

Instruction manual

Operating & Maintenance

4812273396-EN.pdf

Compact planer
PL350

Engine
Cummins B3.3

Serial number
10000900x0C003261 -



Translation of original instruction

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Introduction

The machine

Dynapac's PL 350 planer is a compact, easy to operate three-wheeled planer with optional 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 100 mm.

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.

Extra weights (ballast) can, if necessary, be removed from the machine to provide additional stability when milling on various surfaces.

Intended use

PL350 is mainly intended to be used for roadworks:

- to 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 manufacturer's engine manual.

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.**

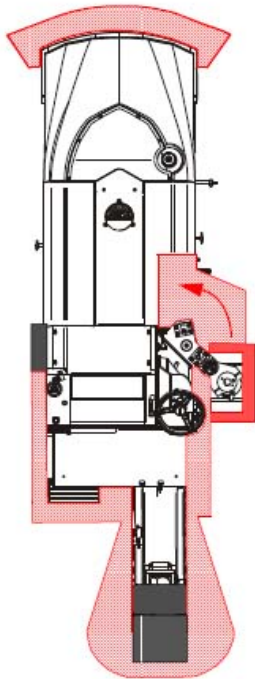
Safety - when operating

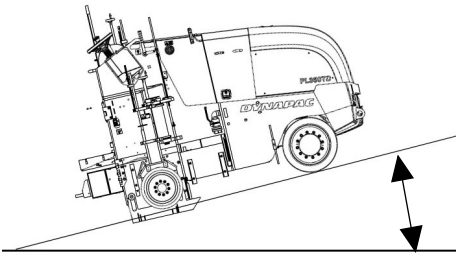


Prevent persons from entering or remaining in the danger area, i.e. a distance of at least 7 m (23 ft) in all directions from operating machines. The operator may allow a person to remain in the danger area, but should then observe caution and operate the machine only when the person is visible or has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

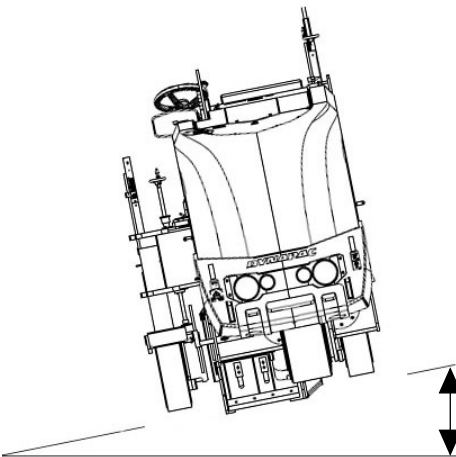
Risk zones on the machine

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





Maximum permitted angle of inclination 14°



Maximum permitted angle of inclination 10°

Fig. Operating on slopes

Slopes

The values specify the maximum permitted angle of inclination when driving.

Bear in mind that loose ground, steering angle, the deflection of the conveyor belt, chasis legs folded in and the operating speed can change 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.



Safety cannot be guaranteed when the max. permitted angle of inclination is exceeded.



Don't drive in slopes with chasis leg folded in.

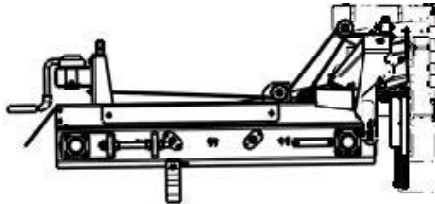


Where possible, avoid driving across slopes. Drive instead straight up and down sloping ground.

Safety (Optional)

Conveyor (option)


 ***The machine should not be transported with material on the conveyor belt.***

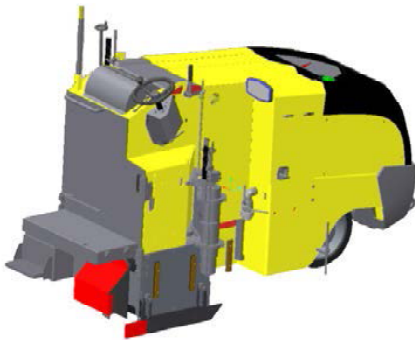


 ***The operator must make sure that nobody is in the working area while the machine is in use.***

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

 ***Risk of being retracted. Rotating conveyor.***

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



 ***Conveyor guard plate has to be installed when PL350 is not equipped with conveyor and driver's seat.***

 ***Risk of foot cut. Rotating milling drum.***

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 - 105°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.

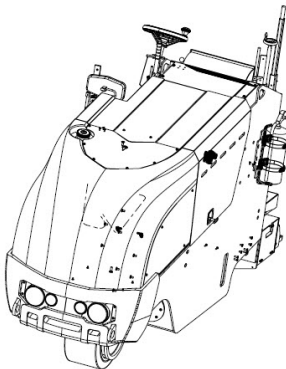


Detergent that can destroy electrical parts, or which is conductive, must not be used.

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.

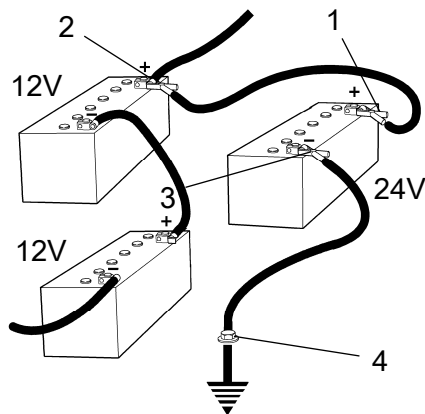


Fig. Jump starting

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 lifting 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 same directive. (Limit is 5 m/s²)

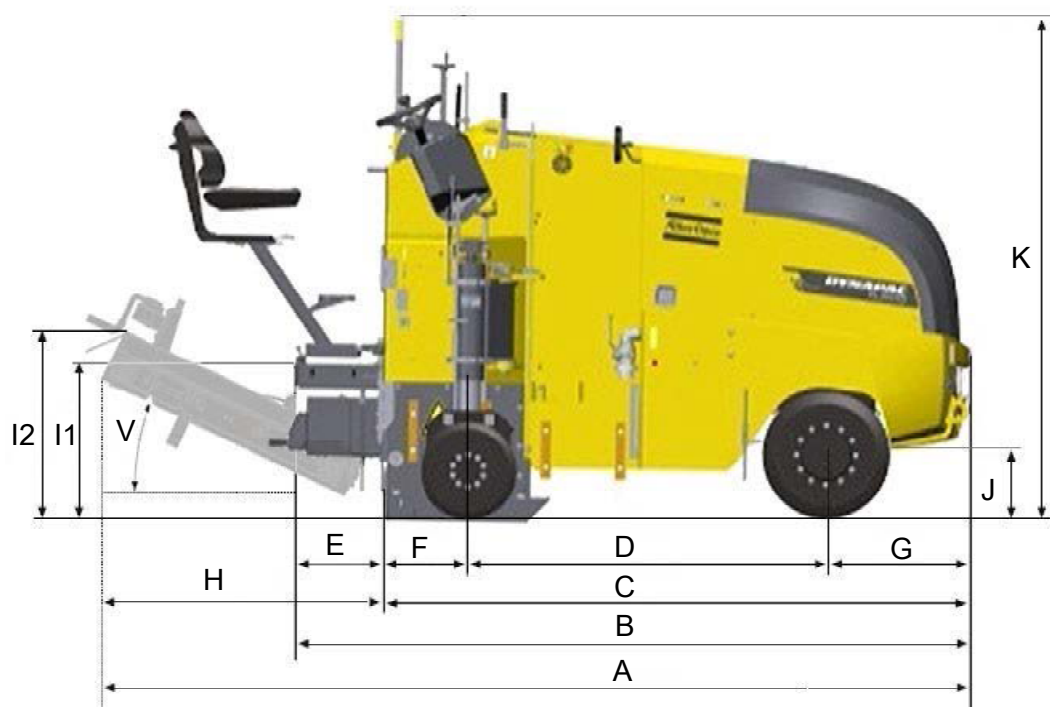
Noise level

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}	45 kW	105 dB (A)
Sound pressure level at the operator's ear (platform), L_{pA}		86 dB (A)

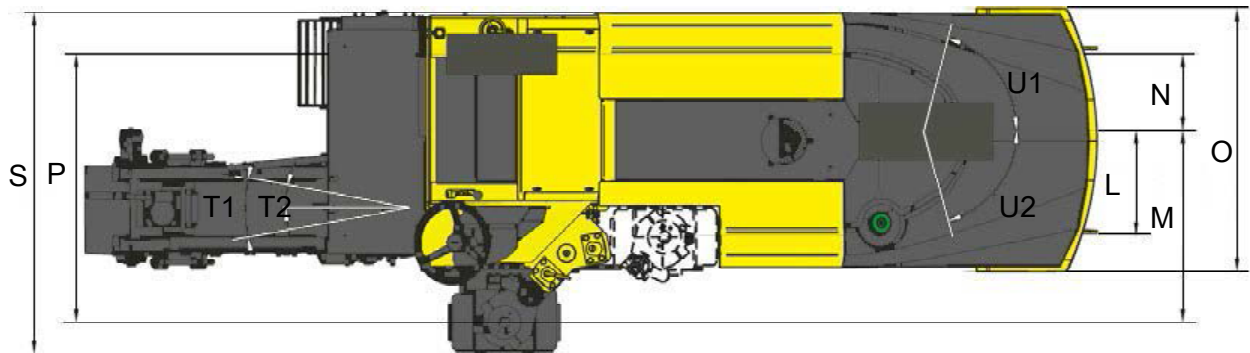
During operation the above values may differ because of the actual operational conditions.

Dimensions, side view



Dimensions	mm	degrees	inch
A	3880	-	153
B	2955	-	116.3
C	2570	-	101.2
D	1570	-	61.8
E	385	-	15.2
F	383	-	15.1
G	617	-	24.3
H	1025	-	40.4
I1	685	-	27
I2	750	-	29.6
J	280	-	11
K	2176	-	85.7
V	-	26	-

Dimensions, top view



Dimensions	mm	degrees	inch
L	365	-	14.4
M	757	-	29.8
N	290	-	11.4
O	1010	-	40
P	1054	-	41.5
S	1350	-	53.1
T1	-	20	-
T2	-	10	-
U1	-	75	-
U2	-	75	-

Weights and volumes

Weights

PL350

Transport weight: min. - max.	4120 - 4275 kg	9085 - 9425 lbs
Operating weight (CE) min. - max.	4445 - 4605 kg	9800 - 10150 lbs
Max operating weight, fully loaded (CE)	4950 kg	11 000 lbs
Machine weight without ballast min. - max.	3345 - 3505 kg	7375 - 7730 lbs
Ballast front	550 kg	1200 lbs
Ballast rear	545 kg	1200 lbs
Conveyor belt (1 m) with scraper (option)	115 kg	255 lbs

Fluid volumes

PL350

Fuel tank	125 l	33 gal
Engine oil	7,5 l	8 qts
Hydraulic reservoir	110 l	116 qts
Water tank	400 l	123 gal
Planetary gear, drive wheel	0,75 l	0.8 qts
Coolant, engine	4,5 l	4.8 qts

Working capacity

Performance PL350

Transport speed	0-5,8 km/h	0-3.5 mph
Working speed	0-25 m/min	0-0.016 mpm

PL350

Milling width	350 mm	13.8 inch
Milling depth	100 mm	4 inch
Line spacing	12 mm	0.5 inch
Milling diameter	520 mm	20.5 inch
Number of milling tool systems C10HD	max. 42 pieces	

General

Engine PL350

Manufacturer/type	Cummins B3.3
Max. power (SAEJ1995)	45 kW 60 hp/2,200 rpm
Engine speed	2,200 rpm
Cylinder volume	3300 cm ³
Fuel type	Diesel
Cooling	Water
Number of cylinders	4
Fuel consumption, full load	11.6 l/h
Fuel consumption, 2/3 load	8.0 l/h

Electrical system

Voltage	24 V
High capacity batteries	2 x 12 V, 74 Ah
Alternator	24 V / 35 A
Fuses	see section on fuses

Hydraulic system

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

Tightening torque

Tightening torque in Nm 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

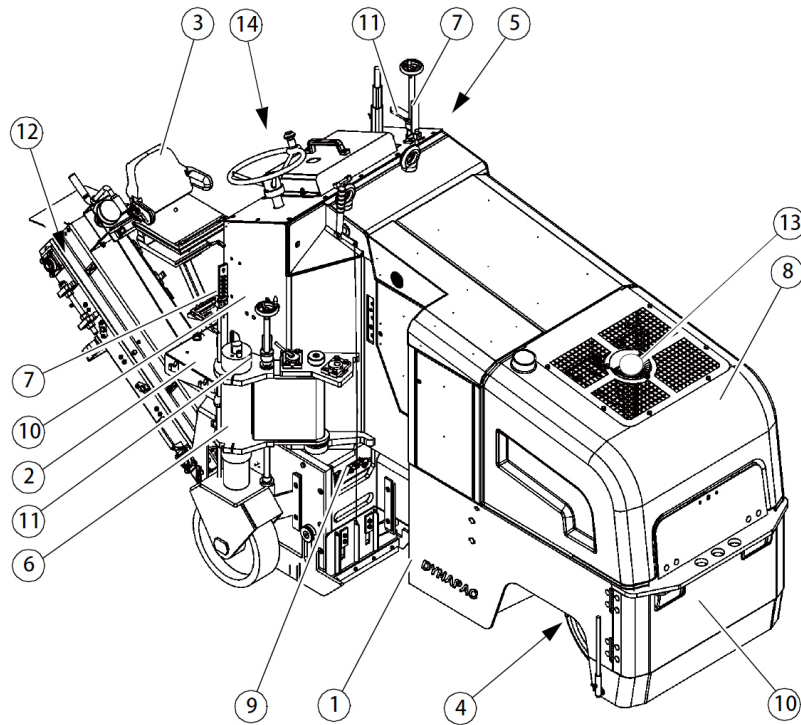
Metric coarse thread, zinc-treated (Dacromet/GEOMET):

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

Machine description

Machine Construction



Item	Description
1	Frame
2	Operator's control station
3	Driver's seat(*)
4	Drive wheel
5	Chassis leg (with drive*)
6	Pivot mounted chassis leg (with drive*)
7	Milling depth indicator
8	Water tank
9	Water spraying system
10	Removable additional weights
11	Milling depth limit stop
12	Lower conveyor (*)
13	Steering angle indicator
14	Storage space for toolbox

Frame and assembly

Robust, distortion-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 full-width operator's control station is located at the back of the machine and can be equipped with a driver's seat as an option.

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 operation and control panel which includes all the necessary switches and display devices.

The steering system involves the use of a steering wheel and travel speed is controlled by a drive lever.

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

Engine

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

The emission levels defined in the U.S. EPA and the European COM3 exhaust standards are all achieved.

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 section

The hydraulically powered milling drum is located between the two rear chassis legs. The two right-hand chassis legs 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 special-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 350mm, the bit 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 hydraulic milling drum motor and can be replaced easily and quickly after removing 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.

There are limits stops on both rear wheels for setting the milling depth. There are water scales on the operator's panel which indicates the lateral inclination of the machine.

Traction unit, steering system, travel drive, brake

The front wheel is mounted in a rotary mounting while the rear wheels are designed as independently suspended chassis legs used for setting the milling depth.

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

The hydraulic travel drive has two infinitely variable speed ranges, adjusted by the hydraulically powered front wheel or optionally as a three-wheeled unit.

The hydraulic travel drives are connected to the wheel hubs by means of planetary gears. This ensures optimum feed and high gradeability.

A multi-disc brake on the front wheel provides braking support. As an option, the machine can be equipped with powered chassis legs.

Water system

The water system comprises a water spraying and cooling system. The water spray and cooling system operates in low-pressure range at approx. 2-3 bar. The system provides cooling and cleaning of the milling bit.

The spray nozzles can be easily replaced.

The water tank has a capacity of 480 liters and has good access for filling from the top.

Lower conveyor (*)

The cold planer is designed as a rear loader and can be equipped with a single-section loading system.

Milling material is loaded via the lower conveyor using a transport aid (e.g. the shovel on a wheel loader) or is placed to one or other side of the milling lane.

The belt can then be changed quickly and easily.

The full-length cover substantially reduces the dust burden.

The upper conveyor can be dismantled / mounted very rapidly.

Hydraulic system

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

Electrical system

24 volt system with two cold start high power batteries engaged sequentially and a 3-phase generator.

The power supply can be interrupted by the battery's main switch.

Identification

Explanation of 17PIN serial number

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

A= Manufacturer

B= Family/Model

C= Check letter

D= No coding

E= Production unit

F= Serial number

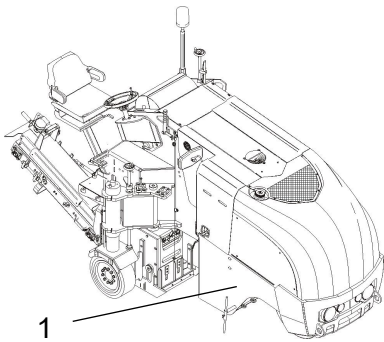


Fig. PIN Front frame

Product identification number on the frame

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

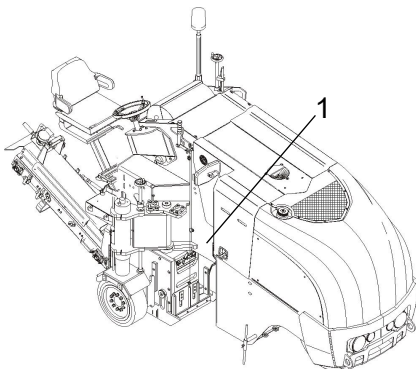


Fig. PL350
1. Machine plate

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.

Decals

Positioning of labels, right-hand side

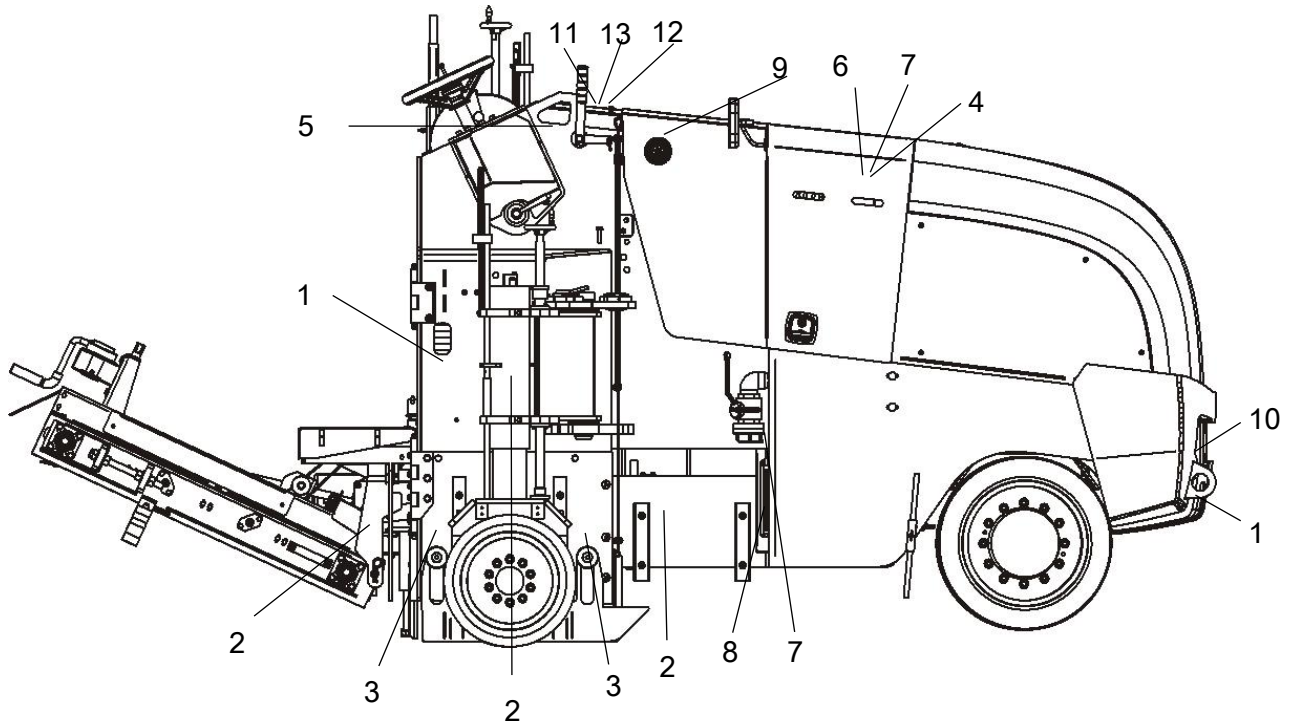


Fig. Location, decals and signs

1. Fixing point	4700382751	8. Hydraulic fluid level	4700272373
2. Warning, crushing risk	4700904785	9. Warning, Starting gas	4700791642
3. Warning, Rotating milling drum	D956052007	10. Lifting plate	4700904870
4. Coolant	4700388449	11. Ear protection	4700388449
5. Lifting point	4700357587	12. Warning, Instruction manual	4700903459
6. Warning, Hot surfaces	4700903424	13. Sound level	4700791275
7. Water	4700991657		

Positioning of labels, left-hand side

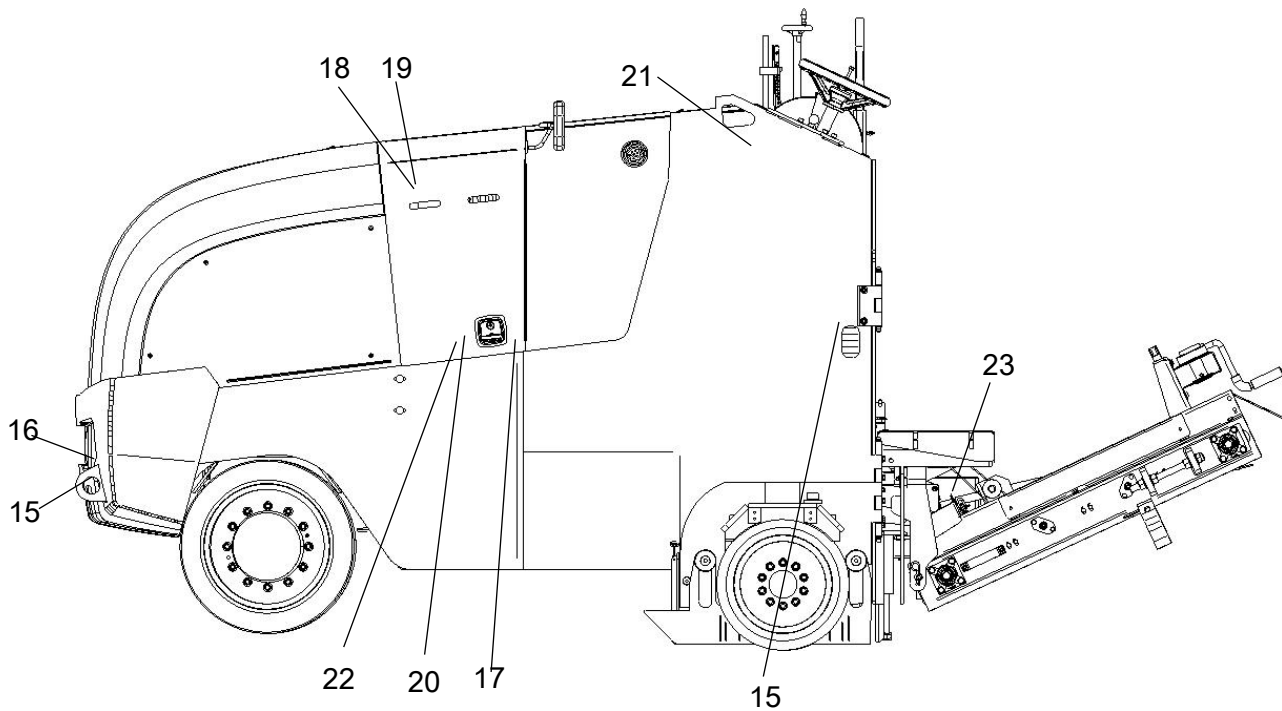
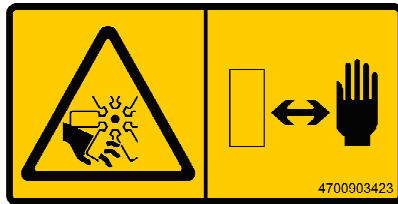


Fig. Location, decals and signs

15	Fixing point	4700382751	20	Diesel fuel	4700991658
16	Lifting point	4700357587	21	Lifting plate	4700904870
17	Warning, Brake disengagement	4700904895	22	Master switch	4700904835
18	Warning, Rotating engine components	4700903423	23	Manual compartment	4700903425
19	Warning, Hot surfaces	4700903424			

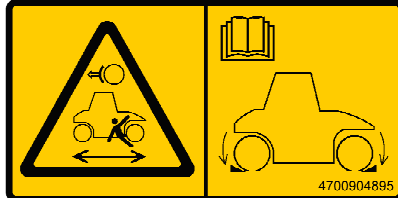
Safety decals

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.



4700903423
Warning - Rotating engine components.

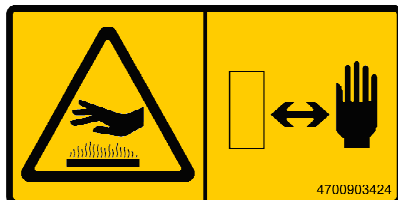
Keep your hands at a safe distance from the danger zone.



4700904895
Warning - Brake disengagement

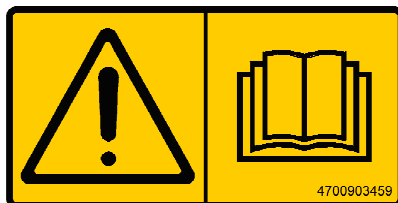
Study the towing chapter before disengaging the brakes.

Danger of being crushed.



4700903424
Warning - Hot surfaces in the engine compartment.

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



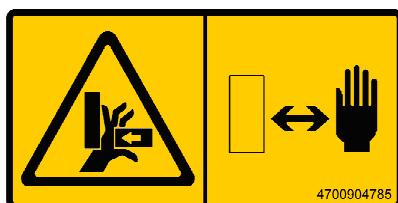
4700903459
Warning - Instruction manual

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.



4700904785
Warning - Crush zone

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

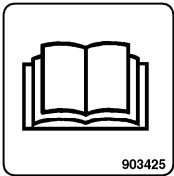


D956052007
Warning - Rotating milling drum

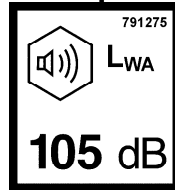
Maintain a safe distance from the risk zone.

Info decals

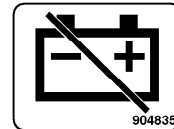
Handbook compartment



Noise power level



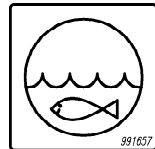
Master switch



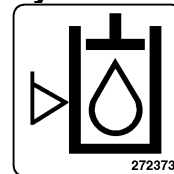
Diesel fuel



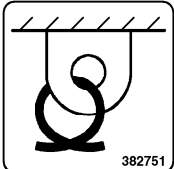
Water



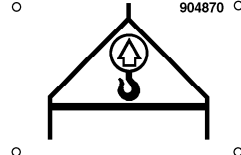
Hydraulic fluid level



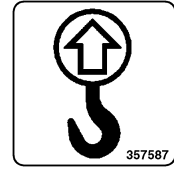
Fixing point



Lifting plate



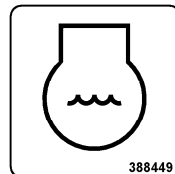
Lift point



Ear protection



Coolant



Instruments/Controls

Control panel and controls

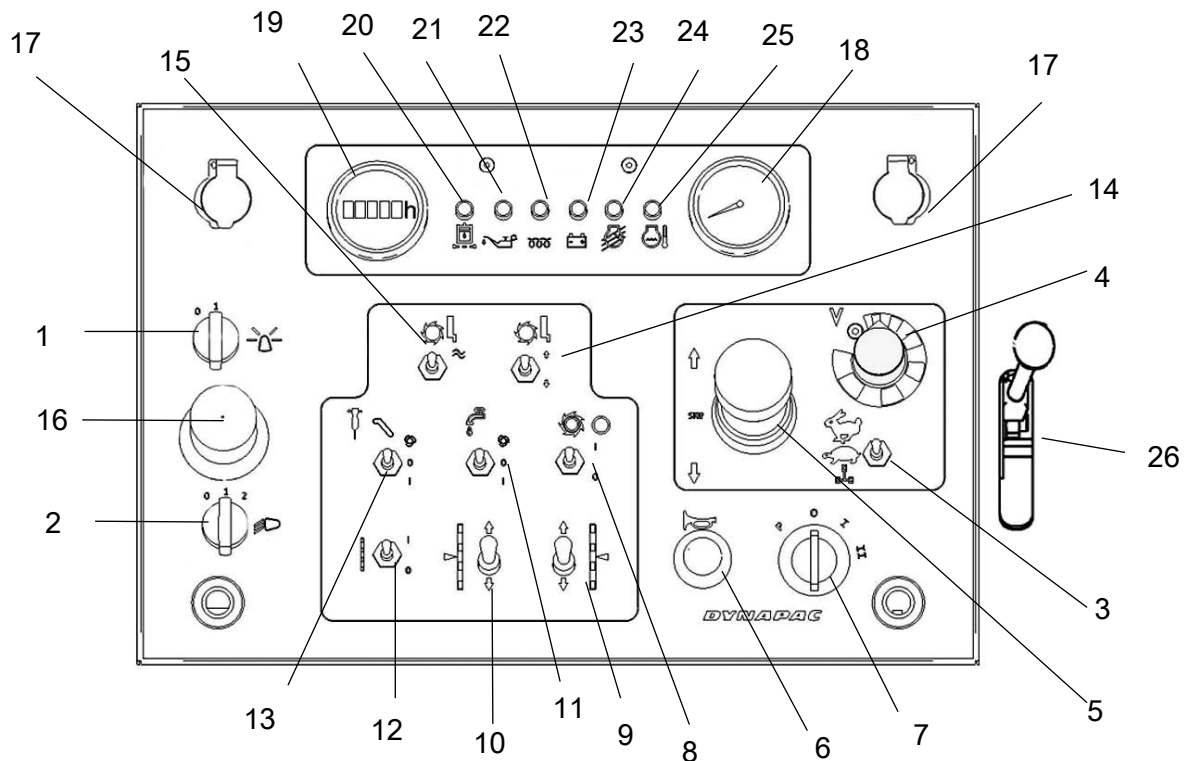









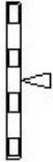








Fig. Control panel

1	Rotating beacon	10	Chassis leg, left Raise/Lower	19	Hourmeter
2	Light button	11	Position setting, water pump	20	Warning lamp, hydraulic filter (suction filter)
3	Gear position switch	12	* Level system OFF/ON	21	Warning lamp, oil pressure
4	Speed setting	13	* Position setting, Conveyor belt/Hydraulic hammer	22	Indicator, Preheating of diesel engine
5	Forward/Reverse lever	14	* Position selector, scraper	23	Warning lamp, battery charging
6	Horn	15	* Floating position, scraper	24	Start inhibitor
7	Ignition lock	16	Emergency stop	25	Warning lamp, engine temperature
8	Milling drum drive	17	Power socket, 24 volt	26	Speed control, diesel engine
9	Chassis leg, right Raise/Lower	18	Temperature gauge, coolant		

* 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	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 positions is only possible when the control lever is in neutral.
4	Speed setting		Variable limitation of max. speed. Min. position: Idling Max. position: Nominal
5	Forward/Reverse lever		Forward/Reverse: Variable adjustment of operating speed. Neutral position: The engine can be started on idle. Machine braked. Max. speed set with the preset control.
6	Horn		Press to sound the horn.
7	Ignition key		Position P: Parking lights on. Position 0: The electric circuit is broken. Secondary brake on. Position I: All instruments and electric controls are supplied with power. Position II: 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	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 low enough for the milling drum to be in contact with the surface when starting the milling drum. The drive can only be activated when the working gear is engaged and the control lever is in neutral.
9, 10	Chassis leg, left/right raise/lower		Lever, forward: Raising the machine Lever, reverse: Lowering the machine To raise the machine evenly, activate the right and left sides simultaneously

No	Designation	Symbol	Function
11	Position control, Sprinkler pump		Position 0: Sprinkler pump switched off Position AUTO: The sprinkler system is started automatically when the forward/reverse lever is activated. Position 1: Constant water supply
12	Level system OFF/ON		Position 0: Leveling switched off Position 1: Leveling on Adjustment with connected leveling equipment can only take place in position 1.
13	Position control, conveyor belt		Position 0: Belt switched off Position AUTO: The conveyor belt is started automatically when the forward/reverse lever is activated. Position 1: Belt activated.
	Hydraulic hammer (option)		Position 0: Hammer switched off Position 1: Hammer on Position AUTO: not operational The hammer may only be used when the machine is stationary
14	Scaper, Up/Down		The scaper is raised/lowered when the switch is activated. The plate lowers automatically when the switch is released.
15	Scrapper, floating position		Scrapper in floating position, lowers with its own weight.
16	Emergency stop		Switches off diesel engine, drive units and steering.
17	Outlet		Extra 24 V outlet.
18	Temperature gauge, cooling system		Displays the temperature of the coolant
19	Working hours, counter		Displays the number of working hours
20	Warning lamp, hydraulic filter (suction filter)		Red lamp lights when the hydraulic filter (suction filter) is clogged and needs to be replaced
21	Warning lamp, oil pressure, diesel engine		If a red lamp lights during operation or does not go out after starting up, turn off the engine and locate the fault
22	Preheating, diesel engine, check		The yellow lamp must have gone out before starting the diesel engine
23	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.
24	Warning lamp, Safety catch		An activated function or pressed emergency stop will not allow the machine to start.
25	Warning lamp, cooling system		If a red lamp lights during operation or does not go out after starting up, turn off the engine and locate the fault
26	Speed control, diesel engine		Variable adjustment of speed. Lever in forward position: Idling Lever in reverse position: Nominal

Electrical system

The electrical control system is protected by 11 fuses and 5 relays.

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

The fuse box and relays are placed behind the left-hand engine cover.

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

Main fuses

There are four main fuses, placed behind the left-hand cover on the engine compartment.

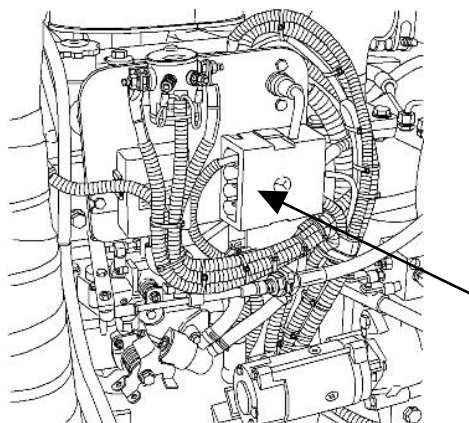


Fig. Engine compartment, positioning of main fuses.

F1.1	Main fuse	50A
F1.2	Main fuse, alternator	50A

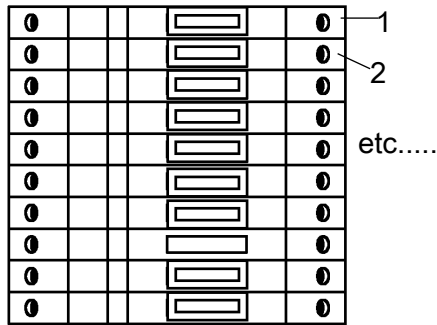


Fig. Fuses on machine

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.	Start inhibitor	10A
2.	Control lamps	10A
3.	Preheating, engine	5A
4.	Control unit, computer	10A
5.	Milling drum, scraper, water system, conveyor belt (option)	10A
7.	Working lights	25A
8.	Rotating hazard light	5A
9.	Horn, buzzer	10A
10.	Levelling system	10A
11.	Plugs, 24V	10A

Relays, machine

Relays:

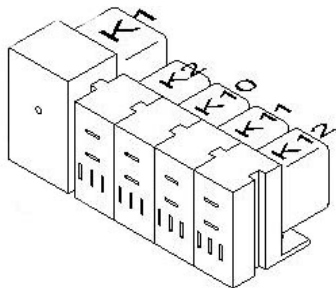


Fig. Relays

K1	Start activator
K2	Water system
K10	Milling drum
K11	Milling drum
K12	Conveyor belt

Functional description

Front plate

The manual front plate (1) prevents the spreading of milled material.

During cleaning or maintenance of the milling drum or milling drum housing, the front plate can be raised using the handle located in front of the steering wheel (2).



The front plate must be folded down during milling!

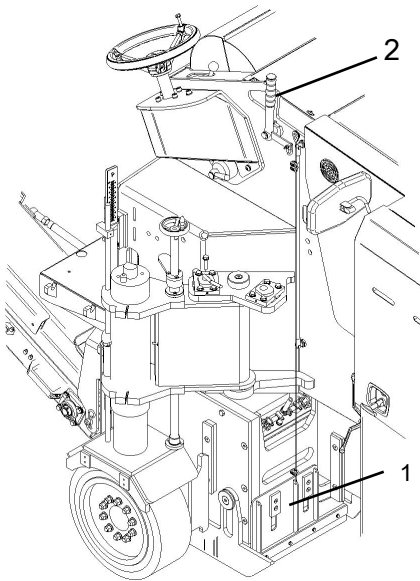


Fig.
1. Front plate
2. Handle, front plate

Footplate extension (option)

An additional extension of the footplate (1) can be hooked onto the existing footplate to provide more space. Under the plate are 2 adjustment screws, which must be locked into position after adapting the plate.

A fold-out support handle (2) is installed on the attachment located on the machine frame.

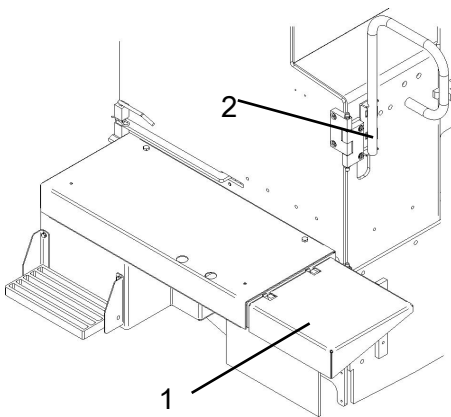


Fig.
1. Extra footplate
2. Support handle

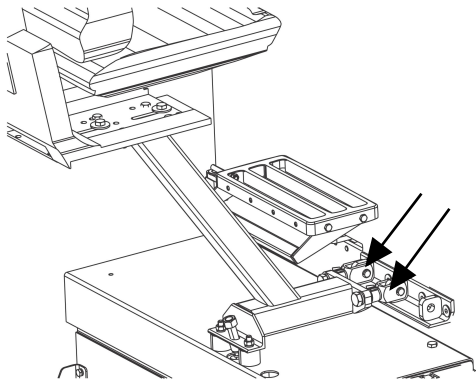


Fig. Chassis seat, locking screws

Driver's seat (option)

The driver's seat can be removed and the standing plate used.

- Undo the locking clamps on both brackets and move the entire driver's seat to one side. Remove the driver's seat.

Install the seat in the reverse order.

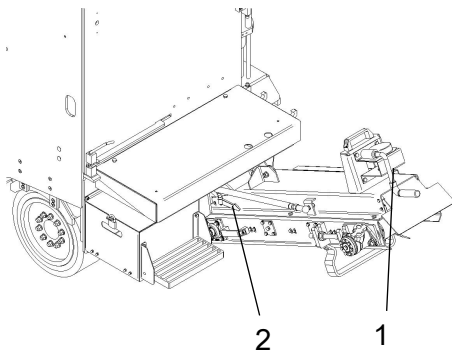


Fig. Conveyor belt
1. Crank handle
2. Locking device

Conveyor belt (option)

The conveyor belt can be adjusted vertically and laterally.

Vertical output is adjusted using the crank handle (1).

Sideways movement is achieved by undoing the locking device (2). Turn the entire conveyor belt by hand to the desired position. Securely lock the locking device.



Adjustments may only be performed when the machine is switched off!

Rear door

The milling drum and the extra weights are accessed from the rear door (1), which is opened by opening the locking pin (2) and pulling the catch (3) to the side.

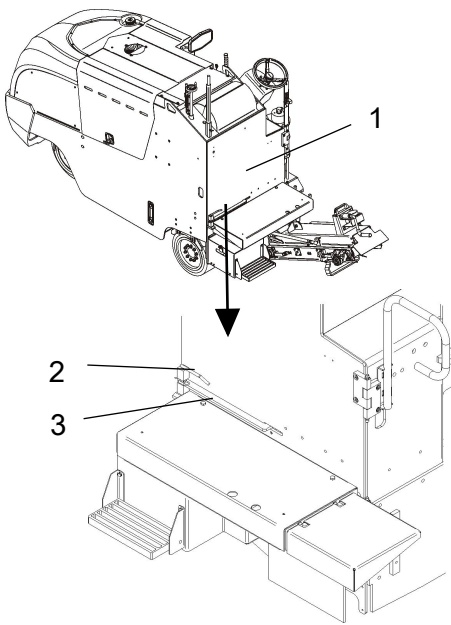


Fig. Rear door
 1. Rear door
 2. Locking pin
 3. Catch



If the door is open and the safety switch (4) is deactivated, the transmission for the milling drum will be switched off.

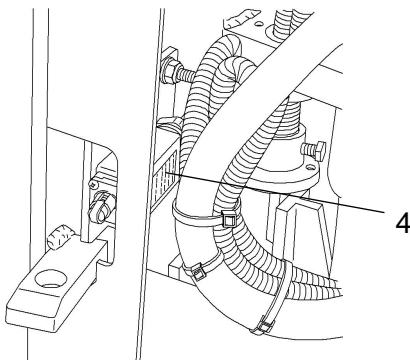


Fig. Open rear door
 4. Safety switch

Close the door properly before commencing milling work.

Safety switch

There are 2 safety switches, one located under the standing plate (1) and one behind the rear door (2).

The safety switch for the standing plate interrupts operation and the machine will stop after a short distance if the pressure from the driver is removed from the plate.

The safety switch by the rear door interrupts operation of the milling drum when the door is open.

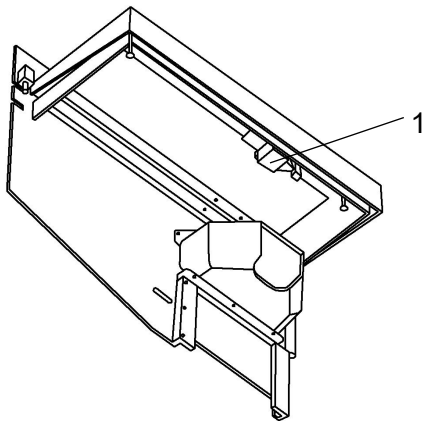


Fig. 1. Safety switch, standing plate

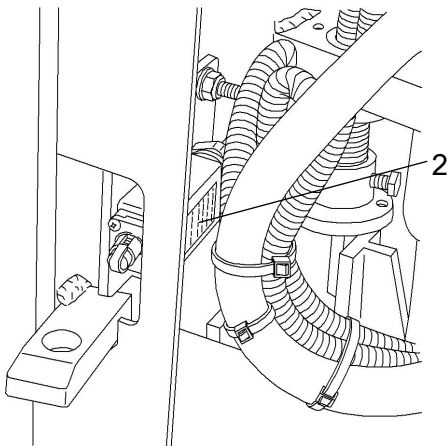


Fig. 2. Safety switch, rear door



If one of the safety switches is deactivated, the control lever must be moved to neutral before the machine can be driven again.

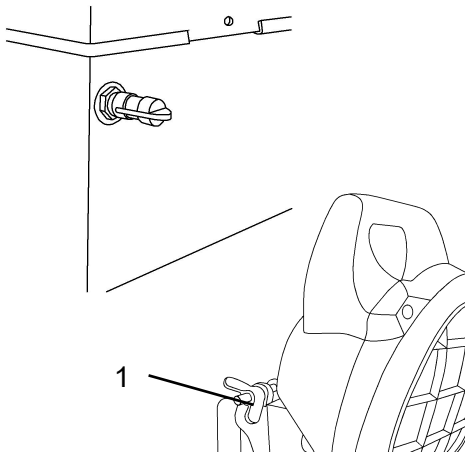


Fig. Working lights
1. Wing nut

Working lights

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

NB! The sockets are 24 volt sockets!

Place the working lights in position and secure with a wing nut (1)

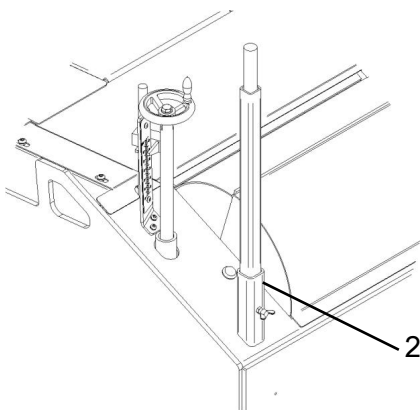
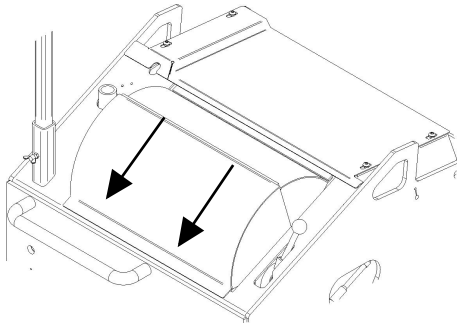


Fig. Vertical adjustment, rotating beacon
2. Screw

The rotating beacon, located on the left-hand side of the control panel, can be adjusted vertically by undoing the screw (2), setting the correct height and then tightening the screw again.

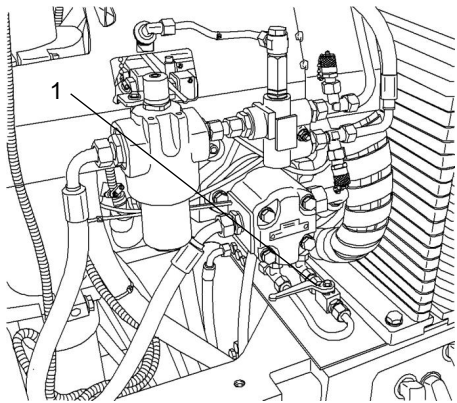
Vandalism protection



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

Fig. Vandalism protection

Stop valve, milling drum freewheel



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.

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

Bits - Tool holder

System: C10HD

The double action quick coupling system C10HD consists of:

1. Bits
2. Tool holder

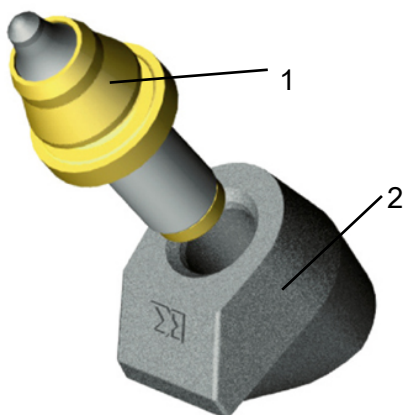
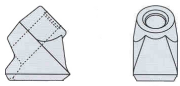
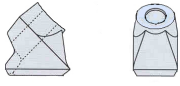
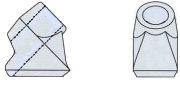
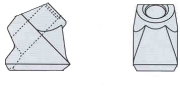


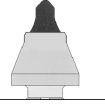
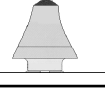
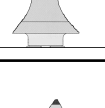
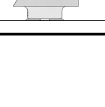
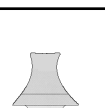
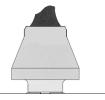
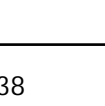
Fig. Quick coupling system
1. Bits
2. Tool holder

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

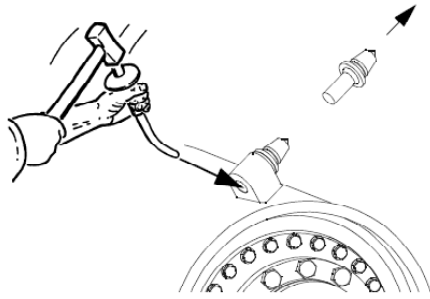


Fig. Removing bits

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, unusual vibrations during milling or other damage.

Removing of damaged or worn bit:

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!

Fitting new bit:

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



***Use copper, brass or plastic hammers!
Steel hammers damage the tip of the milling tooth!***

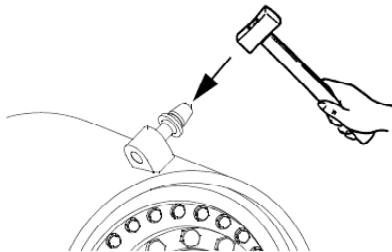


Fig. Fitting bits

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

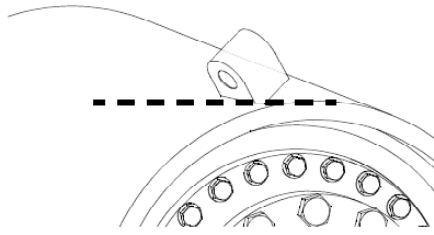


Fig. Cut defective tool holder

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.

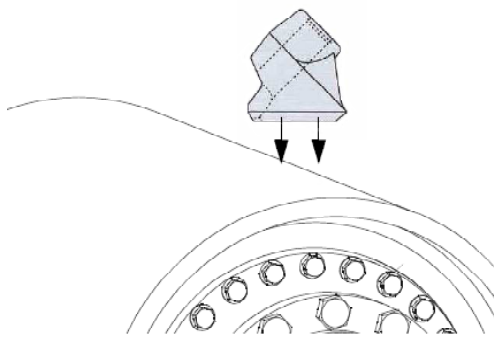


Fig. Position new tooth holder

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.

Safety switch - Operation

The planer is equipped with safety switches.

If the driver steps off the standing plate, operation is interrupted and the machine stops after a short distance.



If the safety switch has been deactivated, the control lever must be moved to neutral before the machine can be operated.



Stand on the plate at all times when operating the machine!

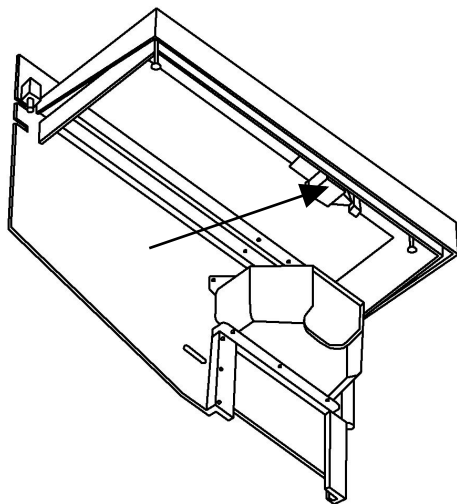


Fig. Safety switch, travel drive

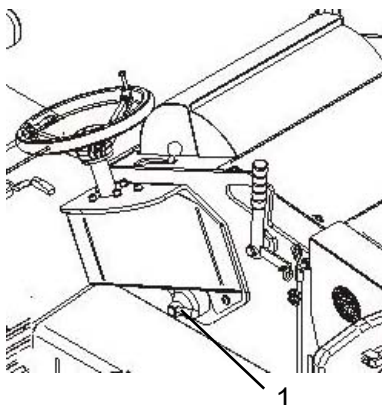


Fig. Steering console
1. Adjustment, steering wheel

Steering wheel - Adjustment

The steering wheel can be adjusted vertically using the lever (1) behind the steering wheel.

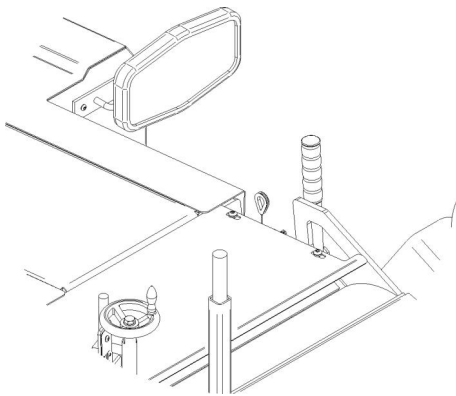


Fig. Working mirror

View

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

Adjust the working mirror for good visibility behind you.

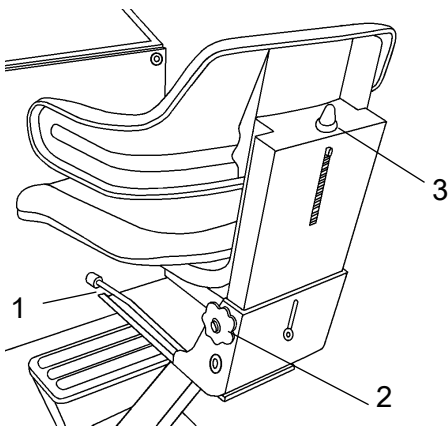


Fig. Driver seat
 1. Locking lever - Length adjustment
 2. Knob - height adjustment
 3. Knob - Weight adjustment

Driver seat - Adjustment (option)

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)
- Height adjustment (2)
- Weight adjustment (3)



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

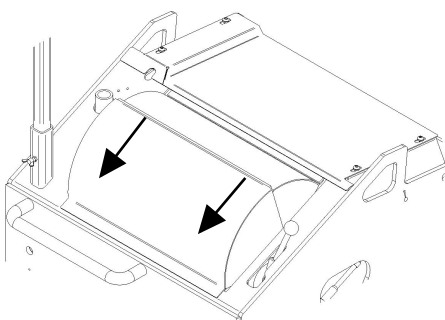


Fig. Vandalism protection

Unlock the vandalism protection

Unlock and fold up the vandalism protection on the panel 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) and other lights (4) are working.

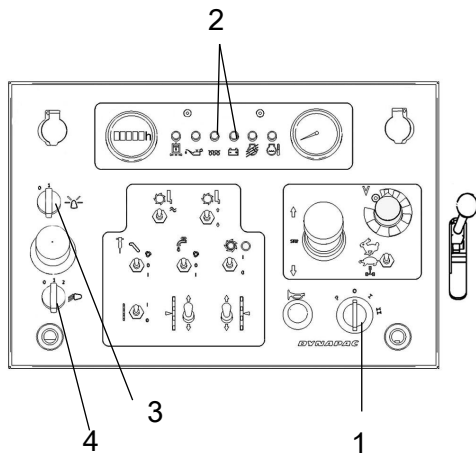


Fig. Main control panel

Master switch - Switching on

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

The battery isolator is located under the left-hand engine cover. Turn the key to the On position. The planer is now supplied with power.

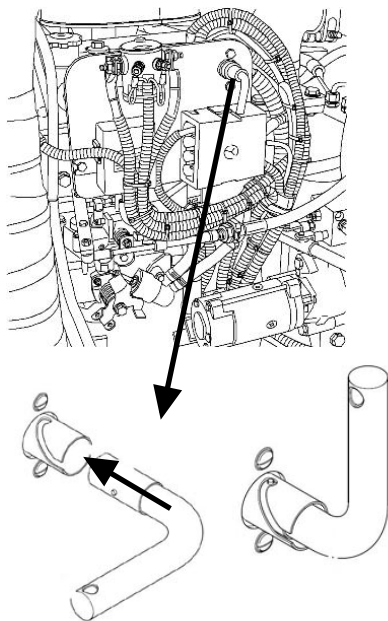


Fig. Battery disconnecter

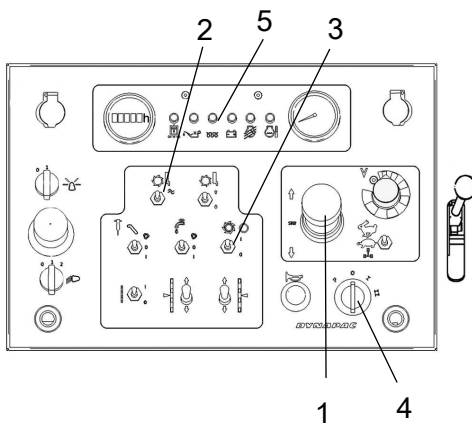


Fig. Control panel
 1. Forward/Reverse lever
 2. Scraper
 3. Milling drum drive
 4. Ignition lock
 5. Control lamp, preheating

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 scraper is in the floating position (2) and that other controls are in position 0.

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

Turn the ignition key (4) to position 1. Wait until the preheating control lamp (5) has gone out, and then turn the ignition key to pos. 2 to start the diesel 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.

! **Ensure 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.**

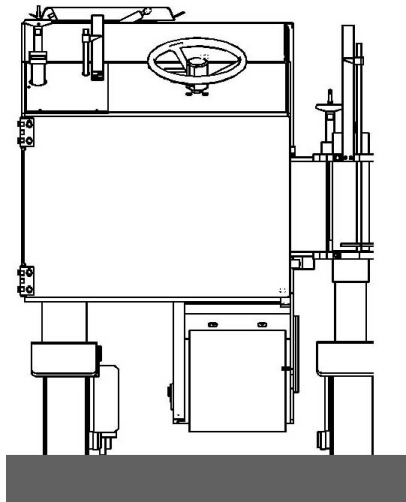


Fig. Positioning

Operation

Positioning

Machine height

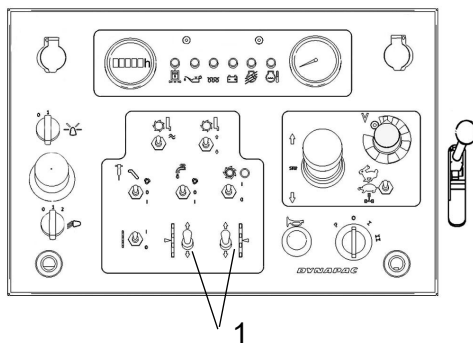


Fig. Control panel
1. Leveling (raise/lower machine)

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 10 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.

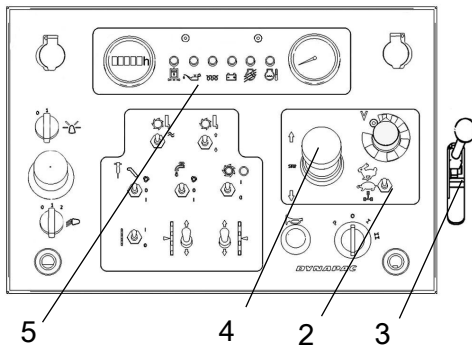
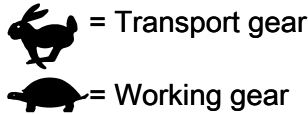


Fig. Control panel
 2. Gear position switch
 3. Speed limitation
 4. Forward/Reverse lever
 5. Gauges

- Put the gear position switch (2) in transport mode to move the machine at transport speed.



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

- Set the speed control for the engine (3) at full power.

Carefully move the forward/reverse lever (4) forwards or backwards, depending on which direction of travel is required. The speed increases the further the lever is moved away from the neutral position.

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

Check while driving that all the gauges (5) show normal readings. Stop the planer and engine immediately in the event of abnormal values. Check and correct any faults; see also the section on maintenance and the engine manual.

Driving on difficult surfaces

Drive wheels

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

When the machine has regained its grip set the knobs in their original positions.

! When "differential lock" is activated it's impossible to turn the machine on the spot or to drive around a sharp corner.

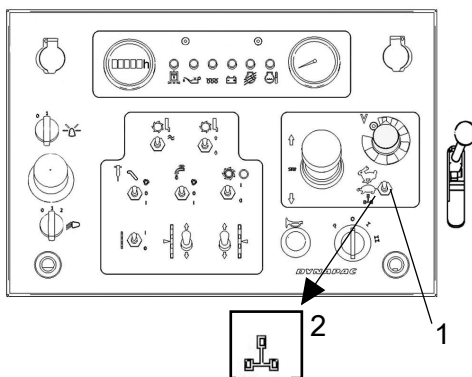


Fig. Control panel
 1. Gear position switch
 2. Differential lock position

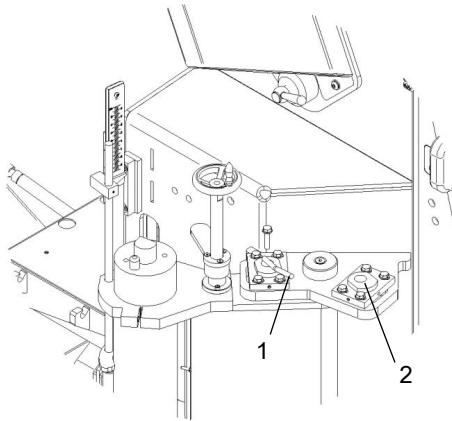


Fig. Swivel chassis leg
 1. Pin
 2. Bolt

Swivel chassis leg.

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



The chassis leg's wheel must be held in the correct position manually when being moved.

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

1. Pull out the pin and swing the chassis leg in towards the machine.
2. Secure the chassis leg and insert the pin again.

Direction of steering indicator

The direction of steering indicator is located on the top of the machine. The indicator is connected to the front wheel's steering and shows the direction position of the front wheel.

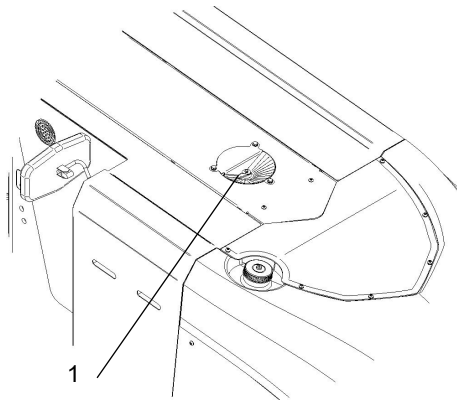


Fig. 1. Direction of travel indication

Pointer

The milling lane indicator is located on the vehicle frame. When folded out, it helps the driver to maneuver the machine during milling. The indicator's extension length is adjusted with stop screws (1) and its height is adjusted with wing nuts (2).

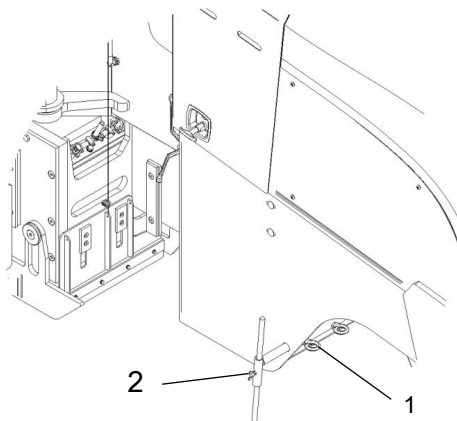
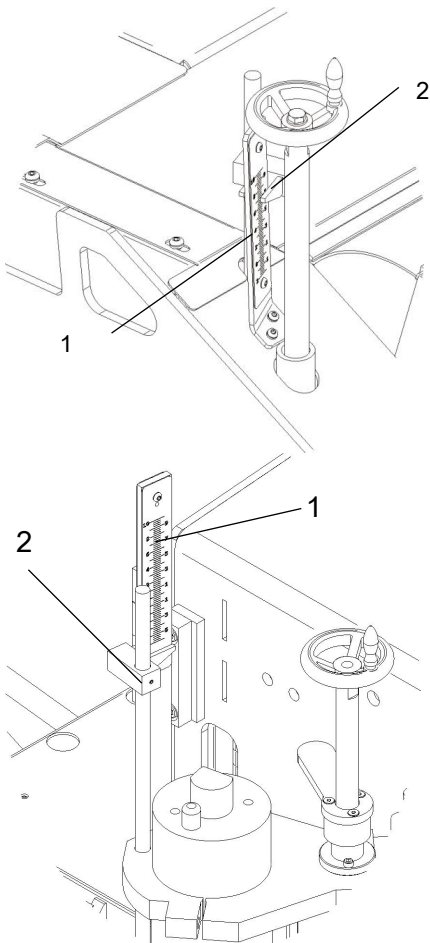


Fig. Direction indicator
 1. Stop screw
 2. Wing nut

Milling/Levelling

Milling depth indicator, adjustment



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.

Let the machine be at level ground:

Lower the spinning milling drum until both sides lightly scratches the surface.

Adjust the indicator by releasing the retaining screw (1) and set the pointer (2) to zero. Tighten the retaining screw.

! The stroke length on each chassis leg is shown in centimeters and optionally in inches.

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

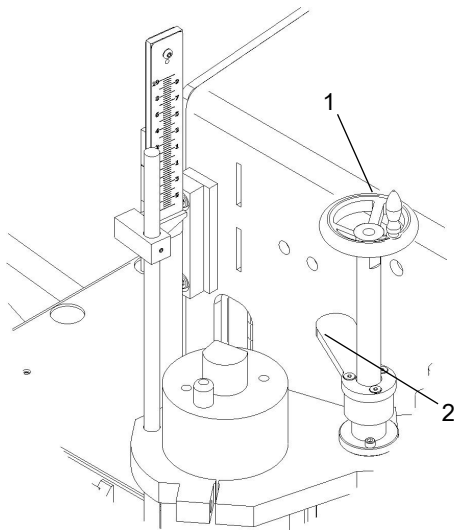


Fig. Position stop milling depth
 1. Crank
 2. Locking lever

Milling depth indicator Position stop

Adjustable position stops for milling depth can be found on each chassis leg.

When the desired milling depth has been set, this level can be locked using a position stop.

Turn the shaft to the desired position using the crank (1). Lock the shaft in position with the locking lever (2).

! Before the milling depth can be increased, the position stop must first be undone and the shaft cranked up.

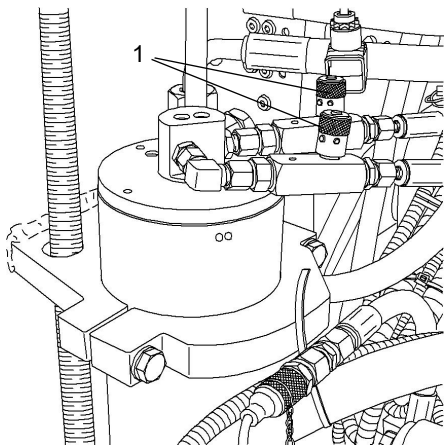


Fig. Flow valve
 1. Flow valve

Flow valve

Adjusting the speed to raise/lower the two chassis legs is performed with the aid of the relevant flow valve. (1)

The chassis legs should move easily.

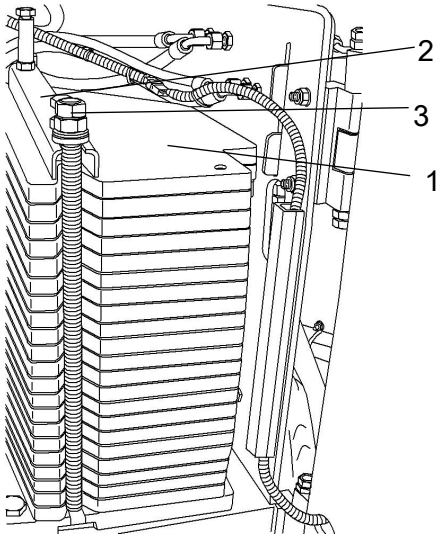


Fig. Ballast
1. Weights
2. Rail
3. Screw

Ballast rear - Adjusting machine weight

The machine weight should always be as high as possibly.

At some applications, e.g. milling inside buildings with a cellar underneath, it is possible to remove or add weights in order to reduce the machine weight.

The weights, which are located inside the rear door on the machine, are stacked on top of each other and held in place by a rail (2) and screw (3).

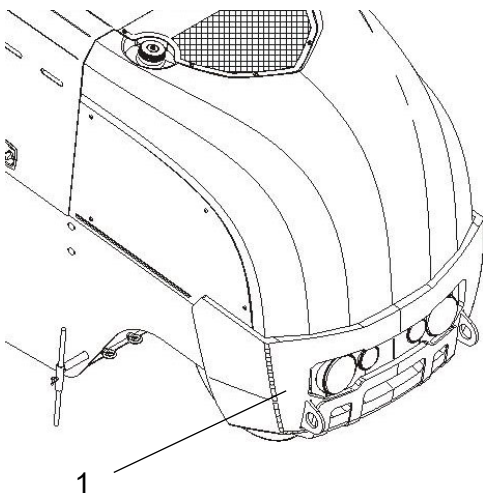


Fig. Ballast
1. Front plate

Ballast front - Adjusting machine weight

The machine weight should always be as high as possibly.

At some applications, e.g. milling inside buildings with a cellar underneath, it is possible to remove or add weights in order to reduce the machine weight.

Milling instructions

Milling position

Machine lowered - Milling drum lowered

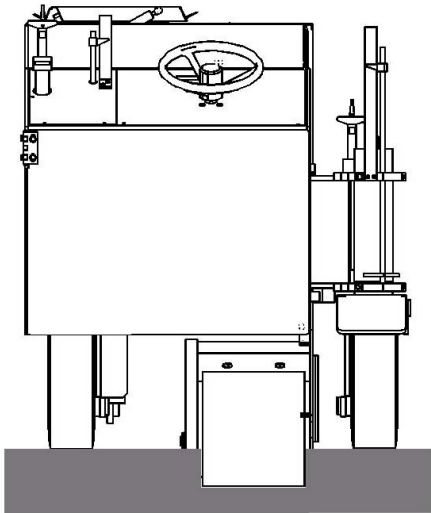


Fig. Milling position

Resetting milling depth

The milling drum is run at low rotational speed. Lower the drum until the bits scrape against the ground, along the full width of the drum.

Reset the scale for the milling depth.



Resetting must be performed on right rear foldable leg, both when folded in and folded out. Always reset on a horizontal, not inclined surface.

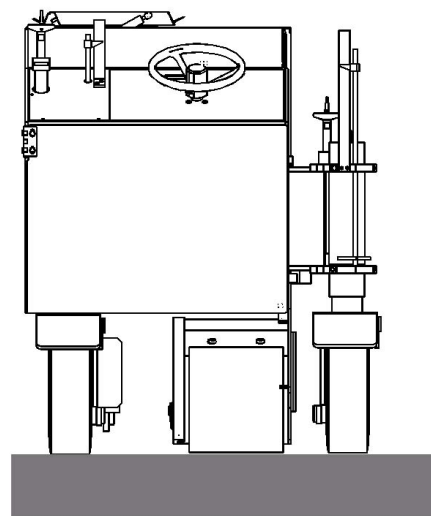


Fig. Resetting

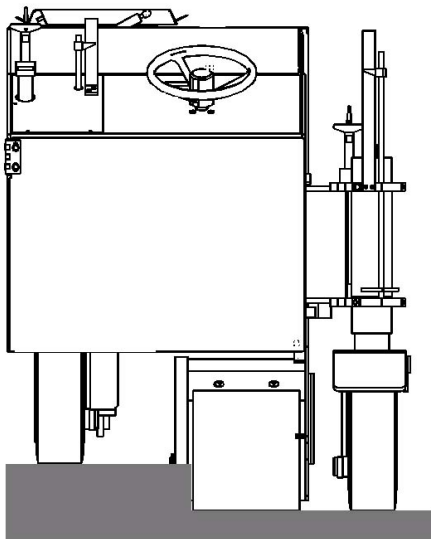


Fig. Surface milling

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 right rear foldable leg folded in:

The right rear foldable leg drives in front of the milling drum where the ground has still not been milled.

Depth setting:

Same milling depth on right and left side.

Milling at edge of roadway or at shoulders.

Depth setting:

- left - required milling depth
- right - required milling depth + shoulder height, alternatively with planer horizontal.



The planer must always be maintained in horizontal position when planer is in milling position!

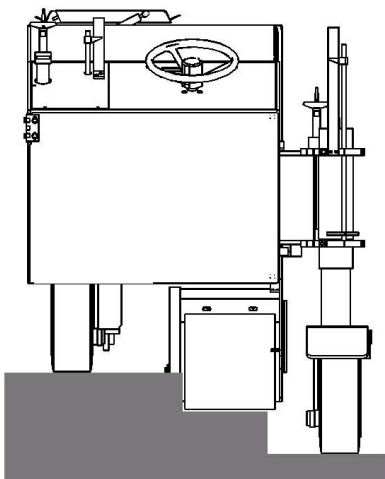


Fig. Milling at edge of roadway or at shoulders.

Milling at curb edge with folded out chassis leg.

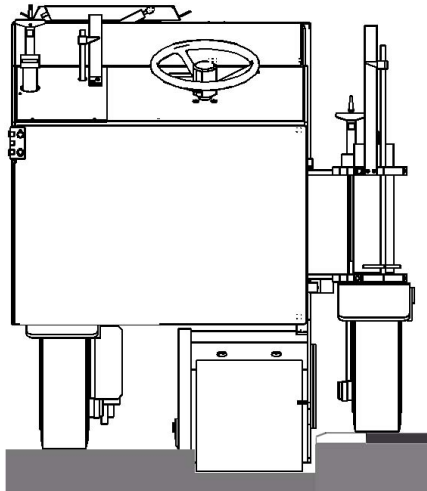


Fig. Milling at curb edge with extended chassis leg.

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 slopes.

Milling at curb edge with folded in chassis leg.

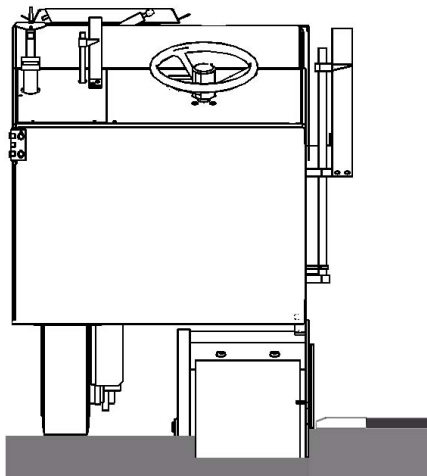


Fig. Milling at curb edge with withdrawn chassis leg.

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 slopes.

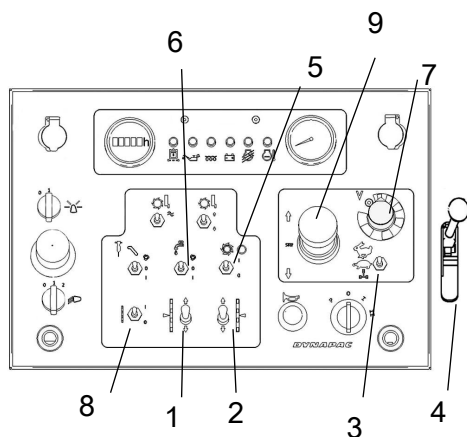


Fig. main control panel

1. Chassis leg left
2. Chassis leg right
3. Gear position switch
4. Engine speed control, diesel engine
5. Milling drum drive
6. Water pump
7. Speed limitation
8. Levelling function
9. Control lever

Milling preparations



Check all the hydraulic functions on the machine before milling!



Do not start milling if a warning lamp on the control panel comes on! Check what the lamp means and rectify the fault.



Do not activate milling drum while machine is moving, planer might jump backwards suddenly. eg. If lowering the machine too fast while milling drum speed is low, it would lead bystander body injury.

Make sure control lever (9) is in neutral position and parking brake is applied. It will prevent machine from jumping backwards.

- Lower the machine manually as far as possible without the milling drum coming into contact with the ground with the two switches "chassis leg, right and left" (1, 2).

Activate the following functions on the control panel:

- Put the control lever (9) in neutral position.
- Put the gear position switch (3) in working mode (tortoise).
- Set the speed control for the engine (4) at full power.
- Put the milling drum drive (5) in the ON position.
- Put the water pump (6) in the AUTO or 1 position.
- Set the speed (7) in the desired position.
- Set the leveling function in position 1 (8) (Function option)

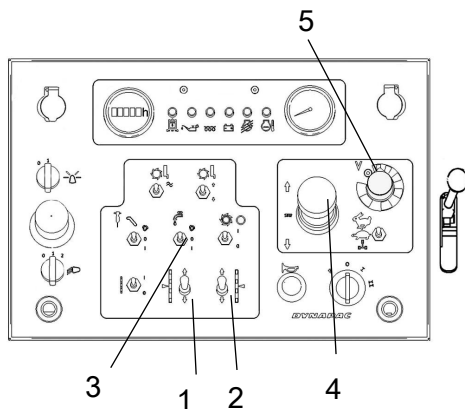


Fig. Main control panel

1. Chassis leg left
2. Chassis leg right
3. Water pump
4. Control lever
5. Speed adjustment

Milling without automatic levelling

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

- Lower the machine until the milling drum scrapes lightly against the ground with the two switches "chassis leg, right and left" (1, 2).
- Set the milling depth indicators to zero on both sides. (see section Milling depth indicators, adjustment)
- Carefully lower the machine to required milling depth (1, 2). The milling depth is shown on the respective milling depth indicators.
- Set the water pump in the AUTO position (3)
- Move the machine by moving the control lever (4) from neutral.
- If necessary, adjust to the appropriate speed (5).



The sprinkler system and automatic functions for the conveyor belt will engage as soon as the milling drum is in operation and the control lever is activated.

Milling with automatic levelling (option)

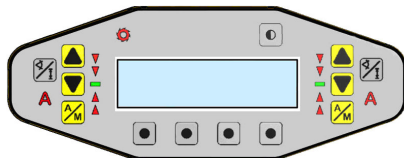


Fig. Automatic levelling system Easy Level (option)

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.

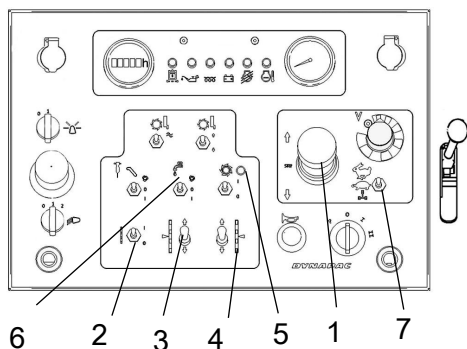


Fig. Control panel
 1. Control lever
 2. Leveling
 3. Chassis leg left
 4. Chassis leg right
 5. Milling drum drive
 6. Water pump
 7. Gear position switch

Stop milling

- Stop the machine and put the control lever (1) in neutral.
- If automatic levelling has been used, switch off this function by putting the Automatic mode switch (2) in position 0.
- Raise the machine evenly using the switches for chassis leg left (3) and chassis leg right (4) until the requisite ground clearance is reached.
- Allow the milling drum drive (5) and the water pump (6) to run for a few minutes and then switch off these functions.

Drive away from the area:

- Set the gear position switch (7) in transport mode.

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

Braking

Normal braking

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



When starting and driving a machine that is cold, remember that the hydraulic fluid is also cold and that braking distances can be longer than normal until the machine reaches the working temperature.

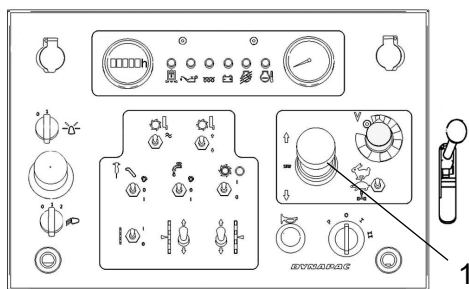


Fig. Control panel
 1. Forward/Reverse lever

Parking brake

Putting the control lever (1) in neutral stops the machine and activates the parking brake (Multi-disc in front motor). Parking brake is activated even when engine is turned off.

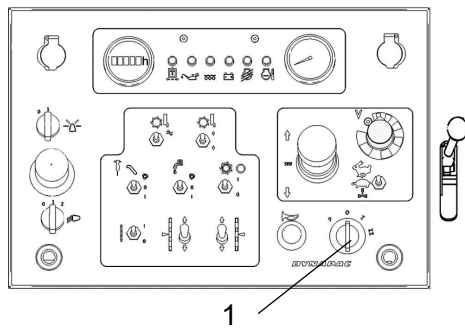


Fig. Control panel
1. Ignition lock

Reserve brake



Turn the ignition key (1) to position 0. 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.

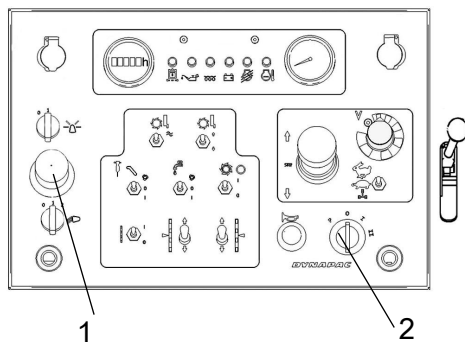


Fig. Control panel
1. Emergency stop
2. Ignition lock

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 front motor actuates.

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

Parking

Parking/Switching off

Always park the machine on the most level surface.



Never park the machine with running engine!

Before leaving the machine:

Lower the machine until the milling drum almost touches the ground.

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

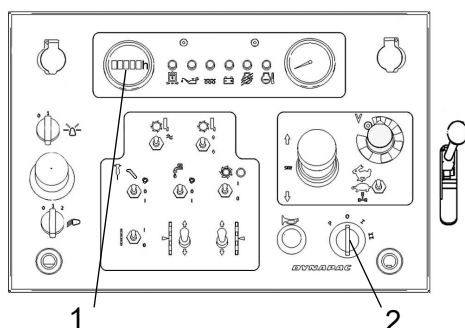
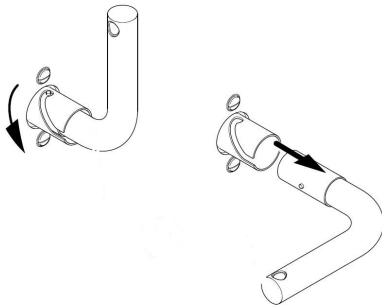


Fig. Control panel
1. Hours of operation
2. Ignition lock

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



Master switch

At the end of the shift, switch off the battery disconnecter 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. Master switch

Cleaning the machine

The machine should be cleaned with water at the end of the day. Remove all residual milling material. Lubricate bearings and support leg after cleaning.

Check that side shields, front shield and scraper are properly secured and slide in their tracks without jamming. Clean the tracks daily.



Do not spray water directly onto bearings and electronic components!

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.

The conveyor belt (option) must be dismantled before lifting.

Permissible lifting weight: see lifting plate on the planer

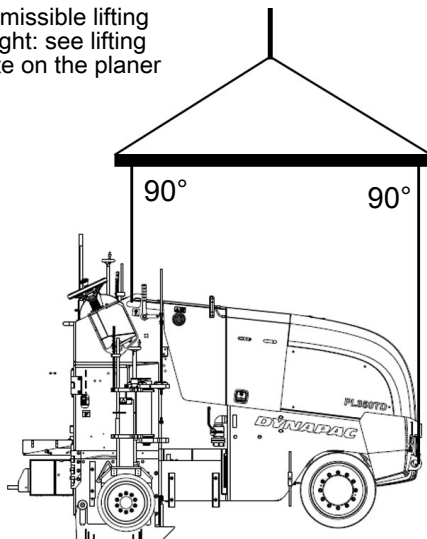


Fig. Machine ready to be lifted, side view



Fig. Place the conveyor to horizontal



Fig. Hose connect to conveyor motor

Dismantle the conveyor

1. Place the conveyor to horizontal position.

2. Dismantle hoses connect to conveyor motor.



1

3. Rotate the locking handle (1) to lay the unconnected side down.



2

3

4. Dismantle bolt (2) and clip (3) for each side of the conveyor.



4

5. Disconnect the lifting wire by pulling off the clip (4) to completely dismantle the conveyor.

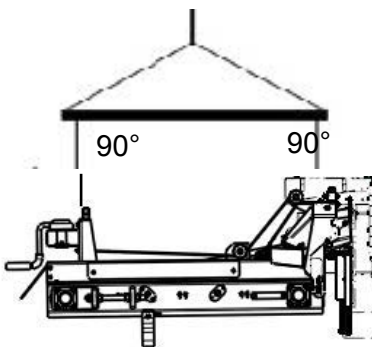


Be aware to support the conveyor before removing the wire.

Lifting the conveyor

There are 3 lifting handles on the conveyor intended for lifting.

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



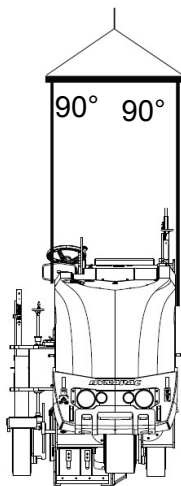


Fig. Machine ready to be lifted, front view



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



The gross weight of the machine is noted on the machine plate, located by the swivel chassis leg.



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 horizontal position when lifted!

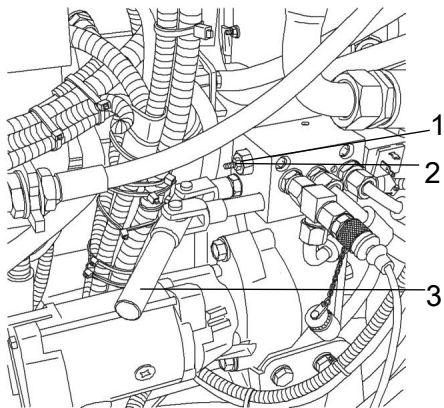


Fig. Brake release valve

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



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

The release pump for the brakes is located on the left side.

- 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.

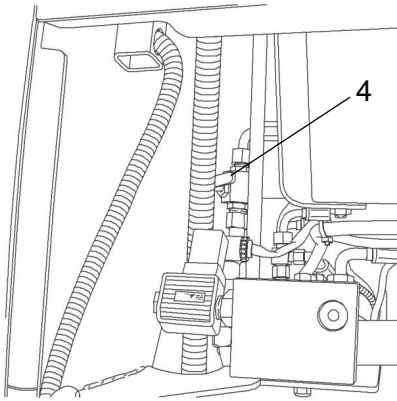


Fig. Valve, release drive system

In order to release the drive system during towing, the valve (4) behind the rear door must be opened:

Towing position: Valve in open position (down)
Operating position: Valve in closed position (to the right)

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

Towing the planer



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 total retrieval load may amount to max. 5 tonnes.

Transport

Securing PL350 for loading

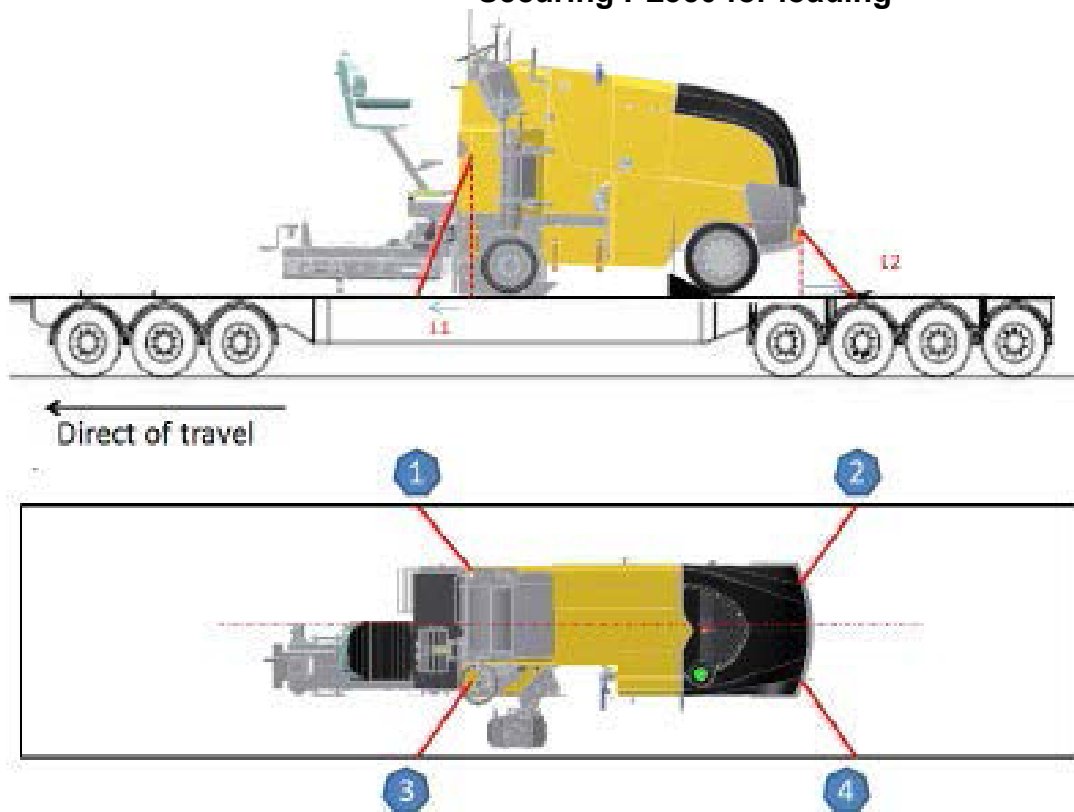


Fig.1 Machine loaded on low-loader and lashing points

Secure the compact planer to transport.
(This instruction also apply to machine without conveyor.)



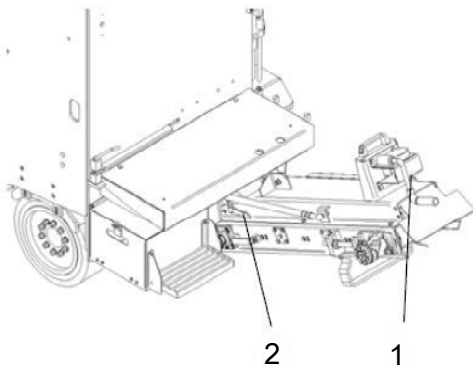
The right chassis leg must be folded out and locked before transport and lifting; follow the instructions under respective headings.

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

The lashings' permitted distance interval in meters	
(1 - 4: single lashing, LC at least 2.9 tonnes (2,900 daN), S _{TF} 500 kg (500daN))	
L1, L3	L2, L4
0.8 - 3.0	0.8 - 3.0

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 wheel must be zero, chock front wheel as pic show. The right chassis leg must be locked in folded out position.
- Lower the machine until the milling drum is just above the loader floor (about 1.0 - 10 cm), or if wooden supports are used the drum should rest lightly against them.
- Apply the parking brake and switch off the machine.
- If conveyor belt is mounted, adjust its crank handle (1) place it on a rubber liner, and lock its lock device (2) to keep conveyor straight to back or front.



- 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 3 tonnes.

Fig. Conveyor

1. Crank handle

2. Locking device

Lashings

- The lashing comprise a lashing strap or chain with a permitted load (LC/MSL) of at least 3 tonnes (3,000 daN) and a pre-tension S_{TFO} of at least 500 kg (500 daN). The lashings are re-tightened as required.
- Each of lashings 1-4 is a single lashings. A head mounts on the machine tie down point and one head mounts on the platform.
- Lashings in the same direction are placed in different lashing mounts on the trailer. Lashings that are pulled in opposite directions may be placed in the same lashing mount, however.
- 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.

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 stipulated 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

	ENGINE OIL	Air temperature -15°C - +50°C (5°F-122°F)	Atlas Copco Engine 100 , API CH-4 or equivalent.	P/N 5580020624 (5 liters), P/N 5501522700 (20 liters)
	HYDRAULIC FLUID	Air temperature -15°C - +40°C (5°F-104°F)	Atlas Copco Hydraulic 300 or equivalent.	P/N 9106230330 (20 liters), P/N 9106230331 (209 liters)
	BIOLOGICAL HYDRAULIC FLUID, PANOLIN	Air temperature over +40°C (104°F) 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.	Shell Tellus T100 or equivalent. PANOLIN HLP Synth 46 (www.panolin.com)	
	GREASE		ESSO UNIREX N3 or equivalent.	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 , API GL-5, or equivalent.	P/N 4812008274 (5 liters), P/N 4812008275 (20 liters)
	TRANSMISSION OIL Gearbox oil 90 (angular planetary gearing) Only for PL 500TD		Shell Spirax MB80	
	COOLANT	Air temperature 0°C (32°F) - above +40°C (104°F) Anti-freeze protection down to about -37°C (-34.6°F)	Shell Spirax AX 85W/140, API GL-5 or equivalent. Atlas Copco Coolant 150 or equivalent, (mixed 50/50 with water).	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

PL350

Fuel tank	125 l	33 gal
Engine oil	7,5 l	8 qts
Hydraulic reservoir	110 l	116 qts
Water tank	400 l	123 gal
Planetary gear, drive wheel	0,75 l	0.8 qts
Coolant, engine	4,5 l	4.8 qts

Maintenance - Maintenance schedule

Service and maintenance points

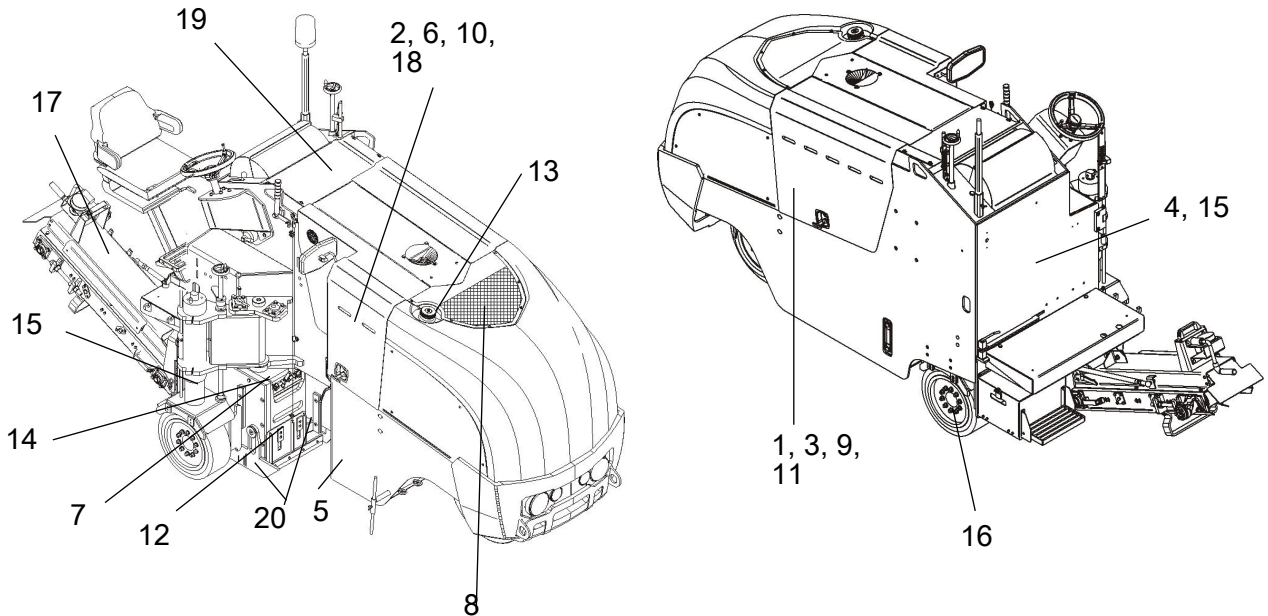


Fig. Service and maintenance points

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

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.

Maintenance - Maintenance schedule



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.

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 hydraulic filter	Replace if necessary, see 2000 h
4	Check return oil filter, suction side, indication control panel	Replace if necessary, see 2000 h
13	Fill the water tank	
14	Check the sprinkler system	
14	Check water filter	Replace filter if necessary
7	Check condition of milling tool and tool holder.	Replace if necessary. See section Function description
19	Check drive belt system, diesel engine	Refer to the engine manual
8	Clean hydraulic fluid cooler	
9	Check coolant level	Refer to the engine manual
	Check brakes/emergency stop	
	Check safety function, standing plate, rear door	

Maintenance - Maintenance schedule

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
7	Check rubber protection, milling housing	Replace if necessary
	Lubrication of steering unit, crown wheel	
21	Check side plates	Replace if necessary

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
16	Change oil in planetary gear, drive wheel	See section "Drive wheel - Planetary gear, oil draining" (2000 hours)
16	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	
15	Check slide plates, chassis leg	Adjust if necessary
	Lubricate spindle, milling depth gauge	

Maintenance - Maintenance schedule

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 the engine fuel filter	Refer to the engine manual
6	Check hydraulic reservoir cap/vent	
	Check hydraulic hoses	Replace if necessary
13	Empty and clean water tank	
1,2	Change engine oil and oil filter	Refer to the engine manual

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
9	Replace coolant	
16	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
11	Drain and clean the fuel tank	
6	Change the hydraulic fluid	
2	Replace return fluid filter, suction side	
16	Change oil in planetary gear, drive wheel	
4	Replace high-pressure hydraulic fluid filter	


Maintenance, 10h

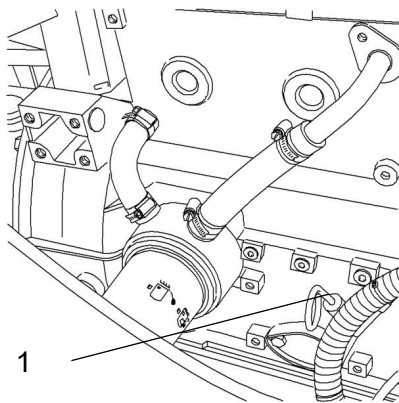
 **Make sure that ventilation (extraction) is adequate if the engine is run in poorly ventilated areas. Risk of carbon monoxide poisoning.**

 **Place the planer on a level surface. The engine must be switched off during all checks and adjustments of the planer, unless otherwise specified.**



Diesel engine - Check oil level/Filling


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

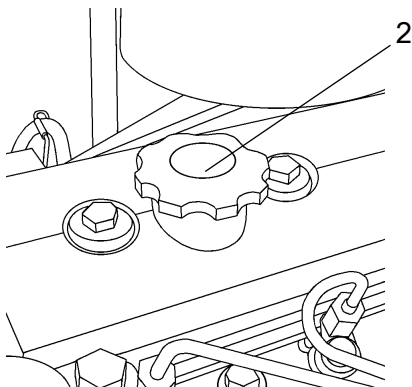


The dipstick is placed behind the left cover in the engine compartment.

Pull up the dipstick (1) and check that the oil level is between the upper and lower marks.

Top up with oil if necessary (2).

 **The machine must be lowered down over the rear chassis legs and the engine must be in a horizontal position when filling.**



For further details, refer to the engine's instruction manual.

Fig. Engine compartment, left-hand machine side
1. Dipstick
2. Filling



Hydraulic reservoir - Check fluid level

Place the planer on a flat surface and check the oil level (1). The sight glass is located on the right-hand side of the machine. Top up with the type of hydraulic fluid (2) specified in the lubricant specification, if the level is too low.

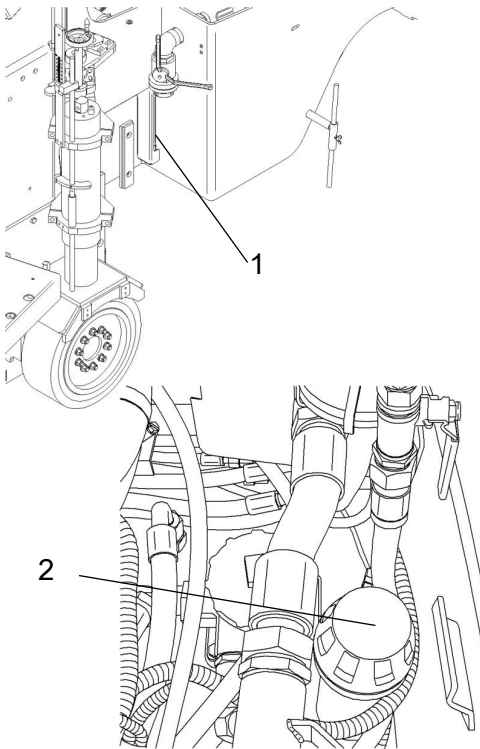


Fig. Hydraulic reservoir
 1. Sight glass
 2. Filler pipe



Fuel tank - Filling

Check the fuel level (1) and top up the fuel tank every day to avoid the formation of condensate. Follow the engine manufacturer's specifications for diesel fuel.

The tank cap (2) is located under the hatch on the left side of the machine.

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

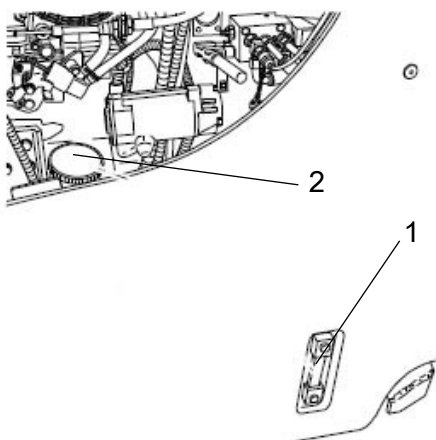


Fig. Fuel tank
 1. Sight glass
 2. Tank cap

The tank holds 125 liters of fuel.



Check the high-pressure hydraulic filter

The filter unit must be replaced when the indicator shows red, or after an interval of 2000 h. Engine must be running during check.

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

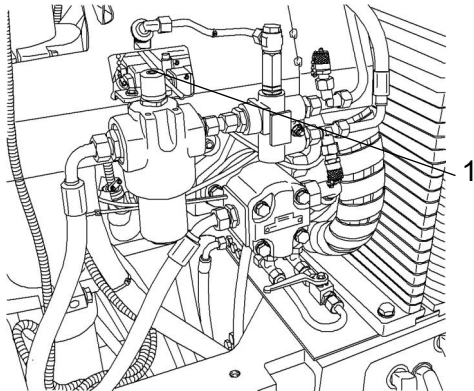


Fig. High-pressure hydraulic filter
1. Filter indicator



Check return filter - suction side

The filter unit must be replaced when an alarm (1) is shown on the control panel or at intervals of 2000 h

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

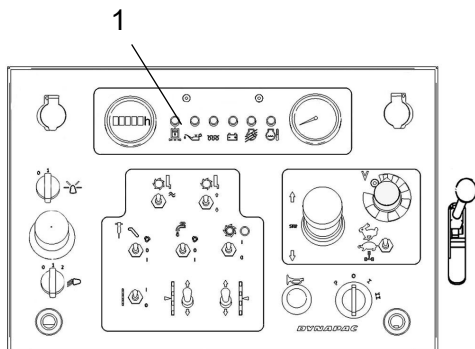


Fig. Control panel
1. Alarm, return filter



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 (2) and fill with clean water.



Only additive: A small amount of ecofriendly antifreeze.

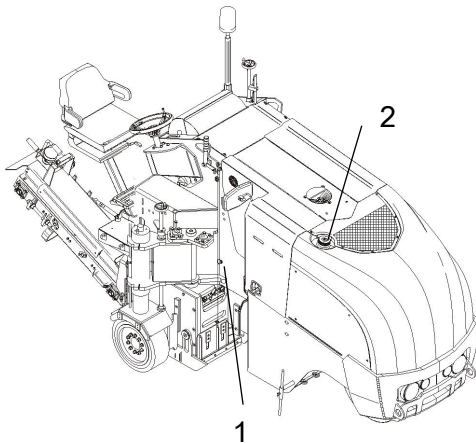


Fig. Filling with water
 1. Level indication
 2. Filler cap, water



Sprinkler system/nozzles Checking/Cleaning

The nozzles are located on the milling drum 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.

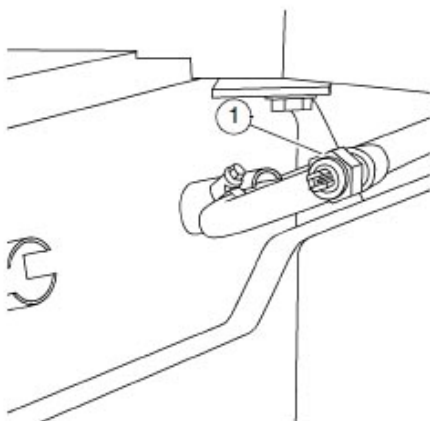


Fig. Sprinkler nozzle
 1. Nozzle



Water filter - Checking/Replacing

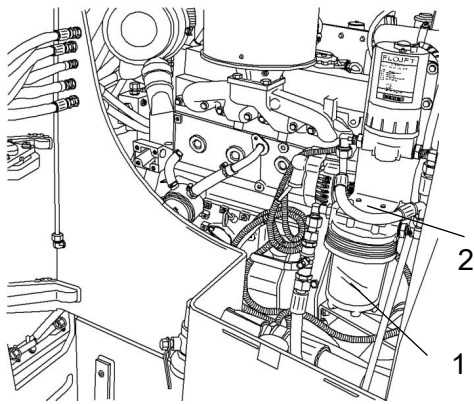


Fig. Water filter
1. Filter unit
2. Air valve

The filter unit (1) must be replaced when it indicates a strong brown color.

- Check that the water pump is not in operation.
- Release the sight glass by hand and remove the old filter unit.
- Clean the filter glass.
- Fit a new filter unit, and tighten the sight glass by hand.
- If necessary, bleed the filter by opening the air valve (2) when the water pump is in operation.

Check after replacing that the seal is correctly positioned!



Always dispose of old filters. Never reuse!



Recycle old filters for waste disposal!



Clean cooler

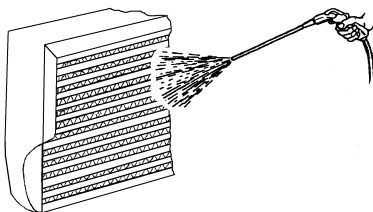


Fig. Cooler

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 level, radiator

Check the radiator level daily. Coolant should be changed once/year.

⚠ Release the pressure before opening the radiator cap!

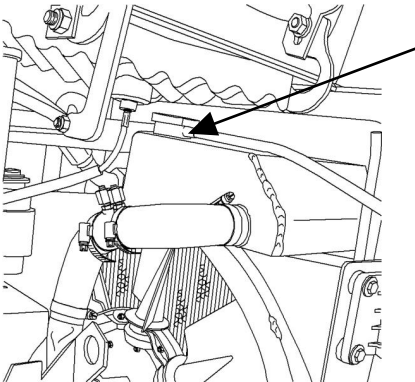


Fig. Cooler



Brake function/Emergency stop - Check

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.

See also Operating section in the manual.

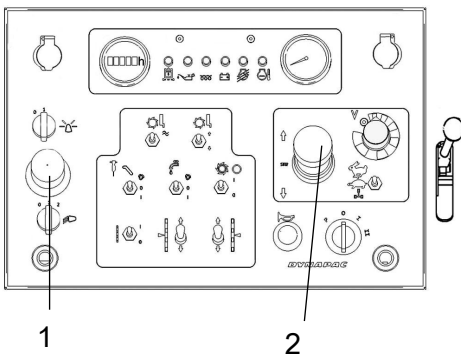


Fig. Control panel
1. Emergency stop
2. Forward/Reverse lever

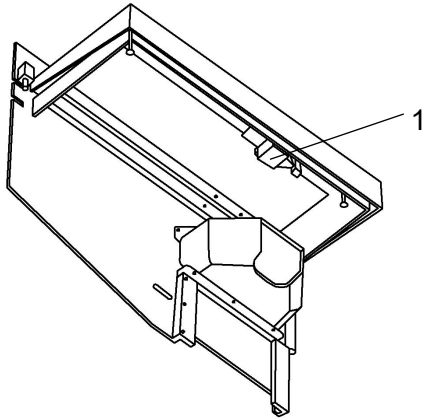


Fig. 1. Safety switch, standing plate

Check safety switches

The function of the safety switches under the standing plate (1) and behind the rear door (2) must be checked every day.

The safety switch for the standing plate will interrupt travel motion and the machine will stop after a short distance when the pressure from the driver disappears from the plate.

The safety switch by the rear door will interrupt the operation of the milling drum when the door is open.

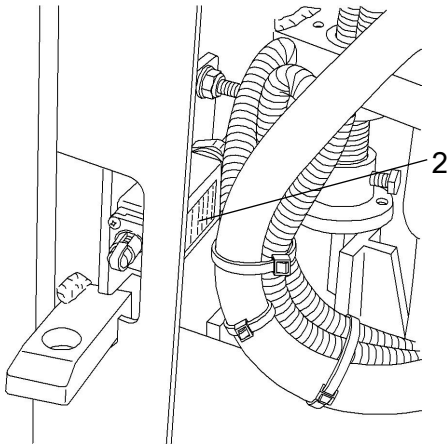


Fig. 2. Safety switch, rear door



If one of the safety switches is deactivated, the control lever must be moved to neutral before the machine can be driven forward/reversed.



Diesel engine - Checking the drive belt

Visually check the drive belt every day for damage.

For maintenance of the drive belt, see engine manual.

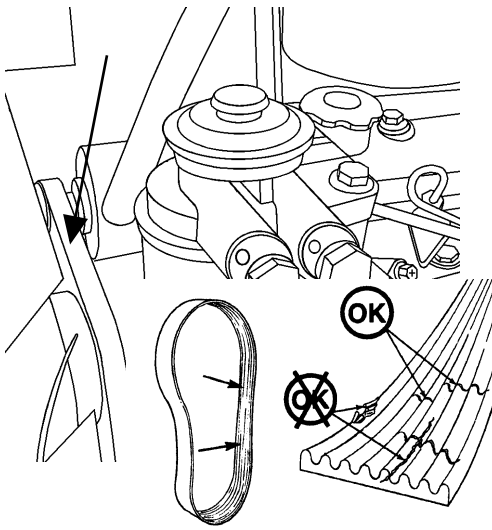




Fig. Drive belt

Maintenance - 50h

 **Make sure that ventilation (extraction) is adequate if the engine is run in poorly ventilated areas. Risk of carbon monoxide poisoning.**

 **Place the planer on a level surface. The engine must be switched off during all checks and adjustments of the planer, unless otherwise specified.**



Air cleaner - emptying

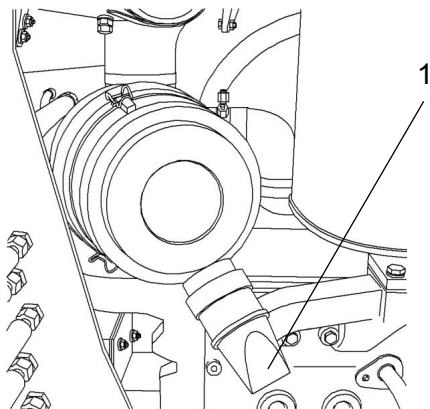


Fig. Air cleaner
1. Dust trap

Empty the air cleaner's dust pouch (1) every 50 h by pressing the rubber bellows with your fingers. Check also that the air hoses are in good condition.

Clean the air cleaner when operated in extremely dusty environments .

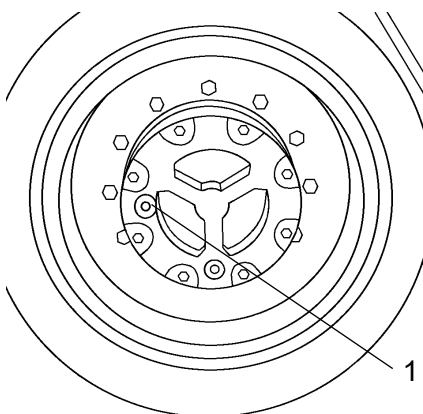


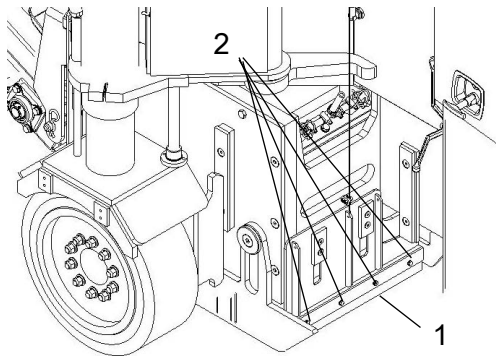
Fig. Front wheel, Planetary gear/position for refilling
1. Filler plug

Drive wheel, Planetary gear - Check of oil level

The planetary gear is located in the front wheel. Position 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.



Check rubber seal - Milling housing

The 2 rubber seals (1) are located at the front and rear of the milling housing.

Check the seals and replace if damaged:

- Undo the retaining screws (2) and remove damaged seal. Fit a new seal and tighten the retaining screws.

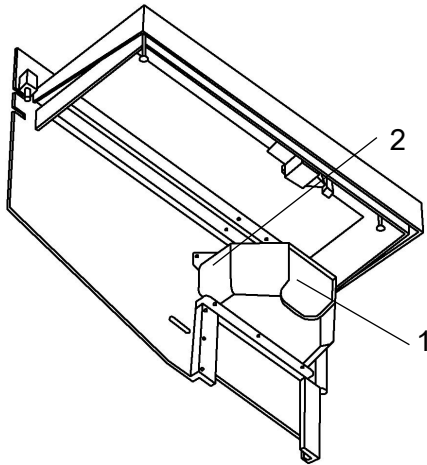
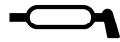


Fig. Milling housing, front and rear
1. Rubber seal
2. Retaining screws



Crown wheel - Front wheel

The crown wheel must be lubricated every 50 h. 1 lubricating nipple located on the right front wheel, on the right-hand side of the crown wheel. 5 pump strokes with manual grease gun.



Use grease as per the lubricant specification.

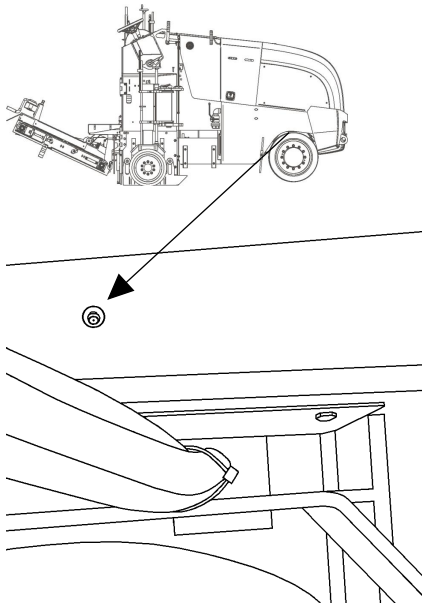


Fig. Crown wheel

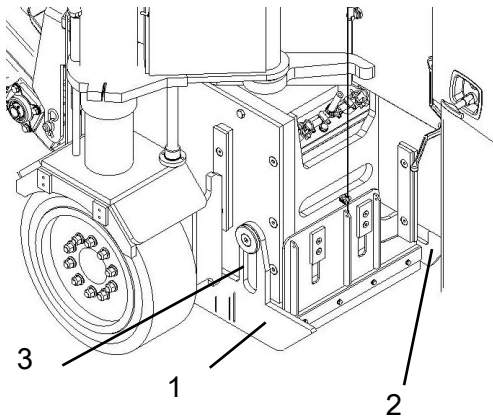


Fig. Side plates
 1. Side plate, right side
 2. Side plate, left side
 3. Slide tracks

Side plates - Check

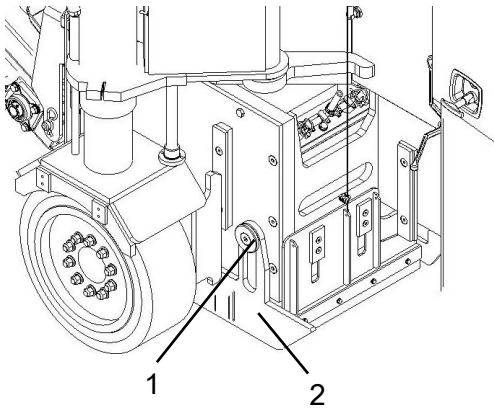
The side plates are located on either side of the milling drum (1, 2).

Check that the side plates slide in their tracks (3) without catching. Clean the tracks daily of milled material.

Check that the side plates are properly secured, and tighten the retaining screws if necessary.

To access the left-hand side plate, open the rear door on the machine.

Replace the side plates if necessary, see "Replacement, side plates".



Side plates - Replacement

To replace side plates:


Undo the 2 retaining screws (1) and remove the side plate (2).


Align a new side plate and tighten the retaining screws.

To access the left-hand side plate, open the rear door on the machine.

Fig. Side plates
1. Retaining screw 2. Side plate

Maintenance - 250h

 **Make sure that ventilation (extraction) is adequate if the engine is run in poorly ventilated areas. Risk of carbon monoxide poisoning.**


 **Place the planer on a level surface. The engine must be switched off during all checks and adjustments of the planer, unless otherwise specified.**





Battery

Checking the electrolyte level

The batteries are situated under the cover plate (1) located on the control panel. Undo the screws and remove the cover plate.

 **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.**

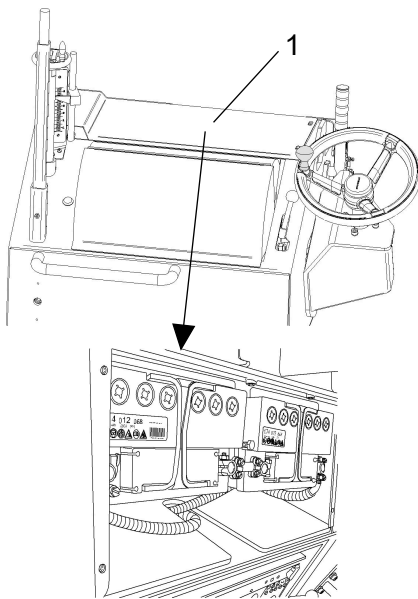
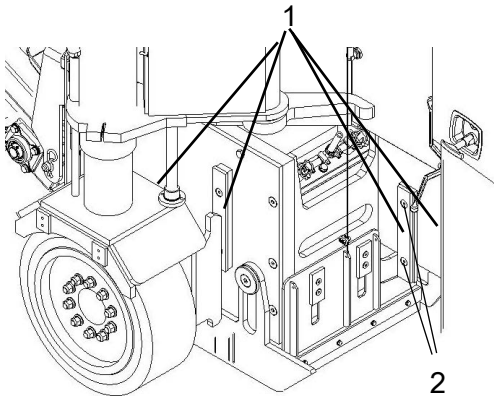


Fig. Battery compartment 1. Cover plate 2. Screws

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



**Fig. 1. Slide rails, right chassis leg 1.
Slide rails 2. Retaining screws**

Slide rails - Check

The slide rails (4 by the right-hand chassis leg and 2 by the left-hand chassis leg) must be checked every 250 hours of operation.

When the slide rail is worn down to the screw head, it must be replaced.

Right-hand side:

- Undo 2 retaining screws/guide rail (2).
- Replace the guide rail and install a new one with the retaining screws.

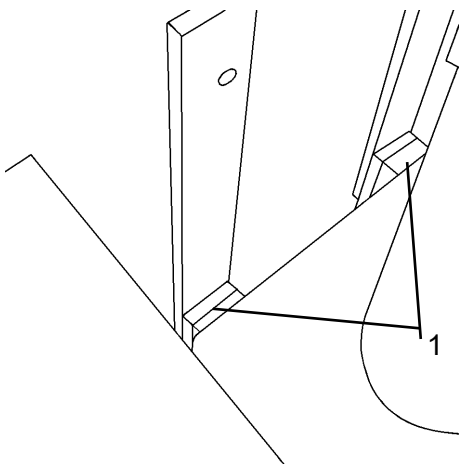
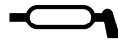


Fig. 2. Slide rails, chassis leg, left-hand side

Left-hand side:

Open the rear door on the machine to access the guide rails by the left-hand chassis leg. The slide rails (2) are mounted on the machine frame.



Milling depth, limit position

Apply grease on the spindle for the milling depth indicators on both sides. 1 pump stroke with manual grease gun. Every 250 hours or more frequently if necessary.



Use grease as per the lubricant specification.

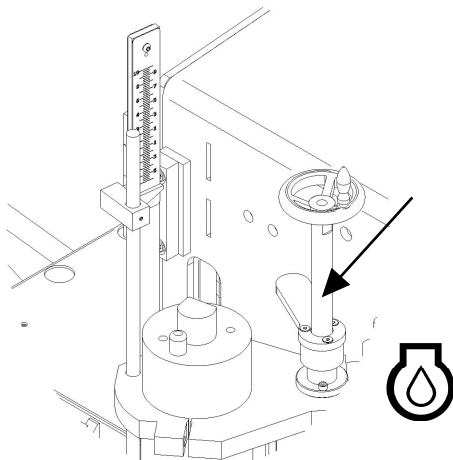


Fig. Milling depth indicator, spindle

Diesel engine - Oil change - Filter replacement

The drain cock for the oil (1) is located on the right-hand side of the machine frame, by the chassis leg.

Run the engine warm before draining the oil.



Switch off the engine before draining.



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.

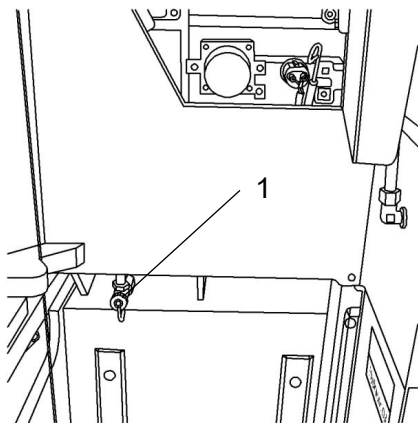


Fig. 1. Drain cock

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.

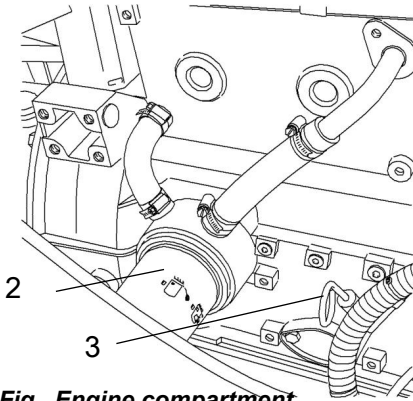


Fig. Engine compartment
2. Oil filter
3. Dipstick

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.

Top up with new engine oil, see section "Diesel engine - Check oil level". See the lubricant specification to obtain the correct oil grade.

Check the dipstick (3) to ensure that the oil level is correct. Refer to the engine manual for details.



Check - Replace air cleaner's filter element

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

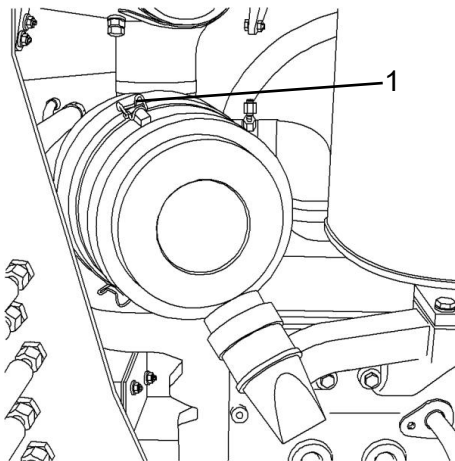


Fig. Main filter

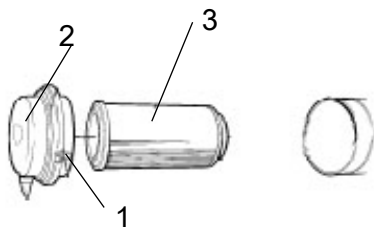


Fig. Air cleaner
1. Clips
2. Cover
3. Main filter

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.

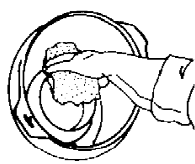
When refitting the cover, make sure that the dust valve is positioned downwards.



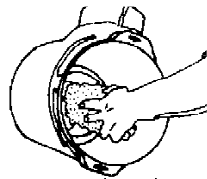
Air cleaner - Cleaning

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.

Maintenance - 500h

 **Make sure that ventilation (extraction) is adequate if the engine is run in poorly ventilated areas. Risk of carbon monoxide poisoning.**

 **Place the planer on a level surface. The engine must be switched off during all checks and adjustments of the planer, unless otherwise specified.**



Fuel filter - Replacement

The fuel filter is located behind the right-hand engine compartment cover and must be replaced every 500 h.

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.

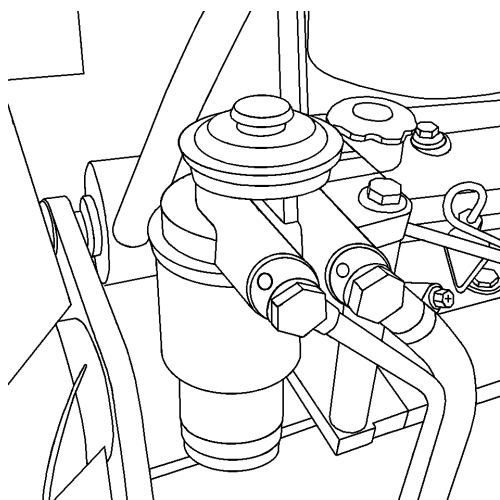
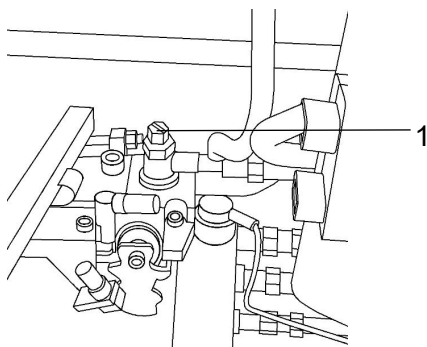


Fig. Fuel filter



Fuel filter - Bleeding the filter



Open the bleeder screw (1). (bleeding takes place during pumping/filling the filter)

Use the mechanical hand pump, located on the fuel filter; pump with the push button (2) until resistance is noticed during pumping, at which point the filter is filled with fuel.

Tighten the bleeder screw to the correct torque.

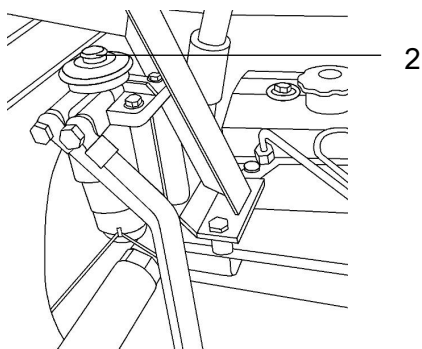


Fig. Fuel filter
1. Bleeder screw 2. Push button, pump



Hydraulic reservoir cap - Check

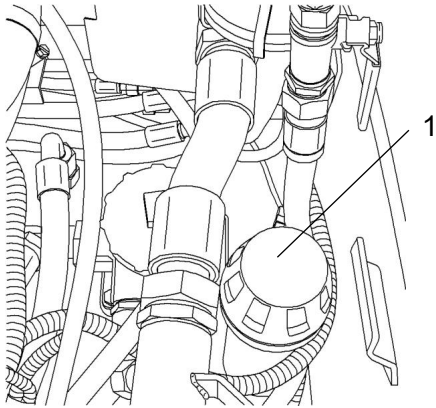


Fig. Engine compartment
1. Filler cap

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

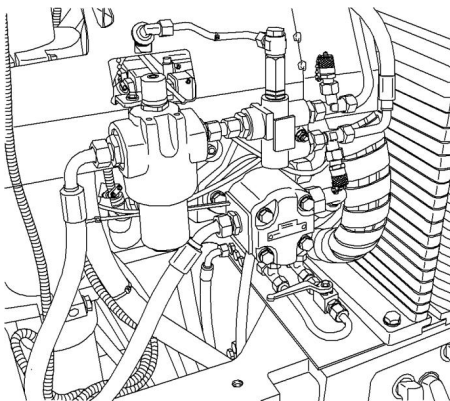


Fig. Hydraulic hoses

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

Check the date of manufacture and maximum approved pressure for the hose when replacing!

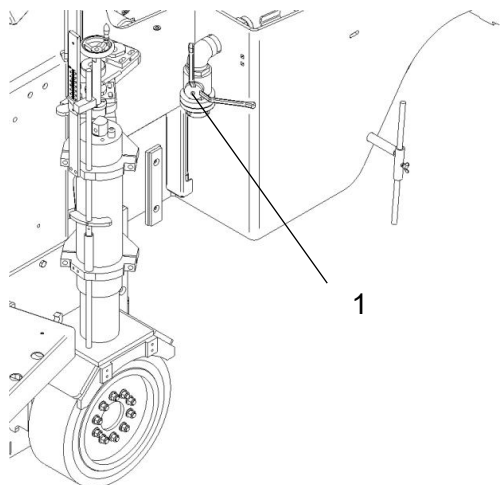


Fig. Water tank
1. Tap water

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 afterwards.


- 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 - 2000h

 **Make sure that ventilation (extraction) is adequate if the engine is run in poorly ventilated areas. Risk of carbon monoxide poisoning.**

 **Place the planer on a level surface. The engine must be switched off during all checks and adjustments of the planer, unless otherwise specified.**



Fuel tank - Drainage

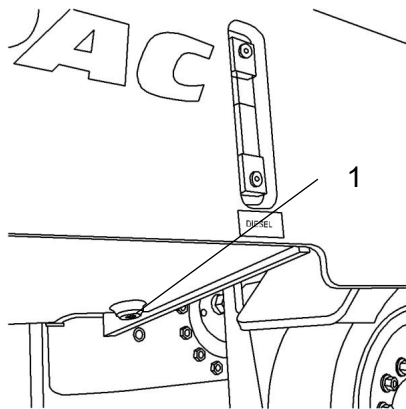



Fig. Fuel tank
1. Drain plug

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.



Hydraulic reservoir Fluid change



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

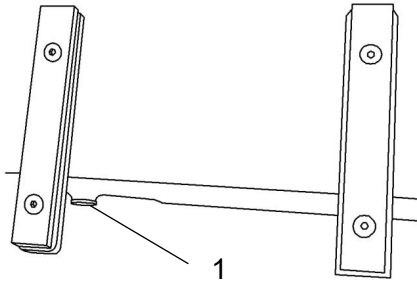
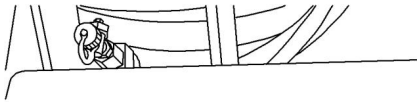


Fig. Draining the hydraulic fluid
1. Draining the hydraulic fluid

The drain plug (1) is located under the machine on the right-hand side, by the chassis leg.

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.

Top up with new hydraulic fluid, see section "Hydraulic reservoir - Check fluid level". See the lubricant specification to obtain the correct oil grade.

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



Return oil filter suction side Replacement

The hydraulic system's return fluid filter is located on the hydraulic reservoir behind the engine compartment's right-hand service panel, and must be replaced every 2000 h or once/year, or when the warning lamp on the instrument panel (3) lights up red.

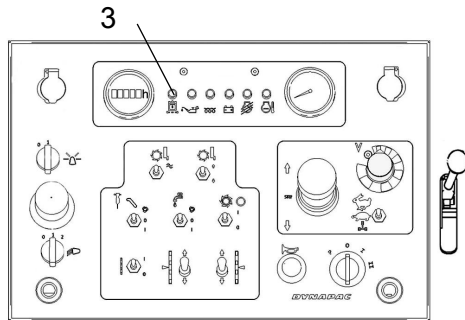


Fig. Control console
3. Warning lamp, return fluid filter, suction side

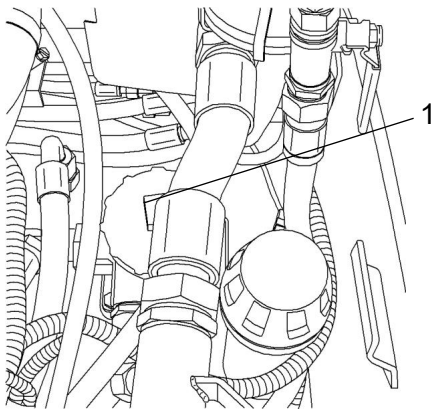


Fig. Engine compartment, left
1. Filter housing cover

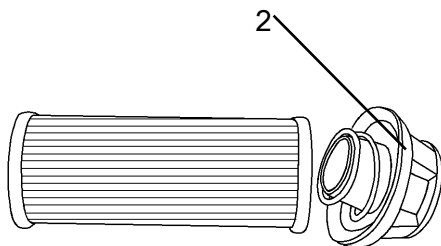


Fig. Filter unit
2. Handle

- Undo the filter housing cover (1).

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



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

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

- Refit the filter housing cover.

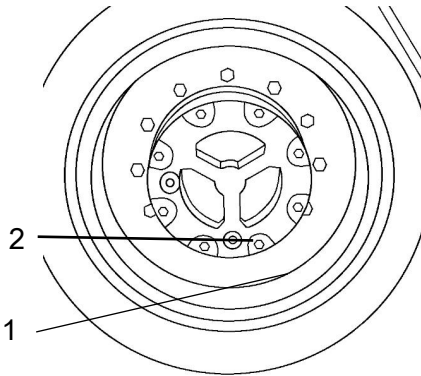


Fig. Planetary gear/position for filling
1. Drain plug
2. Filler plug

Drive wheel - Planetary gear, oil draining

First change after 50 hours of operation, then every 2000 hours and at least 1 time per 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.

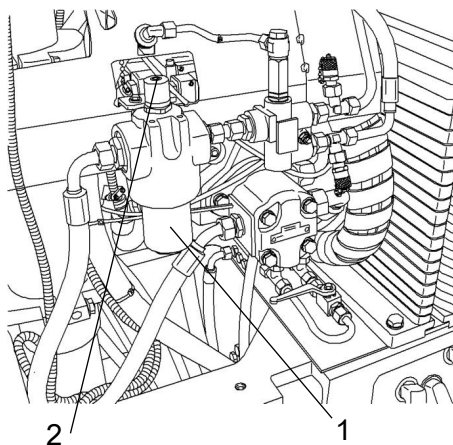


Fig. High-pressure hydraulic filter 1. Filter holder 2. Indicator

High-pressure hydraulic filter - Replacement



The filter units must always be replaced in pairs!

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.

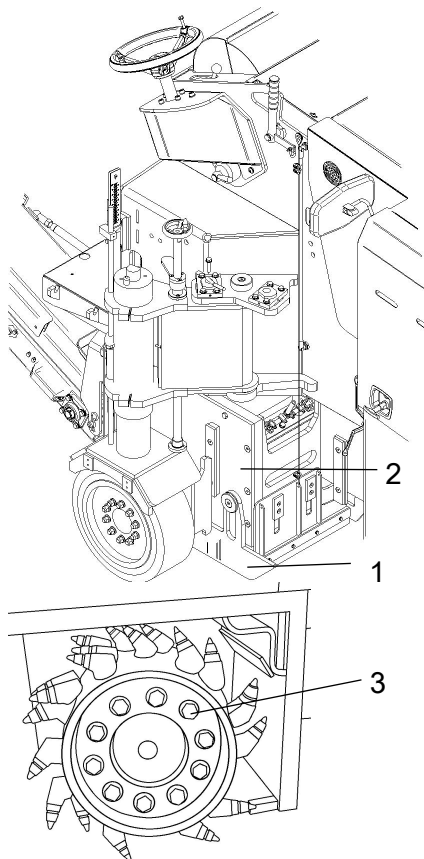


Fig. Milling drum
1. Side plate
2. Cover
3. Retaining screws, milling drum

Milling drum - Removal

The milling drum is screwed onto the drive motor. It has no bearings on the right-hand side.

Dismantle the milling drum:

- Turn the right-hand chassis leg to its forward position. Raise the machine.



Ensure that the machine cannot drop!

Check that the milling drum is not in contact with the surface.

- Remove the side plate (1).
- Remove the entire cover (2).
- Undo the milling drum's retaining screws (3) and pull out the drum.

Refit in the reverse order.



Check that the retaining screws are clean and tighten to the correct torque.