Instructions manual

Operating & Maintenance

4812273397.pdf

Compact planer
PL500

Diesel engine
Cummins QSB 4.5

Serial number
10000902x0C003643 -

Translation of original instructions.

Reservation for changes
Printed in China

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Introduction

The machine

Dynapac Planer PL 500 is a compact, very easy to operate planer with all-wheel drive.

The machine has hydrostatic drives, variably adjustable in 2 speed ranges and hydraulic steering (Orbitrol)

The machine has a maximum milling depth of 160 or 200 mm, depending on the variant.

The right chassis leg can be folded in for precision milling along curbes etc.

The very tight turning radius makes it possible, for example, to mill around man holes.

Intended use

PL 500 is mainly intended to be used for roadworks:

- to partially remove layers of asphalt, asphalt concrete and concrete
- remove superficial irregularities in the form of ruts, lateral unevenness and distortions
- to restore the correct surface profile
- roughen up and remove markings
- to carry out preparations in conjunction with laying piping and conduits

The above work requires the underlying surface to be sufficiently stable and strong to withstand the movement of the planer.

The machine is not designed to be used as a towing machine, a winch or lifting device. See "Safety Manual for Planing".

The machine is not intended for using in explosive atmosphere.

Warning symbols

WARNING ! Marks a danger or a hazardous procedure that can result in life threatening or serious injury if the warning is ignored.

CAUTION ! Marks a danger or hazardous procedure that can result in damage to the machine or property if the warning is ignored.

General

This manual contains instructions for machine operation and maintenance.

The machine must be correctly maintained for maximal performance.

The machine should be kept clean so that any leakages, loose bolts and loose connections are discovered at as early a point in time as possible.

Inspect the machine every day, before starting. Inspect the entire machine so that any leakages or other faults are detected.

Check the ground under the machine. Leakages are more easily detected on the ground than on the machine itself.

THINK ENVIRONMENT ! Do not release oil, fuel and other environmentally hazardous substances into the environment. Always send used filters, drain oil and fuel remnants to environmentally correct disposal.

This manual contains instructions for periodic maintenance normally carried out by the operator.

Additional instructions for the engine can be found in the manufactuer's engine manual.

CE marking and Declaration of conformity

(Applies to machines marketed in EU/EEC)

This machine is CE marked. This shows that on delivery it complies with the basic health and safety directives applicable for the machine in accordance with machinery directive 2006/42/EC and that it also complies with other directives applicable for this machine.
A “Declaration of conformity” is supplied with this machine, which specifies the applicable directives and supplements, as well as the harmonized standards and other regulations that are applied.

Safety - General instructions

(Also read the safety manual)

1. **Read the entire manual before starting the machine and before carrying out any maintenance. Do not remove the manual from the machine. Replace the instruction manual if lost, damaged or unreadable.**

2. **The safety manual supplied with the machine must be read by all planer operators. Always follow the safety instructions. Do not remove the manual from the machine.**

3. **Only trained and/or experienced operators should be allowed to drive the planer. It is prohibited to take passengers on the planer.**

4. **Never use the planer if it is in need of adjustment or repair.**

5. **Only climb up or down from the planer when it is stationary. Use the intended grips and rails. Always use the three-point grip (both feet and one hand, or one foot and both hands) when mounting or dismounting from the machine. Never jump down from the machine.**

6. **Drive carefully on sharp bends.**

7. **Avoid driving across slopes. Drive straight up or straight down the slope.**

8. **Make sure that the underlying surface is sufficiently stable.**

9. **Make sure that there are no obstacles in the direction of travel, on the ground, in front of or behind the planer, or overhead.**

10. **Drive particularly carefully on uneven ground.**

11. **Use the safety equipment provided.**

12. **Keep the planer clean. Immediately remove any dirt or grease from the operator platform. Keep all signs and labels clean and fully legible. Replace damaged plates and labels.**

13. **Safety measures before refueling:**
    - Shut off the engine
    - Do not smoke
    - No naked flame in the vicinity of the machine
    - Ground the filling device nozzle to the tank to avoid sparks

14. **Before carrying out repairs or service:**
    - Place chocks at the wheels

15. **Hearing protection is recommended if the noise level exceeds 80 dB(A). The noise level can vary depending on the equipment on the machine and the surface the machine is being used on.**

16. **Do not make any changes or modifications to the planer, this could put safety at risk. Changes may only be made following the written approval of Dynapac.**

17. **Avoid using the planer before the hydraulic fluid has reached its normal working temperature. Braking distances can be longer than normal when the fluid is cold. See instructions in the STOP section.**

18. **For your own safety, always wear:**
    - a helmet
    - work shoes with steel toecaps
    - hearing protection
    - breathing protection while milling, if necessary
    - reflective clothing/high visibility vest
    - work gloves
    - eye protection, if necessary

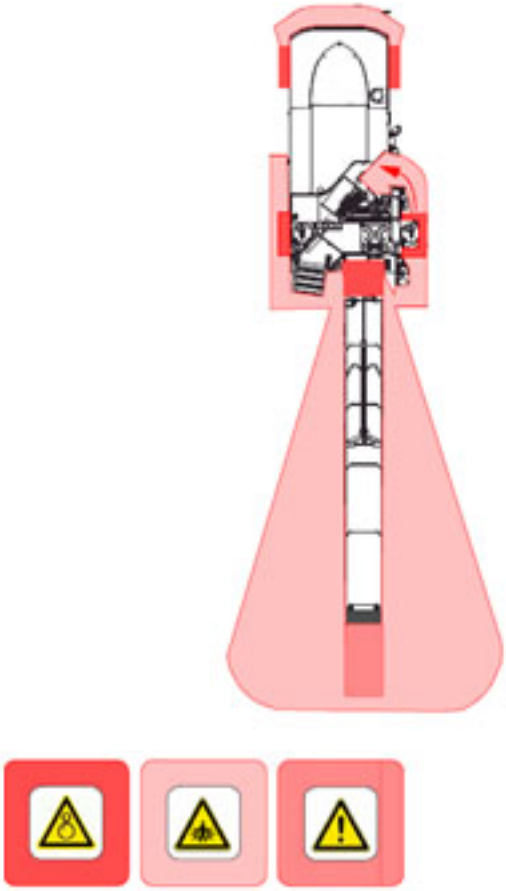
19. **Ensure sufficient ventilation (extraction of air by fan) where the engine is run poorly ventilated spaces.**

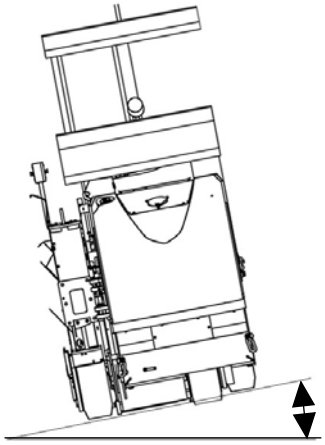
Safety - when operating

Prevent persons from entering or remaining in the danger area, i.e. a distance of at least 7 m (23 ft) in all directions from operating machines. The operator may allow a person to remain in the danger area, but should then observe caution and operate the machine only when the person is visible or has given clear indications of where he or she is.

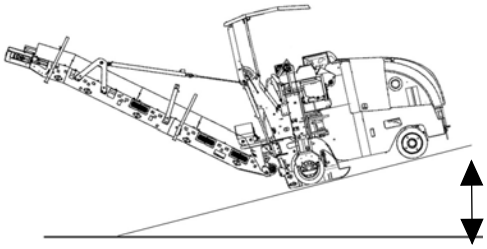
Risk zones on the machine

Within these areas there is a risk of being retracted or crushed as a result of rotating, feeding or moving parts.





Max 6°



Max 6°

Fig. Operating on slopes

Slopes

This angle has been measured on a hard, flat surface with the machine stationary.

The steering angle is zero and all tanks are full.

Bear in mind that loose ground, the deflection of the conveyor, chassis leg folded in, the operating speed and any change in the center of gravity can cause the machine to tip over on slopes with lower gradients.

Follow the recommendations for maximum permitted angle in the picture.

Don't drive in slopes with chassis legs folded in.

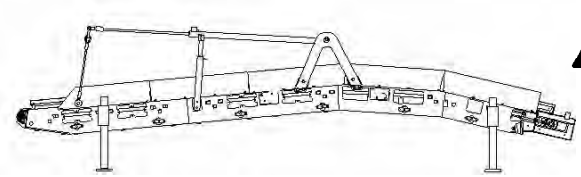
Don't swing chassis leg on slope, machine may back roll or go down by gravity.
Risk of crash bystander or tip over.

Where possible, avoid driving across slopes. Drive instead straight up and down sloping ground.

Safety (Optional)

Conveyor (option)

The machine must not be transported with material on the conveyor. The weight for the conveyor is specified on the unit rating plate. This weight is not included in the machine weight specified on the machine plate.



The operator must make sure that nobody is in the working area while the machine is in use.

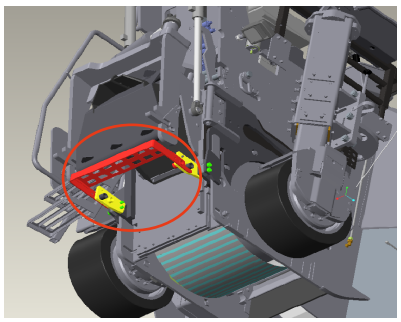
Risk of body and crush injuries. The conveyor has rotating parts.

Fig. Conveyor

Risk of being retracted. Rotating conveyor.

The conveyor must be returned to its transport position after it has been used.

The overall length of the machine is changed when the conveyor is fitted.



Conveyor guard plate has to be installed when PL500 is not equipped with conveyor

Risk of foot cut. Rotating milling drum.

Fig. Roof

Roof (option)

Risk of squeeze risk and crush injuries.

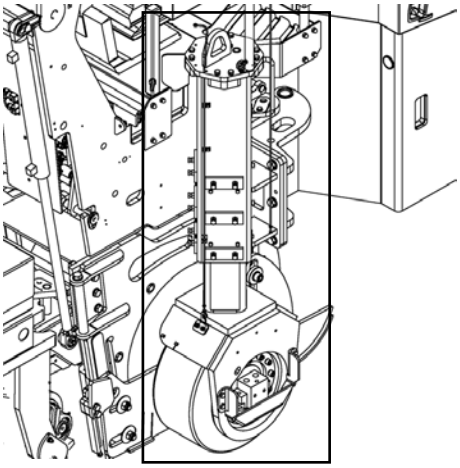


Fig. Hydraulic chassis leg Extended position

Hydraulic chassis leg

The operator must make sure that nobody is in the working area while the machine is in use.

The hydraulic chassis leg can be folded in, causing a risk of a crush injury

The chassis leg must be returned to the transport position (extended position) after use.

Don't swing chassis leg on slope, machine may back roll or go down by gravity.
Risk of crash bystander or tip over.

Special instructions

Standard lubricants and other recommended oils and fluids

Before leaving the factory, the systems and components are filled with the oils and fluids specified in the lubricant specification. These are suitable for ambient temperatures in the range -15°C to +40°C (5°F - 104°F).

The maximum temperature for biological hydraulic fluid is +35°C (95°F).

Higher ambient temperatures, above +40°C (104°F)

For operation of the machine at higher ambient temperatures, however maximum +50°C (122°F), the following recommendations apply:

The diesel engine can be run at this temperature using normal oil. However, the following fluids must be used for other components:

Hydraulic system - mineral oil Shell Tellus T100 or similar.

Lower ambient temperature - Freeze risk

Make sure that the watering system is empty/drained of water (sprinkler, hoses, tank/s) or that anti-freeze has been added, to prevent the system freezing.

Temperatures

The temperature limits apply to standard versions of planers.

Planers equipped with additional equipment, such as noise suppression, may need to be more carefully monitored in the higher temperature ranges.

High pressure cleaning

Do not spray directly onto electrical components.

Do not use high pressure cleaning for dashboard/display.

The Electrical Drive Control and the computer box may not be washed with high pressure cleaning and not at all with water. Clean them with a dry wiper.

Detergent that can destroy electrical parts, or which is conductive, must not be used.

Place a plastic bag over the fuel filler cap and secure with a rubber band. This is to avoid high pressure water entering the vent hole in the filler cap. This could cause malfunctions, such as the blocking of filters.

Never aim the water jet directly at the fuel tank cap. This is particularly important when using a high-pressure cleaner.

Fire fighting

If the machine catches fire, use an ABC-class powder fire extinguisher.

A BE-class carbon dioxide fire extinguisher can also be used.

Battery handling

When removing batteries, always disconnect the negative cable first.

When fitting batteries, always connect the positive cable first.

Dispose of old batteries in an environmentally friendly way. Batteries contain toxic lead.

Do not use a quick-charger for charging the battery. This may shorten battery life.

Jump starting (24V)

Do not connect the negative cable to the negative terminal on the dead battery. A spark can ignite the oxy-hydrogen gas formed around the battery.

Check that the battery used for jump starting has the same voltage as the dead battery.

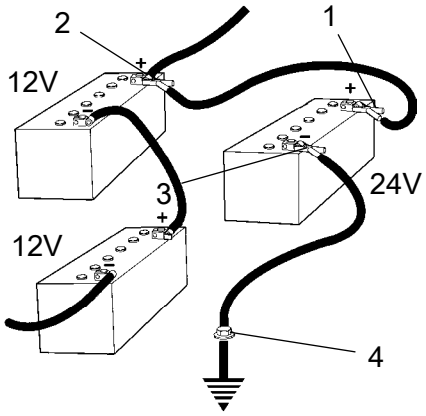


Fig. Jump starting

Turn the ignition and all power consuming equipment off. Switch off the engine on the machine which is providing jump start power.

Jump leads must have 24V.

First connect the jump start battery's positive terminal (1) to the flat battery's positive terminal (2).Then connect the jump start battery's negative terminal (3) to, for example, a bolt (4) or the lifjting eye on the machine with the flat battery.

Start the engine on the power providing machine. Let it run for a while. Now try to start the other machine. Disconnect the cables in the reverse order.

Starting gas is not to be used!

Technical specifications

Vibrations - Operator station

(ISO 2631)

The vibration levels are measured in accordance with the operational cycle described in EU directive 2000/14/EC on machines equipped for the EU market, nominal speed of diesel engine and milling and transport devices in operation and with vibration switched on, on soft polymer material and with the operator's seat in the transport position.
Measured whole-body vibrations are below the action value of 0.5 m/s² specified in directive 2002/44/EC. (The limit is 1.15 m/s².)
Measured hand/arm vibrations also were below the action level of 2.5 m/s² specified in the samedirective. (Limit is 5 m/s²)

Noise level

The noise levels are measured in accordance with the operational cycle described in EU Directive 2000/14/EC on machines equipped for the EU market; nominal speed of diesel engine and milling and transport devices in operation.

Guaranteed sound power level, L_{wA}

PL500	97kW	105 dB (A)

Sound pressure level at the operator's ear (platform), L_{pA}

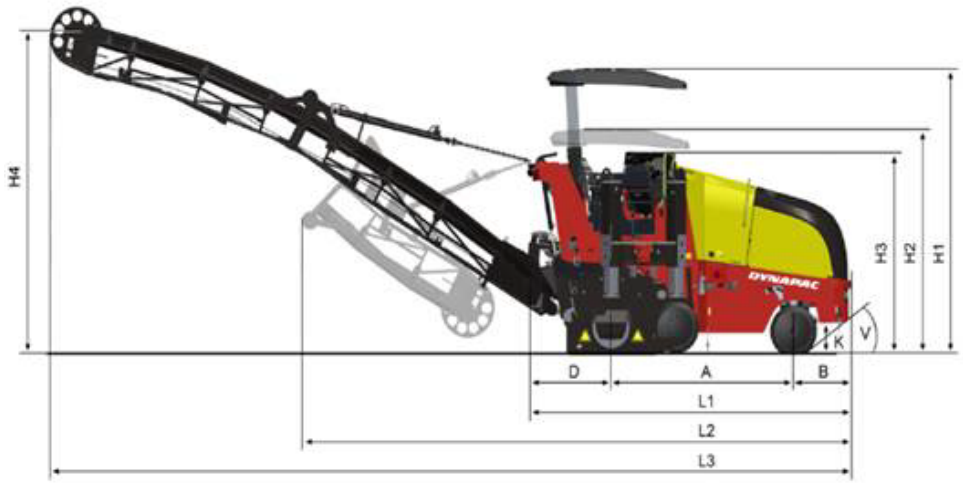
PL500	86 dB (A)

During operation the above values may differ because of the actual operational conditions.

Electrical system

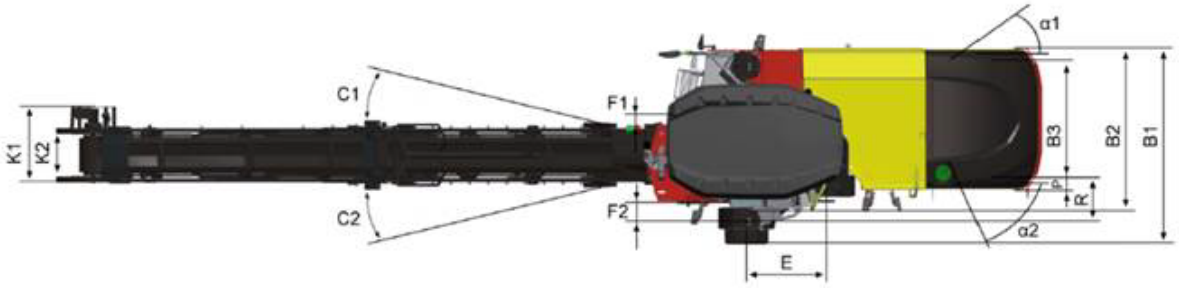
Machines are EMC tested in accordance with EN 13309:2000 'Construction machinery'.

Dimensions, side view



Dimensions	mm	degrees	in
A	1970	-	78
B	760	-	30
D	1000	-	39
L1	3810	-	150
L2	6150-6400	-	242-252
L3	8200-9300	-	323-366
H1	3400	-	134
H2	2500	-	99
H3	2350	-	93
H4	1500-4220	-	59-166
V		30	
K	328	-	13

Dimensions, top view



Dimensions	mm	degrees	in
B1	1650	-	65
B2	1400		55
B3	860	-	34
C1		25	
C2		20	
E	780		31
K1	900	-	34
K2	400		16
P	170		7
R	472		19
α1		29	
α2		68	

Weights and volumes

Weights

PL 500				
Transport weight				
- Without conveyor belt	6900	kg	15 200	lbs
Operating weight (CE)	7900	kg	17 400	lbs
Max operating weight, fully loaded (CE)	8400	kg	18500	lbs

Fluid volumes

PL 500				
Fuel tank	250	l	66	gal
Engine oil	13	l	13,7	qts
Hydraulic reservoir	140	l	148	qts
Water tank	500	l	132	gal
Planetary gear, drive wheel	0,75	l / side	0,8	qts/side
Angular planetary gearing, milling drum drive	6	l	6,3	qts
Coolant, engine	20	l	21	qts

Working capacity

Performance PL500

Transport speed	5,3	km/h	3,3	mph
Working speed	0-24	m/min	0-0,015	mpm

PL500

Milling width	500	mm	19,8	inch
Milling depth				
-PL500	160	mm	6,3	inch
-PL500	200	mm	7,9	inch
Line spacing	15	mm	0,6	inch
Milling diameter	700	mm	27,6	inch
Number of milling tool systems C10HD	max 61	x		
Size of rear rubber wheel	560x250	mm		
Size of front rubber wheel	560x250	mm		

General

Engine PL500

Manufacturer/type	Cummins QSB 4.5 - C130	
Max power (SAE J1995)	97 kw	130/132 hp
Engine speed	2200 rpm	
Cylinder volume	4500 cm3	

Engine

Fuel type	Diesel
Cooling	Water
Fuel consumption, full load	29.3 l/h kg
Fuel consumption, 2/3 load	18.8 l/h kg
Number of cylinders	4

Loading system

Belt width, top conveyor belt	400 mm
Belt speed	4,5 m/s
Loading capacity (theoretical)	250 m3/h
Max unloading height	4220 mm

Electrical system

Voltage	24 V
High capacity batteries	2 x 12 V, 74 Ah
Alternator	24 V / 70 A
Fuses	see section on fuses

Hydraulic system

Pressure generation	Hydraulic pumps, flange mounted on diesel engine
Pressure distribution	Separate hydraulic circuits for travel drive, chassis leg and steering

Tightening torque

Tightening torque in Nm (lbf.ft) for oiled or dry bolts tightened with a torque wrench.

Metric coarse screw thread, bright galvanized (fzb):

STRENGTH CLASS:

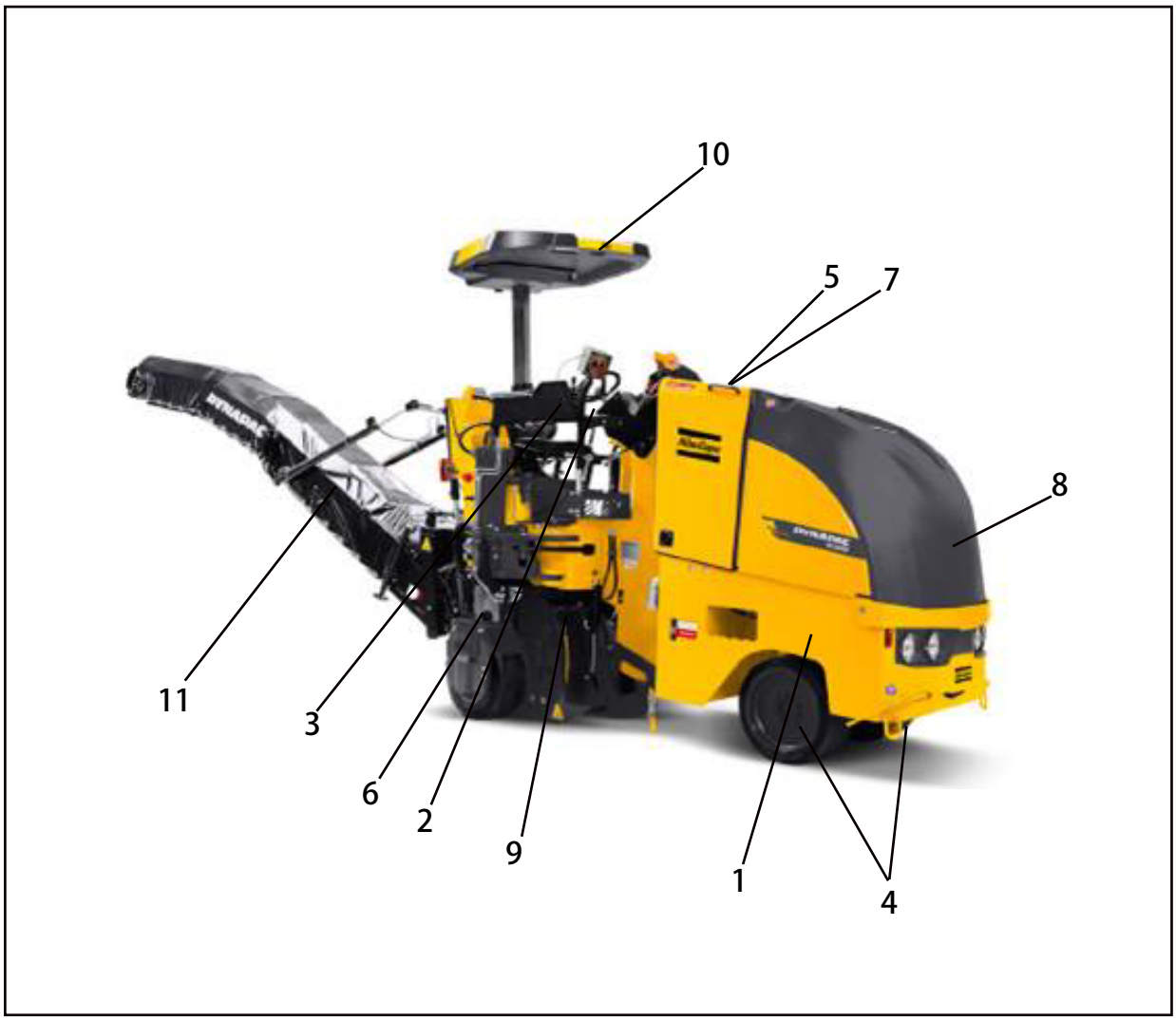
M - thread	8.8, Oiled	8.8, Dry	10.9, Oiled	10.9, Dry	12.9, Oiled	12.9, Dry
M6	8,4	9,4	12	13,4	14,6	16,3
M8	21	23	28	32	34	38
M10	40	45	56	62	68	76
M12	70	78	98	110	117	131
M14	110	123	156	174	187	208
M16	169	190	240	270	290	320
M20	330	370	470	520	560	620
M22	446	497	626	699	752	839
M24	570	640	800	900	960	1080
M30	1130	1260	1580	1770	1900	2100

Metric coarse thread, zinc-treated (Dacromet/GEOMET):

STRENGTH CLASS:

M - thread	10.9, Oiled	10.9, Dry	12.9, Oiled	12.9, Dry
M6	12,0	15,0	14,6	18,3
M8	28	36	34	43
M10	56	70	68	86
M12	98	124	117	147
M14	156	196	187	234
M16	240	304	290	360
M20	470	585	560	698
M22	626	786	752	944
M24	800	1010	960	1215
M30	1580	1990	1900	2360

Descriptions of assemblies and functions



Item	Designation
1	Frame
2	Operator's platform
3	Driver's seat
4	Drive wheel
5	Chassis leg

Item	Designation
6	Swivel-mounted chassis leg
7	Milling depth indicator
8	Water tank
9	Water spraying system
10	Protective roof (O)
11	Upper conveyor (O)

Machine description
Construction

Frame and assembly: Robust, vibration-resistant steel welded design with useful brackets for supporting the assemblies, units, attachments and tanks.
All parts can be easily accessed for maintenance and repair work.

Operator's control station: The operator's control station, conveniently located at the rear of the machine affording good all-round visibility, can be reached via a ladder and is equipped with a driver's seat on the right-hand side.

From the operator's control station on the right-hand side of the machine, the planer is easy and safe to operate, affording good visibility and corresponding ease of monitoring for the milling process.

Controls at operator's control station:
A convenient operating and control element comprising all the requisite switching and display elements.

The securely arranged controls are obviously marked for all applications.

The steering system involves the use of a steering wheel while traction is controlled by means of a drive lever.

All requisite machine settings such as milling depth and slope control can be performed comfortably from the operator's control station.

Access to all major switching and connection points, as well as to all maintenance locations, can be locked.

Engine: The machine is fitted with a powerful 4 cylinder Cummins turbo diesel engine which effortlessly covers the power requirements of this planer.

The emissions values specified by the U.S. EPA exhaust standard and the European exhaust standard, TIER 3, are observed. The engine covers are insulated from noise as standard, enabling noise emissions to personnel and the surrounding area to be reduced to a minimum.

Milling assembly: The powered milling drum is located between the two rear chassis legs. The right-hand chassis leg can be swivelled in front of the milling drum.

The milling drum rotates in the opposite direction to the machine's direction of travel.

The speical-purpose bit arrangement equipped with the best bits ensures rapid and clean milling as well as high bit life.

On the standard drum, with a milling width of 500 mm, bits can be replaced via the rear milling drum flap, thereby keeping downtime to a minimum for replacement purposes.

The milling drum is bolted to the housing of the mechanical drive and can be replaced easily and quickly after swivelling aside the right-hand housing plate.

Milling depth control: milling depth control is performed hydraulically, and separately for each chassis leg.

To the left and right sides of the operator's control station are two clearly legible milling depth indicators.

Traction unit, steering system, travel drive, brake: The machine equipped with two front wheels, the suspension ensures that the vehicle is always supported on the ground in an optimum manner with the help of a parallelogram-shaped component.

The right-hand chassis leg can be swivelled in front of the milling drum.

The hydraulic all-wheel travel drive has continuously variable adjustment across two speed ranges. The hydraulic travel drives are connected to the wheel hubs by means of planetary gears. This ensures optimum traction and high gradeability.

A multi-disc brake on the rear wheel acts as brake.

Water system: The water system comprises a water spraying and cooling system. The water spraying and cooling system operates in the low pressure range. This system is used to cool and rinse clean the milling bits, and to keep down dust.

The spraying nozzles can be easily replaced.

The water tank has a large capacity and is filled from the top or from the bottom (pressure filling).

Loading unit (O): The cold planer attachment is designed as a rear-loading unit and features a one-piece load transfer system.

Final loading of milling material occurs from the upper conveyor to the transport container or some other loading area outside the milling lane. The belt is wide and its transport speed can be varied. As part of this process, the operating speed of the upper conveyor can be varied across an infinite range from zero to maximum setting.

The belt can then be changed quickly and easily.

The height of the upper conveyor can be adjusted hydraulically over a wide range of heights and the conveyor can also be swivelled to quite a sharp angle on both sides.

The full-length cover substantially reduces the dust burden.

The upper conveyor can be dismantled / assembled very rapidly and can be erected on four integrated legs.

As an option, a short version of this loading belt can be supplied which can be used for application such as the conveying of milling material straight into the shovel on a wheel loader.

Hydraulic system: The drive unit, actuator and steering system are operated by independent hydraulic circuits ideally suited to the machine.

Electrical system: 24 volt system with two in-line cold-start high-performance batteries and a 3-phase alternator.

The power supply can be interrupted to ground / earth by the battery's main switch.

Machine description

Identification

Product identification number on the frame

Fig. PIN Front frame

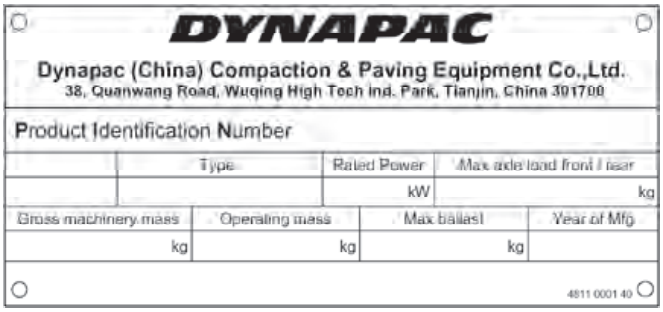
The machine PIN (product identification number) (1) is punched on the front right-hand side of the frame.

Machine plate

Fig. PL 500
1. Machine plate

The machine plate (1) is fixed to the right-hand side of the frame, by the chassis leg.

The plate gives the name and address of the manufacturer, type of machine, PIN (serial number), operating weight, engine power, axle weight front/rear, and year of manufacture.


DYNAPAC

Dynapac (China) Compaction & Paving Equipment Co.,Ltd.
38, Quanwang Road, Wuqing High Tech Ind. Park, Tianjin, China 301700

Product Identification Number

	Type	Rated Power	Max axle load front / rear
		kW	kg

Gross machinery mass	Operating mass	Max ballast	Year of Mfg
kg	kg	kg	

4811 0001 40

Please state the machine's PIN when ordering spares.

100	00123	V	0	C	123456
A	B	C	D	E	F

Explanation of 17PIN serial number

A= Manufacturer

B= Family/Model

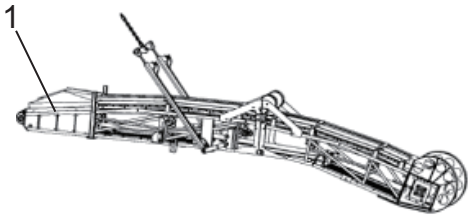
C= Check letter

D= No coding

E= Production unit

F= Serial number

Conveyor plate



The plate (1) shows the PIN of conveyor and conveyor serial number.

Engine plate (IIIA/T3)

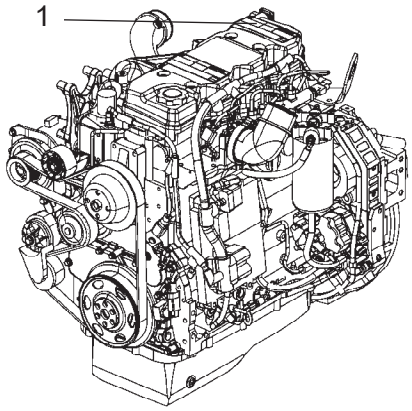


Fig. Engine
1. Type plate

The Engine type plate (1) is located on the cylinder head cover and is accessible when the hood is opened.

The type plate is also placed under the machine plate on the top step to the operator platform.

The plate specified the type of the engine, its serial number and the engine specification. Please specify the engine serial number when ordering spares. Refer also to the engine manual.

Decals

Positioning of labels, right-hand side

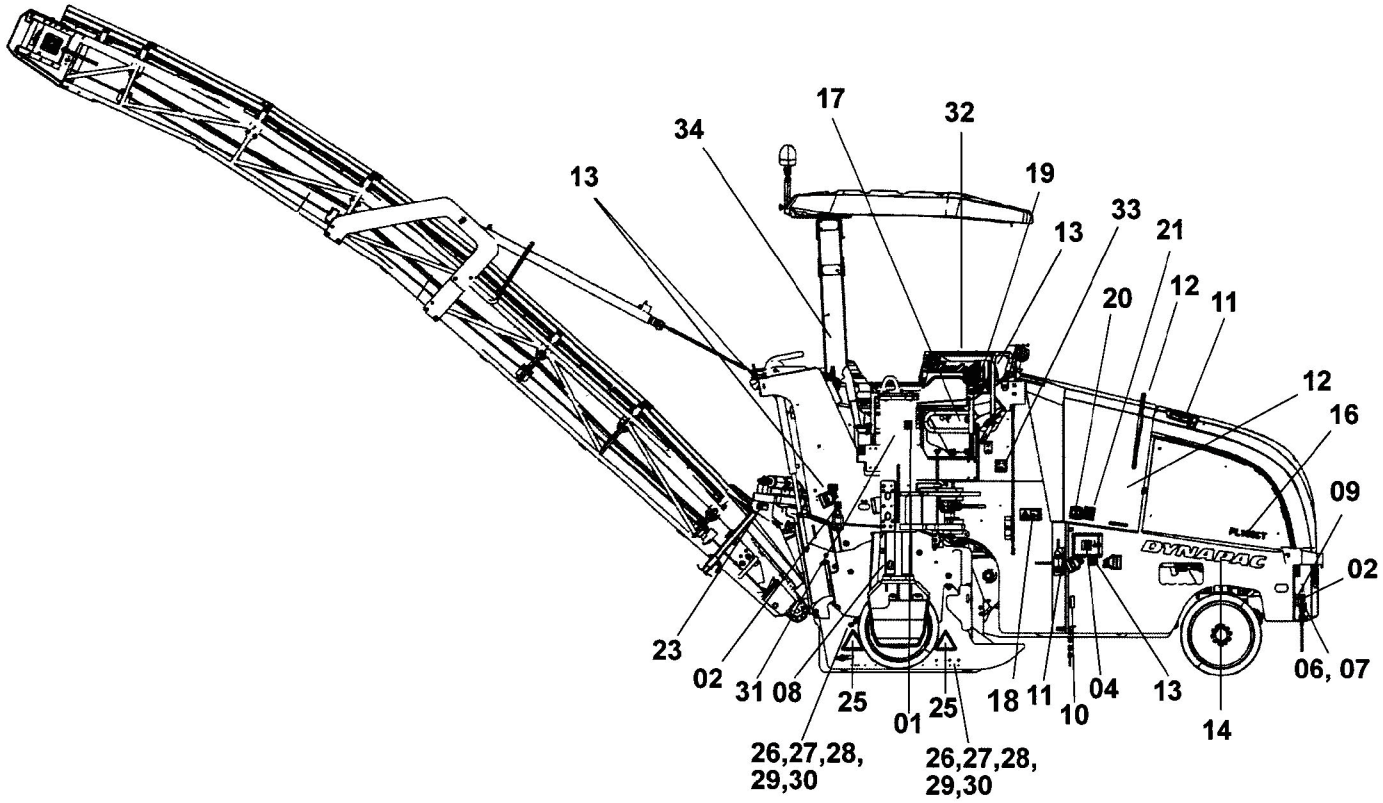


Fig. Location, decals and signs

1	4700357587	Decal "LIFT POINT"
2	4700382751	Decal "TIE DOWN POINT"
3	4700904835	Decal "BATTERY POWER"
4	4700991658	Decal "FUEL"
5	4700272373	Decal "HYDRAULIC OIL LEVEL"
6	4700904870	Lifting data plate
7	4700624016	Blind rivet
8	4700377742	Reflector, red
9	4700377743	Reflector, white
10	4700377744	Reflector, yellow
11	4700991657	Decal "WATER"
12	4700791642	Safety decal, starting fluid
13	4700393959	Battery voltage, 24V
14	4700904268	Dynapac template, red
	4700904093	Dynapac template, white
15	4700904263	Dynapac template, red
	4700904096	Dynapac template, white
16	4812116276	Model code, white PL1000T
	4812116277	Model code, red PL1000T
17	4700903425	Decal Instruction book holder
18	4700903422	Safety decal, crushing zone
19	4700903459	Safety decal, read instruction manual
20	4700903832	Safety decal

Positioning of labels, left-hand side

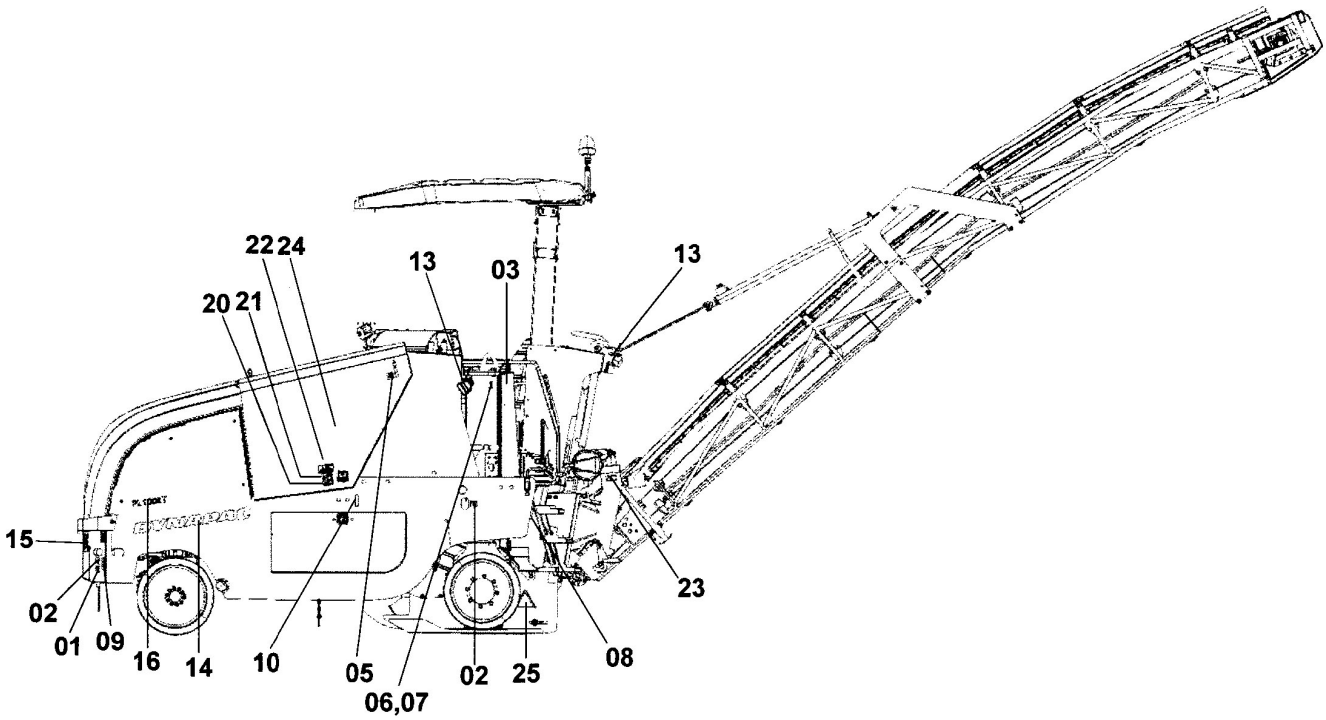
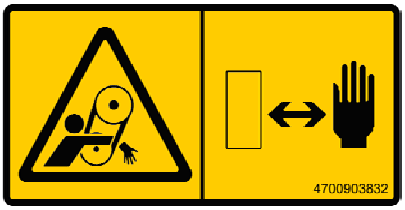


Fig. Location, decals and signs

21	4700903424	Safety decal, hot surface	28	D956052026	Decal, milling depth 16 cm
22	4700904895	Safety decal, brake release	29	D956053006	Decal, milling depth 20 cm
23	4700904785	Safety decal, risk of crushing	30	D956053007	Decal, milling depth 30 cm
24	4700388449	Decal "ENGINE COOLANT FILL"	31	D956052020	Safety decal, tip over
25	D956052007	Safety decal, milling drum	32	4700281898	Decal "EAR PROTECTION"
26	D956053004	Decal, milling depth 4 cm	33	4700791278	Decal "SOUND POWER LEVEL"
27	D956053005	Decal, milling depth 10 cm	34	4700904785	Safety decal, risk of crushing

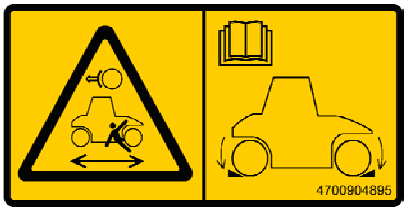
Safety decals

Always make sure that all safety decals are completely legible, and remove dirt or order new decals if they have become illegible. Use the part number specified on each decal.



4700903832
Warning - Rotating engine components.

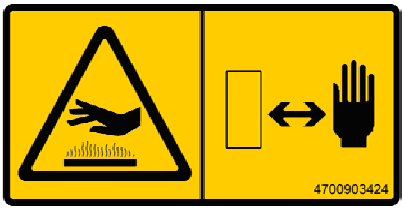
Keep your hands at a safe distance from the danger zone.



4700904895
Warning - Brake disengagement

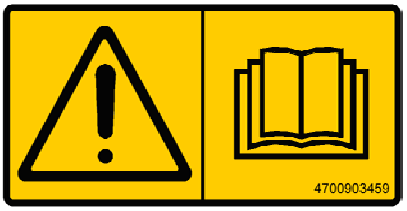
Study the towing chapter before disengaging the brakes.

Danger of being crushed.



4700903424
Warning - Hot surfaces in the engine compartment.

Keep your hands at a safe distance from the danger zone.



4700903459
Warning - Instruction manual

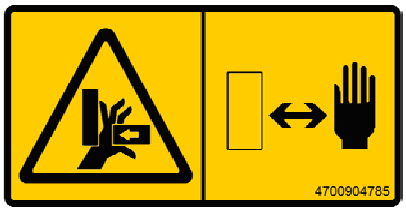
The operator must read the safety, operation and maintenance instructions before operating the machine.

4700791642
Warning - Starting gas

Starting gas is not to be used.

903422
Warning - Crush zone, chassis leg

Risk of personal injury or being crushed. Maintain a safe distance from the crush zone.

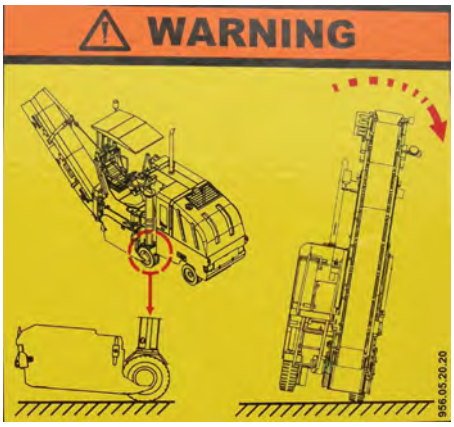


4700904785
Warning - Crush zone

Risk of crush injuries. Keep at a safe distance from risk zone.

D956052007
Warning - Rotating millingdrum

Maintain a safe distance from the risk zone.

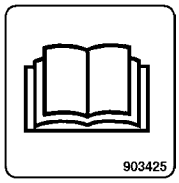


D956052020
Warning - Risk of tipping

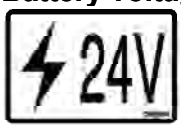
The machine is more instable when chassis leg has been folded in.

Info decals

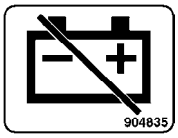
Handbook compartment



Battery voltage



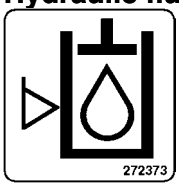
Master switch



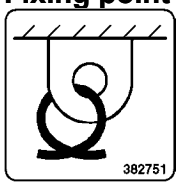
Diesel fuel

Water

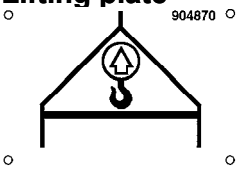
Hydraulic fluid level



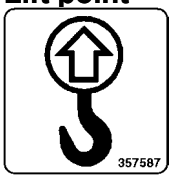
Fixing point



Lifting plate



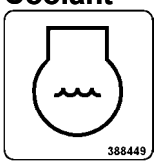
Lift point



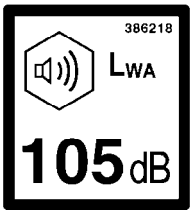
Hearing protection

Milling depth

Coolant



Sound effect level



Instruments/Controls

Control panel and controls

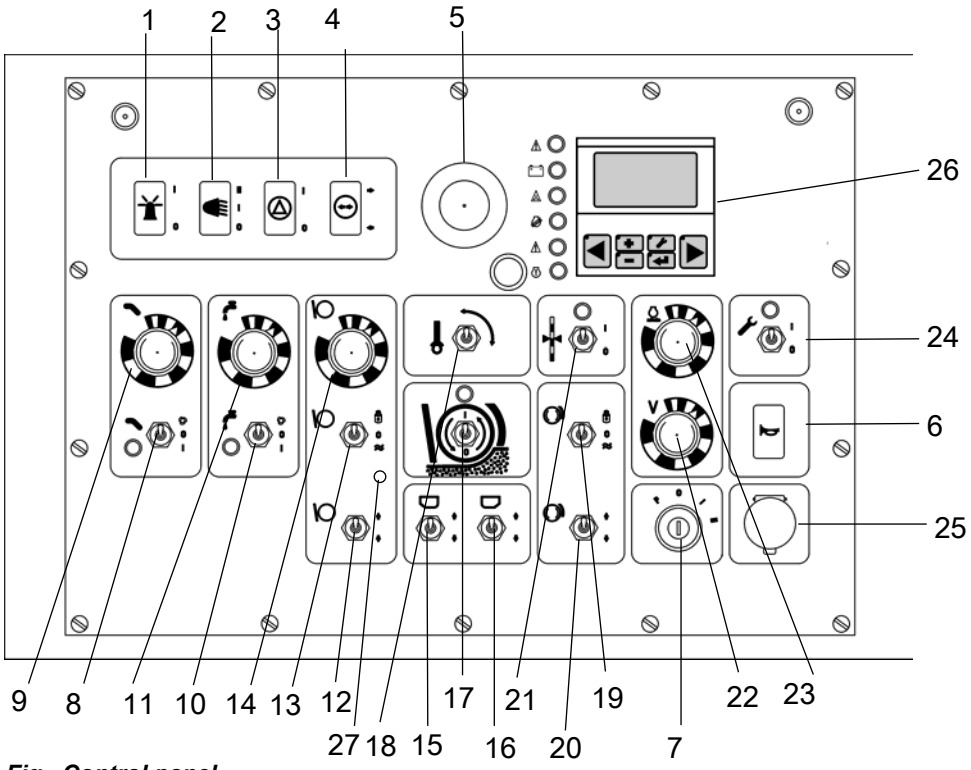


Fig. Control panel

1	Rotating beacon	11	Water volume setting	21	*	Level system OFF/ON
2	Light button	12	Scraper raise/lower	22		Speed limiter
3	Hazard indicators	13	Position selector, scraper	23		Speed control, diesel engine
4	Direction indicator	14	Release pressure, scraper	24		Service switch
5	Emergency stop	15	Left-hand side shield Raise/Lower	25		Power socket, 24 volt
6	Horn	16	Right-hand side shield Raise/Lower	26		Display
7	Ignition lock	17	Milling drum drive	27		Scraper floating model indicator
8	Position setting, conveyor	18	Hydraulic chassis leg IN/OUT			
9	Speed setting, conveyor	19	Position selector, front shield			
10	Position setting, water pump	20	Front shield Raise/Lower			

* Optional

Functional description of control panel

No	Designation	Symbol	Function
1	Rotating beacon		Activate the rotating warning lights by pressing down the switch in position 1.
2	Lights, switch		Position 0 Lights off Position 1: Driving lights (dipped, operating lights) Position 2: Working lights (headlights, dipped, operating lights)
3	Hazard indicators		Activate the hazard lights by pressing down the switch. **The hazard lights can be switched on without inserting the ignition key.**
4	Direction indicators		Shows that the direction indicator is activated.
5	Emergency stop		Switches off diesel engine, drive units and steering.
6	Horn		Press to sound the horn.
7	Ignition key		Position P: Parking lights on. Position 0: The electric circuit is broken. Reserve brake on. Position 1: All instruments and electric controls are supplied with power. Position 2: Start function. **The engine can only be started if the control lever is in neutral, when the cutter drum is not engaged, and when the raise/lower switch is in neutral.**
8	Position control, conveyor belt		Position 0: Belt switched off Position AUTO: The conveyor belt starts automatically if the milling drum and the forward/reverse lever are activated. Position 1: Belt activated. LEDs indicate activation.
9	Setting the speed of the conveyor belt		Variable adjustment of conveyor speed.
10	Position control, water pump		Position 0: Water pump off Position AUTO: The sprinkler system starts automatically if the milling drum and the forward/reverse lever are activated. Position 1: Constant water supply LEDs indicate activation.
11	Setting the water pump		Adjusting the amount of water pumped to the milling drum.
12	Scraper, Up/Down		The scraper is raised/lowered according to the direction the switch is pushed.
13	Position control, scraper		
			Scraper unload pressure. Scraper unload pressure can be regulated to prevent scraper to dig into the ground.

No	Designation	Symbol	Function
			Scraper blocked, stops in set position.
			Scraper in floating position, lowers with its own weight. The floating indicator will be lighted, but toggle switch will go back to the block position. To cancel the floating model, push toggle switch to pressure position, floating indicator turn off, Floating model cancel. Or turn of ignition switch , floating model also be cancel.
14	Release pressure, scraper		Controls the release pressure by which the scraper is flush with the ground. On soft surfaces the pressure against the ground can be reduced to avoid the scraper digging in.
15	Left side shield, Up/Down		The side shield is raised/lowered as long as the switch is activated. The shield lowers automatically when the switch is released.
16	Right side shield, Up/Down		The side shield is raised/lowered as long as the switch is activated. The shield lowers automatically when the switch is released.
17	Milling drum drive		Press the switch to activate the driving of the milling drum. The lamp indicates function selection. Press the switch again to deactivate the milling drum. The machine must not be lowered down so far that the milling drum comes into contact with the surface when starting the milling drum. The driving can only be activated when the working gear is engaged and the control lever is in neutral. LEDs indicate activation.
18	Hydraulic chassis leg IN/OUT		Fold out/in the chassis leg by activating the lever. Before the chassis leg is swung it must be pulled in to the end position towards the machine and the driver seat pushed in. Always use the lock bolt to lock the chassis leg.
19	Position control, front shield		
			Front shield supplied with pressure.
			Front shield blocked, stops in set position.
			Front shield in floating position.
20	Front shield Up/Down		The front shield is raised/lowered when the switch is activated. The shield lowers automatically when the switch is released.
21	Level system OFF/ON		External switch for activation/deactivation of automatic position, levelling system Adjustment with connected levelling equipment can only take place in position 1. LEDs indicate activation.

No	Designation	Symbol	Function
22	Speed setting		Variable adjustment of travel speed. Min. position: Idling Max. position: Nominal
23	Speed control, diesel engine		Variable adjustment of speed. Min. position: Idling Max. position: Nominal Automatic speed control maintains preset value constant during loading.
24	Service switch		Disconnects all machine functions, apart from diesel engine. Disconnects belt tension to milling drum and hydraulic pressure in the system. NOTE: Used during servicing, e.g. when replacing milling teeth or drive belts to milling drum. LEDs indicate activation.
25	Outlet		Extra 24 V outlet.
26	Display		Displaying for instance error codes

Ergonomic panel and controls

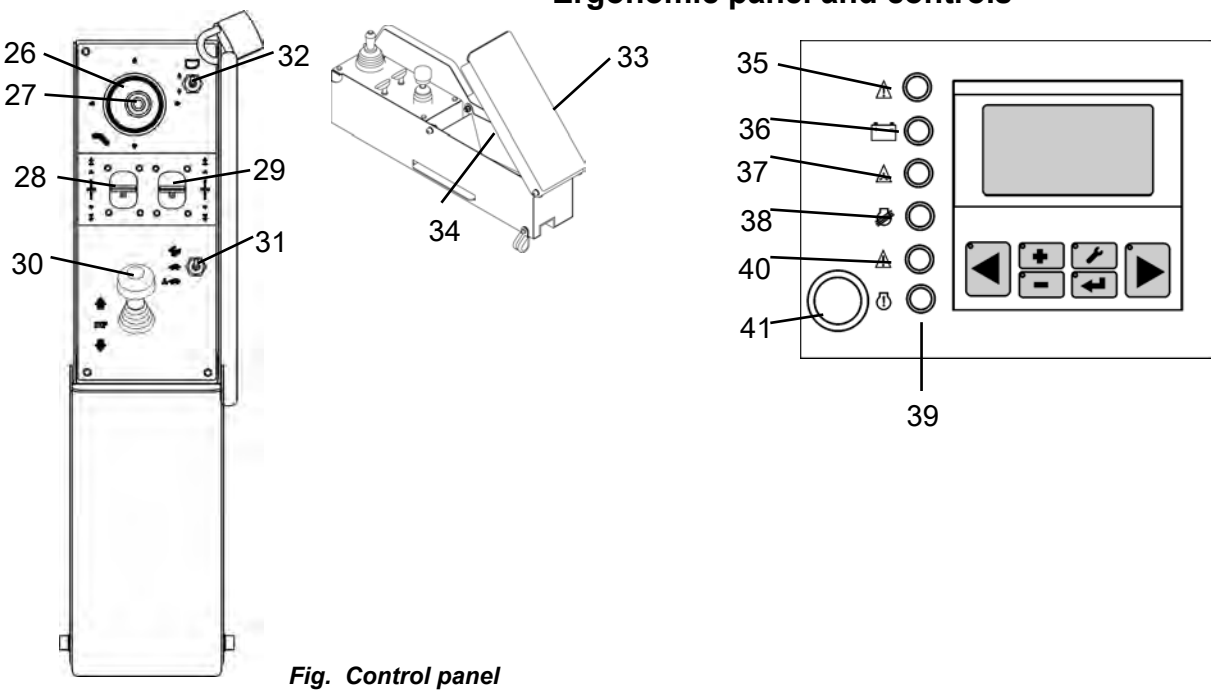


Fig. Control panel

26	Control lever, conveyor	33	Armrest	38	Start inhibitor
27	Horn	34	Vandalism protection	39	Error message
28	Chassis leg, left Raise/Lower	35	Warning lamp, diesel engine	40	Error message + engine stop
29	Chassis leg, right Raise/Lower	36	Warning lamp, battery charging	41	Error code selector
30	Forward/Reverse lever	37	Warning lamp, cooling system		
31	Gear position switch				
32	Right-hand side shield Raise/Lower				

* Optional

Functional description, ergonomic panel

No	Designation	Symbol	Function
26	Control lever, conveyor		Position left/right: Swings conveyor in respective direction. Position Up/Down: Raises/lowers conveyor. Belt moves when lever is held pressed in.
27	Horn		The horn sounds on the conveyor in pressed position. This button is defunct if there is no conveyor (option).
28, 29	Chassis leg, left/right raise/lower		
			Position 1: Slow increase for the machine.
			Position 2: Rapid increase for the machine.
			Position 3: Slow reduction for the machine.
			Position 4: Rapid reduction for the machine. (used, for example, for service switch)
30	Forward/Reverse lever		Forward/Reverse: Variable adjustment of operating speed. Neutral position: The engine can be started on idle. No travel drive, the machine is braked. Max. speed set with the preset control. The lever must be in neutral before the engine can be started; the engine will not start with the control in any other position. The safety catch under the lever knob must be lifted when the lever is moved out of neutral.
31	Gear position switch		Position 1: Transport mode
			Position 2: Working mode
			Position 3: Working gear + differential lock. Used when one of the wheels spins. Switching between work and transport is only possible when the control lever is in neutral.
32	Right side shield, Up/Down		The side shield is raised/lowered when the switch is activated. The shield lowers automatically when the switch is released.
33	Armrest		Can be lifted up. Space for tamper inhibitor for panel.
34	Vandalism protection		The vandalism protection is used to protect the panel, and can be locked with a padlock on the front edge.
35	Warning lamp, function		A flashing code is shown for a function fault.
36	Warning lamp, battery charging		If the lamp comes on when the engine is running, the alternator is not charging. Stop the engine and locate the fault.
37	Warning lamp, fan		A flashing code is shown for a fault in the fan control system.
38	Warning lamp, Start inhibitor		An activated function or pressed emergency stop will not allow the machine to start.

No	Designation	Symbol	Function
39	Engine diagnostic		Red control lamp. Serious fault. Switch off engine immediately! Rectify before restarting. The lamp goes on for a few seconds when the ignition is switched on.
40	Engine diagnostic with engine stop		Yellow control lamp. Less serious fault. Rectify as soon as possible. The lamp goes on for a few seconds when the ignition is switched on.
41	Troubleshooting		Press the button until the three-digit code is shown.

Display

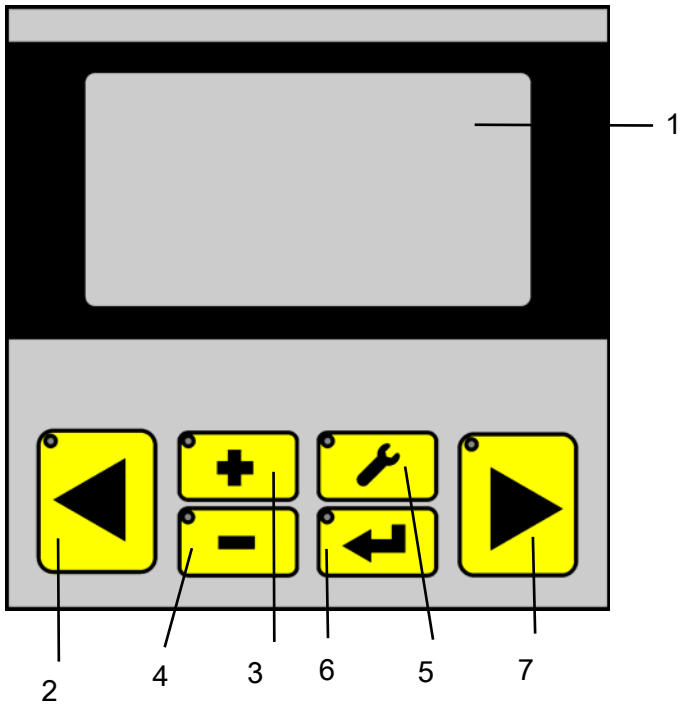


Fig. Display

Function description, Display

Position	Designation	Function
1	Display	Showing display
2	Button "Arrow left"	- Opens previous dialog box - Selection of parameter field
3	Button "Raise value"	To corresponding setting of selected value
4	Button "Lower value"	To corresponding setting of selected value
5	Button, Settings	Password protected
6	Button, Enter	Confirm set value
7	Button "Arrow right"	- Opens next dialog box - Selection of parameter field

Description of Dialog boxes

The dialog box switches automatically to corresponidng side and an error message is shown during a malfunction.

Dialog box 1 Start screen

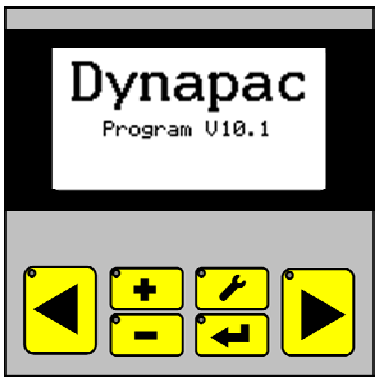


Fig. Dialog box 1

Start image.
After 3 seconds the image changes to dialog box 2.

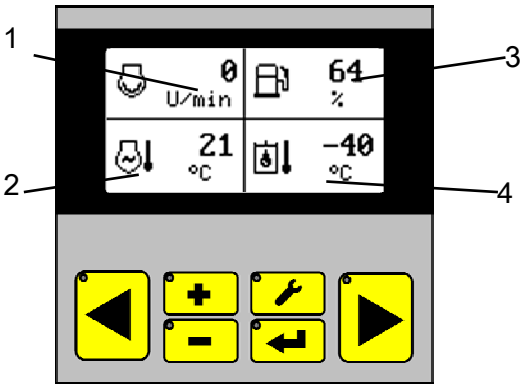


Fig. Dialog box 02

Dialog box 02 Engine

Displaying of following current values:

1. Rpm
2. Engine/Cooling water temperature °C/F
3. Tank gauge %
4. Hydraulic/oil temperature °C/F

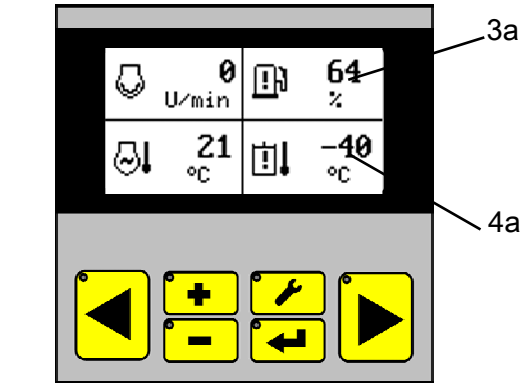


Fig. Dialog box 02, Error message

Displaying of any error messages:

When a fault occurs, this is shown with an explanation mark in the symbol.

3a: Fault in tank sensor (short circuit, defective sensor) or low tank level (less than 15% remaining)

4a: Temperature of hydraulic fluid higher than 100°! Switch off all the hydraulics, except for diesel engine.

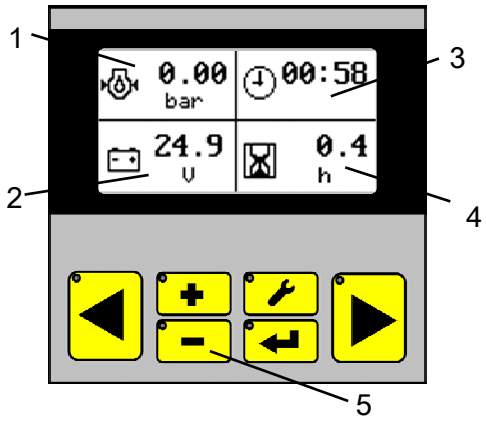


Fig. Dialog box 03

Dialog box 03 Engine

1. Engine oil pressure
2. Battery charging check (V)
3. Time (h)
4. Working hours, counter (h)

Press the "Lower value" button (5) for about 3 seconds to reset working hours to 0.

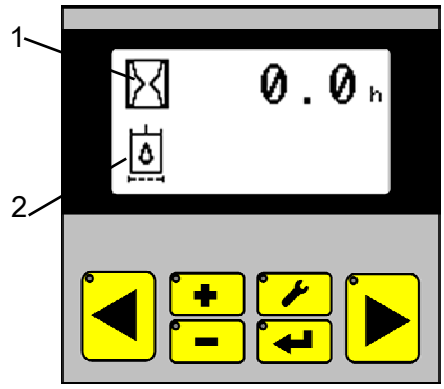


Fig. Dialog box 04

Dialog box 04

Displaying of following values:

1. Working hours, engine
2. Status return filter - suction side

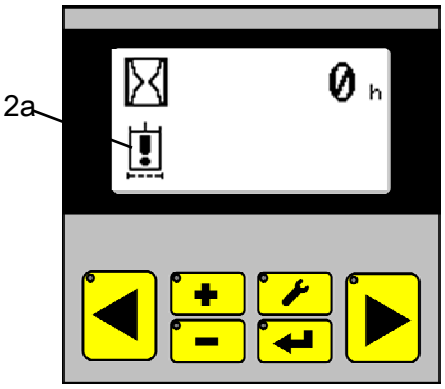


Fig. Dialog box 04, Error message

Displaying of any error messages:

When a fault occurs, this is shown with an explanation mark in the symbol (2a).

The filter must be replaced!

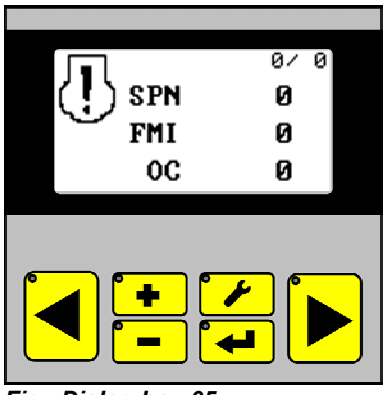


Fig. Dialog box 05

Dialog box 05 Error memory

Display image for error message, engine

Browse with the + and - buttons to see any other current faults.

See "Dialog box 06 Error code engine" for explanation of error codes

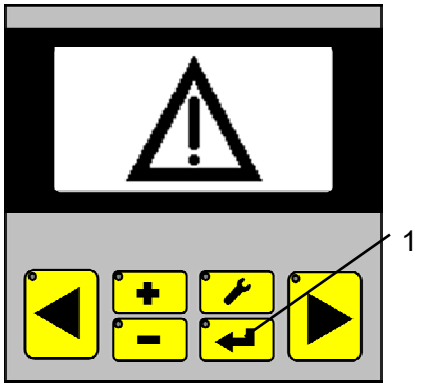


Fig 1. Dialog box 06

Dialog box 06 Error codes, engine

Faults or warnings on the engine are signalled with relevant warning lamp and display.

The engine is switched off automatically is there is a serious fault.

1. Press the "Enter" button to return to error display.

2. Error messages in the display consist of several codes.
For description of codes, see section "Error code, engine"

3. Browse between several received errors with the plus and minus buttons.

Figure 3 is shown if there are no faults.

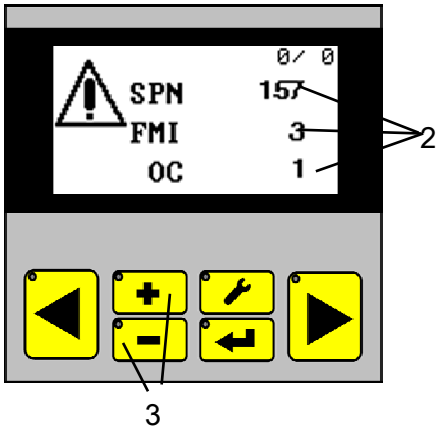


Fig 2. Dialog box 06, Error display

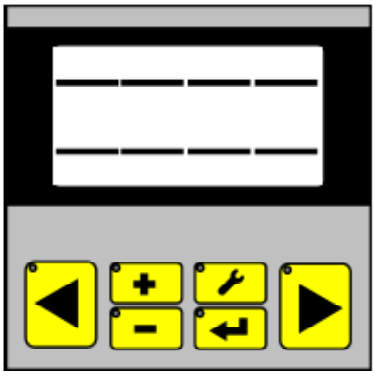


Fig 3. No faults reported

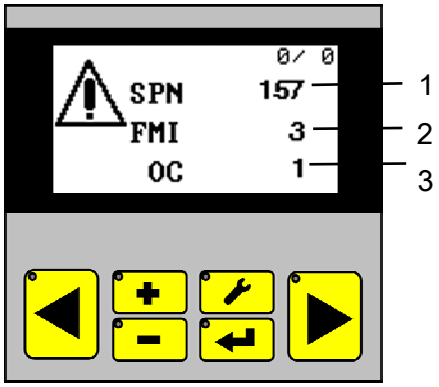


Fig. Error code, engine

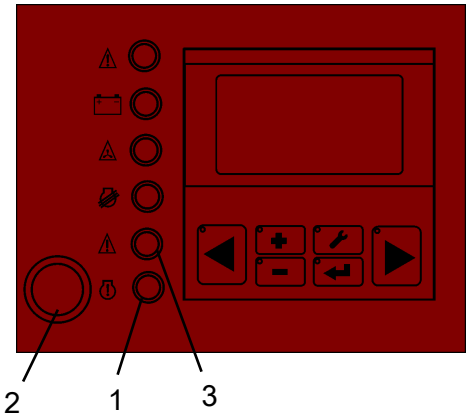


Fig. Error codes, flashing code

Error code, engine

Warning lamp and indicating signal a serious fault on the diesel engine, with automatic stopping of the engine or for the engine to be stopped.

The image is an example of error codes that can be received.

Display:

1. SPN (Cause): 157
2. FMI (Consequence): 3
3. OC (Frequency): 1

Cause: Cable break on sensor for common rail pressure.
Consequence: Engine switched off
Frequency: Fault occurs for first time

Error codes, flashing code

Display of error codes with flashing code is an alternative to error display.

If a fault on the drive engine (1) is indicated, a flashing code can be shown with the help of the fault finder (2). The flashing code is shown on the indicator lamp. (3)

Display of code:

Press the fault finder button until the 3-digit code is shown on the indicator lamp. The warning lamp goes off during the time the fault finding button is pressed.

Example as per diagram:

Flashing sequence: 1 - pause - 5 - pause - 7
Error code: 157

The code is shown again if the fault finder button is pressed repeatedly.

The warning lamp stays on until the fault is rectified.

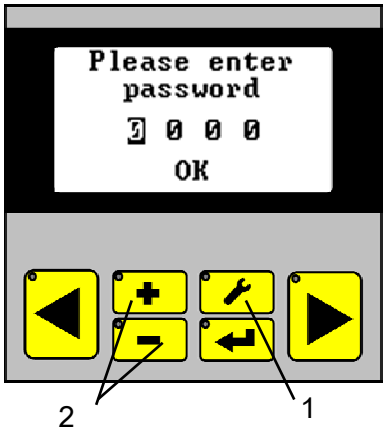


Fig. Dialog box Setup

Dialog box, Password settings

A password is required to continue to the service level.

1. Press the Settings button (1) for 2 seconds to enter password.
2. Enter the 4-digit password using the plus and minus buttons (2). Confirm each number with Enter.
This input must be performed within 20 seconds.

The display is blocked after 2 incorrect inputs. Reset the block with OFF/ON

Fig. Dialog box Setup, language

Dialog box Setup/Settings language

There are 2 languages to choose between:
DE - German. Metric units shown in display.
US - English. Imperial units shown in display.

Basic factory settings: DE

Set the language:

1. Select language by pressing the arrow buttons (1)
2. Confirm with Enter (2).

To exit the service level:
Press the button for 2 seconds.

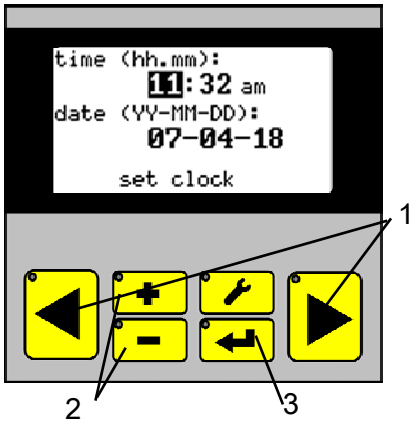


Fig. Dialog box Setup, time/date

Dialog box, Time/date settings

Set the time and date:

1. Select the time or date box by pressing the arrow buttons (1)
2. Set the required value with the plus/minus buttons (2).
3. Confirm with Enter (3).

To exit the service level:
Press the button for 2 seconds.

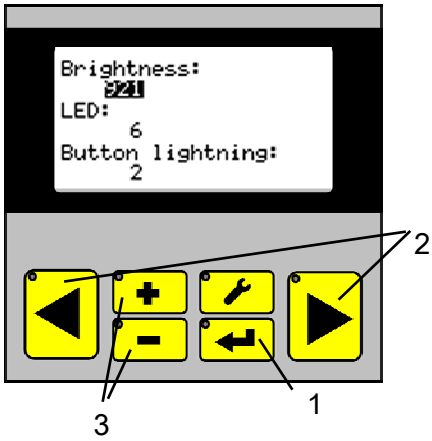


Fig. Dialog box Setup, brightness/lighting

Dialog box, brightness/lighting settings

Set the brightness and button lighting:

1. Press the Enter button (1) for 2 seconds to open the Setup menu.

2. Select the relevant setting with the arrow buttons (2)
3. Set the required value with the plus/minus buttons. (3)
4. Confirm with Enter. (1)

To exit the service level:
Press the button for 2 seconds.

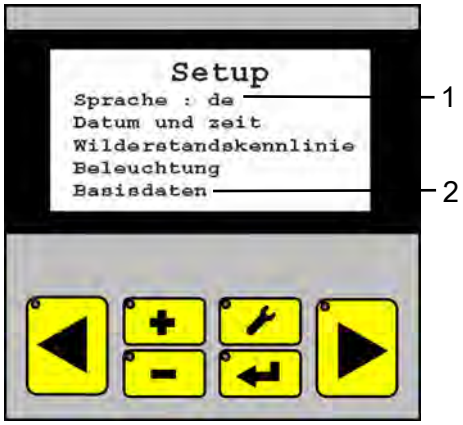


Fig. Setup/Settings language German menu

Dialog box Factory reset

This function is only available in the German menu!

To perform a factory reset:

- If the German menu is not selected: go in under the section "Dialog box Setup/Settings language". Select language DE-German (1).

- Select the menu "Basisdaten" (2) under the section "Dialog box Setup/Settings language".

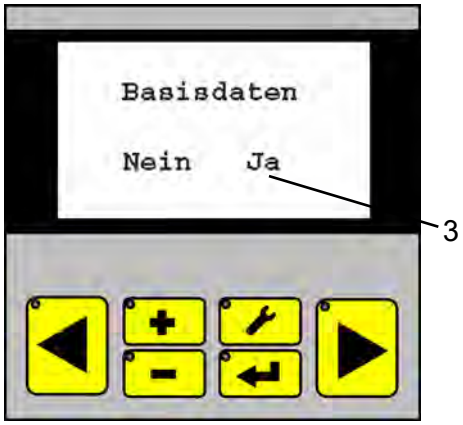
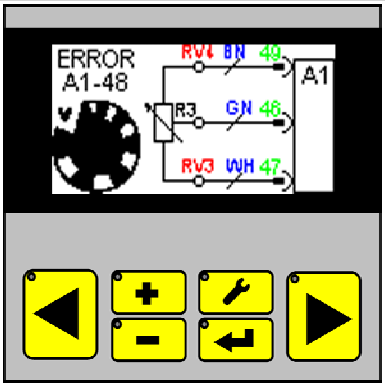
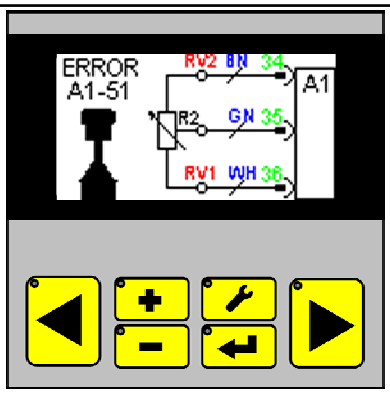
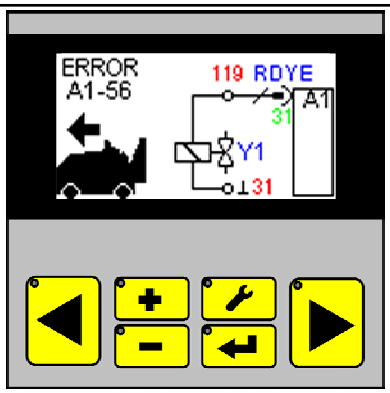


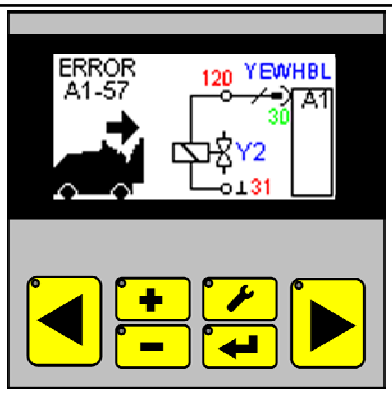
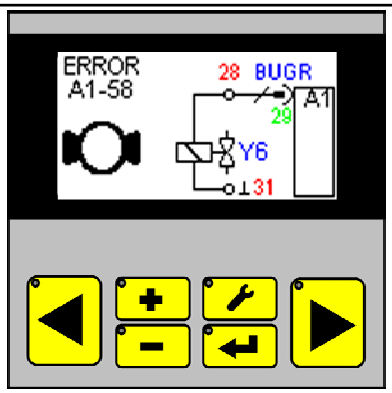
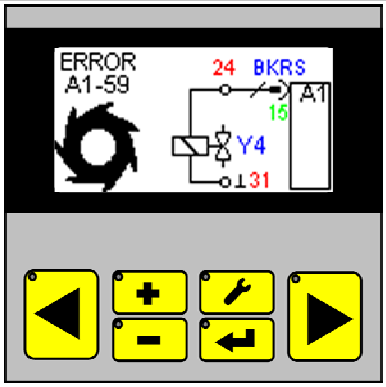
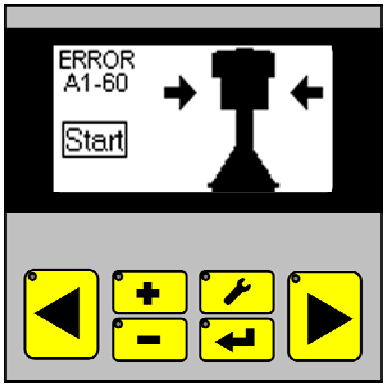
Fig. Dialog box Setup, factory reset

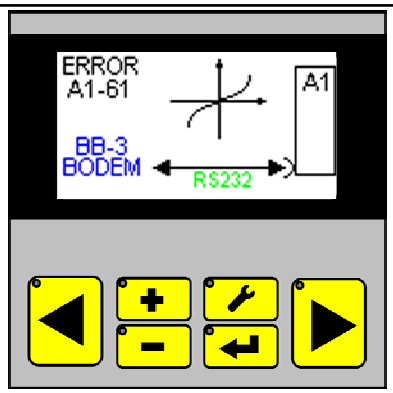
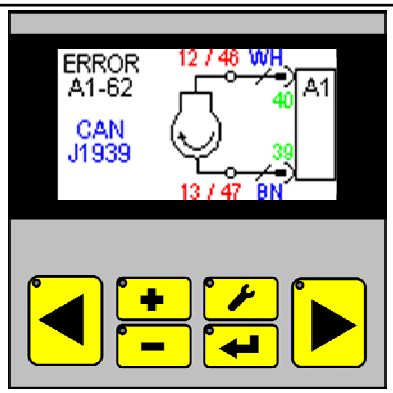
- Select "JA" (3) to perform the factory reset

Description of error codes, dialog boxes

Every fault message has its own error code number. When contacting technical service, specify the error code number and other information from the fault message.

Indication	Error code	Significance
	A1-48	Fault on speed potentiometer
	A1-51	Fault on control lever
	A1-56	Fault in pump, forward drive

Indication	Error code	Significance
	A1-57	Fault in pump, reverse drive
	A1-58	Fault in brake system
	A1-59	Fault in milling drum drive
	A1-60	Control lever not in neutral

Indication	Error code	Significance
	A1-61	CAN error
	A1-62	Communication fault A1 to ECM diesel engine

Electrical system

Electrical system

The electrical control system is protected by 27 fuses and 27 relays.

The exact number depends on how much extra equipment the machine has.

The fuse box and relays are placed behind the instrument panel.

The machine is equipped with a 24 V electrical system and an AC alternator.

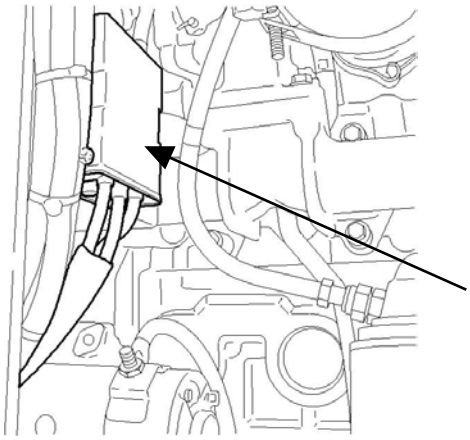


Fig. Engine compartment, positioning of main fuses.

Main fuses

There are four main fuses, located behind the right-hand cover on the engine compartment.

F1.1	Main fuse	50A
F1.2	Starter motor	30A
F1.3	Preheating	100A
F1.4	Main fuse, alternator	100A

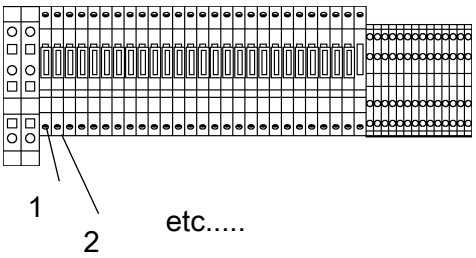


Fig. Fuses on machine

Fuses, machine

The figure shows the different positions of the fuses.

The table below gives the amperage and function of the fuses. All fuses are flat pin fuses.

Fuse boxes:

1.	Display, chassis leg, tip alarm	5A	16.	Parking lights, left + right	10A
2.	Start inhibitor	10A	17.	Service switch, belt tension, flasher unit	5A
3.	Control unit, computer	1A	18.	Working lights	15A
4.	Control unit, computer	10A	19.	Horn	5A
5.	Levelling, external	10A	20.	Diesel engine	1A
6.	Scraper + front shield	10A	21.	Diesel engine	30A
7.	Side shield lock, conveyor belt, chassis leg	10A	22.	Water system	10A
8.	Rotating hazard light	10A	23.	Fan control	5A
9.	Brake	10A	24.	Side shields	10A
10.	Direction indicator	10A	25.	Ignition	40A
11.	Hazard indicator + 24V outlet	10A	26.	Lights, headlight	20A
12.	Dipped light, left	10A	27.	Ignition lock switch	30A
13.	Dipped light, right	10A			

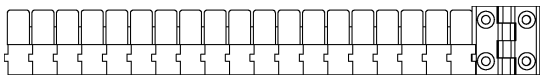


Fig. Relays

Relays, machine

Relays:

K0	Starter motor	K16	Swivel chassis leg (*)
K1	Start activator	K17	Swivel chassis leg (*)
K2	Raise levelling, left	K18	Lifting unit, roof (*)
K3	Lower levelling, left	K19	Auto/Manual, left side
K4	Conveyor belt (*)	K21	Auto/Manual, right side
K5	Water system	K22	Supply current, control unit
K6	Transport/working gear	K23	Emergency stop, Start inhibitor and indication
K7	Reserve	K24	Max. angle, conveyor belt
K8	Brake lights	K25	Speed control, drive signal
K9	Heating	K26	Raise levelling, right
K10	Blinker	K27	Lower levelling, right
K11	Voltage, ignition	K28	Engine speed, potentiometer
K12	Raise scraper	K29	Hazard indicators
K13	Raise front plate	K29	Blinker
K14	Release of conveyor belt/water system		

* extra equipment

Functional description

Safety sensors - scraper

As a safety precaution, there are 2 sensors (inductive sensors) at the rear by the scraper, B9 and B10. If one of the sensors is activated by the rear scraper (or by some other metal), the circuit is broken.

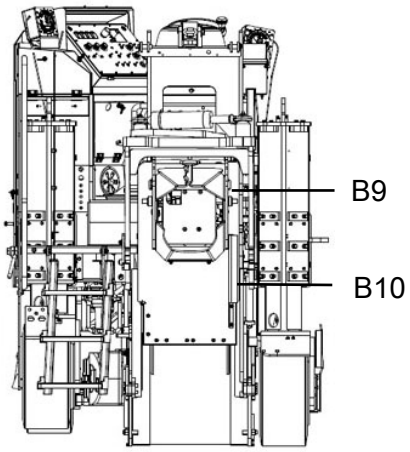


Fig. Machine from back, sensor B9 and B10

Scraper lock - B9

If sensor B9 is activated, it's not possible to move the planer in forward or reverse direction. You can't engage the clutch for the milling drum.

Milling safety - B10

If the scraper is raised and activates sensor B10 during milling, the milling drum stops automatically as

soon as the machine is reversed.

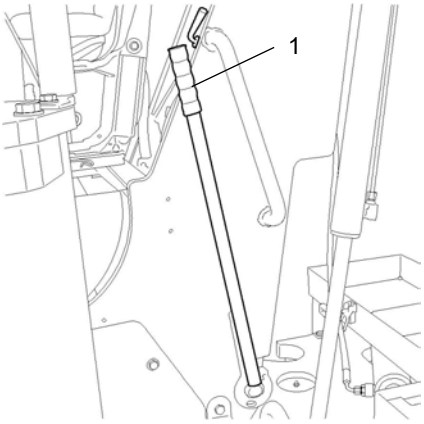


Fig. Locking device, scraper
1. Lock handle

Locking device, scraper

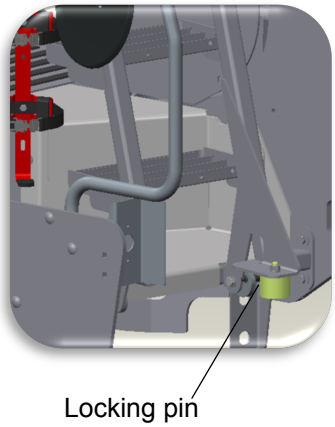
As a safety precaution during maintenance on the milling drum or milling housing, the scraper can be locked automatically in its upper position.
The lock handle is located just to one side behind the driver seat.

To release the catch:

- Press the lock handle to its front position and then lower down the scraper.

Make sure before working that the scaper is secured in its upper position!

The scraper must always be run up to its end position when working on the milling drum or milling housing.



Locking pin, ladder

As a safety precaution during operation or maintenance below the ladder. The ladder can be locked in its upper position and prevent it fall down by gravity.

To release the catch:

Hold the ladder by one hand, release the locking pin by another hand and then lower the ladder.

Make sure before working under the ladder that the ladder is secured in its upper position!

Working lights

There are a number of 24 volt sockets placed around the vehicle frame for working lights.

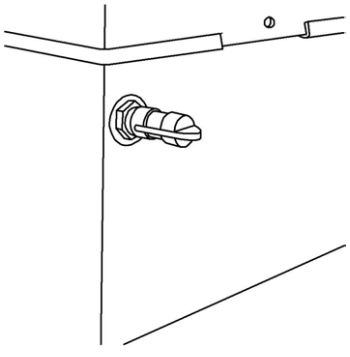


Fig. Working lights

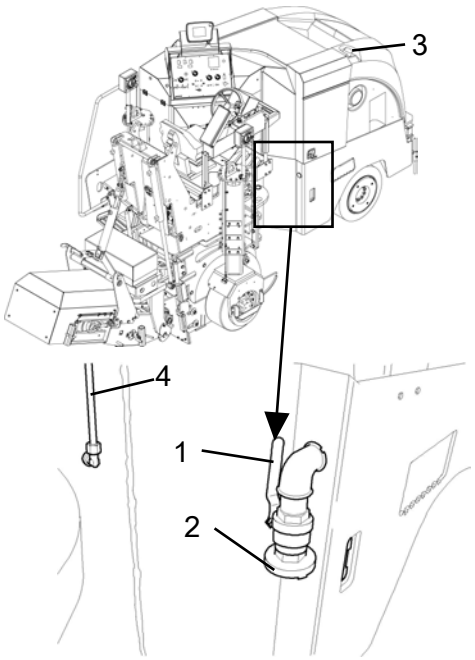


Fig. Water tank
1. Tap
2. Coupling
3. Tank cap
4. Level indicator

Emptying/Filling water tank

Emptying:

- Open the tap (1) and allow all the water to run out. Close the tap afterwards.

Filling takes place via the filler cap (3). Alternatively, filling can be done via a pressure hose.

Filling with pressure hose:

- Connect the pressure hose to the coupling (2) and tighten.
- Open the filler cap (3) for better ventilation.
- Open the tap (1).

Start filling.
- Turn off the tap before removing the hose.

The water level in the tank is shown in the level indicator (4).

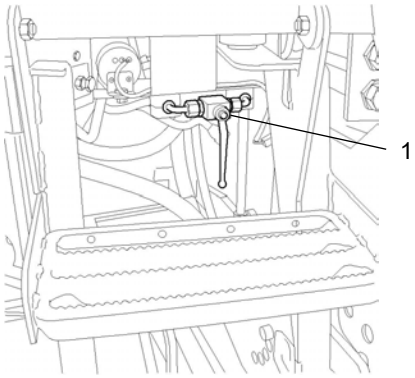


Fig. Freewheel, milling drum
1. Stop valve, freewheel

Stop valve, freewheel, milling drum

The stop valve (1) is used during maintenance work or when replacing milling teeth.

To disengage/lock the milling drum freewheel:

Vertical position: Freewheel locked - Milling position
Horizontal position: Freewheel free - Possible to turn milling drum.

Engine must be switched off when working on the milling drum!

Vandalism protection

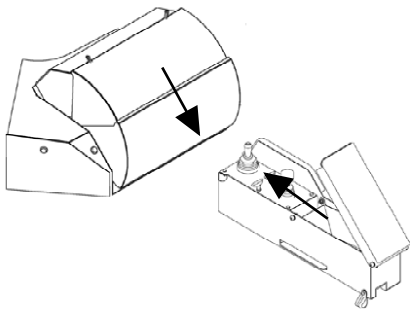


Fig. Example of vandalism protection

There is a vandalism protection on each drive panel. Close and lock after finishing work.

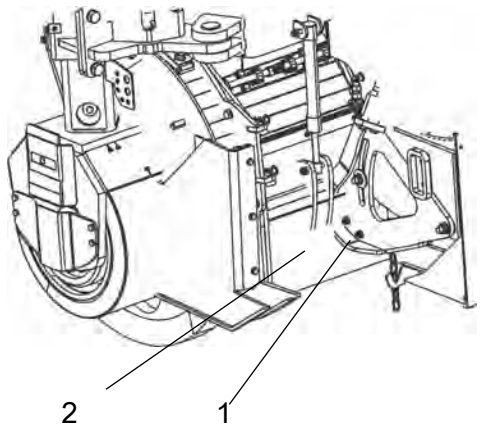


Fig. Milling housing
1. Hydraulic front plate
2. Slide plate

Hydraulic front plate - Milling housing

The hydraulic front plate (1) is located on the milling housing and is operated from the main control panel.

The front plate prevents the spreading of milled material.

When the front plate is set in the "floating" position on the main control panel, the slide plate (2) follows irregularities in the ground and thereby controls the front plate.

Floating mode is recommended when milling.

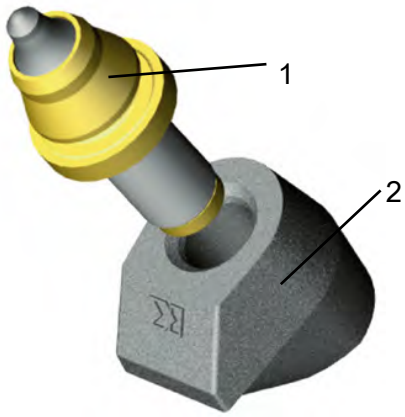


Fig. Quick coupling system
1. Bits
2. Tool holder

Bits - Tool holder

System: C10HD

The double action quick coupling system C10HD consists of:
1. Bits
2. Tool holder

Typical wear marks on tool holder

	New, unused tool holder
	Heavy wear on the tool contact surfaces or wear ring - replace immediately
	Heavy wear on the tool contact surfaces or wear ring - replace immediately
	Heavy wear on sides, replace immediately

Typical wear marks on bits

The condition of bits, wear rings and tooth holders should be checked several times a day. Replace immediately if there are visible signs of wear or damage.

	New, unused milling bit
	Worn milling bit, replace immediately
	Eroded milling bit, replace immediately
	One-side worn milling bit, replace immediately
	Worn milling bit, replace immediately
	Broken milling bit, replace immediately
	Broken milling bit, replace immediately

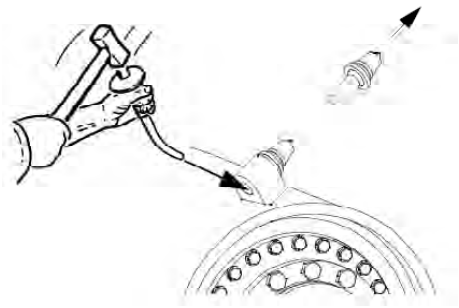


Fig. Removing bits

Bits - Checking - Fitting/Removing

The condition of the bits should be checked several times a day. Replace immediately if there are visible signs of wear, unsusual vibrations during milling or other damage.

Removing of damaged or worn bitl:

Place the hammer punch in the hole on the back of the tool holder and knock out the bit with a hammer.

Clean the holes and contact surfaces before fitting new teeth!

Fig. Fitting bits

Fitting new bit:

- Knock in the new bits in the tool holders with a hammer.

Use copper, brass or plastic hammers!
Steel hammers can damage the tip of the bits!

Make sure after fitting that the bits can rotate and is not jammed = less wear on tool.

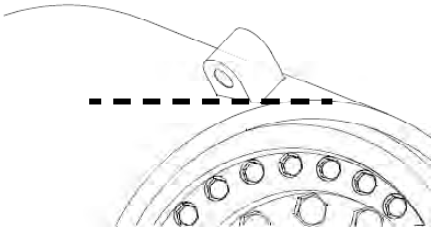


Fig. Cut defective tool holder

Tool holder - Checking/Replacing

The tool holders are only replaced when they are defective.

- Remove the defective holder. Carefully clean the contact surface.

- Place the new holder, with inserted bits, on the drum and weld on.

Make sure the tip of the bit is on the same position as before.

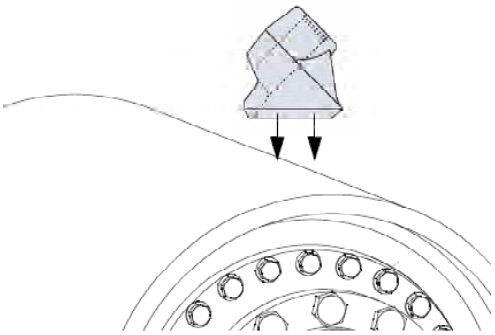


Fig. Position new tooth holder

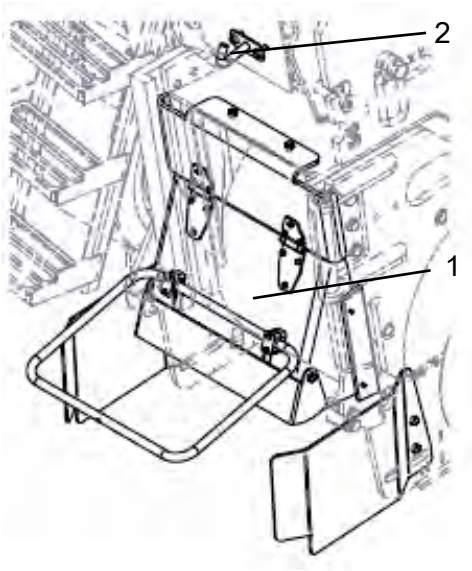


Fig. Milling housing
1. Rear opening door
2. Mounting

Rear door - Milling housing (Option)

This option can only be installed if the machine is not equipped with a conveyor belt.

Instead of the scraper's entire unit, the machine can be equipped with a rear opening door (1). This door is hinged, and during servicing can be opened and hooked in place on a mounting (2).

The door prevents the spreading of milled material.

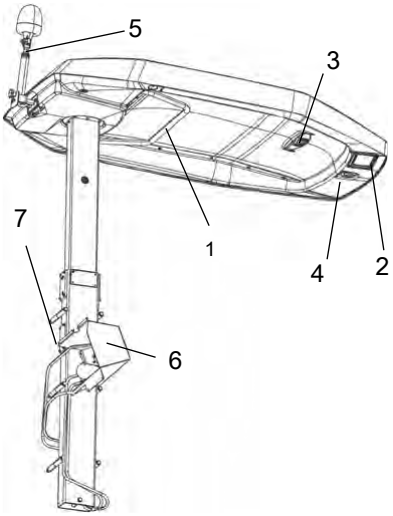


Fig. Roof
1. Handle, sideways movement
2. Working lights 3. Reading light
4. Hook 5. Rotating beacon
6. Power pack
7. Lever, emergency raising of roof

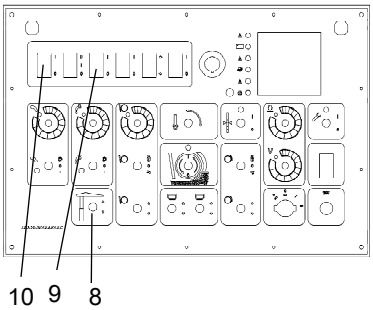


Fig. Control panel 8. Raise/lower roof
9. Working lights 10. Rotating beacon

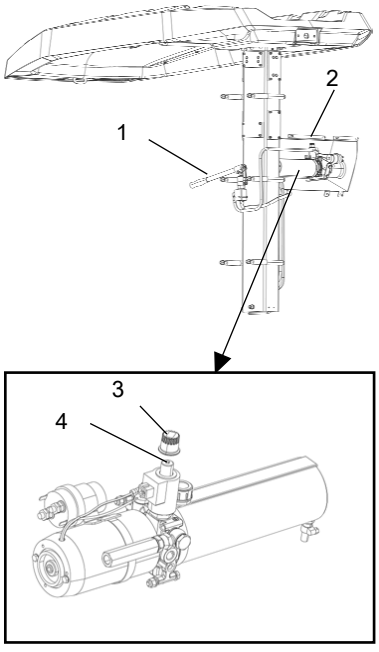


Fig. Roof
1. Lever, manual 2. Protection, powerpack
3. Cap, solenoid 4. Valve

Roof (option)

The roof has two adjustment options, vertical and horizontal:

Press up the handle (1) and push the roof manually to the required position. When the handle is released, the roof is locked in its current position.

Raise/lower the roof with button (8) on the main control panel.

Observe the risk of crushing injuries when folding the roof up/down.

- Working lights (2) are lit with button (9) on the main control panel.

- The reading light (3) is lit at the lamp. 3 positions: Off/on/map lighting

- Hook (4), used during transport to secure the roof in the lowered position.

- Rotating beacon (5). Started on the main control panel (10)

- Power pack (6)

- Lever (7). Manually raising of roof.

Raise/lower the roof manually

If required the roof can manually be raised/lowered.

Raise the roof manually:

- By manually pumping the lever (1), the roof will raise.

Lower the roof manually:

- Unscrew protection for powerpack (2).

- Unscrew the solenoid cap (3).

- Use a screwdriver to push the valve (4) down and keep it in position while pumping the lever (1) at the same time, the roof will lower.

- Refit the solenoid cap and the protection for powerpack after use.

Oil level must be between 1/2 and 1/3 while roof in lower position.
Make sure there is no more oil inside.

Operation

Before starting

Checks before starting

Before starting the diesel engine:

- Remember to carry out daily maintenance. See the maintenance instructions.
- Walk round the machine and check that there is no visible damage or leakage.
- Check the safety and protection devices.

Master switch - Switching on

Remember to carry out daily maintenance. Refer to the maintenance instructions.

The battery disconnector is placed behind the driver seat. Turn the key to the On position. The planer is now supplied with power.

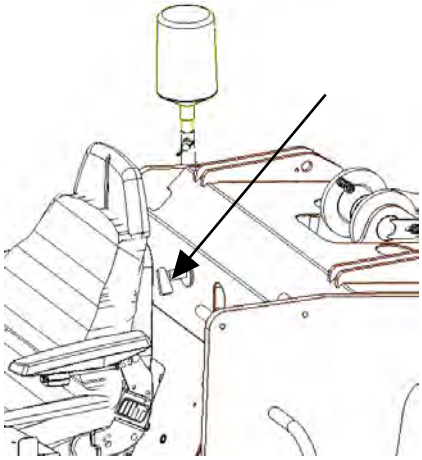


Fig. Battery disconnector

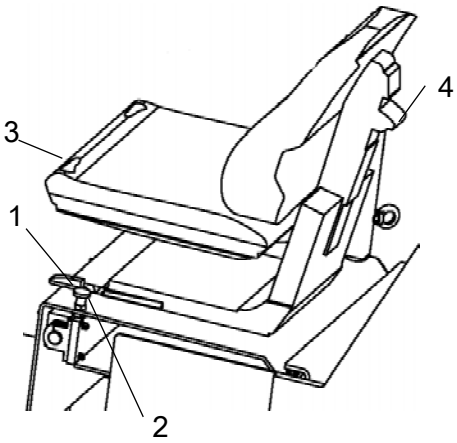


Fig. Driver seat
1. Lock lever - Length adjustment
2. Lock screw - Side adjustment
3. Weight adjustment
4. Backrest lifting

Operator's seat - Adjustment

Adjust the operator’s seat so that the position is comfortable and so that the controls are within easy reach.

The seat can be adjusted as follows.

- Length adjustment (1)
- Side adjustment (2)
- Weight adjustment (3)
- Backrest adjustment (4)

Always make sure that the seat is secure before beginning operation.

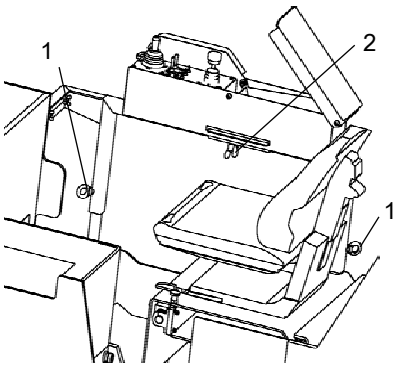


Fig. Control platform
1. Raising panel
2. Mowing panel sideways

Control unit, ergonomic panel - Adjustment

The ergonomic panel has two adjustments, vertically and horizontally.

The panel can be raised by unscrewing the lock screws (1) on the rack, lifting the rack to the required positing and then tightening the screws. The panel can be moved lengthwise by unscrewing the lock screw (2) on the panel, sliding the panel to the required position and then tightening the lock screw.

To adjust the seat, see section for seat.

Adjust all settings when the machine is stationary.

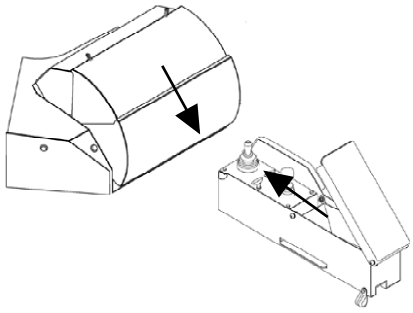
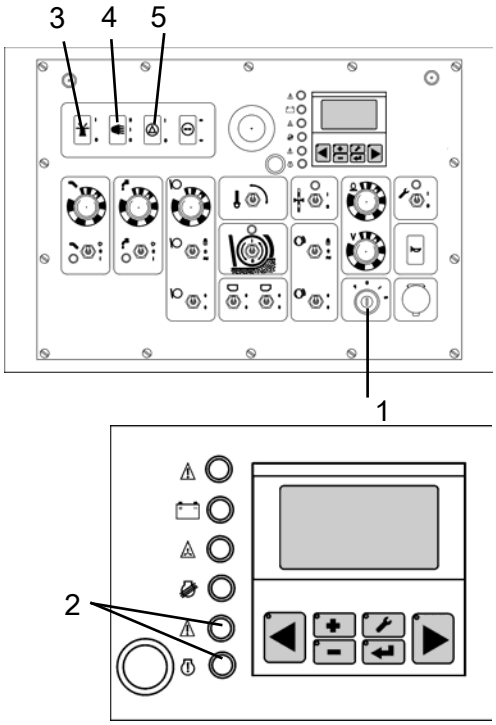


Fig. Example of vandalism protection

Unlock the vandalism protection

Unlock and fold up the vandalism protection on the panels before starting.



Instrument and lamp checks

Turn the switch (1) to position 1 and check that the warning lamps for the engine (2) go on.

Check that the rotating beacon (3), lights (4), and warning blinkers (5) work.

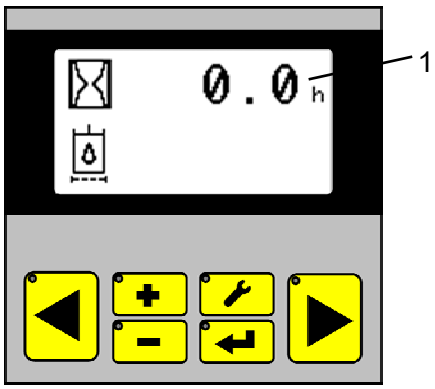


Fig. Dialog box 04
1. Working hours, display

Checking the working hours

Check the number of working hours (1) to see if additional maintenance is necessary.

View

Before starting, make sure that the view forwards and backwards is unobstructed.

Mirrors should be correctly adjusted.

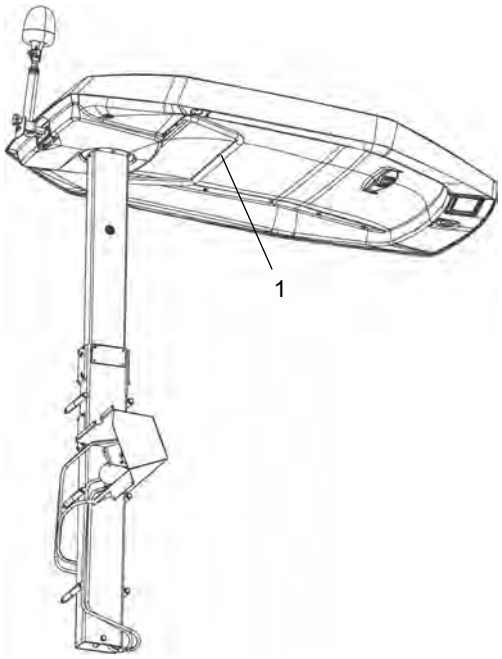


Fig. Roof
1. Lever, sideways movement

Roof adjustment (option)

The roof has two adjustments, vertically and horizontally.

Sideways movement can be performed by pressing up the handle (1) and manually pushing the roof to the required position. When the handle is released, the roof is locked in its current position.

Raise/lower the roof with the button on the main control panel.

Risk of crushing injuries when raising/lowering the roof.

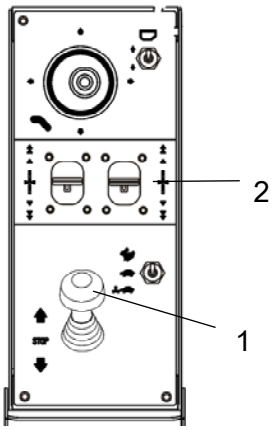


Fig. Ergonomic panel
1. Forward/Reverse lever
2. Height adjustment

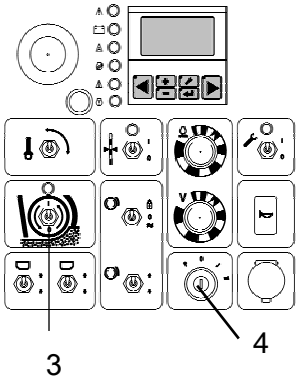


Fig. Right-hand side control panel
3. Milling drum drive
4. Ignition lock

Starting

Starting the engine

Make sure that the emergency stop is not activated.

Put the forward/reverse lever (1) in neutral, making sure that the height adjustment (2) is in the middle position and the milling drum drive (3) in position 0.

The diesel engine cannot be started if the lever is in another position.

Turn the ignition key (4) to position 2 to start the engine. Release as soon as the engine starts.

Do not run the starter motor for too long (max. 30 seconds). If the engine will not start, wait a minute before trying again.

Allow the engine to idle for a few minutes with no load to warm up, longer if the air temperature is below +10°C (50°F). The milling drum should be engaged.

Ensue that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.

When starting and driving a cold machine with cold hydraulic fluid, the braking distance will be longer than when the fluid reaches normal working temperature.

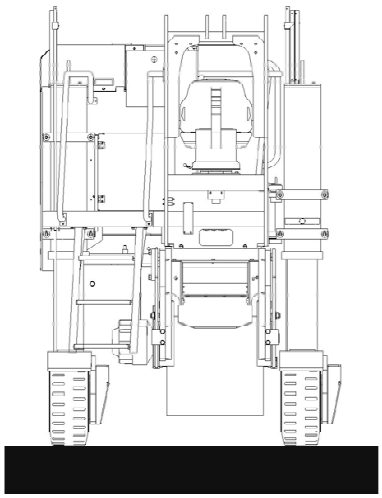


Fig. Positioning

Driving

Positioning

Machine height

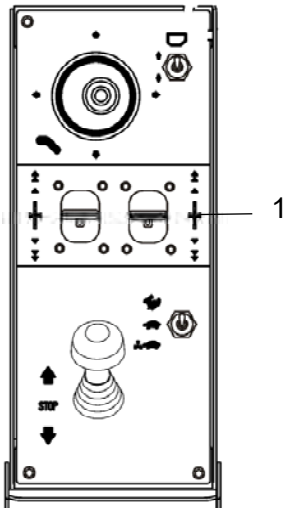


Fig. Control panel
1. Levelling (raise/lower machine)

Driving the machine

Under no circumstances is the machine to be operated from the ground. The operator must be standing on the platform or sitting in the driver's seat at all times when the machine is in operation.

Raise the machine (1) so that the milling drum clears the ground (about 20 cm). Check that the steering is working by turning the steering wheel once to the right and once to the left while the planer is stationary.

Make sure that the work area in front and behind the planer is clear.

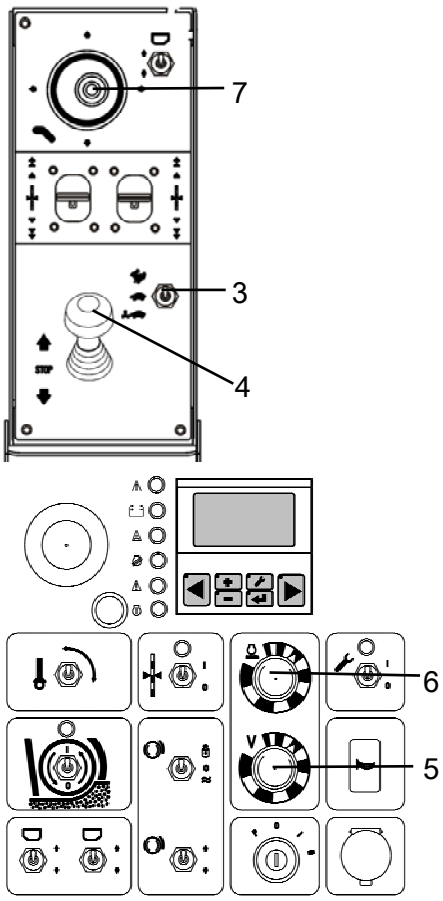


Fig. Control panel, right-hand side
5. Speed setting
6. Speed control diesel engine

- Set the gear position switch (3) in transport mode to move the machine at transport speed.

= Transport gear

= Working gear

The transport gear must only be used when driving the machine on a smooth surface.

- Put the speed control for the engine (6) at full power.

- Adjust to the desired speed with the "Speed setting" knob (5).

- Carefully move the forward/reverse lever (4) forwards or backwards, depending on which direction of travel is required. Note that the safety catch under the control knob must be lifted up to move the control out of neutral!
The speed increases the further the lever is moved away from the neutral position.

- When necessary, steer the conveyor belt with the control lever (7).

The speed should always be controlled using the forward/reverse lever and never by changing the engine speed.

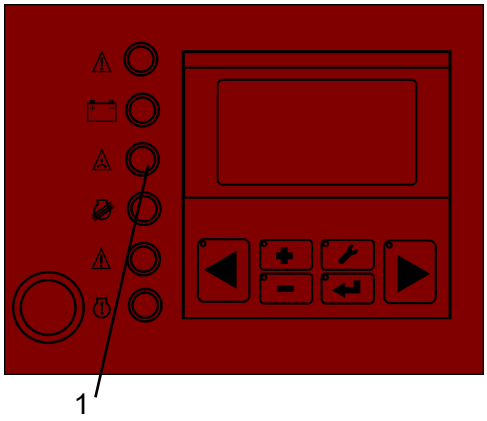


Fig. Panel 1. Warning lamp, air filter

Check while driving that the gauges show normal readings. Stop the planer and engine immediately in the event of abnormal values. Check and correct any faults; see also chapter on maintenance and the engine manual.

If the warning lamp for the air filter (1) goes on while driving (at full speed), the main filter must be cleaned or replaced; see maintenance manual.

Driving on difficult surfaces

Drive wheels

If the machine should get stuck and the wheels start to spin, put the gear position switch (1) in the "differential lock" (2) position.

The control lever must be in the middle position when the gear position switch is changed.

When the machine has regained a hold, return the switch to the original position.

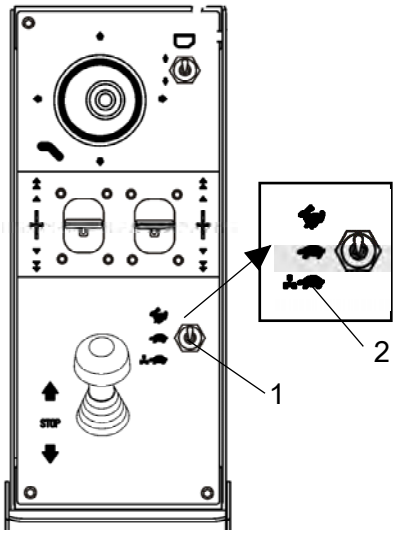


Fig. Ergonomic panel
1 Gear position switch 2. Differential lock position

Swivel chassis leg, hydraulic

The right-hand chassis leg can be folded in to the side of the machine when necessary.

The driver seat must be pushed in when the chassis leg is folded in.

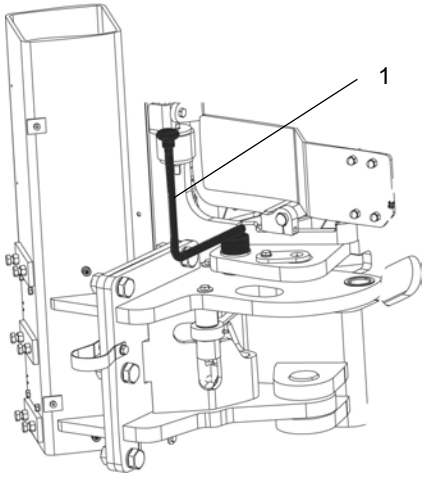


Fig. Swivel chassis leg

Lower the machine to ground level and raise up the chassis leg to the upper position.

1. Pull out the pin (1) and swing the chassis leg towards the machine using the knob (2) on the control panel.

2. Secure the chassis leg and insert the pin again.

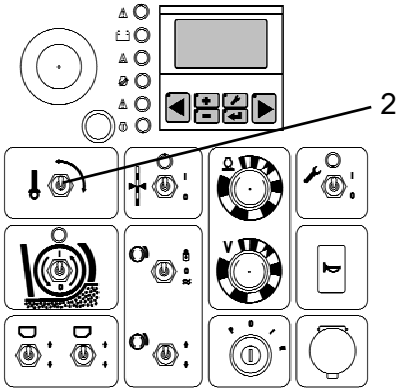


Fig. Control panel, right side
2. Knob, hydraulic chassis leg

Pointer

The pointer is placed on the vehicle frame. In extended position it helps the driver to manoeuvre the machine when milling.
The extension length and depth is adjusted with wingnuts (1).

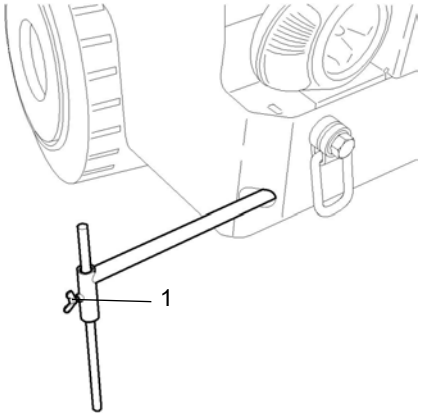


Fig. Pointer
1. Adjusting screw, wingnuts

Milling/Levelling

Milling depth indicator, adjustment

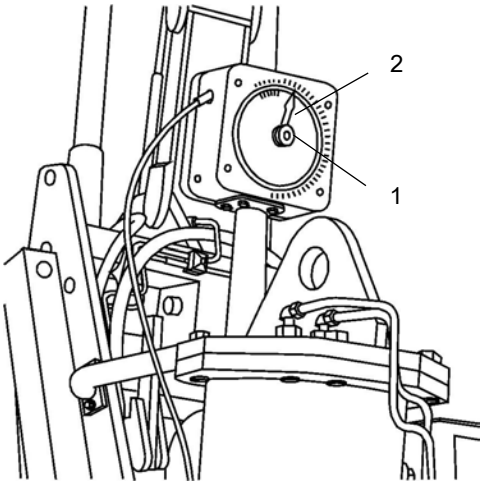


Fig. Milling depth indicator
1. Retaining screw
2. Indicator

There is an adjustable milling depth indicator on each chassis leg.

The right-hand chassis leg's indicator has a scale for the position of both sides:
- Chassis leg extended.
- Chassis leg withdrawn.

Set the required reading on the indicator by releasing the retaining screw (1) and adjusting the indicator (2). Tighten the retaining screw.

The machine must never be reset until individual adjustment can be carried out!

The stroke length for each chassis leg is shown in centimetres and inches.

Indication of milling edge

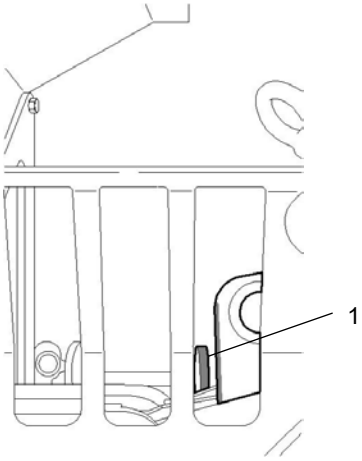


Fig. Milling edge mark

Under the floor by the driver seat there is mark that shows the right-hand milling edge on the machine.

Spirit level

There is a spirit level on the control platform to show the sideways angle of the machine.

The marking (1) indicates the angle on the scale.
The spirit level can be adjusted with the set screw (2).

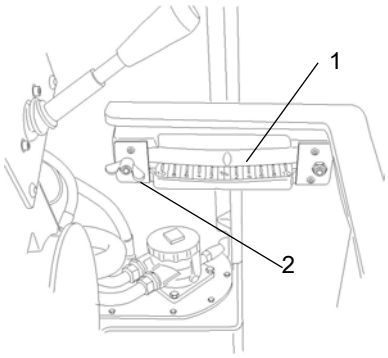


Fig. Spirit level
1. Scale
2. set screw

Manometer, scraper release pressure

The pressure indicator specifies the set release pressure on the scraper.

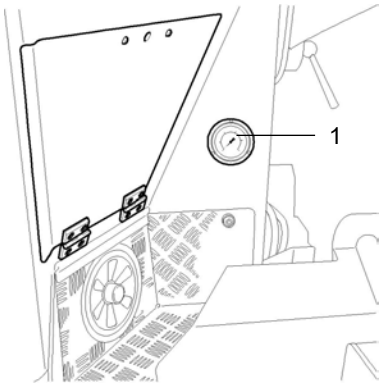


Fig. Manometer, scraper release pressure

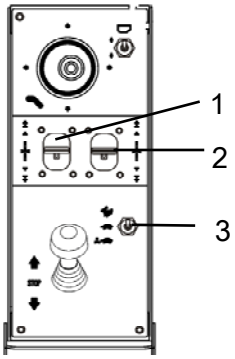


Fig. Ergonomic panel
1. Chassis leg, left
2. Chassis leg, right
3. Gear position switch

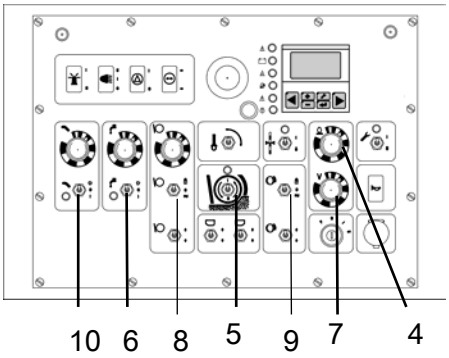


Fig. Control panel
4. Speed control, diesel engine
5. Milling drum drive
6. Water pump
7. Speed setting
8. Position selector, scraper
9. Position selector, side plate
10. Position adjustment, conveyor

Milling preparations

Check that all the hydraulic functions on the machine are activated before milling!

Do not start milling if a warning lamp goes on in the display! Check the fluid level and make sure the hydraulic filter is not contaminated.

If scraper is in upper positoion and sensor B9 is activated, it's not possible to move the planer in forward or reverse direction. You can't engage the clutch for the milling drum.

Activate the following functions on the ergonomic and control panels:

- Put the gear position switch (3) in working mode (tortoise).

- Put the position selector for the scraper (8) in floating mode.

- Put the position selector for the front shield (9) in floating mode.

- Set the speed control for the engine (4) at min. power.

- Put the milling drum drive (5) in the ON position.

- Lower the machine until the milling drum scrapes lightly against the ground with the two switches "chassis leg, right and left" (1, 2).

- Reset the milling depth indicators on both sides.

- Set the speed control for the engine (4) at full power.

- Put the water pump (6) in the AUTO or 1 position.

- Turn the speed control (7) to the required speed.

- Set the position adjuster for the conveyor belt (10) in the AUTO or 1 position. Only applies if conveyor belt is used.

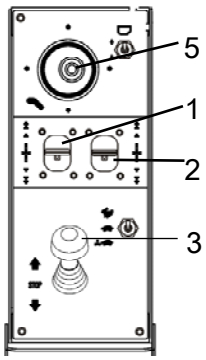


Fig. Ergonomic panel
1. Chassis leg, left
2. Chassis leg, right
3. Gear position switch
5. Control level, conveyor belt

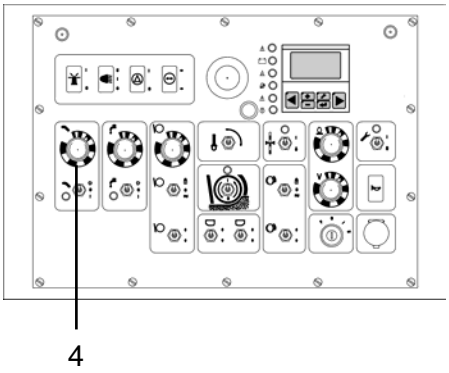


Fig. Left side, control panel
4. Speed setting, conveyor belt

Milling without automatic levelling

When all preparations have been completed the milling can start while the machine is stationary:

- Carefully lower the machine to required milling depth (1, 2). The milling depth is shown on the respective milling depth indicators.

- Move the machine by moving the control lever (3) from neutral.

- Adjust the speed of the conveyor belt if necessary with the preset control (4).

- If necessary, steer the conveyor belt with the control lever. (5)

The sprinkler system and the conveyor belt's automatic functions are engaged when the control lever is activated.

If the scraper is raised and activates sensor B10 during milling, the milling drum stops automatically as soon as the machine is reversed.

Fig. Automatic levelling system Easy Level (option)

Milling with automatic levelling (option)

Dynapac's "Easy Level" levelling system provides automatic control of the milling drum in the vertical plane. The system is optional, and its operation is described in a separate manual for the levelling system.

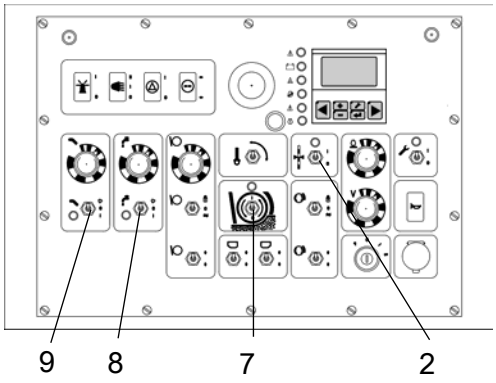


Fig. Control panel
2. Automatic mode
7. Milling drum drive
8. Water pump
9. Position adjuster, conveyor

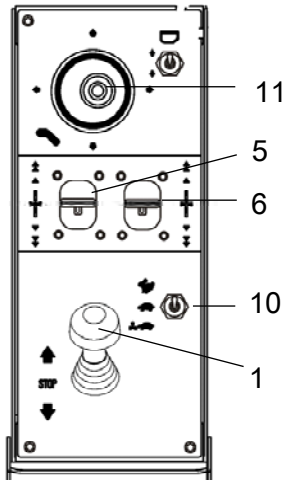


Fig. Ergonomic panel
1. Control lever
5. Chassis leg, left
6. Chassis leg, right
10. Gear position switch
11. Speed control, engine

Stop milling

- Stop the machine and put the control lever (1) in neutral.

- If automatic levelling has been used, swich off this function by putting the Automatic mode switch (2) in position 0.

- Raise the machine level with the switches for chassis leg left (5) and chassis leg right (6) until the requisite ground clearnance is reached.

- Allow the milling drum drive (7), water pump (8) and conveyor belt (9) to run for a few seconds and then switch off these functions.

Drive away from the area:

- Put the gear position switch (10) in transport mode.

Drive the machine forward by moving the control lever (1) slowly forward.

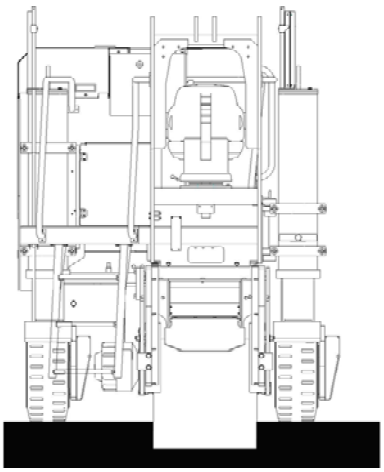


Fig. Milling position

Milling instructions

Milling position

Machine lowered - Milling drum lowered

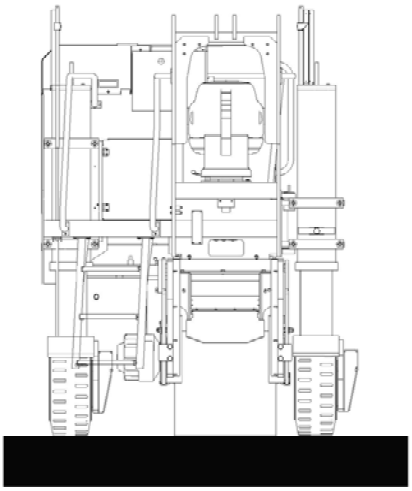


Fig. Resetting

Resetting milling depth

The milling drum is run at low rotational speed.
Lower the drum until the teeth scrape against the ground, along the full width of the drum.
Reset the scale for the milling depth.

Resetting must be performed on both the withdrawn and extended chassis legs. Always reset on a horizontal, not inclined surface.

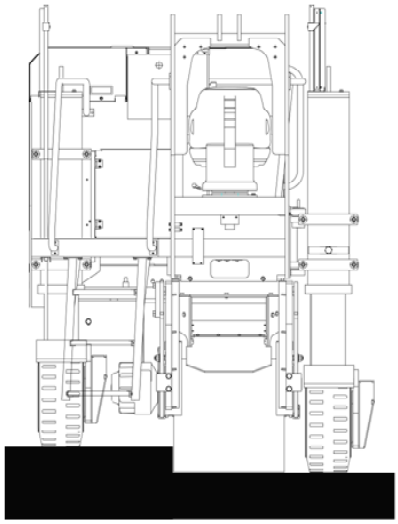


Fig. Surface milling

Surface milling

With extended right chassis leg:

The right chassis leg goes in the already milled and cleaned first track.

Depth setting:
- right = 0
- Left = required milling depth

With withdrawn right chassis leg:

The right chassis leg drives in front of the milling drum when it has still not been milled.

Depth setting:
Same milling depth on right and left side.

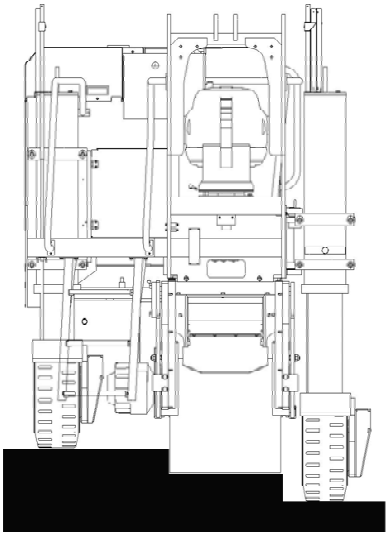


Fig. Milling at edge of roadway or at shoulders.

Milling at edge of roadway or at shoulders.

Depth setting:
- left - required milling depth
- right - required milling depth + shoulder height, alternatively with planer horisontal.

The planer must always be maintained in horisontal position when assuming the milling position!

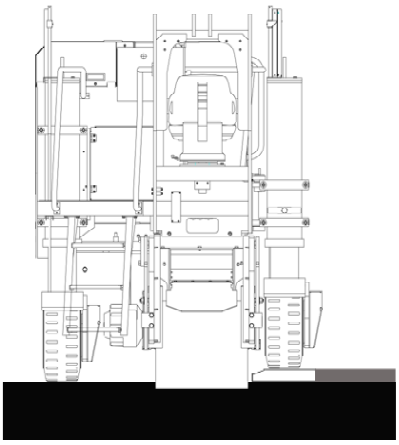


Fig. Milling at curb edge with extended chassis leg.

Milling at curb edge with folded out chassis leg.

Advantages:
- High milling precision
- Precise milling surface
- Direct milling to curb edge is possible.

Disadvantages:
- In some circumstances it is not possible to achieve the required milling depth.

Don’t fold out chassis leg on slope.

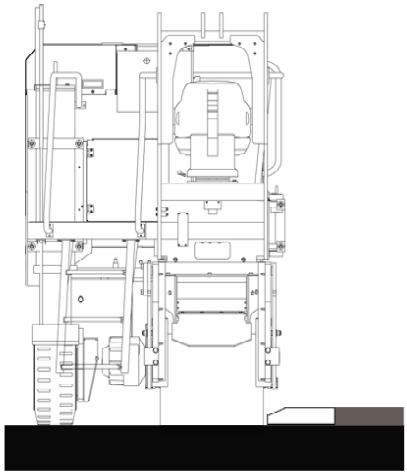


Fig. Milling at curb edge with withdrawn chassis leg.

Milling at curb edge with folded in chassis leg.

Advantages:
- Max milling depth achieved
- Direct milling to curb edge is possible.

Disadvantages:
- Less milling precision.
Machine is very sensitive to irregularities.

Don’t fold in chassis leg on slope.

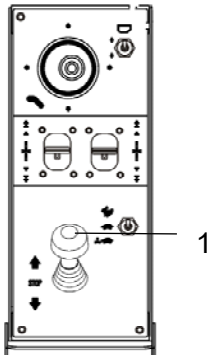


Fig. Ergonomic panel
1. Forward/Reverse lever

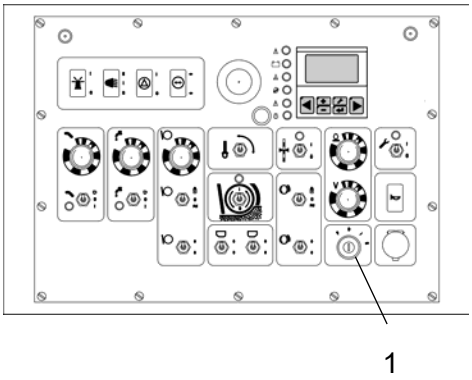


Fig. Control panel
1. Ignition lock

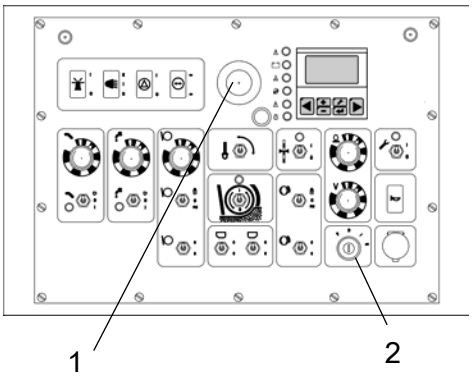


Fig. Control panel
1. Emergency stop
2. Ignition lock

Breaking

Normal braking

The control lever (1) is normally used to brake. The hydrostatic transmission brakes the machine when the lever is moved to neutral.

Parking brake

Setting the control lever (1) in neutral stops the machine and activates the parking brake (Multi-disc in rear motor).

Secondary brake

Turn ignition key (2) to 0 position. The diesel engine stops, the hydrostatic transmission brakes and the Multi-disc in the front motor actuates.

Turn the ignition to position "II" to start up the diesel engine.

Emergency braking

For emergency braking, press the emergency stop (1), hold the steering wheel firmly and be prepared for a sudden stop. The engine stops.@@ @@

When emergency stop is activated: The diesel engine stops, the hydrostatic transmission brakes and the Multi-disc in the rear motor actuates.

After emergency braking, turn ignition key (2) to position "II" to start the diesel engine.

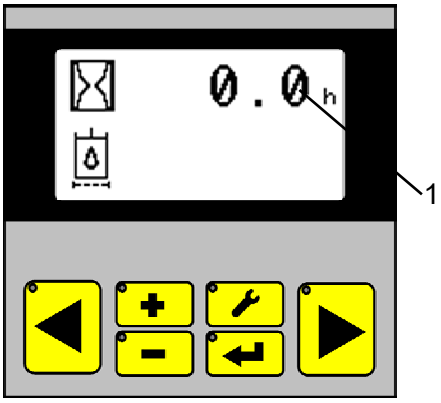


Fig. Display, hours of operation

Parking

Parking/Switching off

Always park the machine on the most level surface.

Lower the machine until the milling drum almost touches the ground. Make sure that the side plates and scraper touch the ground.

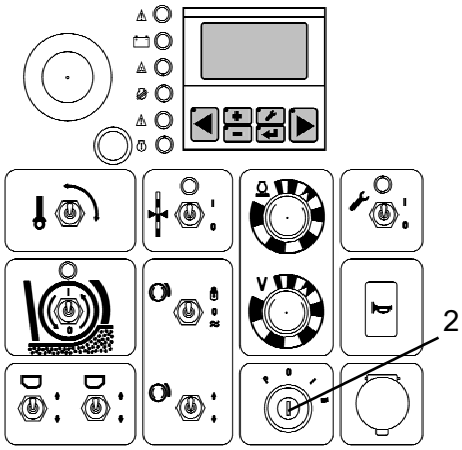


Fig. Right side, control panel
2. Ignition lock

Before leaving the machine:

- Read off status for working hours (1) and check if any maintenance is need before switching off the machine.

- Switch off the engine and pull out the ignition key. (2) Close the tamper inhibitors and lock.

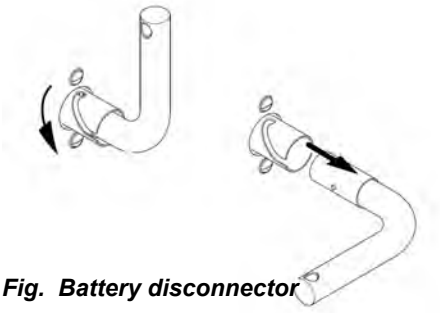


Fig. Battery disconnector

Master switch

At the end of the shift, switch off the battery disconnector and remove the key.

This will prevent battery discharging and will also make it difficult for unauthorized persons to start and operate the machine. Lock the service doors/covers.

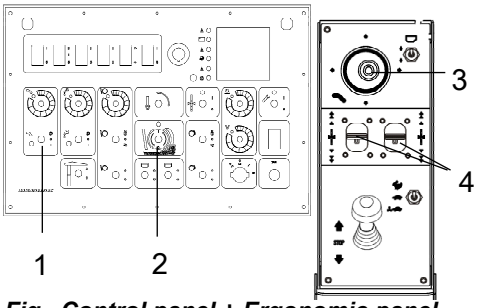


Fig. Control panel + Ergonomic panel
1. Position setting, conveyor belt
2. Milling drum drive
3. Control lever, conveyor belt
4. Lever, raise the machine

Uncouple of conveyor - rigid

The surface where the conveyor is to be placed should be as flat as possible.

- Raise the machine to its uppermost position (4)

- Lower the conveyor (3) until its outermost point is on the ground.

The position setting for conveyor (1) and milling drum drive (2) should be disconnected (position 0) when uncouple the conveyor!

- Fold out the support legs (5)

- Lower the machine with the control lever (4) until the conveyor is stable on the support legs.

- Fold up the cylinder supports using lever (6)

- Disconnect the lifting cylinder (7) from the machine frame, insert the cylinder, control lever (3)

- Release the 4 couplings (8) from the hydraulic circuit and fit the protective caps. Disconnect the power.

- Undo the lock (9), carefully drive the machine away from the conveyor.

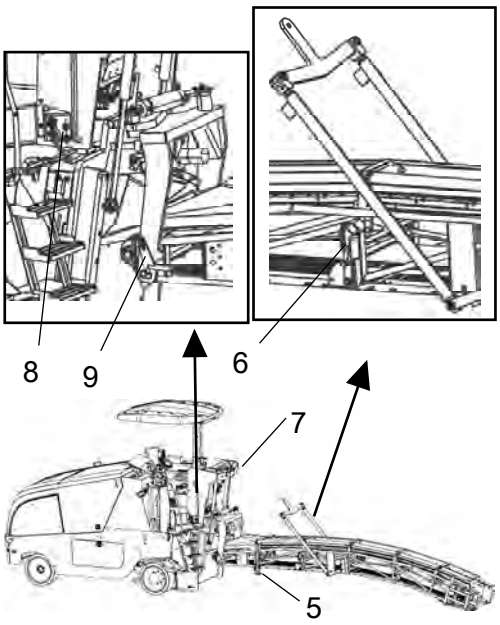


Fig. Conveyor lowered down

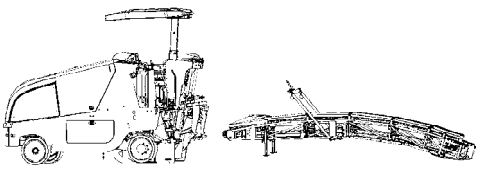


Fig. Conveyor dismantled

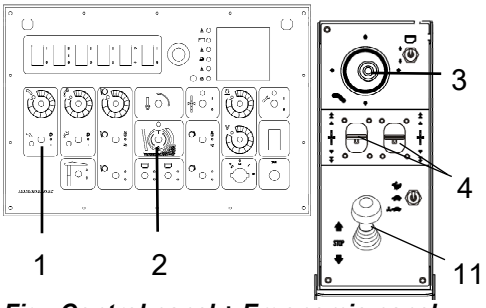


Fig. Control panel + Ergonomic panel
1. Position setting, conveyor belt
2. Milling drum drive
3. Control lever, conveyor belt
4. Lever, raise the machine
11. Forward/Reverse control

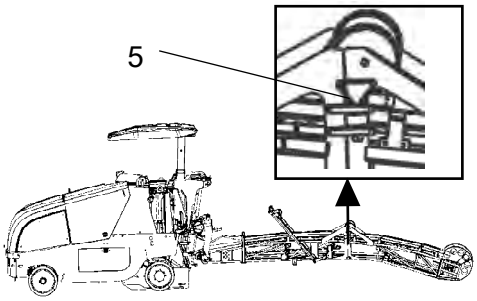


Fig. Conveyor lowered 5. Locking pin

Uncoupling of conveyor - foldable

The surface where the conveyor is to be placed should be as flat as possible.

The position setting for conveyor (1) and milling drum drive (2) should be disconnected (position 0) when uncouple the conveyor!

- Raise the machine to its uppermost position (4)

- Lower the conveyor (3) until its outermost point is on the ground.

- Loosen the locking pin (5)

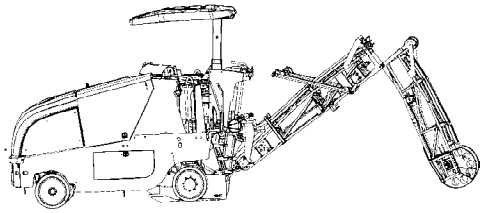


Fig. Conveyor, upper position

- Raise the conveyor, control lever (3) until the conveyor does not fold any more.

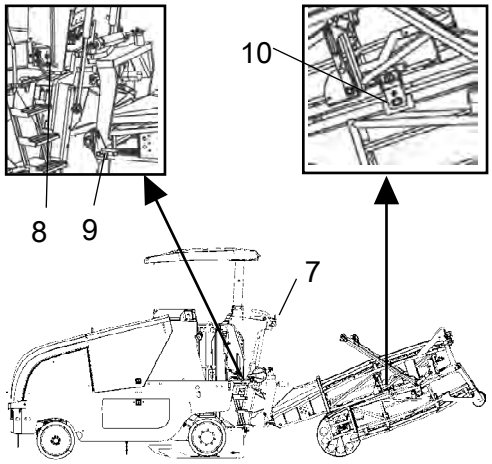


Fig. Conveyor
7. Cylinder
8. Couplings, 4 p.
9. Lock
10. Locking, conveyor

- Lower the conveyor (3), carefully reverse the machine (11) at the same time until the belt is completely folded and resting on the ground.

- Lock the conveyor in position (10). Insert the locking pin.

- Disconnect the lifting cylinder (7) from the machine frame, insert the cylinder, control lever (3)

- Release the 4 couplings (8) from the hydraulic circuit and fit the protective caps. Disconnect the power.

- Undo the lock (9), carefully drive the machine away from the conveyor.

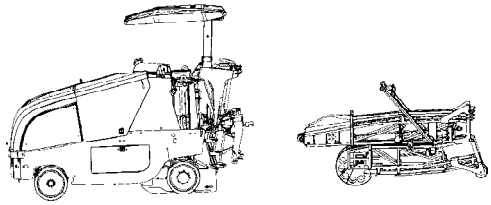


Fig. Conveyor dismantled

Long-term parking

The following instructions should be followed when long term parking (more than one month).

Before using the planer again attend to the the items marked with an * below.

Wash the machine and touch up the paint finish to avoid rusting.

Treat exposed parts with anti-rust agent, lubricate the machine thoroughly and apply grease to unpainted surfaces.

Battery

* Remove the battery from the machine, clean, grease the cable connectors (terminals) and trickle charge the battery once a month. The battery is otherwise maintenance free.

Engine

* See the manufacturer's instructions in the engine manual.

Watering system

* Empty the water tank and all hoses of water. Empty the filter housing and the water pump. Undo all sprinkler nozzles.

See maintenance sections for "Watering system - draining".

Hoods, tarpaulin

* Lower the instrument cover over the instrument panel.

* Cover the entire planer with a tarpaulin. A gap must be left between the tarpaulin and the ground.

* If possible, store the planer indoors and ideally in a building where the temperature is constant.

If the machine is stationary for over 6 months to 1 year the following items must also be attended to:

* Drain off the engine oil and fill the diesel engine with an approved conservation oil.

Fuel tank

Fill the fuel tank completely full to prevent condensation.

Hydraulic reservoir

Fill the hydraulic reservoir to the uppermost level mark (see under the heading ‘Every 10 hours of operation.’)

Miscellaneous

Lifting

Lifting the planer

There are 4 lifting points on the machine by which to lift the machine.

Lifting takes place with a lifting yoke so that the chains/lines are kept vertical.

Dismantle conveyor before lifting.

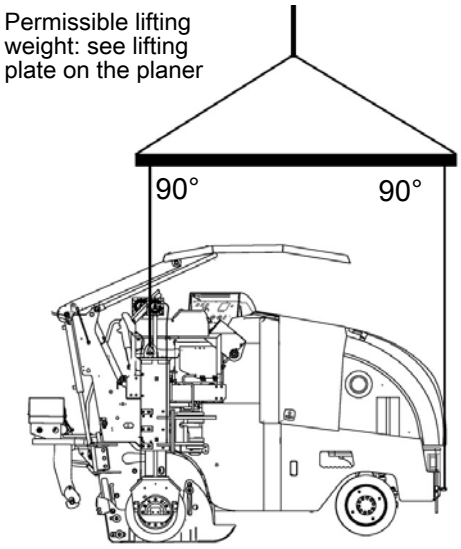


Fig. Machine ready to be lifted, side view

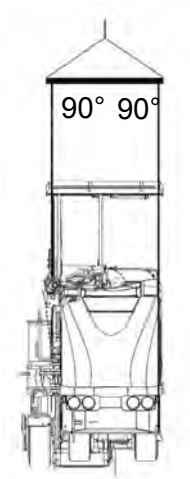


Fig. Machine ready to be lifted, front view

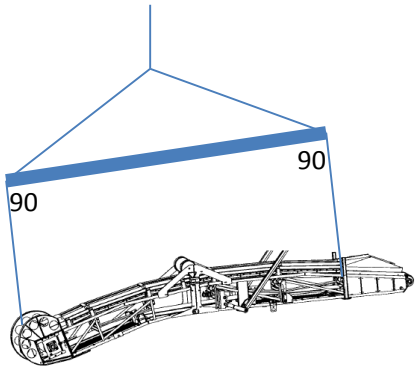
The right chassis leg must be folded out and locked with the pin.

The lifting weight of the machine is shown on the lifting plate on the right front frame and the left rear frame.

Lifting equipment such as chains, steel wires, straps and lifting hooks must be dimensioned in accordance with the relevant safety regulations for the lifting equipment.

Stand well clear of the hoisted machine! Make sure that the lifting hooks are properly secured.

The machine must be held in a horisontal position when lifted!



Lifting the conveyor

There are four lifting holes on the conveyor head and support legs. Attached the lifting yokes to the conveyor, lifting takes place with a lifting yoke chains /ropes are kept vertical.

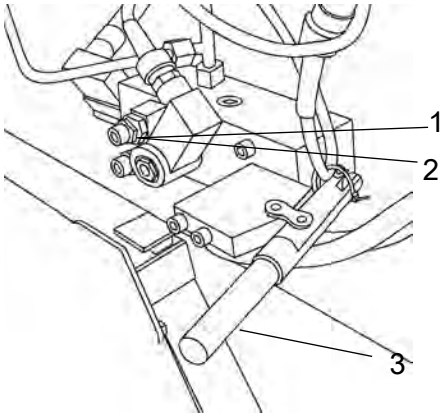


Fig. Brake release valve
1. Lock nut
2. stop screw
3. Pump handle

Towing/Recovery

The planer can be moved up to 300 meters as per the following alternatives.

Releasing the brakes and pump

Chock the wheels to prevent the planer from moving; the machine can start to roll when the brakes are released hydraulically.

The control for releasing the brakes is located on the left side of the machine.

- Unscrew the lock nut (1) on the hand pump and screw in the stop screw (2) as far as it goes. Tighten the lock nut.

Pump with the handle (3) until the brakes are released.

The brakes release at a pressure of 30 bar.

In order to release the drive system during towing, the valve (4) behind the diesel refuelling cover must be opened:

Towing position: Valve in open position (lengthwise)
Operating position: Valve in closed position (see fig. 4)

Reset brake: Undo the lock nut and unscrew the stop screw a few turns. Tighten the lock nut. Set the valve in "Operation" position.

Fig. 4. Ball valve - in closed position

Towing the planer

The planer must be braked on the engine during towing. There is no braking capacity on the planer now.

The planer must be towed slowly, max. 3 km/h, and only for a short distance; max. 300 metres.

When towing a machine the towing device must be connected in 2 eyes.

Recovery/towing in only 1 of the eyes is prohibited!

The tow load must only amount to 4 tonnes per eye.

Transport

Machine prepared for transport

Securing PL500 for loading

Securing the PL500 compact planer from Dynapac for transport.
(The instructions also apply to machine without conveyor.)

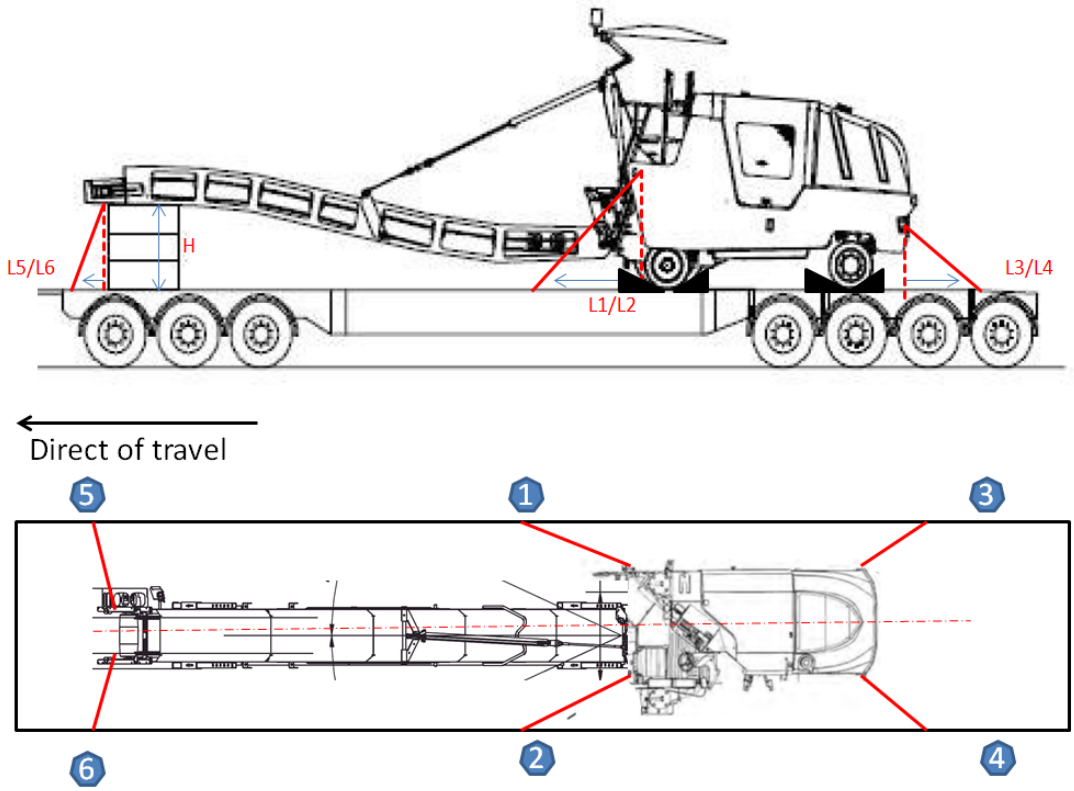


Fig 1

The right chassis leg must be folded out and locked before transport and lifting; follow the instructions under respective headings.

1-4 = single lashings, i.e. one lashing with two parts, one head on the machine, another head on the platform.

The lashings' permitted distance interval in meters			
1 - 4: Single lashings, LC at least 5 tonnes (5000 daN), STF 600 kg (600daN) 5 - 6: Single lashings, LC at least 1 tonnes (1000 daN), STF 300 kg (300daN)			
L1-L2	L3-L4	L5-L6	H
1.0-3.0	0.8-3.0	0.1-2.0	0.5-1.5

Load carrier

- The machine must always be reversed up the ramp with the rear end pointing in the direction of travel of the transport vehicle.
- When loaded, the planer basic central line is centered laterally on the platform (± 5 cm).
- The steering angle of the front wheels must be zero.
- The right chassis leg must be locked in extendedposition.
- Lower the machine until the milling drum is just above the ground (approx. 5 cm), or if wooden supports are used the drum should rest lightly against them.
- Lower the rear scraper, front guard and left/right shields to the lowest position.
- Lower the roof to its lowest position. Extruding control equipment must be retracted, or removed.
- The parking brake is applied and in good working condition and stop the engine.
- If the conveyor belt is mounted, place it on its support and lash it as per fig. 1.
- Chock all machine wheels as fig 1.
- The contact surfaces must be clean, wet or dry, and free from frost, ice and snow.
- The lashing mounts on the load carrier have LC/MSL at least 5 tonnes.

Lashings

- The lashings 1 - 4 comprise a lashing strap or chain with a permitted load (LC/MSL) of at least 5 tonnes (5,000 daN) and a pre-tension STF of at least 600 kg (600 daN). The l ashings are re-tightened as required.
- The lashings 5 - 6 comprise a lashing strap or chain with a permitted load (LC/MSL) of at least 1 ton (1,000 daN) and a pre-tension STF of at least 300 kg (300 daN). The lashings are retightened as required.
- Each of lashings 1 - 6 is a single lashings. One end on the machine, the other end on the platform.
- Lashings in the same direction are placed in different lashing mounts on the trailer.
- The lashings are as short as possible.
- The lashing hooks must not lose grip if the lashings become slack.
- The lashings are protected against sharp edges and corners.
- The lashings are located symmetrically in pairs on the right and left sides.

Make sure that the lashing equipment, e.g. chains, blocks and attachments in the transport vehicle, are approved and have the requisite breaking strain for the mode of transport. The lashing must be held tensioned during the entire transport.

Operating instructions - Summary

8. **Follow the SAFETY INSTRUCTIONS specified in the Safety Manual.**

2. Make sure that all instructions in the MAINTENANCE MANUAL are followed.

3. Turn the battery isolation switch to the ON position.

9. Check that all switches are in position 0 and the Forward/Reverse control is in Neutral.

5. Start the engine and allow it to warm up.

6. Set the gear position switch in the required position.

7. Adjust the engine speed to the desired position.

8. Set the speed to the desired position.

9. Check that the milling drum clears the ground, at least 10 cm. Raise the machine if necessary.

10. **Drive the planer. Operate the forward/reverse lever with care.**

11. **Check the brakes. Remember that the braking distance will be longer if the hydraulic fluid is cold.**

12. **IN AN EMERGENCY:**
    - Press the emergency stop
    - Hold the steering wheel firmly.
    - Brace yourself for a sudden stop.

13. When parking:
    -Set the forward/reverse control in NEUTRAL.
    Chock the wheels.

14. When lifting: - Refer to the relevant section in the Instruction Manual.

15. When towing: - Refer to the relevant section in the Instruction Manual.

16. When transporting: - Refer to the relevant section in the Instruction Manual.

17. Retrieval: - Refer to the relevant section in the Instruction Manual.

Preventive maintenance

Complete maintenance is necessary for the machine to function satisfactorily and at the lowest possible cost.

The Maintenance section includes the periodic maintenance that must be carried out on the machine.

The recommended maintenance intervals assume that the machine is used in a normal environment and working conditions.

Acceptance and delivery inspection

The machine is tested and adjusted before it leaves the factory.

On arrival, before delivery to the customer, delivery inspection must be conducted as per the check list in the warranty document.

Any transport damage must be immediately reported to the transport company.

Warranty

The warranty is only valid if the stiplulated delivery inspection and the separate service inspection have been completed as per the warranty document, and when the machine has been registered for starting under the warranty.

The warranty is not valid if damage has been caused by inadequate service, incorrect use of the machine, the use of lubricants and hydraulic fluids other than those specified in the manual, or if any other adjustments have been made without the requisite authorisation.

Maintenance - Lubricants and symbols

			DYNAPAC
ENGINE OIL	Air temperature -15°C - +50°C (5°F-122°F)	AtlasCopco Engine 100	P/N DYNAPAC500 (4 L) P/N DYNAPAC600 (18 L)
HYDRAULIC FLUID	Air temperature -15°C - +40°C (5°F-104°F)	AtlasCopco Hydraulic 300	P/N 9106230330 (20 L) P/N 9106230331 (209 L)
	Air temperature over +40°C (104°F)	Shell Tellus T100	
BIOLOGICAL HYDRAULIC FLUID, PANOLIN	When it leaves the factory, the machine may be filled with biologically degradable fluid. The same type of fluid must be used when changing or topping up.	PANOLIN HLP Synth 46 (www.panolin.com)	
GREASE		ESSO UNIREX N3	**Dynapac Roller Grease** (0.4kg), P/N 4812030095
FUEL	See engine manual.	-	-
TRANSMISSION OIL Gearbox oil 220 (Planetary gear)	Air temperature -15°C - +40°C (5°F-104°F)	AC Fluid Gearbox 100	**Dynapac Gear oil 300**, P/N 4812008274 (5 liters), P/N 4812008275 (20 liter),
TRANSMISSION OIL Gearbox oil 90 (angular planetary gearing) Only for PL 500TD		Shell Spirax MB80	
	Air temperature 0°C (32°F) - above +40°C (104°F)	Shell Spirax AX 85W/140, API GL-5 or equivalent.	
COOLANT	Anti-freeze protection down to about -37°C (-34.6°F)	AtlasCopco Coolant 150	P/N 2658449097 (5 Gallon)

Always use high-quality lubricants and the amounts recommended. Too much grease or oil can cause overheating, resulting in rapid wear.

Fluid volumes

PL500				
Fuel tank	250	l	66	gal
Engine oil	13	l	13,7	qts
Hydraulic reservoir	140	l	148	qts
Water tank	500	l	132	gal
Planetary gears, drive wheels	0,75	l / side	0,8	qts/side
Angular planetary gearing, milling drum drive	6	l	6,3	qts
Coolant, engine	20	l	21	qts

Maintenance - Maintenance schedule

Service and maintenance points

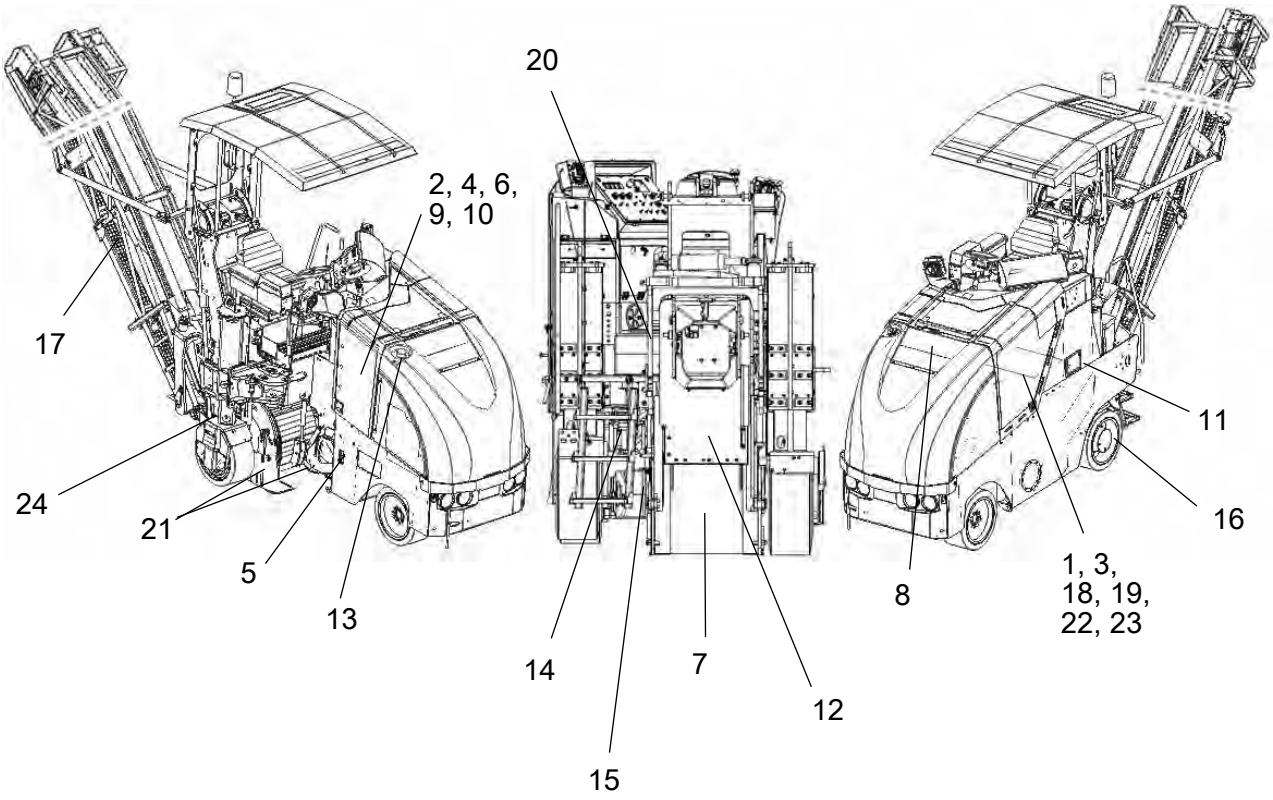


Fig. Service and maintenance points

1. Engine oil
2. Oil filter
3. Fuel filter
4. Hydraulic filter
5. Hydraulic fluid level
6. Hydraulic fluid, filling
7. Milling drum/housing
8. Hydraulic fluid cooler
9. Coolant
10. Air cleaner
11. Refueling point
12. Scrapers
13. Water tank, filling
14. Sprinkler system
15. Drum gear
16. Planetary gear
17. Conveyor
18. Drive belt, milling drum
19. Drive belt, diesel engine
20. Battery
21. Side shields
22. Coupling
23. Drive belt, pump
24. Chassis leg

General

Periodic maintenance should be carried out after the number of hours specified. Use the daily, weekly etc. periods where number of hours cannot be used.

Remove all dirt before filling, when checking oils and fuel and when lubricating using oil or grease.

The manufacturer's instructions found in the engine manual also apply.

Where both operational hours and time intervals are specified, maintenance should be carried out at the point in time that occurs first.

After the FIRST 10 hours of operation

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
23	Pump drive - adjusting the belt tension	See chapter "Pump drive - adjusting the belt tension" (2000h)
24	Adjust slide plates, chassis leg	See chapter "Slide plates, chassis leg - check" (2000h)

Every 10 hours of operation (Daily)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
	Before starting up for the first time on that day	
1	Check the oil level in diesel engine	Refer to the engine manual
5	Check the fluid level in the hydraulic reservoir	Top up if necessary
11	Fill fuel tank	
4	Check filter indicator, high pressure filter	
4	Check filter indicator, suction and return filter	
13	Fill the water tank	
14	Check the sprinkler system	
14	Check water filter	Replace filter if necesssary
7	Check condition of milling tool and tool holder.	Replace if necessary. See section Function description
17	Check function and condition of conveyor (belt rollers, belt tension)	Adjust/replace if necessary
17	Check steel wire, conveyor belt	Adjust/replace if necessary
18	Check belts, drive belt for milling drum	
19	Check belt system, diesel engine	Refer to the engine manual
	Check brakes/emergency stop	
21	Check side shields	
21	Check front shield	Option
3	Drain the fuel prefilter	
8	Clean hydraulic fluid cooler	

Every 50 hours of operation (Weekly)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
10	Check/clean air filter and dust container	Replace as required
15	Check oil level in planetary gear/drive wheel	Top up if necessary
15	Check oil level, gearbox	
	Lubricate as per items	
17	Check rubber parts, conveyor belt	
12	Check scraper, milling housing	

After the FIRST 100 hours of operation.

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
7	Check bolted joints, milling housing, drum.	See chapter "Check of bolted joints - Milling housing" (1000h)

After the FIRST 250 hours of operation.

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
15	Change oil in planetary gear, drive wheel	See section "Chassis leg, drive wheel - Planetary gear, oil draining" (2,000 hours)
15	Adjust visible screws/nuts, planetary gear/drive wheel	

Every 250 hours of operation (Monthly)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
20	Check condition of batteries	Top up if necessary
	Check condition of fan	
10	Clean air filter unit	
24	Check slide plates, chassis leg	Adjust if necessary

Every 500 hours of operation (Every three months)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
3	Change engine oil and oil filter	Refer to the engine manual
3	Change the engine fuel filter	Refer to the engine manual
3	Replace engine fuel prefilter/clean water separator	
6	Check hydraulic reservoir cap/vent	
	Check hydraulic hoses	Replace if necesssary
22	Check clutch lining	
13	Empty and clean water tank	

Every 1000 hours of operation (Every six months)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
3	Check engine valve clearances	Refer to the engine manual
22	Lubricate clutch bearings	
7	Check tightening torque of bolted joints, milling housing, drum	Tighten if necessary
15	Check visible screws/nuts, planetary gear/drive wheel	Tighten if necessary

Every 2000 hours of operation (Yearly)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
6	Change the hydraulic fluid	
23	Replace belt for pump drive	
4	Replace hydraulic filter unit	
4	Replace return fluid filter, suction side	
15	Change oil in planetary gear, drive wheel	
15	Change oil in drum gearbox	
19	Replace diesel engine drive belts	
11	Drain and clean the fuel tank	

Maintenance - 10h

Place the planer on a level surface.
The engine must be switched off and the service switch actuated (on control panel) during all checks and adjustments, unless otherwise specified.

Ensue that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.

When filling liquid, the machine must be horizontal on level ground.

Diesel engine Check oil level

Take care not to touch any hot parts of the engine when removing the dipstick. Risk of burns.

The dipstick is placed behind the left cover in the engine compartment.

Pull up the dipstick (1) and check that the oil level is between the upper and lower marks. For further details, refer to the engine's instruction manual.

The machine must be lowered down over the rear chassis legs and the engine must be horizontal when filling (2) and checking.

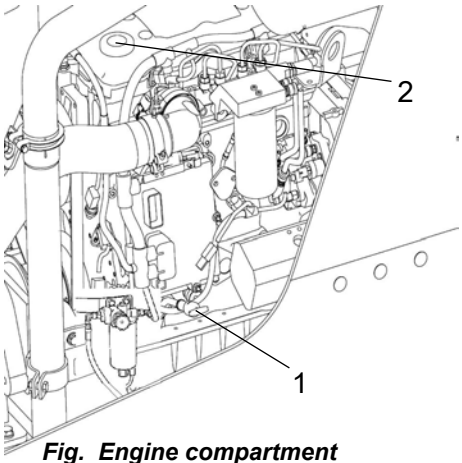


Fig. Engine compartment
1. Dipstick
2. Filling

Hydraulic reservoir - Check fluid level

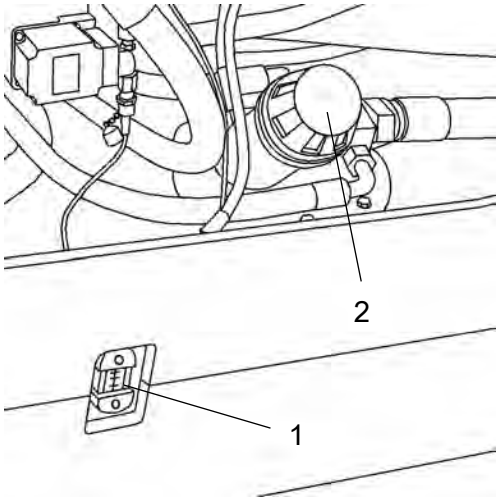


Fig. Hydraulic reservoir
1. Sight glass
2. Filler pipe

Place the planer horizontally on a level surface and check that the oil level in the sight glass (1) is between the max and min markings. The sight glass is located on the right-hand side of the machine. Top up with the type of hydraulic fluid specified in the lubricant specification, if the level is too low.

Fuel tank - Filling

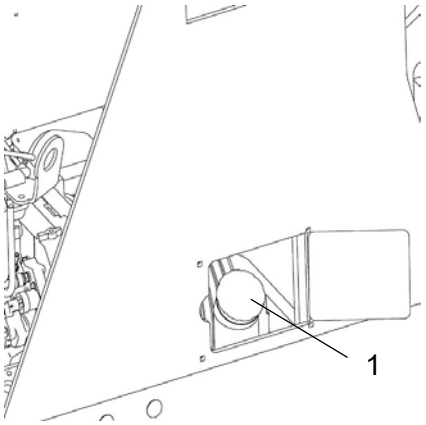


Fig. Fuel tank
1. Filler cap

Fill the fuel tank every day to avoid formation of condensation. Follow the engine manufacturer's specifications for diesel fuel.

The lockable filler cap (1) is located below the left cover for the engine.

Never refuel while the engine is running. Do not smoke and avoid spilling fuel.

The tank holds 250 litres of fuel.

Check the high-pressure hydraulic filter

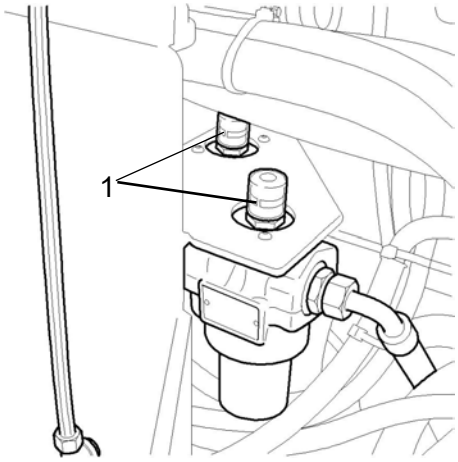


Fig. High-pressure hydraulic filter
1. Filter indicator

The filter unit must be replaced when the indicator shows red, or after an interval of 2000 h

After repairs to the hydraulic systemet all filters must be checked after 10 working hours, and replaced when necessary.

Release the hydraulic pressure by turning the service switch OFF/ON 10 times before replacing the filter!

Water tank - filling

Check the level in the water tank on the level indicator (1) on the right-hand side of the tank.

Unscrew the filler cap (3) and fill with clean water.

Alternatively the tank can filled via a pressure hose.

Pressure hose filling:

- Connect the pressure hose to the coupling (2) and tighten.
- Open the filler cap (3) for better ventilation.
- Open the tap (4).

Start filling.

- Turn off the tap before removing the hose.

Only additive: A small amount of ecofriendly antifreeze.

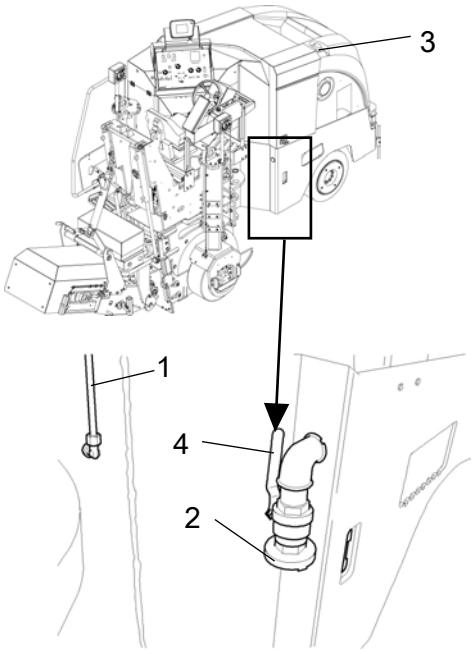


Fig. Water Filling
1. Level indicator
2. Coupling
3. Filler cap
4. Tap

Check return filter - suction side

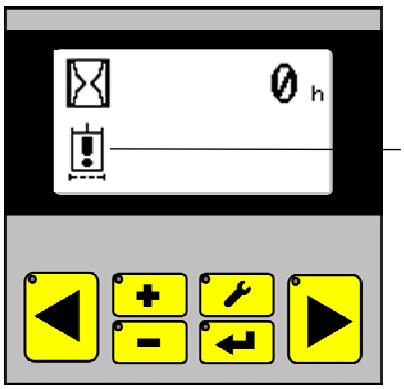


Fig. Display image
1. Alarm filter

The filter unit must be replaced when an alarm is shown in the display (dialog box 4), or at interval of 2000 h

After repairs to the hydraulic systemet all filters must be checked after 10 working hours, and replaced when necessary.

Sprinkler system/nozzles Checking/Cleaning

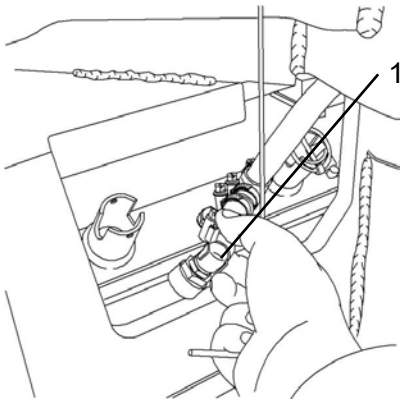


Fig. Sprinkler nozzle
1. Nozzle

The nozzles are located on the milling housing.

Start the sprinkler system and make sure that no nozzles (1) are clogged. Clean any blocked nozzles if necessary.

Release the pipe together with the nozzles from their attachments. Clean the nozzles with a wire brush. Remove the nozzle if necessary for replacement or more carefully cleaning.

When fitting new nozzles, make sure that the flat jet of water is directed sideways towards the milling drum.

Water filter - Checking/Replacing

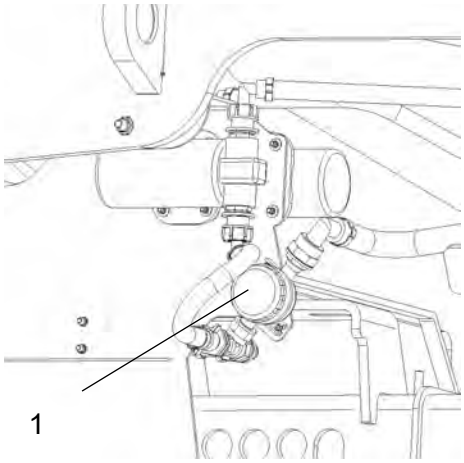


Fig. Water filter
1. Filter element, strainer

Filter element, strainer (1) must be replaced in the event of damage.

Cleaning should be performed daily.

Clean/replace filter:

- Check that the water pump is not in operation.

- Undo the filter cap by hand. Clean filter holder and cap

Recycle old filters for waste disposal!

Check after replacing that the seal is correctly positioned!

- Insert the filter element, tighten the filter cap by hand.

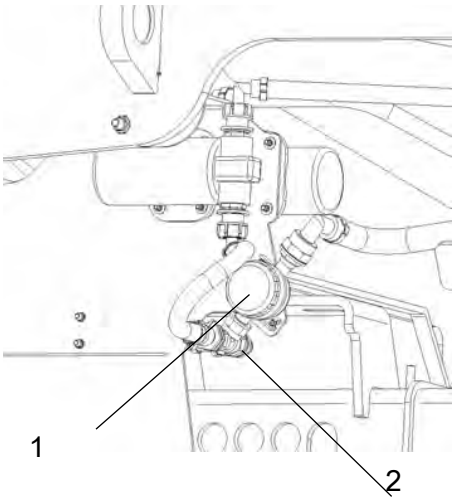


Fig. Pump system
1. Filter housing
2. Stop cock

Sprinkler system - Draining

Remember that there is a risk of freezing during the winter. Empty the tank, pump, filter and lines, or mix antifreeze in the water.

Empty water from the water tank (see section "Emptying/Filling water tank")

Turn off the pumps on the control panel. Undo the coupling (2) and empty the filter housing (1).
Start the water pump and allow the water to run off.
Turn off the pump when the lines and filter are empty.
The pump must not be operated when empty, do not allow it to run for more than 30 seconds!

Refit the coupling.

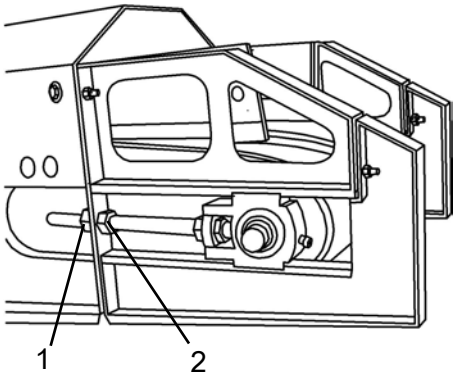


Fig. Conveyor belt
Belt tension
1. Lock nuts
2. Adjuster nuts

Check of belt tension - belt rollers, conveyor belt

Check the belt rollers, conveyor belt and screw unions for visible damage or wear.

Adjust the belt as soon as it sags. During the first working hours the belt will expand considerably, and will repeatedly need to be tensioned.

Increase the tension:

- Release the lock nuts (1) on both sides of the tensioning device.

- Adjust the tension on both sides with the adjuster nuts (2). Use a U-spanner. Tighten the lock nuts after adjusting.

If the belt runs to one side of the belt roller, adjust the left or right spindle by tightening or releasing.

Align the belt rollers if they do not tension sufficiently:

- Release the attachment plate on the belt roller and turn slightly.
Right adjustment of belt roller = push left belt roller forward.
Left adjustment of belt roller = push right belt roller forward.

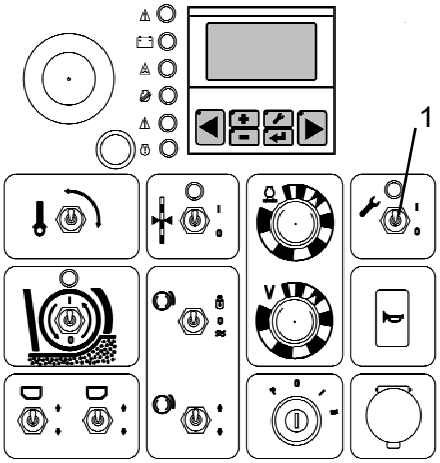


Fig. Control panel, right side
1. Service switch

Milling drum - Drive belt - replacement

The belt drive consists of two compound belts and is located on the left side of the milling section.

The belts are always replaced in pairs.

Replace damaged and worn belts immediately!

The slots in the V-belts must be carefully cleaned before fitting new belts.

Make sure not to accidently start the engine!

- Set the service switch on the control panel in position 1.

Remove the belt guard before carrying out maintenance.

The belt tensioner releases and the belts can be removed and replaced.

Check also the condition of the pulleys.

Brake function/Emergency stop - Check

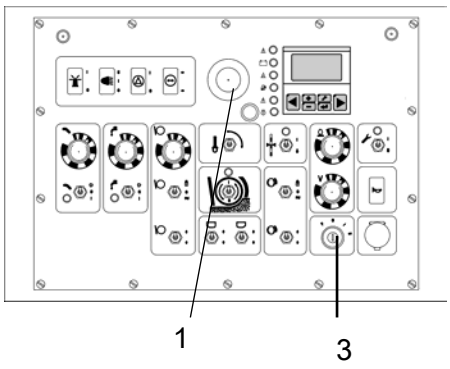


Fig. Control panel
1. Emergency stop
3. Ignition lock

Checking the emergency stop

Drive the planer **slowly** forward. Hold the steering wheel firmly and brace yourself for a sudden stop.

Push in the emergency stop (1). The planer should come to a sudden stop and the engine should switch off.

After checking the emergency stop, set the forward/reverse lever (2) in neutral.

Pull up the emergency stop (1). Start the engine.

The planer is now ready for operation.

Check the brakes by carrying out the following :

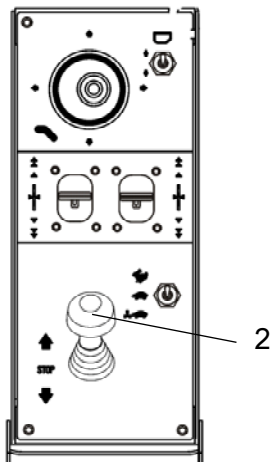


Fig. Ergonomic panel
2 Forward/Reverse lever

Checking reserve brake function

Drive the planer **slowly** forward. Hold the steering wheel firmly and brace yourself for a sudden stop.

Turn the ignition key (3) to position 0. The planer should come to a sudden stop.

After this check, turn the ignition key to position 1.

The planer is now ready for operation.

See also Operating section in the manual.

Diesel engine - Checking the drive belt

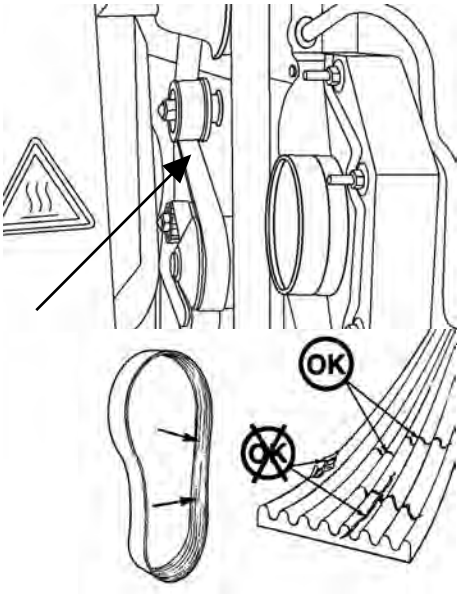


Fig. Drive belt

Visually check the drive belt every day for damage.

For maintenance of the drive belt, see engine manual.

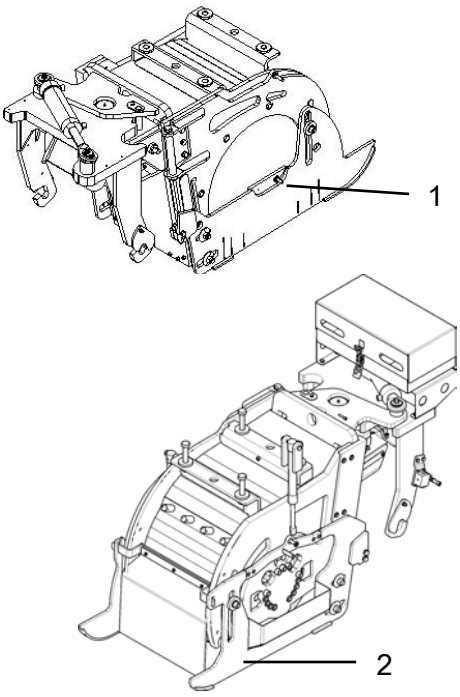


Fig. Side shields
1. Side shield, right side
2. Side shield, left side

Side shields - Check

The side shields are located on each side of the milling drum.

Check that the side shields (1, 2) are properly secured and slide in their tracks without jamming. Clean the tracks daily.

Replace side plates/wearing parts if necessary.

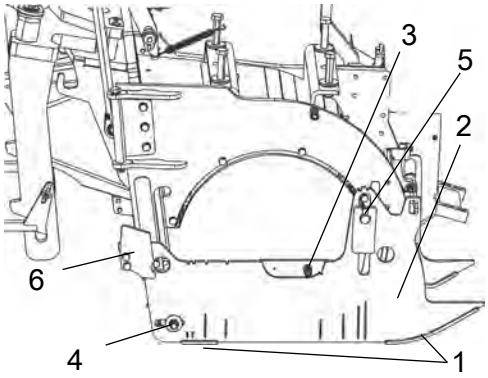


Fig. Milling housing right side
1. Ware plate
2. Side shield, right side
3. Attachment point, hydraulic cylinder
4. Nut
5. Retaining screw
6. Plate

Side plates/Wearing parts, right side - Replace

A ware plate (1) is located on each side shield. As soon as the material on the ware plate gets too thin it must be replaced.

Remove the right-hand side plate (2):

- Fold in the right chassis leg and lower the side plate until it touches the ground.

- Disconnect the hydraulic cylinder from its attachment point (3).

- Unscrew the nut (4).

- Release/remove the retaining screw (5) with washer and guide sleeve.

- Remove the plate (6)

Refit in the reverse order.

Side shields - Replace wear plates left side

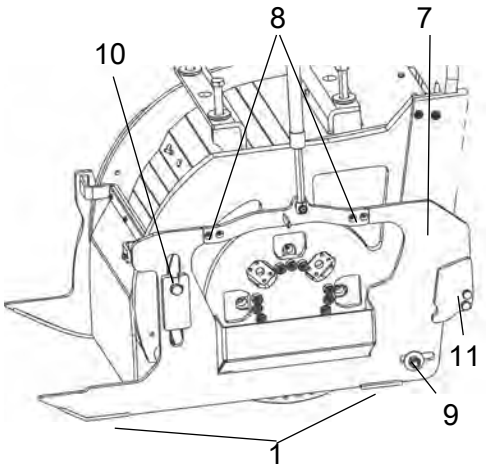


Fig. Milling housing, left side
1. Sensor ski
7. Side plate, right side
8. Retaining screws, hydraulic cylinder
9. Nut
10. Retaining screw
11. Plate

Remove the left-hand side plate (7):

- Lower the side shield until it touches the ground.

- Unscrew the 4 retaining screws (8) for the link holding the hydraulic cylinder.

- Unscrew the nut (9)

- Release/remove the retaining screw (10) with washer and guide sleeve.

- Remove the plate (11)

Cut off the welded wearing parts (1) and weld on new ones.

Take the requisite safety precautions when removing and welding! Disconnect control units and displays.

Refit in the reverse order.

Side plates/Wearing parts, left side - Replace

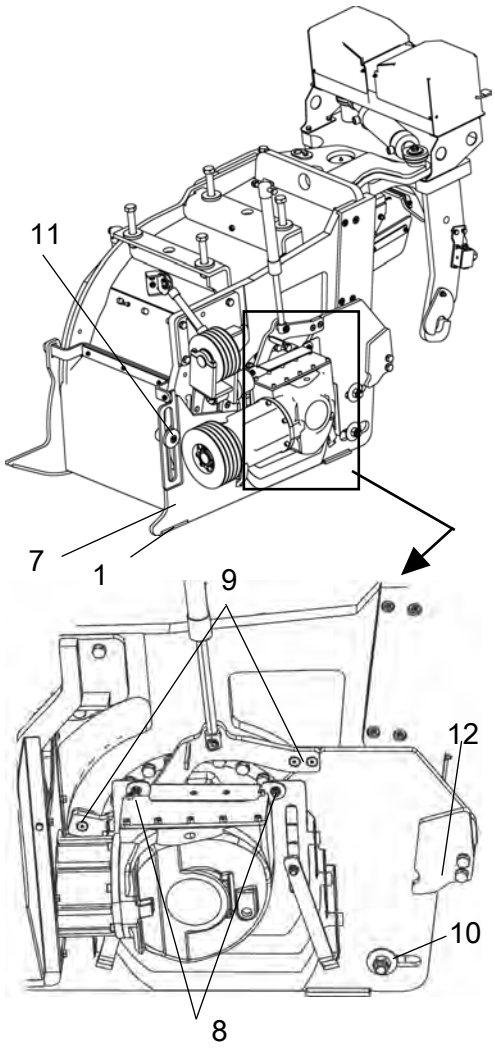


Fig. Milling housing, left side
1. Wearing part
7. Side plate, left side
8. Retaining screws, upper link
9. Retaining screws, link, hydraulic cylinder
10. Nut
11. Retaining screw
12. Plate

Remove the left-hand side shield (7)

- Lower the side shield until it touches the ground.

- Unscrew the 2 retaining screws (8) and remove the upper link part.

- Unscrew the 4 retaining screws (9) for the link holding the hydraulic cylinder.

- Unscrew the nut. (10)

- Release and remove the retaining screw (11) with washer and guide sleeve.

- Remove the plate (12)

Cut off the welded wearing parts (1) and weld on new ones.

Take the requisite safety precautions when removing and welding! Disconnect control units and displays.

Refit in the reverse order.

Water separator, fuel prefilter - Draining

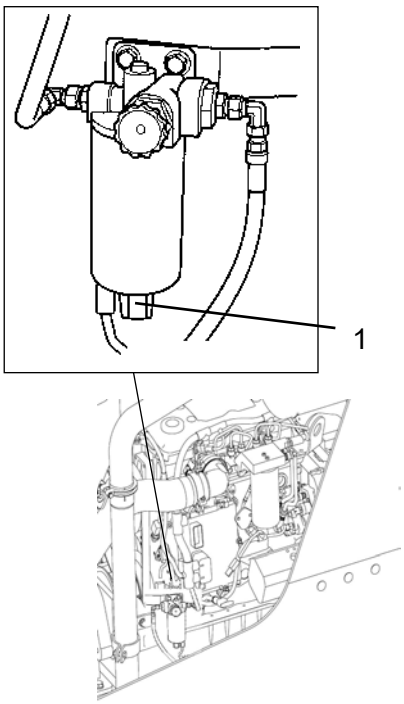


Fig. Fuel prefilter
1. Drain valve

Drain the prefilter according to interval or error message from engine electronics.

Draining:

Screw on the drain valve (1) and drain the liquid until only clear diesel fuel runs out.

Close the drain valve by hand.

Clean cooler

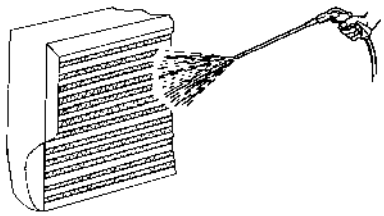


Fig. Cooler

Make sure that the air flow through the cooler is unobstructed. Dirty coolers are blown clean with compressed air or washed clean using a high-pressure water cleaner.

Take care when using a high-pressure water jet. Do not hold the nozzle too near the cooler.

Wear protective goggles when working with compressed air or high-pressure water jets.

Check Hydraulic front plate - Milling housing

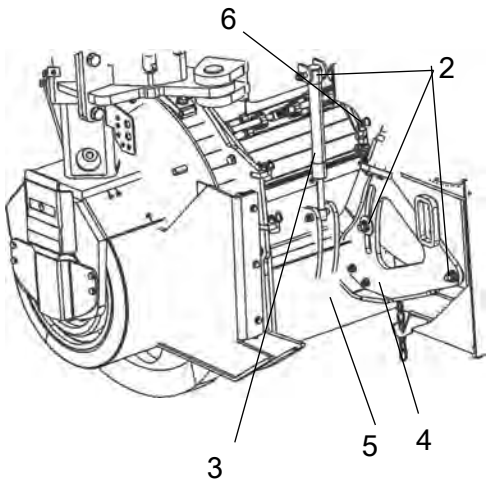


Fig. Milling housing
1. Hydraulic front plate
2. Hinged points
3. Hydraulic cylinder
4. Slide shoe
5. Front plate
6. Slide rail

Check daily:

- The function for raising, lowering and setting the front plate in floating mode. (Main control panel)

- Check the condition and function of hinged points (2)

- Hydraulic cylinder (3)

- Condition of slide shoe (4) and front plate (5)

- Bolted joint between front plate and slide rail (6), on both sides of the milling housing.

Maintenance - 50h

Place the planer on a level surface.
The engine must be switched off and the service switch actuated (on control panel) during all checks and adjustments, unless otherwise specified.

Ensue that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.

Air cleaner - emptying

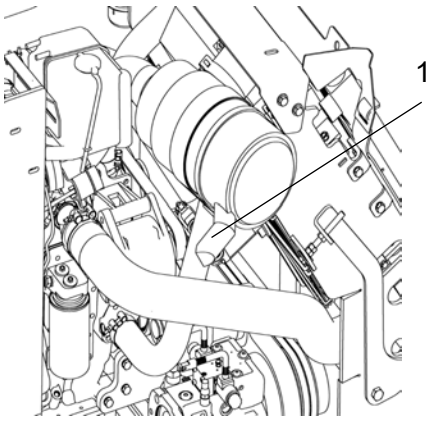


Fig. Air cleaner
1. Dust trap

Empty the air cleaner dust trap (1) through pressing the rubber bellows using the fingers. Check also that the air hoses are intact.

Clean the air cleaner when operated in extremely dusty environments .

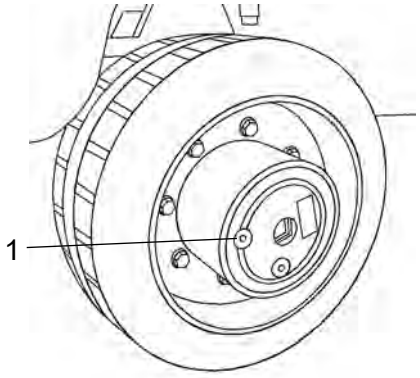


Fig. Planetary gear/position for refilling
1. Filler plug

Chassis leg, drive wheel Planetary gear - Check of oil level

Place the planer so that the filler plug (1) in the planetary gear is at "9 o clock".

Fill with oil to lower edge of level hole. Use transmission oil. See the lubrication specification.

Clean and refit the plug.

Drum gearbox - Checking the oil level

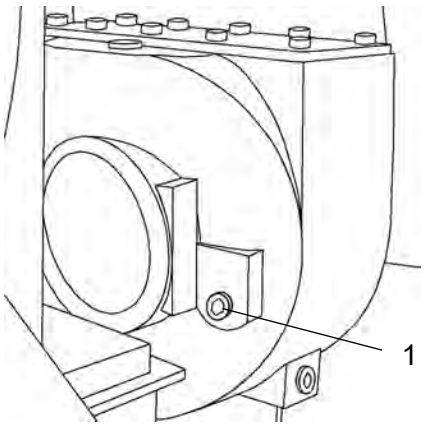


Fig. Level check - drum gearbox
1. Filler plug

Position the planer horizontally.

Unscrew the filler plug (1).

Ensure that the oil level reaches up to the lower edge of the plug hole.

Top off with oil to the right level if the level is low. Use transmission oil according to the lubricant specification.

Clean and refit the plug.

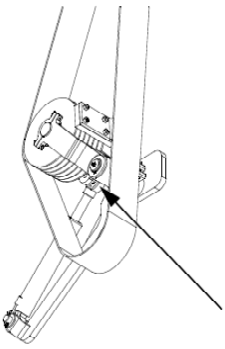


Fig. Belt tensioner, milling drum drive

Lubrication points

Belt tensioner

1 grease nipple is located on the belt tensioner. 3 pump strokes with manual grease gun.

Use grease as per the lubricant specification.

Chassis leg, right side

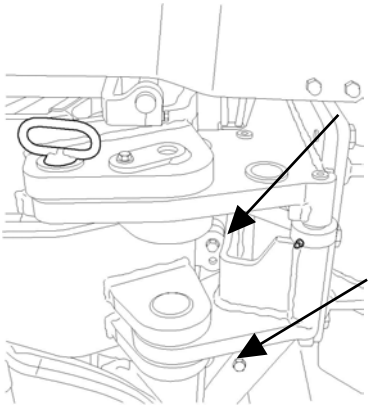


Fig. Chassis leg, right side, grease nipples

2 grease nipples are located on the chassis leg joint. 5 pump strokes with manual grease gun.

Use grease as per the lubricant specification.

Guide, two-wheel variant

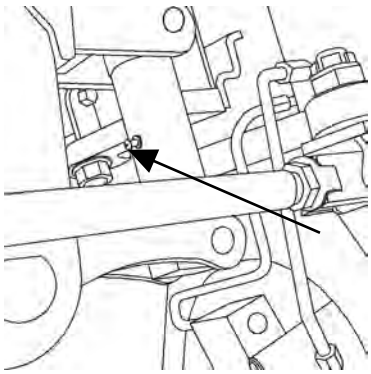


Fig. Guide, two-wheel variant, grease nipples

2 grease nipples located at guide on underside of machine. 5 pump strokes with manual grease gun.

Use grease as per the lubricant specification.

Guide, one-wheel variant

4 grease nipples located at guide on underside of machine. 5 pump strokes with manual grease gun.

Use grease as per the lubricant specification.

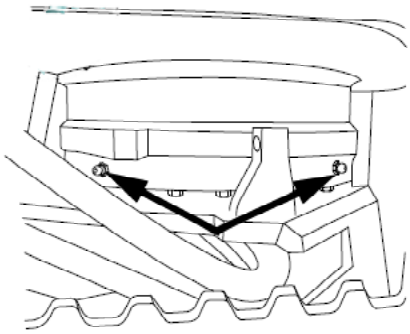


Fig. Guide, one-wheel variant, grease nipples

Conveyor - reversing (option)

2 grease nipples located on each side of conveyor tension bearing. 3 pump strokes with manual grease gun.

Use grease as per the lubricant specification.

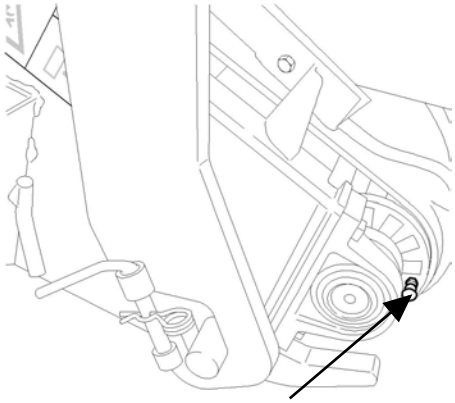


Fig. Conveyor belt, tension bearing, grease nipples

Conveyor - drive (option)

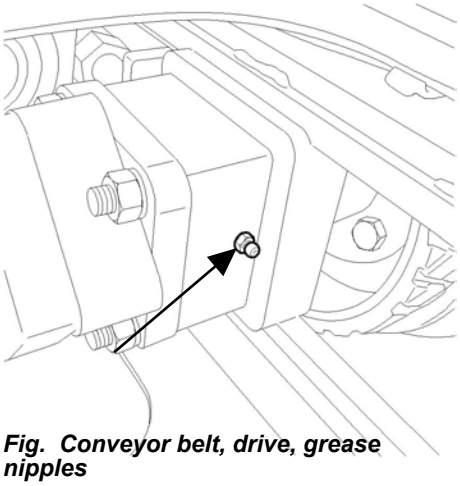


Fig. Conveyor belt, drive, grease nipples

2 grease nipples located on each side of conveyor drive. 3 pump strokes with manual grease gun.

Use grease as per the lubricant specification.

Conveyor belt - swivel bracket

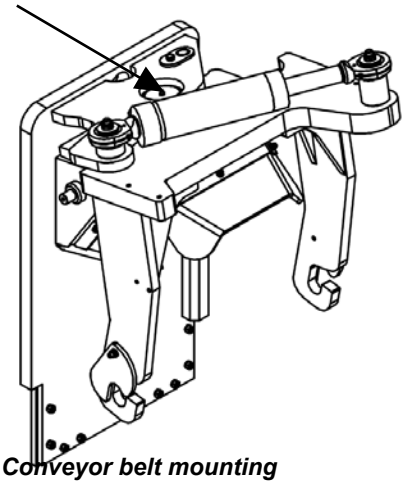


Fig. Conveyor belt mounting

1 grease nipple located at conveyor belt mounting, at bearing. 1 pump stroke with manual grease gun.

Use grease as per the lubricant specification.

Hydraulic cylinder

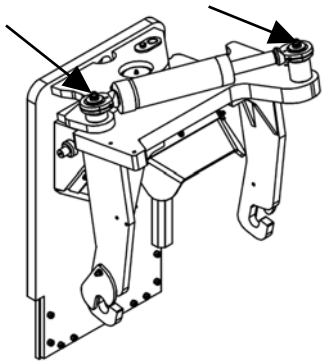


Fig. Hydraulic cylinder

Grease nipples are located on hydraulic cylinder bearings. 3 pump strokes with manual grease gun.

Use grease as per the lubricant specification.

Check of funnel rubber - sealing rubber, side guides

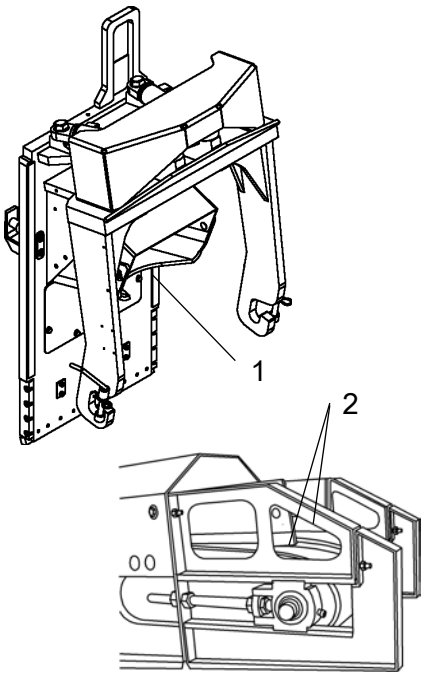


Fig. Rubber parts, conveyor belt
1. Collector funnel
2. Side guide, conveyor belt

The rubber parts on the conveyor belt must be visually checked after damage.

- Collector funnel (1)

- Side guide, conveyor belt (2)

The rubber parts are fitted with screw unions.

Remove damaged/worn parts and fit new ones.

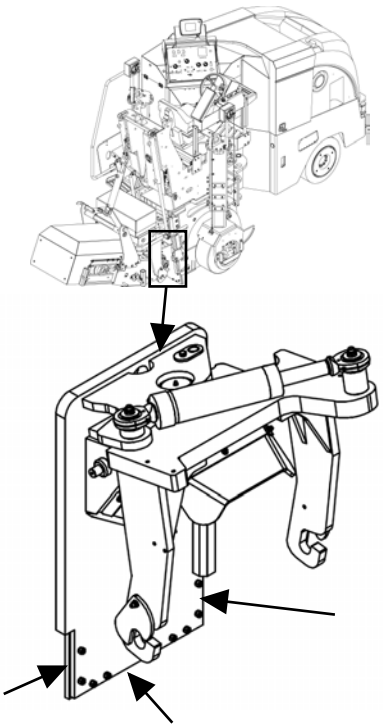


Fig. Scraper tool - Wearing parts

Check of scraper tool, milling housing

The scrapers must be replaced when they are worn.

- Raise the machine, lower down the milling drum cover and and raise the side shields to the upper position.

Make sure that the diesel engine cannot be started.

Make sure that the cover is secured!

- Check the wear surfaces, as shown in diagram. Release the retaining screws and remove the worn scrapers.

- Clean the contact surface before fitting new scrapers. Adjust to the required height.

Maintenance - 250h

Place the planer on a level surface. The engine must be switched off and the service switch actuated (on control panel) during all checks and adjustments, unless otherwise specified.

Ensue that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.

Battery
Checking the electrolyte level

The batteries are located under the seat bracket. Release the screws (1) and swing up the seat bracket.

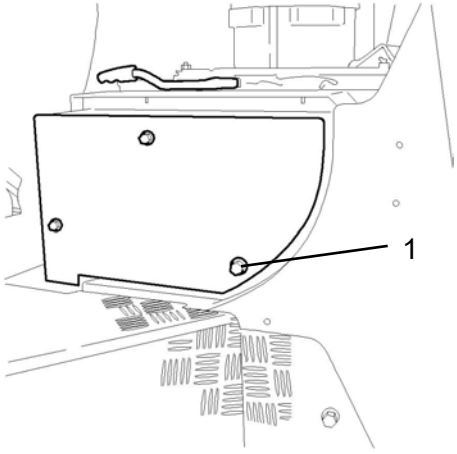


Fig. Battery compartment

Make sure there are no naked flames in the vicinity when checking the fluid level. Explosive gas is produced in the battery.

Wear safety goggles. The battery contains acid, which is corrosive. In the event of contact with the acid, rinse with water.

When disconnecting the battery, always disconnect the negative cable first. When connecting the battery, always connect the positive cable first.

The cable shoes should be clean and tightened. Corroded cable shoes should be cleaned and greased with acid-proof Vaseline.

Coolant level - Check

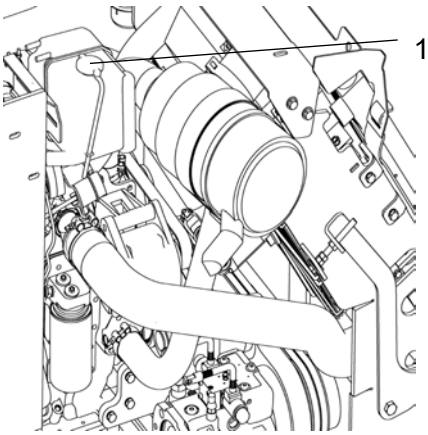


Fig. Expansion tank
1. Filler cap

Check that coolant level is between the max/min marks.

Take great caution if the radiator cap must be opened while the engine is hot. Wear protective gloves and goggles.

Fill, if nedeed, with a mixture of 50% water and 50% anti freeze. See the lubrication specifications in these instructions and in the engine manual.

The machine must be in transport mode to ensure better ventilation of the engine when refilling.

Flush the system every other year and change the coolant. Make sure also that the air flow through the cooler is unobstructed.

Pump drive - Check of belt

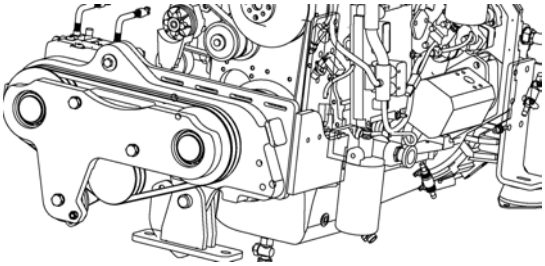


Fig. Pump drive

The pump drive is located between the engine and cooler.

Damaged and worn belts must be replaced immediately, see chapter on maintenance measures 2000 h

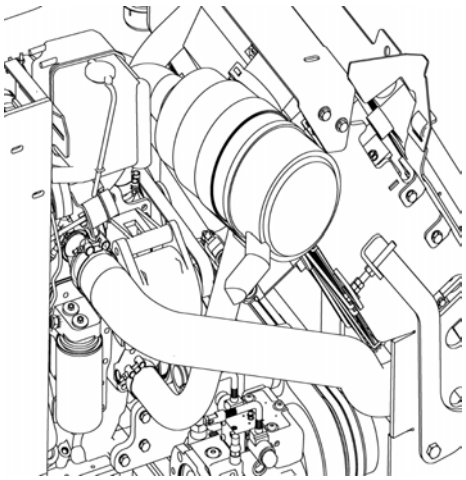


Fig. Main filter

Airfilter - Change mainfilter

Release the clips (1), pull off the cover (2), and pull out the main filter (3).

Clean the air cleaner if necessary, see section Air cleaner - Cleaning.

When replacing the main filter (3), insert a new filter and refit the air cleaner in the reverse order.

When refitting the cover, make sure that the dust valve is positioned downwards.

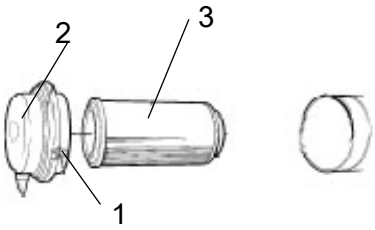
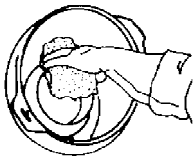


Fig. Air cleaner
1. Clips
2. Cover
3. Main filter

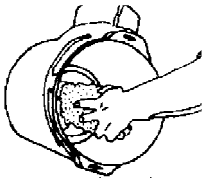
Air cleaner
- Cleaning

Wipe clean the inside of the cover (2) and the filter housing (5). See the previous illustration.

Wipe clean on both sides of the outlet pipe.



Inner edge of outlet pipe.



Outer edge of outlet pipe.

Wipe also both surfaces for the outlet pipe; see adjacent figure.

Check that the hose clamps between the filter housing and the suction hose are tight and that the hoses are intact. Inspect the entire hose system, all the way to the engine.

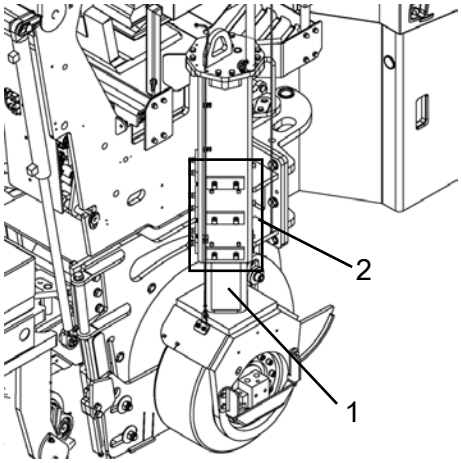


Fig. Chassi leg, slide plate
1. Slide surface
2. Set screws

Slide plates, chassis leg - check

There are several slide plates on both chassis legs.

The clearance on both chassis leg guides is first adjusted after 10 working hours and then every 2000 hours.

The slide surfaces (1) on all 4 sides of the leg should always be well greased!

The chassis leg must be unloaded during the adjustment!

Adjust the clearance

The clearance on both chassis leg guides is adjusted with 6 separate slide plates.

- Undo the lock nut, tighten the set screw by hand and then lock with the lock nut (2).

There must be no play on the chassis leg after adjusting. Continue to adjust if necessary.

Maintenance - 500h

Place the planer on a level surface. The engine must be switched off and the service switch actuated (on control panel) during all checks and adjustments, unless otherwise specified.

Ensue that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.

Diesel engine - Oil change - Filter replacement

The drain cock for the oil (1) is located on the right side of the machine frame.

Run the engine warm before draining the oil.

Switch off the engine before draining.

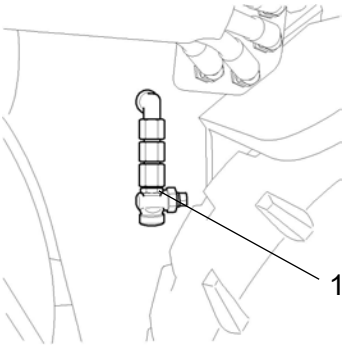


Fig. 1. Drain cock

Place a suitable container under the drain plug. Collect up the oil and hand in to waste disposal station.

Danger of being burned when draining hot oil. Protect your hands.

Recycle old filters for waste disposal.

Open the cover on the drain cock.

Fit a hose (option).

Open the drain cock with a spanner and allow all the oil to run out.

Close the cock, remove the hose and refit the cover.

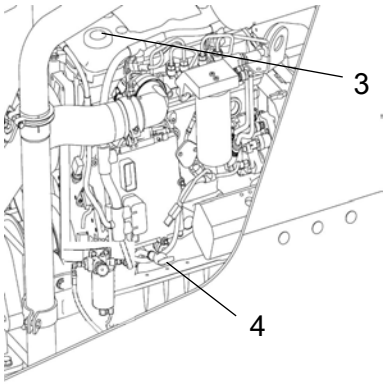


Fig. Engine compartment
3. Filler cap, engine oil
4. Dipstick

Replace engine oil filter (2)

The oil filter is located on the engine block behind the right cover for the engine compartment.

Release the filter and clean the contact surface.

Lubricate the seal on the new filter.

Fill the filter with oil and fit in place. Tighten by hand.

Check the seal and oil pressure indicator.

Fill with new engine oil (3), see lubricant specification for the correct grade of oil.

Check the dipstick (4) to ensure that the oil level is correct. Refer to the engine manual for details.

Fuel filter - Replacement

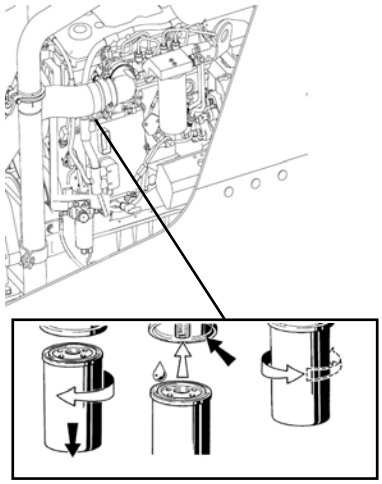


Fig. Fuel filter

Release the fuel filter and clean the contact surface.

Lubricate the seal on the new filter.

Tighten the filter by hand.

Bleed the filter, see chapter Fuel filter - Bleeding the filter.

Fuel filter - Bleeding the filter

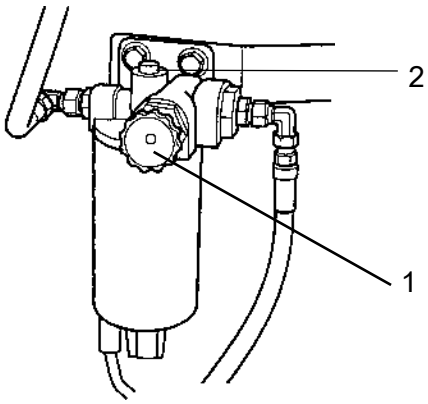


Fig. Prefilter
1. Pump knob
2. Bleeder screw

Pull out the pump handle. (1)

Open the bleeder screw (2). (bleed during pumping/filling the filter)

Pump until resistance is felt during the pumping, whereby the filter is filled with fuel.

Close the bleeder screw and screw on the pump handle.

Water separator, fuel prefilter - Replacement

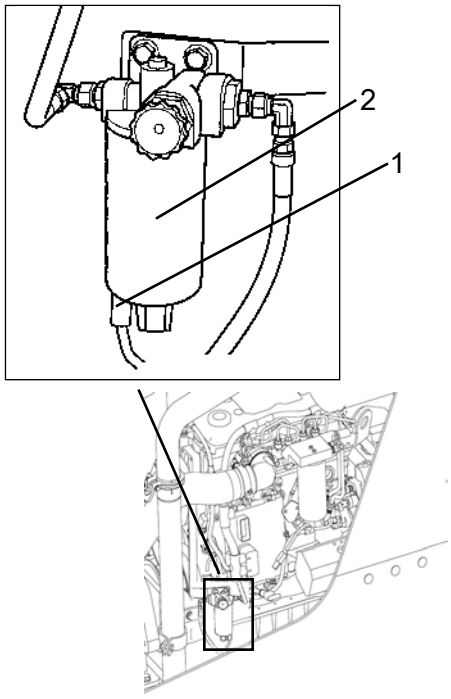


Fig. Fuel prefilter
1. Water sensor contact
2. Filter cartridge

Remove the water sensor contact. (1)

Remove the filter cartridge (2) with suitable tool (filter spanner or filter strap) and unscrew.

Clean the filter holder sealing surface.

Oil in the seal on the filter cartridge and screw the lower holder tight by hand.

Reconnect the water sensor contact.

Bleed the filter, see chapter Fuel filter - Bleeding the filter.

Hydraulic reservoir cap - Check

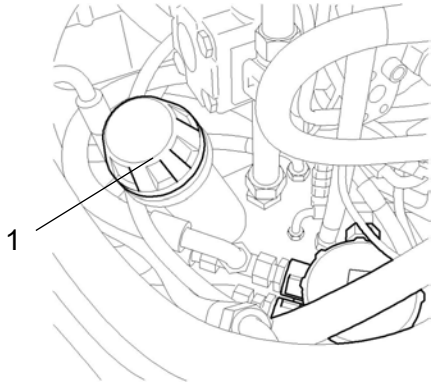


Fig. Engine compartment
1. Filler cap

Unscrew the filler cap and check that it is not clogged. The air must have a free passage through the cap in both directions.

If clogged in either direction, clean with a little diesel oil and blow with compressed air until free passage is assured, or replace the cap with a new one.

Wear protective goggles when working with compressed air.

Wear protective gloves when working with diesel.

Hydraulic hoses
Check

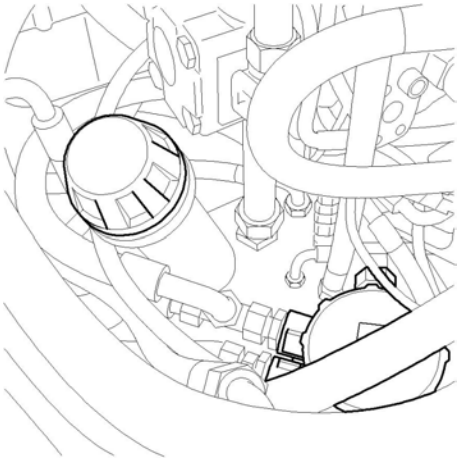


Fig. Hydraulic hoses

Check the condition of the hydraulic hoses, and immediately replace defective hoses.

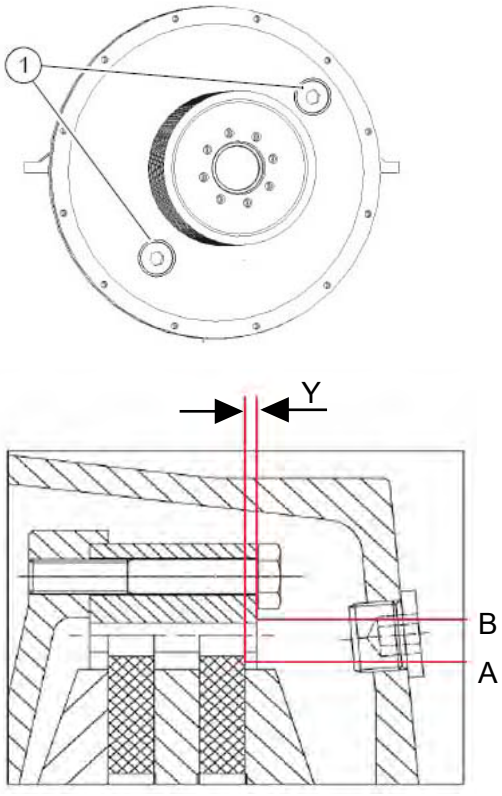


Fig. Clutch lining
1. Inspection cover

Clutch lining - check

The clutch is located behind the left service cover on the control panel.

Make sure that the engine cannot be accidently started!

Check the clutch lining:

- Remove the inspection covers (1) on the clutch housing.

- Check the wear on the outer linings:
Meassure between mark A and B

A - B = Y mark. (max 12 mm)

Clutch in new condition= 3 mm
Max wear (Y-mark) = 12 mm

If maximum wear has been reached, replace the outer lining.

- Close the covers after inspection.

Check is made at engaged clutch and disengaged engine.

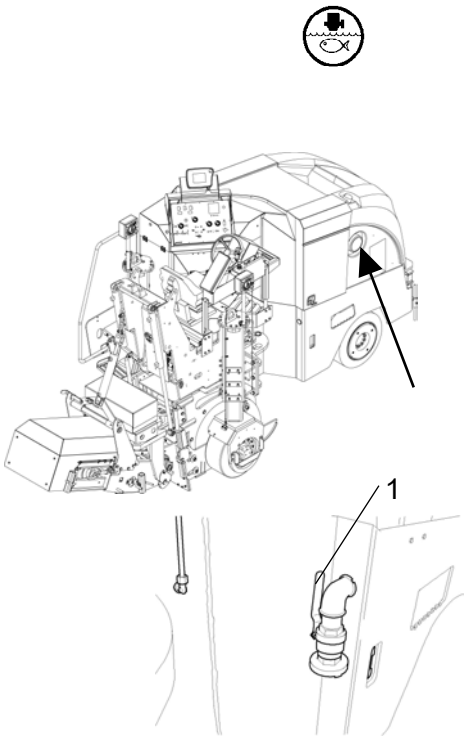


Fig. Water tank
1. Tap water

Water tank - Emptying / Cleaning

Empty the tank before cleaning, open the tap (1) and allow all the water to run out.

- Clean the tank with water and a suitable detergent. Close the tap before filling up.

- Fill up with new water, see chapter "Water tank-Filling".

Remember that there is a risk of freezing during the winter. Empty the tank, lines and pump.

Maintenance - 1000h

Ensue that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.

Place the planer on a level surface.
The engine must be switched off and the service switch actuated (on control panel) during all checks and adjustments, unless otherwise specified.

Clutch bearing

1 grease nipple is located behind the pulley. 5 pump strokes with manual grease gun.

Use grease as per the lubricant specification.

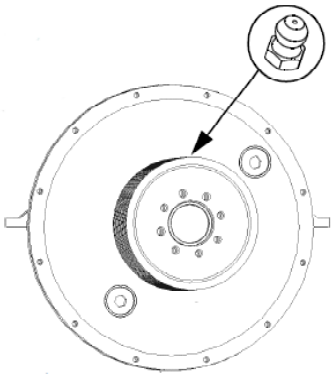


Fig. Clutch bearing, grease nipple

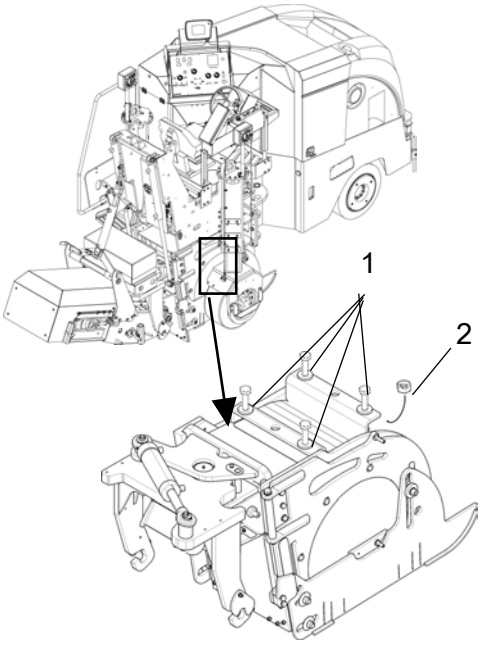


Fig. Milling housing - Screw unions

Tightening torque bolted joints - Milling housing

The connection between the milling housing and machine frame must be checked/retightened with a torque wrench after the first 100 working hours and then every 1000 hours.

This is done on the milling house nuts (2). The screws (1) are held in the machine frame.

Tightening torque: 1060 Nm

Maintenance - 2000h

Place the planer on a level surface. The engine must be switched off and the service switch actuated (on control panel) during all checks and adjustments, unless otherwise specified.

Ensue that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.

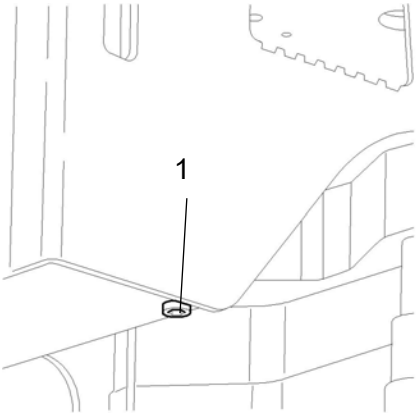


Fig. Engine compartment under hydraulic reservoir, left side
1. Oil plug

Hydraulic reservoir
Fluid change

Take care when draining the hydraulic fluid. Wear protective gloves and goggles.

The drain plug(1) is located under the machine on the left side.

Place a container under the plug.

Release the oil plug and allow all the oil to run out.

Refit the drain plug with a new seal.

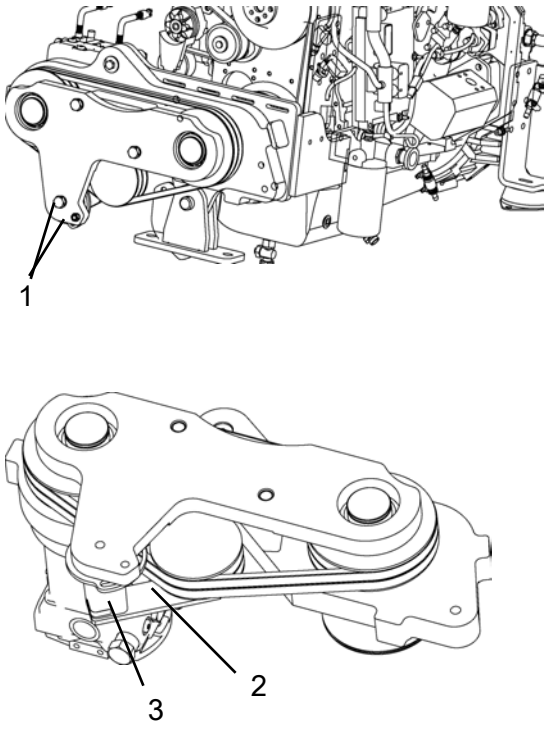
Hand in the drained oil to a waste disposal station.

Fill with fresh hydraulic fluid. Refer to the lubricants specification for grade information.

To replace the hydraulic fluid filter, see chapter "High-pressure hydraulic filter Replacement".

Start the engine and operate the hydraulic functions. Check the level in the reservoir and top off as required.

Pump drive - Check - replacement of belt



Replacing:

The pump drive is located between the engine and cooler.

Replace damaged and worn belts immediately. The slots on the V-belts must be cleaned from particles.

The belts must always be replaced in pairs.

- Unscrew the screws (2). (1).

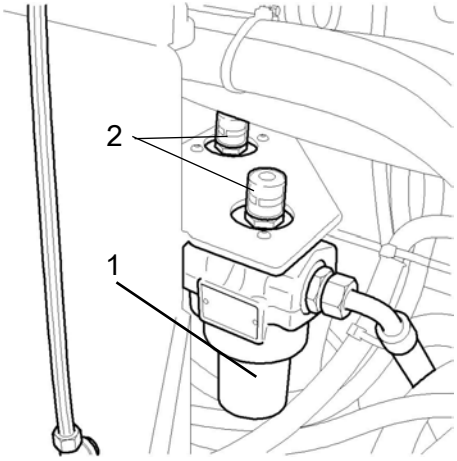
- Turn the tension arm with a spanner (2) in towards the square edge of the belt tensioner. (3)

- Replace the belt. To adjust the belt tension, see section "Pump drive, adjusting belt tension".

Check also the condition of the pulleys.

Fig. Pump drive
1. Retaining screws
2. Tension arm
3. Belt tensioner

High-pressure hydraulic filter - Replacement



The filter units must always be replaced in pairs!

The engine must be running when replacing the filter!

Release the hydraulic pressure by turning the service switch OFF/ON 10 times before replacing the filter!

Fig. High-pressure hydraulic filter
1. Filter
2. Indicator

When the indicator (2) indicates red, the filter must be replaced. Release the filter holder with an Allen key. Unscrew by hand.

Remove the filter (1) and hand in to a waste disposal station. This is a disposable filter and cannot be cleaned.

Make sure that the old seal is not left on the filter head. Leakage will otherwise occur between the new and old seal.

Thoroughly clean the sealing surfaces on the filter head. Apply a thin coat of fresh hydraulic fluid on the new filter seal. Screw tight the filter by hand.

Red indicator (2) resets itself automatically after replacement.

Pump drive - adjusting the belt tension

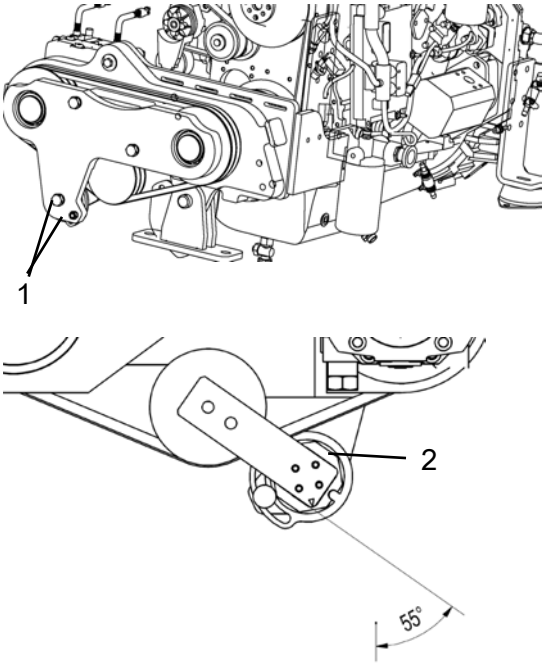


Fig. Pump drive
1. Screws
2. Belt tensioner square edge

The belt tensioner is first adjusted after 10 working hours and then every 2000 hours

The belt tensioner is reached from under the machine.

- Unscrew the screws (2). (1, 2).

- Using the key, turn the belt tensioner to an angle of 55° in relation to the belt.

- Tighten the screws.

Return oil filter suction side
Replacement

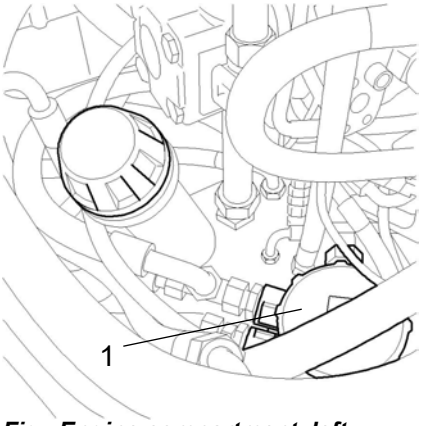


Fig. Engine compartment, left
1. Filter housing cover

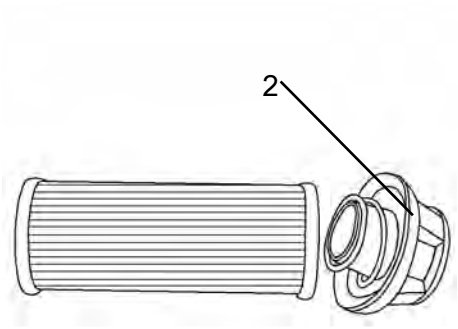


Fig. Filter unit
2. Handle

Remove the filter (1) and deliver to special waste handling. This is a single-use filter and cannot be cleaned.

The return oil filter is located on the hydraulic reservoir behind the rightt service cover for the engine compartment and must be replaced every 2000 hours or once a year.

- Release the filter housing cover (1) by unscrewing the square bolts.

- Lift out the complete filter unit from the housing and remove the handle (2) from the used filter unit.

- Fit the handle on the new filter unit and put the complete filter insert in the filter housing.

- Refit the filter housing cover.

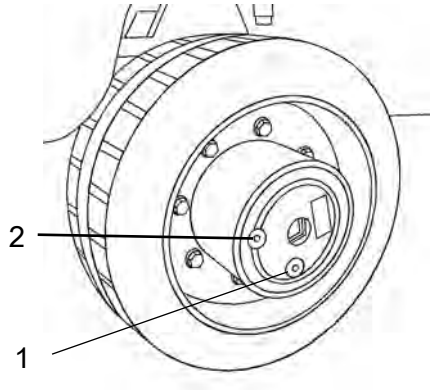


Fig. Planetary gear/position for refilling
1. Drain plug
Filler plug

Chassis leg, drive wheel - Planetary gear, oil draining

The oil is first changed after 250 working hours and then every 2000 hours, but at least once a year.

Position the planer so that the drain plug (1) in the planetary gear is at "6 o clock" and the filler plug (2) at "9 o clock".

- Unscrew the drain plug.. Drain the oil into a container.

Oil should be taken to your local waste disposal station.

- Screw tight the drain plug.

- Fill new oil through the filler hole the the lower edge of the level hole. Use transmission oil. See lubrication specification. Screw tight the filler plug.

Drum gearbox - Oil change

The oil is first changed after 250 working hours and then every 2000 hours, but at least once a year.

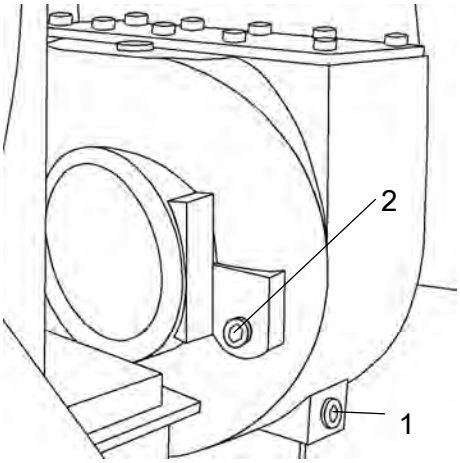


Fig. Drum gearbox
1. Drain plug
2. Filler plug

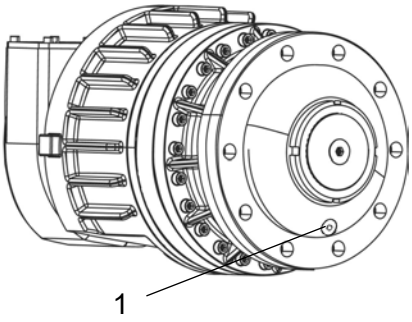


Fig. Drum gear
1. Drain plug

Position the planer on a level surface.

Clean and remove the filler plug (2). Remove the drain plugs by the drum gearbox (1) and by the drum gear (1), and drain the oil into a suitable container.

Refit the drain plugs (1) and fill carefully until the oil reaches the plug hole (2). Wait until the oil has run over in the drum gear, then check the level and top up if required, in accordance with "Drum gearbox - Checking the oil level".

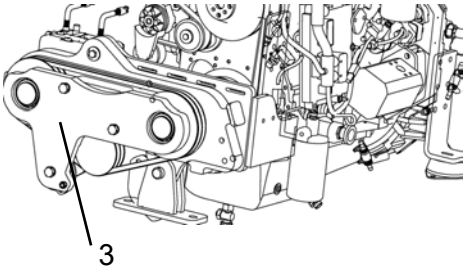
Use transmission oil according to the lubricant specification.

Clean and replace the filler plug (1).

Hand in the drained oil to a waste disposal station.

Diesel engine - Replacing the drive belt

The pump drive must be removed from the engine before the drive belt can be replaced.



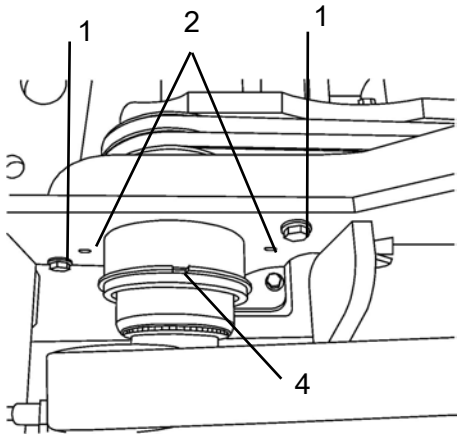


Fig. Pump drive
1. Retaining screws
2. Threaded holes
3. Pump drive
4. Lock ring

Release the pump drive

- Remove the retaining screws (2 x) (1). Fix them in the adjacent threaded holes. (2)

When the screws are screwed in the pump drive(3) is pulled away from the engine drive shaft.

- Pull away the pump drive all the way to the lock ring. (4)

- Lift off the engine drive belt.

- Refit in the reverse order.

Fuel tank - Drainage

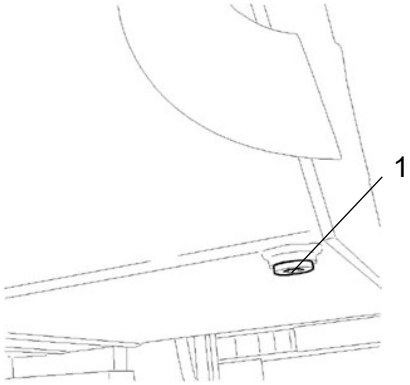


Fig. Fuel tank
1. Drain plug

Water and sediment in the fuel tank are removed via the drainage plug in the bottom of the fuel tank.

Be very careful during draining. Do not drop the plug or else all the fuel will flow out.

The draining should be done when the planer has been stationary for a prolonged period, e.g. overnight. The fuel level should be as low as possible.

The planer should preferably have been standing with the drain plug somewhat lower, so that water and sediment will collect at the drain plug (1). Drain as follows:

Place a container under the plug (1).

Remove the plug and drain the water and sediment until only pure fuel runs from the plug. Refit the plug.

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