see Engine documentation for more info). HMI does not make any decision on its own. It only displays information coming from t ECU.
- Low oil pressure. Turned on by Yanmar ECU CAN message Y_IOS or by Deutz ECU CAN message SO1 (please see Engine documentation for more info). Also turned on if Fault code SPN 100 are received from any ECU. HMI does not make any decision on its own. It only displays information coming from t ECU.
- Engine Stop Lamp. Turned on by ECU CAN message DM1 if Engine has severe fault codes. DM1 also contain fault codes. HMI does not make any decision on its own. It only displays information coming from the ECU.

8. Amber Warning lamp. Turned on by ECU CAN message DM1 if Engine has minor fault codes. Same message as DM1 that contains fault codes. HMI does not make any decision on its own. It only displays information coming from the ECU.
9. Regeneration lamp. Turned on by Yanmar ECU if Stationary Regeneration is required or if engine ends up in Stationary Regeneration Backup mode. If engine is in Backup mode Yanmar SA-D is needed to bring the engine back to full functionality.
10. Engine over heated. Turned on by Yanmar ECU CAN message Y_IOS or by Deutz ECU CAN message SO1 (please see Engine documentation for more info). HMI does not make any decision on its own. It only displays information coming from the ECU.
11. Engine fail lamp. Turned on by ECU CAN message DM1 if Engine has any fault codes. Same message that contains the fault codes. HMI does not make any decision on its own. It only displays information coming from the ECU.
12. Active fault codes. Turn on if there are active non engine fault codes.
13. Water in fuel. Turned on by Deutz ECU CAN message WFI (please see engine documentation for more info). HMI does not make any decision on its own. It only displays information coming from the ECU.

Messages

“Disengage Blade Clutch before engine can be started”: Displayed if operator tries to crank the engine with blade clutch engaged. Visible for 2sec after finished crank attempt.

“Stationary Regeneration Could Not Be Activated”: Shown if Stationary Regeneration is aborted while the process is initiated but not fully started.

“Stationary Regeneration Has Been Aborted”: Shown if Stationary Regeneration is aborted during its active phase.

“Engine Overheated”: Shown if engine running and engine overheated lamp have been turned on for 5s.

“No Blade Water Pressure”:

1. Shown if operator tries to start the engine with low water pressure and have Blade Water Safety is selected.
2. Shown if engine has stopped due to water pressure.

“Machine Stop Pressed: Restore Machine Stop and cycle ignition”: Shown when Machine Stop is pressed.

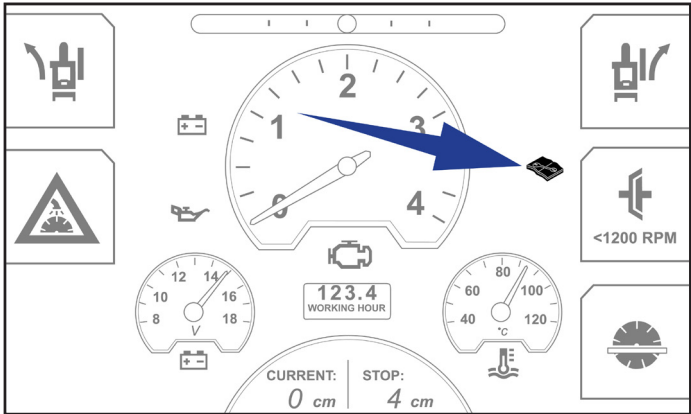
“Machine Stop State Active: Please cycle ignition”: Shown if the operator tries to start the engine after that machine stop has been pressed and released and ignition not yet have been cycled. Will go out after 2sec.

“Crank Error: Please cycle ignition slowly. If problem still exist check harness and Fault Codes”: Shown if crank signal from Start Key indicate active crank for 5sec after ignition on.

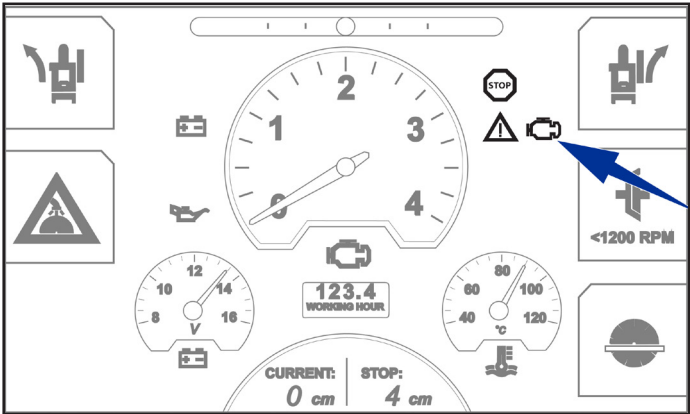
“No Machine Type Selected”: Shown if no machine type has been selected in Machine Type Menu.

“Speed Control Not in Stop Position”: Shown if operator tries to start the engine while neutral switch is open.

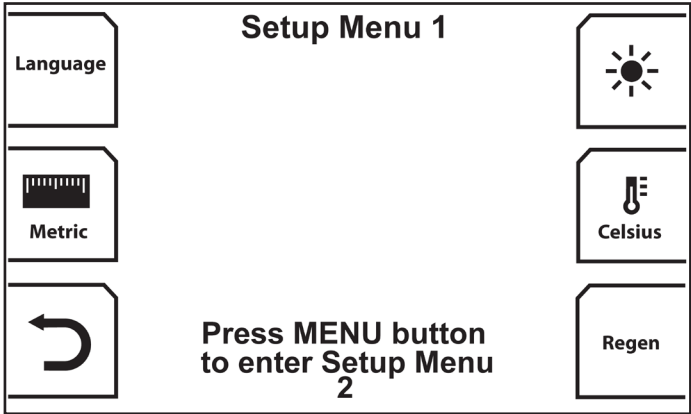
FS 7000D Fault Codes



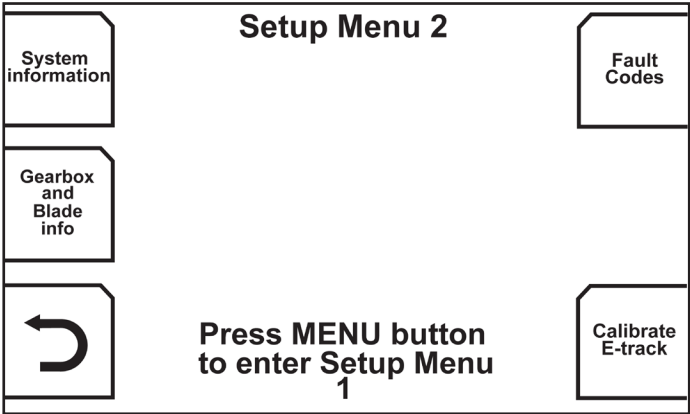
1. Active fault codes. Turn on if there are active non engine fault codes.



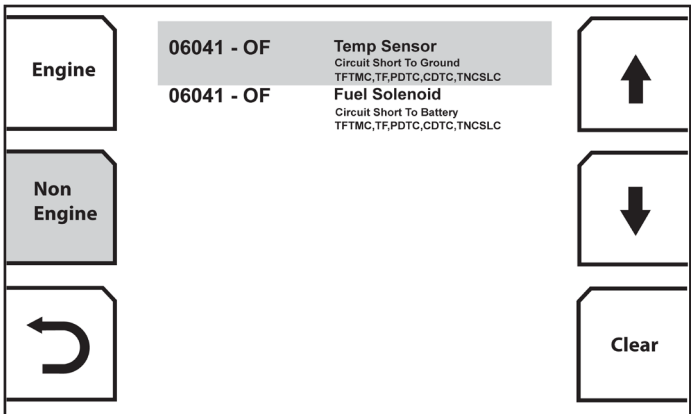
2. Engine fail lamp. Turned on by ECU CAN message DM1 if Engine has any fault codes. Same message that contain the fault codes. HMI does not make any decision on its own. It only displays information coming from the ECU.



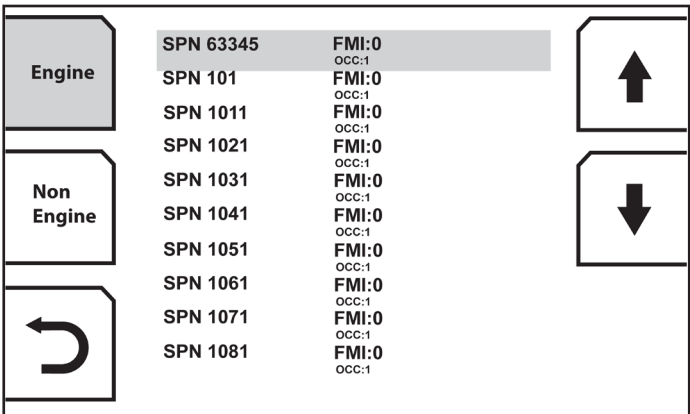
3. When the MENU button is pressed you will see this menu. Press menu button again to go to Setup Menu 2.



4. After you get to Setup Menu 2 you then press the Fault Codes button.

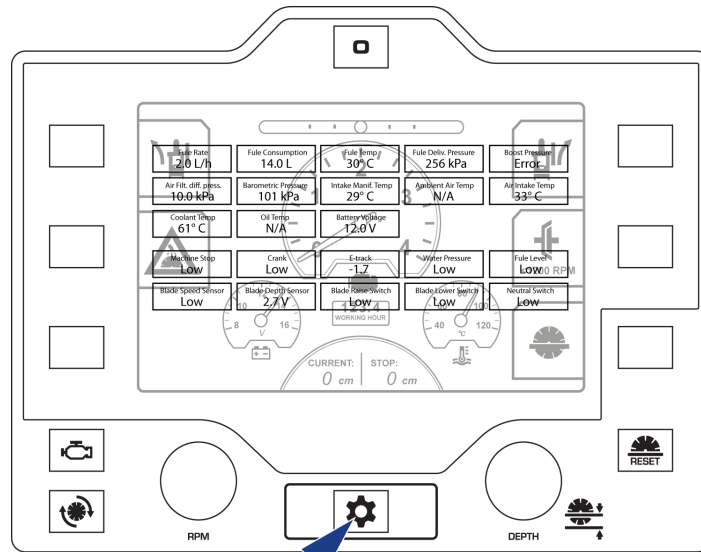


5. In Fault Codes it is possible to switch between the fault codes for the saw and the engine manufacturer fault codes. The image above shows the Non Engine fault codes.



6. The image above shows how the Engine Fault Codes may look like. It is always possible to go back by pressing the button for the back arrow down to the left.

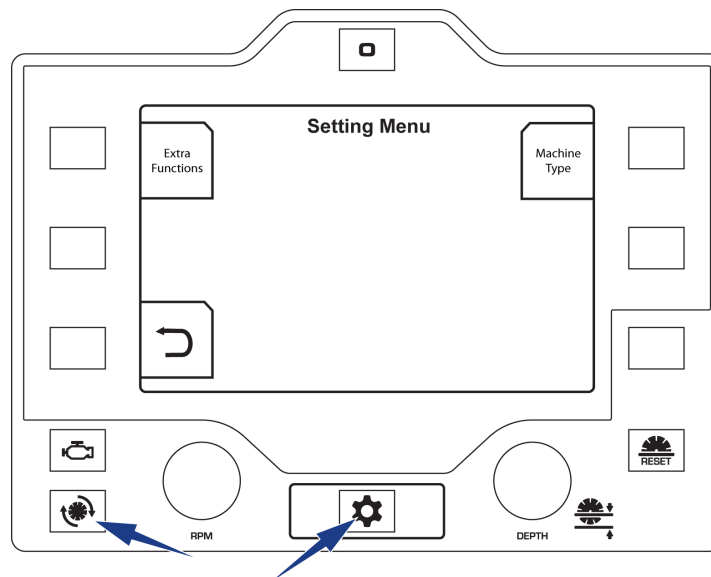
Service Menu



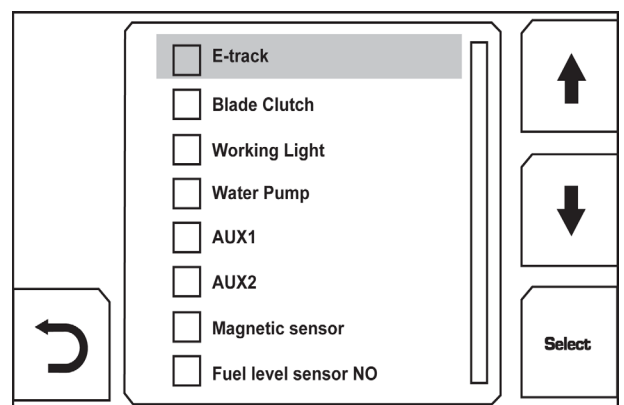
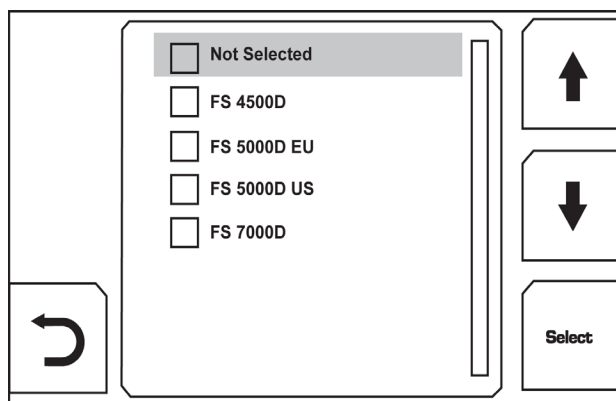
To access the Service Menu, hold the “Menu” button down for 2 seconds.

To exit the menu, hold the “Menu” button down for 2 seconds.

Setting Menu



To access the Setting Menu press the “Menu” button and “Display of blade speed, rpm” down at the same time.



11. FAULT CODES

Error Messages

Code	Message	Description	Action
U100187	Engine ECU	No CAN communication	Check damage to HMI and ECU connector and chassis harness. If found, repair and restart system, reset fault code. If problem still exists contact HCP SERVICE for further information. Cutting can not continue. Engine forced to low idle.
U100087	I/O Controller	No CAN communication	1: Check damage to HMI connector and chassis harness. If found, repair and restart system, reset fault code. 2: If problem still exists, contact your service agent for further information.
U100088	I/O Controller	Software Download Failed	1: Check damage to HMI connector and chassis harness. If found, repair and restart system, reset fault code. 2: Replace HMI.
P060748	IOC MPU	Supervision Failure	No recommended field action. Contact HCP SERVICE for further information.
P060745	IOC MPU	Program Memory Failure	No recommended field action. Contact HCP SERVICE for further information.
P060742	IOC MPU	General Memory Failure	No recommended field action. Contact HCP SERVICE for further information.
C1E0111	Blade Depth Sensor Signal	Circuit Short To Ground	1: Disconnect sensor and reset fault code. If fault code no longer exists replace sensor. 2: Check damage connector and harness. If found, repair and restart system, reset fault code. If problem still exists contact HCP SERVICE for further information No cutting recommended.
C1E0112	Blade Depth Sensor Signal	Circuit Short To Battery	1: Disconnect sensor and reset fault code. If fault code no longer exists replace sensor. 2: Check damage connector and harness. If found, repair and restart system, reset fault code. If problem still exists contact HCP SERVICE for further information No cutting recommended.

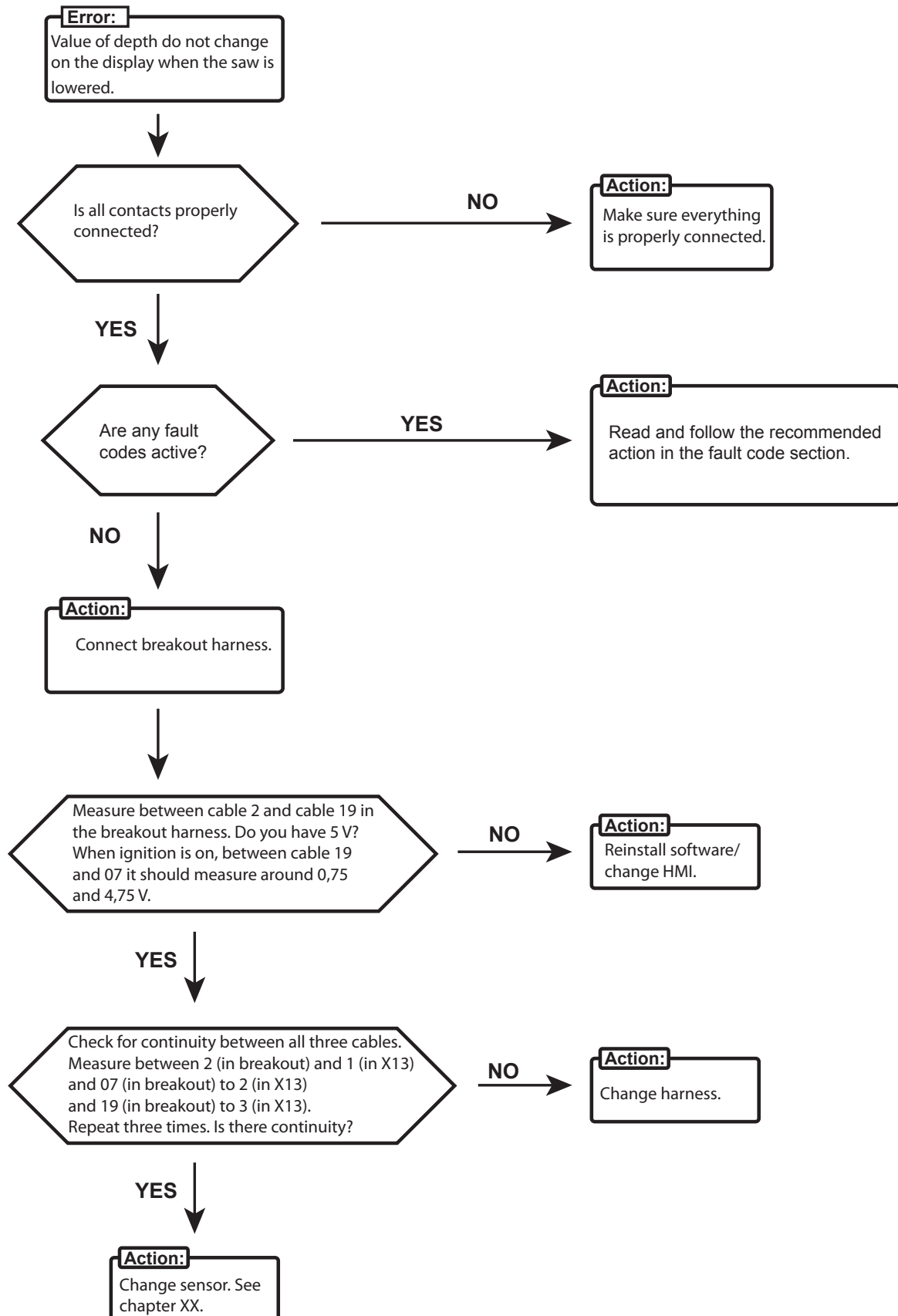
Code	Message	Description	Action
C1D0115	Starter	Engine starter can not be controlled. Cutting can not continue.	1: Check damage to HMI and ECU connector and harness. If found, repair and restart system, reset fault code. 2: If problem still exists, contact your service agent for further information.
C1D0111	Starter	Engine can not be started.	1: Check damage to HMI and ECU connector and harness. If found, repair and restart system, reset fault code. 2: If problem still exists, contact your service agent for further information.
C1D0711	Power supply external device	Cutting can not continue.	1: Check cables to: Blade depth sensor and sensor itself E-track position sensor and sensor itself Neutral start switch and switch itself Fuel level sensor and sensor itself Lower/raise switch and switch itself Water safety switch and switch itself 2: Change HMI
C1D0215	AUX2	Circuit Short To Battery or Open	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0211	AUX2	Circuit Short To Ground	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0315	Blade Clutch	Circuit Short To Battery or Open	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0311	Blade Clutch	Circuit Short To Ground	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0615	Water Pump	Circuit Short To Battery or Open	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0611	Water Pump	Circuit Short To Ground	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.

Code	Message	Description	Action
C1D0815	AUX1	Circuit Short To Battery or Open	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0811	AUX1	Circuit Short To Ground	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0915	Working Light	Circuit Short To Battery or Open	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0911	Working Light	Circuit Short To Ground	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0C15	Ignition	Circuit Short To Battery or Open	Yanmar: 1: Check fuel pump relay in relay/fuse box 2: Check damage connectors and ignition signal from HMI to relay/fuse box to ECU. Deutz: 1: Check damage to HMI and ECU connectors/harness.
C1D0C11	Ignition	Circuit Short To Ground	Yanmar: 1: Check fuel pump relay in relay/fuse box 2: Check damage connectors and ignition signal from HMI to relay/fuse box to ECU. Deutz: 1: Check damage to HMI and ECU connectors/harness.
C1D0D15	Hydraulic Lift Pump	Circuit Short To Battery or Open	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0D11	Hydraulic Lift Pump	Circuit Short To Ground	1: Check relay in relay/fuse box 2: Check damage to HMI connector and harness to relay/fuse box.
C1D0E15	Hydraulic Lowering Valve	Circuit Short To Battery or Open	1: Check that hydraulic valve is properly connected. 2: Check damage to HMI connector and harness to hydraulic valve.
C1D0E11	Hydraulic Lowering Valve	Circuit Short To Ground	1: Check that hydraulic valve is properly connected. 2: Check damage to HMI connector and harness to hydraulic valve.

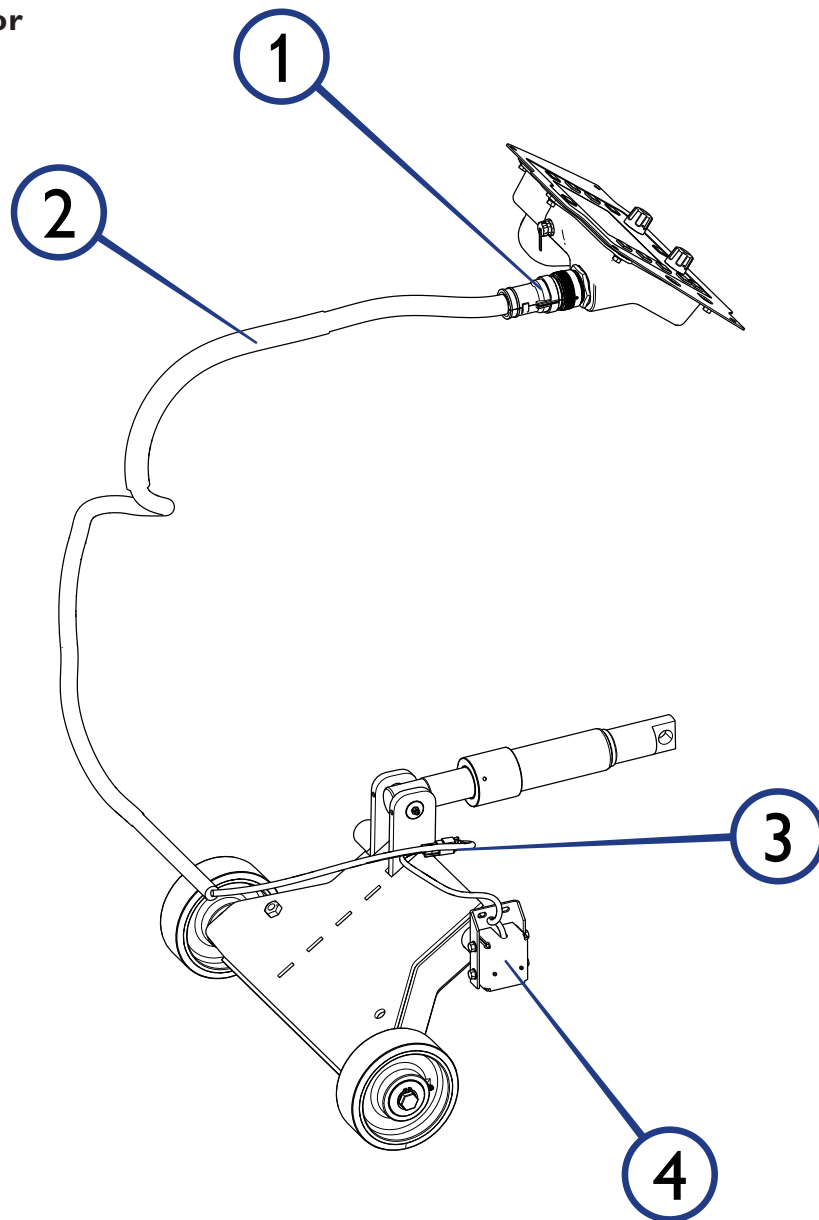
Code	Message	Description	Action
C1E0511	E-track Position Sensor	Circuit Short To Ground	Check damage to actuator, connector and harness.
C1E0512	E-track Position Sensor	Circuit Short To Battery	Check damage to actuator, connector and harness.
C1F0112	E-track Motor A	Circuit Short To Battery	1: Disconnect E-track and reset fault code. If fault code no longer exist check damage to E-track actuator harness and connector. 2: If fault code still exists check damage to chassis harness.
C1F0111	E-track Motor A	Circuit Short To Ground	1: Disconnect E-track and reset fault code. If fault code no longer exist check damage to E-track actuator harness and connector. 2: If fault code still exists check damage to chassis harness.
C1F0212	E-track Motor B	Circuit Short To Battery	1: Disconnect E-track and reset fault code. If fault code no longer exist check damage to E-track actuator harness and connector. 2: If fault code still exists check damage to chassis harness.
C1F0211	E-track Motor B	Circuit Short To Ground	1: Disconnect E-track and reset fault code. If fault code no longer exist check damage to E-track actuator harness and connector. 2: If fault code still exists check damage to chassis harness.
C1F0521	E-track Motor	Circuit Overload	1: Disconnect E-track and reset fault code. If fault code no longer exist check damage to E-track actuator harness and connector. 2: If fault code still exists check damage to chassis harness.
C1F0513	E-track Motor	Circuit Open	1: Disconnect E-track and reset fault code. If fault code no longer exist check damage to E-track actuator harness and connector. 2: If fault code still exists check damage to chassis harness.

12. FAULT TRACING

Blade depth sensor

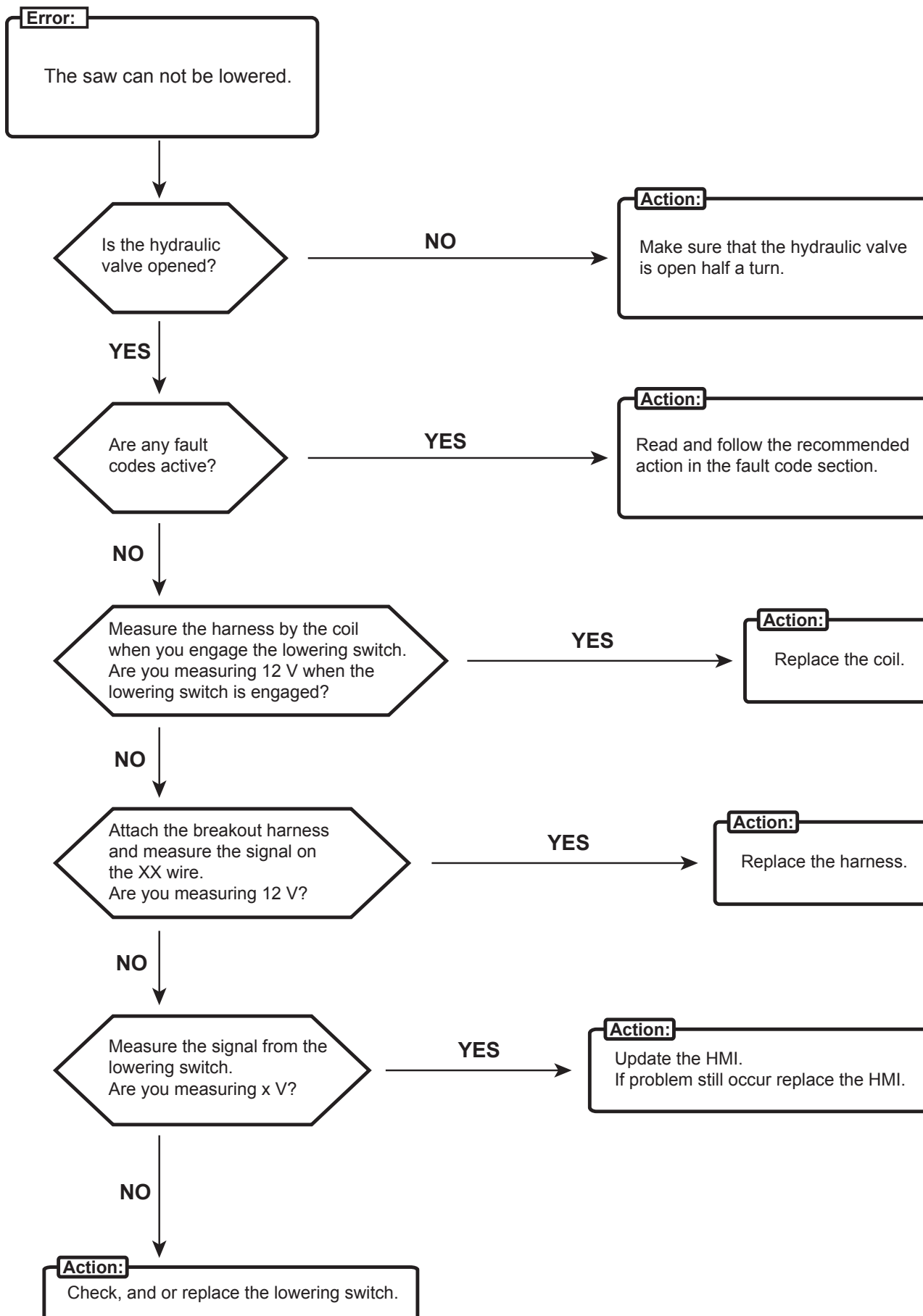


Blade Depth sensor

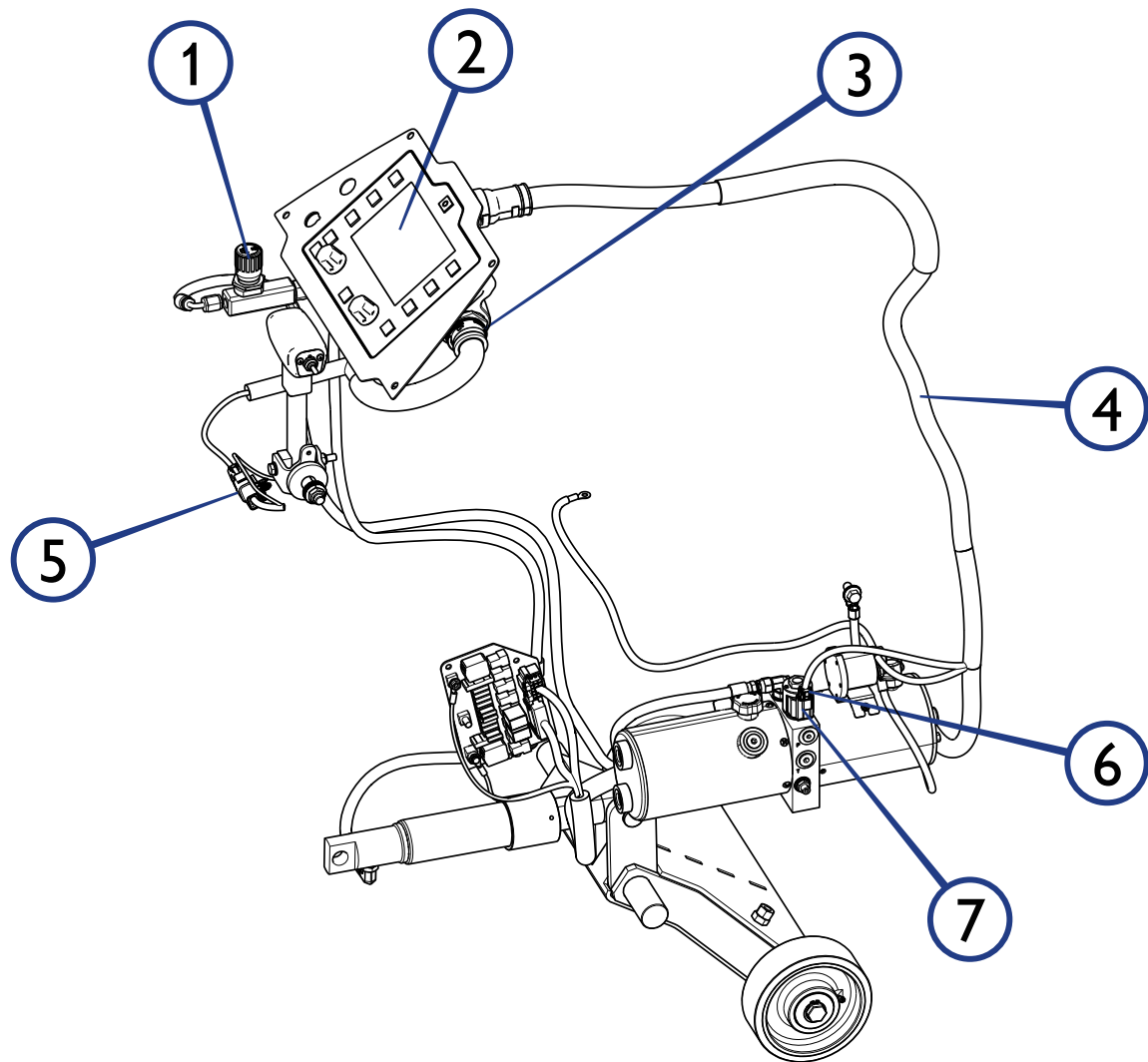


1. Contact X14.
2. Harness.
3. Contact X13.
4. Sensor.

Lowering

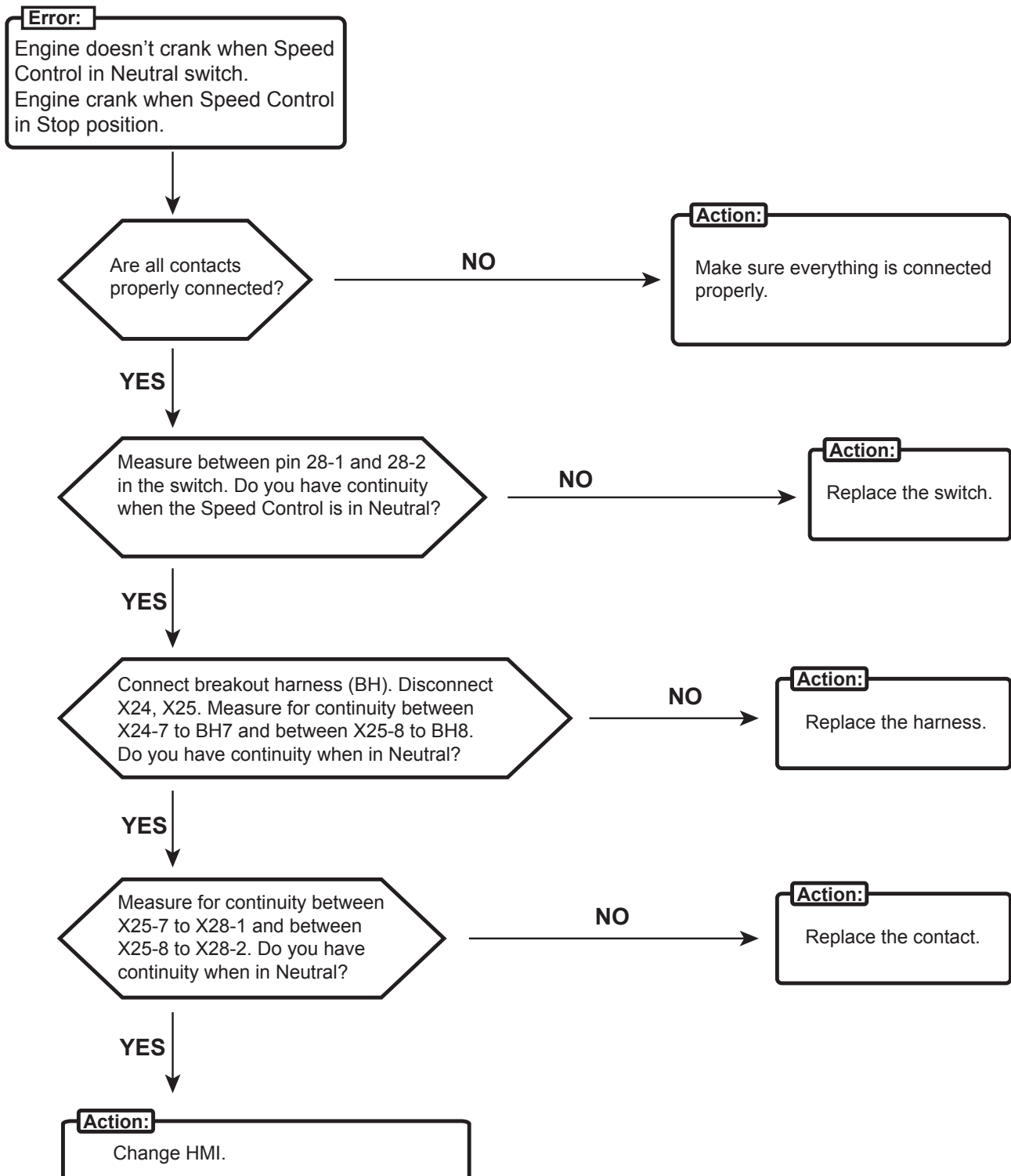


Lowering

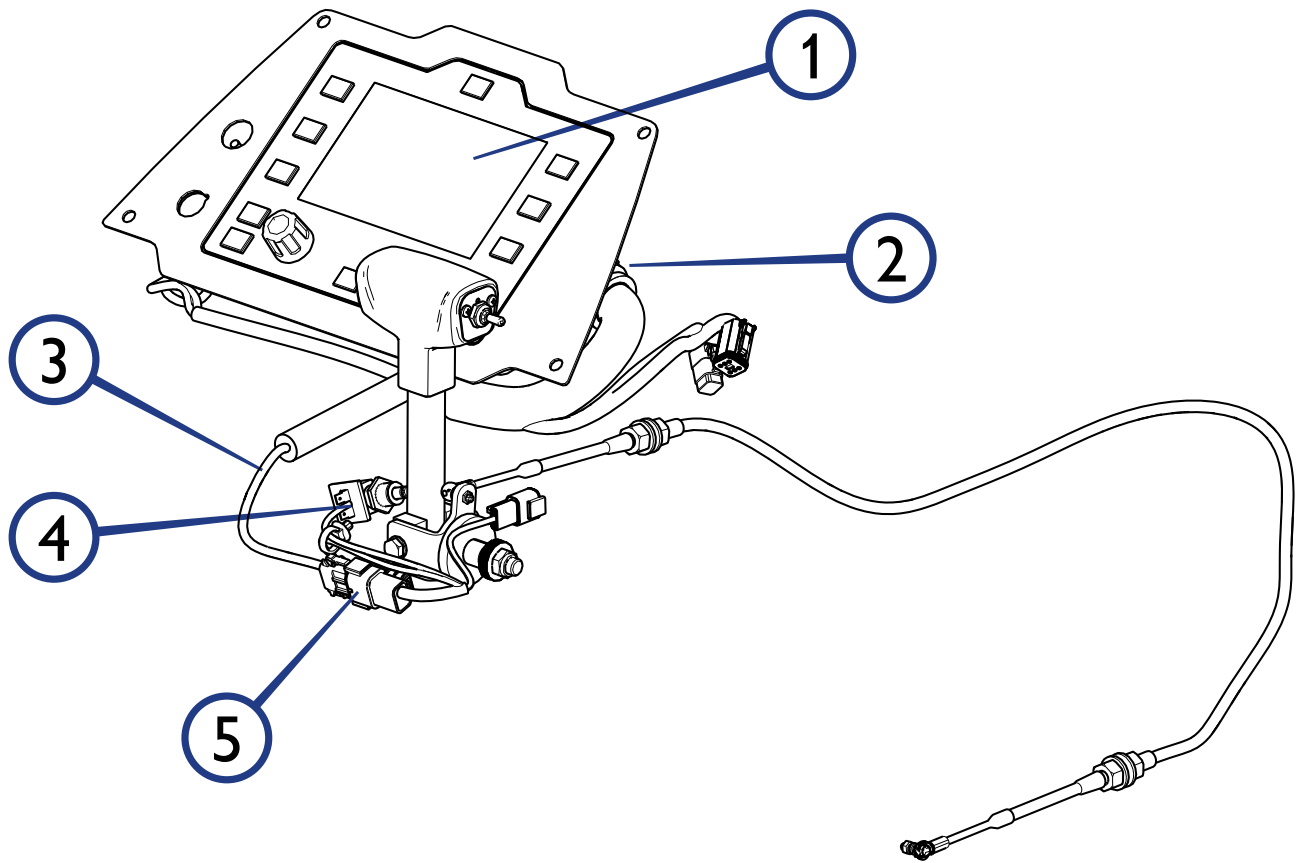


1. Lowering speed valve.
2. HMI.
3. HMI2 contact.
4. Engine harness.
5. Contacts; X24, X25.
6. Contact X15.
7. Coil.

Neutral

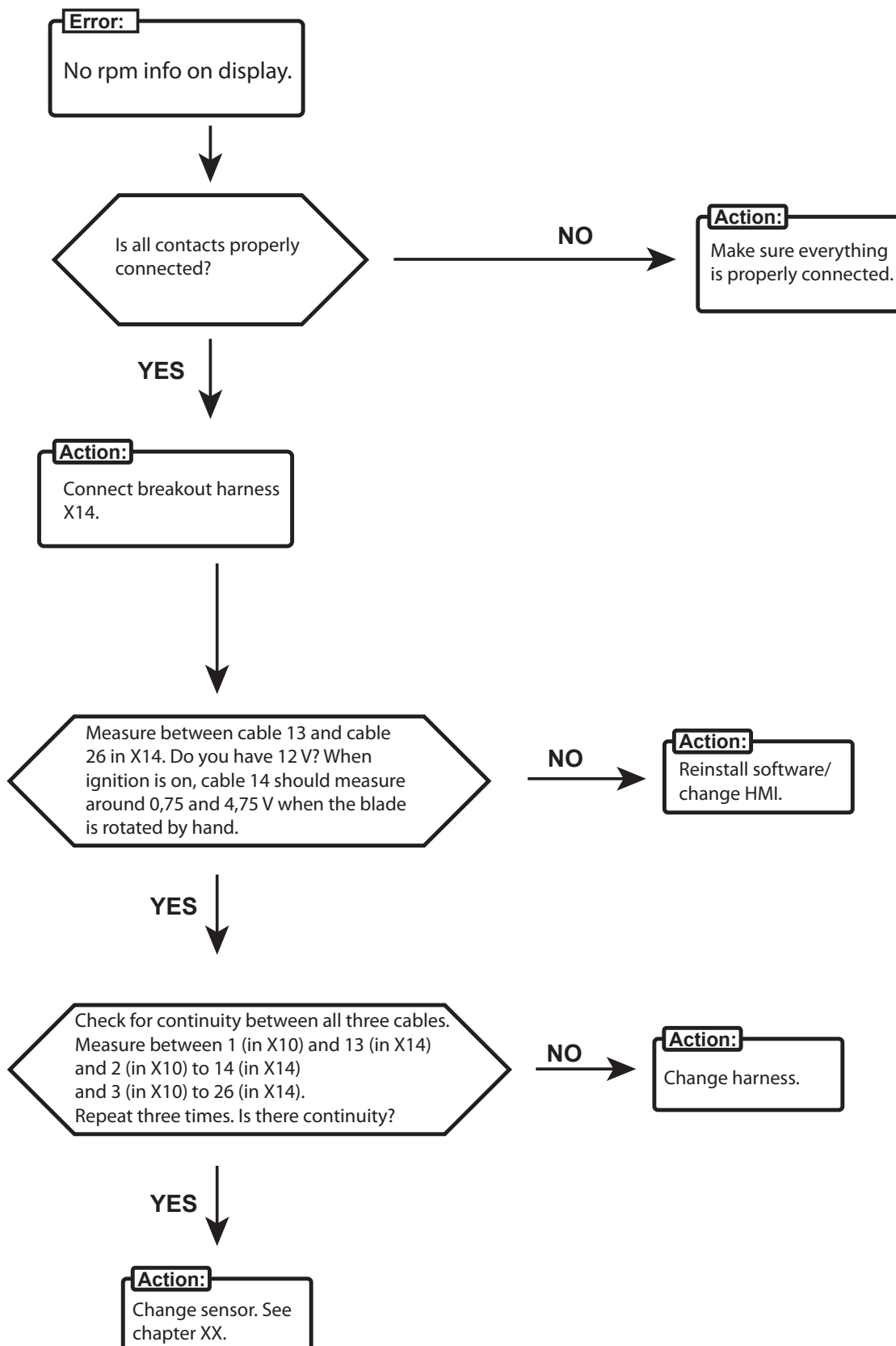


Neutral

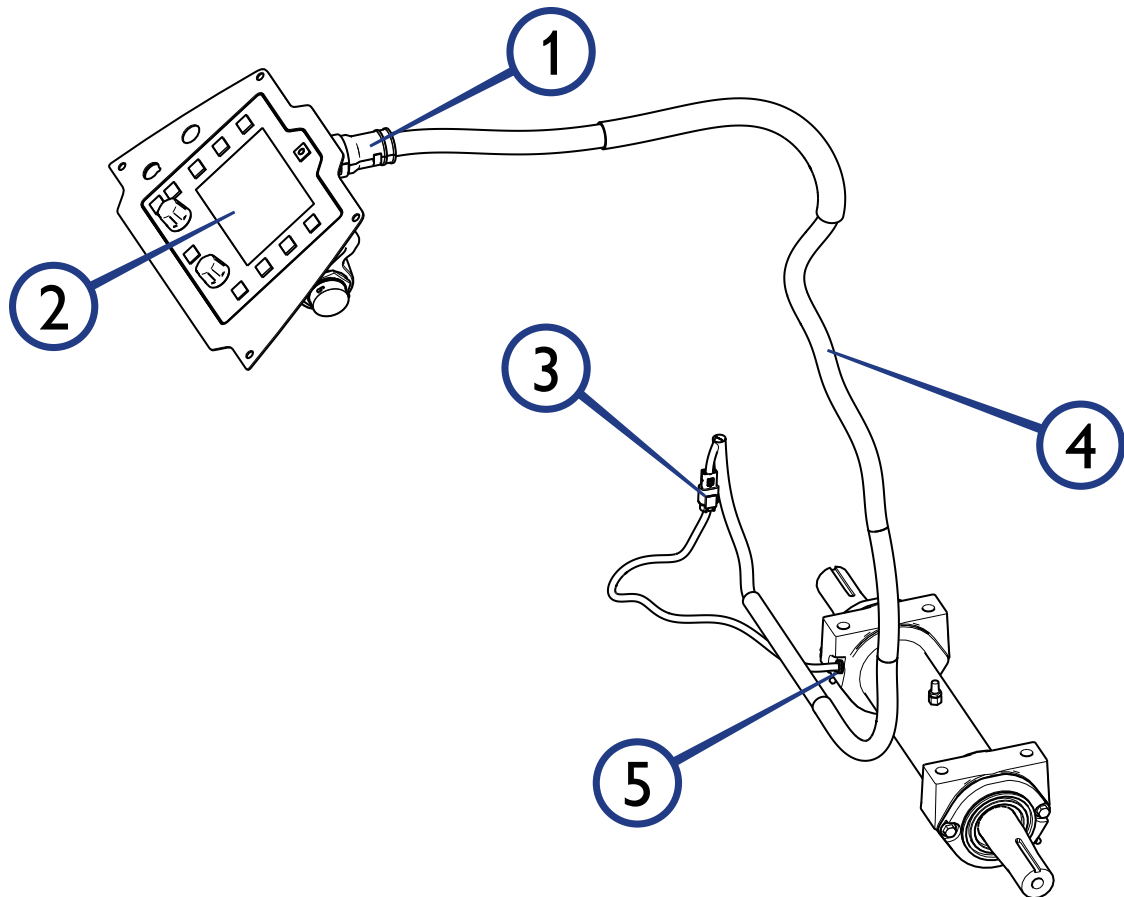


1. HMI.
2. HMI2 (for breakout harness).
3. Harness 28-1, 28-2.
4. Switch.
5. Contacts; X24, X25.

Blade Speed Sensor

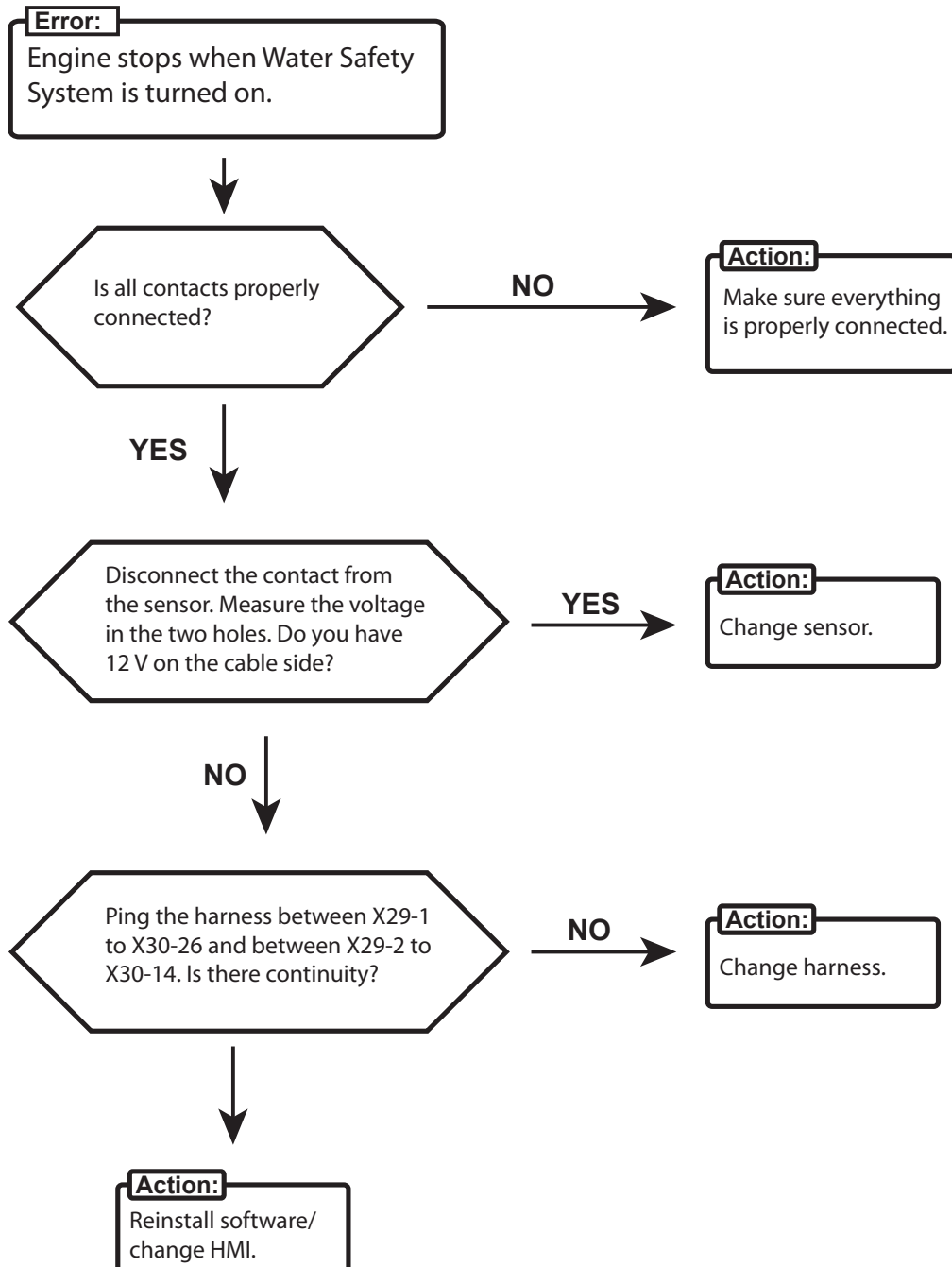


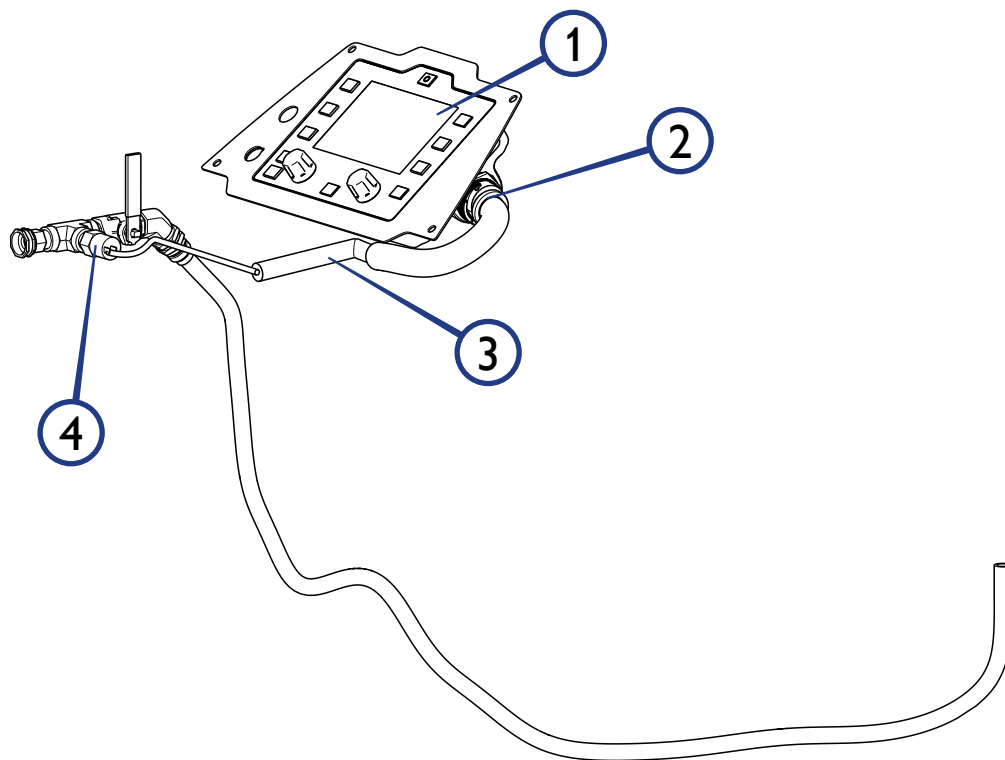
Blade Speed Sensor



1. Contact for breakout harness X14.
2. HMI.
3. Contact X10.
4. Engine harness.
5. Sensor.

Water pressure switch



Water Pressure Switch

1. HMI:
2. HMI2.
3. Cowl Harness.
4. Switch.

13. REPAIR INSTRUCTIONS

Table of Content

13. Repair Instructions

13.1. Covers

Removing the Front Cover.....	46
Removing the Side Covers.....	46
Removing the Fan Protection	47

13.2. Electric /Hydraulics

Removing the Battery	48
Removing the Wiring Harnesses	48
Change Lift Cylinder	50
Dismantling the Rear Axle - Hydraulic Motor.....	51

13.3. Cowling

Changing the Radiator Filter	52
Emptying/Refilling the Radiator	52
Removing the HMI Board	53
Removing the ECU	54
Removing the Lowering Speed Valve.....	54
Removing the Speed Control.....	55
Replacing the Radiator	57

13.4. Engine

Engine Lift.....	58
Changing the DOC.....	59
Replacing the Fan	60
Replacing the Fan Belt	61
Replacing the Generator Belt	61

13.5. Gearbox / Clutch / Blade shaft

Blade Shaft Drive Belts.....	62
Removing the Blade Shaft Drive Belts	62
Attaching the Blade Shaft Drive Belts	62
Changing the Pulleys.....	63
Gear Box	65
Removing the Gear Box.....	65
Mounting the Gearbox	66
The Clutch.....	68
Disassembling the Clutch	68
Reassembling the Clutch.....	68
Replacing the Clutch Armature.....	69

13.6. Baseplate / Frame

Lifting the Road Saw	70
Removing the Lift Bail	70

13.7. Front-/Rear Axle / Lift Cylinder

Rear Axle.....	72
Removing the Rear Axle	72
Reattaching the Rear Axle	72
Replacing the Blade Depth Sensor.....	73
Removing the Front Axle	74
Replacing the Bearing Bracket	75
Replacing the Wheels	75
Changing the Blade Shaft.....	76
Replacing the E-track.....	76
Replacing the Proximity Sensor.....	77
Change Idler Shaft/Gear.....	78
Blade Shaft/Gear.....	78

14. Software - Download

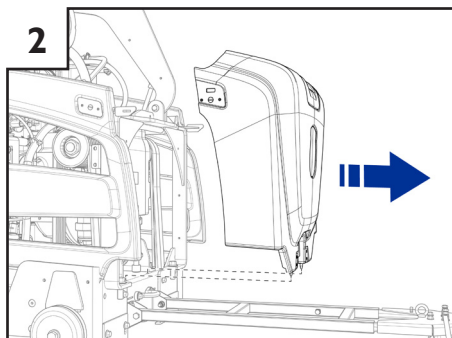
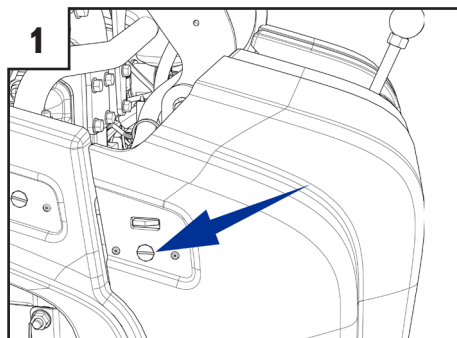
Software update FS HMI	79
Connections	80
Ignition Key.....	80
HMI-2.....	80
USB	80
“0” button	80
HMI-1	80
Downloading HMI software.....	81
Verify Software download	82

15. Electrical Drawings

ECU	83
Relay	84
HMI.....	85
Power	86
Fuses	87

16. Hydraulic Drawings

Hydraulic Schematic FS 7000D	88
------------------------------------	----

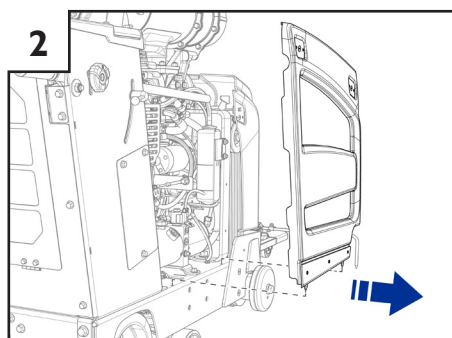
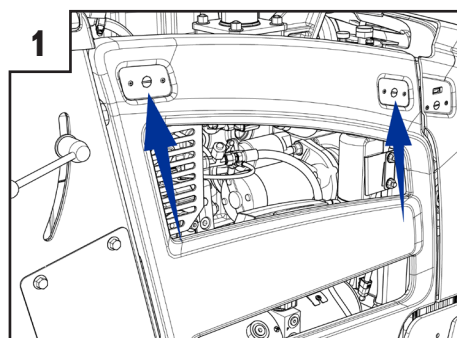


13.1. COVERS

Removing the Front Cover



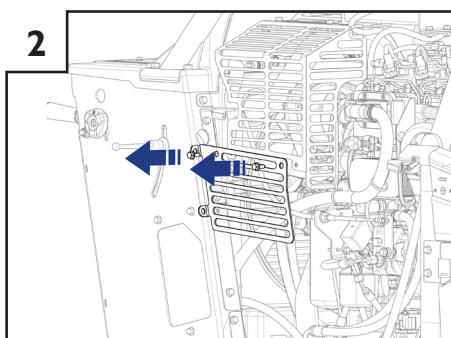
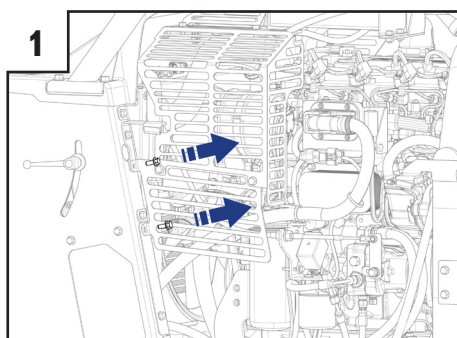
1. Open the front cover on each side by rotating the turn slot.
2. Lift the cover up and outwards.



Removing the Side Covers



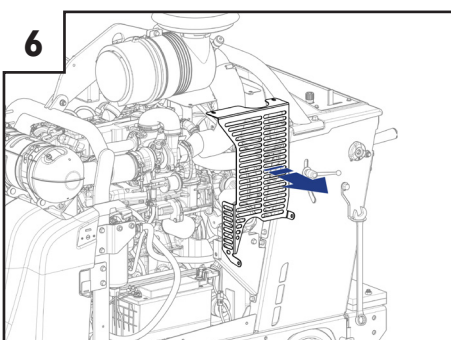
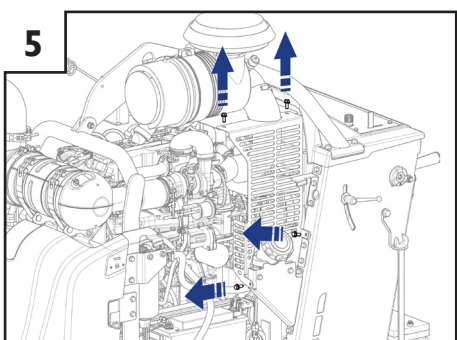
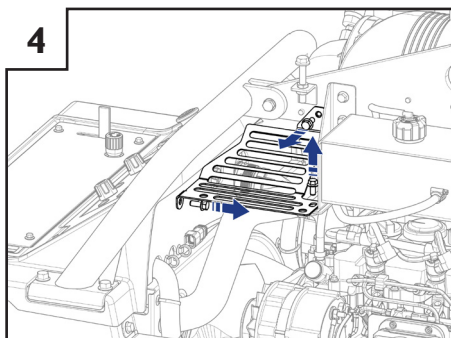
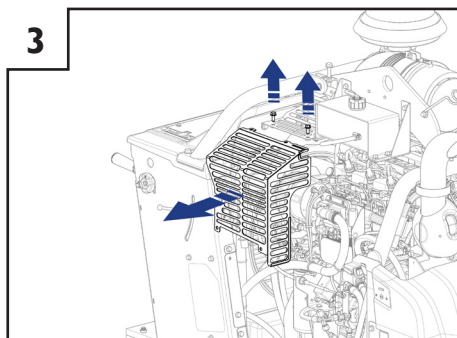
1. Open the side covers on each side by rotating the two turn slots.
2. Lift the covers up and outwards.



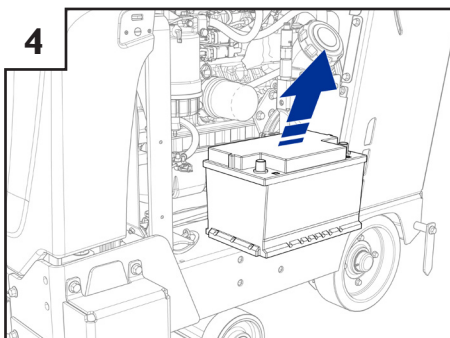
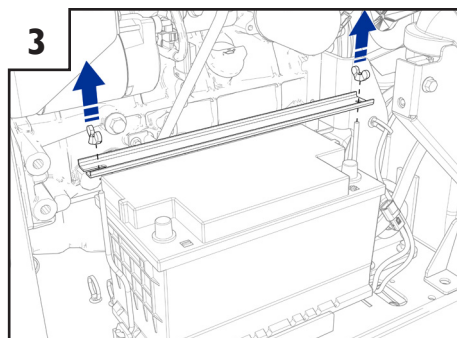
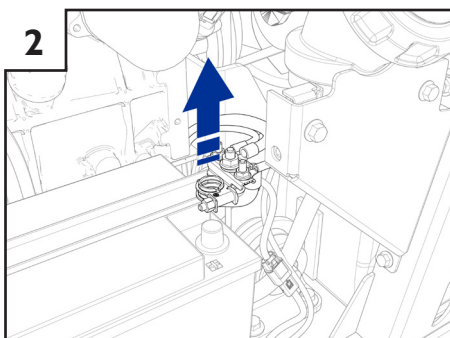
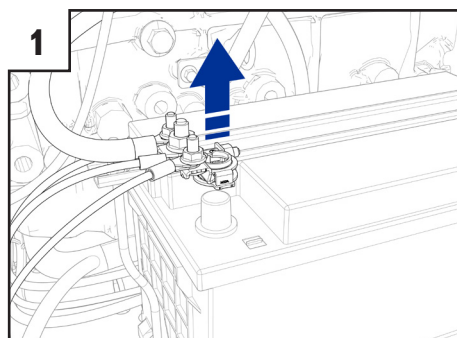
Removing the Fan Protection



First see [Removing the Side Covers \(p. 46\)](#).

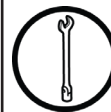


1. Unscrew the two screws holding the lower Fan Protection to the frame on the right side.
2. Unscrew the two remaining screws and lift away the lower Fan Protection off.
3. Remove the two upper screws and remove the upper Fan Protection.
4. Remove the three remaining screws and remove the top Fan Protection
5. Unscrew the four screws holding the Fan Protection on the left side.
6. Lift the Fan Protection away.



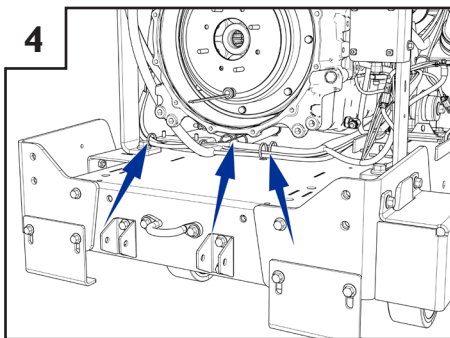
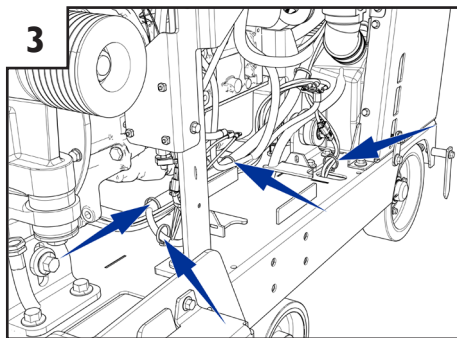
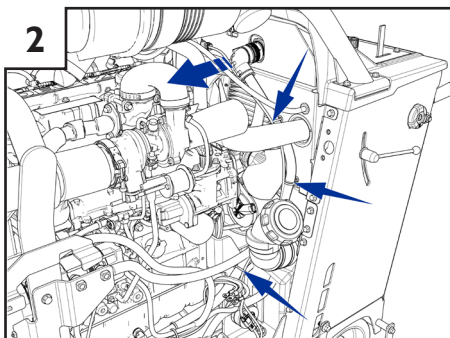
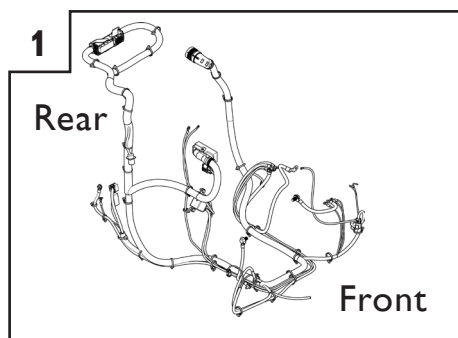
13.2. ELECTRIC / HYDRAULICS

Removing the Battery

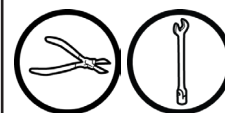


First see [Removing the Side Covers \(p. 46\)](#) (only left side needed).

1. Unscrew bolt at negative terminal. Use a safety key.
2. Unscrew bolt at plus pool and remove battery.
3. Unscrew the two nuts and remove the battery holder.
4. Lift the battery out without tilting it.

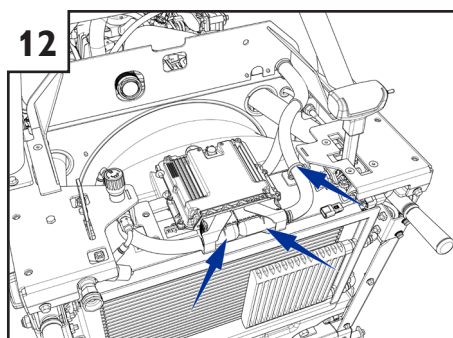
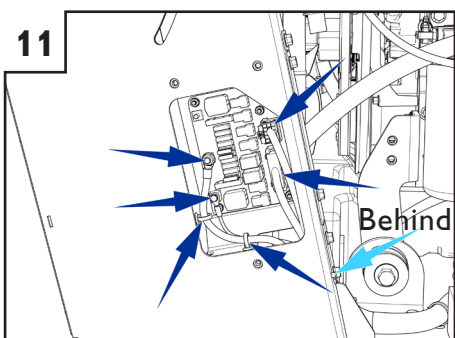
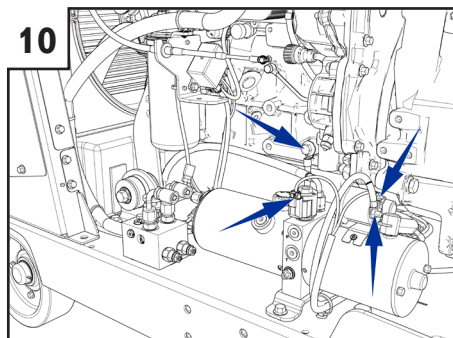
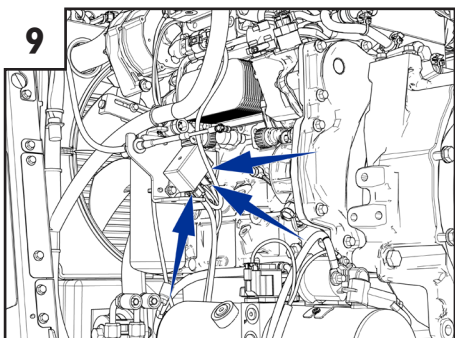
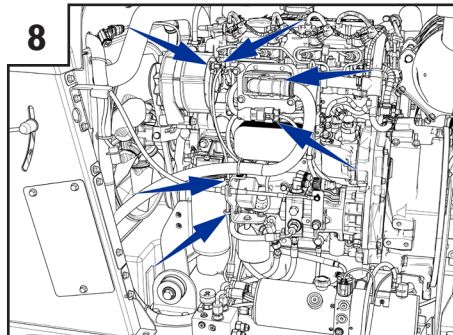
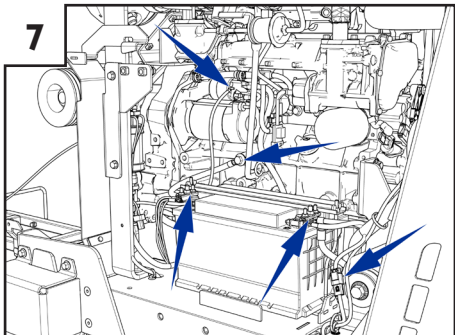
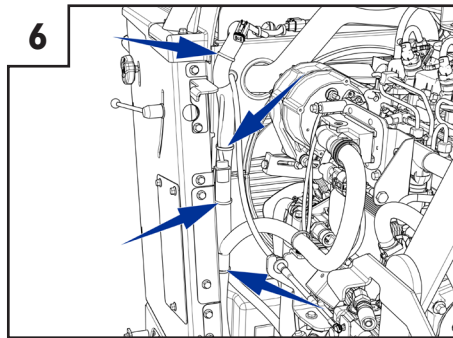
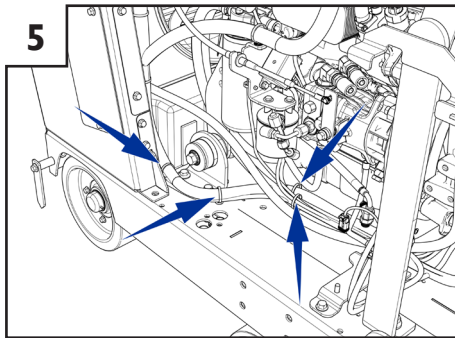


Removing the Wiring Harnesses

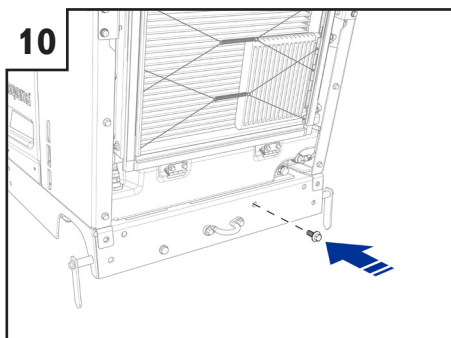
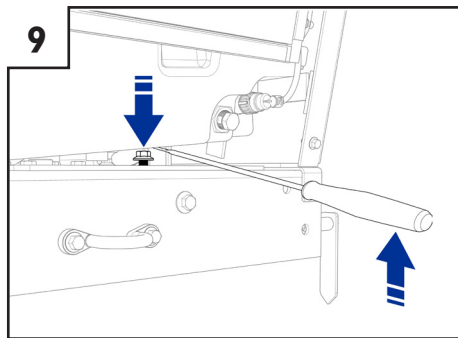
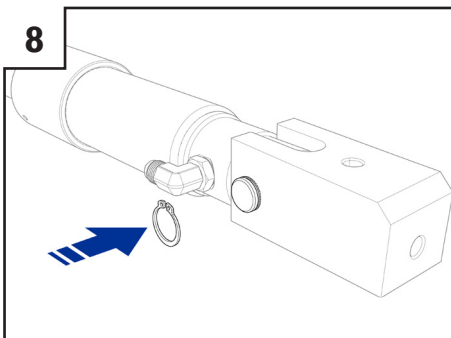
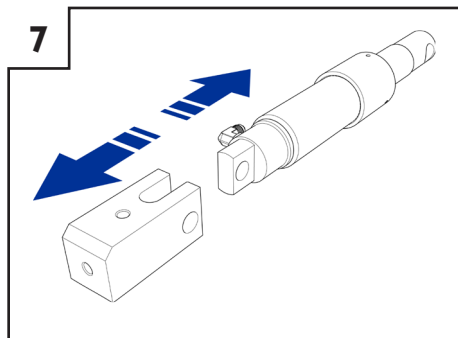
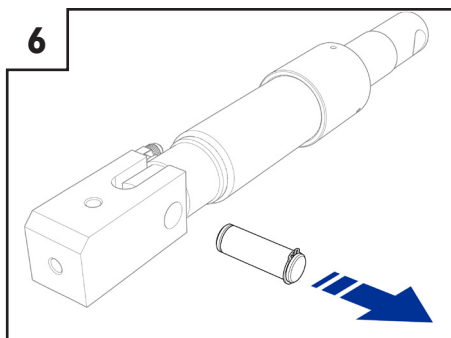
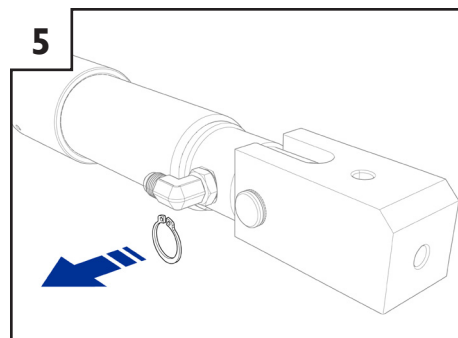
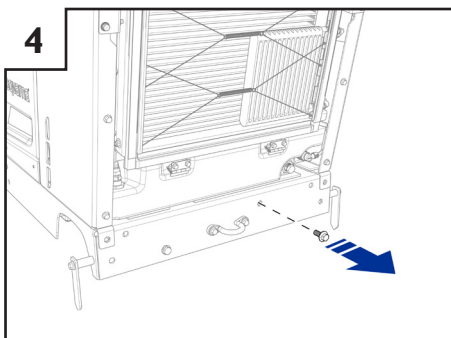
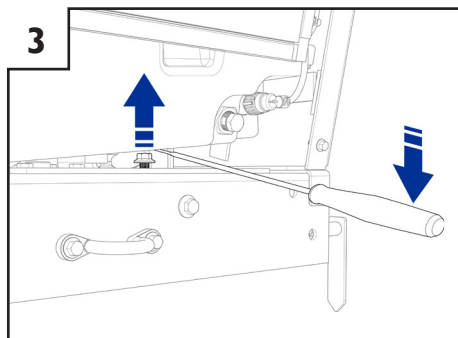
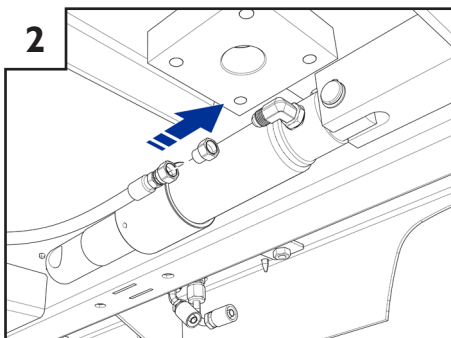
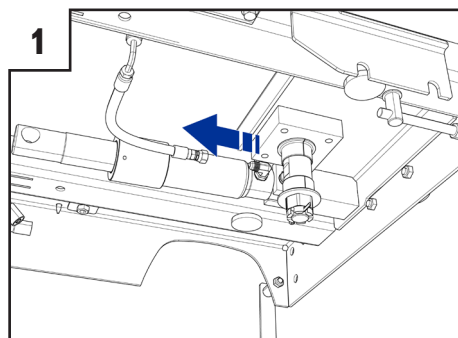


First see [Removing the Side Covers \(p. 46\)](#), [Removing the Fan Protection \(p. 47\)](#), [Removing the Battery \(p. 48\)](#) and [Removing the Gear Box \(p. 65\)](#).

1. The image shows the wiring harnesses. First part of removing the wiring harnesses is to remove all the first-tree clips.
2. Remove the four clips on the left side and disconnect the HMI cable.
3. Remove the clips holding the power cables and the lower harness.
4. Remove the clips under the clutch.



5. Remove the clips on the right side behind the hydraulic pump.
6. Remove the clips on the ECU cable.
7. Remove the ground and starter motor cable.
8. Disconnect the generator, power and relay cables along with the clips.
9. Remove the clips around the throttle cable.
10. Remove the wires connected to the hydraulic pump.
11. Remove the cables and clips from the fuse board. One clip is located behind the side panel.
12. Disconnect the cables from the ECU and the clip holding the cable.

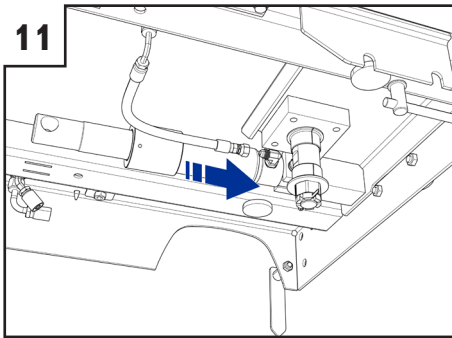


Change Lift Cylinder



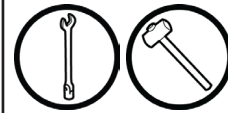
First see [Removing the Rear Axle \(p. 72\)](#) and [Removing the Front Axle \(p. 74\)](#)

1. Cover the ground beneath the hydraulic connectors with a carpet to reduce spill. Then remove hydraulic hose from the undercarriage.
2. Put a plug in each hole
3. Carefully lift up the fuel tank with a screwdriver and loosen the vertical bolts.
4. Remove the rear bolt and hold up the lift cylinder.
5. Remove the snap ring from the axis with a pliers.
6. Tap out the cylindrical axis from the lift cylinder.
7. Remove the lift cylinder. Make sure to clean and regreasing it before putting it back.
8. Insert the cylindrical axis in the lift cylinder and put on a brand new ring
9. Put the lift cylinder in place then lift up the tank and insert the vertical bolt.
10. Insert the rear bolt and tighten it.

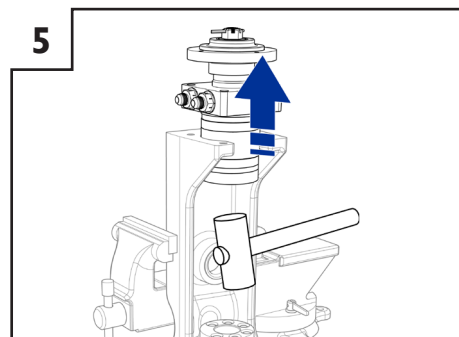
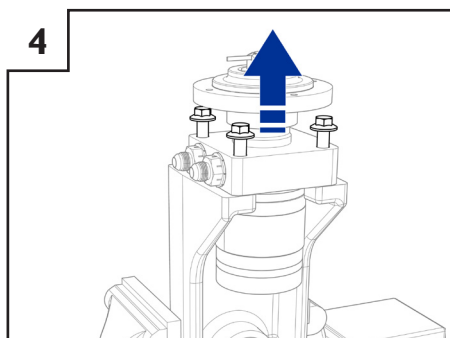
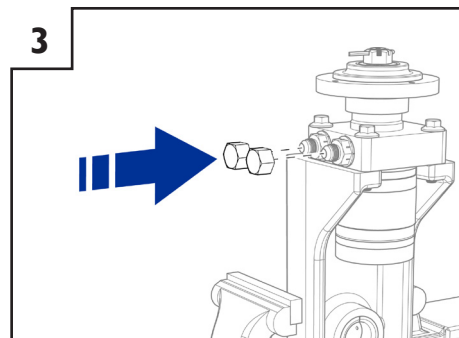
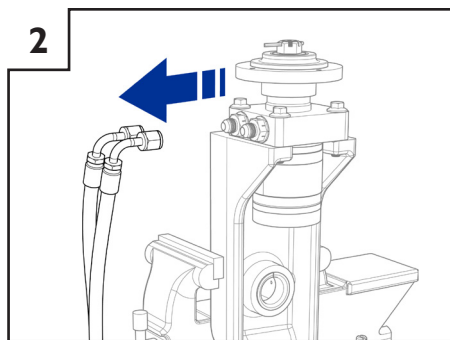
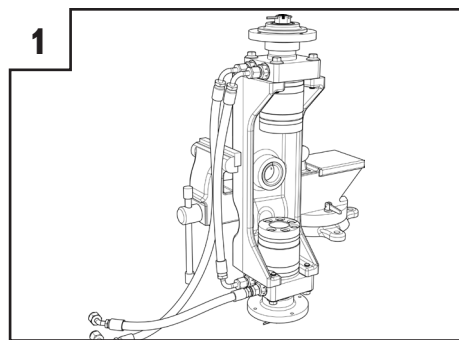


11. Remove the plug and reconnect the hydraulic hose.

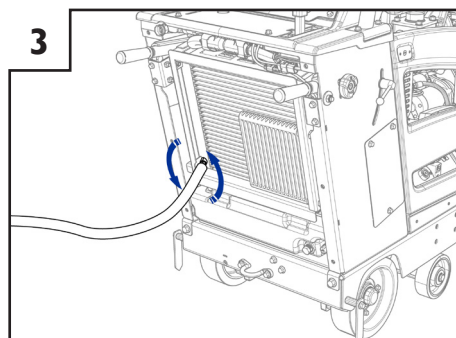
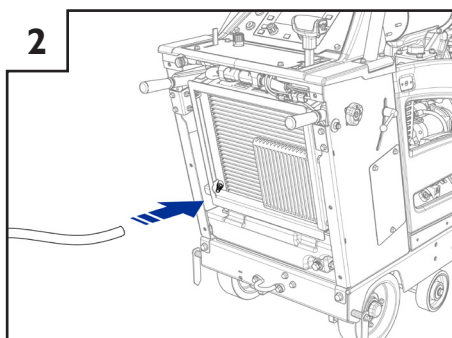
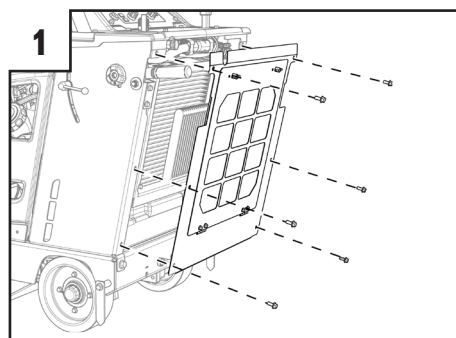
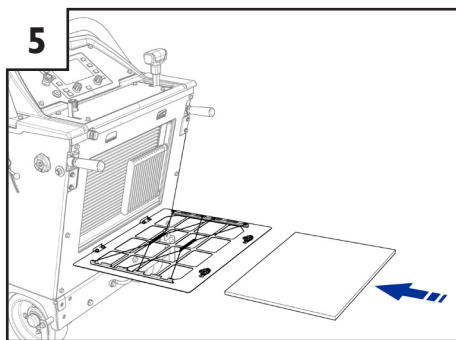
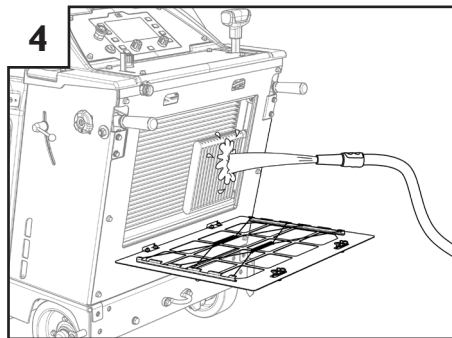
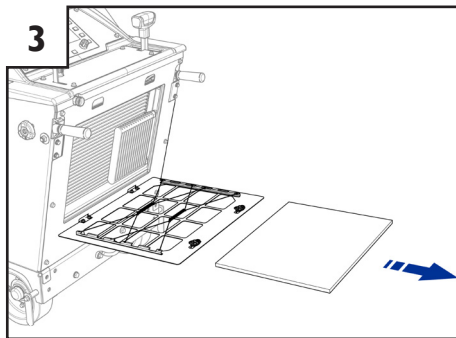
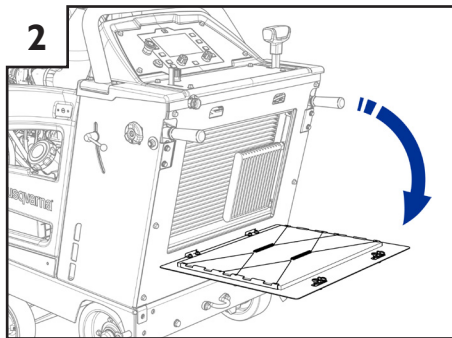
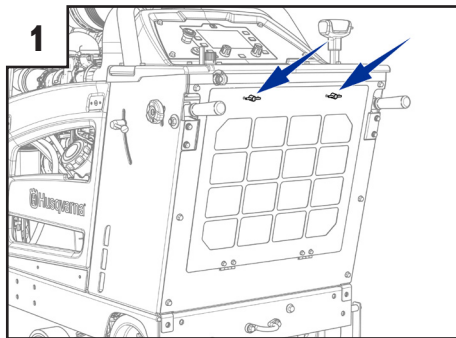
Dismantling the Rear Axle - Hydraulic Motor.



First see [Removing the Rear Axle \(p. 72\)](#). The steps below are applicable for both engines.



1. Secure the rear axis vertical in a vise.
2. Remove the hydraulic hoses.
3. Put a plug in the hole.
4. Unscrew the 4 screws for each engine.
5. Use a plastic hammer to remove the hydraulic motor.



13.3. COWLING

Changing the Radiator Filter

First see [Removing the Battery \(p. 48\)](#).

1. Unlock the back cover by turning the screws.
2. Open the back cover.
3. Remove the filter from behind the springs.
4. Rinse the radiator with water.

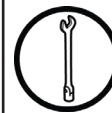


Warning!

Do not use a pressure washer!

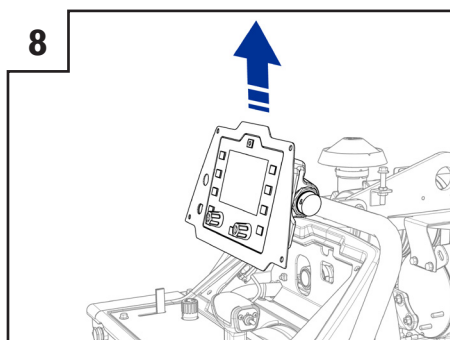
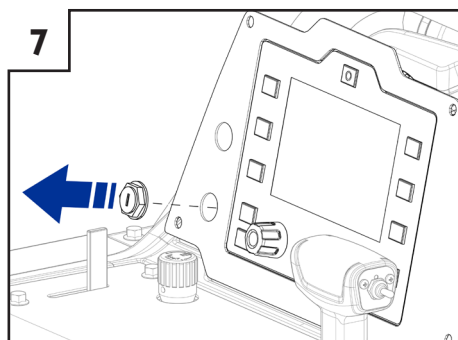
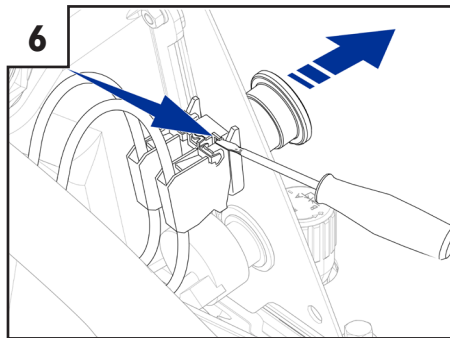
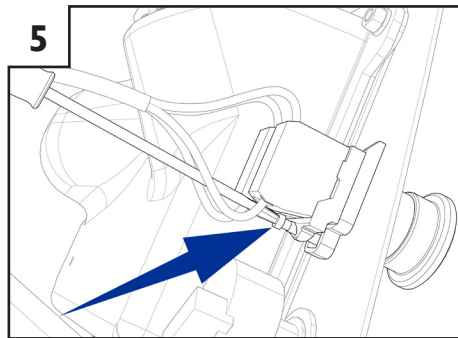
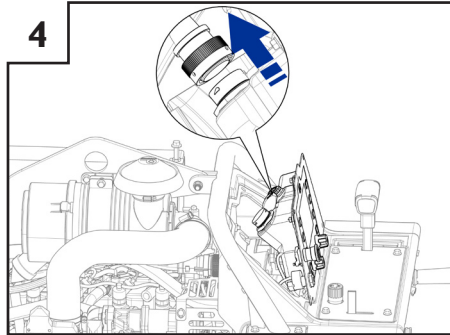
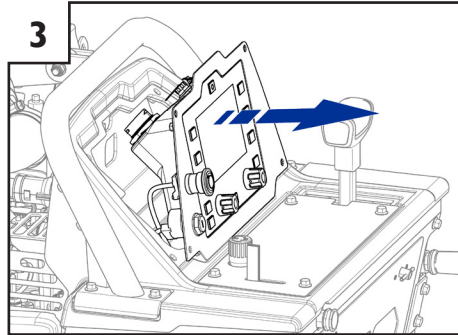
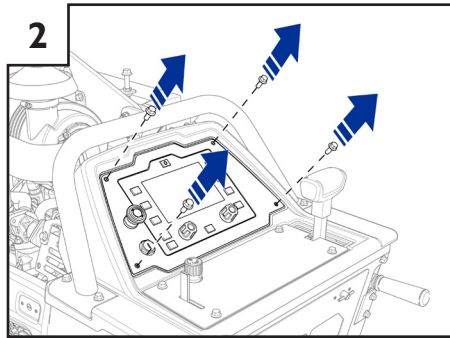
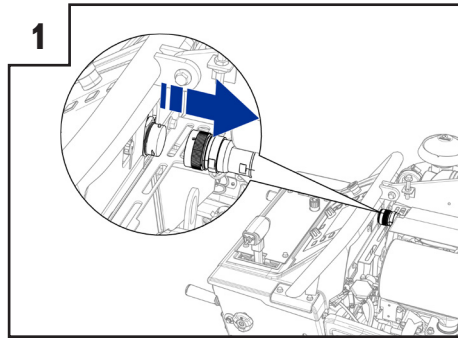
5. Insert a new filter and close the cover.

Emptying/Refilling the Radiator

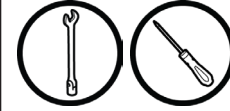


First see [Removing the Battery \(p. 48\)](#).

1. Unlock the back cover by turning the screws.
2. Open the back cover.
3. Put an extension on the valve.
4. Open the valve and collect the liquid.

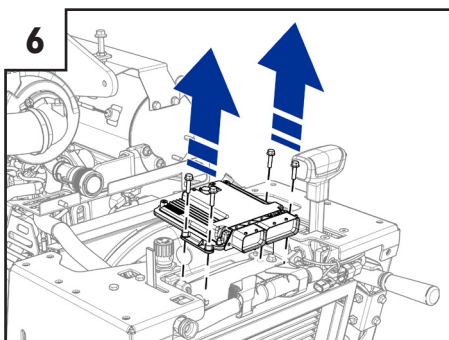
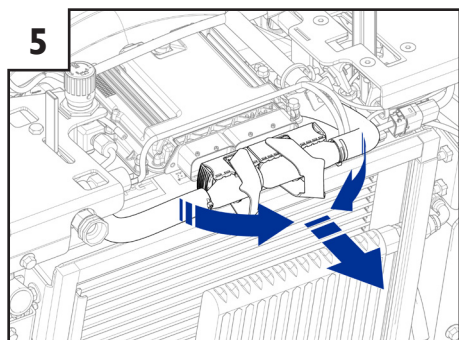
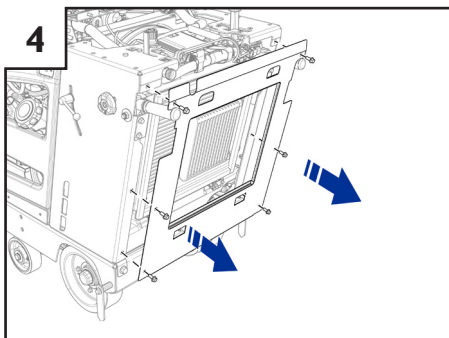
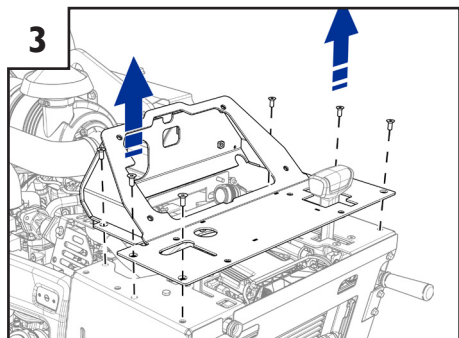
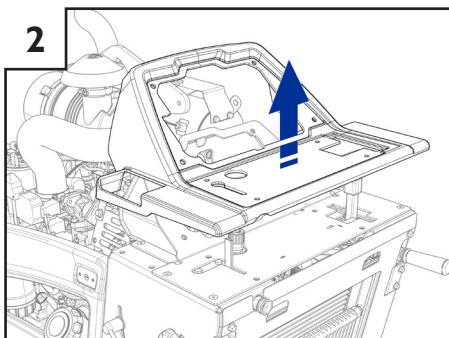
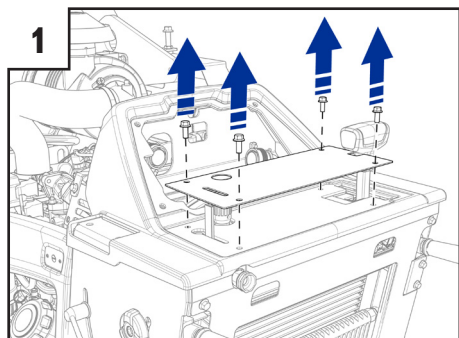


Removing the HMI Board

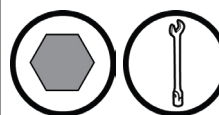


1. Unplug the connector by turning it counterclockwise.
2. Remove the 4 screws around the display
3. Pry up the panel.
4. Unplug the connector located under panelen by turning it counterclockwise.
5. Loosen the screw on the emergency stop with a Phillips screwdriver.
6. Disassemble the emergency stop by releasing the latch with a screwdriver and remove the cover.
7. Turn the nut holding the ignition and pull it apart.
8. Remove the HMI board.

Reverse steps for reassembly

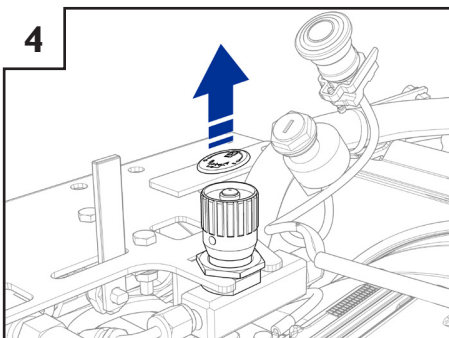
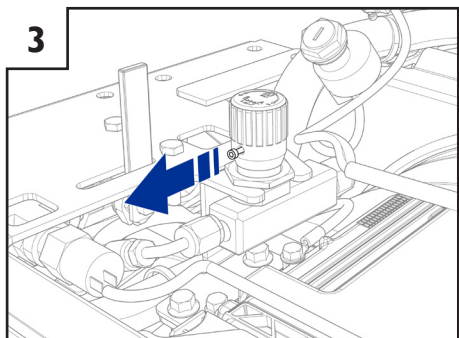
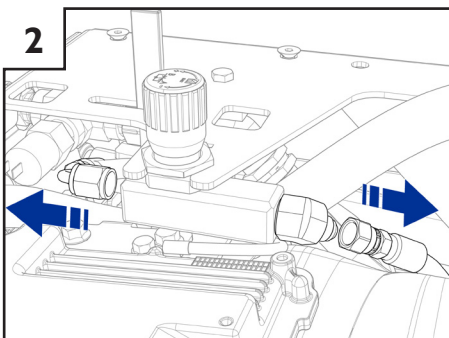
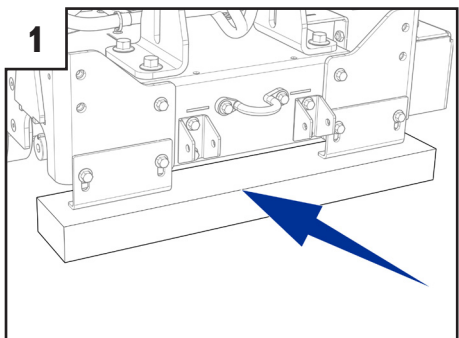


Removing the ECU

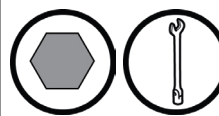


First see **Removing the HMI Board (p. 53)** and steps 4 & 6 in **Removing the Lift Bail (p. 70)**.

1. Remove the four screws and lift the panel.
2. Remove the plastic cover.
3. Remove the six screws and lift up the bracket.
4. Remove the six screws and the back cover.
5. First lift the handle then disconnect the contacts by pulling them outwards.
6. Remove the four screws and lift out the ECU.

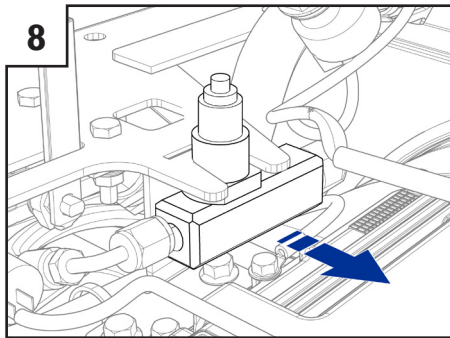
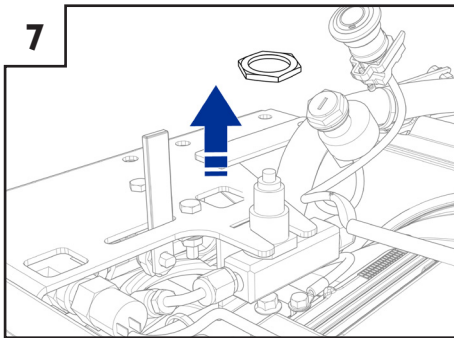
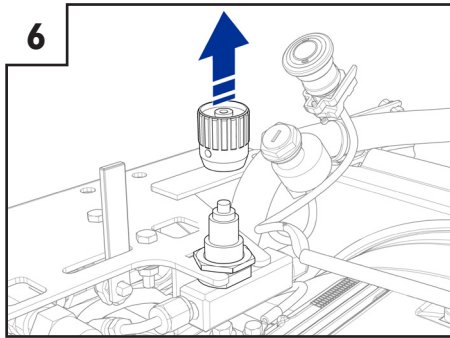
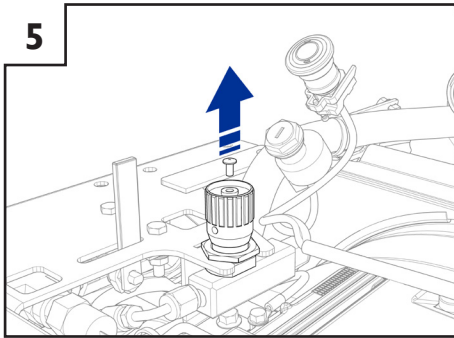


Removing the Lowering Speed Valve

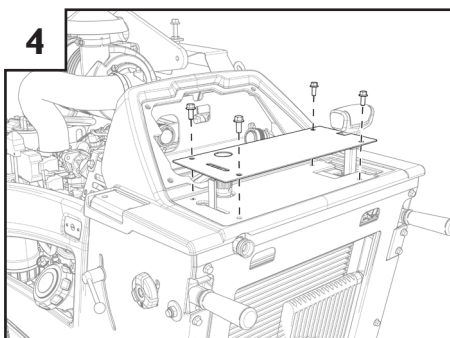
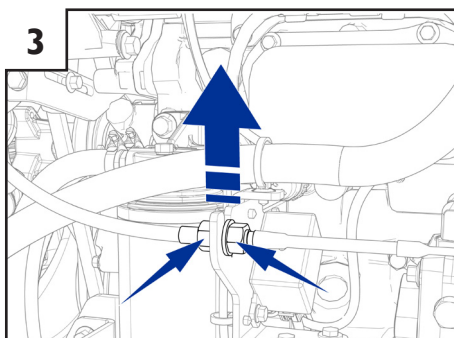
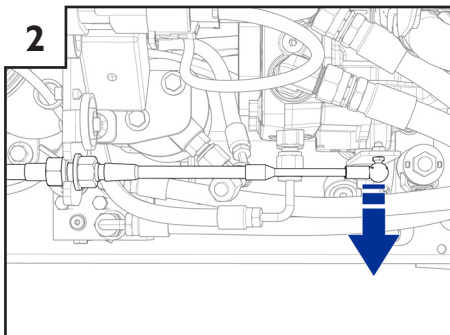
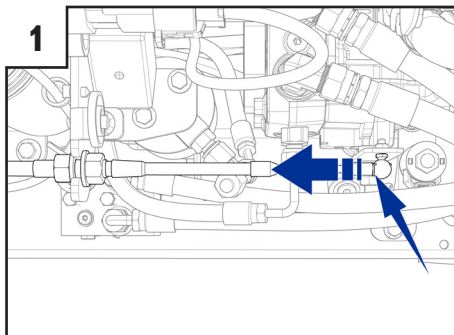


First see steps 1-3 in **Removing the ECU (p. 54)**.

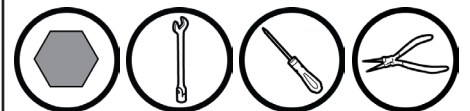
1. Lower the saw onto a support placed in the front. This is done as a precaution.
2. Unscrew the hydraulic clutches.
3. Loosen the set screw of the control.
4. Flip the top off.



5. Remove the screw located underneath.
6. Pull the top off.
7. Remove the nut.
8. Remove the lowering speed valve.

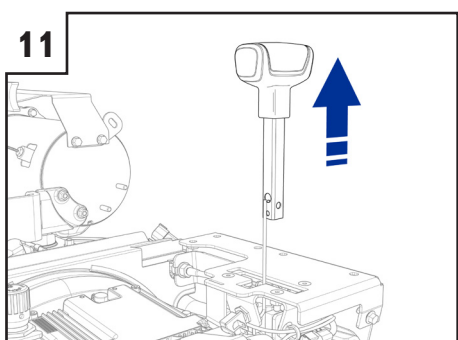
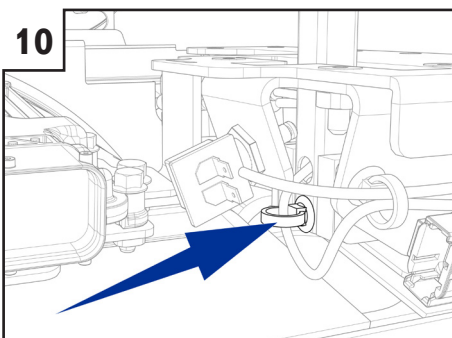
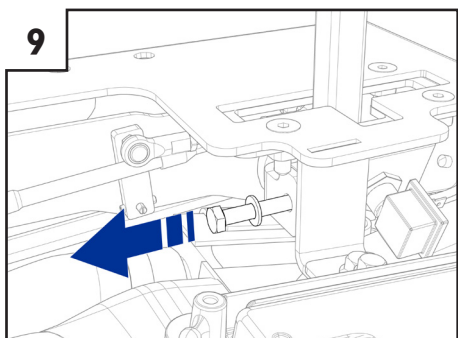
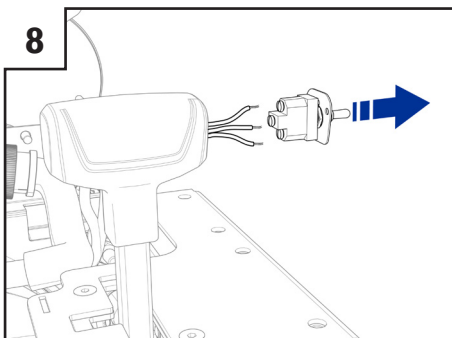
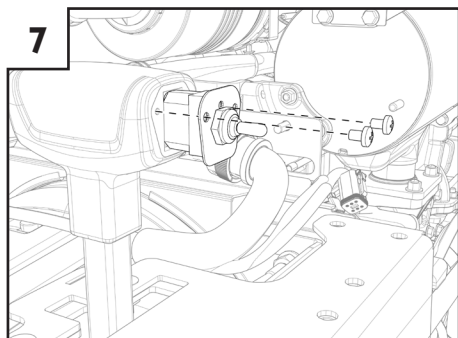
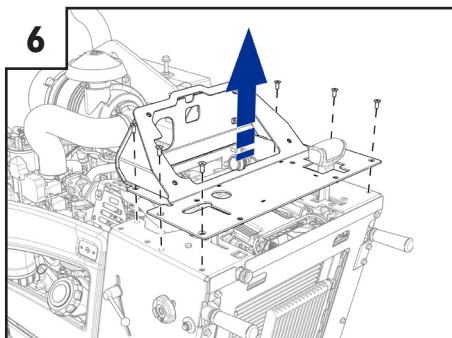
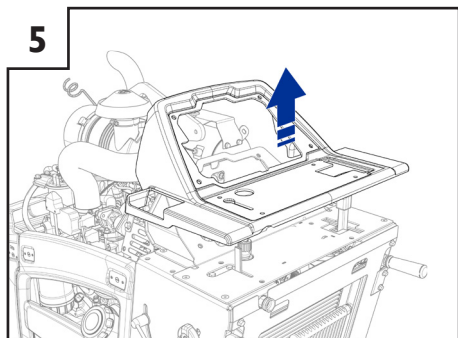


Removing the Speed Control

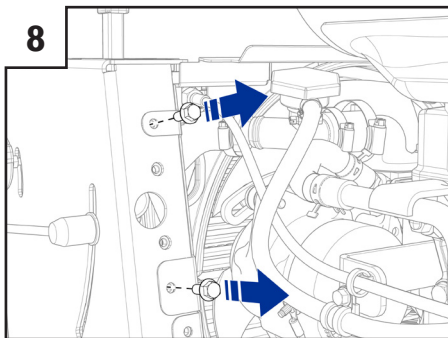
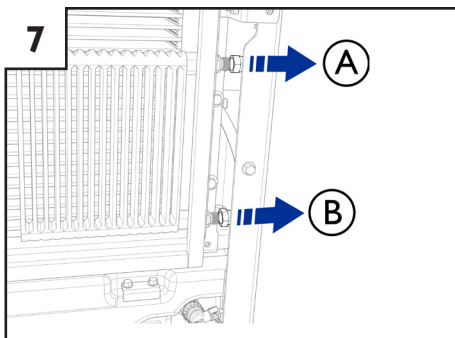
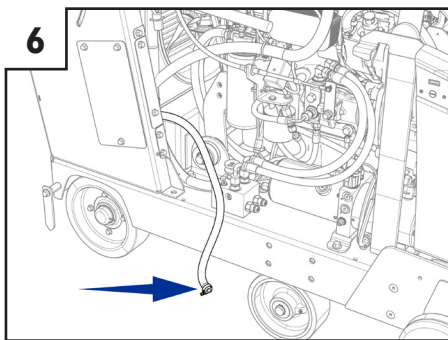
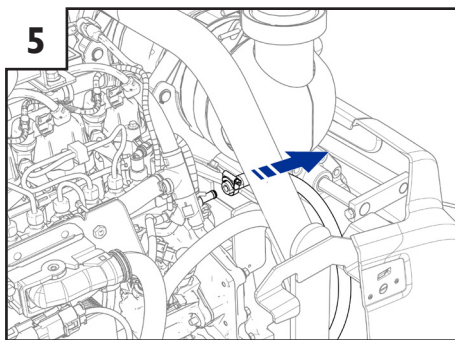
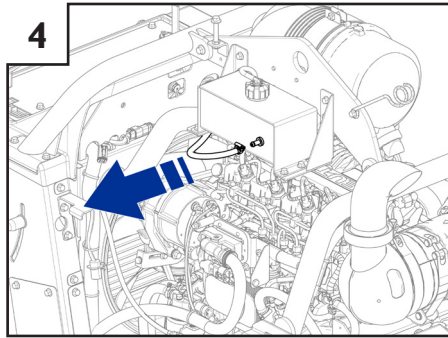
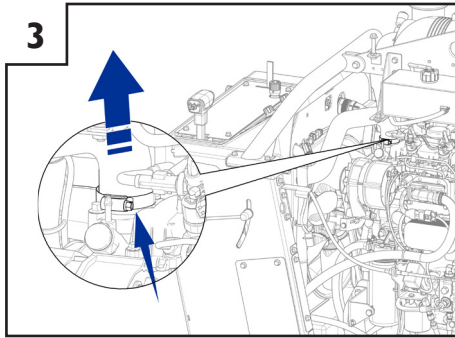
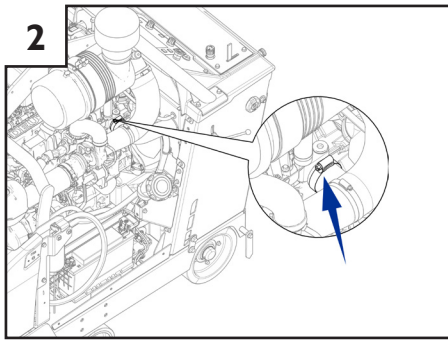
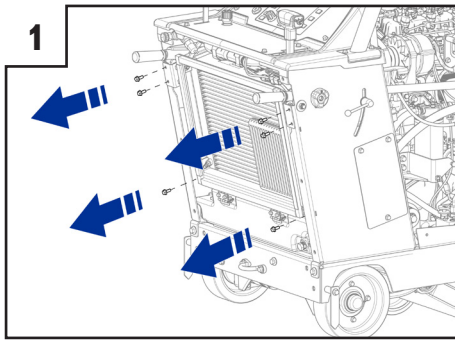


First see [Removing the Side Covers \(p. 46\)](#), [Removing the Fan Protection \(p. 47\)](#), [Removing the Battery \(p. 48\)](#) and [Removing the HMI Board \(p. 53\)](#).

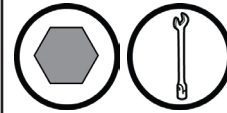
1. Remove the clips on the throttle wire
2. Remove the cable from the ball.
3. Loosen opposite nuts holding the wire.
4. Remove 4 screws holding the panel and remove it.



5. Lift the plastic cover away.
6. Remove the six screws and lift up the bracket.
7. Remove the screws on the speed control with a Phillips screwdriver and pull the button out.
8. Remove cables by loosening the screws.
9. Remove the bolt holding the speed control.
10. Cut the clip apart.
11. Pull the speed control up.

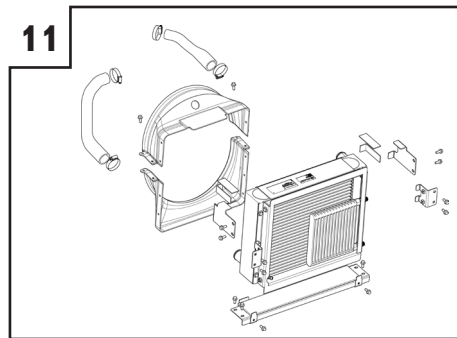
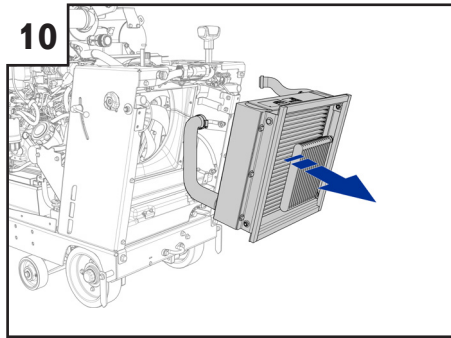
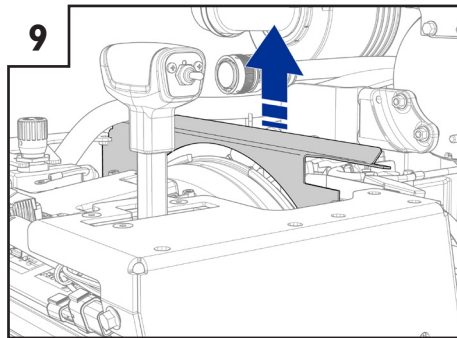


Replacing the Radiator



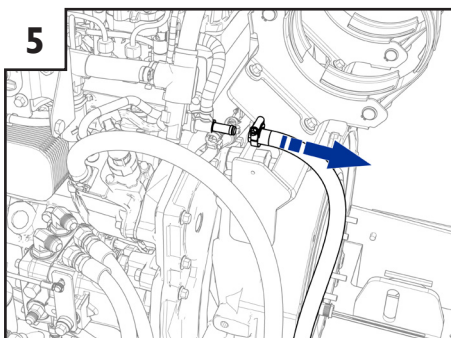
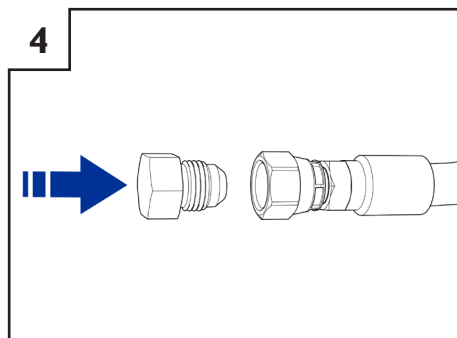
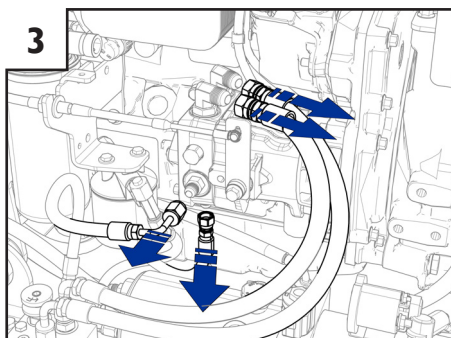
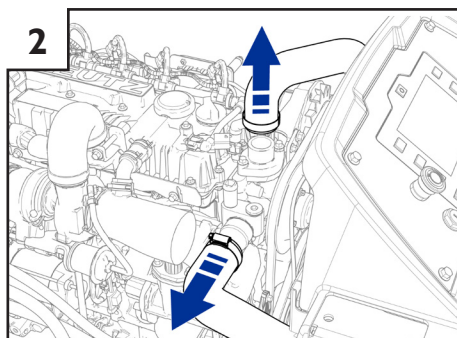
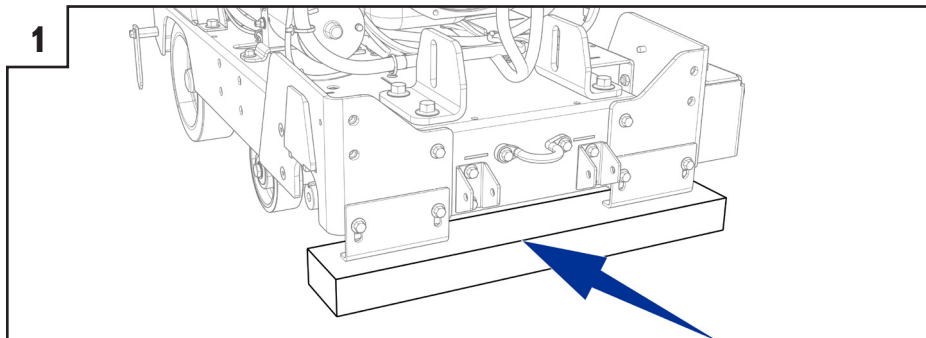
First see [Removing the Side Covers \(p. 46\)](#), [Removing the Fan Protection \(p. 47\)](#), [Emptying the Radiator \(p. 52\)](#)

1. Remove the rear six screws.
2. Loosen the cooling hose on the left side.
3. Loosen the cooling hose on the right side
4. Detach hose from the expansion tank and put a plug in both the hose and the filter.
5. Detatch the fuel hose and put a plug in the engine.
6. Pull down the hose to the lowest point of the saw and drain the fuel system in a container.
7. Remove the two fuel coolant hose from the radiator.
8. Remove the four bolts holding the back flow plate.



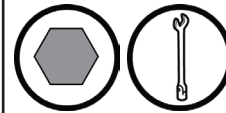
9. Lift up the back flow plate two centimeters.
10. Pull the radiator and hoses out. Be careful with the fan shroud when the radiator is lifted away.
11. Remove all hoses and covers from the radiator.

Reverse steps for reassembly



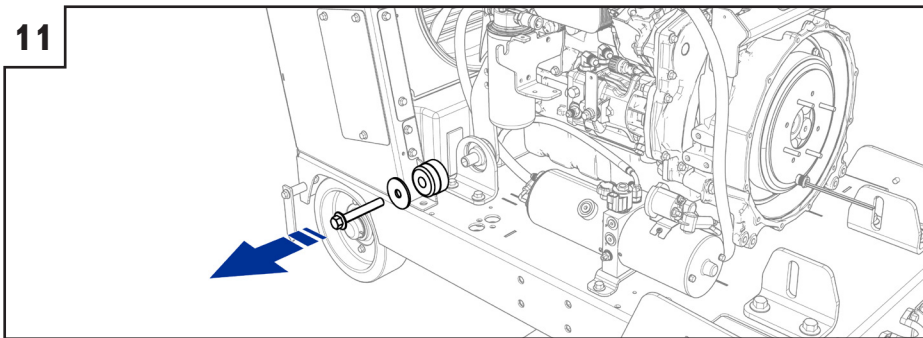
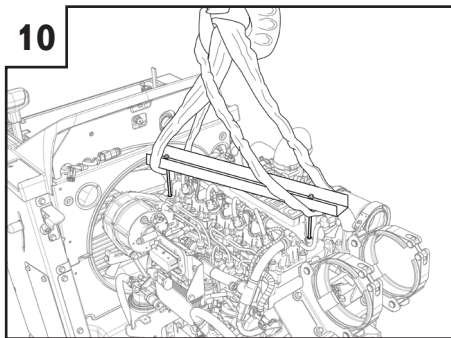
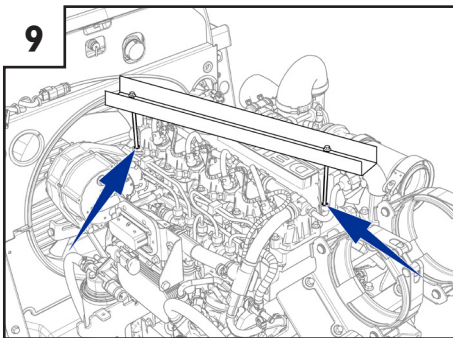
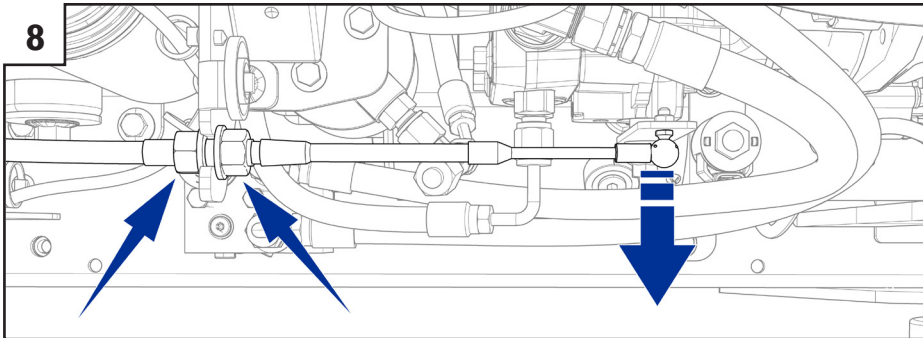
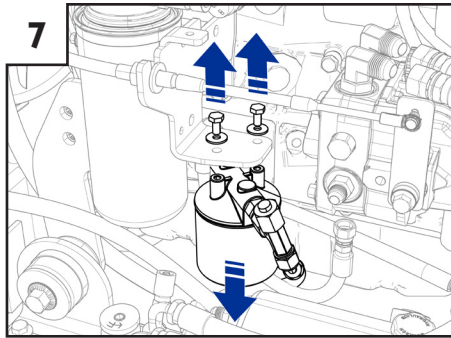
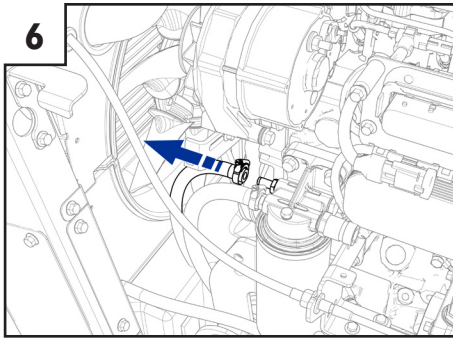
13.4. ENGINE

Engine Lift



First see [Removing the Front Cover \(p. 46\)](#), [Removing the Side Covers \(p. 46\)](#), [Removing the Fan Protection \(p. 47\)](#), [Emptying the Radiator \(p. 52\)](#), [Removing the Battery \(p. 48\)](#), [Removing the Lift Bail \(p. 70\)](#), [Removing the Wiring Harnesses \(p. 48\)](#) and [Gear Box \(p. 65\)](#).

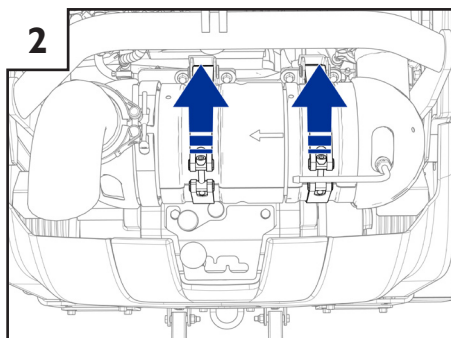
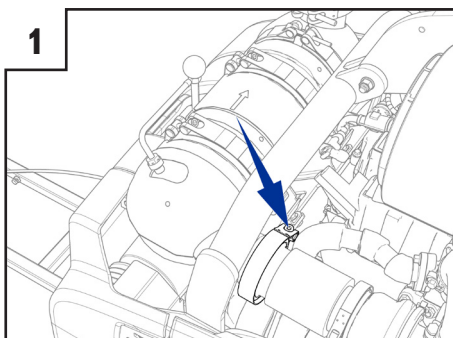
1. Lower the roadsaw onto a support placed in the front. This is done as a precaution.
2. Loosen the hose clamp and make sure the second hose to the radiator is loose.
3. Disconnect the five hydraulic hoses from the hydrostatic engine.
4. Insert plugs to reduce the spill.
5. Remove hose for fuel return and insert plug.



6. Disconnect the hose between fuel tank and filter.
7. Remove the hydraulic filter and the bracket with two screws.
8. To remove the gas relay first remove the clips on the throttle wire, then remove the cable from the ball and finally loosen the two opposite nuts holding the wire.
9. Use the special tool and attach it with bolts in the two marked holes.
10. Attach the strap from a traverse then slowly lift and secure the engine. Make sure the strap is in tension. Very important to pull evenly.
11. Remove the rear mounting screw on each side (Image shows right side). Lift the engine carefully and be sure to protect the fan.

Information!

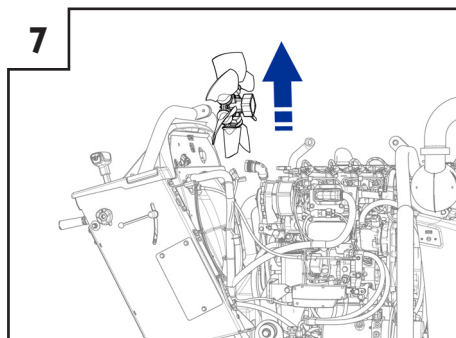
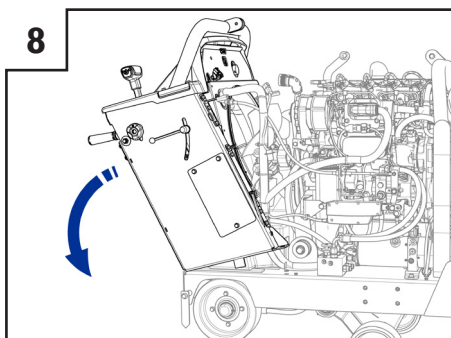
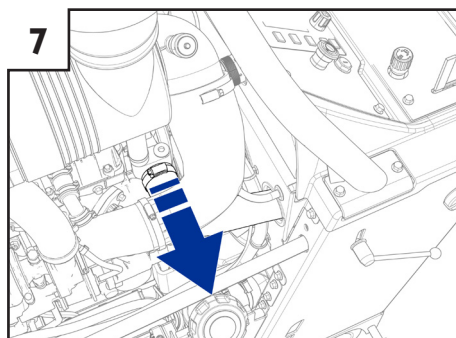
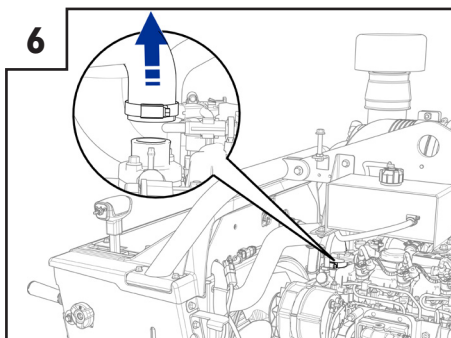
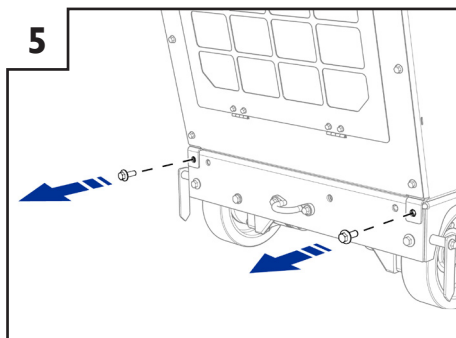
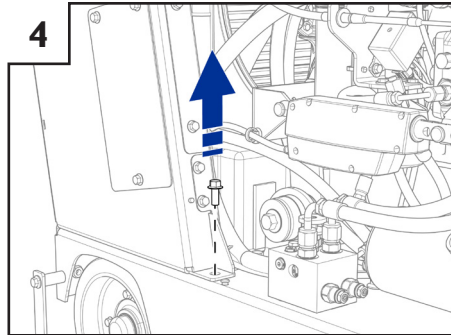
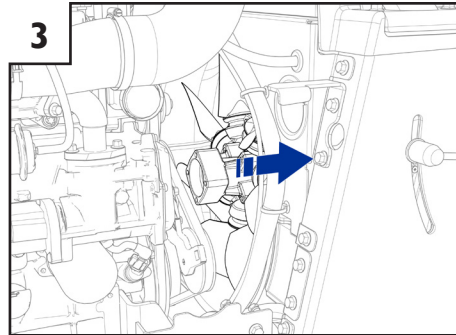
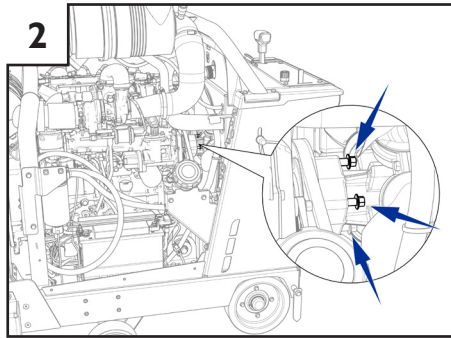
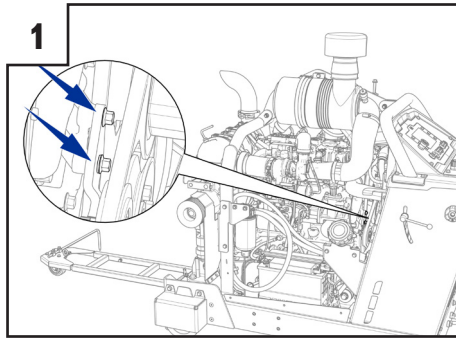
If the engine is to be sent away, then also remove all brackets that aren't part of the engine.



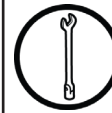
Changing the DOC



1. Remove the screws in the attachments holding the silencer.
2. Loosen the hose clamp and lift out the silencer.
3. For reassembly reverse the steps.



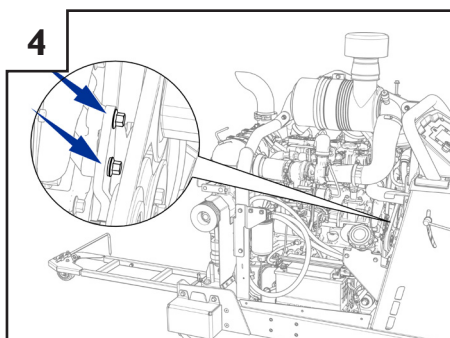
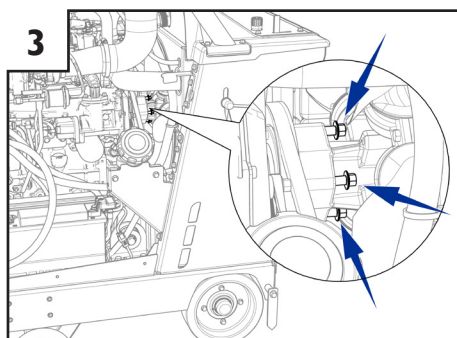
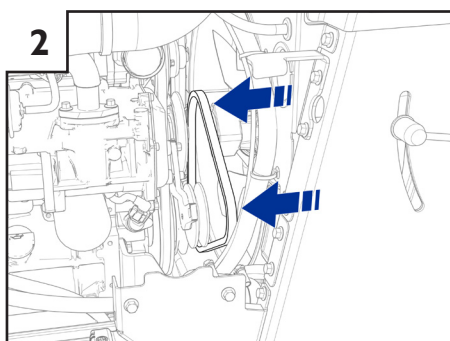
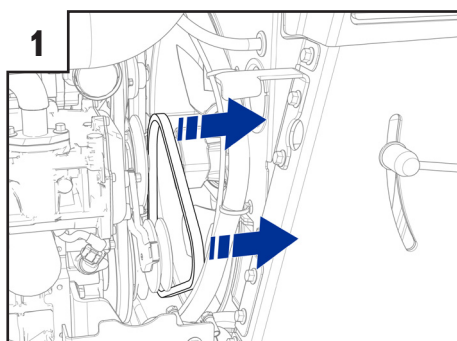
Replacing the Fan



First see **Removing the Side Covers (p. 46)**, **Removing the Fan Protection (p. 47)** and **Emptying the Radiator (p. 52)**.

1. Loosen the belt tension.
2. Remove the four screws holding the fan.
3. Remove the fan and gently put it in against the cowling.
4. Remove the bolts on each side of the cowling.
5. Unscrew the two rear bolts.
6. Loosen the hose clamp and lift the hose to the radiator off.
7. Remove the second hose by first loosen the clamp.
8. Tip the cowling. You have to be at least two persons to do this.
9. Lift the fan out.

Reverse steps for assembly.

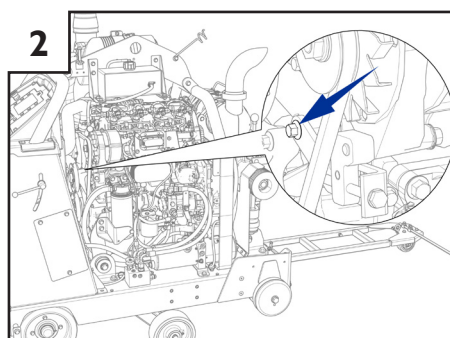
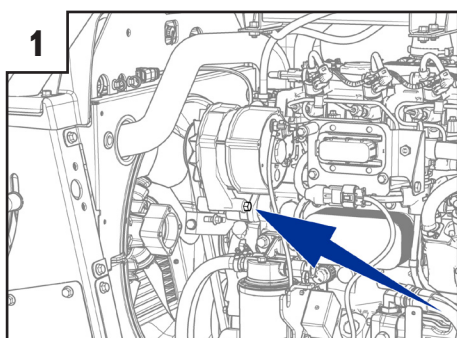


Replacing the Fan Belt

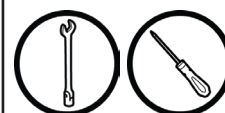


First see [Removing the Side Covers \(p. 46\)](#), [Removing the Fan Protection \(p. 47\)](#) and step 1-3 in [Replacing the Fan \(p. 60\)](#).

1. Gently force the belt off.
2. Put the new belt on.
3. Attach the fan with the four screws
4. Tighten the belt tension

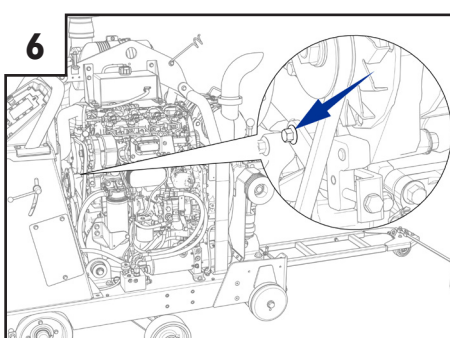
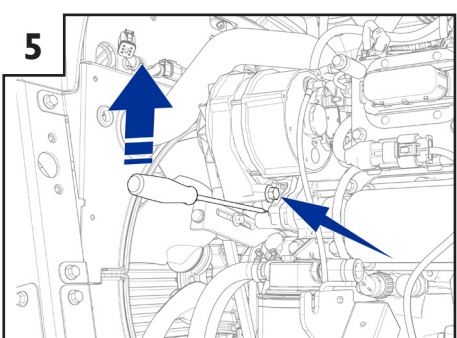
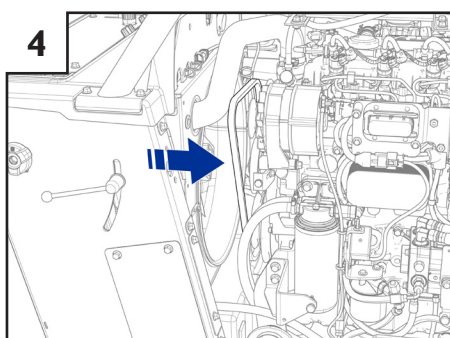
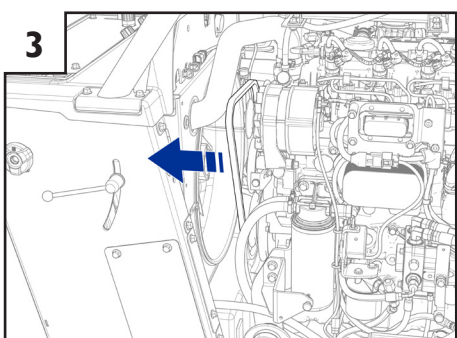


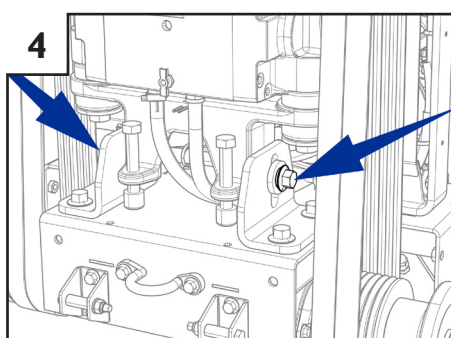
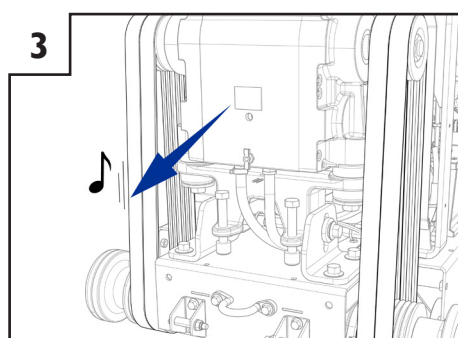
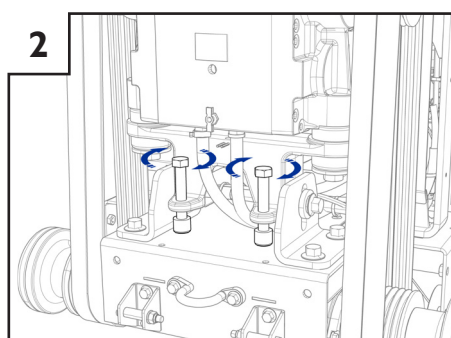
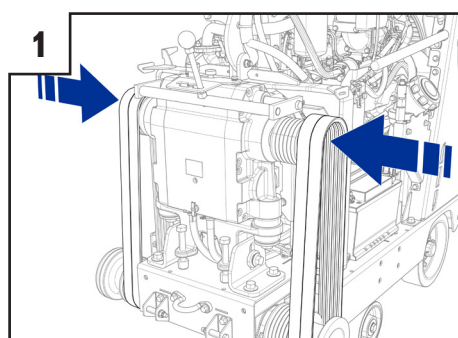
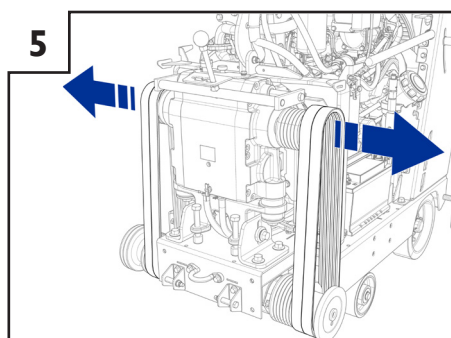
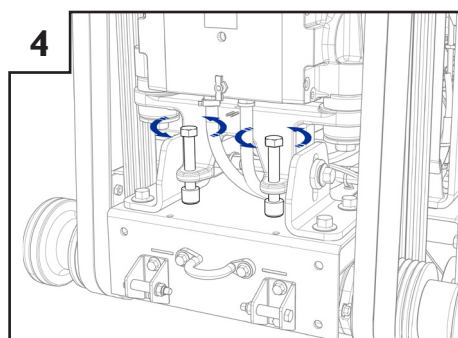
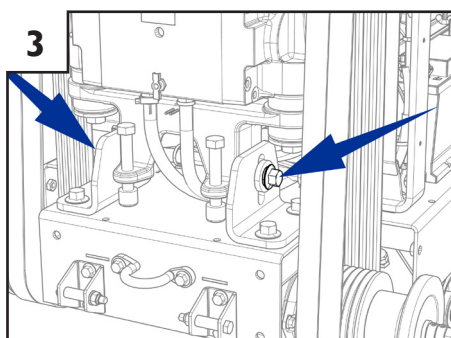
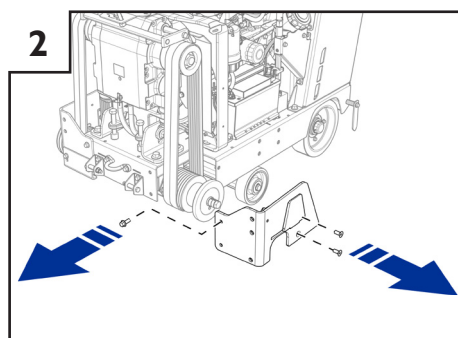
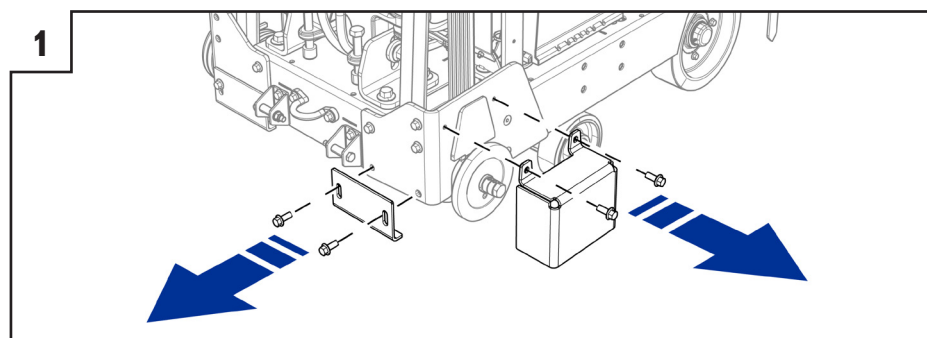
Replacing the Generator Belt



First see [Removing the Side Covers \(p. 46\)](#), [Removing the Fan Protection \(p. 47\)](#) and remove the fan belt according to [Replacing the Fan Belt \(p. 61\)](#).

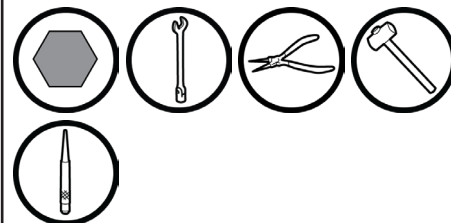
1. Loosen the nut on the generator.
2. Loosen the nut controlling the tension.
3. Force the belt off.
4. Put the new belt on.
5. Lift up the generator with a screwdriver to get the belt tense and at the same time tighten the nut locking the belt tensioner.
6. Tighten the nut to lock the generator.





13.5. GEARBOX / CLUTCH / BLADE SHAFT

Blade Shaft Drive Belts



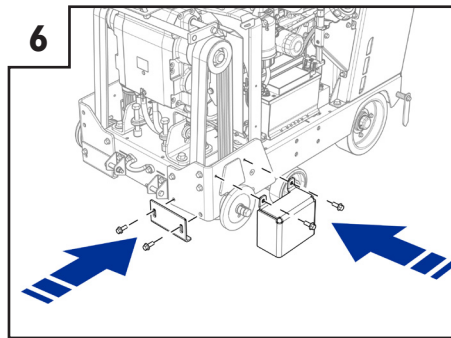
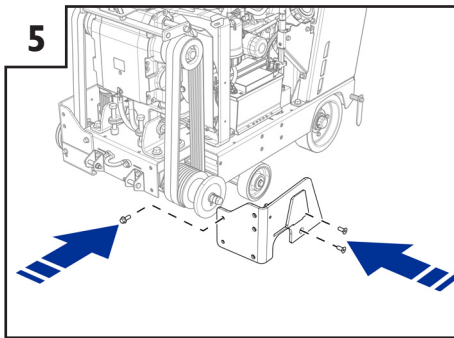
First see [Removing the Front Cover \(p. 46\)](#) and [Removing the Side Covers \(p. 46\)](#).

Removing the Blade Shaft Drive Belts

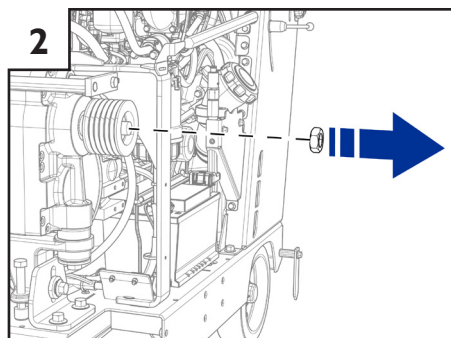
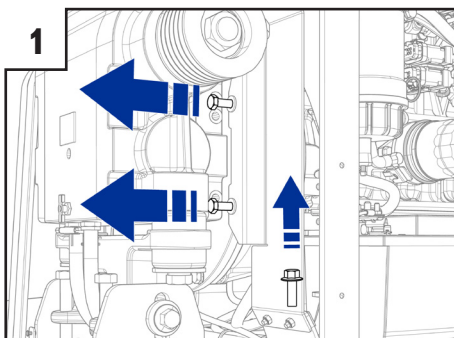
1. Remove the outer front corner brackets of the lower saw frame by removing the four screws.
2. Remove the three screws holding the corner bracket and remove it.
3. Loosen the locking screw.
4. Lower the engine and gearbox by unscrewing the jacking bolts alternately.
5. Slip off the belts of the pulleys by rolling them off a couple grooves at a time.

Attaching the Blade Shaft Drive Belts

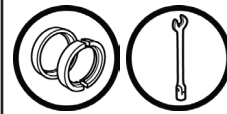
1. Slip the new belts on by rolling them a couple grooves at a time.
2. To tension the belts, raise the gearbox and engine using the jacking screws. Be sure to keep the left and right sides even.
3. To set the tension of the belts, pluck the edge of the belt like a guitar string. If the sound is a "thud" sound, they need to be tighter, you want to tighten the belts just to the point that you get a tone, sort of a low C.
4. Tighten the two horizontal locking bolts located behind the two jacking bolts



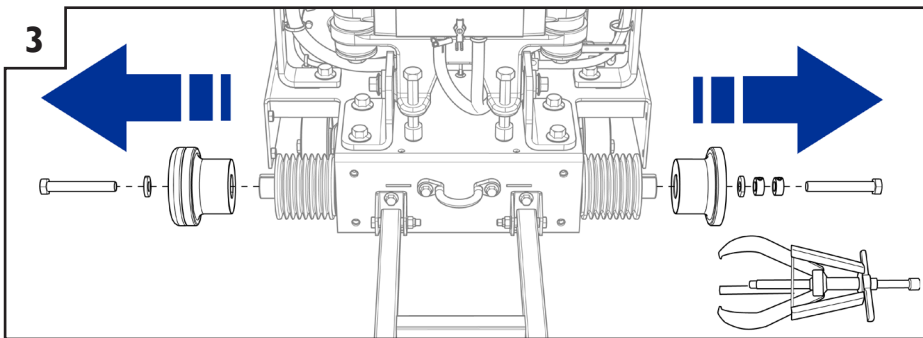
5. Reinstall the front corner brackets with three screws each.
6. Reinstall the outer front corner brackets with four screws each.



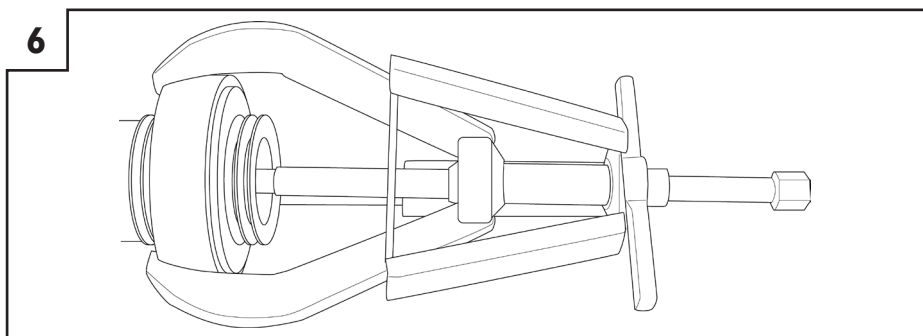
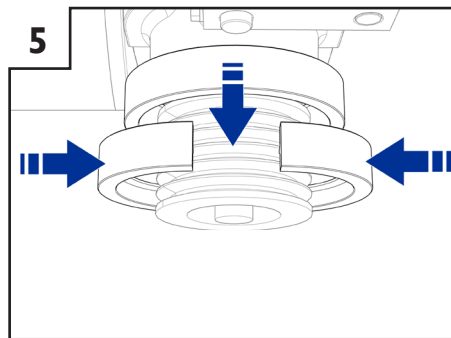
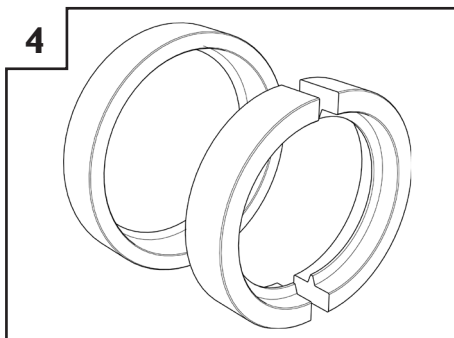
Changing the Pulleys



First see [Removing the Front Cover \(p. 46\)](#) and [Removing the Blade Shaft Drive Belts \(p. 62\)](#).

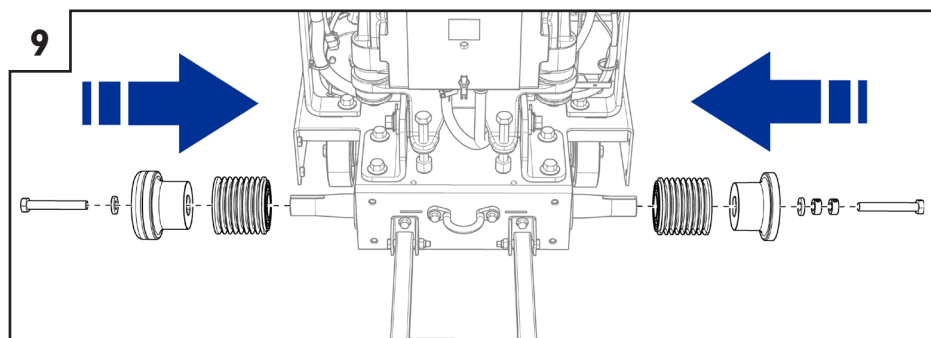
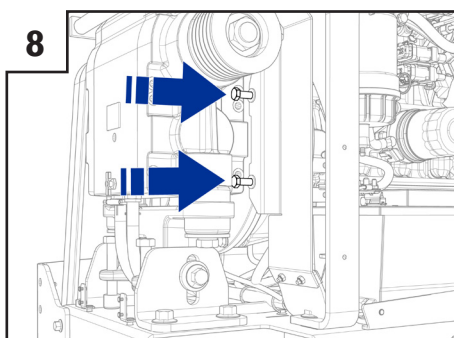
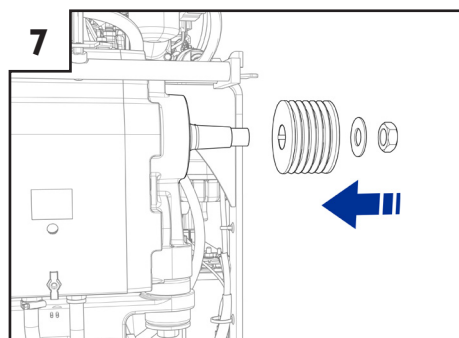


1. [Gearbox pulleys] Remove the pulley cover by loosening the two screws connecting it to the gearbox and the one connecting the rubber plate to the base plate.
2. [Gearbox pulleys] Remove the shaft nut that retains the pulley on the gearbox shaft with a tool on each side
3. [Blade shaft pulleys] Remove the big screw, washer and flange. The side that has no blade has two washers with stop screws.
4. Use the kit 541207100 to assist in pulling the collars and pulleys from the shaft.
5. Fit the two half sections into the groves of the pulleys and slide the ring to over the two half sections
6. Grip the outer ring with the jaws of your puller and pull the pulleys off the tapered shafts.



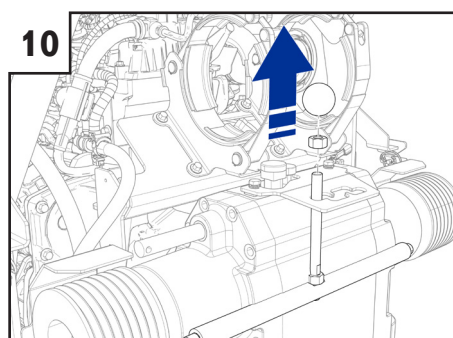
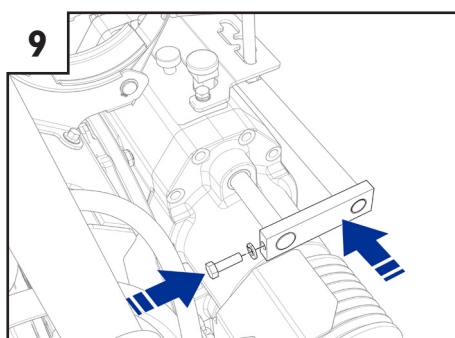
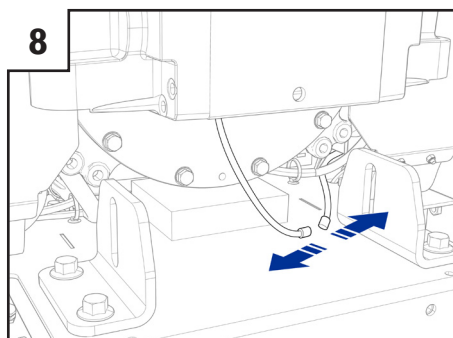
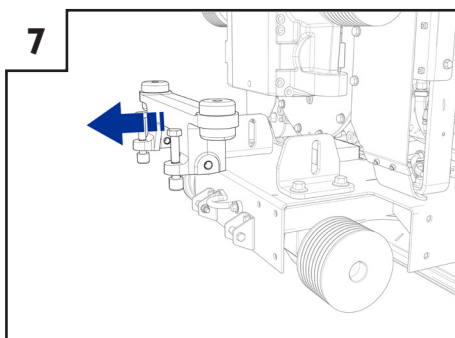
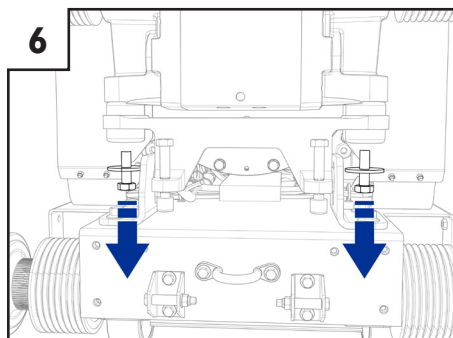
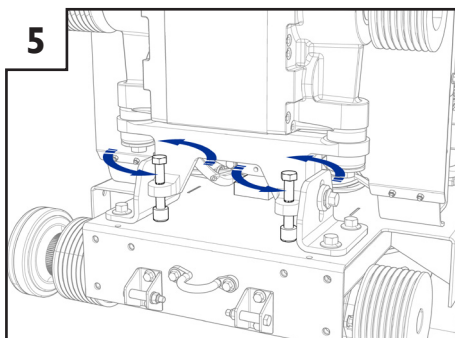
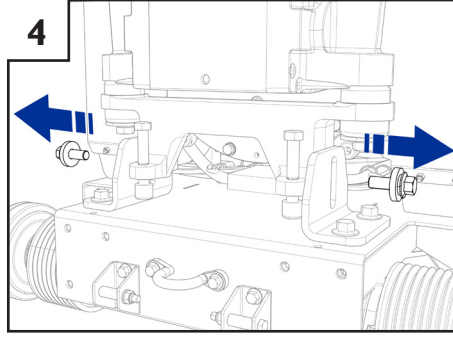
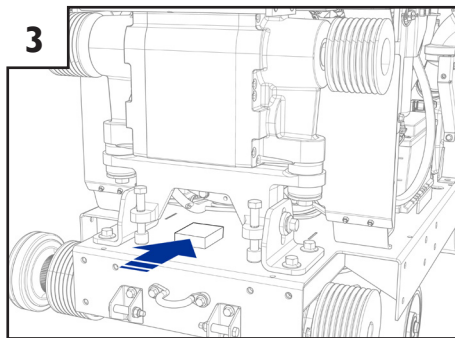
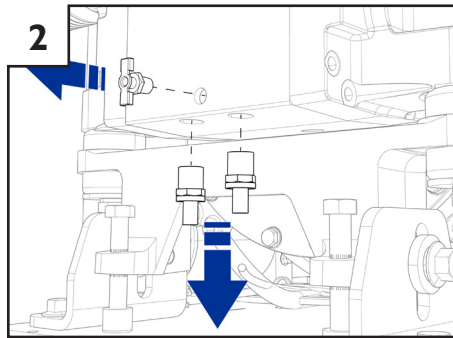
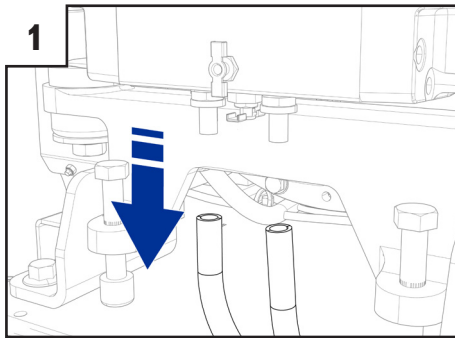
Warning!

This moment might require much force!

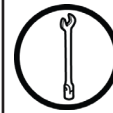


For Assembly

7. [Gearbox pulleys] Mount the new pulley with washer and screw.
8. [Gearbox pulleys] Attach the pulley cover by fastening the two screws connecting it to the gearbox.
9. [Blade shaft pulleys] Mount the new pulleys with flange, washer, (washer with stop screw) and screw.



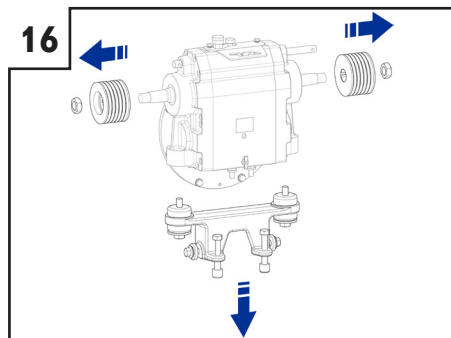
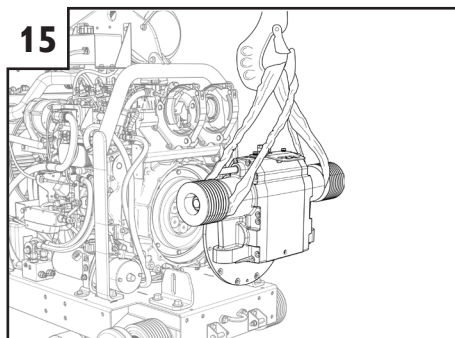
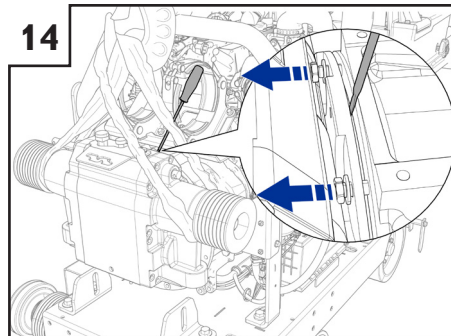
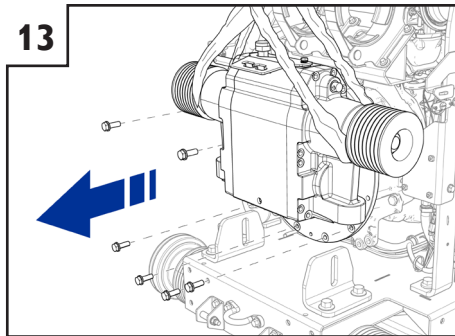
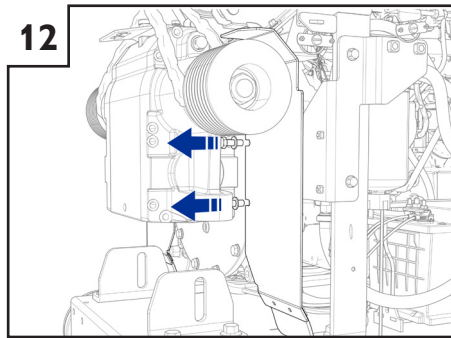
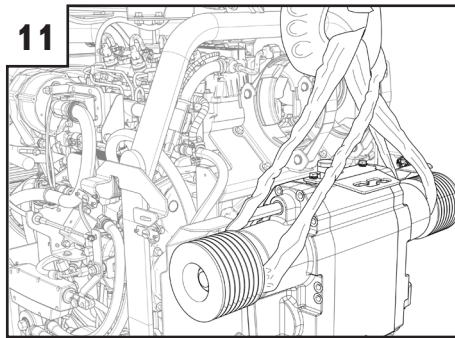
Gear Box



First see [Removing the Blade Shaft Drive Belts \(p. 62\)](#).

Removing the Gear Box

1. Disconnect the water hoses and drain fittings from the gearbox.
2. Disconnect the water hose connections.
3. Slip a short 2x4 under the bell housing of the engine.
4. Back out the jacking bolts to lower the engine down onto the 2x4.
5. Remove the two horizontal bolts located just behind the two jacking bolts.
6. Remove the two vertical bolts holding the gearbox to the front support casting.
7. Remove the engine base casting by sliding it forward and off of the saw.
8. Disconnect the clutch wire from the wiring harness.
9. Remove the gear selector.
10. Unscrew the nob and slide the gear selector out.



11. Secure the gear box with a overhead crane.

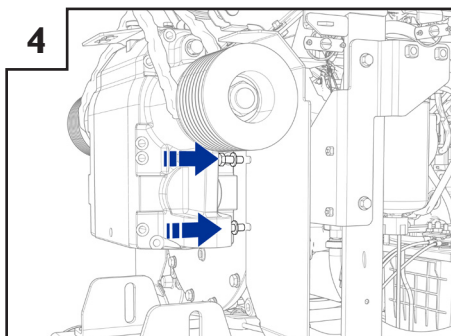
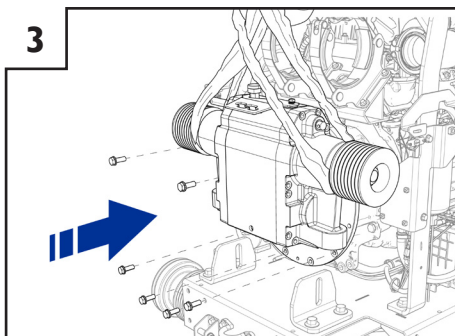
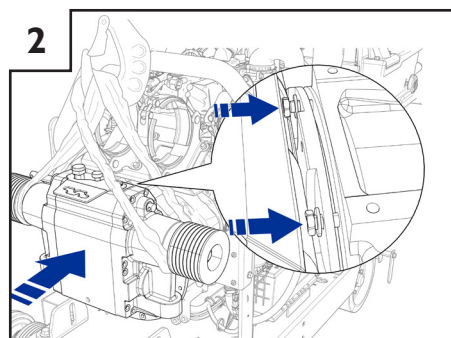
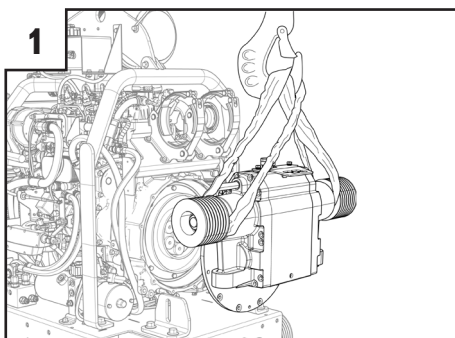
12. Remove the two covers with two screws with washers on each side, these screws also fasten the gearbox to the engine.

13. Remove the screws with washers holding the gearbox to the engine, Leave the two top nuts in place.

14. Remove the two nuts at the upper part of the gearbox at the same time as you use a screwdriver to disconnect the gearbox and slide it away from the engine.

15. Use the overhead crane to lift the gearbox off. Place the front side down on your work surface.

16. Remove the pulleys and moose horn.



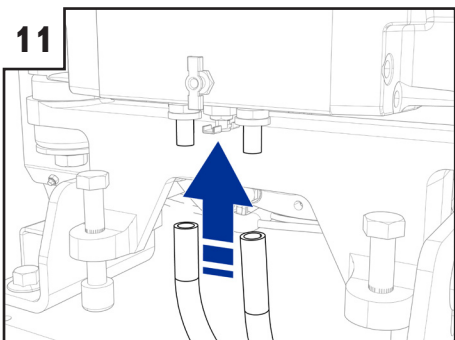
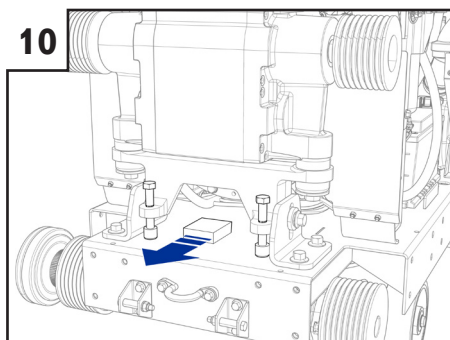
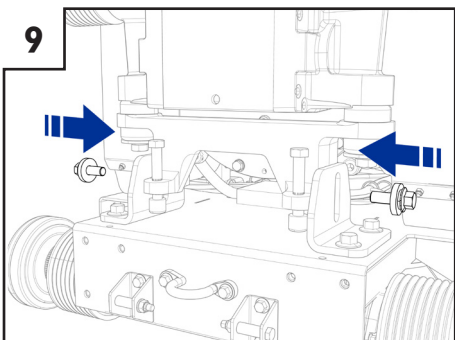
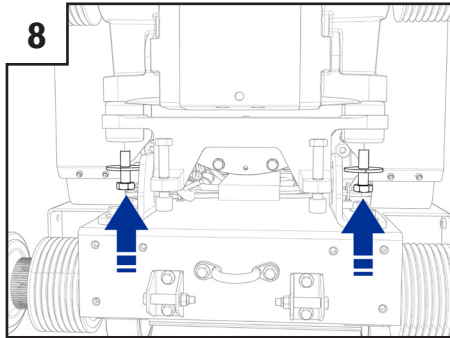
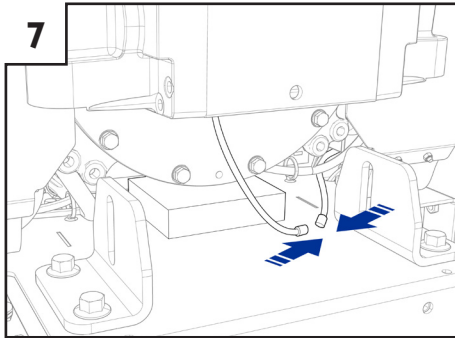
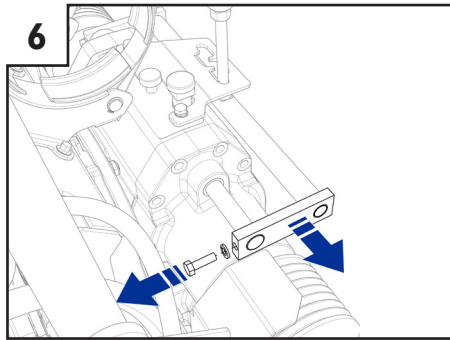
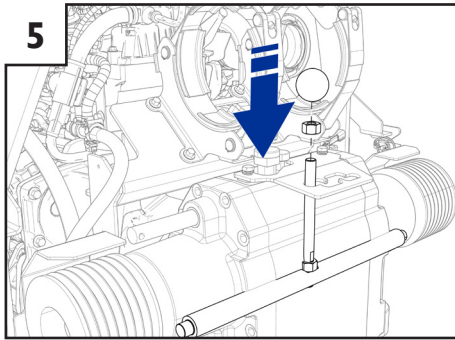
Mounting the Gearbox

1. Use the overhead crane to lift the gearbox in place.

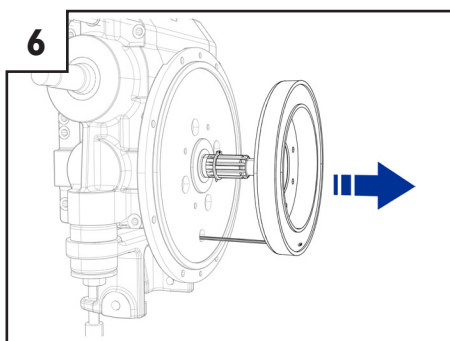
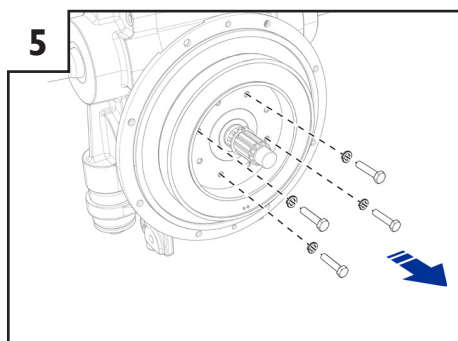
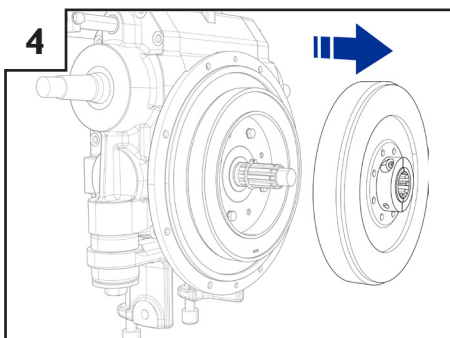
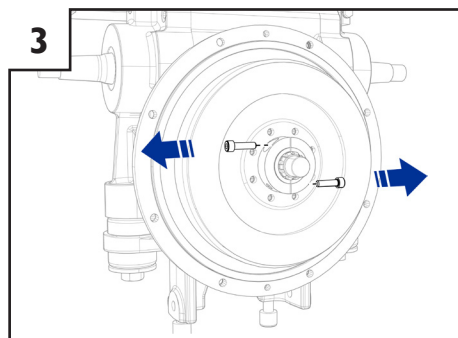
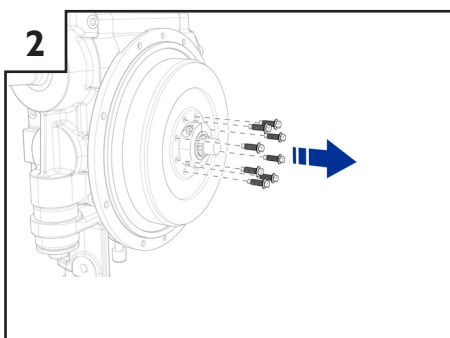
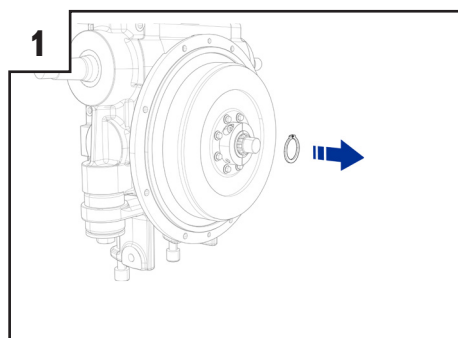
2. Fit it on to the two screws and fasten the nuts with washers.

3. Insert the remaining screws and fasten them.

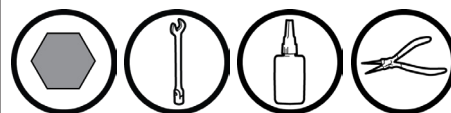
4. Mount the two covers with two screws each.



5. Fasten the nob.
6. Mount the gear selector.
7. If there is a clutch, then reconnect the clutch wire from the wiring harness.
8. Slide the engine base casting in and fasten it with the two vertical bolts.
9. Insert the two horizontal bolts but do not fasten them.
10. Turn the jacking bolts alternately to raise the engine. Fasten the horizontal bolts and remove the 2x4.
11. Reconnect the water hoses and drain fittings to the gearbox.



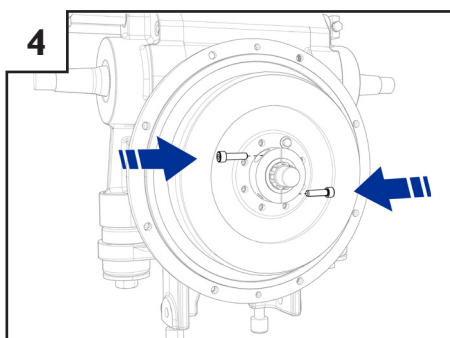
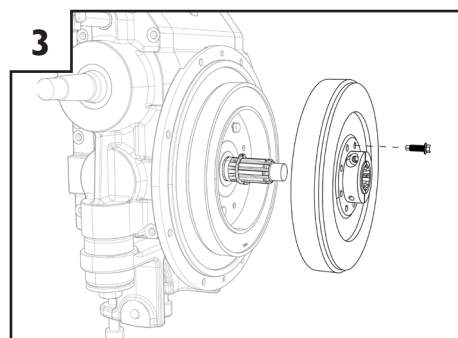
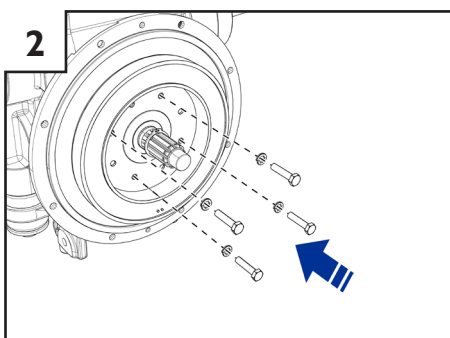
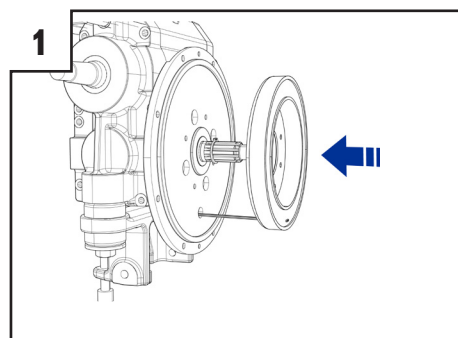
The Clutch



First see [Removing the Gear Box \(p. 65\)](#).

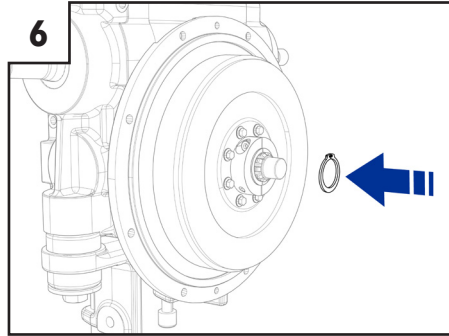
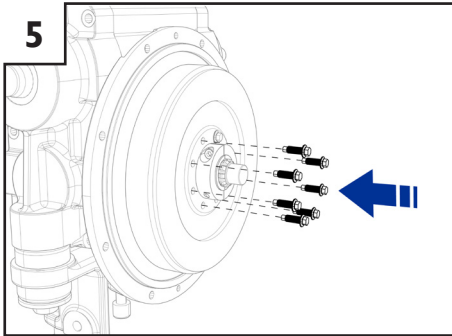
Disassembling the Clutch

1. Remove the snap ring
2. Remove the eight bolts retaining the rotor assembly.
3. Remove the two socket head cap screws.
4. Use a screw driver to spread the hub open and slide it off.
5. Remove the four bolts holding on the field coil.
6. Remove the ties that holds the cables and remove the field coil.



Reassembling the Clutch

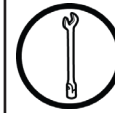
1. Insert the cable in the field coil.
2. Fasten the four bolts on the field coil.
3. Slide the hub on the rotor, and fasten the rotor and hub assembly with one of the eight bolts. The position is set by the position of the two snap rings
4. Insert the two socket head cap screws with Loctite and torque to 35ft-lb or 47,4Nm.



5. Insert the remaning 7 scrwes.

6. Attach a new snap ring.

Replacing the Clutch Armature



First see [Removing the Gear Box \(p. 65\)](#).

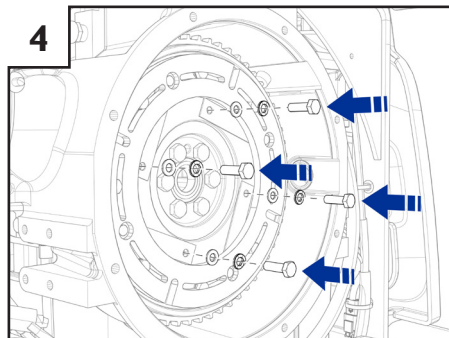
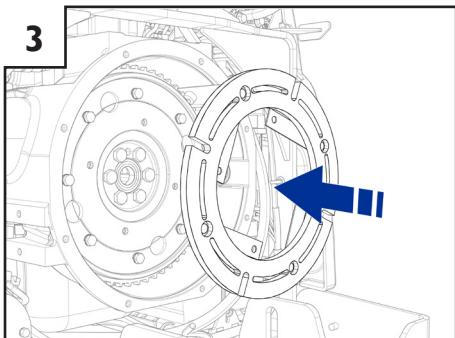
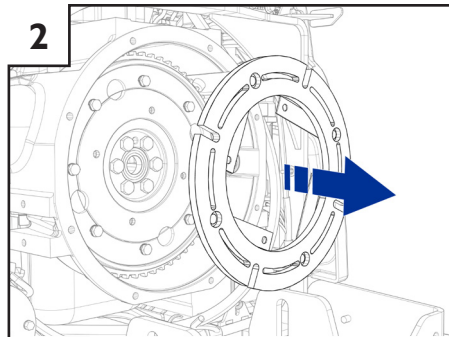
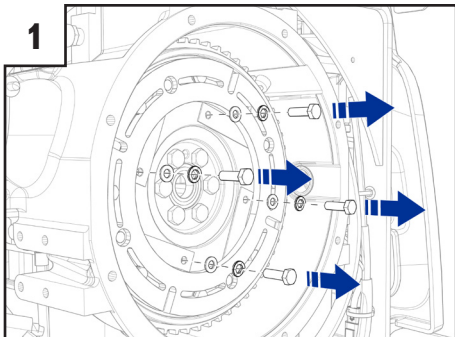
1. Remove the four bolts.

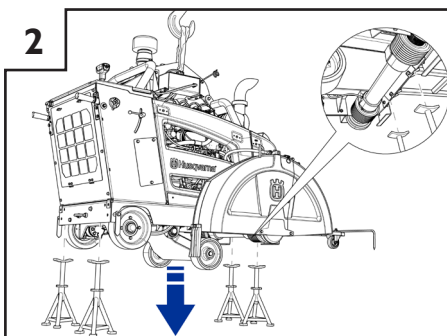
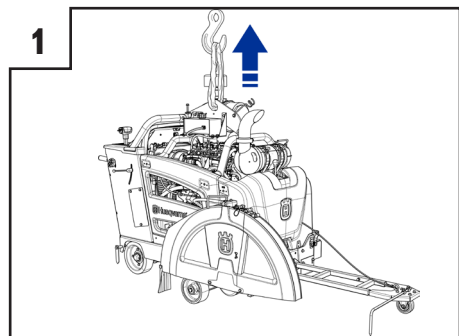
2. Lift the armature out.

3. Mount the new armature.

4. Apply Loctite 246 to all bolts and insert them.

5. Tighten them to 28 ft.lb or 38Nm



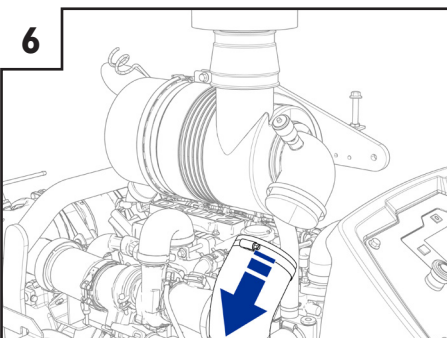
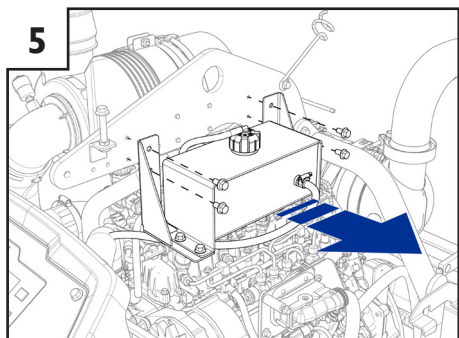
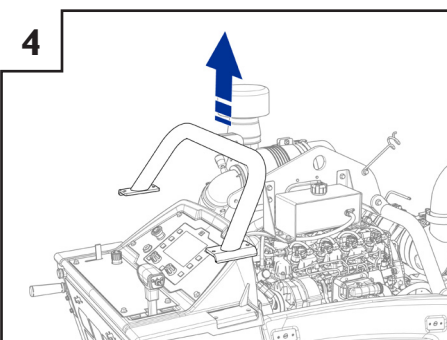
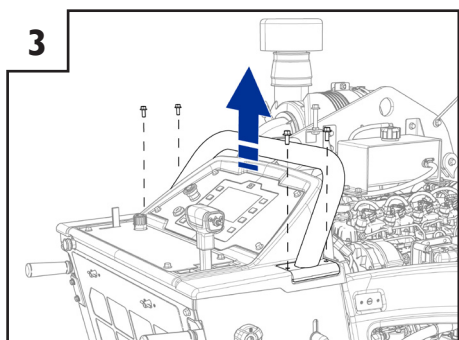
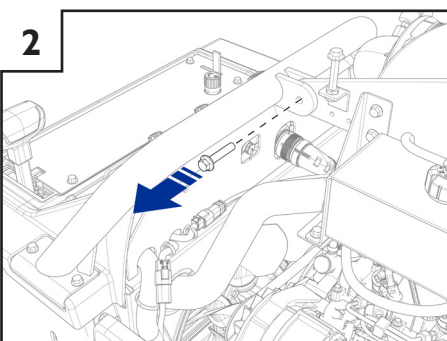
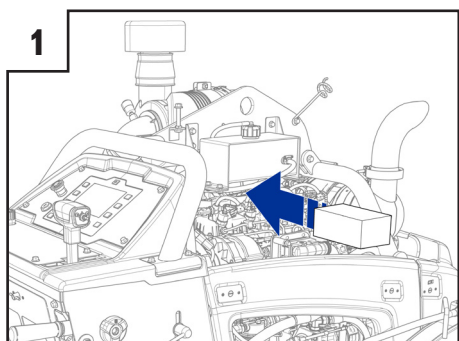


13.6. BASEPLATE / FRAME

Lifting the Road Saw



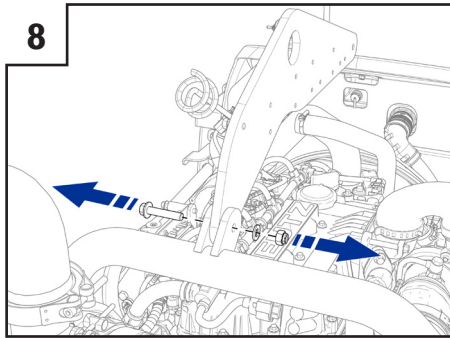
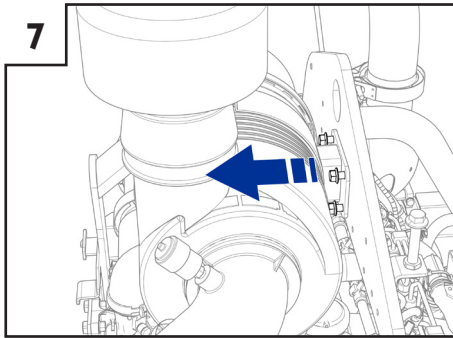
1. Use a travers and attach it to the hole on top of the lift bail and lift it up.
2. Put four axle stands beneath the saw and Lower the saw on top of the axle stands.



Removing the Lift Bail



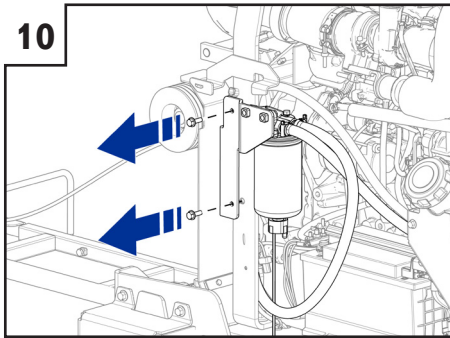
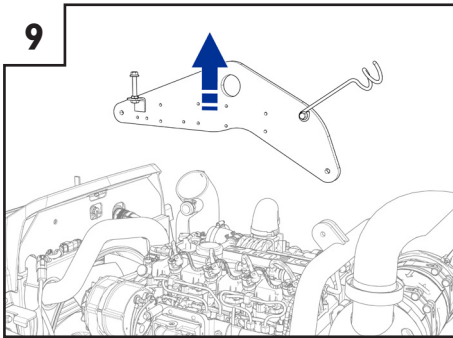
1. [Back lift bail] Support the middle portion of the lift bay with a 2"4
2. Remove the screw connecting the back lift bail to the middle lift bail.
3. Unscrew the four screws connecting the lift bay to the cowling.
4. Remove the back lift bail.
5. [Middle lift bail] First remove the expansion tank from the middle lift bail by unscrewing four screws
6. Disconnect the hose to the air cleaner by loosen the clamp.



7. Remove the air cleaner from the middle lift bail by unscrewing the four screws.

8. Remove the screw connecting the middle lift bail to the front lift bail.

9. Lift the middle lift bail away.

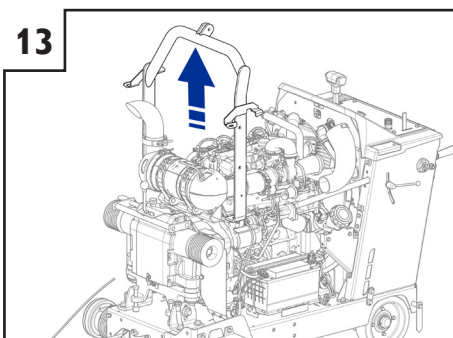
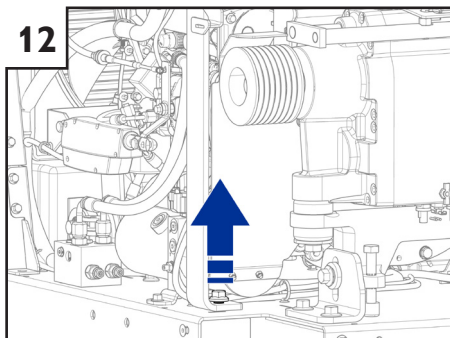
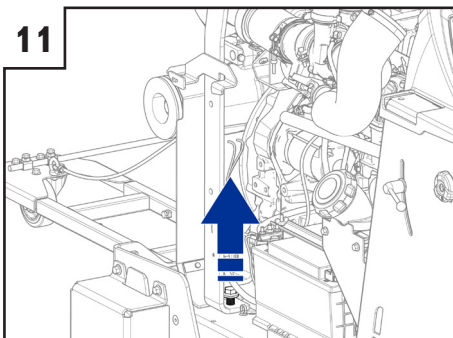


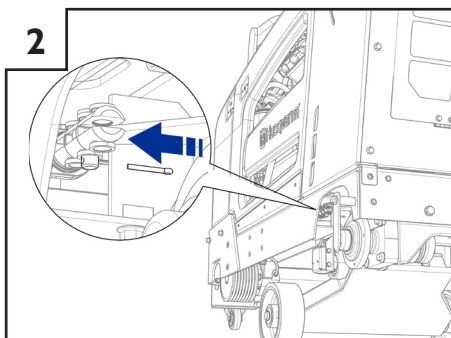
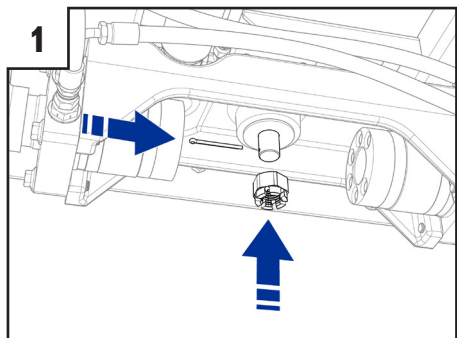
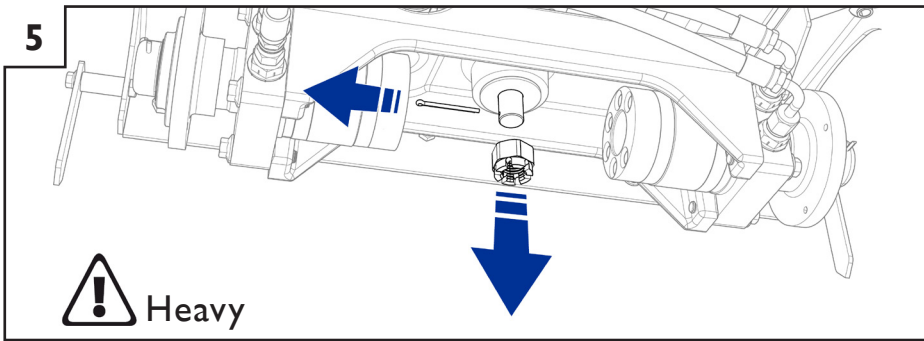
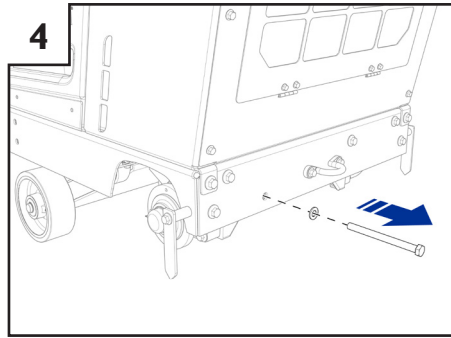
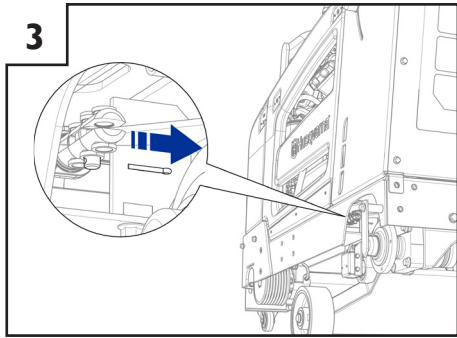
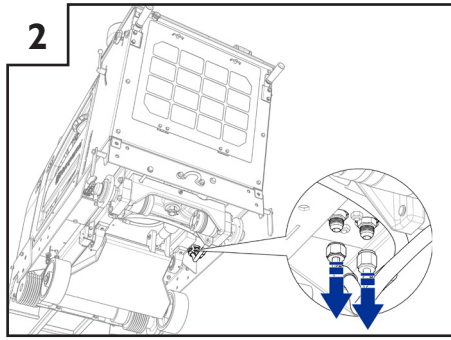
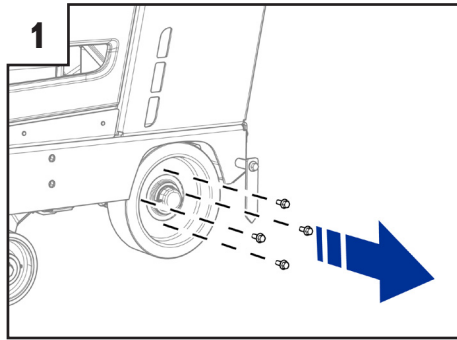
10. [Front lift bail] Remove the two screws holding fuel filter and put it down.

11. Remove the left bottom screw on the front bail. Cut of the clips located on the lift bail.

12. Remove the right bottom screw on the front bail.

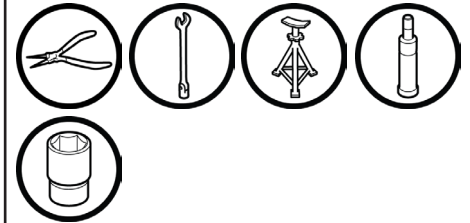
13. Lift out the front lift bail.





13.7. FRONT- / REAR AXLE / LIFT CYLINDER

Rear Axle



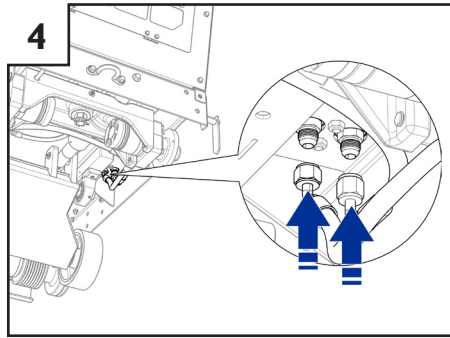
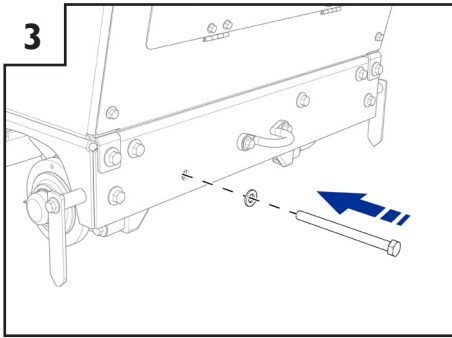
First see [Lifting the Road Saw \(p. 70\)](#).

Removing the Rear Axle

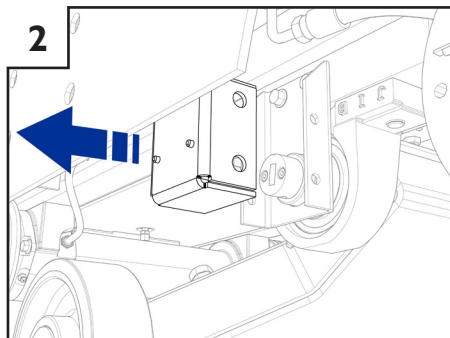
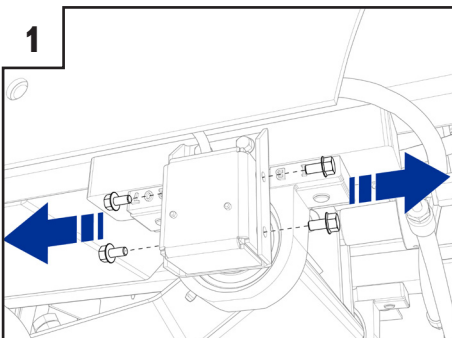
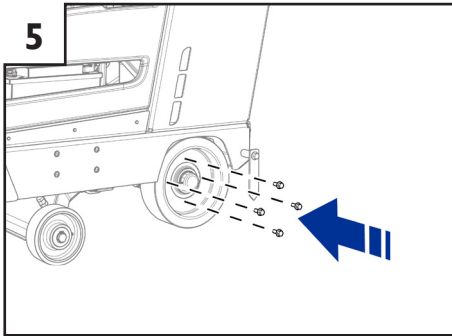
1. Remove the two tires with four screws each. (Must not be done, but the axle will be lighter.)
2. Cover ground with a carpet to reduce oil spill and unplug two hydraulic connectors and plug the hoses.
3. (E-track): Remove the first cotter pin to the e-track and push e-track to the side.
4. (Manual e-track): Unscrew the two nuts on the other side and remove the long screw with washer.
5. Use a jack or get help lifting. Warning! The rear Axle is heavy. Remove castle nut and washer (37 mm socket) and slowly lower the rear axle to the ground.

Reattaching the Rear Axle

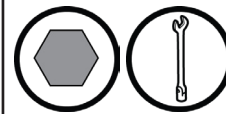
1. Apply grease on the nut. Mount the axle with washer and castle nut then put a new pin thru the bolt.
2. (E-track): Put the e-track back and insert at new cotter pin



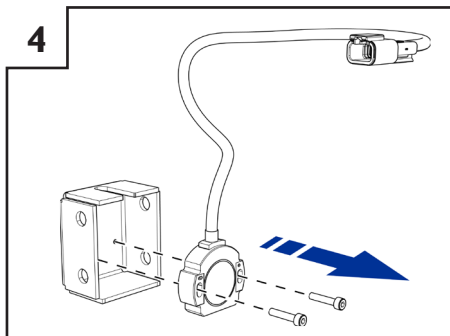
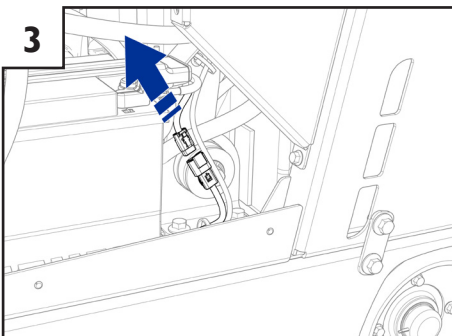
3. (Manual E-track): Attach the long screw with washer and fasten the two nuts on the other side.
4. Remove the plugs and reconnect the hydraulic hoses
5. Mount the weels with 4 screws.
6. Put the saw back on the ground by Reversing the steps in Lifting the Roadsaw.



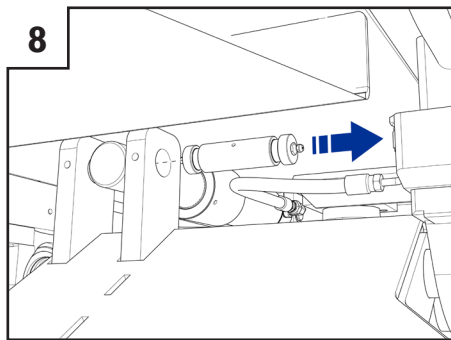
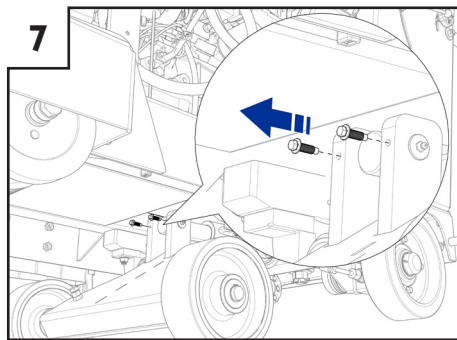
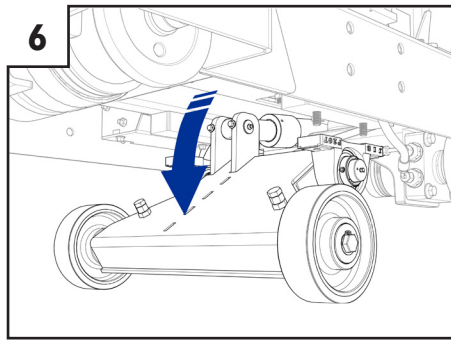
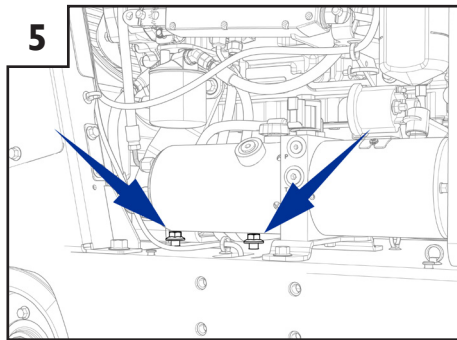
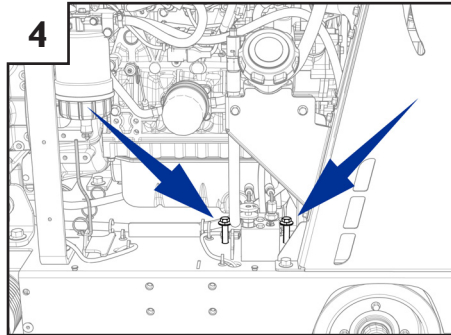
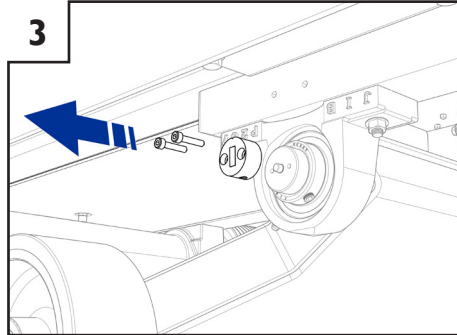
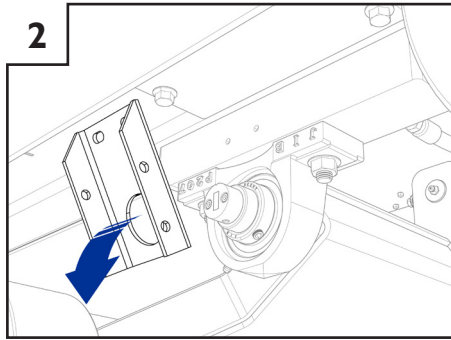
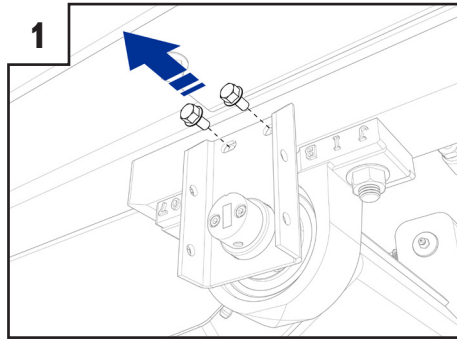
Replacing the Blade Depth Sensor



First see [Removing the Side Covers \(p. 46\)](#). Only left side needed.



1. Unscrew the four screws holding the blade depth sensor cover.
2. Lift the blade depth sensor cover off.
3. Unplug the sensor contact located behind the battery.
4. Unscrew the blade depth sensor from the sensor cover.
5. Follow the steps above in reverse to place the new sensor.

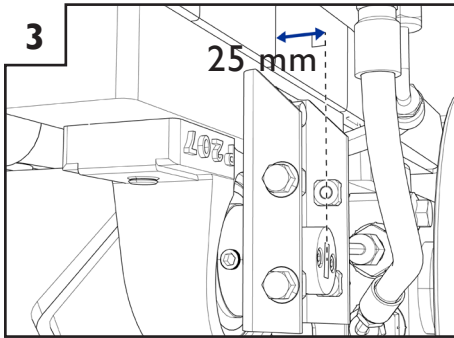
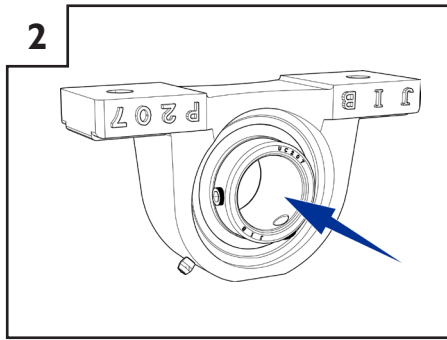
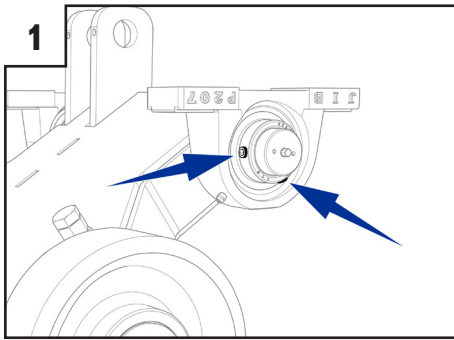


Removing the Front Axle

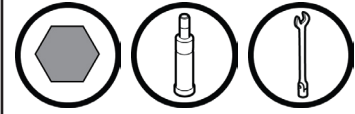


First see **Lifting the road saw** and step 1-3 in **Replacing the Blade Depth Sensor** (p. 73).

1. Unscrew two screws holding the bracket at the angle sensor.
2. Remove the bracket.
3. Remove the two screws and pull the magnet out.
4. [Right side] Loosen the two screws holding the right bearing located behind the battery.
5. [Left side] Loosen the two screws holding the left bearing. Either use a wrench or move the Hydraulic pump for easier reach.
6. Lower the front axle.
7. Remove the two bolts holding the shaft.
8. Knock the shaft out with a hammer.

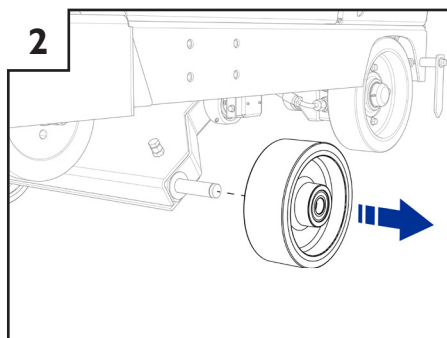
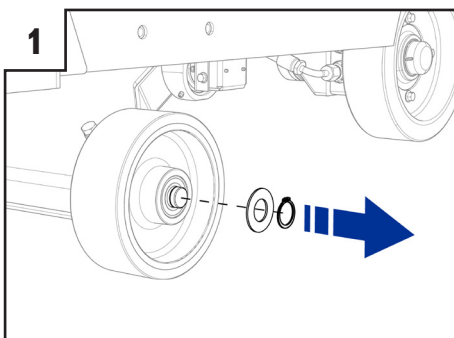


Replacing the Bearing Bracket



First see [Removing the Front Axle \(p. 74\)](#).

1. Remove the bearing brackets by loosening the two stop screws.
2. Clean and grease, Fasten the bearing bracket on the front axle when the axle is back on the saw. Reverse steps in [Removing the Front Axle \(p. 74\)](#).
3. Place and adjust the right bearing bracket 25 mm from the magnet surface to the bar the bearing bracket is attached to.

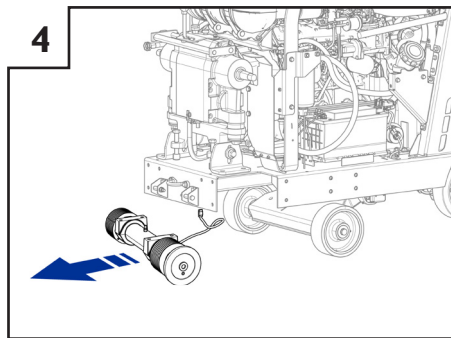
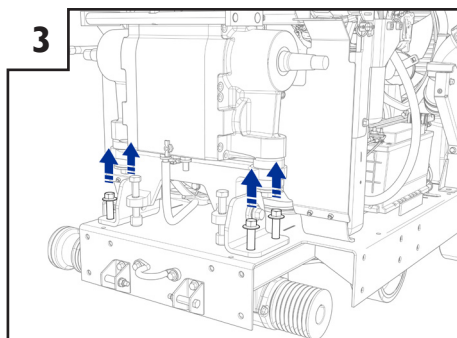
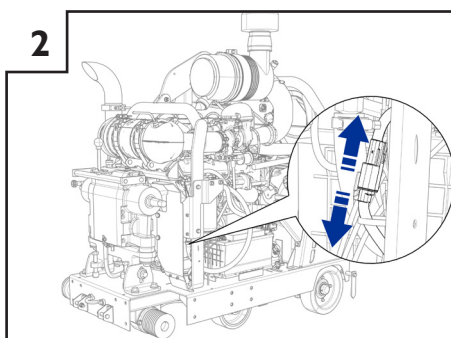
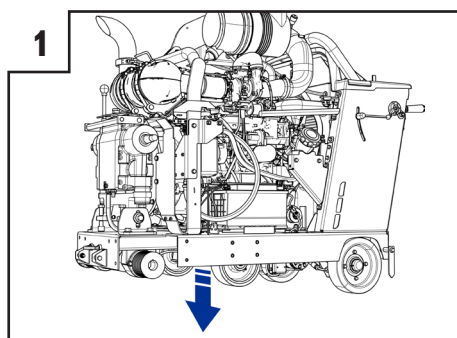


Replacing the Wheels



1. Remove circlips with a circlip pliers and remove the washer.
2. Pull off the wheel.

Clean and grease inside of wheel before reassemble with the steps reversed. Make sure to use new circlips.

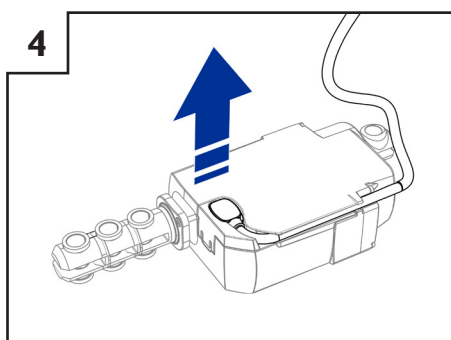
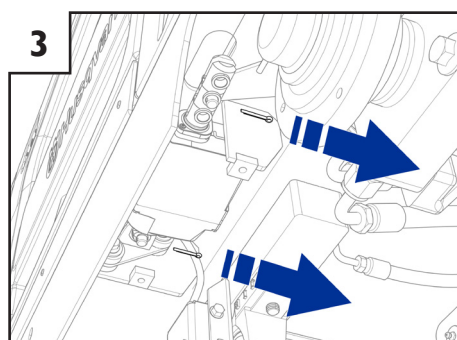
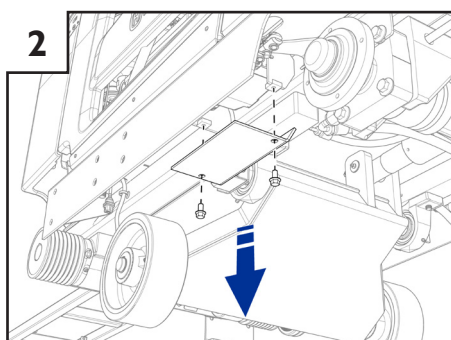
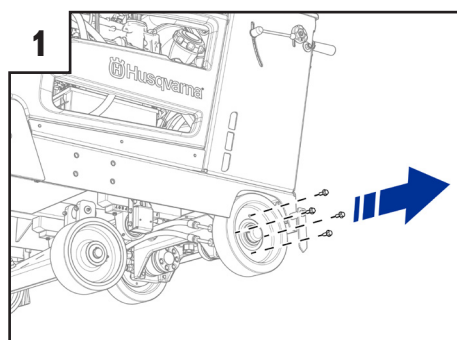


Changing the Blade Shaft



First see [Removing the Front Cover \(p. 46\)](#) and [Removing the Side Covers \(p. 46\)](#). Only left side needed.

1. Lower the front end as much as possible.
2. Disconnect the proximity sensor wire.
3. Remove the four bolts that holds the axis.
4. Raise the front end and remove the axis.
5. To fasten the axis again follow the steps above in reverse.

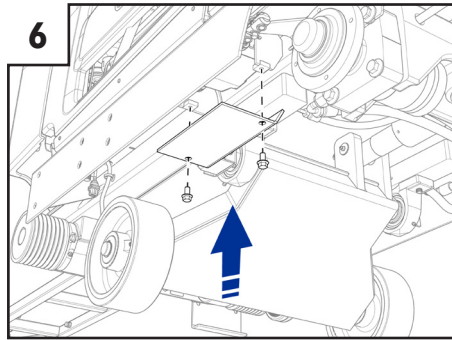
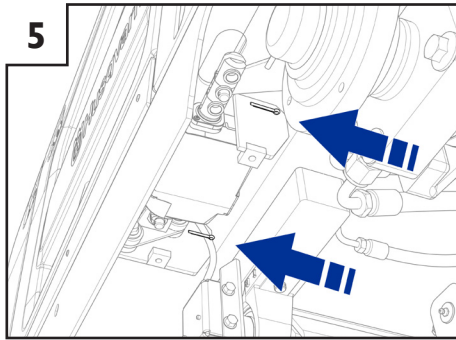


Replacing the E-track

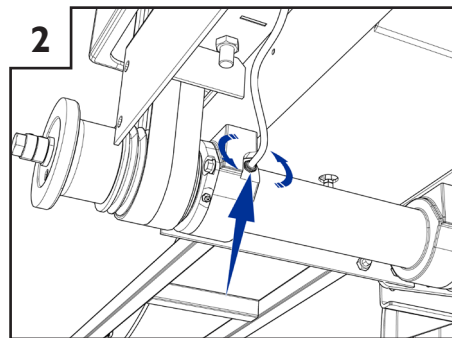
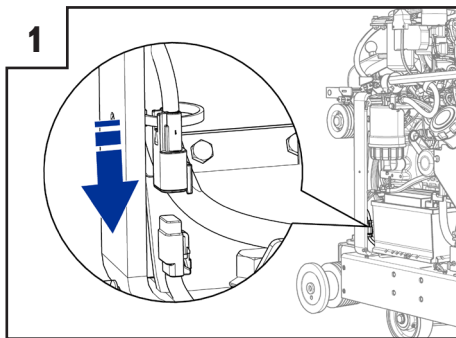


First see [Lifting the Road Saw \(p. 70\)](#).

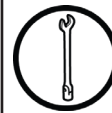
1. Remove the left back tire. Four screws.
2. Unscrew two screws on the E-track lid and remove the lid.
3. Remove the cotter pins and bolts on the bottom.
4. Unplug the contact from the E-track.



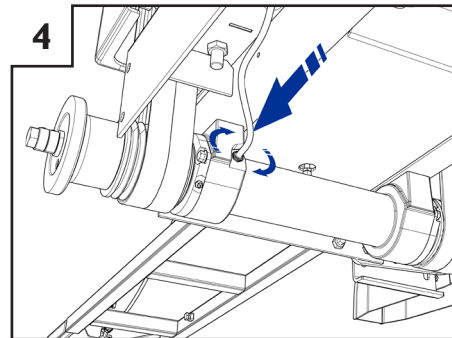
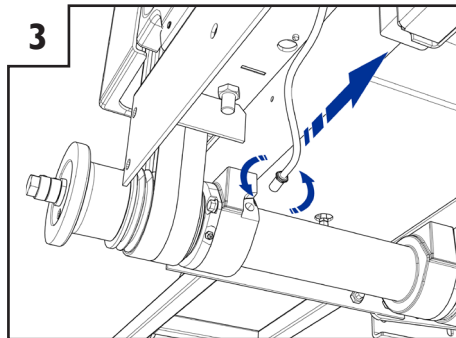
5. Replace E-track and fasten it with two new cotter pins. Then follow the steps in reverse to fasten it.
6. Insert two screws at the E-track lid and fasten it then reattach the wheel.



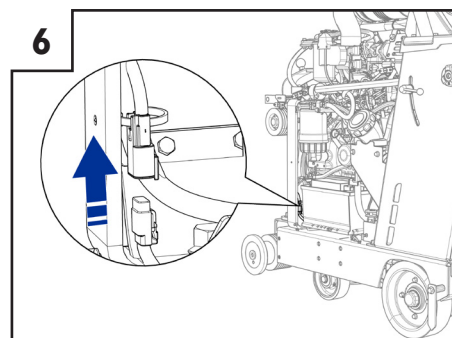
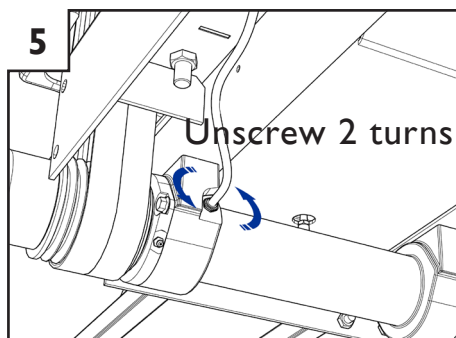
Replacing the Proximity Sensor

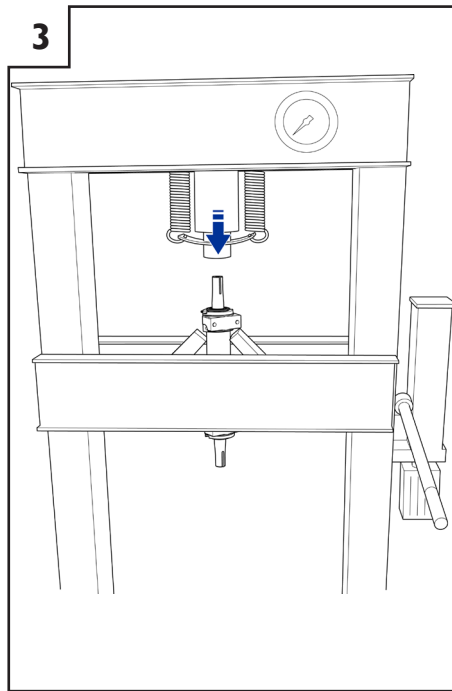
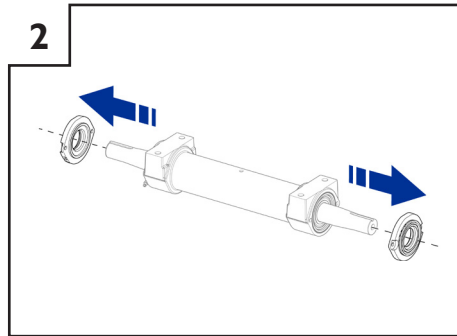
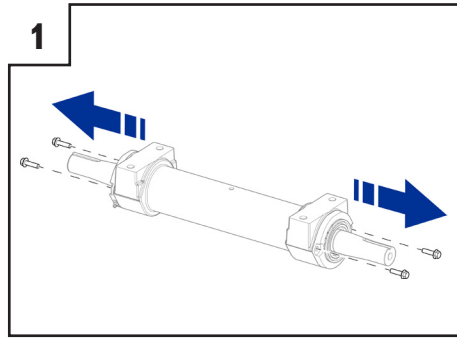


First see [Changing the Blade Shaft \(p. 76\)](#).

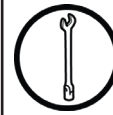


1. Disconnect the proximity sensor from the harness.
2. Unscrew the nut.
3. Unscrew the cable and remove it.
4. To secure the new sensor position first screw it fully into place.
5. Unscrew the proximity sensor two turns and then secure it by fastening the nut.
6. Reconnect the proximity sensor to the harness.



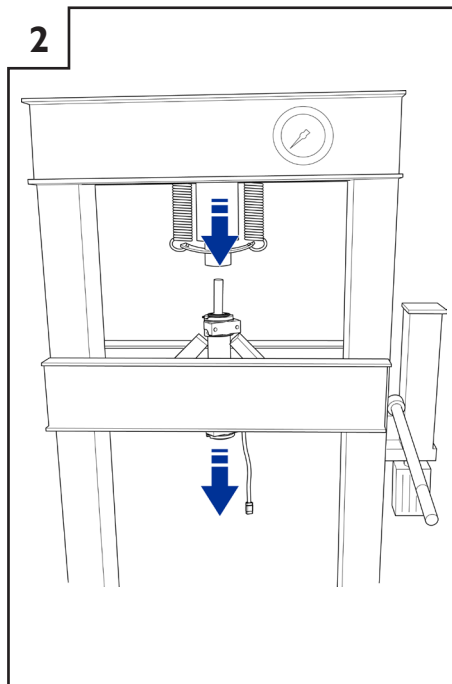
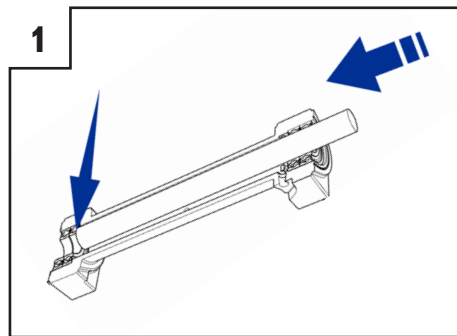


Change Idler Shaft/Gear



First see [Changing the Blade Shaft \(p. 76\)](#) and [Changing the Pulleys \(p. 63\)](#), only lower needed.

1. Remove the four screws holding the bearings.
2. Remove the bearings.
3. Use a presser to remove the shaft out of the housing.



Blade Shaft/Gear

First see [Change Idler Shaft/Gear \(p. 53\)](#).

1. Remove the bottom bearing with a bearing puller, a slide hammer or use a pipe. Slide the pipe into the tube from the opposite side of where the bearings are located. Start with removing the left bearing.
2. Put it in a presser and gently press it out.



Information!

Be careful and make sure not to damage the shaft when removing bearings.

14. SOFTWARE - DOWNLOAD

Software update FS HMI

Entering programming mode

HMI software is loaded via USB with Freescale MfgTool. To download the software the HMI must be put in programming mode.

Mounted in machine

If HMI is mounted in the machine then programming mode is entered by the following steps:

1. Make sure that Ignition key is turned OFF
2. Disconnect power supply by removing connector HMI-1 or disconnecting the negative terminal of the battery.
3. Wait for at least 5 seconds.
4. Reconnect the power supply
5. Connect USB-cable between the USB connector on the HMI and the PC.
6. Press the “0” button and keep it pressed
7. Turn Ignition key ON while “0” button is still pressed
8. Release “0” button after 3 seconds or more.

Stand Alone

If HMI is not mounted in the machine the programming mode is entered by the following steps:

1. Make sure that HMI-2 pin 12 and HMI-2 pin 39 are NOT connected together.
2. Connect 12V power supply to HMI-1 pin 1 and ground HMI-1 pin 34.
3. Connect USB-cable between the USB connector on the HMI and the PC.
4. Press the “0” button and keep it pressed
5. Connect HMI-2 pin 12 and HMI-2 pin 39 together while “0” button is still pressed.
Pin 12 and 39 must be connected together during the whole programming sequence.
6. Release “0” button after 3 seconds or more.

HMI is now in programming mode. In this state the HMI is waiting for new software to be downloaded from the connected PC. In this state the display backlight is turned on but no Husqvarna logo is visible.



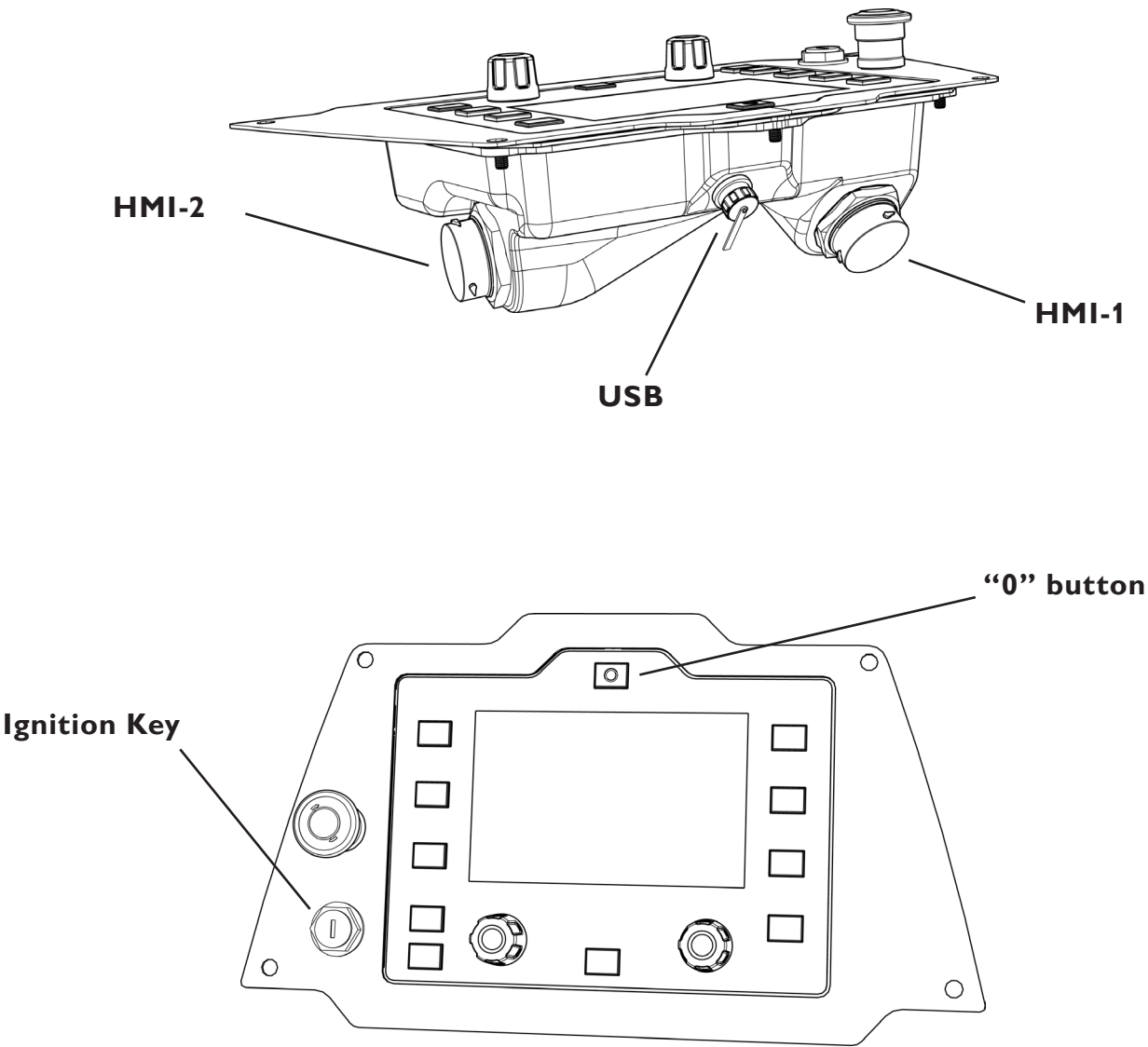
Information!

The first time MfgTool is used on a computer new drivers will be automatically installed. This may cause the above described process for entering programming mode to be interrupted. If this happens repeat the process.

Connections

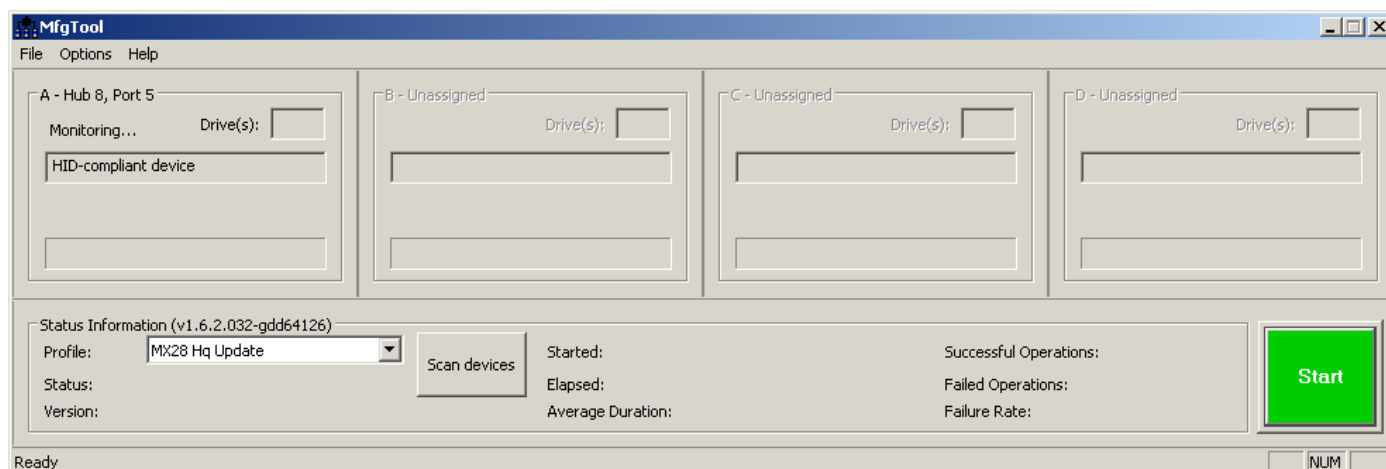
The HMI must be powered by an external 12V power supply that can source 1A or more. The following external connections have to be made to the HMI.

Function	Connector	Pin
12V	HMI-1	1
GND	HMI-1	34
Ignition switch signal	HMI-2	12
Ignition switch VCC	HMI-2	39
USB	USB	



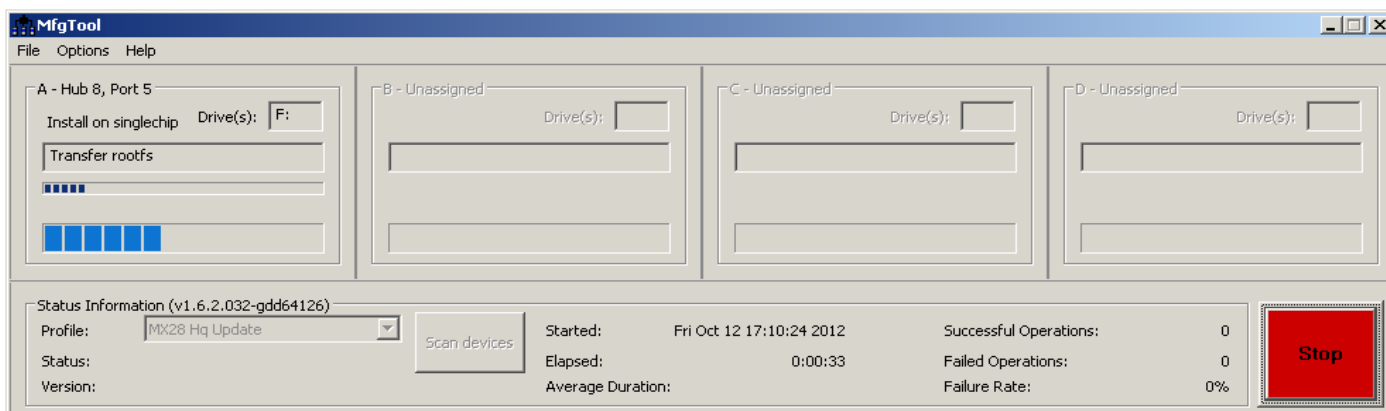
Downloading HMI software

HMI software is supplied by Husqvarna as a zip file that contains both the HMI software and MfgTool. Start MfgTool by executing file MfgTool.exe. The MfgTool looks like the image below.



In section A you can now see the text *HID-compliant device*. If it does not appear, try to click on the *Scan devices* button. If this does not work, check the USB connection.

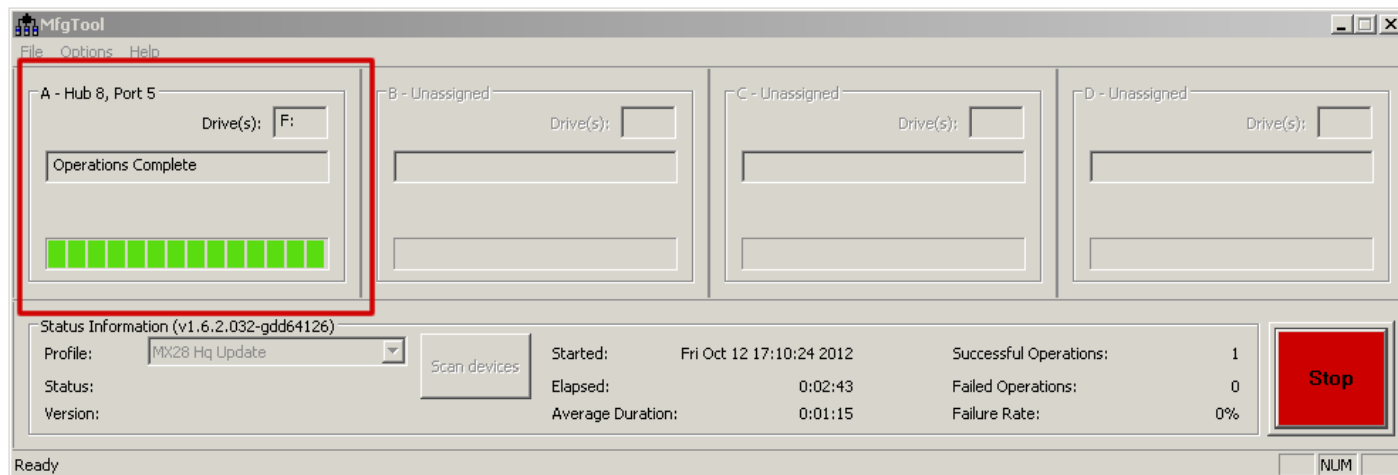
Start software download by pressing the green *Start* button. The downloading process takes about 2 minutes. Meanwhile MfgTool looks like this. The text information and the status bar in section A will change a few times during software download.



Information!

The first time MfgTool is used on a computer to download software new drivers will be installed. This may cause the software download process to be interrupted. If this happens repeat the above described process.

When software download is complete, the message *Operation Complete* is displayed section A and the status bar turns green. MfgTool now looks like this:



Then press the red *Stop* button to end software download and close MfgTool and then remove the USB cable from the HMI.

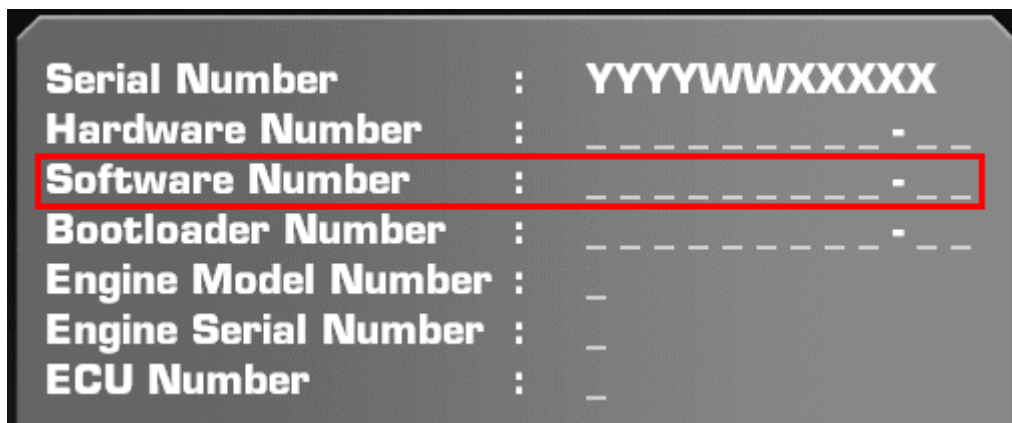
Turn off ignition (wait 2s) and on again.

When turning on ignition the first time after new software has been downloaded to the HMI the HMI will do an internal software download. this takes approximately 20 seconds.

Verify Software download

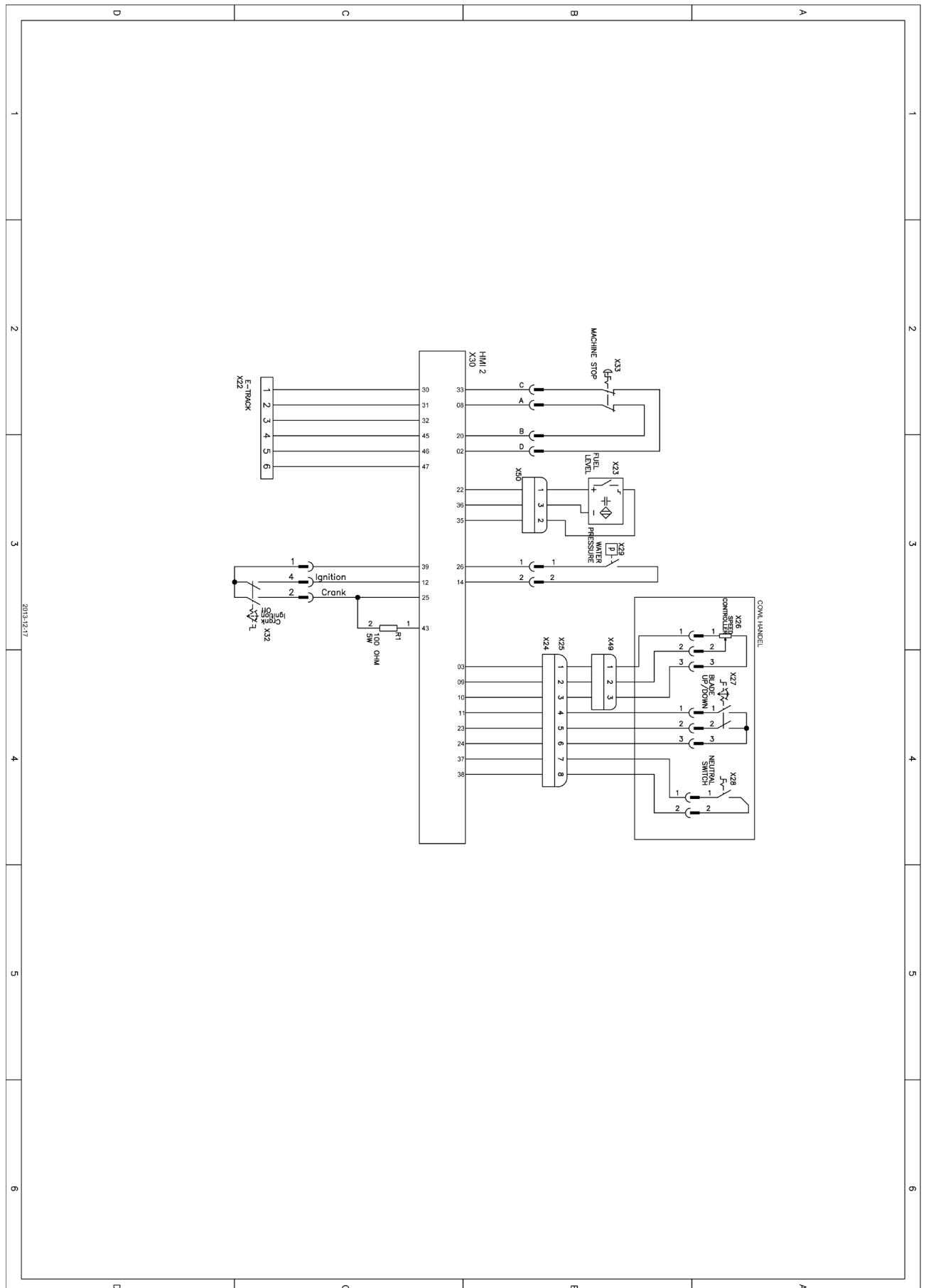
From the *Operator Menu* enter the *Setup Menu 2* by pressing the *MENU* button twice. If any warning messages are displayed then first acknowledge these by pressing the *MENU* button until *Operator Menu* is displayed.

Select *System Information* and check the *Software Number*

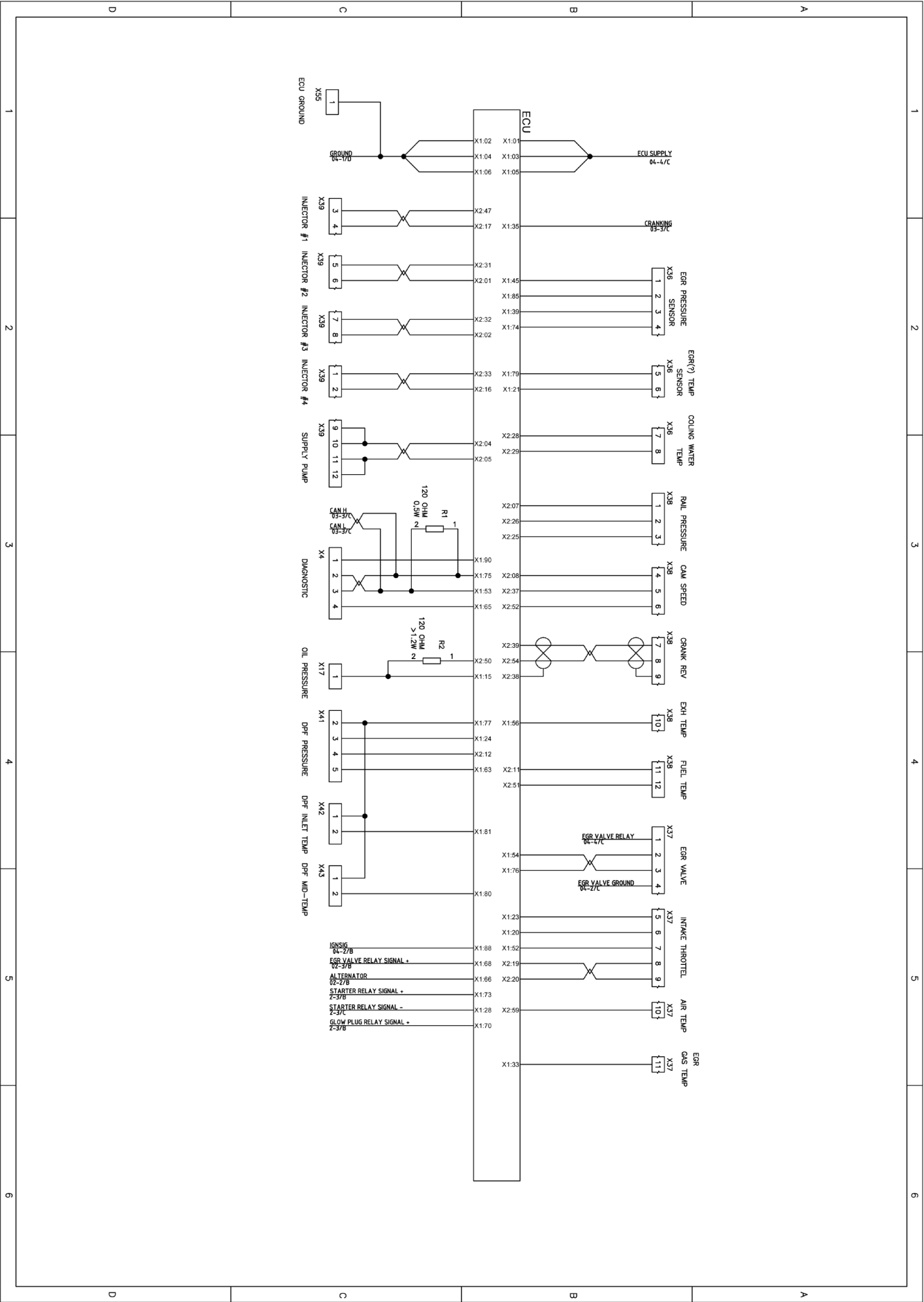


14. ELECTRICAL DRAWINGS

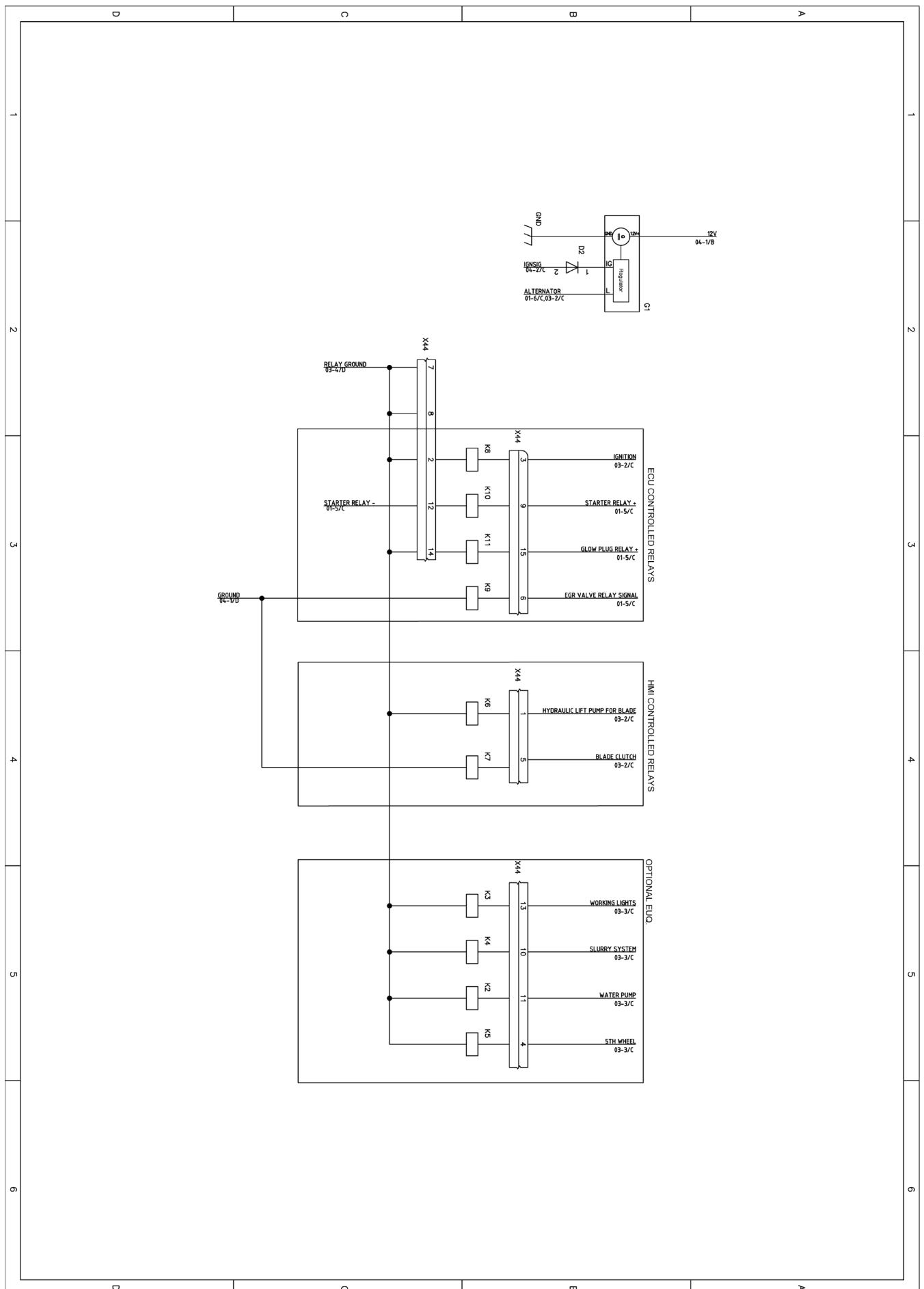
Cowl Harness



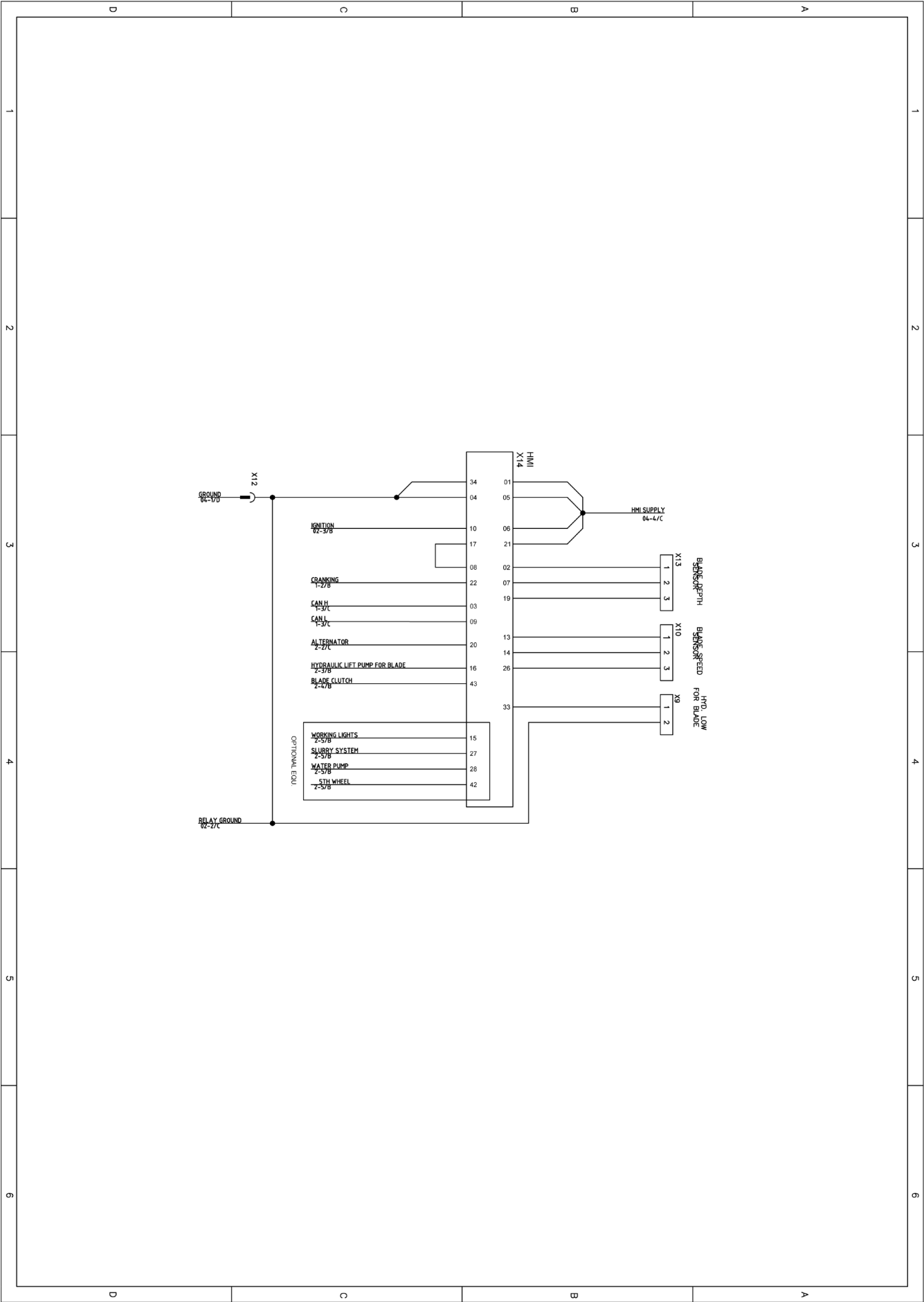
ECU



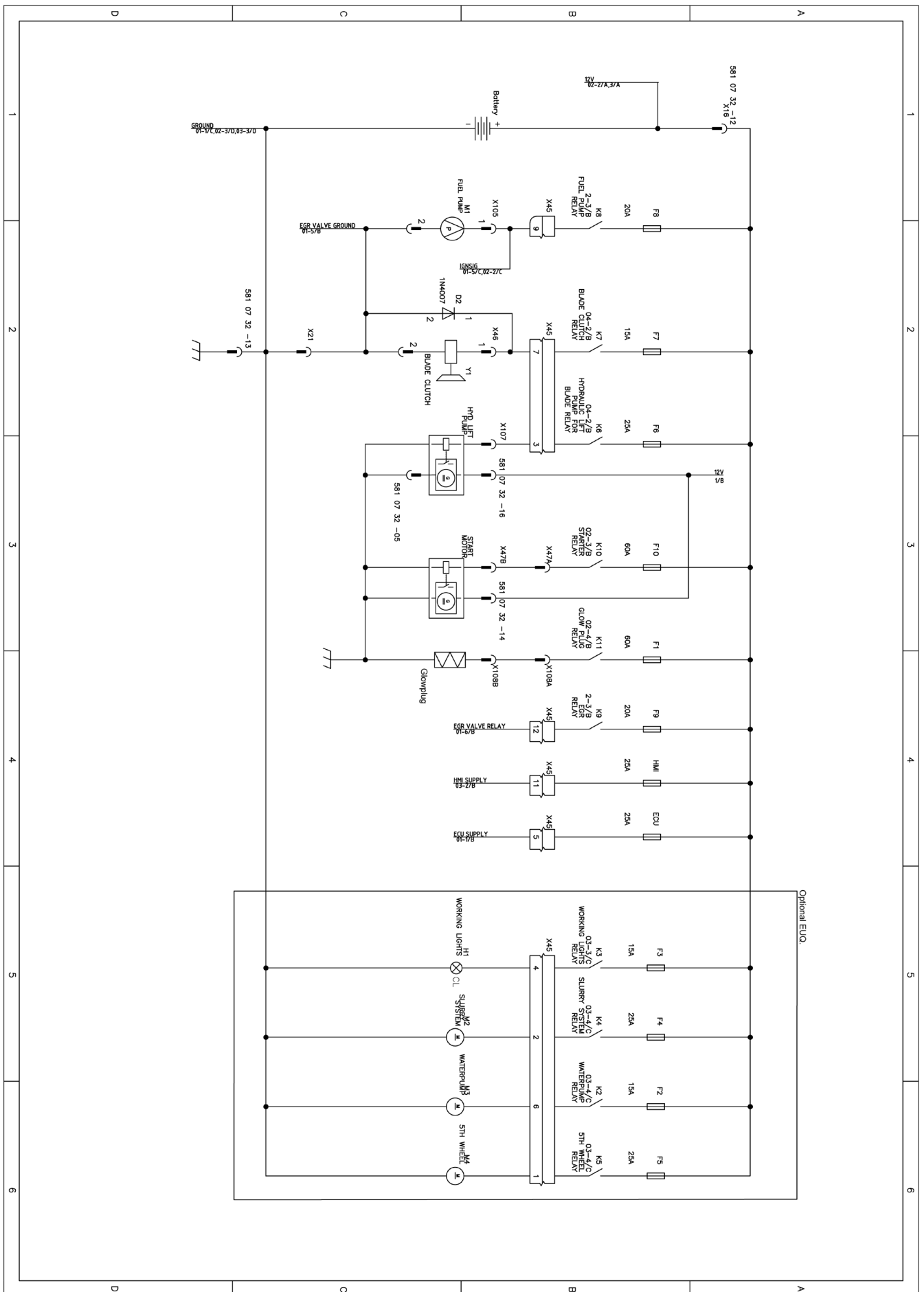
Relay



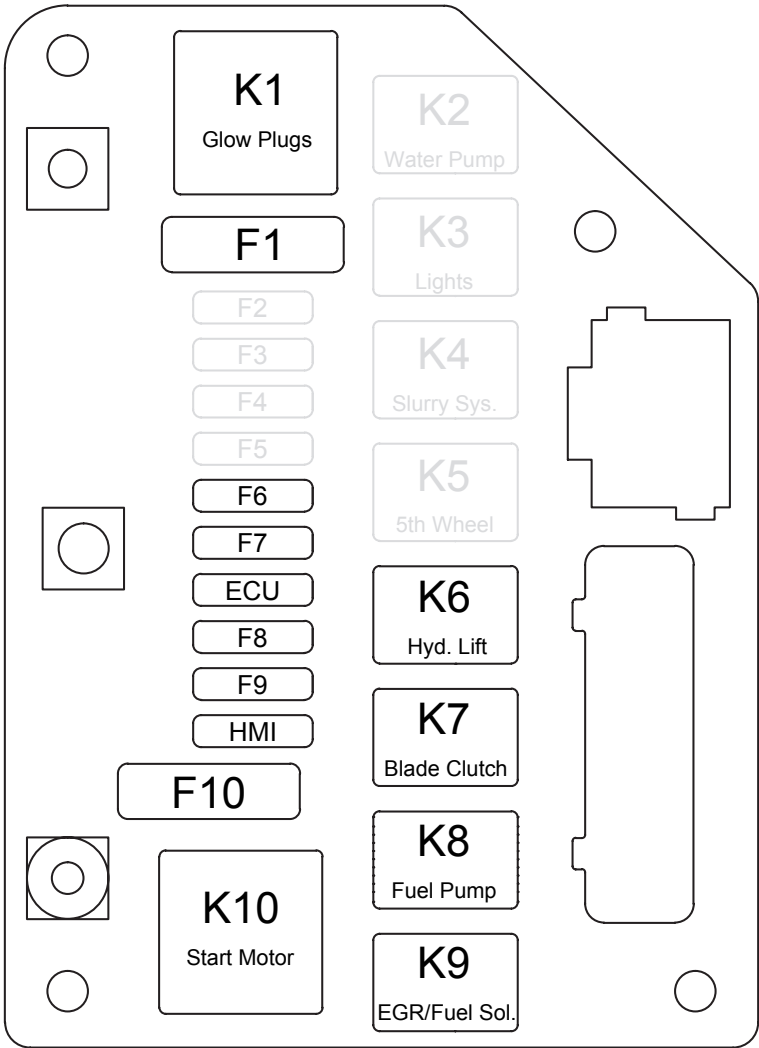
HMI



Power



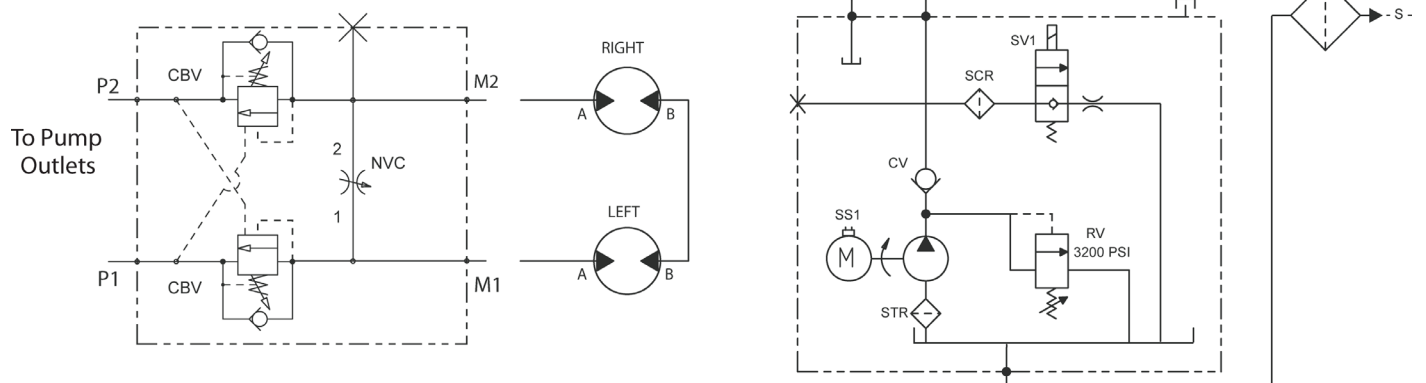
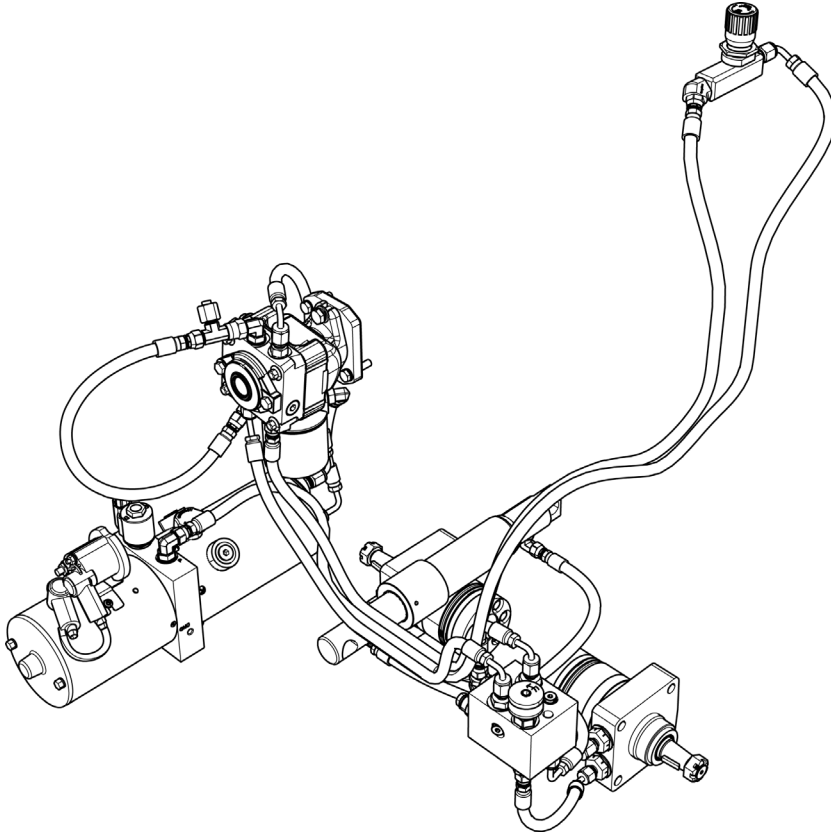
Fuses



Function	Desig.	Relay (amp)	Desig.	Fuse (amp)
Glow Plugs	K1	70	F1	60
Water pump (optional)	K2	25	F2	25
Lights (optional)	K3	25	F3	25
Slurry System (optional)	K4	25	F4	25
5th Wheel (optional)	K5	25	F5	25
Hyd. Lift Pump	K6	25	F6	25
Blade Clutch	K7	25	F7	15
Fuel Pump	K8	25	F8	20
EGR/Fuel Sol.	K9	25	F9	20
Start Motor	K10	70	F10	60
ECU	n/a	n/a	ECU	25
HMI	n/a	n/a	HMI	25

16. HYDRAULIC DRAWINGS

Hydraulic Schematic FS 7000D





www.husqvarnacp.com

115 63 32-26 Rev.A.

English