

Instructions manual

Operating & Maintenance

4812313232.pdf

**Compact planer
PL1000F (IIIA/T3)
PL1000F (IV/T4f)**

**Diesel engine
Cummins QSL9-C300
Cummins QSL9-C333**

**Serial number
10000908C0C004938
10000909C0C005581**



Contents

Instruction	1
Warning symbols	1
Intended use	1
General	1
The machine.....	2
Technical modifications, attachments and conversations.....	3
Safety – General instructions.....	5
Safety – when operating	7
Risk zones on the machine	7
Slopes (Tip over risk).....	8
Safety (Optional)	9
Conveyor	9
Hydraulic chassis leg	10
Roof (option)	10
Special instructions	11
Special instructions.....	11
Standard lubricants and other recommended oil and fluids.....	11
High ambient temperatures, above +40°C (104°F).....	11
Lower ambient temperature – Freeze risk.....	11
Temperatures.....	11
High pressure cleaning	12
Fire fighting	12
Battery handling.....	12
Jumping starting (24V)	14
Technical specifications.....	15
Vibrations – Operator station	15
Noise level	15
Dimensions, side view	16

Contents

Dimensions, top view	17
Weights and volumes	18
Working capacity.....	18
General	19
Tightening torques	20
Machine description.....	21
Descriptions of assemblies and functions	21
Machine description	23
Identification	26
Machine plate.....	26
Explanation of 17PIN serial number	26
Engine plate.....	27
Decals	28
Positioning of labels.....	28
Info decals	32
Instruments/Controls.....	33
Main console.....	33
Ergo control box	37
Remote control box.....	40
Screen structure for setting and display options	41
Description of error codes, dialog boxes	54
Electrical system	75
Main fuses	75
Fuses, machine	76
Fuses boxes	76
Relay, machine.....	77
Functional description.....	78
Scraper lock – B2	78
Milling safety – B3	78
Working lights.....	79

Rotating beacon (Option)	79
Panel protection.....	80
Hydraulic front plate – Milling housing.....	80
Bits – Tool holder	81
Typical wear marks on tool holder	82
Typical wear marks on bits	82
Dismantling the bits	83
Mounting the bits	83
Removing the quick-charge tops (model1)	83
Removing the quick-charge tops (model2)	84
Mounting the quick-charge tops (model1)	84
Mounting the quick-charge tops (model2)	84
Replacing the bit box	85
Replacing the holder box.....	86
Roof (option).....	87
Raise/Lower the roof manually	88
Emptying/Filling water tank	89
Cleaning (Option)	90
Locking device, scraper	91
Operation	93
Before starting	93
Checks before starting	93
Operator's seat - Adjustment.....	93
Unlock the panel and ergo control box protection	94
Checking the working hours.....	94
View.....	95
Master switch – switching on.....	95
Roof adjustment (Option)	95
Instrument and lamp checks.....	95
Starting	96

Contents

Starting the engine	96
Driving	97
Positioning	97
Driving the machine	97
Driving on the difficult surfaces	99
Swivel chassis leg, hydraulic	99
Pointer	100
Milling (not auto)/Leveling	101
Adjust	101
Milling preparation	102
Milling automatic leveling	103
Milling with automatic leveling (Option)	103
Milling instructions	104
Milling position	104
Resetting milling depth	104
Surface milling	105
Milling at edge of roadway or at shoulder	105
Milling at curb with folded out chassis leg	106
Milling at curb with folded in chassis leg	106
Stop milling	107
Manometer, scraper release pressure	108
Braking	108
Normal braking	108
Secondary brake	108
Emergency braking	109
Master switch	109
Parking	110
Parking/Switching off	110
Cleaning the machine	110
Folding/unfolding conveyor	111

Long-term parking	113
Long-term parking	113
Battery	113
Engine	113
Watering system	113
Hoods, tarpaulin	113
Fuel tank	114
Hydraulic reservoir	114
Miscellaneous	115
Lifting	115
Lifting the planer	115
Towing the planer	116
Towing/Recovery	116
Release the brakes and pumps	117
Transport	118
Machine prepared for transport	118
Load carrier	119
Operating instructions – Summary	120
Preventive maintenance	123
Maintenance – Lubricants and symbols	125
Maintenance – Lubricants and symbols	125
Fluid volumes	125
Maintenance – Maintenance schedule	127
Maintenance – Maintenance schedule	127
Service and maintenance points	127
General	128
Every 10 hours of operation (Daily)	129
Every 50 hours of operation (Weekly)	130
After the FIRST 100 hours of operation	130
After the FIRST 250 hours of operation	130

Contents

Every 250 hours of operation (Monthly).....	131
Every 500 hours of operation (Every three months)	131
Every 1000 hours of operation (Every six months).....	132
Every 2000 hours of operation (Yearly).....	132
Maintenance – 10h	133
Diesel engine – Check oil level.....	133
Hydraulic reservoir – Check fluid level	134
Fuel tank – Filling	134
Check the high pressure hydraulic filter.....	135
Check return filter – suction side	135
Water tank – Filling.....	136
Sprinkler system/nozzle – Checking/Cleaning	137
Water filter – Checking/Replacing	137
Sprinkler system – Draining.....	138
Check of belt tension – belt rollers, conveyor belt	139
Milling drum – Drive belt – Replace	140
Diesel engine – Checking the drive belt.....	141
Brake function/Emergency stop – Check.....	142
Check hydraulic front plate – Milling housing.....	143
Side shield – Check	144
Scraper plate, milling housing – Check	144
Water separator, fuel prefilter – Draining	145
Clean cooler	145
Retaining ropes, catch ropes, shackles – Check.....	146
Maintenance – 50h	147
Air filter – Check.....	147
Rubber protection in milling housing – Check.....	148
Front chassis leg – lubrication points	148
Rear right chassis leg – lubrication points	149
Rear left chassis leg – lubrication points	149

Conveyor - Drive – lubrication points	150
Conveyor - Driven – lubrication points	150
Primary conveyor - Drive – lubrication points	150
Primary conveyor - Driven – lubrication points	150
Primary conveyor - Drive – lubrication points	150
Discharge conveyor – Folding cylinder – lubrication points	151
Crawler – lubrication points	151
Milling drum – lubrication points	152
Check of funnel rubber – sealing rubber, side guides	153
Milling drum, planetary gear – Check of oil level	153
Split gear box – Check oil level	154
Maintenance – 250h	155
Battery	155
Checking the electrolyte level	155
Coolant level – Check	156
Air filter – Cleaning	157
Maintenance – 500h	159
Diesel engine – Oil change – Filter replacement	160
Fuel filter – Replacement	161
Water separator, fuel prefilter – Replacement	162
Hydraulic reservoir cap – Check	163
Hydraulic hoses – Check	164
Water tank – Emptying/Cleaning	164
Clutch lining – Check	165
Maintenance – 1000h	167
Clutch bearing	167
Split gear box – Oil change	168
Maintenance – 2000h	169
Chassis leg, drive wheel – Planetary gear, oil draining	169
Diesel engine – Replacing the drive belt	170

Contents

Return oil filter suction side – Replacement	170
High-pressure hydraulic – Replacement	171
Hydraulic reservoir – Fluid change	172
Milling drum – Planetary gear, change oil	172
Fuel tank – Drainage	173
Coupling – Check – Replacement of belt	174
Coupling gear box – Adjusting the belt tension	175
Air filter – Replace	176
Disposal	177
Appendix	1
Appendix 1: Engine Fault Code	1

Introduction

Warning symbols



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

Intended use

PL1000F 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.

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 leakage 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 ENVIROMENT! 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 manufacture's engine manual.



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

The machine

Atlas Copco Planer PL1000F is a compact, hydraulically driven by four steerable crawler units. It has a front loading system which is used to remove asphalt and cement layers. The milling drums are driven mechanically by power-transmission belts.

As a result of its high planing performance, we would recommend that this cold planer is used in particular when carrying out extensive redevelopment work on large and spacious roads, such as motorways, urban and country roads, car parks, airports etc.

Technical modifications, attachments and conversions: The machine may only be operated with the extension parts, optional equipment and accessories, protection and safety devices authorized by the manufacturer as well as the setting values specified by the manufacture. The manufacture is not liable for damage resulting from unauthorized changes to the assemblies, their removal or their replacement with other, non-intended components or taking them completely or partially out of operation.

The attachment or installation of additional devices, which are used to intervene in the function of the cold planer or with which its function are supplemented, is only permitted with the written approval of the manufacturer. If necessary, approval should be sought from the local authorities.

Consent from the authorities is however no substitute for approval from the manufacturer.

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 Atlas Copco 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 – General instructions

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.

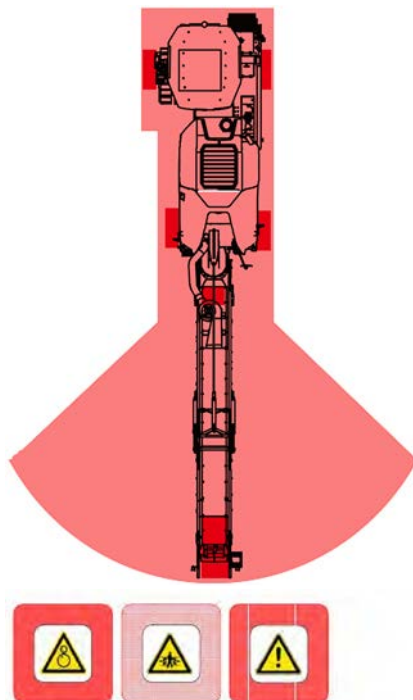
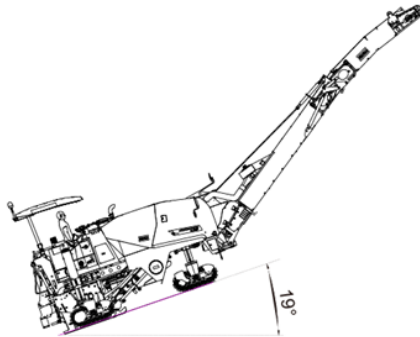


Fig. Risk zone

Slopes (Tip over risk)

Permitted angle of inclination is measured with chassis leg folded out.



Maximum permitted angle of inclination 46% (25°)



Follow the stated recommendations for maximum permitted angle in the picture.



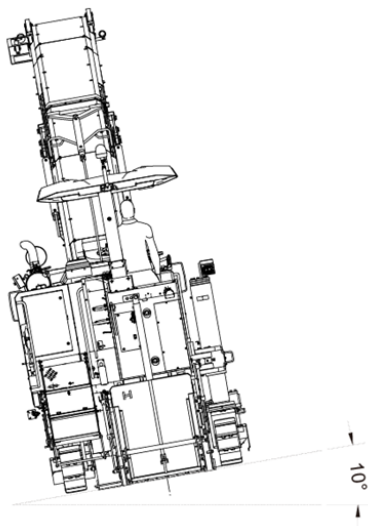
Safety cannot be guaranteed when the max. permitted angle of inclination is exceeded.



Avoid driving in slopes with chassis leg folded in!



Bear in mind that chassis leg folded in radically will change the machines stability and cause the machine to tip over on slopes lower than specified.



Maximum permitted angle of inclination 17% (10°)

Fig. Operating on slopes



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

Safety – General instructions

Safety (Optional)

Conveyor



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



Fig. Conveyor



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



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

Hydraulic chassis leg

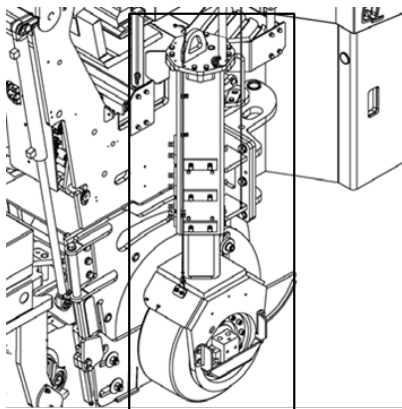


Fig. Hydraulic chassis leg
Extended position



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



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



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

Roof (Option)



Fig. Roof



Risk of squeeze and crush injury.

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.

Special instructions



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)



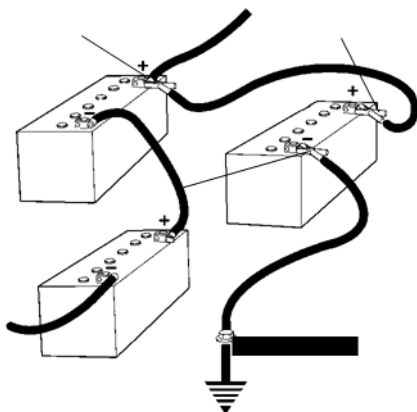
Do not connect the negative cable to the negative terminal on the dead battery. A spark can ignite the oxy-hydrogen gas formed around the battery.



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

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.

Fig. Jump starting



Starting gas is not to be used!

Technical specifications

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/s^2 specified in directive 2002/44/EC. (The limit is 1.15 m/s^2 .)

Measured hand/arm vibrations also were below the action level of 2.5 m/s^2 specified in the same directive. (Limit is 5 m/s^2)

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.

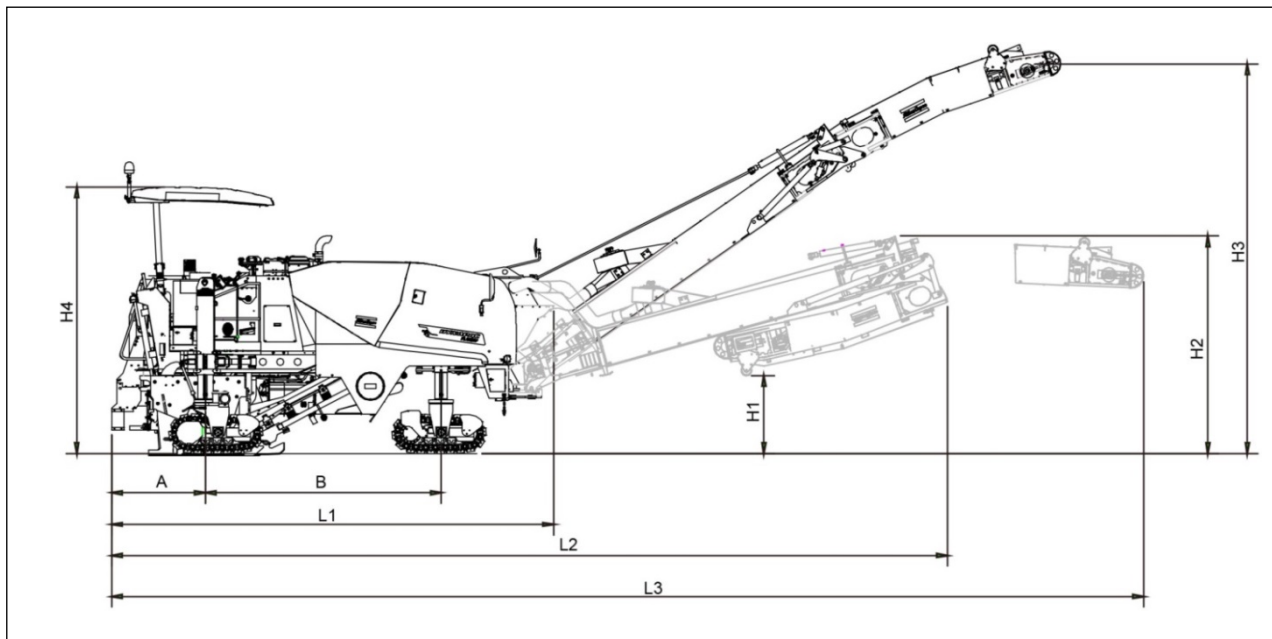
Guaranteed sound power level, LwA	248kW	108dB(A)
Sound pressure level at the operator's ear (platform), LpA		87dB(A)

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

Electrical system

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

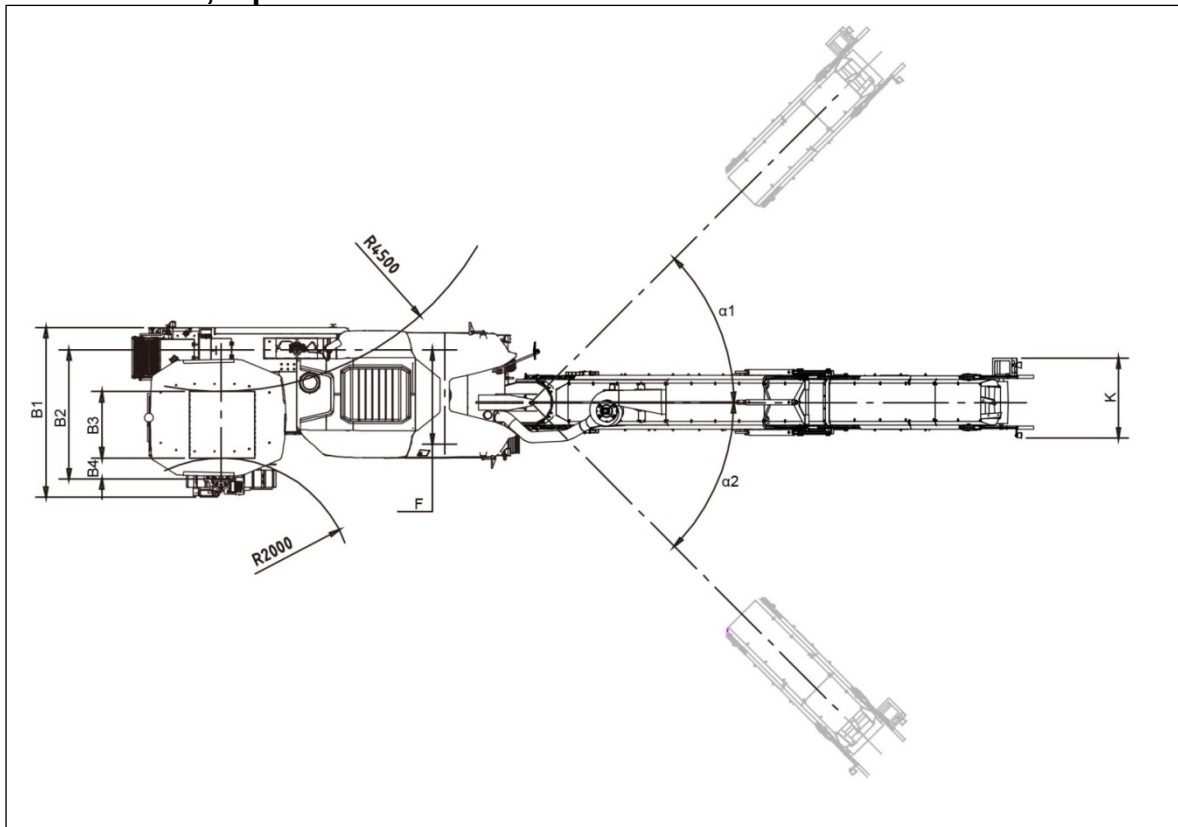
Dimensions, side view



Dimensions	mm	Inch
A	1337	53
B	3365	132
L1	6307	248
L2	11927	470
L3	14729	580
H1	1109	44
H2	3100	122
H3	5560	219
H4	3798	150

Technical specifications

Dimensions, top view



Dimensions	mm	Degrees	Inch
B1	2547		97
B2	1940		76
B3	1000		39
B4	315		12
F	1420		56
$\alpha 1$		45	
$\alpha 2$		45	
K	1204		47

Weights and volumes

Weights

PL1000F

Transport weight:	20100 kg	44313 lbs
Operation weight (CE)	21050 kg	46407 lbs
Operation weight, (full tanks, full range of equipment)	22000 kg	48502 lbs
Conveyor	1300 - 1400 kg	2866 - 3086 lbs

PL1000F

Fuel tank	500 L
Engine oil	23 L
Hydraulic fluid tank	130 L
Water tank	1500 L
Planetary gear, drive wheel	1.3 L * 4
Split gear box	20 L
Planetary gear, milling drum drive	17 L
Coolant, engine	50 L
Urea (for T4f Only)	38 L
Grease	38 kg

Working capacity

Performance PL1000F

Transport speed	0 - 125 m/min
Working speed	0 - 35 m/min

PL1000F

Milling width	1000 mm	39.4 in
Milling depth	330 mm	13 in
Line spacing	15 mm	0.6 in
Milling diameter (milling drum dia.)	980 mm	39 in
Number of milling tool	98	

Technical specifications

General

Engine PL1000F (T3)

Manufacturer/type	Cummins QSL9-C300
Rated power@2200rpm	224kW
Engine speed	2100 rpm
Cylinder volume	8900 cm3
Fuel type	Diesel
Cooling	Water
Number of cylinders	6
Fuel consumption, full load	65 l/h
Fuel consumption, 2/3 load	43 l/h

Engine PL1000F (T4f)

Manufacturer/type	Cummins QSL9-C333
Rated power@2200rpm	248kW
Engine speed	2100 rpm
Cylinder volume	8900 cm3
Fuel type	Ultra Low Sulfur Diesel
Cooling	Water
Number of cylinders	6
Fuel consumption, full load	66 l/h
Fuel consumption, 2/3 load	44 l/h

Loading system

Belt width, conveyor belt	650/600 mm
Belt speed	4 m/s
Loading capacity (theoretical)	180 m3/h
Max unloading height	5500 mm

Electrical system

Voltage	24V
High capacity batteries	2 x 12 V, 170Ah
Alternator	24V/70A
Fuses	See section on fuses

Tightening torque

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

Metric coarse screw thread, bright galvanized (fzb):

STRENGTH CLASS:

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

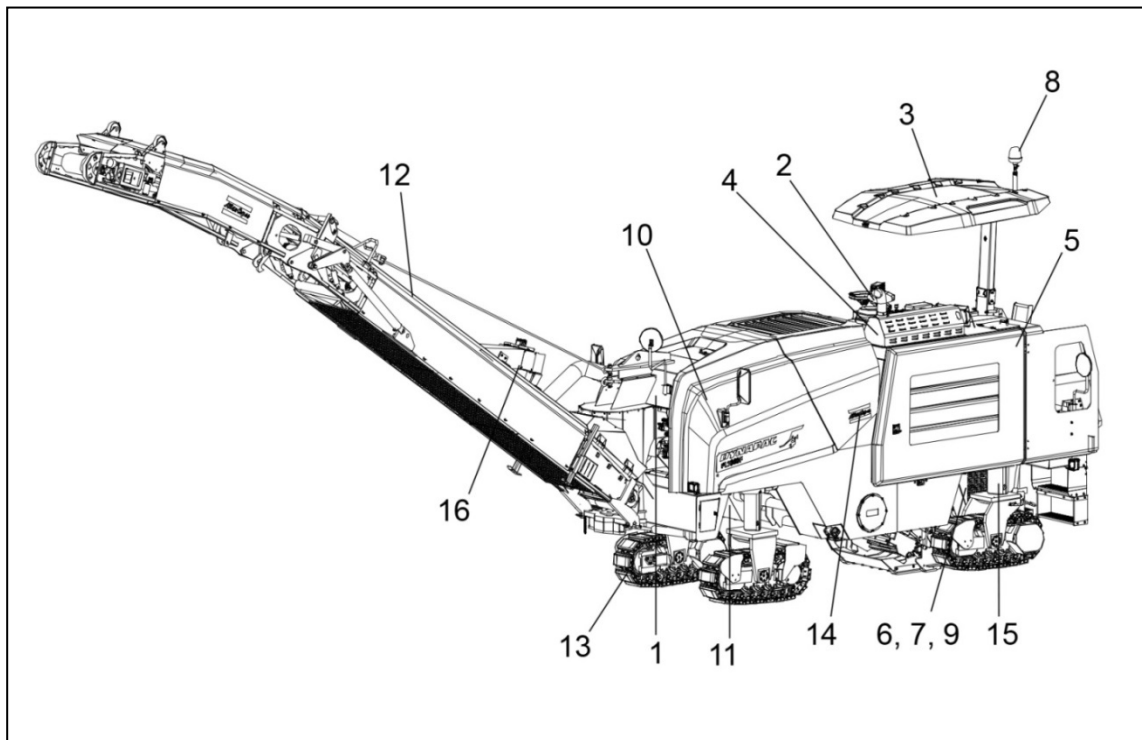
**Metric coarse thread, zinc-treated
(Dacromet/GEOMET):**

STRENGTH CLASS:

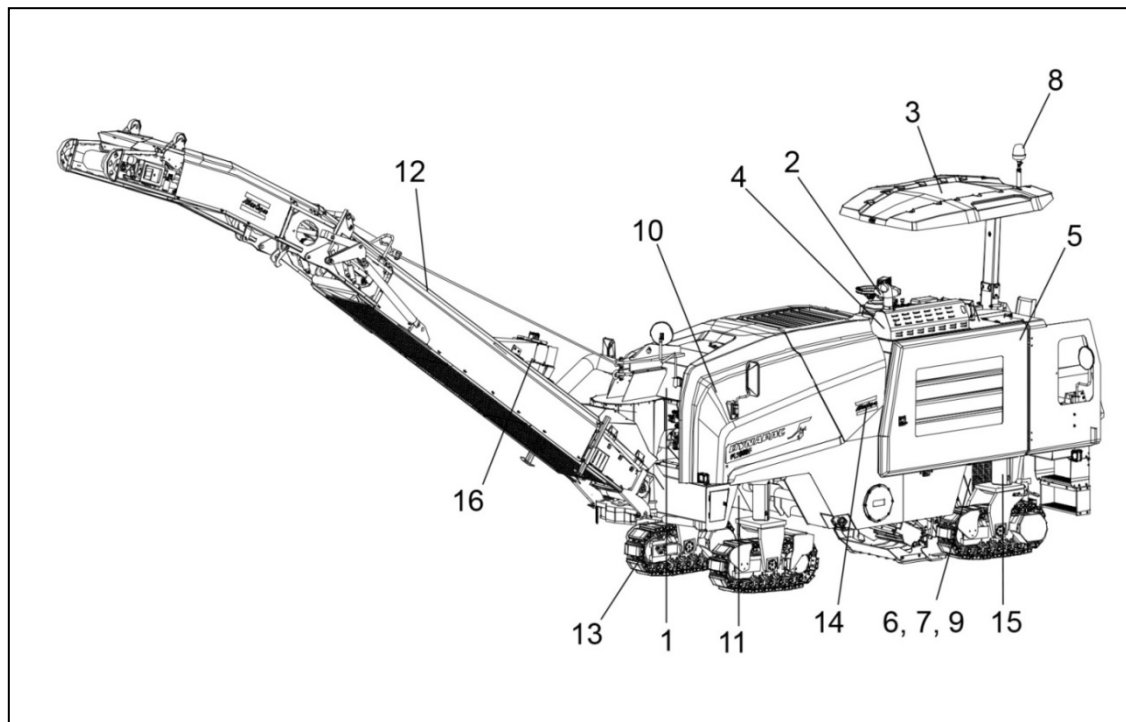
M - thread	10.9, Oiled	10.9, Dry	12.9, Oiled	12.9, Dry
M6	12,0	15,0	14,6	18,3
M8	28	36	34	43
M10	56	70	68	86
M12	98	124	117	147
M14	156	196	187	234
M16	240	304	290	360
M20	470	585	560	698
M22	626	786	752	944
M24	800	1010	960	1215
M30	1580	1990	1900	2360

Machine description

Descriptions of assemblies and functions



Item	Designation
1	Frame
2	Operator's control station
3	Canopy
4	Engine
5	Engine Cover
6	Milling Drum
7	Milling Box Assembly
8	Rotating Beacon



Item	Designation
9	Water System
10	Front Cover
11	First Conveyor
12	Second Conveyor
13	Crawler
14	Decals
15	Strut Tower
16	Dust Collecting System

Machine description

Construction

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 operator's control station, conveniently located at the rear of the machine affording good-all-round visibility, can be reached via a ladder and is equipped with a driver's seat on the right-hand side. From the operator's control station on the right-hand side of the machine, the planer is easy and safe to operate, affording good visibility and corresponding ease of monitoring for the milling process.

The cold planer can be fitted with a weather protection sun roof (can be lifted and lowered and rotated). During transport, the roof can be lowered hydraulically.

Controls at operator's control station: A convenient operating and control element comprising all the requisite switching and display elements. The securely arranged controls are obviously marked for all applications.

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

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

Engine: The machine is fitted with a powerful 6-cylinder Cummins turbo diesel engine which effortlessly covers the power requirements of the large planer. This engine has electronic engine management which also automatically adapts it to the extreme operating and environmental conditions and therefore keeps its torque stable.

The engine cover is noise-insulated as standard so that operating staff and the surrounding area are subjected to minimum levels of noise. The engine is available in two versions, first version complying with US EPA T3, EU stage IIIA and

China stage III exhaust standard, second version complying with the latest exhaust regulations US EPA T4f and EU stage IV.

Milling Drum: The mechanically high-strength V-belt-driven milling drum is located between the two rear chassis legs.

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

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

The professional bit arrangement and equipping with the best cutting tools ensures rapid and clean milling as well as high bit life.

On the standard drum, with a milling width of 1000 mm, 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 mechanical drive and can be replaced easily and quickly after removing the right-hand housing plate.

Milling box assembly: seals off the milling drum to the left and right through the side board, the sliding shoe to the front, the scraper to the rear, in all grading depth and therefore ensures optimum material pickup and a clean cutting surface.

The side plates are fitted with replaceable, zero-wear hard metal plates to increase their service life.

Milling depth adjustment: Milling depth adjustment is performed hydraulically and separately for each rear wheel.

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

Traction unit, steering system, travel drive, brake: Suspension of the two front wheels using a parallelogram-shaped rocker arm ensures an optimum contact surface at all times. The rear wheels on the chassis legs are designed for the milling adjustment.

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

Machine description

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

A multi-disc brake on both front and rear wheel acts as brake.

Water system: The water system comprises a water spraying and cooling system. The water spraying and cooling system operates in the average pressure range. This system is used for cooling and jetting the bits.

The spray nozzles can be easily replaced.

The water tank has a high capacity and has good access for filling from the top.

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

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

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

Identification

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 manufacture, type of machine, PIN (serial number), operating weight, engine power, axle weight front/rear, and year of manufacture.

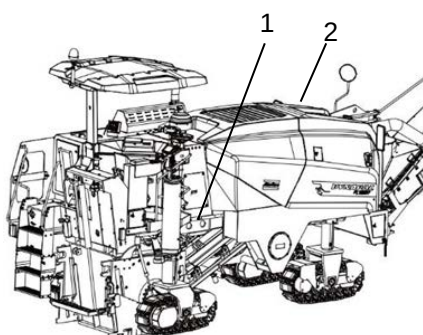


Fig. Location,

1. Machine plate
2. PIN

		Dynapac (China) Compaction & Paving Equipment Co., Ltd. 38, Quanwang Rd, Wuqing High Tech Ind. Park, Tianjin, China 301700		
Product Identification Number				
Designation	Type	Rated Power	Max axle load front / rear	
		kW	k	
Gross machinery mass	Operating mass	Max ballast	Month Year of Mfg	
kg	kg	kg		
Made in China 4812 1251 11				

Please state the machine's PIN when ordering spares.

Product identification number on the frame

The machine PIN (product identification number)(2) is punched on the front-right-hand side of the frame.

Explanation of 17PIN serial number

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

A=Manufacture

B=Family/Model

C=Check letter

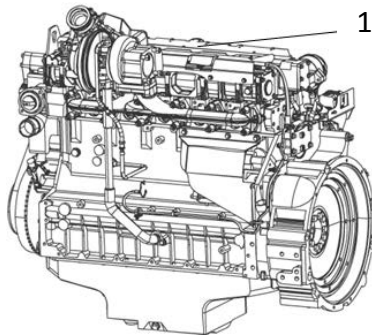
D=No coding

E=Production unit

F=Serial number risk of being retracted or crushed as a result of rotating, feeding or moving parts.

Machine description

Engine plate



The engine plate (1) is affixed on top of the engine. The plate specifies the type of engine, its serial number and the engine specification.

Please specify the engine serial number when ordering spares. Refer to the engine manual.



Decals Positioning of labels

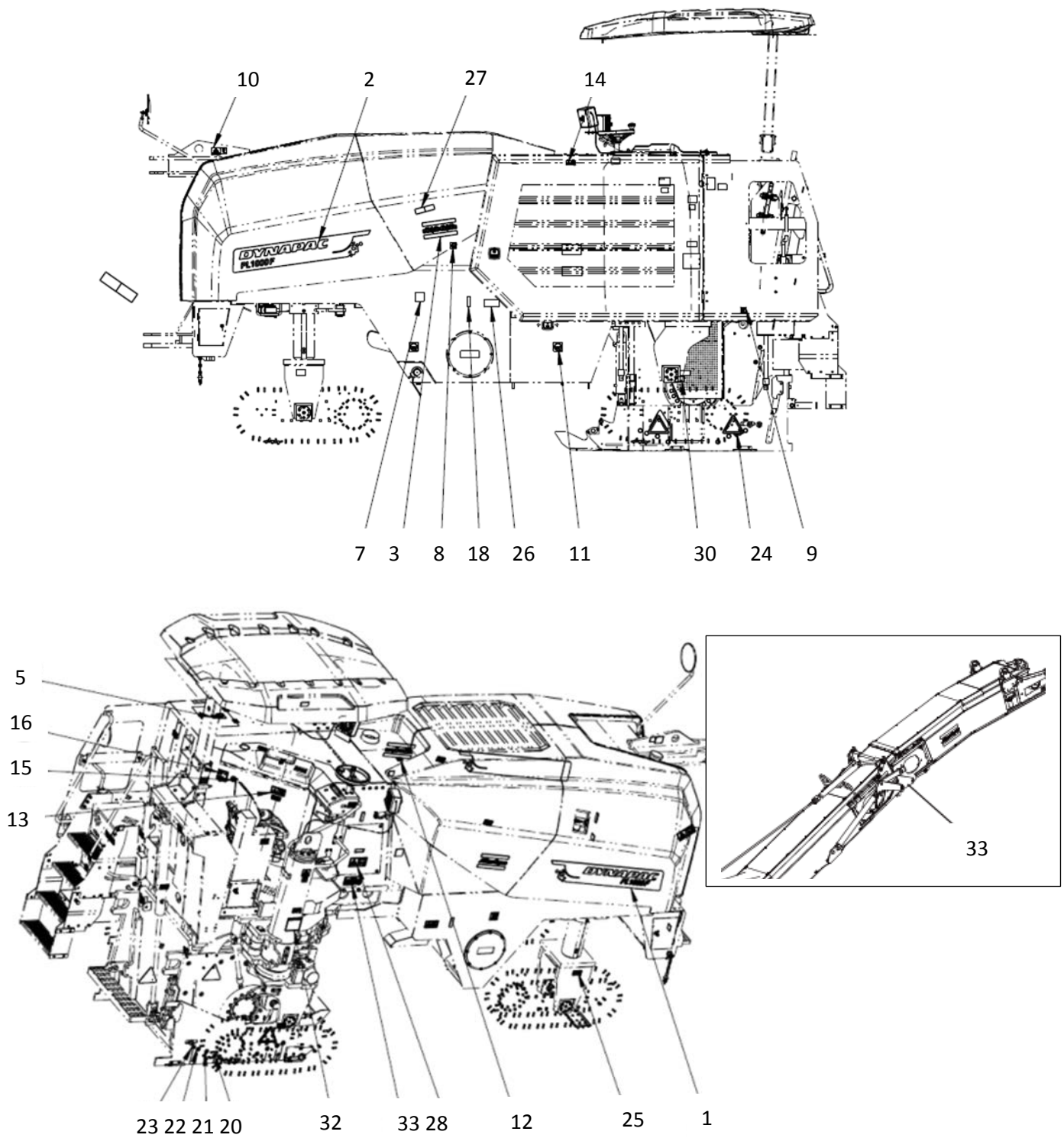
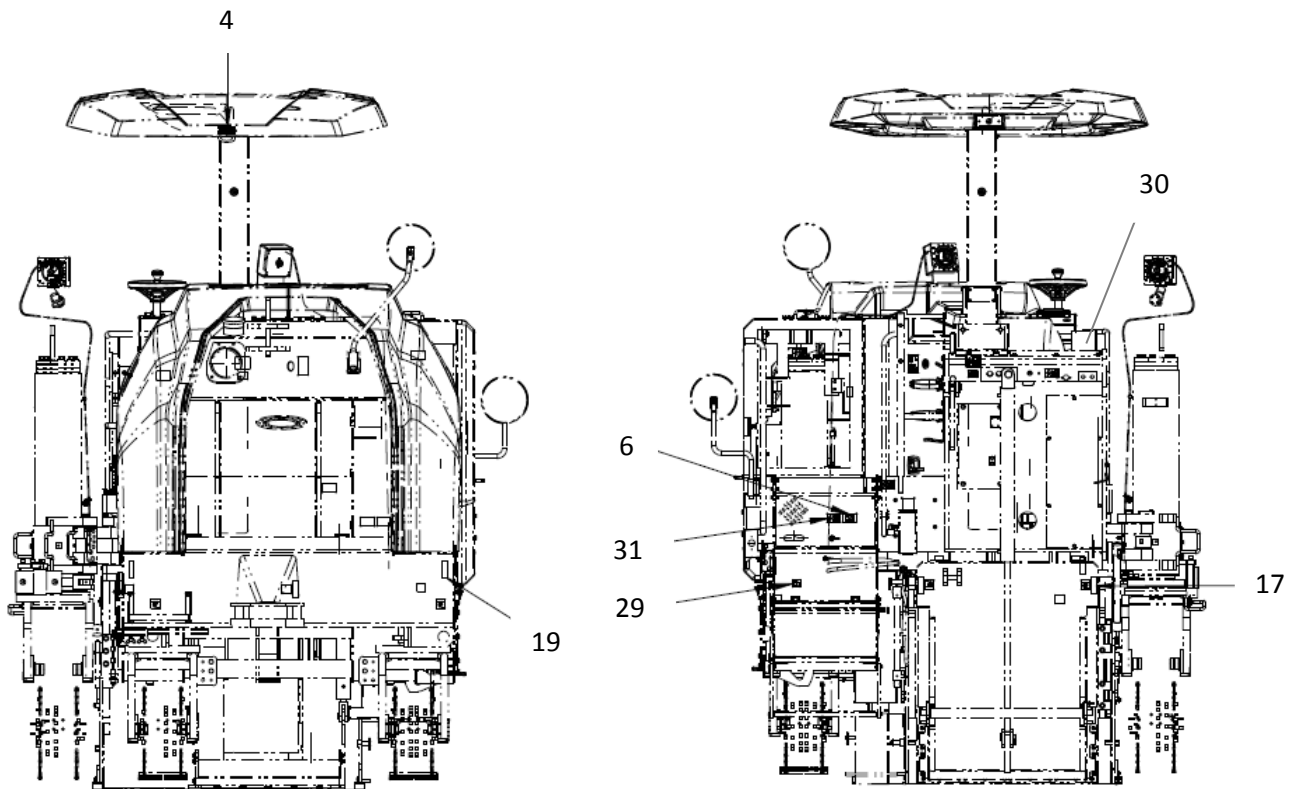


Fig. Location, decals and signs

Machine description



1	Decal-Dynapac-right	4812276278	18	Reflector	4700377744
2	Decal-Dynapac-left	4812276277	19	Reflector	4700377743
3	Decal-Atlascopco	4812269831	20	Milling depth,4cm	956053004
4	Decal-Atlascopco	4812269829	21	Milling depth,10cm	956053005
5	Lift point	4700357587	22	Milling depth,20cm	956053006
6	Battery power-disconnect	4700904835	23	Milling depth,30cm	956053007
7	Diesel fuel	4700991658	24	Warning, milling drum	956052007
8	Hydraulic oil	4700272373	25	Warning, rotating engine compartments	4700903832
9	Tie down point	4700382751	26	Warning, brake release	4700904895
10	Lifting plate	4700904870	27	Warning, hot surface	4700903424
11	Water	4700991657	28	Warning, crush zone	4700903422
12	Engine coolant	4700388449	29	Safety manual	4700903425
13	Warning,instruction manual	4700903459	30	Roof/Hood switch	4812277615
14	Warning, starting gas	4700791642	31	Sulfur fuel only	4811000344
15	Ear protection	4700282898	32	Engine ECU protection	4812017008
16	Sound power level	4700791278	33	decal tie down point	4812278094
17	Reflector	4700377742			

Safety decals

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



4700903832

Warning - Rotating engine components

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



4700904895

Warning - Brake disengagement

Study the towing chapter before disengaging the brakes.

Danger of being crushed.



4700903424

Warning - Hot surface 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.



4700903422

Warning - Crush zone, chassis leg

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

Machine description



D956052007

Warning - Rotating milling drum

Maintain a safe distance from the risk zone.



4812017008

Warning – Engine ECU protection

Do not disconnect battery switch before 100 seconds after stopping the machine.

Info decals

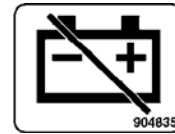
Handbook compartment



Battery voltage



Master switch



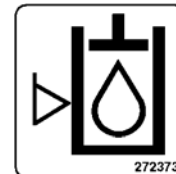
Diesel fuel



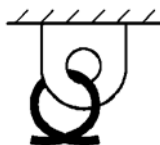
Water



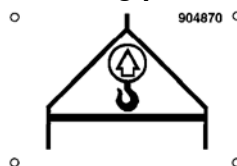
Hydraulic fluid level



Fixing point



Lifting plate



Lift point



Hearing protection



Milling depth



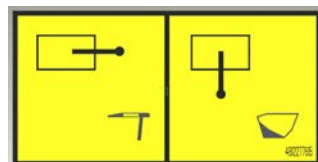
Sound power level



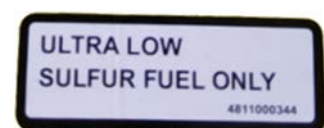
Coolant



Roof / hood switch

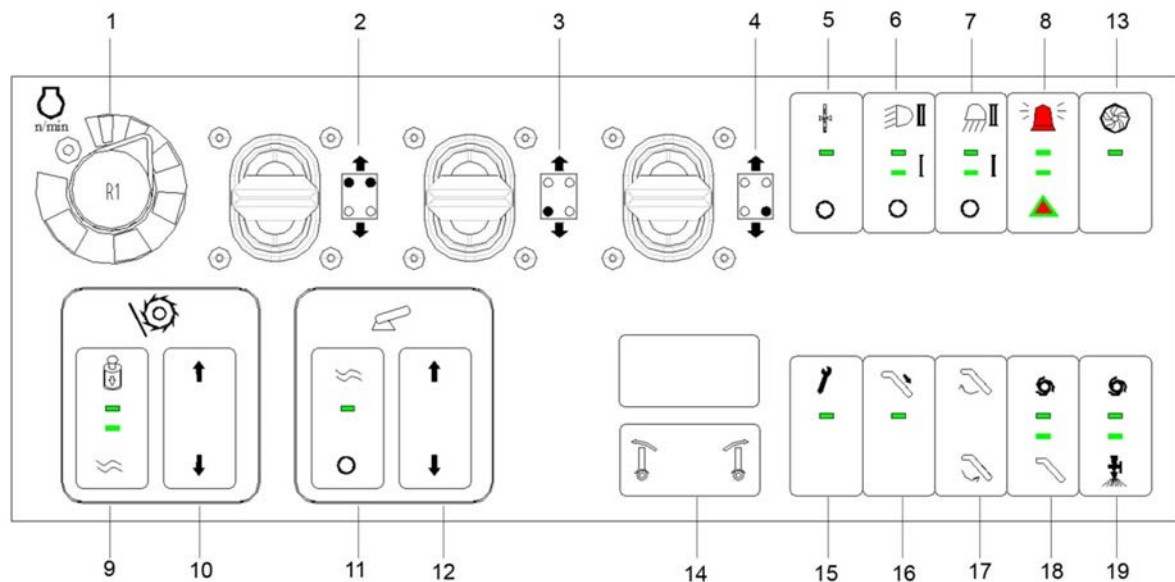


Sulfur fuel only

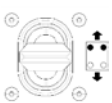
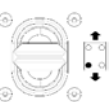
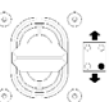


Machine description

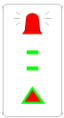
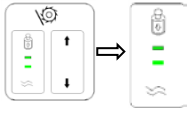
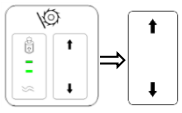
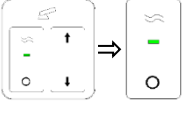
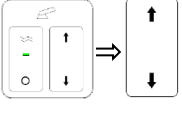
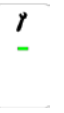
Instruments/Controls Main console



- | | |
|---|---|
| 1 Engine speed adjustment | 11 Sliding shoe switch |
| 2 Raising/lowering front of vehicle | 12 Raising/lowering sliding shoe |
| 3 Raising/lowering rear left side of vehicle | 13 Duster switch |
| 4 Raising/lowering rear right side of vehicle | 14 Rear right strut tower swinging switch |
| 5 Automatic mode switch | 15 Service mode switch |
| 6 lighting switch | 16 Conveyor reversing mode |
| 7 Working lights | 17 Conveyor folding switch |
| 8 Beacon switch | 18 Conveyor switch |
| 9 Scraper switch | 19 water Pump switch |
| 10 Raising/lowering scraper | |

Pos.	Designation	Symbol	Function
1	Engine speed adjustment		Adjust the engine speed by rotating the knob, and the actual data in rpm is indicated in the display.
2	Raising/lowering front of vehicle		While the handle switch is being pulled upward, the front strut towers are extended and the body of the vehicle is raised continuously until it reaches its upper limit position; While the handle switch is being pulled downward, the front strut towers are retracted and the body of the vehicle is lowered continuously until it reaches its lower limit position.
3	Raising/lowering left rear side of vehicle		While the handle switch is being pulled upward, the left rear strut tower is extended and the body of the vehicle is raised continuously until it reaches its upper limit position; While the handle switch is being pulled downward, the left rear strut tower is retracted and the body of the vehicle is lowered until it reaches its lower limit position; The lifting/descending speed is proportionate to the handle pulling speed (up/down). When the system is powered on, it defaults to manual operation. In auto mode, the system including strut towers is changed into manual operation once the switch is actuated; when the switch is released, it is changed back to the auto mode.
4	Raising/lowering right rear side of vehicle		While the handle switch is being pulled upward, the right rear strut tower is extended and the body of the vehicle is raised continuously until it reaches its upper limit position; While the handle switch is being pulled downward, the right strut tower is retracted and the body of the vehicle is lowered continuously until it reaches its lower position. The lifting/descending speed is proportionate to the handle pulling speed (up/down). When the system is powered on, it defaults to manual operation. In auto mode, the system including strut towers is changed into manual operation once the switch is actuated; when the switch is released, it is changed back to the auto mode.
5	Automatic mode switch		Leveling system enters into automatic control mode by pressing the upper position of switch, in which the right and left rear strut towers are raised and lowered by the leveling system automatically; LED indicates activation; And it exits from the automatic control system by pressing the lower position. In this mode, the side shields and the sliding shoe are automatically changed into floating state.
6	Lighting switch		The width lamp, head lamp and backlight of control table are lightened simultaneously by pressing the upper position of the switch (position II). The upper LED is activated. The width lamp and back light of control table are lightened by pressing the neutral position of the switch (position I). The lower LED is activated. The lights are turned off by pressing the lower position of the switch. The LED is off.
7	Working light		The working light and canopy light are lightened simultaneously by pressing the upper position of the switch (position II). The upper LED is activated. The working light is switched on by pressing the neutral position. The lower LED is activated. The lights are turned off by pressing the lower position. The LED is off.

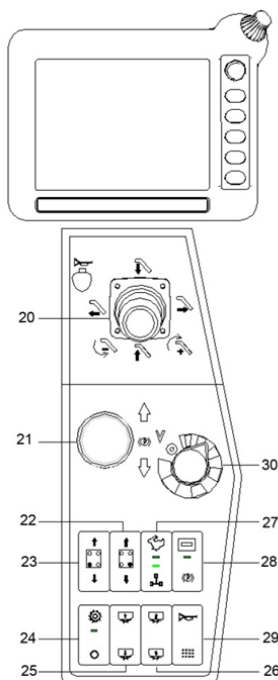
Machine description

8	Beacon switch		Rotating beacon is switched on by pressing the upper position of the switch. Twin flashing lights is switched on by pressing the lower position of the switch. (only work on wheeled machine)
9	Scraper state switch		The pressurization state is actuated by pressing the upper position of the switch; The pressure is set on the display; The floating state is actuated by pressing the lower position. The scraper is locked when the switch is in neutral; LEDs indicate activation.
10	Raising/lowering scraper switch		Raise/lower the scraper by pressing the upper/lower position of the switch.
11	Sliding shoe state switch		The floating state of sliding shoe is actuated by pressing the upper position of the switch or activate milling drum, LED on the upper position turns on; and it is locked by pressing the lower position, LED on the upper position turns off.
12	Raising/lowering sliding shoe switch		Raise/lower the sliding shoe by pressing the upper/lower position of the switch;
13	Duster switch		The duster starts to work by pressing the upper position of the switch, and LED light is on, and it stops by pressing the lower position.
14	Right rear chassis leg swinging switch		This switch is only valid in service mode. Dowel pin loose when pressing the left side of the switch, wait a few seconds, rear right chassis leg starts to swing forward; it stops when release the switch, the dowel pin back to original position. Dowel pin loose when pressing the right side of the switch, wait a few seconds, rear right chassis leg starts to swing backward; it stops when release the switch, the dowel pin back to original position.
15	Service mode		The service mode is activated / deactivated by pressing the upper/lower position of the switch, LED indicates activation. The switch can be activated and this mode can be entered into only when the planer is in stationary state and the engine is started. In service mode: <ul style="list-style-type: none"> - The planer fails to travel, and keeps in braking state. And the rotor clutch is disengaged; - The side shields on both sides is available to stop at any position; - The folding function of belt is activated, and the belt is foldable; - The folding function of right rear chassis leg is activated, and the chassis leg is foldable.

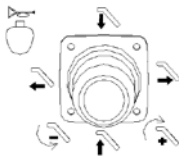
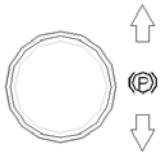
16	Conveyor reversing mode		The conveyor enters into reversing mode by pressing the upper position of the switch, and it stops when the switch is released. The switch function can be activated only when the conveyor is in an inactive state.
17	Conveyor folding switch		This switch is only valid in service mode. Safety hook of conveyor uncoupled after pressing the upper position of switch, wait a few seconds, conveyor starts to unfold; it stops when release the switch, then safety hook shall link up again. Safety hook of conveyor uncoupled after pressing the lower position of switch, wait a few seconds, conveyor starts to fold; it stops when release the switch, then safety hook shall link up again. The horn sounds every 2 second during the folding/unfolding process to remind people around.
18	Conveyor switch		The conveyor starts to operate manually by pressing the lower position of the switch, and the lower LED light is on; it stops when the switch is in neutral, and both of the upper and lower LED lights are off; and it starts to operate automatically by pressing the upper position and the upper LED light is on Only in this mode, and the planer is in low-speed working mode, shall the conveyor be switched on when the FNR handle being pushed forward, and it is switched off when the handle is in neutral or being pulled backward.
19	Water pump switch		The water pump starts to work manually by pressing the lower position of the switch, and lower LED light is on; It stops when the switch is in neutral, and both of the upper and lower LED lights are off. And it starts to work automatically by pressing the upper part and the upper LED light is on. Only in this mode, and the planer is in low-speed working mode, shall the water pump is switched on when the FNR handle being pushed forward, and it is switched off when the handle is in neutral or being pulled backward.

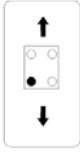
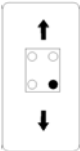
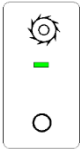
Machine description

Ergo Control Box



- 20 Conveyor handle switch
- 21 FNR handle
- 22 Right rear strut tower UP-DOWN
- 23 Left rear strut tower UP-DOWN
- 24 Milling drum
- 25 Left side plate UP-DOWN
- 26 Right side plate UP-DOWN
- 27 Travel drive mode
- 28 Parking brake
- 29 Horn
- 30 Work speed adjustment switch

Pos.	Designation	Symbol	Function
20	Conveyor handle		<p>The conveyor moves downward by pushing the handle forward; it moves upward by pulling the handle backward; it moves to the left by pushing the handle towards the left; and it moves to the right by pushing the handle towards the right.</p> <p>The conveyor speed is increased by rotating the ball handle clockwise; and it is decreased by rotating the ball handle counterclockwise.</p> <p>Press it to sound the horn.</p>
21	FNR handle		<p>The planer moves forward by pushing the FNR handle forward, and it moves backwards by pulling the handle backward.</p> <p>The planer is in braking state when it is in neutral.</p> <p>Vehicle speed is proportionate to the pushing angle of FNR handle.</p> <p>Machine stop moving when rear scraper achieve to upmost position.</p>

22	Left rear strut tower UP-DOWN		<p>While the upper position of switch is being pressed, the left rear strut tower is extended and the body of vehicle is raised until it reaches its upper limit position;</p> <p>While the lower position of switch is being pressed, the left rear strut tower is retracted and the body of vehicle is lowered until it reaches its lower limit position.</p>
23	Right rear strut tower UP-DOWN		<p>While the upper position of switch is being pressed, the right rear strut tower is extended and the body of vehicle is raised until it reaches its upper limit position;</p> <p>While the lower position of switch is being pressed, the right rear strut tower is retracted and the body of vehicle is lowered until it reaches its lower limit position.</p>
24	Milling drum		<p>Press upper button of the switch, milling drum starts rotating, green LED lights on; press the lower button milling drum stops rotating.</p> <p>Milling drum could only work when planer is not moving.</p> <p>Sensor only activate when rear scraper is in low position. After activating the button, engine RPM automatically achieve to 900rpm, milling drum starts to work, wait a few seconds, engine RPM automatically accelerate to throttle potentiometer speed (invalid data if less than 1400rpm).</p> <p>Sensor automatically shut milling drum down when machine move backward and rear scraper is higher than lower position sensor.</p> <p>When milling drum working, side shield and sliding shoe are in floating state..</p>
25	Left side plate UP-DOWN		<p>The left side plate is raised by pressing the upper part of the switch, and the upper LED light is on.</p> <p>The leveling system is on standby state, without any output.</p> <p>It is lowered by pressing the lower position of the switch and the LED light indicates activation.</p>

Machine description

26	Right side plate UP-DOWN		<p>The right side shield is raised by pressing the upper part of the switch, and the upper LED light is on. The leveling system is on standby state, without any output.</p> <p>The right side shield is declined by pressing the lower part of the switch, and the lower LED light is on.</p>
27	Travel drive mode		<p>Press the upper button to activate fast mode (hare), LED light on.</p> <p>Under this mode, milling drum switch is not available; milling drum could not be started.</p> <p>When the switch is in neutral position, the lower speed (tortoise) mode is on, two LED lights are off. System defaults working mode (tortoise) after ignition.</p> <p>After pressing the lower button, machine starts flow divide mode, the lower LED light on. At this moment, propulsion motor is in lower speed mode and flow-split valve is activated.</p>
28	Parking brake		<p>The travelling system of planer is braked by pressing the upper part of switch and the upper LED light is on.</p> <p>The planer cannot be moved under this mode.</p> <p>The planer can be started only when it is in the braking mode.</p> <p>Release the lock mode and press the lower button then deactivate the brake mode, LED lights off. Then planer could start moving.</p>
29	Horn		<p>The horn sounds when the switch is pressed, and stops when it is released.</p>
30	Work speed adjustment switch		<p>Adjust the maximum travelling speed in the working mode (turtle). The set travelling speed in m/min or feet/min is indicated in the display.</p>

Remote Control box

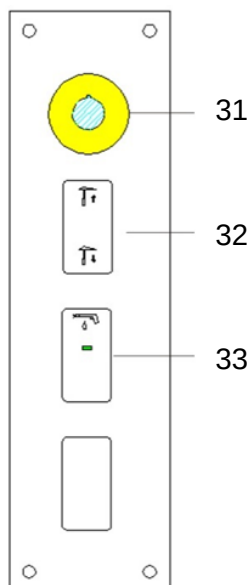


Fig. Remote Control Box

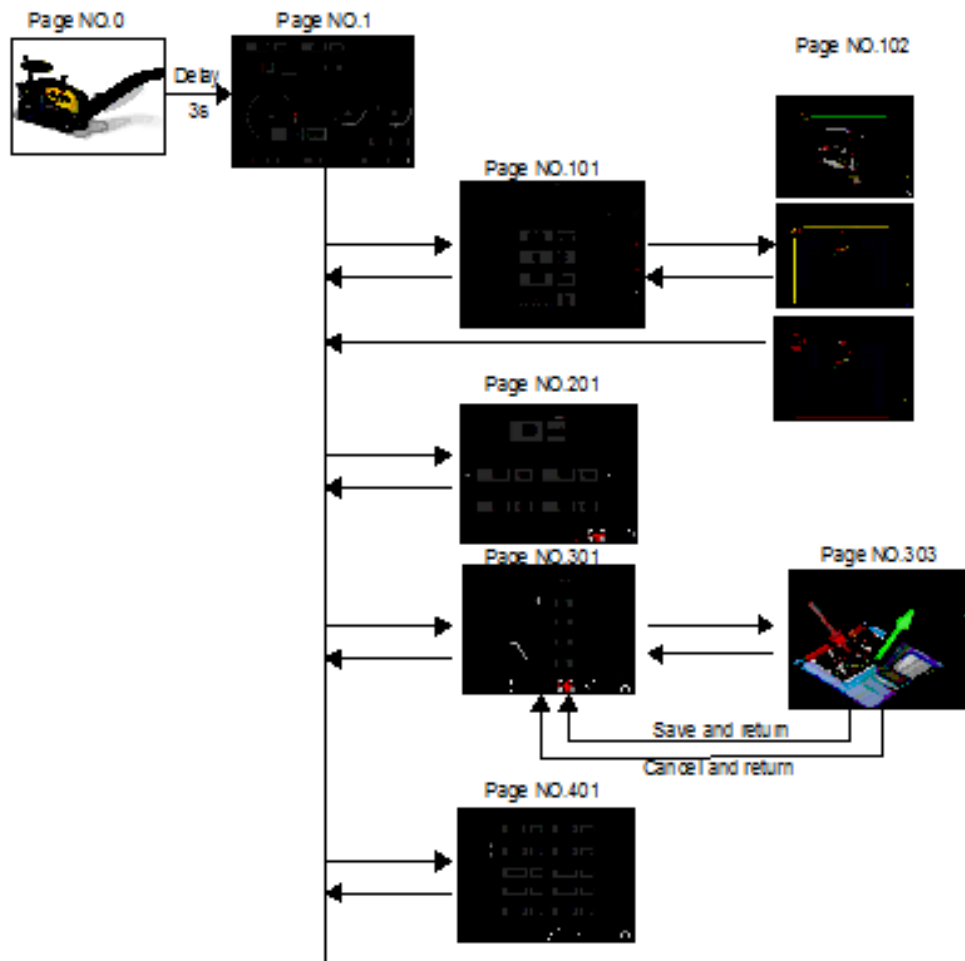
31 Emergency stop 32 Canopy raising/lowering switch 33 High pressure water gun switch

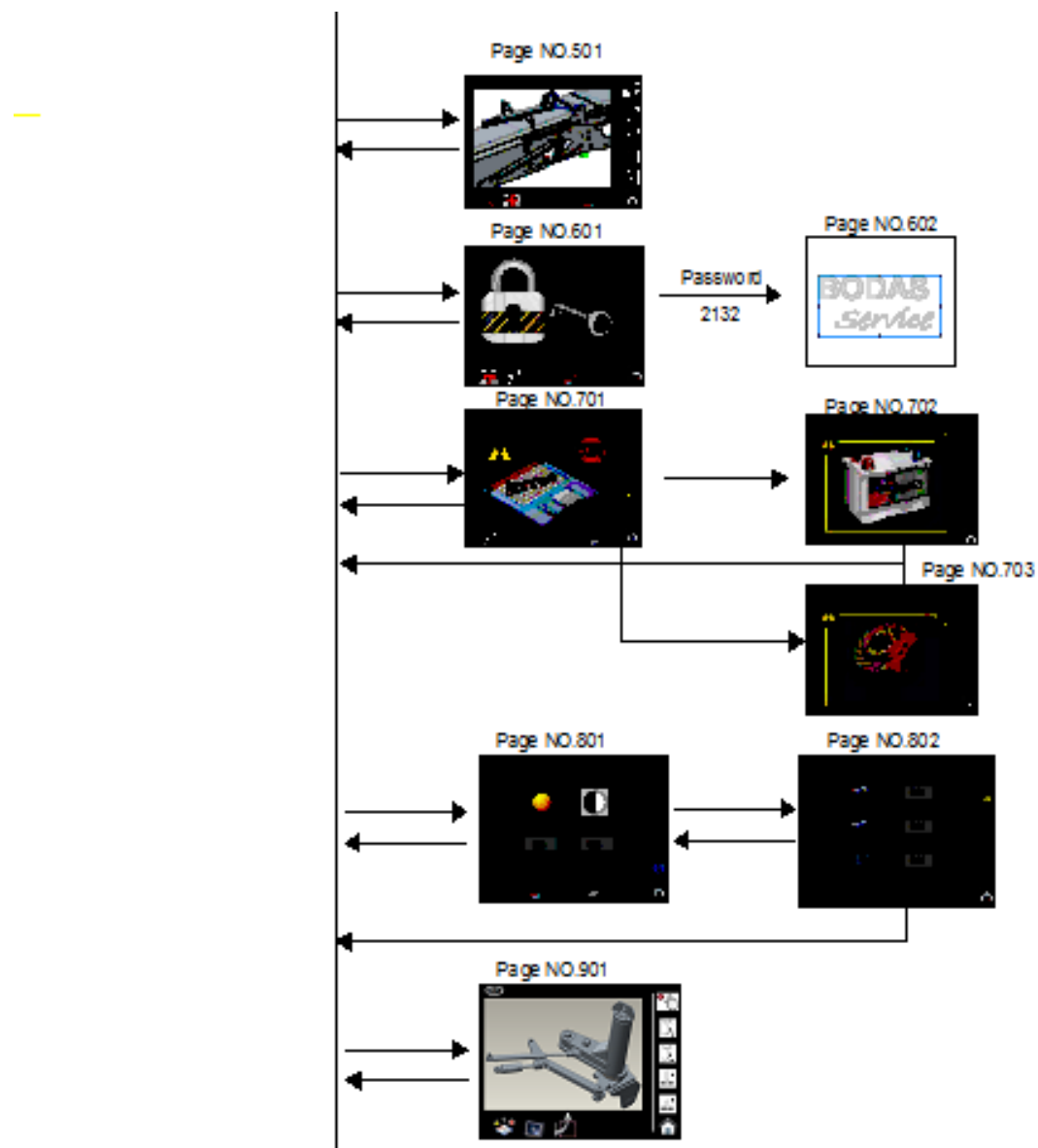
Pos.	Designation	Symbol	Function
31	Emergency stop		<p>The engine, milling drum, conveyor, water pump, strut tower, scraper and side shields are disengaged whenever the emergency button is pressed.</p> <p>Two emergency stops are placed underneath the steering wheel and on the remote control box respectively.</p> <p>To restart the engine, both of the emergency stops must be released.</p> <p>When the emergency stop button is pressed, It is required to indicate the relevant warning icon in the display to show which one is activated.</p>
32	Canopy raising/lowering switch		<p>The canopy is raised / lowered by pressing the upper/lower position of the switch, and it stops when the switch is released.</p>
33	High pressure water gun switch		<p>When high pressure water pump doesn't in working mode, press upper position of switch, water pump starts working, LED lights on; When high pressure water pump is in working mode, press upper position of switch, water pump stop working, LED lights off;.</p>

Machine description

Screen structure for setting and display options

The following graphic can be used to clarify the setup of the screen structure and to simplify operation or the procedure to be following during various setting and display operations.





Machine description

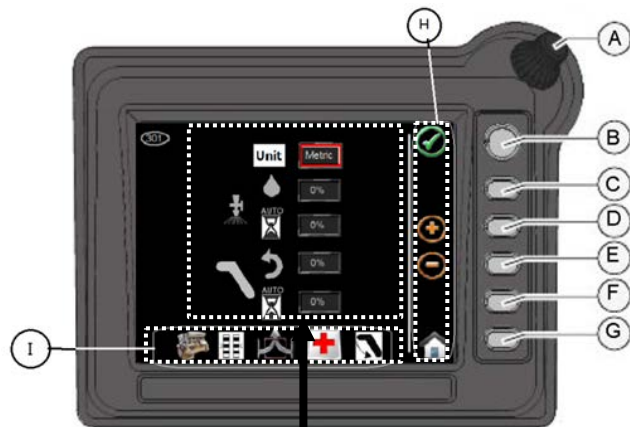
Operation, displays and setting options in the menu

Welcome screen



The system gets electricity once the key switch is turned on. Welcome screen appears in the display, and then the main screen is showed 3 seconds later , meanwhile, all LEDs on the control table are lighted for 3 seconds, the state of vehicle is indicated normally.

Input and operation of display



Rotate encoder A to switch different menu screen, the items in the menu adjacent to the current one are indicated in **Action Menu "I"**.

Press Button B-G to execute functions indicated in **Action list "H"**.

Action menu is including the following items:

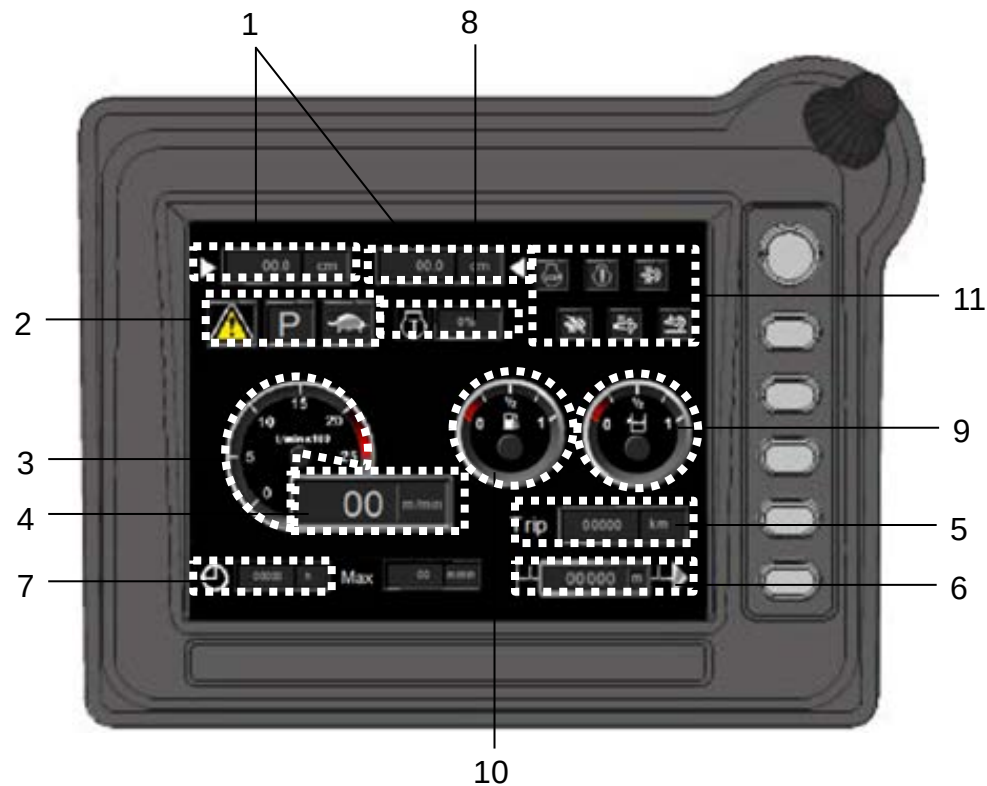
- Main
- Engine information
- Engine warning
- Leveling
- Adjustment
- Electrical screen
- Hydraulic
- Fan information
- Calibration
- Warning screen
- System information

Display: Show the information details of the selected "Action" through **Action Menu** by pressing **button B**

Press Button B-G to execute functions indicated in **Action list "H"**.

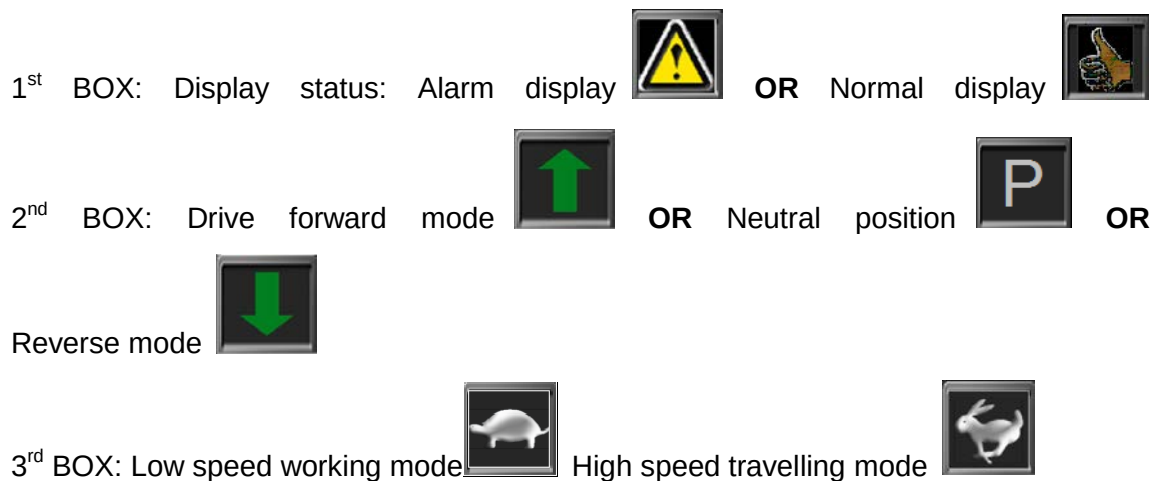
Main screen-information and warning messages (Page 1)

Following the welcome screen, the system enters into the main screen automatically in three seconds later.



The main screen includes the following main parameters:

1. The actual milling depth of the left and right side are shown in the upper area of display, with the unit of cm (inch in British system), resolution ratio of 0.1cm and measuring range of 99.9cm.
2. The system alarm, travelling direction and high/low speed are displayed respectively in three indication box.



Machine description

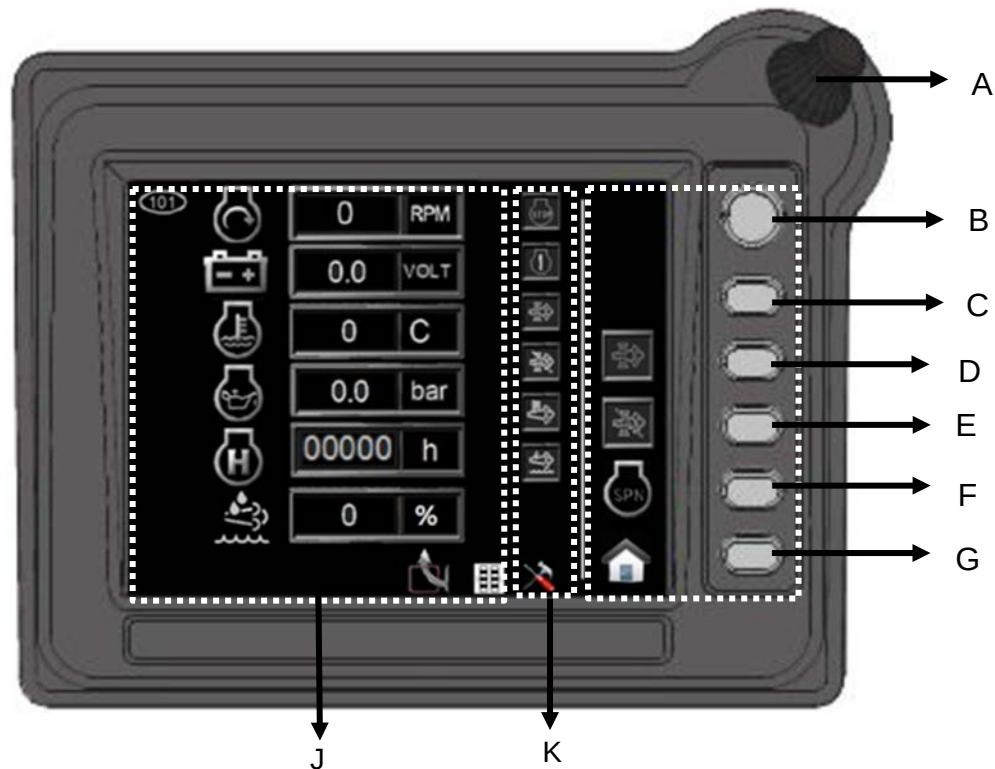
3. The engine speed is shown on the left side of display, with the unit of rpm
- 4 .The actual travelling speed is shown on the right of the tachometer, with the measuring range of 99, and unit of m/min (feet in British system). The maximum setting speed is displayed under the meter of actual travelling speed, with the unit of m/min (feet in British system). When the planer is in high speed travelling state (hare), the unit is in km/h (mile in British system), and the maximum speed will not be indicated in the display (neither in the indicator).
5. The total distance travelled by the machine since delivery is indicated at bottom right of the display (the value, with the unit of km, cannot be reset to zero), and the measuring range is 99999, recalculate from 0 when it overflows.
6. The traveled distance travelled in milling mode is shown below the total mileage (reset is allowable, and recalculate when it cleared to zero). Callout the key screen, press Button G for more than 3 seconds and then reset the mileage. And it is recorded only when the planer is in low speed working mode (turtle), the milling drum is turned on and the automatic state is valid. The measuring rang is 99999, and recalculate from 0 after it overflows.
7. The working hours of engine is shown below the tachometer. The measuring range is 99999, and recalculate from 0 when it overflows.
8. The actual torque load of engine is showed in percentage.
9. The level of water tank is indicated in the display.
10. The level of diesel oil is indicated in the display.
11. The engine alarm information is shown at the right corner of display.

Mainly Includes:

Engine fault light		Light effect	
Engine alarm light		Light effect	
Engine regeneration		Light effect	
Engine regeneration prohibition		Light effect	
High post-processing temperature of engine		Light effect	
Low DEF liquid level of engine		Light effect	

Machine description

Engine Information Screen (Page 101)



- A. Encoder, rotate A to switch to different screen.
- B. Action selection
- D. Press Button C, the post-processing of engine is enforced to regenerate, which is stopped by releasing the button. **For T4f engine ONLY.**
- E. The post processing of engine is prohibited to regenerate and kept in this state until the button is pressed again to cancel regeneration prohibition. **For T4f engine ONLY.** (The state of switch is saved when the power is cut off).
- F. To enter the engine alarming page.
- G. Back to Home page (Main interface).
- J. Information that appear on the screen, including:
 - Real-time rotating speed (rpm)
 - Power voltage (v)
 - Water temperature (°C)
 - Oil pressure (bar)
 - Working hours (h)
 - Liquid level of post-processing urea box
 - The engine's value and parameters displayed in this screen are comes from J1939.
- K. Alarm → Symbol message refer to main screen. Six alarm light signals are displayed in this screen, with the same state as home page.

Engine warning Screen (Page 102)



This screen is used for displaying the engine SPN fault code.

This screen has 3 different states:

1st state: Green interface – The display shows “ENGINE OK”, which indicates no fault code.



2nd state: Yellow interface - The display shows “ENGINE WARNING!”, which indicates that the engine goes wrong. The temporary operation function of the machine can be executed. This issue is required to be addressed as soon as possible to prevent further damage.



3rd state: Red interface - The display shows “STOP ENGINE”, which indicates that the malfunction of the guide engine has reached to the extent of automatically shutting down, or stop engine to prevent from further damage.

Press button B to see the next fault code.
Press button G to return to the main screen.

Fig. Engine warning screen

- **SPN+FMI: Fault code**
- **OC: Frequency**

The fault conditions can be determined by explanation of a number of alarm codes contained in the alarm information screen

See appendix 1 for specific SPN fault code.

Machine description

Leveling, setting leveling value (Page 201)



The setting value and actual measured value of leveling system are displayed in this screen.

The actual travelling speed of planer is displayed at the upper position of the screen.

1. Indicates actual measured value of leveling system
2. Indicates setting value of leveling system
3. Indicates the height of two rear strut towers
4. Action menu, corresponding button on the display (3) which controls selecting each action.

Press Button B to change the value from left to right.

The setting depth of left side is increased by 0.1cm at each time of pressing of Button

D , and it is decreased by 0.1cm at each time of pressing Button E . Press and hold for continuous change.

Inputting focus (red frame) switches to the left or right by pressing Button B at each time.

Press Button C  to switch slope mode located at the same side of inputting point (in red frame), **gray means turn off**, and **green means activation** (when the slope mode is activated in one side, the other side is automatically shut down). The display of depth is in percentage when the above-mentioned mode is in activation.

Press Button F  and hold for 3 seconds, the height of both left and right strut tower are set in zero position (and also the zero value is stored).

Press Button G  to return to the main interface.



Adjustment Screen (Page 301)

The following data can be set in this screen:

1. Button on the display. Select corresponding button for each specific action.
2. Action menu, corresponding button on the display (1) which controls selecting each action.
 - Unit of display data (metric or British system)
 - Water pump jet capacity, automatic stop and delay
 - Max. Rotating speed of conveyor, automatic stop and delay
 - Left side shield pressurizing pressure
 - Right side shield pressurizing pressure
 - Rear scraper pressurizing pressure
 - Deducting motor speed (in percentage)
 - Other parameters

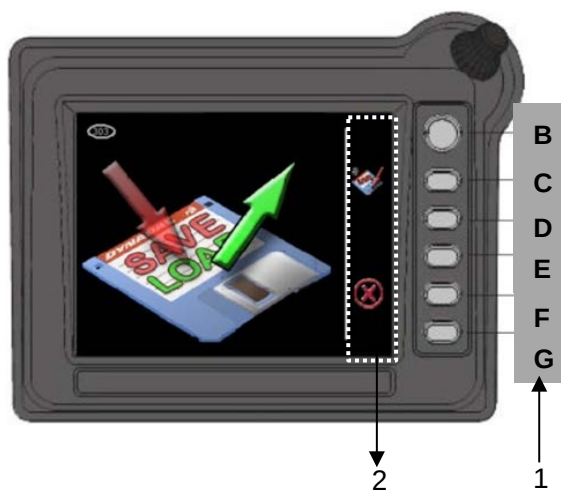
Red frame indicate the current setting point.

Press Button B , and the inputting point (in red frame) switches in turn.

Press Button D  or E  to change data.

When the parameter is changed, press button F  to write it in and then enter into the confirmation page. Press Button G  to return to the main interface.

Machine description



(Page 303)

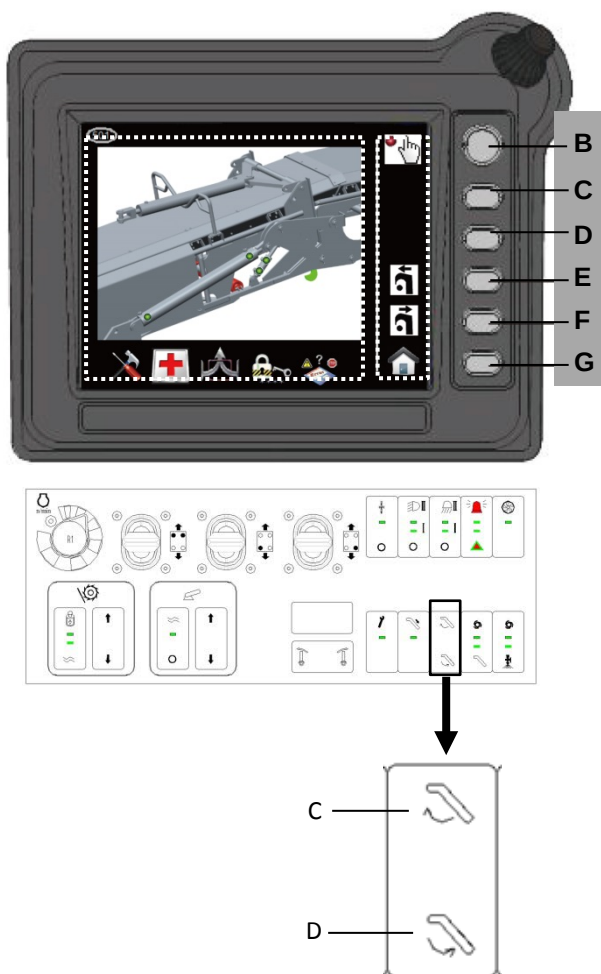
Press button C  in this interface, and the system will write previously set parameter, press button F  to discard changes and return to page 301.



Electrical Screen (Page 401)

This screen indicates potentiometer voltage for Max. Working speed and for the engine rotating speed (mV);
 Potentiometer dual voltage of control lever for travel drive in the side control box (mV);
 Potentiometer dual voltage of control lever for three strut towers in the control table (mV);

Press Button G  to return to the main screen.



Conveyor folding screen (Page 501)

When pressing Button B  in this screen, the lamplet next to the icon goes red (it is in gray when entering the page every time), and the manually folding function of conveyor is activated.

After activating button B :

To manually fold conveyor, press button F



To manually unfold conveyor, press button F



(C: unfold; D: fold; E: hook; F: release)

The two indicator lights in the cylinder corresponds to the sensors in the relevant position, green represents connected, gray represents disconnected.

Press Button G  to return to the main screen.

(Page 601)

To enter this screen, password is required.

No change in the page if the password is wrong, press Button G  to return to the main screen.

Shift into the calibration screen (BODAS Service) if the password is right.

Parameter setting of BODAS Service requires password protection. Look only on the parameters, no password necessary.



Machine description



Warning Screen (page 701)

Press Button C  to check current fault, press Button E  to check non-current fault, and press Button G  to return to the main screen.

Press Button C  **under page 701** to enter into the current fault warning screen.



(Page 702)

The current system alarm is showed in sequence automatically after entering this interface.

Press Button B , the next alarm shows automatically; press Button G to return to the main screen.

Press Button B 
See appendix for specific warning information.

Press button E  **under Page 701** to enter into the non-current fault warning screen.



(Page 703)

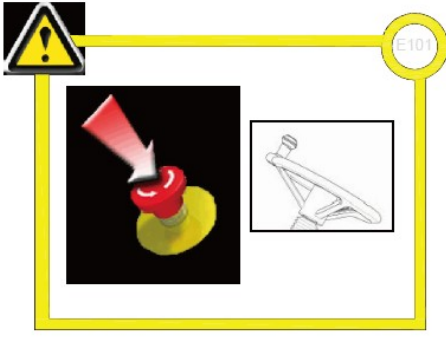
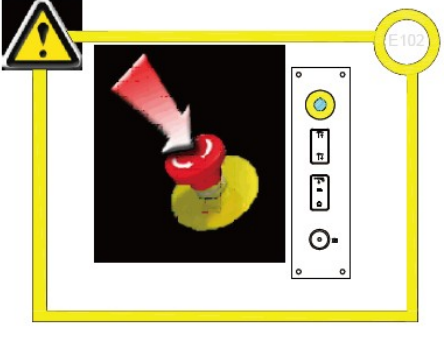
The previously appeared and stored warning information shows in sequence automatically after entering this interface.

Press Button B , the next alarm shows automatically; press Button F  to clear all stored warning information.

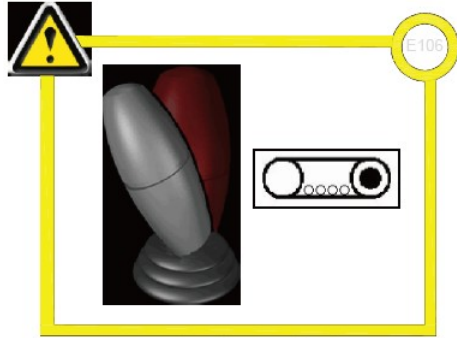
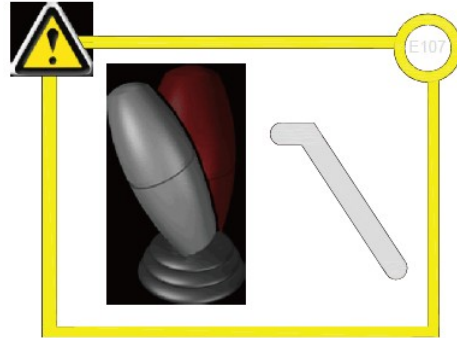
Press Button G  to return to the main screen.

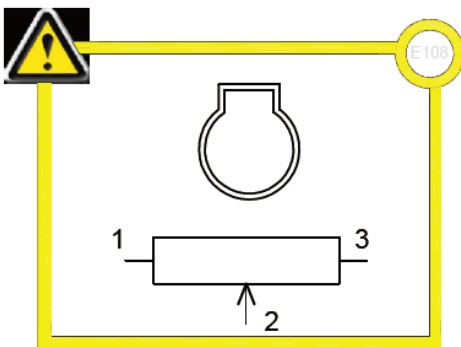
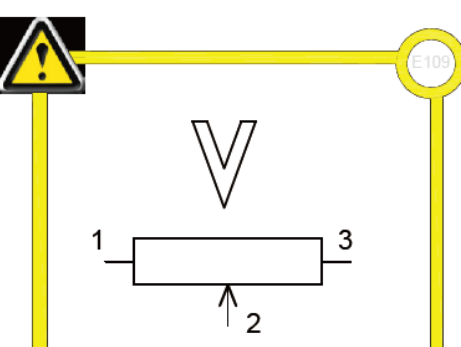
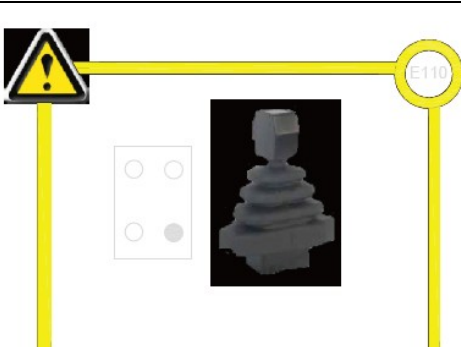
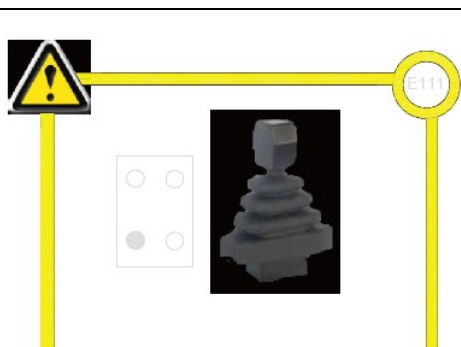
Description of error codes, dialog boxes

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

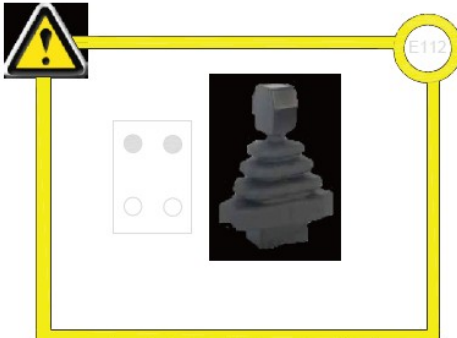
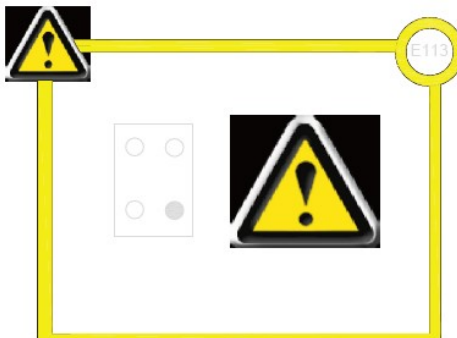
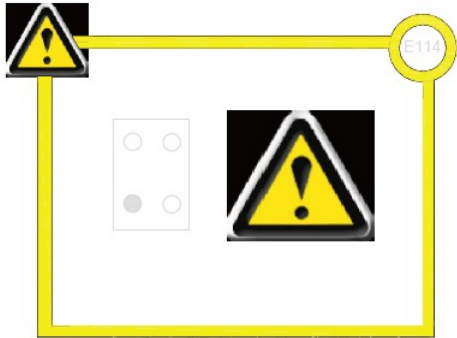
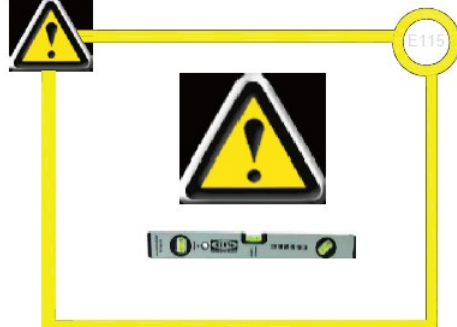
Indication	Error code	Significance
	E101	Emergency stop button on the control table is activated
	E102	Emergency stop button on the remote control box is activated
	E103	Low battery voltage

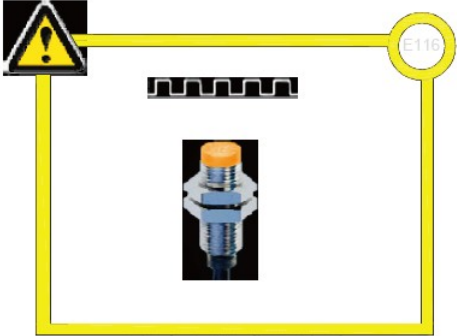
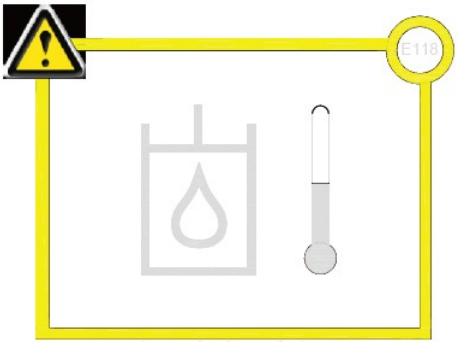
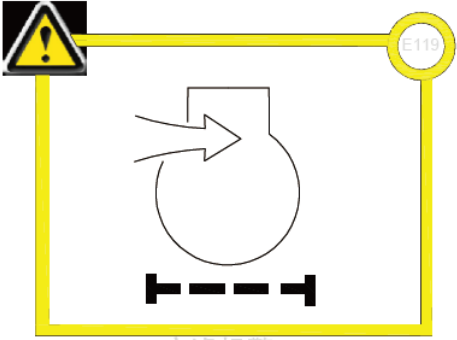
Machine description

 <p>The diagram shows two electronic control units connected by a CAN BUS line. The text 'CAN BUS' is displayed in green above the units.</p>	E104	CAN communication fault
 <p>The image shows a yellow rectangular electronic control unit with a cable connected to it.</p>	E105	Fault in leveling system
 <p>The image shows a grey control lever with a red button. To the right is a schematic diagram of the lever's internal mechanism.</p>	E106	Fault on control lever for travel drive
 <p>The image shows a grey control lever with a red button. To the right is a schematic diagram of the lever's internal mechanism.</p>	E107	Fault on control lever for conveyor

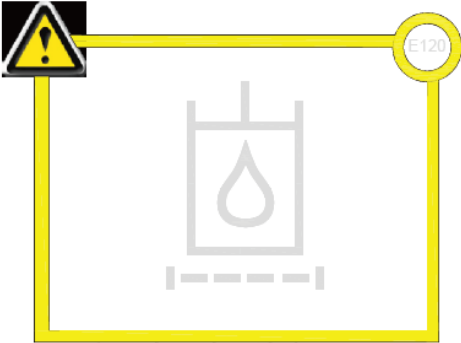
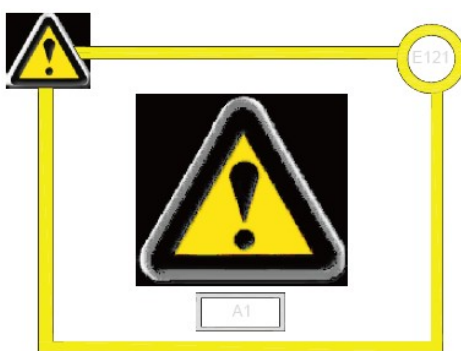
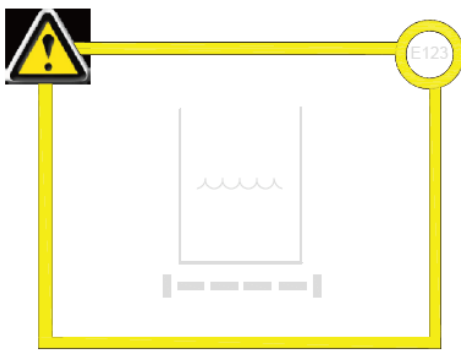
	E108	Fault in potentiometer for engine speed
	E109	Fault in potentiometer for travel speed
	E110	Fault on control lever for rear right leg
	E111	Fault on control lever for rear left leg

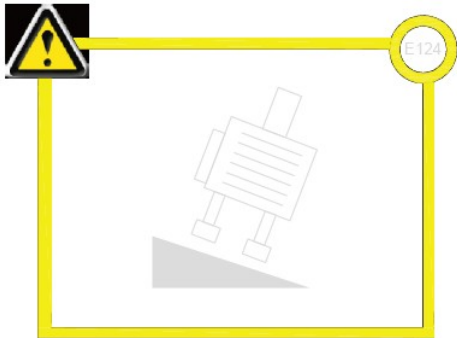
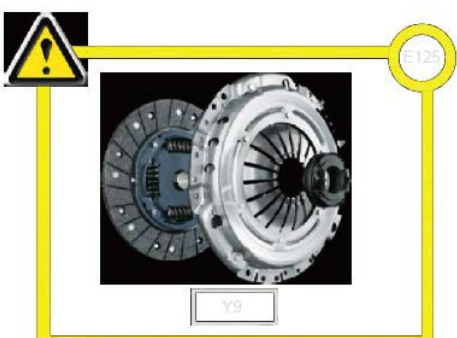
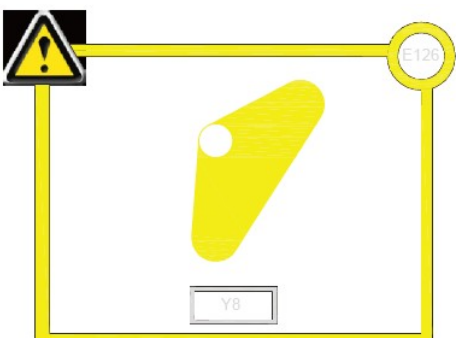
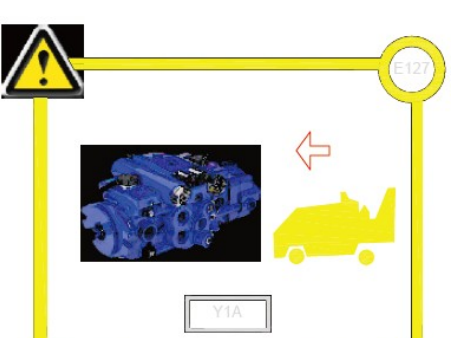
Machine description

	E112	Fault on control lever for front leg
	E113	Fault on position sensor for rear right leg
	E114	Fault on position sensor for rear left leg
	E115	Fault on tilt sensor

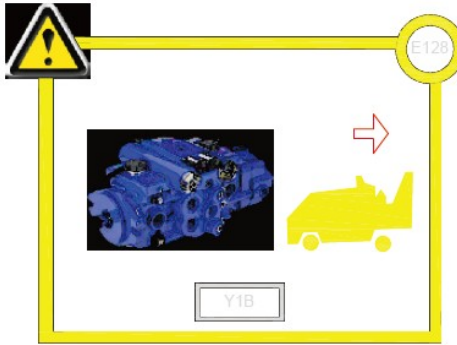
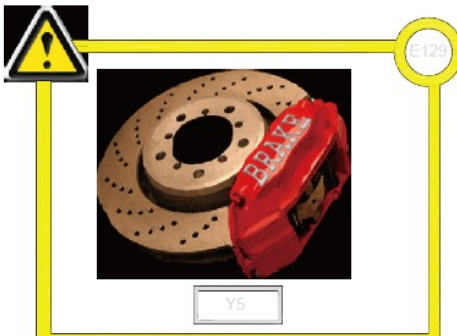
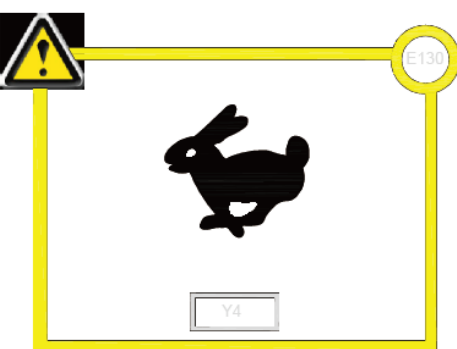
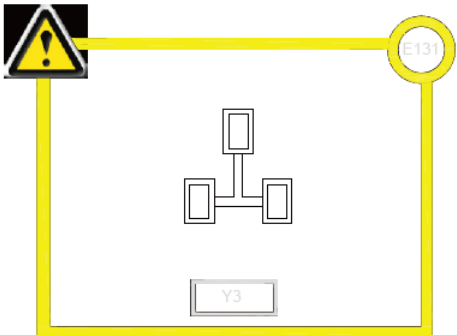
	E116	Fault on sensor for engine speed
	E117	Fault on sensor for diesel oil level
	E118	Hydraulic oil temperature too high
	E119	Warning on air filter

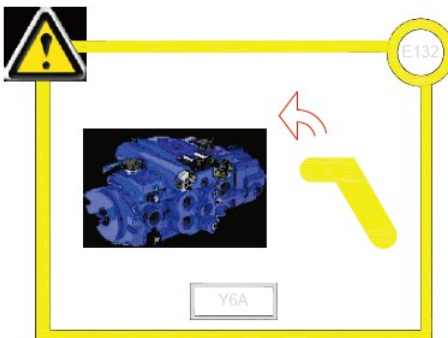
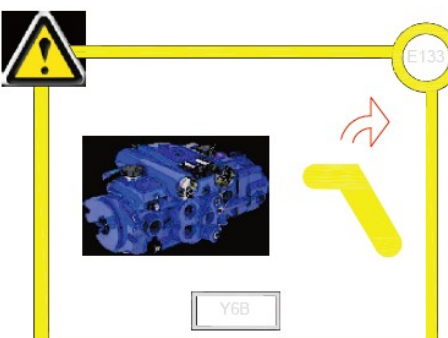
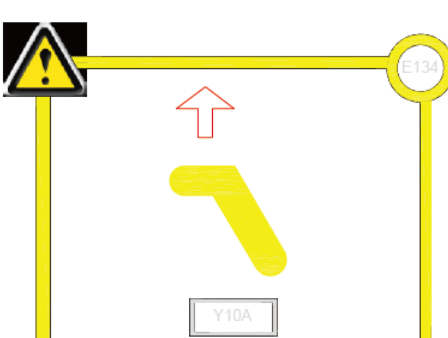
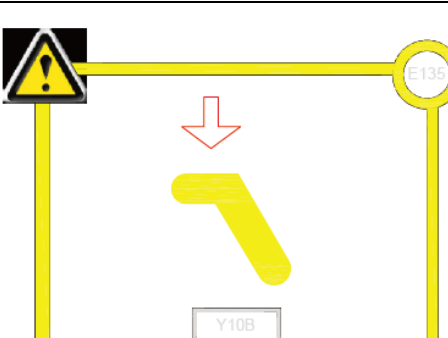
Machine description

	E120	Hydraulic oil filter clogging
	E121	Fault on A1 controller
	E122	Fault on A2 controller
	E123	Warning on water filter

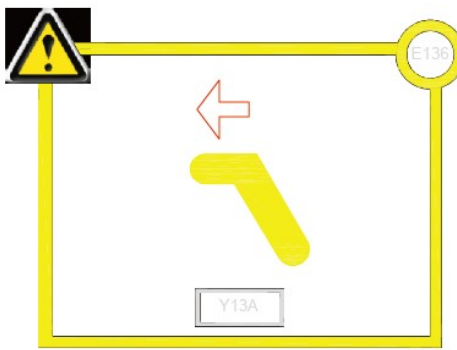
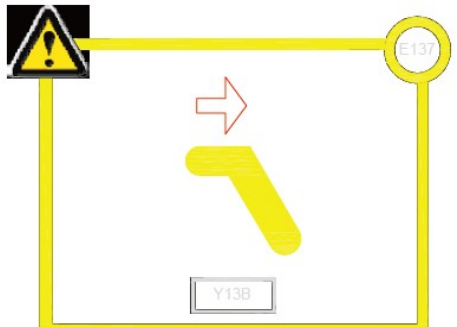
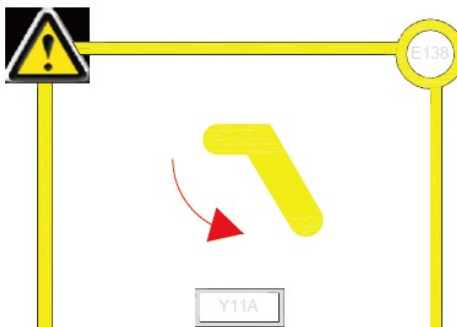
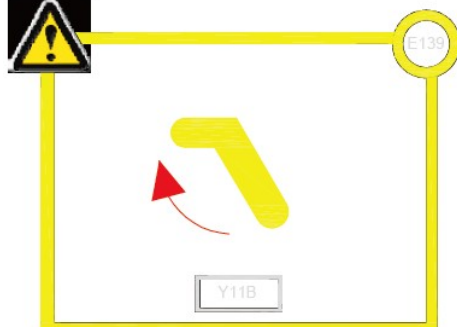
	E124	Tool big inclination angle of planer
	E125	Solenoid valve fault, milling drum drive clutch
	E126	Solenoid valve fault, belt tensioner
	E127	Solenoid valve fault, drive forward pump

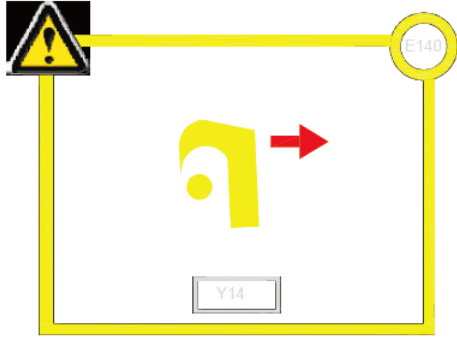
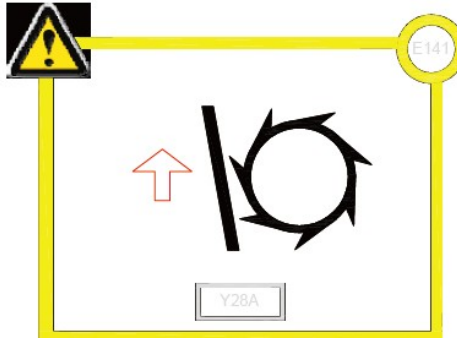
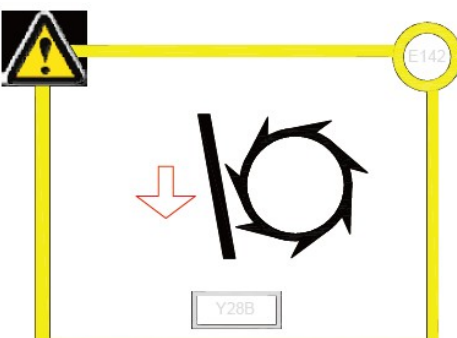
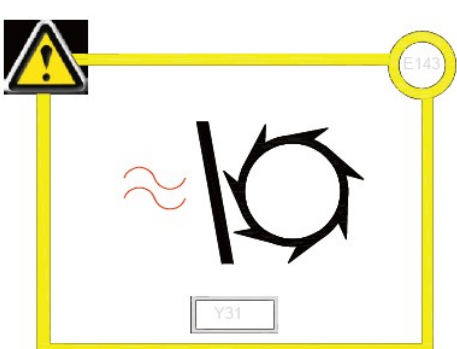
Machine description

	E128	Solenoid valve fault, drive backward pump
	E129	Solenoid valve fault, brake system
	E130	Solenoid valve fault, drive motor displacement
	E131	Solenoid valve fault, differential lock

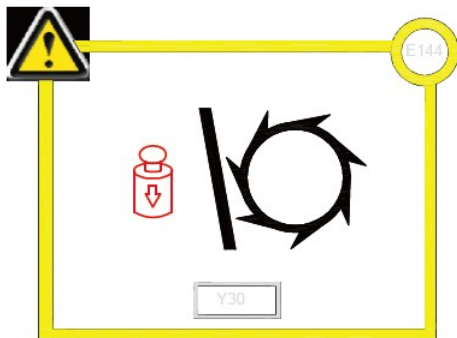
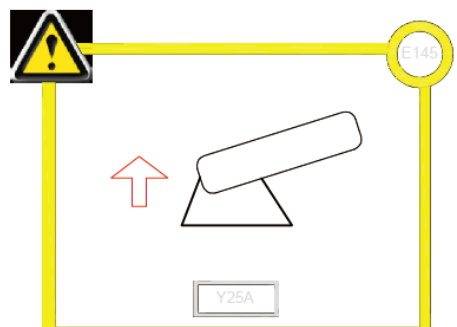
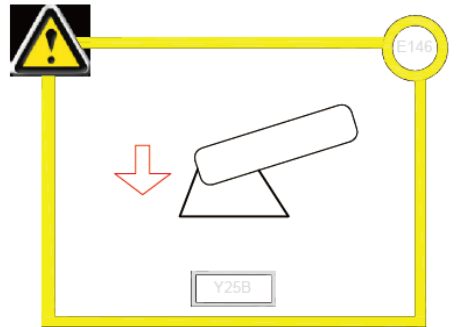
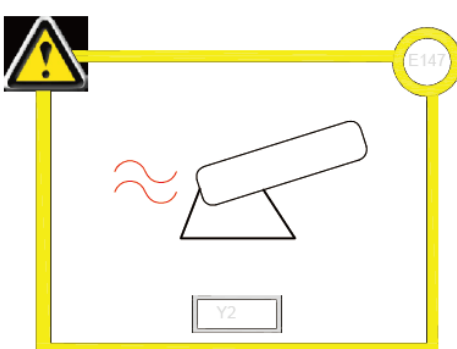
	E132	Solenoid valve fault, conveyor drive forward pump
	E133	Solenoid valve fault, conveyor drive backward pump
	E134	Solenoid valve fault, conveyor lift
	E135	Solenoid valve fault, conveyor lower

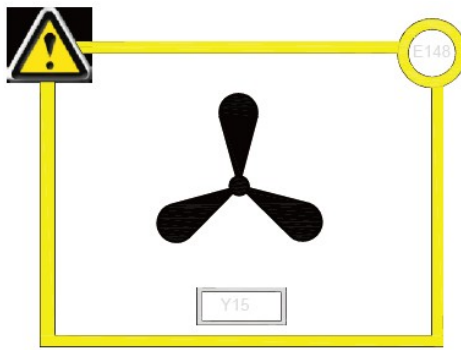
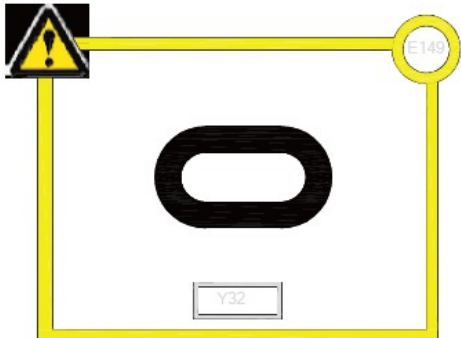
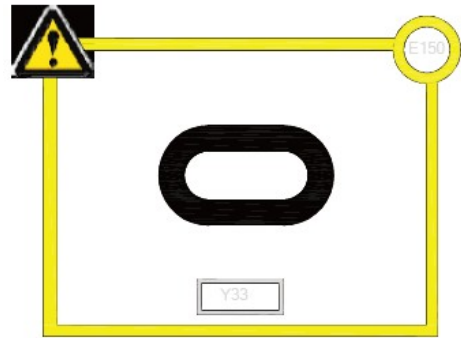
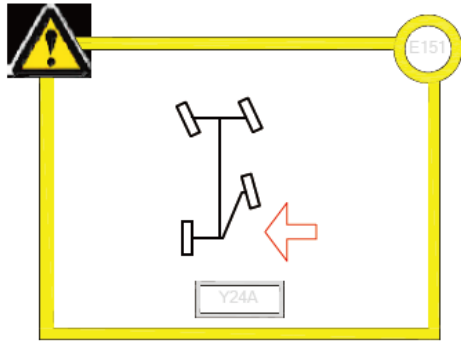
Machine description

	E136	Solenoid valve fault, conveyor left
	E137	Solenoid valve fault, conveyor right
	E138	Solenoid valve fault, conveyor fold
	E139	Solenoid valve fault, conveyor unfold

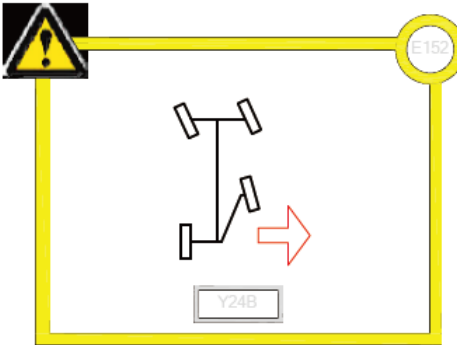
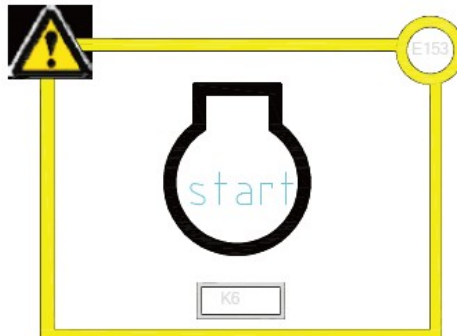
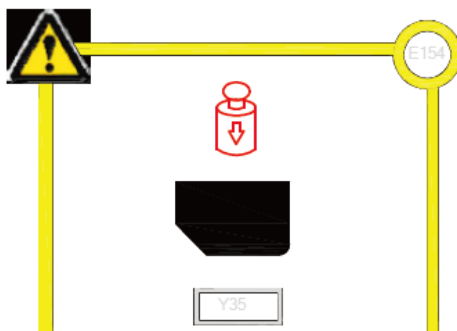
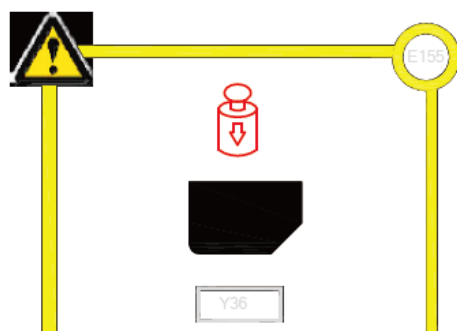
	E140	Solenoid valve fault, conveyor fold lock
	E141	Solenoid valve fault, rear scraper lift
	E142	Solenoid valve fault, rear scraper lower
	E143	Solenoid valve fault, rear scraper float

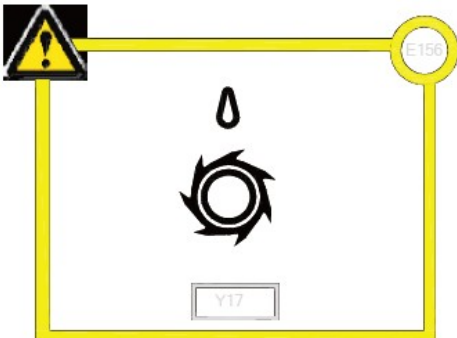
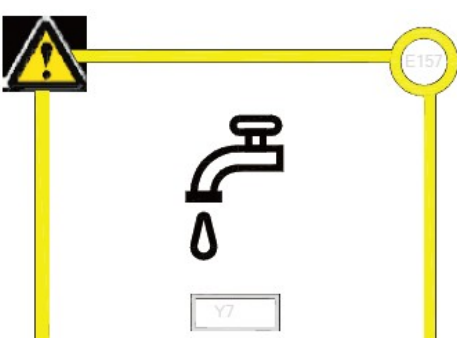
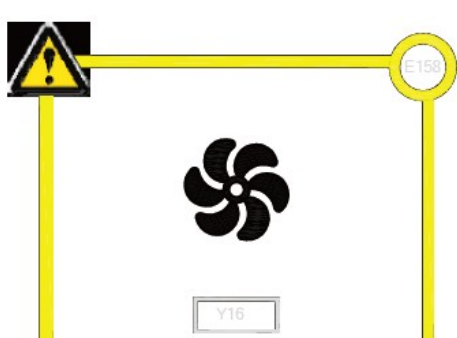
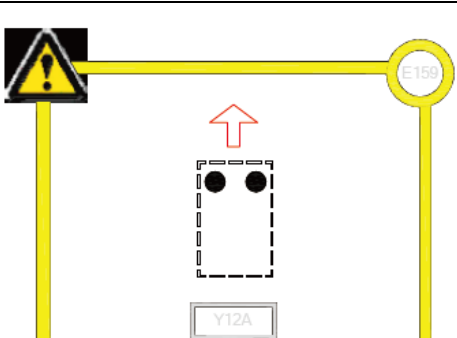
Machine description

	E144	Solenoid valve fault, rear scraper add pressure
	E145	Solenoid valve fault, sliding shoe lift
	E146	Solenoid valve fault, sliding shoe lower
	E147	Solenoid valve fault, sliding shoe float

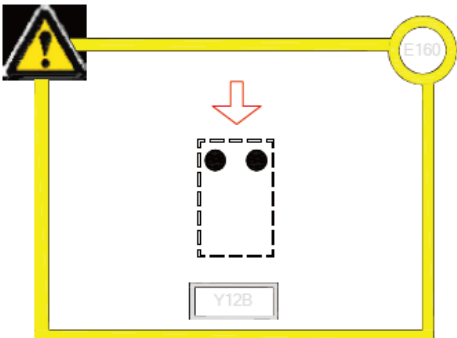
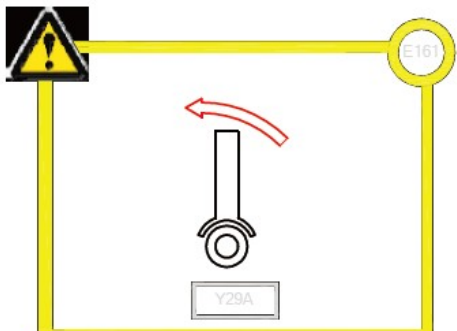
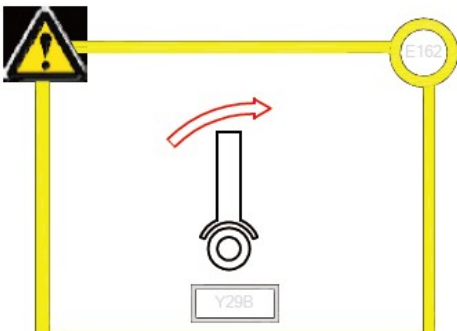
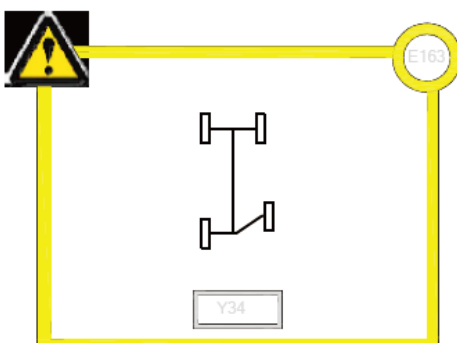
 <p>Y15</p> <p>E148</p>	E148	Solenoid valve fault, coolant fan
 <p>Y32</p> <p>E149</p>	E149	Solenoid valve fault, track stretch
 <p>Y33</p> <p>E150</p>	E150	Solenoid valve fault, track stretch
 <p>Y24A</p> <p>E151</p>	E151	Solenoid valve fault, rear right wheel steering left

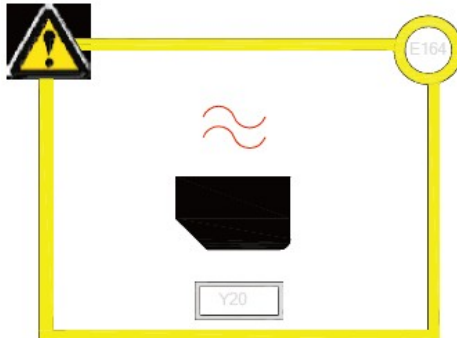
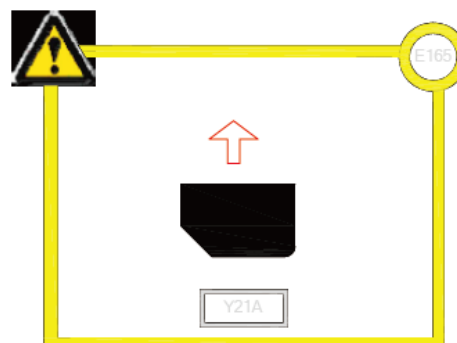
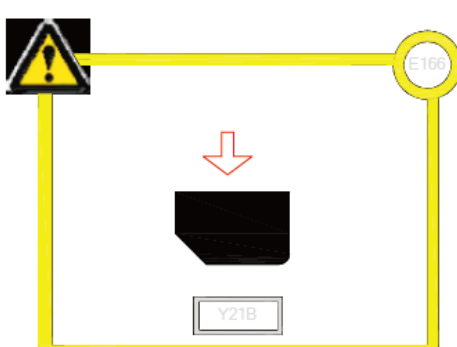
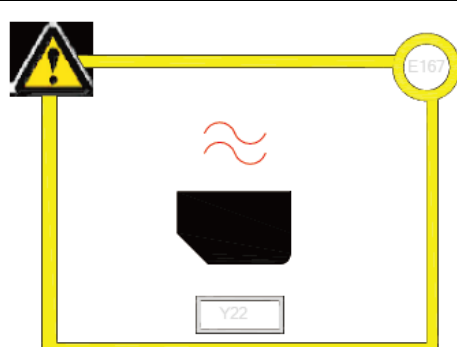
Machine description

	E152	Solenoid valve fault, rear right wheel steering right
	E153	Fault on safety relay for engine start
	E154	Solenoid valve fault, left side plate add pressure
	E155	Solenoid valve fault, right side plate add pressure

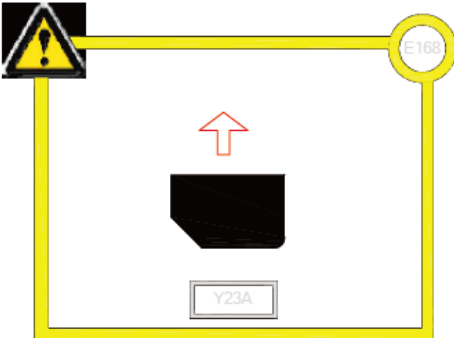
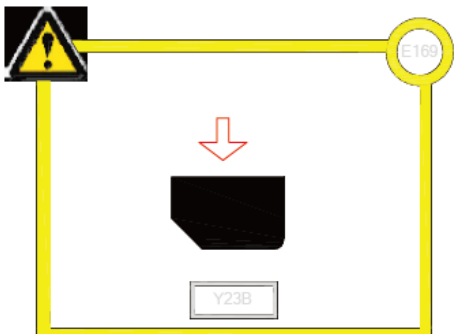
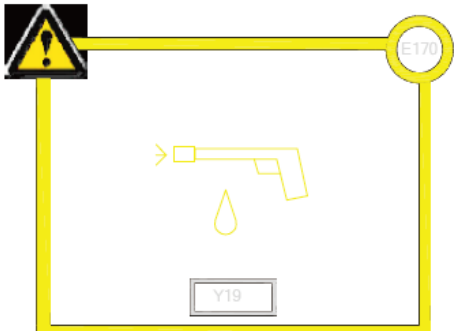
	E156	Solenoid valve fault, water pump
	E157	Solenoid valve fault, water valve
	E158	Solenoid valve fault, coolant fan
	E159	Solenoid valve fault, front strut tower lift

Machine description

	E160	Solenoid valve fault, front strut tower lower
	E161	Solenoid valve fault, rear right wheel swing left
	E162	Solenoid valve fault, rear right wheel swing right
	E163	Solenoid valve fault, rear right wheel lock

	E164	Solenoid valve fault, left side shield float
	E165	Solenoid valve fault, left side shield lift
	E166	Solenoid valve fault, left side shield lower
	E167	Solenoid valve fault, right side shield float

Machine description

	E168	Solenoid valve fault, right side shield lift
	E169	Solenoid valve fault, right side shield lower
	E170	Solenoid valve fault, high pressure water pump



Display set-up and system information screen (Page 801)

Under the main screen, press F8 to enter this page.

Brightness and contrast set.

Each display can only be set its own brightness and contrast.

Press button D  to increase brightness by 5%, and press Button E  to reduce it by 5%.

Press Button B  to switch to contrast, with the same step size as 5%.

In this screen, press Button F  to enter into the system information page, and press Button G  to return to the main interface.

Machine description



(Page 802)

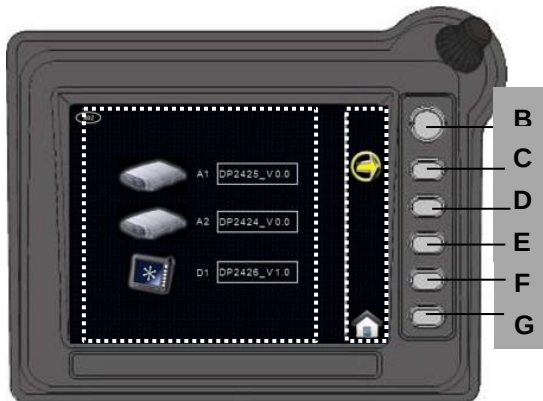
Under page 801, press Button F  to enter into the system information interface.

This page indicates the version number of three controllers, two displays and control tables on both left and right side in the electronic control system.

Under this page, press Button C  to

return to page 801, and press Button G  to return to the main interface.

System version screen (Page 802)



Page 802 shows the version numbers of the two RCs and display. Press button C  to back to Page 801.

Rear right leg fold/unfold (Page 901)



To manually operate the function of the right rear track folding and steering when the sensor in fault.

Press button B  to enable and disable the manually operation function. The lamp next to the decal turn to red (from gray), rear right chassis leg manual fold/unfold function activated.

Press button C  and D  to control the steering cylinder of right rear track. Press button E  and F  to control the locking cylinder.

Press button G  to back to main page.

Machine description

Electrical system

The electrical control system is protected by 40 fuses and 16 relays.

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

The fuse box and relays are placed in the control box.

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



Main Fuses

The main fuses are located above the rear scraper, behind the cover.

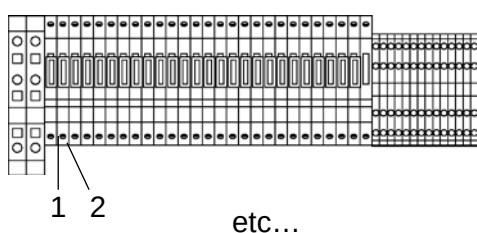
Fig. Location, main fuses.

F1.1 Control system main fuse 50A

F1.2 Roof motor fuse 30A

F1.3 Generator fuse 100A

F1.4 Air heater engine fuse 100A



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.

Fuses boxes

F1.1	Control system main fuse	50A	F2.17	Lamp of conveyor	10A
F1.2	Motor of roof fuse	30A	F2.18	Horn of Machine	5A
F1.3	Generator fuse	100A	F2.19	Traffic lamp	10A
F1.4	Engine air heater fuse	100A	F2.20	Work lamp	10A
F2.1	Power switch fuse	5A	F2.21	Brake lamp	10A
F2.2	Line15 (by key switch) fuse	30A	F2.22	Work lamp	10A
F2.3	Emergency stop switch fuse	2A	F2.23	24V Light socket	10A
F2.4	Line60 (by emergency stop switch) fuse	30A	F2.24	12V Light socket	5A
F2.5	Line58 (Main control panel) fuse	10A	F2.25	Power for A1 Logic	5A
F2.6	Line59 (Side control panel) fuse	10A	F2.26	Power for A1 Output	20A
F2.7	Line56 (Work light) main fuse	30A	F2.27	Power for Sensor	10A
F2.8	Engine controller (power) fuse	30A	F2.28	Power for Sensor	5A
F2.9	DEF supply module	15A	F2.29	Power for A2 Logic	5A
F2.10	DEF line heater	15A	F2.30	Power for A2 Output	20A
F2.11	Engine Key Switch Input	5A	F2.31	Power for Sensor	10A
F2.12	Engine Diagnostic socket	1A	F2.32	Power for MOBA Controller A4	10A
F2.13	Aftertreatment Sensor	10A	F2.33	Displayer DI3 A5	5A
F2.14	Small Panel	5A	F2.34	Power for camera	5A
F2.15	Turn lamp power	10A	F2.35	Power of camera displayer A7	5A
F2.16	Roof lamp	5A	F2.36	MOBA Sensor power fuse	5A

Machine description

Relay, machine

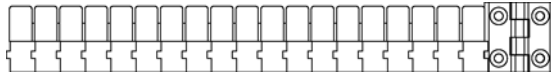


Fig. Relays

Relays

K1	Start relay
K2	Engine intake air heater relay
K3	Power for control system relay
K4	Emergency stop relay
K5	Work light relay
K6	Engine shaft start relay
K7	DEF supply relay
K8	DEF line heater relay
K9	Engine start lock relay
K10	Leveling auto relay left
K11	Leveling auto relay left
K12	Leveling auto relay right
K13	Leveling auto relay right
K14	Brake lamp relay
K15	Turn light relay
K16	Water valve relay
K20	Roof motor relay (power unit)

Functional description

Safety sensors- scraper

As a safety precaution, there are 2 sensors (inductive sensors) at the rear by the scraper, B2 and B3. If one of the sensors is activated by the rear scraper (or by some other metal), the circuit is broken.

Scraper lock - B2

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

Milling safety - B3

If the scraper is raised and activates sensor B3 during milling, the milling drum stops automatically as soon as the machine is reversed.

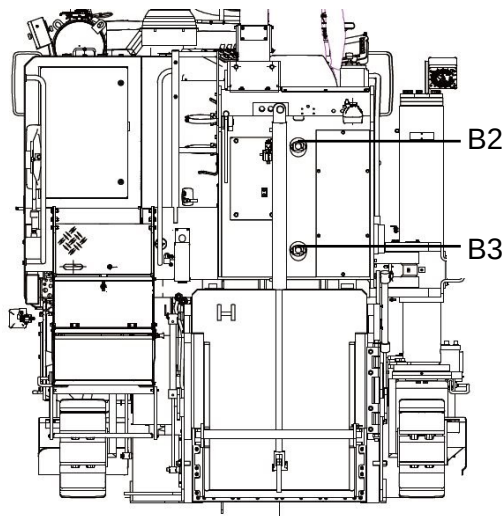


Fig. Machine from back, sensor B2 and B3

Machine description

Working lights

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



Fig. Example of working lights

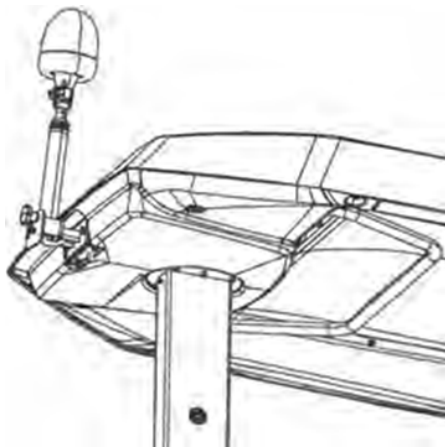


Fig. Rotating beacon

Rotating beacon (Option)

The rotating beacon is available as an option.

If the machine does not have a roof, the beacon is located at the rear right-hand side of the machine. If the machine has a roof, the beacon is located at the rear edge of the roof.

The rotating beacon is activated from the control panel.

Panel protection

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

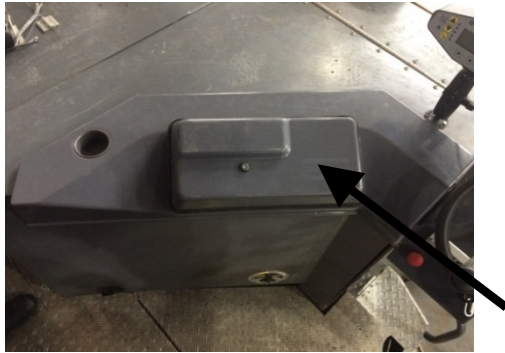


Fig. Example of panel protection

Hydraulic front plate - milling housing

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

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

Floating mode is recommended when milling.



2

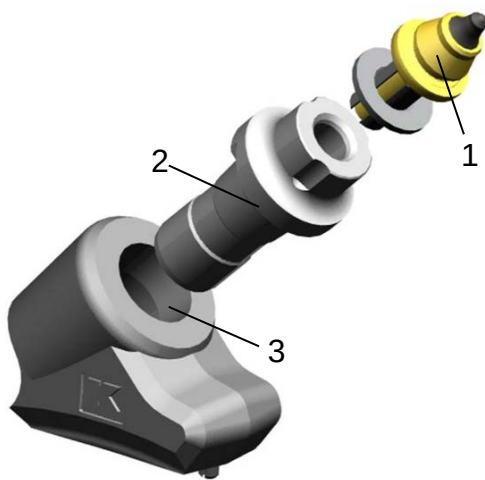
1

Fig. Milling housing

1. Hydraulic front plate

2. Slide plate

Machine description



Bits – Tool holder

System: KPF301

The double action quick coupling system consists of:

1. Bit
2. Sleeve
3. Tool holder

Fig. Quick coupling system

3. Bits
4. Sleeve
5. Tool holder

Typical wear marks on tool holder

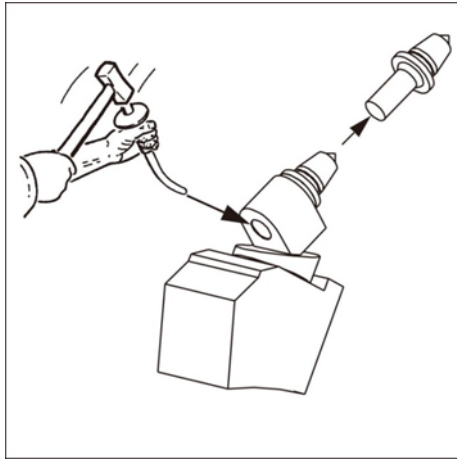
	New, unused tool holder
	Heavy wear on the tool contact surfaces or wear ring - replace immediately
	Heavy wear on the tool contact surfaces or wear ring - replace immediately
	Heavy wear on sides, replace immediately

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

Machine description



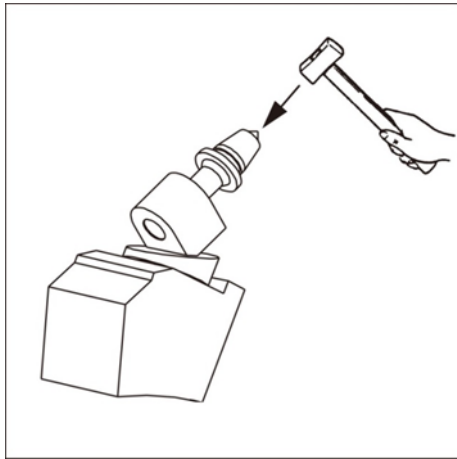
Dismantling the bits

- Position the bit extractor in the hole at the rear of the bit box, and drive out worn and damaged bit by hitting with a hammer.

Optionally, a pneumatically operated hammer that can be driven using the compressed air system of the machine is available.

Mounting the bits

- Drive the new bit into the bit box with a copper, brass or hard plastic hammer.



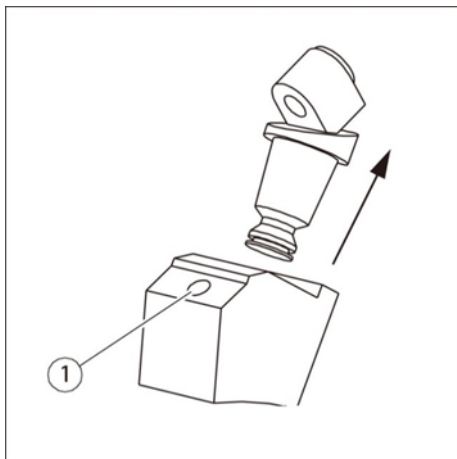
Do not use a steel hammer to drive the bits into the holders, this can lead to the destruction of the top of the bit.



Danger of injury from flaking-off pieces of metal.

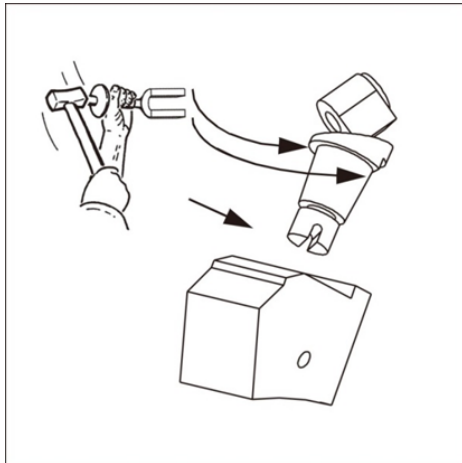


After mounting the bit ensure that the milling bit can be turned. Stuck bits wear out asymmetrically and quickly.



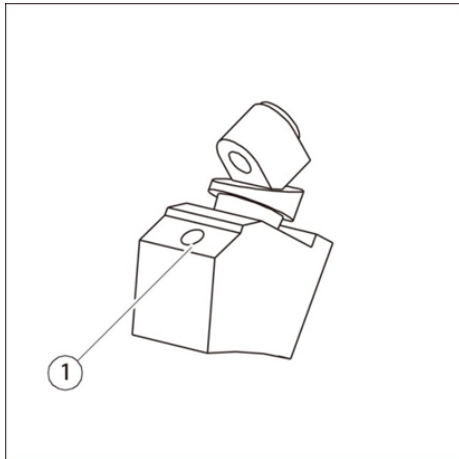
Removing the quick-change tops (model 1)

- Sufficiently loosen the threaded pin (1).
- If necessary, loosen the top by lightly hitting it with a plastic hammer.
- Remove the top from the bit holder.



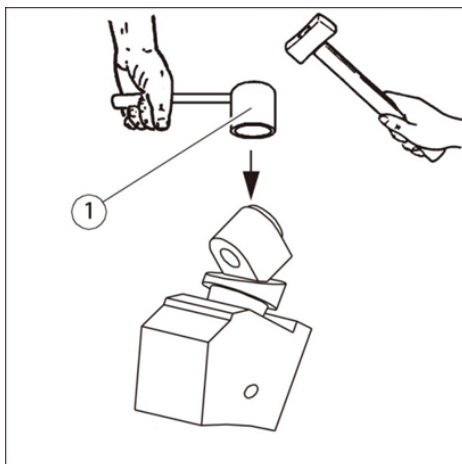
Removing the quick-change tops (model 2)

- Drive the extractor for the quick-change tops by hand or with hammer hits into the notch between the bit holder and the top.
- Remove the loosened top from the bit holder.



Mounting the quick-change tops (model 1)

- Set the top in the correct position into the bit holder
- If necessary, lightly hit the top with a plastic hammer to drive it into the bit holder.
- Properly tighten the threaded pin.



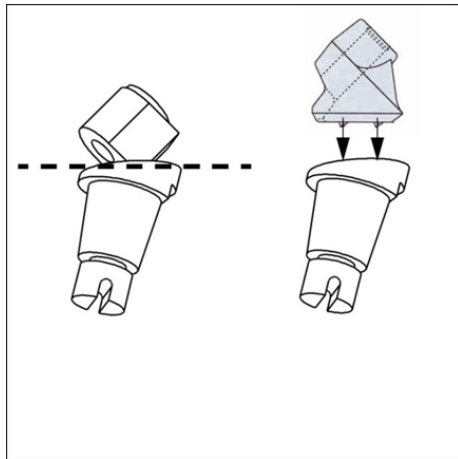
Mounting the quick-change tops (model 2)

- Set the top in the correct position into the bit holder (defined by pin and nut).
- Position the impact tool (1) on the top.
- By hitting the impact tool with a hammer, drive the top into the bit holder.



Lightly grease the shaft and hole. Ensure that there is no dirt in the hole.

Machine description



Replacing the bit box

- Remove the quick-change top from the bit holder.
- Separate the worn bit box from the shaft; ensure that the contact surface is level.
- Position the new bit box (with inserted bit!) on the shaft (the stop nipples of the box must be inserted into the stop holes of the shaft.)
- Attach the new bit box to the shaft and then weld it on.



Observe the required safety measures during dismantling and welding!

Replacing the holder box

The bit holders, which are arranged on the milling drum in a spiral shape, are welded so solidly and reliably with the drum that they are torn off extremely rarely and in extreme situations (for example, forgotten steel rails in the milling surface).



Each bit on one side of the milling drum (the right or left spiral, as seen from the middle of the drum) has a counterpart bit on the other side that is in the same position, but shifted by a few centimeters.

Use this bit to determine the specifications:

- Height to bit tip
- Distance between bit tip and drum edge
- Smooth the break point
- Position, attach, align and weld the bit holder

The process always occurs with an inserted milling bit!

Ensure that you distinguish between the left and the right bit holder.



Observe the required safety measures during dismantling and welding!

The lateral cutters are normally not welded directly to the milling drum body, but rather to a distance piece welded to the milling drum. The place where the break should occur lies between the cutter and the distance piece so that the distance piece remaining on the cylinder serves as a positioning guide for the new weld if a tear does occur.

Machine description

Roof (Option)

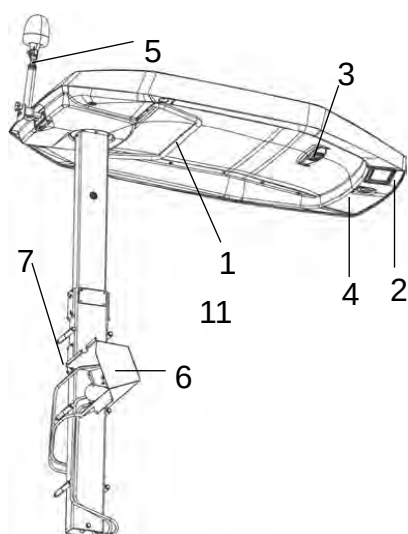


Fig. Roof

6. Handle, sideways movement

7. Working lights

8. Reading light

9. Hook

10. Rotating beacon

11. Power pack

12. Lever, emergency raising of roof

11. Ball valve

The roof has two adjustment options, vertical and horizontal:

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

Rotate the ball valve to the position of raising/lowering roof. And raise/lower the roof with the button (8) on the remote control box.

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

- Working lights (2) are lit with button (9) on the main control panel.
- The reading light (3) is lit at the lamp. 3 positions: off/on/map lighting.
- Hook (4), used during transport to secure the roof in the lowered position.
- Rotating beacon (5). Started on the main control panel (10).
- Power pack (6).
- Lever (7). Manually raising of roof.

See switch function from “Machine description” chapter

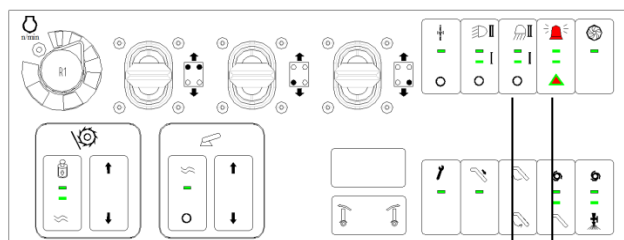


Fig Main control panel

9 10

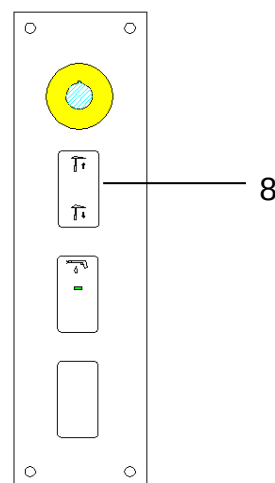
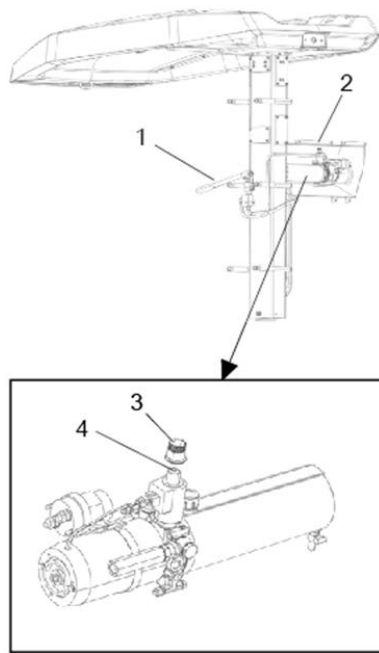


Fig Remote control box



11 – Ball valve; Position of Roof control

11 – Ball valve; Position of Engine hood control



Raise/lower the roof manually

If required the roof can manually be raised/lowered.

Raise the roof manually:

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

Lower the roof manually:

Unscrew protection for power pack (2).

Unscrew the solenoid cap (3).

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

Refit the solenoid cap and the protection for power pack after use.

Fig. Roof

13. Lever, manual

14. Protection, power pack

15. Cap, solenoid

16. Valve

Machine description

Emptying/Filling water tank

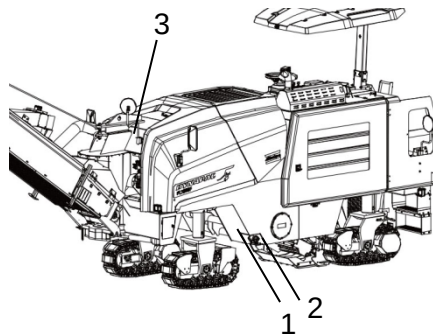


Fig. Water tank

- 1. Tap**
- 2. Coupling**
- 3. Tank cap**

Emptying:

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

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

Filling with pressure hose:

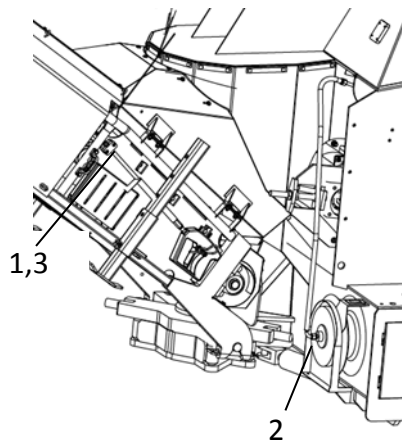
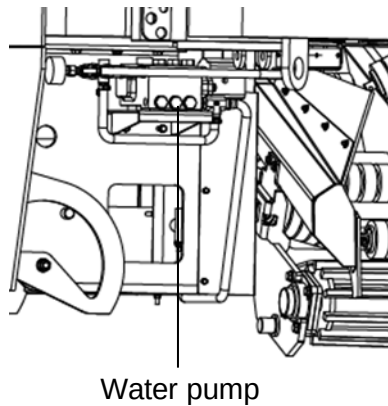
- Connect the pressure hose to the coupling (2) and tighten.
- Open the tap (1).

Start filling:

Turn off the tap before removing the hose.

The water level in the tank is shown in the display on the ergo control box.

Cleaning (Option)



Water pump

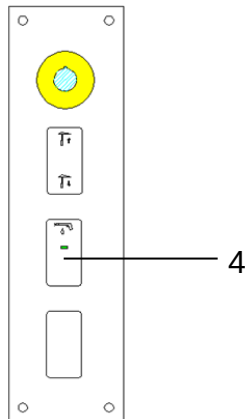


Fig. Hose winder

- 1. Sprinkler system**
- 2. Hose winder**
- 3. Water hose**
- 4. Switch, water pump**

A hose winder, which is located at the front left frame, can be connected to the water pump to clean the machine.

Unwind the water hose (3) from the winder. The hose stops automatically in the unwound position. Pull the hose outwards to achieve automatic winding after use.

Start the water pump with switch (4)

Leave the engine running during use.

Risk of the battery being discharged.

After use - Turn off the pump - Wind up the hose winder.

See switch function from “**Machine description**” chapter.

Machine description

Locking device, scraper



1

Fig. Locking device, scraper
1. Lock handle

As a safety precaution during maintenance on the milling drum or milling housing, the scraper is locked automatically in its upper position.

The lock handle is located behind the drive seat.

To release the catch:

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



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



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

Operation

Before starting

Checks before starting

Before starting the diesel engine:

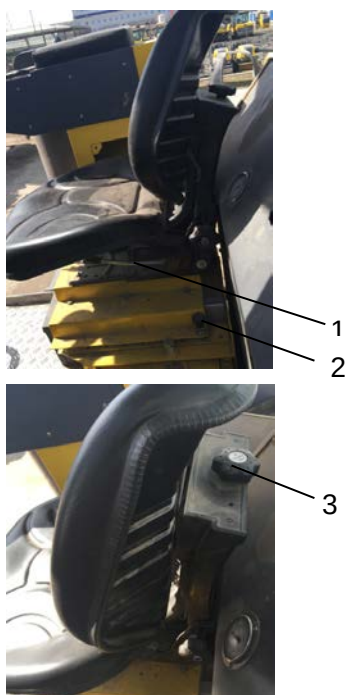
- Remember to carry out daily maintenance. See the maintenance instructions.
- Walk round the machine and check that there is no visible damage or leakage.
- Check the safety and protection devices.

Operator's seat – Adjustment

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

The seat can be adjusted as follows:

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



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

Fig. Operator's seat

- 1. Length adjustment***
- 2. Side adjustment***
- 3. Weight adjustment***
- 4. Backrest adjustment***

Unlock the panel and ergo control box protection

Unlock the protection cover on the panels before starting.



Fig. Example of panel protection

Checking the working hours

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



Fig. Dialog box 101
1. Working hours, display

Operation

View

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

Master switch – Switching on

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

The battery disconnecter is placed under the remote control box.

Turn the key to the ON position. The planer is supplied with power.



Fig. Battery disconnecter

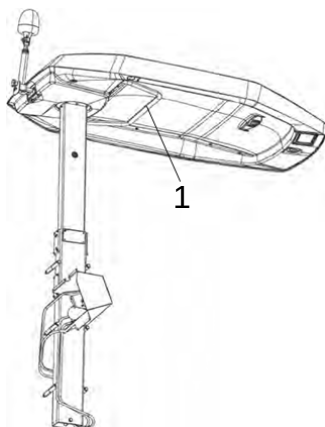


Fig. Roof
1. Lever, sideways movement

Roof adjustment (option)

Raise/lower the roof with the button on the remote control box.

The roof has two adjustments, vertically and horizontally.

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



Risk of crushing injuries when raising/lowering the roof.

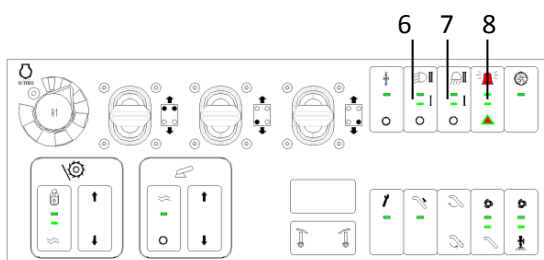


Fig. Main console

Turn the key switch to position 1

Instrument and lamp checks

Turn the ignition key to position ON, and check the warning lamps.

Check that the lighting switch (6), working light (7) and beacon switch (8) work.

See switch function from “**Machine description**” chapter.

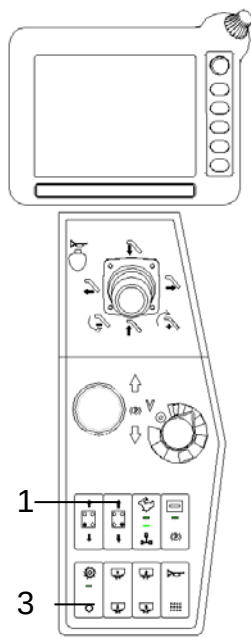


Fig. Ergo control box
1. Forward/reverse lever
1. Milling drum drive

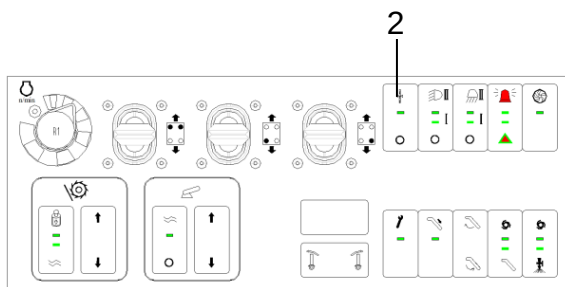


Fig. Main control panel
2. Height adjustment



Fig. 4. Ignition key

Starting

Starting the engine

Make sure that the emergency stop is not activated.

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

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

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



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



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

If the warning message appears on the screen, milling work must not be started. First check the oil filter and the oil level.



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.

See switch function from “Machine description” chapter.

Operation

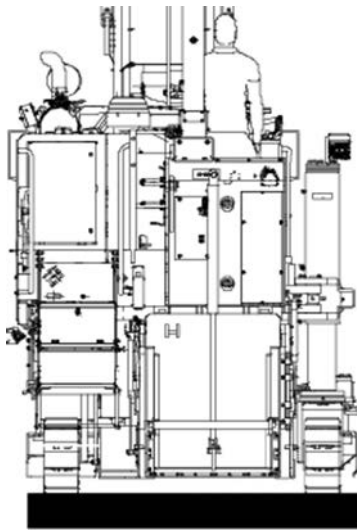


Fig. 4. Position

Driving Positioning

Machine height

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.

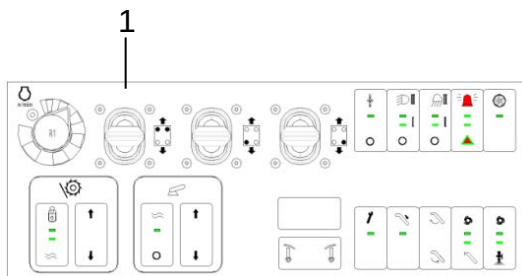


Fig. Main console

Raise the machine (1) so that the milling drum clears the ground (about 20cm). 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.

See switch function from “Machine description” chapter.

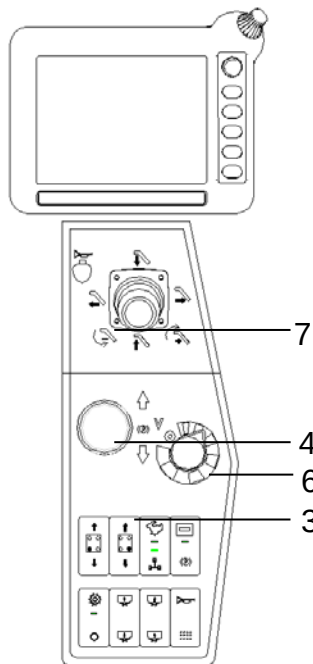


Fig. Ergo control box

3. Gear position switch

4. Forward/reverse lever

6. Speed setting

7. Control lever, conveyor

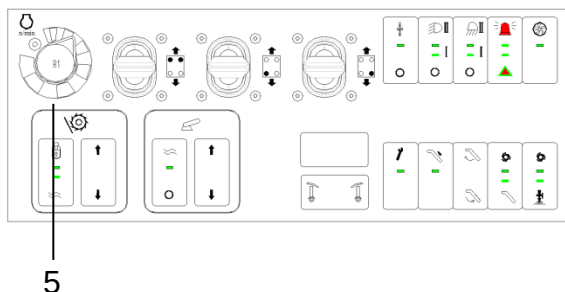


Fig. Main console

5. Speed control, diesel engine

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



= Transport gear



= Working gear



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

- Put the speed control for the engine (6) at full power.
- - Adjust to the desired speed with the "Speed setting" knob (5).
- Carefully move the forward/reverse lever (4) forwards or backwards, depending on which direction of travel is required. Note that the safety catch under the control knob must be lifted up to move the control out of neutral!
- The speed increases the further the lever is moved away from the neutral position.
- When necessary, steer the conveyor belt with control lever (7).

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

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

See switch function from "**Machine description**" chapter.



If the air filter warning signal shows up on instrument panel. The air filter has to be cleaned or replaced; See maintenance manual.

Operation

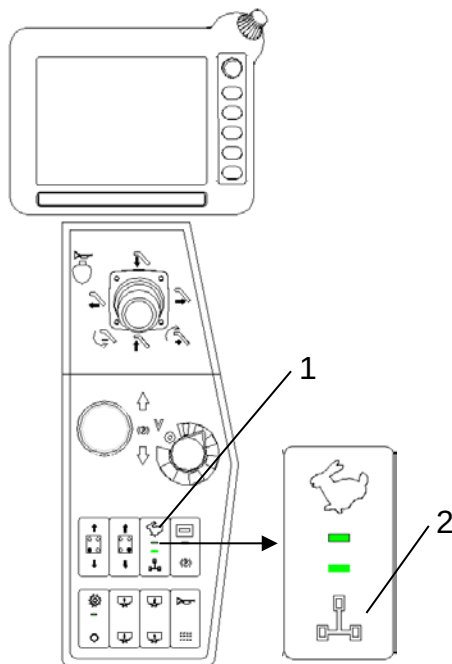


Fig. Ergo control box

1. Gear position switch
2. Differential lock position

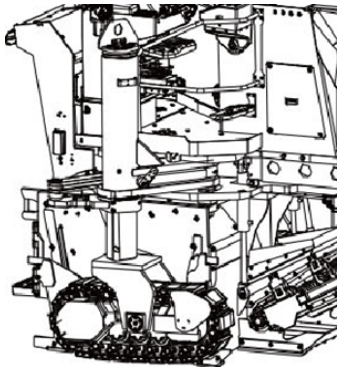


Fig. Swivel chassis leg

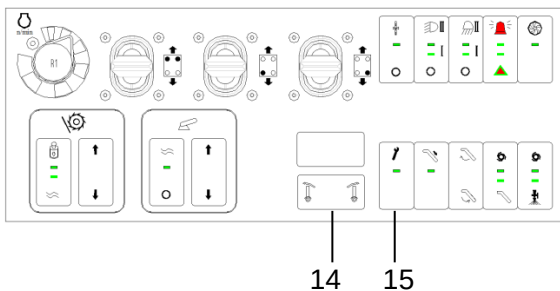


Fig. 14. Right rear chassis leg swing switch

15. Service mode

Driving on difficult surfaces

Drive wheels

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



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

Swivel chassis leg, hydraulic

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



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



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

Lower the machine to ground level and rise up the chassis leg to the upper position,

1. Press button 15 to activate service mode.
2. Press button 14, lock pin pulled up, rear chassis leg start swiveling to target position then lock pin locked again.

Raise the machine to original position.

See switch function from "**Machine description**" chapter.

Pointer

The pointer is placed on the vehicle frame. In extended position it helps the driver to manoeuvre the machine when milling.

The extension length and depth is adjusted with wingnuts (1).

The pointer (2) is in line with the outer edge of the milling drum and indicates the milling line.



Fig. Pointer

1. Wing nut

2. Pointer for milling drum

Operation

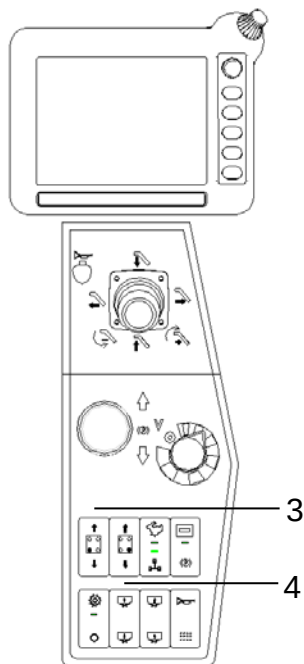


Fig. Ergo control box

3. Chassis leg, left

4. Chassis leg, right

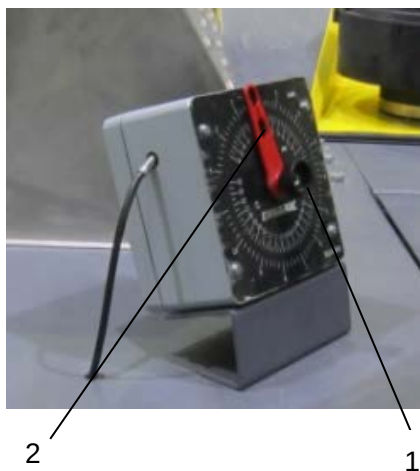


Fig. Milling depth indicator

1. Retaining screw

2. Indicator

Milling (not auto) / leveling

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

See switch function from “**Machine description**” chapter.

Adjust

Lower the machine until the milling drum scrapes lightly against the ground with the two switches “chassis leg, right and left” (3,4).

- Reset the milling depth indicators to zero on both sides.

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



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



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

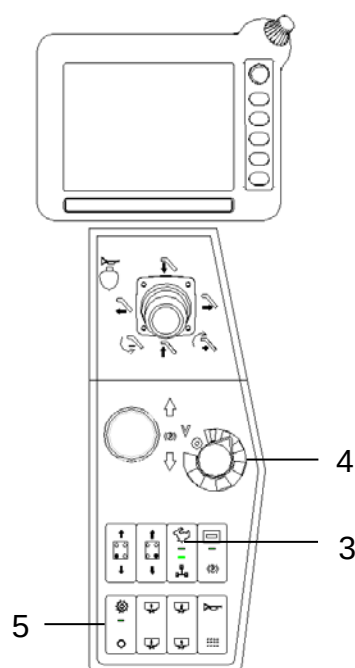


Fig. Ergo control box
3. Gear position switch

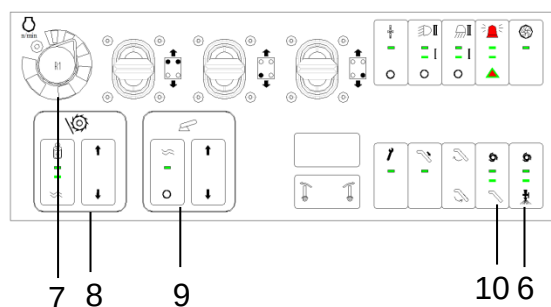


Fig. Control panel
4. Speed setting
5. Milling drum drive
6. Water pump
7. Speed control, diesel engine
8. Position selector. Scraper
9. Position selector, sliding shoe
10. Position adjustment, conveyor

Milling preparation



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



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



If the scraper is raised and activates sensor B2, it is not possible to drive the machine forwards or backwards and the coupling to the milling drum cannot be activated.

Make sure that the milling depth indicator is reset. (see section milling depth indicator, adjustment)

Activate the following functions on the ergonomic and control panels:

- Put the gear position switch (3) one of the working mode.
- Put the milling drum drive (5) in the ON position.
- Set the speed control for the engine (4) at full power.
- Put the water pump (6) in the AUTO or 1 position.
- Turn the speed control (7) to the required speed.
- Put the position selector for the scraper (8) in floating mode.
- Put the position selector for the front shield (9) in floating mode.
- Set the position adjuster for the conveyor belt (10) in the AUTO or 1 position.

See switch function from “**Machine description**” chapter.

Operation

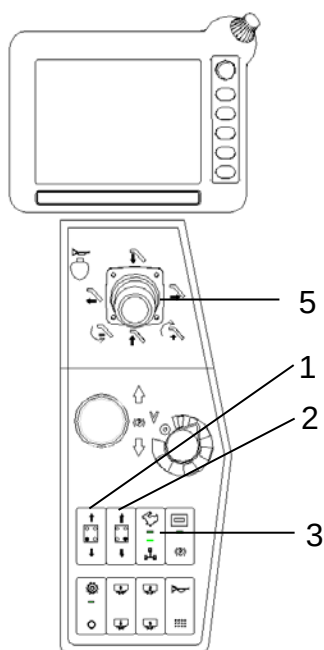


Fig. Ergo control box

1. Chassis leg, left
2. Chassis leg, right
3. Gear position switch
5. Control lever, conveyor belt



Fig. Control panel

4. Speed setting, conveyor belt



**Fig. Automatic leveling system
Easy Level (Option)**

Milling automatic leveling

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

- Carefully lower the machine to the required milling depth (1,2). The milling depth is shown on the respective milling depth indicators.
- Move the machine by moving the control lever (3) from neutral.
- Adjust the speed of the conveyor belt if necessary with the preset control (4).
- If necessary, steer the conveyor belt with the control lever (5).



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



If the scraper is raised and activate sensor B3 during milling, the milling drum stops.

See switch function from “**Machine description**” chapter.

Milling with automatic leveling (option)

Atlas Copco Dynapac's “Easy Level” leveling 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 leveling system.

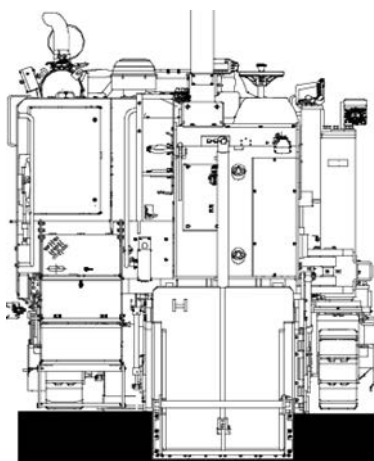


Fig. Milling position

Milling instructions

Milling position

Machine lowered – Milling drum lowered.

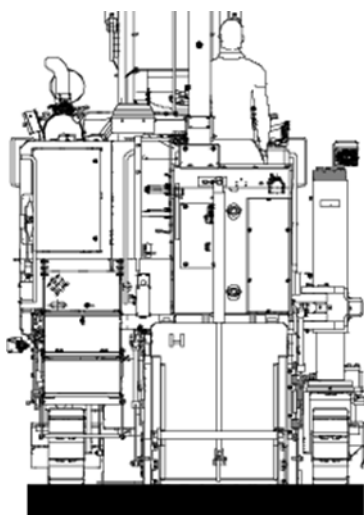


Fig. Resetting

Resetting milling depth

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



Reset the scale for the milling depth to zero.

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

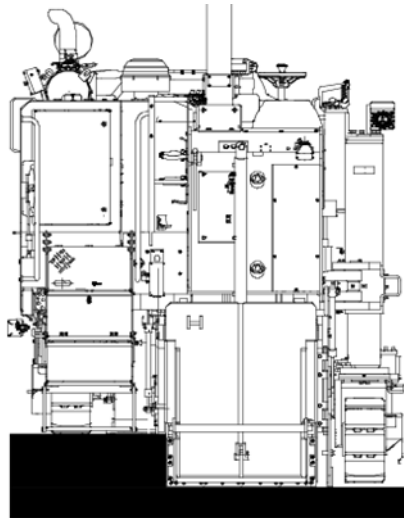


Fig. Surface milling

Surface milling

With extended right chassis leg:

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

Depth setting

- right = 0
- Left = required milling depth

With withdrawn right chassis leg:

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

Depth setting

Same milling depth on right and left side.

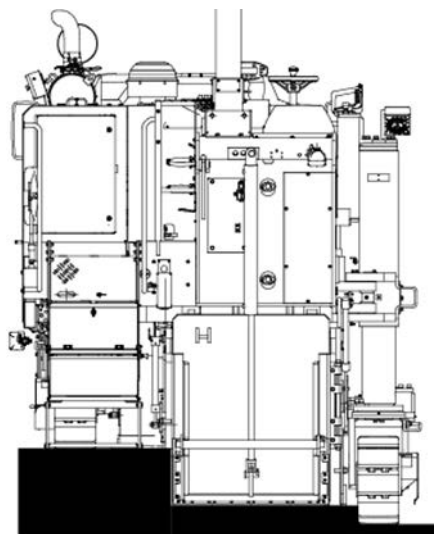


Fig. Milling at edge of roadway or at shoulders

Milling at edge of roadway or at shoulder

Depth setting:

Left – required milling depth

Right – required milling depth + should height, alternatively with planer horizontal!



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

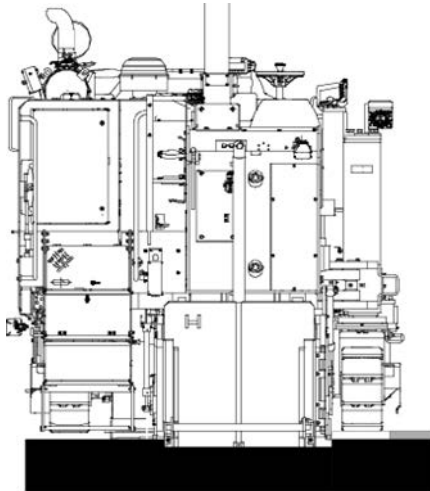


Fig. Milling at curb edge with extended chassis leg

Milling at curb edge with folded out chassis leg

Advantages:

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

Disadvantages:

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



Don't fold out chassis leg on slope.

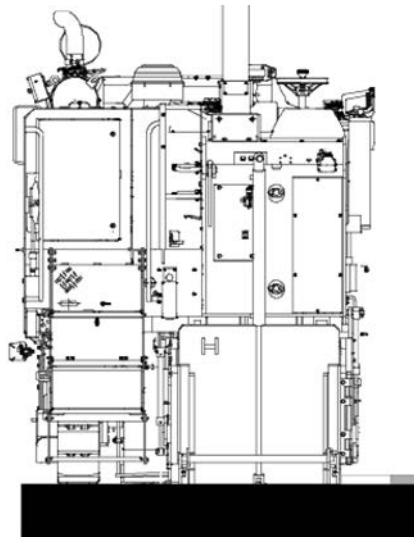


Fig. Milling at curb edge with withdrawn chassis leg

Milling at curb edge with folded in chassis leg

Advantages:

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

Disadvantage:

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



Don't fold out chassis leg on slope.

Operation

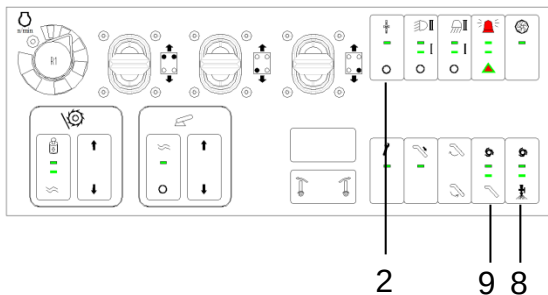


Fig. Control panel

2. Automatic mode

8. Water pump

9. Position adjuster, conveyor

Stop milling

- Stop the machine and put the control lever (1) in neutral.
- If automatic leveling has been used, switch off this function by putting the Automatic mode switch (2) in position 0.
- Raise the machine level with switches for chassis leg left (5) and chassis leg right (6) until the requisite ground clearance is reached.
- Allow the milling drum drive (7), water pump (8) and conveyor belt (9) to run for a few seconds and then switch off these functions.

Drive away from the area:

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

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

See switch function from “**Machine description**” chapter.

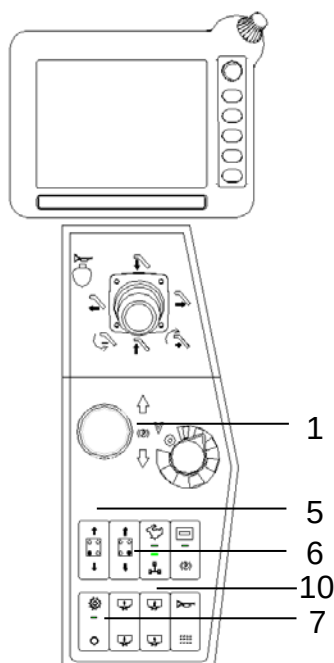


Fig. Ergo control box

1. Control lever

5. Chassis leg, left

6. Chassis leg, right

7. Milling drum drive

10. Gear position switch



Fig. Manometer, scraper release pressure

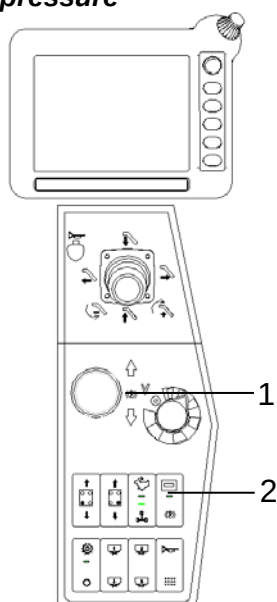


Fig. Ergo control box
1. Control lever
2. Parking brake

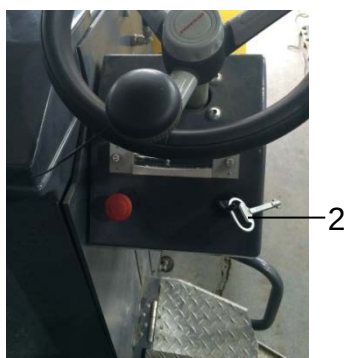


Fig. 2. Ignition lock

Manometer, scraper release pressure

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

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,

Activate parking brake

Parking brake

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

Secondary brake



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

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

See switch function from "**Machine description**" chapter.

Emergency braking

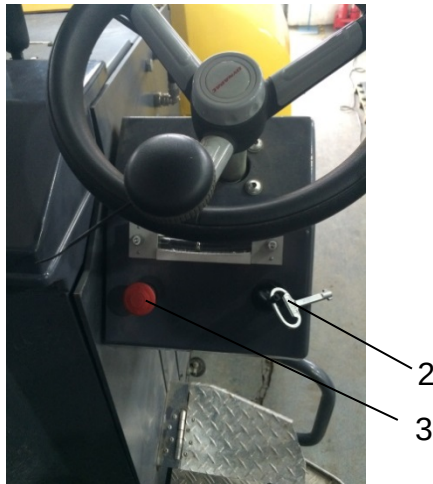


**Fig. 2. Ignition lock
3. Emergency stop**



For emergency braking, press the emergency stop (3), 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 Muti-disc in the rear motor actuate.

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



Fig. Battery dis-connector

Master switch

Remove the key and switch off the battery disconnecter at the end of the shift.

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.



NOTE: After switch off the ignition lock, wait for 100 seconds then turn off the master switch!



Fig. Display, hours of operation



Fig. 2. Ignition lock

Parking

Parking/ Switching off

Always park the machine on the most level surface.

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

Before leaving the machine:

- Read off status for working hours (1) and check if any maintenance is need before switching off the machine,
- Switch off the engine and pull out the ignition key (2) Close the panel cover.



NOTE: After switch off the ignition lock, wait for 100 seconds then turn off the 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!

Operation

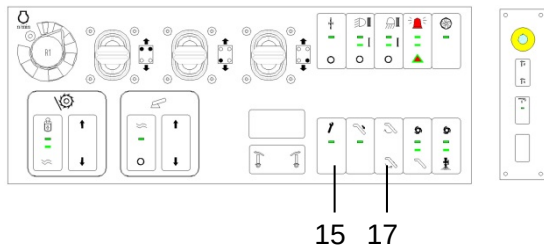


Fig. Main console
15. Service mode
17. Conveyor folding switch

Folding/ Unfolding conveyor

Raise the machine to the highest position.

Activate service mode 15.

Fold / Unfold conveyor by pressing conveyor folding switch 17.

See switch function from “**Machine description**” chapter.

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 items marked with a “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 3 lifting points on the machine by which to lift the machine.



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



Dismantle conveyor before lifting.



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



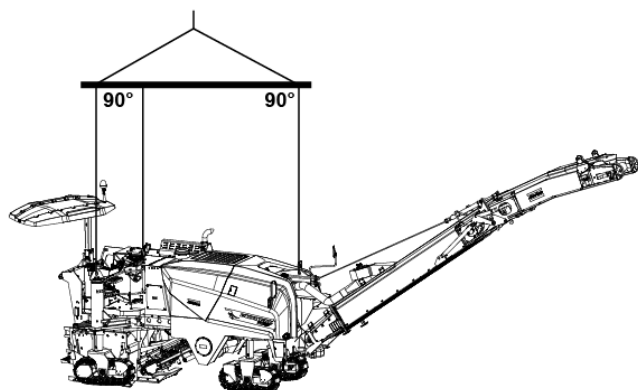
The lifting weight of the machine is shown on the lifting plate on the right front frame and the left rear frame.

Lifting equipment such as chains, steer 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!



Towing the planer



The planer must be braked on the engine during towing. A towing bar must be used as there is no braking capacity on the planer now.



The planer must be towed slowly, max. 3km/h (2mph), and only for a short distance, max. 300 meters (984ft).

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



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

The tow load must only amount to 10 tones per eye.

Towing/Recovery

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



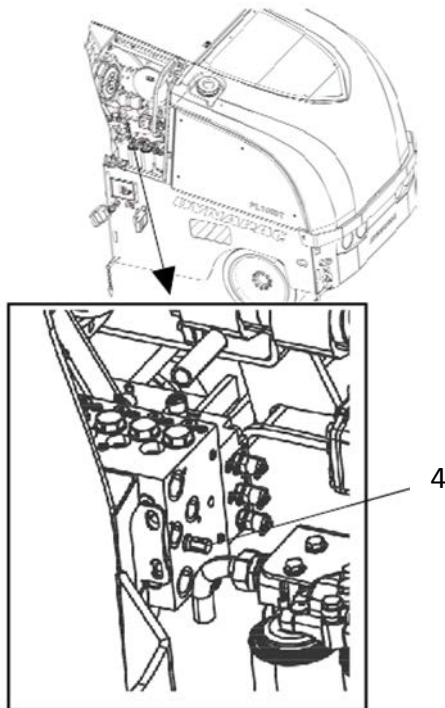
Chock the wheels to prevent the planer from moving; the machine can start to roll when the brakes are released hydraulically.

Releasing the brakes and pumps

Releasing the brakes located behind the left hand cover for the engine compartment.

- 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 30bar.

- Twist and open the ball valve (4) located in the flow divider on the right-hand side of the engine compartment.

Reset brake disengagement and close the ball valve after towing.

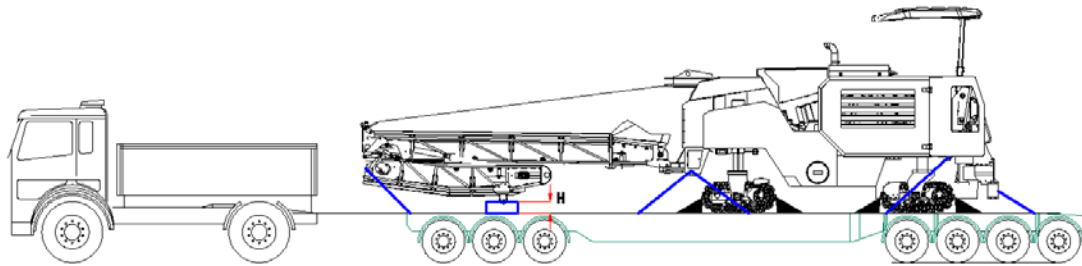


The planer cannot be started until the ball valve is closed again!

Fig. Right engine compartment
4. Ball valve

Transport

Machine prepared for transport



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

Park and secure the machine:

The steering angle of the front wheels must be zero. The right chassis leg must be locked in extended position.

Parking brake will be tight and functional.

- Lower the machine until the milling drum is just above the ground (approx..5cm) or if wooden supports are used the drum should rest lightly against them.

- Lower the roof to its lowest position. Extruding control equipment must be retracted, or removed.

- If the conveyor belt is mounted, place it on its support or in another case, the roller on the conveyor contacts with the bottom plate of the transport vehicle as per fig.1, and lash separately in addition to the lashing points indicated in fig.2 and 3 on the next page.

- Stop engine.

- Secure the machine according to the applicable load securing certificate in accordance with the applicable regulations for the country in question.



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

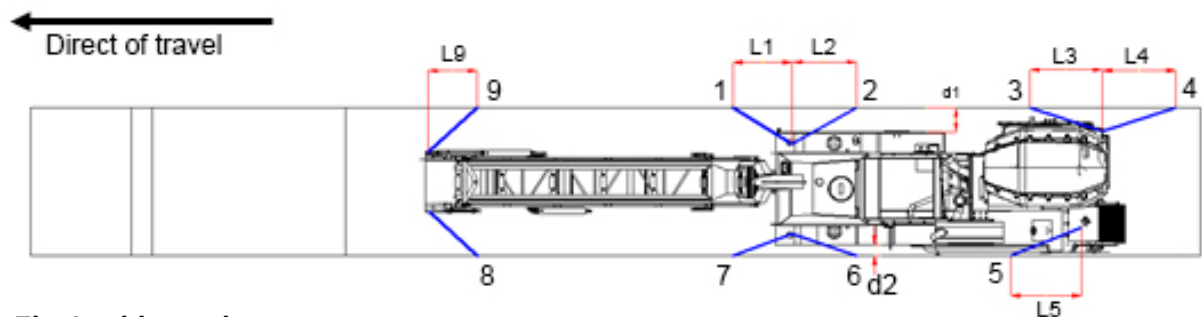


Fig. Lashing points.

1-9 = single lashings, i.e. one lashing with two parts, one end on the machine, another end on the platform.

The lashings' permitted distance interval in meters					
1, 4: Single lashings, LC at least 7 tonnes (70 kN) 2, 7: Single lashings, LC at least 8 tonnes (80 kN) 3, 5: Single lashings, LC at least 6 tonnes (60 kN) 6: Single lashings, LC at least 9 tonnes (90 kN) 8, 9: Single lashings, LC at least 1 tonnes (10 kN)					
L1	L2	L3	L4	L5	L9
0.6 – 1.0	0.6 – 1.0	0.9 – 1.5	0.9 – 1.5	1.0 – 1.5	0.5 – 2.0

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 is not centered laterally on the platform, refer fig 1 dimension, $d1=400\text{mm} \pm 50\text{mm}$, $d2=150\text{mm} \pm 50\text{mm}$, $H=200\text{mm} \pm 50\text{mm}$.
- The steering angle of the front wheels must be zero.
- The drive motor of wheel/track should be locked.
- Lower the machine until the milling drum is just above the ground (approx. 5 cm), or if wooden supports are used the drum should rest lightly against them.

- Lower the rear scraper, front guard and left/right shields to the lowest position.
- Lower the roof to its lowest position. Extruding control equipment must be retracted, or removed.
- The parking brake is applied and in good working condition and stop the engine.
- If the conveyor belt is mounted, lash it as per fig. 1
- Chock all machine wheels/tracks, strongly recommend non-slip mat under wheel/track to increase the friction factor.
- 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 10 tonnes.

Lashings

- The lashings 1-6 comprise a lashing strap or chain with a permitted load (LC/MSL) of at least in table 1.
- The lashings are re-tightened as required, the lashing preload should follow the lashing supplier instruction.
- Each of lashings 1-9 is a single lashing. One end on the machine, another end on the platform.
- Lashings in the same direction are placed in different lashing mounts on the trailer.
- 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.

Operating instructions - Summary



1. Follow the **SAFET INSTRUCTIONS** specified in the **Safety Manual**.
2. Make sure that all instructions in the **MAINTENANCE** are followed.
3. Turn the master switch to the **ON** position.
4. Check that all switches are in position **0** and the **Forward/Reverse** control is in **neutral**.
5. Start the engine and allow it to warm up.
6. Set the gear position switch in the required position.
7. Adjust the engine **RPM** to the desired position.
8. Set the travel speed to the desired position.
9. Check that the milling drum clears the ground, at least **10cm**. Raise the machine if necessary.



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



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



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

13. When parking:
 - Set the forward/reverse control in **NEUTRAL**.
 - Chock the wheels.
14. When lifting: - Refer to the relevant section in the Instruction Manual
15. When towing: - Refer to the relevant section in the Instruction Manual.
16. When transporting: - Refer to the relevant section in the Instruction Manual.
17. Retrieval: - Refer to the relevant section in the Instruction Manual.

Preventive maintenance

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

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

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

Acceptance and delivery inspection

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

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

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

Warranty

The warranty is only valid if the 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 authorization.

Maintenance – Lubricants and symbols

DYNAPAC/ATLAS COPCO



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

Fluid volumes

PL1000F			
Fuel tank	500	l	132.1 gal
Engine oil	100	l	105.7 qts
Hydraulic reservoir	130	l	137.4 qts
Water tank	1200	l	317 gal
Planetary gear, drive wheel	5.2	l	5.5 qts
Planetary gear, milling drum drive	17	l	18 qts
Split gearbox	16	l	17 qts
Urea box	10	l	10.6 qts
Coolant, engine	50	l	52.8 qts

Maintenance- Maintenance schedule

Service and maintenance points

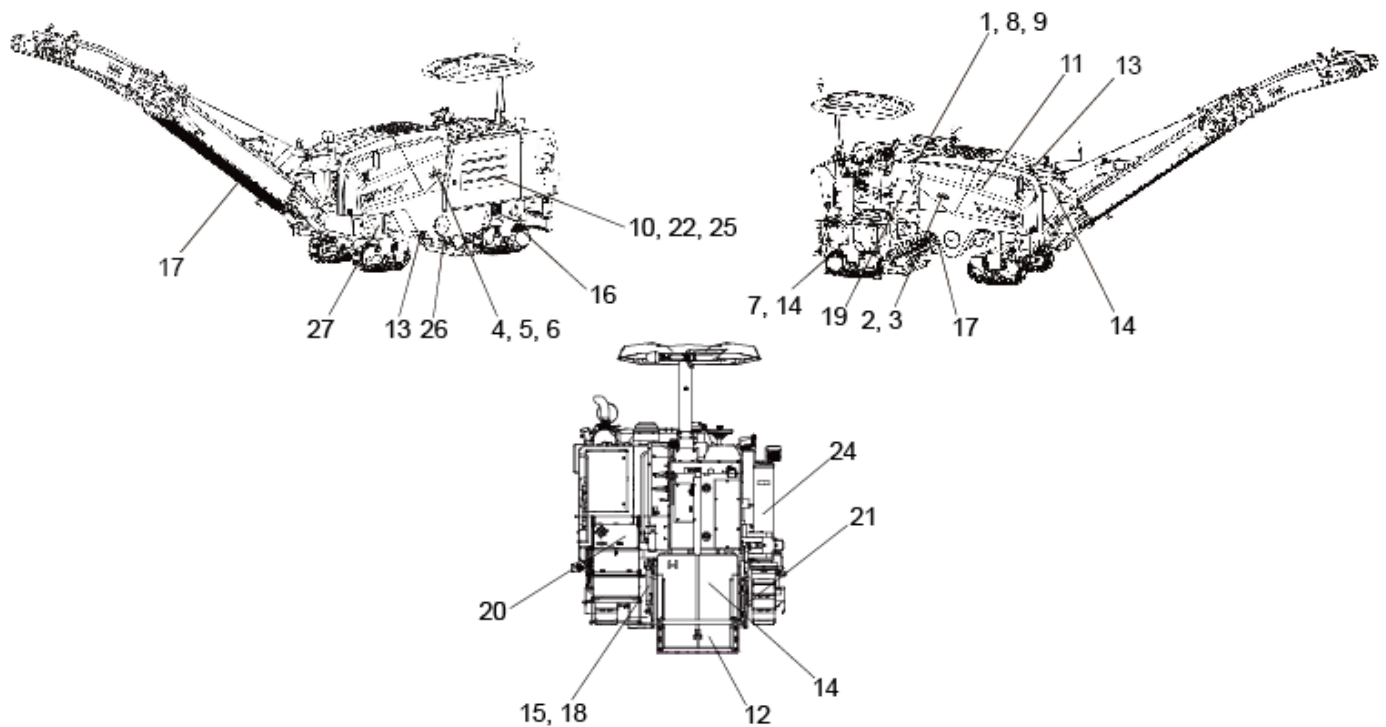


Fig. Service and maintenance points

1. Engine oil	11. Fuel tank refueling	21. Side plates, RH
2. Oil filter	12. Scraper	22. Clutch
3. Fuel filter	13. Water tank, filling	23. Side plate, LH
4. Hydraulic filter	14. Sprinkler system	24. Chassis leg
5. Hydraulic fluid level	15. Planetary gear, milling drum	25. Split gearbox
6. Hydraulic fluid, filling	16. Planetary gear, drive wheel	26. Hydraulic front plate
7. Milling drum/housing	17. Conveyor belt	
8. Hydraulic fluid cooler	18. Drive belt, milling drum	
9. Coolant	19. Belt, diesel engine	
10. Air cleaner	20. Battery	

General

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



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



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



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

Maintenance – Maintenance schedule

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	Check the fuel level	Top up if necessary
4	Check filter indicator, high pressure filter	
4	Check filter indicator, suction and return filter	
13	Check the water level of water tank	Top up if necessary
14	Check the sprinkler system	Clean/replace if necessary
14	Check water filter	Replace filter if necessary
7	Check condition of milling tool and tool holder.	Replace if necessary. See from chapter “Machine description”
17	Check function and condition of conveyor (belt rollers, belt tension)	Adjust/replace if necessary
18	Check belts, drive belt for milling drum	
19	Check belt system, diesel engine	Refer to the engine manual
	Check brakes/emergency stop	
21,23	Check side shields	
26	Check hydraulic front plate	
3	Drain the fuel prefilter	
8	Check hydraulic fluid cooler	Clean if necessary
	Check condition of retaining ropes, catch ropes and shackles	Replace if necessary
	Check level of urea	Top up if necessary
12	Check scraper, milling housing	

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	Replace as required
7	Check rubber protection in milling housing	Replace if necessary
	Lubricate as per items	
17	Check funnel rubber of transfer points and sealing rubber	
16	Check oil level in planetary gear/drive wheel	Replace if necessary
25	Check oil level, split gearbox	Replace if necessary
15	Check oil level in planetary gear/milling drum	Replace if necessary

After the FIRST 100 hours of operation

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

Pos. in fig	Action	Comment
7	Check bolted joints, milling housing, drum.	

After the FIRST 250 hours of operation

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

Pos. in fig	Action	Comment
15	Change oil in planetary gear, milling drum	
16	Change oil in planetary gear, drive wheel	
16	Adjust visible screws/nuts, planetary gear/drive wheel	
25	Change oil, split gearbox	
1	Change engine oil and oil filter	Refer to the engine manual

Maintenance – Maintenance schedule

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	
9	Check coolant level	
10	Clean air filter unit	see "Check - Replace filter element"
7	Check wear plate inside the milling housing	

Every 500 hours of operation (Every three months)

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

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

Every 1000 hours of operation (Every six months)

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

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

Every 2000 hours of operation (Yearly)

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

Pos. in fig	Action	Comment
6	Change the hydraulic fluid	
4	Replace hydraulic filter unit	
4	Replace return fluid filter, suction side	
16	Change oil in planetary gear, drive wheel	
15	Change oil in planetary gear, milling drum	
19	Replace diesel engine drive belts	
11	Drain and clean the fuel tank	
22	Replace belt, clutch	
10	Replace filter element	

Maintenance, 10h



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



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

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



Diesel engine - Check oil level

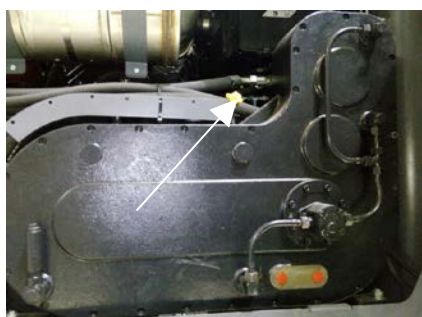


Fig. Dipstick



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

The dipstick is placed on the top of the split gearbox inside the engine compartment. Pull up the dipstick and check that the oil level is between the upper and lower marks. For further details, refer to the engine's instruction manual.



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

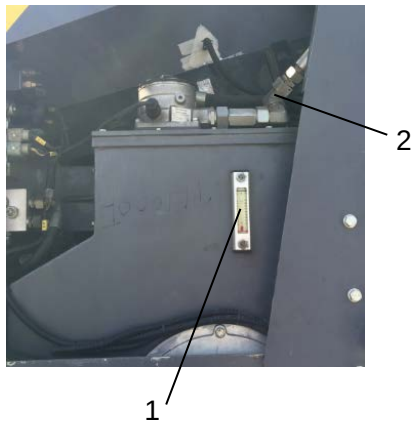


Fig. Hydraulic reservoir

- 1. Sight glass
- 2. Filler cap



Hydraulic reservoir – Check fluid level

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



Fuel tank – Filling



Fig. 1. Cover

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

The lockable filler cap is located on the right-hand inside the cover (1) of the machine.



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

The tank holds 500 liters of fuel.



Fig. High-pressure filter



Check the high- pressure hydraulic filter

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



After repairs to the hydraulic system, all filters must be checked after 10 working hours and replaced if necessary. To check the filter, the engine must be running.



Fig. 1. Return filter 1



Check return filter – suction side

The filter (1) must be replaced when an alarm is shown in the display, or at interval of 2000h.



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



Water tank – filling

Check the level in the water tank by the data shown in the display.

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

Alternatively the tank can be filled via a pressure hose.

Pressure hose filling:

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

Start filling.

- Turn off the tap before removing the hose.

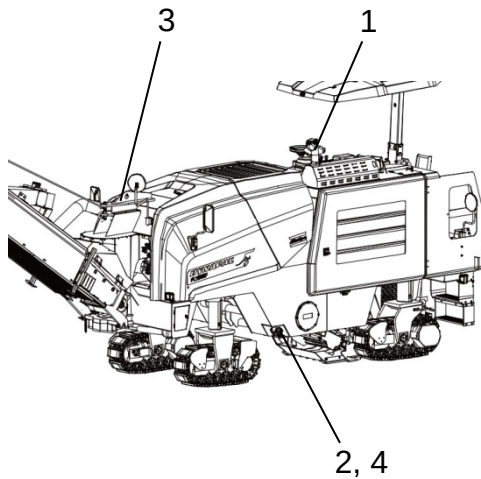


Fig. Water Filling
1. Level indicator
2. Coupling
3. Filling cap
4. Tap



Only additive: A small amount of ecofriendly antifreeze.



Sprinkler system/ nozzles

Checking / Cleaning



Fig. Sprinkler nozzle
1. Nozzle

One of the nozzles is located on the milling housing. The other one is located at the end of primary conveyor.

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

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



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



Water filter – Checking/Replacing



1

Fig. Water filter
1. Filter element, strainer

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

Cleaning should be performed daily.

Clean/ replace filter.

- Check that the water pump is not in operation.
- Undo the filter cap by hand. Clean filter holder and cap.



Recycle old filters for water disposal.

Check after replacing that the seat is correctly positioned!

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



Sprinkler system – Draining



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

Empty water from the water tank (see section, “Emptying/filling water tank”)

Turn off the pumps on the control panel. Empty the filter housing (1).

Start the water pump and allow the water to run off. Turn off the pump when the lines and filters are empty. The pump must not be operated when empty, do not allow it to run for more than 30 seconds!

Refit the coupling.



1

Fig. 1. Filter housing

Check of belt tension – belt rollers, conveyor belt

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

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

Increase the tension:

- Release the lock nuts (1) on both sides of the tensioning device.
- Adjust the tension on both sides with the adjuster nuts (2). Use a U – spanner. Tighten the lock nuts after adjusting.



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



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

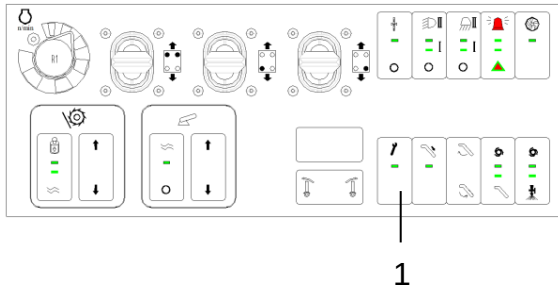


Fig. Control panel, right side
1. Service switch

Milling drum – Drive belt – replacement

The belt drive consists of two compound belts and is located on the left side of the milling section. The belts are always replaced in pairs.



Replace damaged and worn belts immediately!

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



Make sure not to accidentally start the engine!

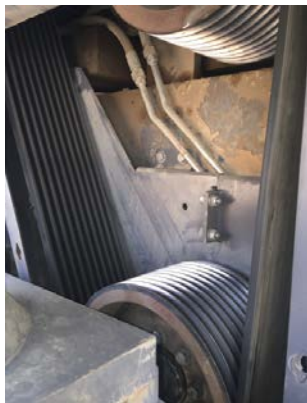


Fig. Drive belt

- Press the upper part of the service switch on the control panel, and LED is lit. Remove the belt guard before carrying out maintenance. The belt tensioner releases and the belts can be removed and replaced.



Check also the condition of the pulleys.



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

Brake function / Emergency stop – Check

Checking the emergency stop.

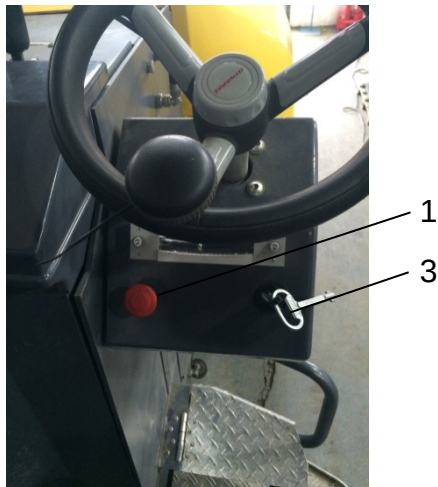


Fig. 1 Emergency stop
3. Ignition key

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 ready for operation.



Check the brakes by carrying out the following:

Checking secondary brake function:

Drive the planer slowly forward. Hold the steering wheel firmly and brace yourself for a sudden stop. Turn the ignition key (3) to position 0. The planer should come to a sudden stop and the engine should be turned off.

After checking, set the forward/reverse lever (2) in neutral. Turn the ignition key to position 1.

The planer is now ready for operation.

See also Operating section in manual.

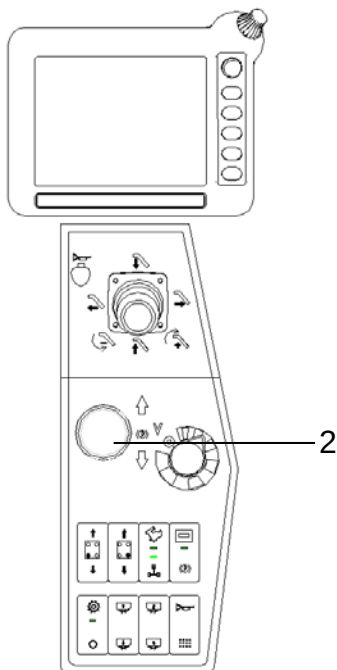


Fig. Ergo control box
2. Control lever

Check hydraulic front plate – Milling housing

Check daily:

- The function for raising, lowering and setting the front plate in floating mode. (Main control panel)
- Check the condition and function of front plate (1)
- Hydraulic cylinder (2)
- Condition of slide shoe (3) for wearing, replace if necessary.

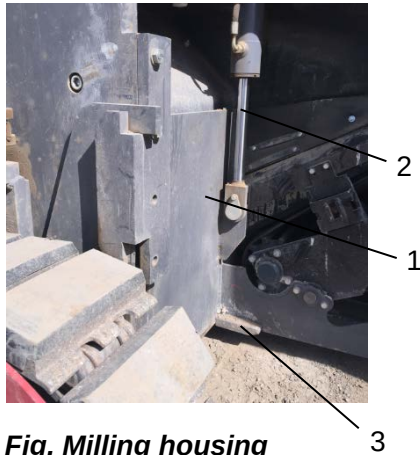


Fig. Milling housing
1. Hydraulic front plate
2. Hydraulic cylinder
3. Slide shoe

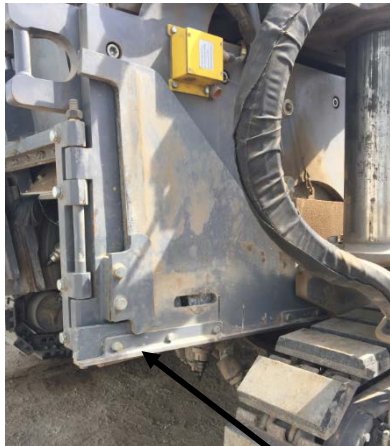


Fig. Side shield, wear plate

Side shields – Check

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

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

Check the condition of the wear plate of side shield, replace wear plates if necessary.



Fig. Scraper plates, milling housing

Scraper plate, milling housing – Check

If necessary, replace the scraper plates.

- Secure the scraper plate.
- Undo the retaining screw for each side. Raise the machine until the plates of scraper can be lifted away.
- Refit the plates.



Make sure that the diesel engine cannot be started.



Water separator, fuel prefilter- Draining

Drain the pre-filter according to interval or error message from engine electronics.

Draining:

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

Close the drain valve by hand.



Fig. Fuel prefilter
1. Drain valve

1



Clean 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,

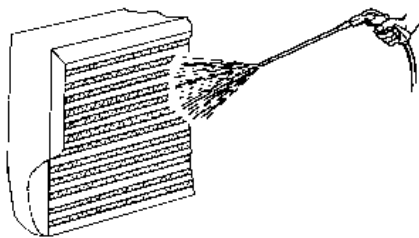


Fig. Cooler



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.

Retaining ropes, catch ropes, shackles – Check

Check the condition of ropes and shackles,
replace if any damage inspected.



Fig. Ropes

Maintenance, 50h



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



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

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



Air filter – Check

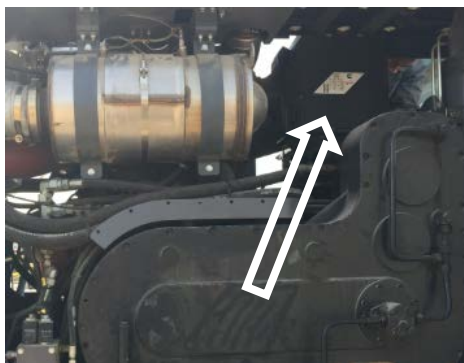


Fig. Air filter

Check air filter condition, replace with new air filter when necessary.

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



Never clean the backup filter! The filter must be replaced after 5 maintenance occasions or every other year.

Rubber protection in milling housing – Check

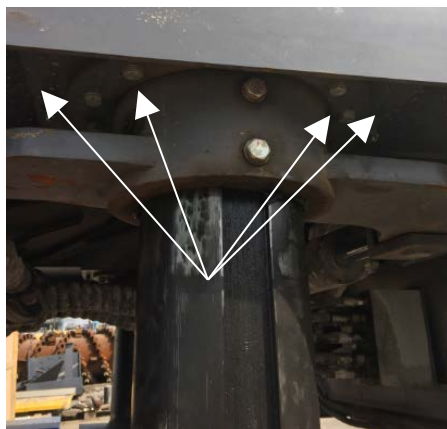


Check the protection (1) in milling housing for wear and any form of damage. Replace if necessary.

Fig. Milling housing



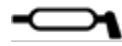
Front chassis leg – lubrication points



Grease nipples located at the chassis leg (left and right) on the underside of machine. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.

Fig. Guide, grease nipple



Rear right chassis leg – lubrication

points

Four grease nipples located at the rear right chassis leg on the underside of machine. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.

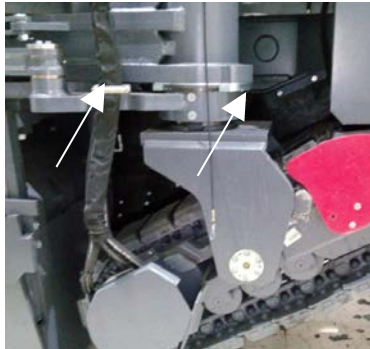


Fig. Rear right chassis leg, lubrication point



Rear left chassis leg – lubrication

points

Two grease nipples located at the rear left chassis leg on the underside of machine. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.



Fig. Rear left chassis leg, lubrication point



Fig. Conveyor, tension bearing, grease nipple



Conveyor – Drive

Grease nipples located on the right side of conveyor pillar block bearing. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.

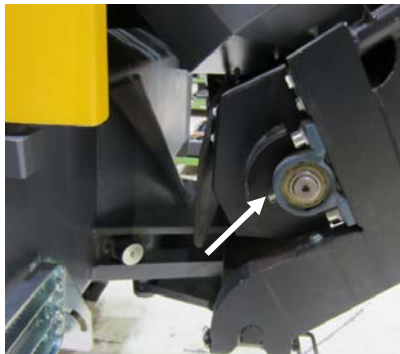
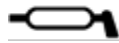


Fig. Conveyor driven, grease nipple



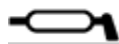
Conveyor – Driven

Grease nipples located on each side of conveyor drive. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.



Fig. Primary conveyor, drive, grease nipple



Primary conveyor – Drive

Grease nipples located on right side of primary conveyor drive. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.



Fig. Primary conveyor drive, grease nipple



Primary conveyor - Driven

Grease nipples located on each side of primary conveyor drive. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.



Fig. Discharge conveyor, folding cylinder



Discharge conveyor – Folding cylinder

Grease nipples located on each side of discharge conveyor folding cylinder. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.



Fig. Crawler



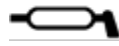
Crawler – Lubrication points

Grease nipples located on each side of each crawler. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.



Fig. Milling housing



Milling drum

Grease nipple located on right side of milling drum.

Undo the cover of milling housing, Pump the grease special for milling bearing. Strokes with manual grease gun until grease flow out.

Use grease as per the lubricant specification.

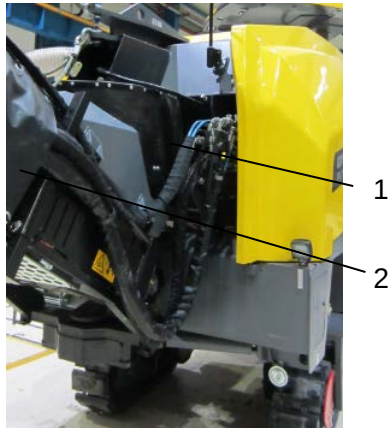
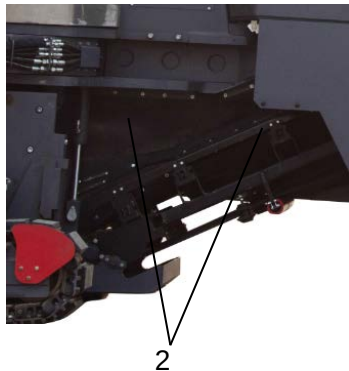


Fig. Funnel rubber
 1. Collector funnel
 2. Side guide, conveyor



Check of funnel rubber – sealing rubber, side guides

The rubber parts on the conveyor must be visually checked.

- Collector funnel (1).
- Side guide, conveyor belt(2)

The rubber parts are fitted with screw unions. Remove damaged/ worn parts and fit new ones if necessary.

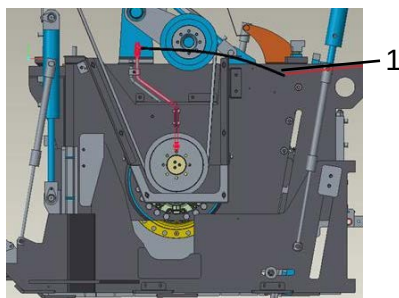


Fig. Milling drum planetary gear
 1. Hose for oil level check and filling

Milling drum, planetary gear – Check of oil level

Position the planer so that the planetary gear is horizontal. Shut down the engine.

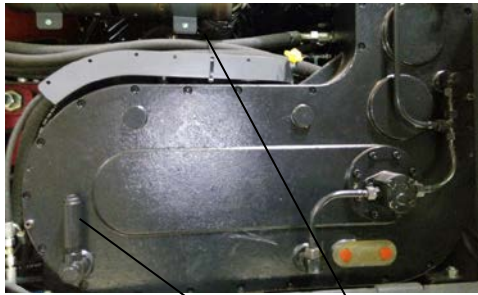
Check the oil level through hose (1). If necessary, fill the transmission oil through the hose (1) until there is oil spill.

Use transmission oil. See lubrication specification. Close the hose valve.



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

Split gear box – Check oil level



Position the planer is horizontal. Shut down the engine.

Check the oil level through the dipstick (1). Top up if necessary.

Top up through the filler (2).

Fig. Split gear box

1. Dipstick

2. Filler

Maintenance, 250h



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



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

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



Battery - Checking the electrolyte

level

The batteries are located under the footboard. Unlock and open the cover.



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.



Fig. Battery

When disconnected the battery, always disconnect the negative cable first. When connecting the battery, always connect the positive cable first. The cable shoes should be clean and tightened. Corroded cable shoes should be cleaned and greased with acid-proof Vaseline.



Coolant level – Check

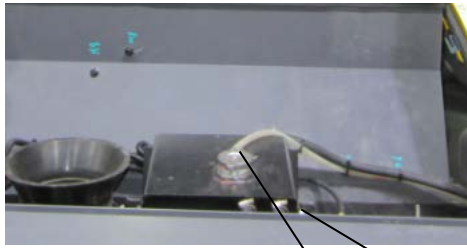


Fig. Expansion tank

1. Filler cap

2. Sight glass

Visually check that coolant level through sight glass (2). Warning signal will appear on the display.



Take great caution if the radiator cap (1) must be opened while the engine is hot. Wear protective gloves and goggles.

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

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



Air filter – Cleaning



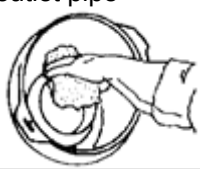
Wipe clean the inside of the cover and the filter housing.

Wipe also both surfaces for the outlet pipe.



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.

Wipe clean on both sides of the outlet pipe



Inner edge of outlet pipe



Outer edge of outlet pipe

If an alarm appears on the display, replace the primary air filter immediately.

Refer to engine manual.

Maintenance, 500h



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



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



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



Diesel engine – oil change – Filter replacement

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

Run the engine warm before draining the oil.



Switch off the engine before draining.



1

The engine oil filter (2) is located on the right hand of the engine compartment. Replace the engine oil filter (2). See lubricant specification for the correct grade of oil.



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.



2



3

Fill the engine oil through port (3).

Refer to engine manual.

**Fig. 1. Engine oil filter
2. Drain cock
3. Engine oil filler**



Fuel filter – Replacement



Fig. Fuel filter
1. Ball valve
2. Fuel filter

Close the ball valve (1).

Release the fuel filter and clean the contact surface.

Lubricate the seal on the new filter.

Tighten the filter by hand.

Open ball valve (1).



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. Ball valve
2. Sensor
3. Filter cartridge



Water separator, fuel prefilter -

Replacement

Close the ball valve (1).

Remove the water sensor contact (2).

Remove the filter cartridge (3) with suitable tool (filter spanner or filter scrap) and unscrew.

Clean the filter holder sealing surface.

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

Reconnect the water sensor contact (2).

Open ball valve (1).



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.

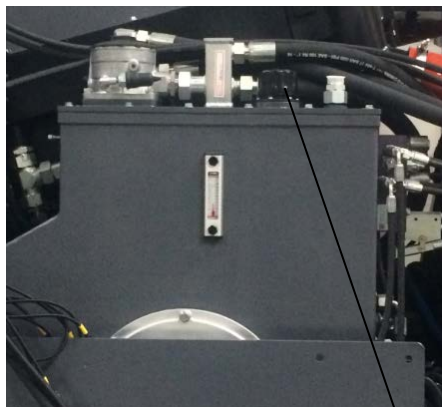


Fig. Engine compartment
1. Filler cap

1



Hydraulic reservoir cap – Check

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

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



Make sure that the engine cannot be accidentally started!



Water tank – Emptying / Cleaning

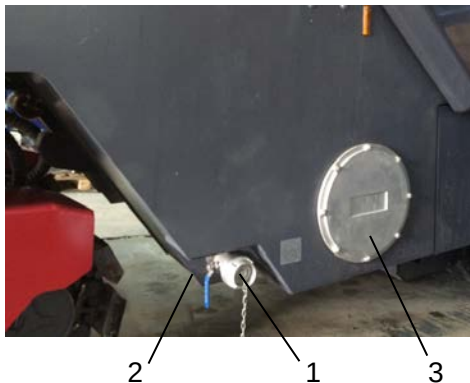


Fig. Water tank

1. Tap
2. Plug
3. Cover

Empty the tank before cleaning, open the tap (1) and plug (2), allow all the water to run out.

Open the cover (3). Clean the tank with water and a suitable detergent. Check the condition of the anti-rust stick, replace if necessary.

Close the tap (1) and plug (2), and cover up the cover (3) before filling up.

- Fill up with new water, see chapter “Water tank-filling”.



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

Clutch lining – Check

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

Clutch friction disc - check

The clutch is located inside the cover on the platform.



Make sure that the engine cannot be accidentally started!

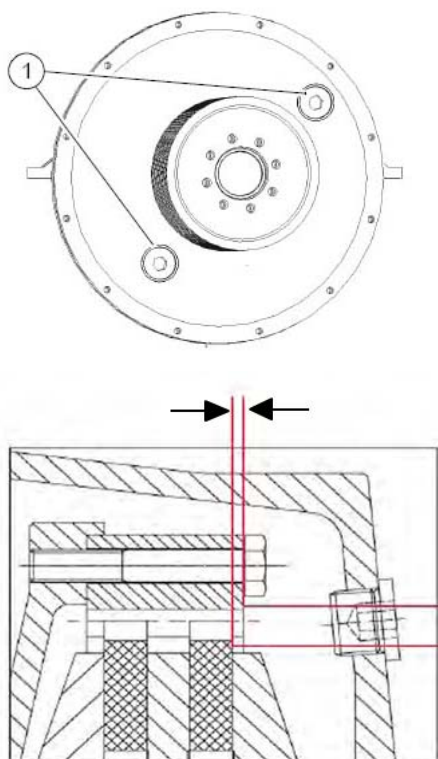


Fig. Clutch friction disc
1. Inspection cover

Check the clutch friction disc:

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

- Check the wear on the outer linings:

Measure between mark A and B:

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

Clutch in new condition = 6mm

Max wear (Y - mark) = 15mm

Inspection is to be carried out with the clutch switched off and the drive at a standstill.

If maximum wear has been reached, replace the outer friction disc.

- Close the covers after inspection.



Check is made at engaged clutch and disengaged engine.

Maintenance, 1000h



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



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



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



Clutch bearing



Fig. Clutch bearing, grease nipple

1 grease nipple is located behind the pulley. Strokes with manual grease gun until grease flow out.



Use grease as per the lubricant specification.



Split gearbox – Oil change



Fig. Split gear box

1. Filler
2. Drain cock
3. Dipstick

The oil is first changed after 250 hours of operation, and subsequently every 1000 hours. Position the planer on a level surface.

Run the engine warm before draining the oil. Unscrew the drain cock (2) and drain the oil into a suitable container. Refit the drain cock (2).

Open the filler (1) carefully fill. Oil level could be checked from dipstick (3).

Use transmission oil according to the lubricant specification.



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.

Maintenance, 2000h



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



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



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

Chassis leg, drive wheel – Planetary gear, oil draining



Fig. Planetary gear/position for filling

- 1. Drain plug**
- 2. Filler plug**

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

Position the planer so that the drain plug (1) in the planetary gear is at “6 O’clock” and the filler plug (2) is horizontal.

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



Fig. Engine belt



Diesel engine – Replacing the drive belt

For replacement, see engine manual.



Return oil filter suction side Replacement

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



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

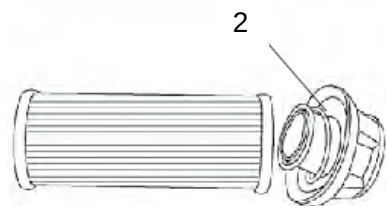


**Fig. 1. Filter housing cover
2. Handle**

- Release the filter housing cover (1) by unscrewing the square bolts.
- Lift out the complete filter until from the housing and remove the handle (2) from the used filter unit.
- Fit the handle on the new filter unit and put the complete filter in the filter housing.
- Refit the filter housing cover (1).



Fig. High-pressure hydraulic filter

1. Filter



High-pressure hydraulic – Replacement



The engine must not be running when replacing the filter!



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

When the alarm signal received from display, 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 disposal 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.

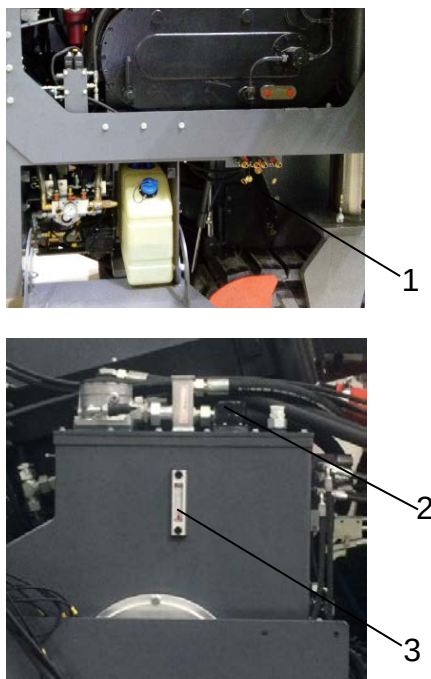


Fig. 1. Drain cock
2. Filler
3. Sight glass



Hydraulic reservoir – Fluid change



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

The drain cock (1) is located on the left-hand side of the frame.

Place a container under the plug.

Release the oil plug and allow all the oil to run out. Close the drain cock (1).



Hand in the drained oil to a waste disposal station.

Refer the oil level show in sight glass (3), fill with fresh hydraulic fluid through filler (2). Refer to the lubricants specification for grade information.

To replace the hydraulic fluid filter, see Chapter "High-pressure hydraulic filter replacement".

Start the engine and operate the function, check the level in reservoir and top off as required.

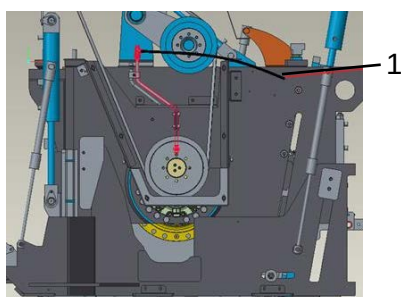
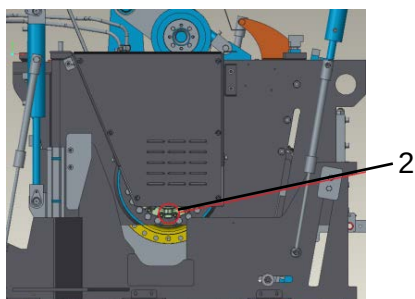


Fig. Planetary gear/position for refilling

- 1. Hose for oil level check and filling**
- 2. Drain plug**

Milling drum – Planetary gear, change oil

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

Position the planer so that the drain plug (2) in the planetary gear is in position horizontal.

- Unscrew the drain plug (2). Drain the oil into a container.



Oil should be taken to your local waste disposal station.

Fill the transmission oil through hose (1).

See lubrication specification.



Fig. 1. Fuel tank
2. Drain plug
3. Cover



Fuel tank – Drainage and clean

Water and sediment in the fuel tank are removed via the drain plug (2) in the bottom of the fuel tank (1).



Be very careful during drainage. 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 (2).

Drain as follows:

Place a container under the plug (2).

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

Clean the sediment:

Open the cover (3), clean the sediment on the bottom.



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



Coupling – Check – Replacement of belt

The coupling is located on the engine.

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

The belt must always be replaced in pairs.

Replacing:

- Remove belt cover (1).
- Actuate the service switch, release the tensioner (2).
- Replace the belt. To adjust the belt tension, see section “Coupling gearbox, adjusting belt tension”.



Check also the condition of the pulleys.

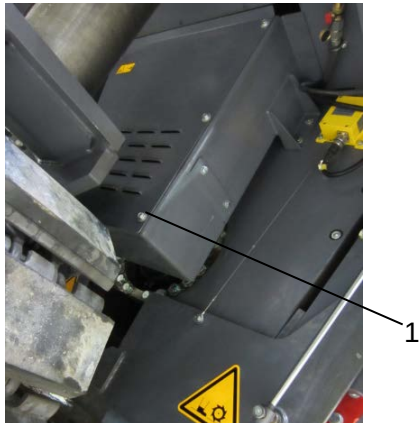


Fig. 1. Belt cover
2. Belt tension



Coupling gear box – adjusting the belt tension

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

The procedures below must be carried out on the relevant belt (x 2).

Installation tension & Span frequency:

New Belt		Used Belt	
Minimum	Maximum	Minimum	Maximum
10000 N	10700 N	8600 N	9320 N
32.5 Hz	33.7 Hz	30.1 Hz	31.3 Hz

If necessary, adjust as described below:

Adjust the pressure of belt tensioner.

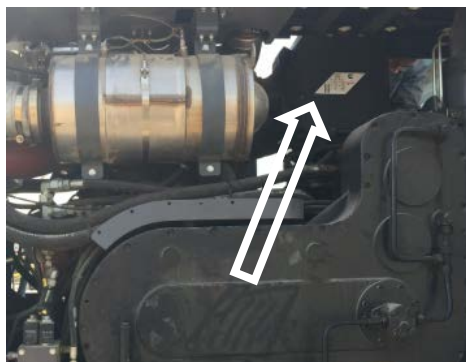


Fig. Air filter element

- 1. Cover**
- 2. Main filter**
- 3. Backup filter**



Air filter – Replace

The filter elements must be replaced when an alarm is shown in the display or as necessary.

Open the cover (1) and pull out the main filter (2) and backup filter (3).

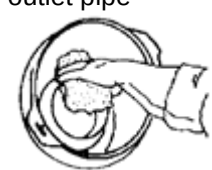
When replacing the filter, insert a new filter and refit the air cleaner in the reverse order.



Never clean the backup filter! The filter must be replaced after 5 maintenance occasions or every other year.

Wipe clean the inside of the cover and the filter housing.

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.



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.

Refer to engine manual.

Disposal

Correctly sorted disposal must be carried out after replacing wear and spare parts and after the machine has been withdrawn from service (scrapped).

The materials must be sorted correctly according to metal, plastic, electronic scrap, various operating substances etc.

Any oil greasy parts (hydraulic hoses, lube pipes etc.) must be treated separately.

Electric devices, accessories and packaging should be recycled in an environment-friendly manner.

Always observe the local regulations.

Appendix

Appendix 1: Engine Fault Code

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
111	Engine Control Module Critical Internal Failure - Bad intelligent device or component	629	12	Controller #1
115	Engine Magnetic Speed/Position Lost Both of Two Signals - Data erratic, intermittent or incorrect	612	2	System Diagnostic Code #2
122	Intake Manifold 1 Pressure Sensor Circuit - Voltage above normal, or shorted to high source	102	3	Engine Intake Manifold #1 Pressure
123	Intake Manifold 1 Pressure Sensor Circuit - Voltage below normal, or shorted to low source	102	4	Engine Intake Manifold #1 Pressure
124	Intake Manifold 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	102	16	Engine Intake Manifold #1 Pressure
131	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source	91	3	Accelerator Pedal Position 1
132	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source	91	4	Accelerator Pedal Position 1
133	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source	974	3	Remote Accelerator Pedal Position
134	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source	974	4	Remote Accelerator Pedal Position
135	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage above normal, or shorted to high source	100	3	Engine Oil Pressure
141	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage below normal, or shorted to low source	100	4	Engine Oil Pressure
143	Engine Oil Rifle Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	100	18	Engine Oil Pressure
144	Engine Coolant Temperature 1 Sensor Circuit - Voltage above normal, or shorted to high source	110	3	Engine Coolant Temperature
145	Engine Coolant Temperature 1 Sensor Circuit - Voltage below normal, or shorted to low source	110	4	Engine Coolant Temperature
146	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	110	16	Engine Coolant Temperature

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
147	Accelerator Pedal or Lever Position 1 Sensor Circuit Frequency - Data valid but below normal operating Range	91	1	Accelerator Pedal Position 1
148	Accelerator Pedal or Lever Position Sensor 1 - Data valid but above normal operational range - Most Severe Level	91	0	Accelerator Pedal Position 1
151	Engine Coolant Temperature - Data valid but above normal operational range – Most Severe Level	110	0	Engine Coolant Temperature
153	Intake Manifold 1 Temperature Sensor Circuit - Voltage above normal, or shorted to high source	105	3	Engine Intake Manifold 1 Temperature
154	Intake Manifold 1 Temperature Sensor Circuit - Voltage below normal, or shorted to low source	105	4	Engine Intake Manifold 1 Temperature
155	Intake Manifold 1 Temperature - Data valid but above normal operational range – Most Severe Level	105	0	Engine Intake Manifold 1 Temperature
187	Sensor Supply 2 Circuit - Voltage below normal, or shorted to low source	3510	4	Sensor supply voltage 2
195	Coolant Level Sensor 1 Circuit - Voltage above normal, or shorted to high source	111	3	Engine Coolant Level
196	Coolant Level Sensor 1 Circuit - Voltage below normal, or shorted to low source	111	4	Engine Coolant Level
197	Coolant Level - Data Valid But Below Normal Operating Range - Moderately Severe Level	111	18	Engine Coolant Level
221	Barometric Pressure Sensor Circuit - Voltage above normal, or shorted to high	108	3	Barometric Pressure
222	Barometric Pressure Sensor Circuit - Voltage above normal, or shorted to low source	108	4	Barometric Pressure
227	Sensor Supply 2 Circuit - Voltage above normal, or shorted to high source	3510	3	Sensor supply voltage 2
234	Engine Crankshaft Speed/Position - Data valid but above normal operational range - Most Severe Level	190	0	Engine Speed

Appendix

Service Fault Code	Service Description	J1939_SPN	FMI	J1939_SPN Description
235	Coolant Level - Data valid but below normal operational range - Most Severe level	111	1	Engine Coolant Level
238	Sensor Supply 3 Circuit - Voltage below normal, or shorted to low source	3511	4	Sensor supply voltage 3
239	Sensor Supply 3 Circuit - Voltage above normal, or shorted to high source	3511	3	Sensor supply voltage 3
241	Wheel-Based Vehicle Speed - Data erratic, intermittent or incorrect	84	2	Wheel-Based Vehicle Speed
242	Wheel-Based Vehicle Speed Sensor Circuit tampering has been detected - Abnormal rate of change	84	10	Wheel-Based Vehicle Speed
245	Fan Control Circuit - Voltage below normal, or shorted to low source	647	4	Engine Fan Clutch 1 Output Device Driver
249	Ambient Air Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source	171	3	Ambient Air Temperature
256	Ambient Air Temperature Sensor 1 Circuit - Voltage below normal, or shorted to	171	4	Ambient Air Temperature
271	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage below normal, or shorted	1347	4	Engine Fuel Pump Pressurizing Assembly #1
272	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage above normal, or shorted	1347	3	Engine Fuel Pump Pressurizing Assembly #2
281	Engine Fuel Pump Pressurizing Assembly 1 - Mechanical system not	1347	7	Engine Fuel Pump Pressurizing Assembly #3
285	SAE J1939 Multiplexing PGN Timeout Error - Abnormal update rate	639	9	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link)
286	SAE J1939 Multiplexing Configuration Error - Out of Calibration	639	13	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link)

Service Fault Code	Service Description	J1939		J1939 SPN Description
		SPN	FMI	
288	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Position Sensor System - Received Network Data In Error	974	19	Remote Accelerator Pedal Position
291	Proprietary Datalink Error (OEM/Vehicle Datalink) - Abnormal update rate	625	9	Proprietary Datalink
292	Auxiliary Temperature Sensor Input 1 - Special Instructions	441	14	Auxiliary Temperature 1
293	Auxiliary Temperature Sensor Input 1 Circuit - Voltage above normal, or shorted to high source	441	3	Auxiliary Temperature 1
294	Auxiliary Temperature Sensor Input 1 Circuit - Voltage below normal, or shorted to low source	441	4	Auxiliary Temperature 1
296	Auxiliary Pressure Sensor Input 2 - Special Instructions	1388	14	Auxiliary Pressure #2
297	Auxiliary Pressure Sensor Input 2 Circuit - Voltage above normal, or shorted to high source	1388	3	Auxiliary Pressure #2
298	Auxiliary Pressure Sensor Input 2 Circuit - Voltage below normal, or shorted to low source	1388	4	Auxiliary Pressure #2
322	Injector Solenoid Driver Cylinder 1 Circuit - Current below normal or open circuit	651	5	Engine Injector Cylinder #01
323	Injector Solenoid Driver Cylinder 5 Circuit - Current below normal or open circuit	655	5	Engine Injector Cylinder #05
324	Injector Solenoid Driver Cylinder 3 Circuit - Current below normal or open circuit	653	5	Engine Injector Cylinder #03
325	Injector Solenoid Driver Cylinder 6 Circuit - Current below normal or open circuit	656	5	Engine Injector Cylinder #06
331	Injector Solenoid Driver Cylinder 2 Circuit - Current below normal or open circuit	652	5	Engine Injector Cylinder #02
332	Injector Solenoid Driver Cylinder 4 Circuit - Current below normal or open circuit	654	5	Engine Injector Cylinder #04
338	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage above normal, or shorted to high source	1267	3	Idle Shutdown Vehicle Accessories Relay Driver Circuit
339	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage below normal, or shorted to low source	1267	4	Idle Shutdown Vehicle Accessories Relay Driver Circuit
343	Engine Control Module Warning Internal Hardware Failure - Bad intelligent device or component	629	12	Controller #1

Appendix

Service Fault Code	Service Description	J1939_SPN	FMI	J1939_SPN Description
349	Transmission Output Shaft Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level	191	16	Transmission Output Shaft Speed
351	Injector Power Supply - Bad intelligent device or component	3597	12	ECU Power Output Supply Voltage #1
352	Sensor Supply 1 Circuit - Voltage below normal, or shorted to low source	3509	4	Sensor supply voltage 1
386	Sensor Supply 1 Circuit - Voltage above normal, or shorted to high source	3509	3	Sensor supply voltage 1
415	Engine Oil Rifle Pressure - Data valid but below normal operational range - Most Severe Level	100	1	Engine Oil Pressure
418	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Least Severe Level	97	15	Water In Fuel Indicator
428	Water in Fuel Indicator Sensor Circuit - Voltage above normal, or shorted to high source	97	3	Water In Fuel Indicator
429	Water in Fuel Indicator Sensor Circuit - Voltage below normal, or shorted to low source	97	4	Water In Fuel Indicator
431	Accelerator Pedal or Lever Idle Validation Switch - Data erratic, intermittent or incorrect	558	2	Accelerator Pedal 1 Low Idle Switch
432	Accelerator Pedal or Lever Idle Validation Switch Circuit - Out of Calibration	558	13	Accelerator Pedal 1 Low Idle Switch
435	Engine Oil Rifle Pressure - Data erratic, intermittent or incorrect	100	2	Engine Oil Pressure
441	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Moderately Severe Level	168	18	Battery Potential / Power Input 1
442	Battery 1 Voltage - Data Valid But Above Normal Operating Range - Moderately Severe Level	168	16	Battery Potential / Power Input 1
449	Injector Metering Rail 1 Pressure - Data valid but above normal operational range - Most Severe Level	157	0	Engine Injector Metering Rail 1 Pressure
451	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage above normal, or shorted to high source	157	3	Engine Injector Metering Rail 1 Pressure
452	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage below normal, or shorted to low source	157	4	Engine Injector Metering Rail 1 Pressure
483	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage above normal, or shorted to high source	1349	3	Engine Injector Metering Rail 2 Pressure

Service Fault Code	Service Description	J1939_		J1939_SPN Description
		SPN	FMI	
488	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range – Moderately Severe Level	105	16	Engine Intake Manifold Temperature
489	Transmission Output Shaft Speed - Data Valid But Below Normal Operating Range - Moderately Severe Level	191	18	Transmission Output Shaft
497	Multiple Unit Synchronization Switch - Data erratic, intermittent or incorrect	1377	2	Engine Synchronization
515	Sensor Supply 6 Circuit - Voltage above normal, or shorted to high source	3514	3	Sensor supply voltage 6
516	Sensor Supply 6 Circuit - Voltage below normal, or shorted to low source	3514	4	Sensor supply voltage 6
523	Auxiliary Intermediate (PTO) Speed Switch Validation - Data erratic, intermittent or incorrect	611	2	System Diagnostic Code #1
527	Auxiliary Input/Output 2 Circuit - Voltage above normal, or shorted to high source	702	3	Auxiliary I/O #02
529	Auxiliary Input/Output 3 Circuit - Voltage above normal, or shorted to high source	703	3	Auxiliary I/O #03
546	Fuel Delivery Pressure Sensor Circuit - Voltage above normal, or shorted to high source	94	3	Engine Fuel Delivery Pressure
547	Fuel Delivery Pressure Sensor Circuit - Voltage below normal, or shorted to low source	94	4	Engine Fuel Delivery Pressure
553	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	157	16	Engine Injector Metering Rail 1 Pressure
555	Crankcase Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	101	16	Engine Crankcase Pressure
556	Crankcase Pressure - Data valid but above normal operational range - Most Severe Level	101	0	Engine Crankcase Pressure
559	Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	157	18	Engine Injector Metering Rail 1 Pressure
584	Starter Relay Driver Circuit - Voltage above normal, or shorted to high source	677	3	Engine Starter Motor Relay
585	Starter Relay Driver Circuit - Voltage below normal, or shorted to low source	677	4	Engine Starter Motor Relay

Appendix

Service Fault Code	Service Description	J1939		J1939 SPN Description
		SPN	FMI	
595	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level	103	16	Engine Turbocharger 1 Speed
599	Auxiliary Commanded Dual Output Shutdown - Special Instructions	640	14	Engine External Protection Input
649	Engine Oil Change Interval - Condition Exists	1378	31	Engine Oil Change Interval
687	Turbocharger 1 Speed - Data Valid But Below Normal Operating Range - Moderately Severe Level	103	18	Engine Turbocharger 1 Speed
689	Engine Crankshaft Speed/Position - Data erratic, intermittent or incorrect	190	2	Engine Speed
691	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage above normal, or shorted to high source	1172	3	Engine Turbocharger 1 Compressor Intake Temperature
692	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage below normal, or shorted to low source	1172	4	Engine Turbocharger 1 Compressor Intake Temperature
731	Engine Speed / Position Camshaft and Crankshaft Misalignment - Mechanical system not responding or out of adjustment	723	7	Engine Speed 2
741	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage above normal, or shorted to high source	1176	3	Engine Turbocharger 1 Compressor Intake Pressure
742	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage below normal, or shorted to low source	1176	4	Engine Turbocharger 1 Compressor Intake Pressure
743	Turbocharger 1 Compressor Intake Pressure - Data erratic, intermittent or incorrect	1176	2	Engine Turbocharger 1 Compressor Intake Pressure
771	Brake Switch Circuit - Voltage below normal, or shorted to low source	597	4	Brake Switch
778	Engine Camshaft Speed / Position Sensor - Data erratic, intermittent or incorrect	723	2	Engine Speed 2

Service Fault Code	Service Description	J1939_		J1939_SPN Description
		SPN	FMI	
1117	Power Supply Lost With Ignition On - Data erratic, intermittent or incorrect	3597	2	ECU Power Output Supply
1141	Injector Solenoid Driver Cylinder 2 - Mechanical system not responding or out of adjustment	652	7	Engine Injector Cylinder #02
1142	Injector Solenoid Driver Cylinder 3 - Mechanical system not responding or out of adjustment	653	7	Engine Injector Cylinder #03
1143	Injector Solenoid Driver Cylinder 4 - Mechanical system not responding or out of adjustment	654	7	Engine Injector Cylinder #04
1144	Injector Solenoid Driver Cylinder 5 - Mechanical system not responding or out of adjustment	655	7	Engine Injector Cylinder #05
1145	Injector Solenoid Driver Cylinder 6 - Mechanical system not responding or out of adjustment	656	7	Engine Injector Cylinder #06
1239	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage above normal, or shorted to high source	2623	3	Accelerator Pedal #1 Channel 2
1241	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage below normal, or shorted to low source	2623	4	Accelerator Pedal #1 Channel 2
1242	Accelerator Pedal or Lever Position Sensor 1 - Data erratic, intermittent or incorrect	91	2	Accelerator Pedal Position 1
1358	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source	91	3	Accelerator Pedal Position 1
1359	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source	91	4	Accelerator Pedal Position 1
1427	Overspeed Shutdown Relay Driver Diagnostic has detected an error - Condition Exists	4185	31	Overspeed Shutdown Relay Driver
1428	Low Oil Pressure (LOP) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists	4186	31	Low Oil Pressure Shutdown Relay Driver

Appendix

Service Fault Code	Service Description	J1939		J1939 SPN Description
		SPN	FMI	
1429	High Engine Temperature (HET) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists	4187	31	High Engine Temperature Shutdown Relay Driver
1431	Pre-Low Oil Pressure Warning Relay Driver Diagnostic has detected an error - Condition Exists	4188	31	Pre-Low Oil Pressure Indicator Relay Driver
1432	Pre-High Engine Temperature Warning Relay Driver Diagnostic has detected an error - Condition Exists	4223	31	Pre-High Engine Temperature Warning Relay Driver
1515	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Received Network Data In Error	91	19	Accelerator Pedal Position 1
1539	Auxiliary Pressure Sensor Input 1 Circuit - Voltage above normal, or shorted to high source	1387	3	Auxiliary Pressure #1
1239	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage above normal, or shorted to high source	2623	3	Accelerator Pedal #1 Channel 2
1241	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage below	2623	4	Accelerator Pedal #1 Channel 2
1242	Accelerator Pedal or Lever Position Sensor 1 - Data erratic, intermittent or incorrect	91	2	Accelerator Pedal Position 1
1358	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source	91	3	Accelerator Pedal Position 1
1359	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source	91	4	Accelerator Pedal Position 1
1427	Overspeed Shutdown Relay Driver Diagnostic has detected an error - Condition Exists	4185	31	Overspeed Shutdown Relay
1428	Low Oil Pressure (LOP) Shutdown Relay Driver Diagnostic has detected an error - Condition	4186	31	Low Oil Pressure Shutdown Relay Driver
1429	High Engine Temperature (HET) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists	4187	31	High Engine Temperature Shutdown Relay
1431	Pre-Low Oil Pressure Warning Relay Driver Diagnostic has detected an error - Condition exist	4188	31	Pre-Low Oil Pressure Indicator Relay Driver
1432	Pre-High Engine Temperature Warning Relay Driver Diagnostic has detected an error - Condition Exists	4223	31	Pre-High Engine Temperature Warning Relay
1515	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System	91	19	Accelerator Pedal Position 1

Service Fault Code	Service Description	J1939_		J1939_SPN Description
		SPN	FMI	
1539	Auxiliary Pressure Sensor Input 1 Circuit - Voltage above normal, or shorted to high source	1387	3	Auxiliary Pressure #1
1678	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage above normal, or shorted to high source	3031	3	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
1679	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Data erratic, intermittent or incorrect	3031	2	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
1682	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Input Lines - Condition Exists	3362	31	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Input Lines
1683	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage above normal, or shorted to high source	3363	3	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater
1684	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage below normal, or shorted to low source	3363	4	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater
1685	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage below normal, or shorted to low source	3364	4	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
1686	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage above normal, or shorted to high source	3364	3	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
1691	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level	5298	18	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Sever level
1694	Aftertreatment 1 Outlet NOx Sensor - Data erratic, intermittent or incorrect	3226	2	Aftertreatment 1 Outlet NOx
1695	Sensor Supply 5 - Voltage above normal, or shorted to high source	3513	3	Sensor supply voltage 5
1696	Sensor Supply 5 - Voltage below normal, or shorted to low source	3513	4	Sensor supply voltage 5
1712	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level	3363	18	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater
1713	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Above Normal Operating Range - Moderately Severe Level	3363	16	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater

Appendix

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
1714	Aftertreatment Diesel Exhaust Fluid Quality - Out of Calibration	3364	13	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
1715	Aftertreatment Diesel Exhaust Fluid Quality - Root Cause Not Known	3364	11	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
1843	Crankcase Pressure Circuit - Voltage above normal, or shorted to high source	101	3	Engine Crankcase
1844	Crankcase Pressure Circuit - Voltage below normal, or shorted to low source	101	4	Engine Crankcase Pressure
1852	Water in Fuel Indicator - Data Valid But Above Normal Operating Range – Moderately Severe Level	97	16	Water In Fuel Indicator
1866	Exhaust Gas Recirculation Differential Pressure - Data erratic, intermittent or incorrect	411	2	Engine Exhaust Gas Recirculation 1 Differential Pressure
1885	Aftertreatment 1 Intake NOx Sensor Circuit - Voltage below normal, or shorted to low source	3216	4	Aftertreatment 1 Intake NOx
1887	Aftertreatment 1 Outlet NOx Sensor Circuit - Voltage below normal, or shorted to low source	3226	4	Aftertreatment 1 Outlet NOx
1896	EGR Valve Controller - Out of Calibration	2791	13	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control
1898	VGT Actuator Controller - Out of Calibration	641	13	Engine Variable Geometry Turbocharger Actuator #1
1938	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level	3597	18	ECU Power Output Supply Voltage #1
1942	Crankcase Pressure - Data erratic, intermittent or incorrect	101	2	Engine Crankcase Pressure
1961	EGR Valve Control Circuit Over Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	2791	15	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
1962	VGT Actuator Driver Over Temperature (Calculated) - Data Valid But Above Normal Operating Range - Least Severe Level	641	15	Engine Variable Geometry
1974	Crankcase Pressure - Data Valid But Above Normal Operating Range - Least Severe Level	101	15	Engine Crankcase Pressure
1976	VGT Actuator Driver Over Temperature (Calculated) - Data Valid But Above Normal Operating Range - Least Severe Level	641	15	Engine Variable Geometry
2182	Engine Brake Actuator Driver 1 Circuit - Voltage above normal, or shorted to high source	1072	3	Engine (Compression) Brake Output
2183	Engine Brake Actuator Driver 1 Circuit - Voltage below normal, or shorted to low source	1072	4	Engine (Compression) Brake Output
2185	Sensor Supply 4 Circuit - Voltage above normal, or shorted to high source	3512	3	Sensor supply voltage 4
2186	Sensor Supply 4 Circuit - Voltage below normal, or shorted to low source	3512	4	Sensor supply voltage 4
2198	VGT Actuator Driver Circuit - Root Cause Not Known	641	11	Engine Variable Geometry Turbocharger Actuator #1
2265	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage above normal, or shorted to high source	1075	3	Engine Electric Lift Pump for Engine Fuel Supply
2266	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage below normal, or shorted to low source	1075	4	Engine Electric Lift Pump for Engine Fuel Supply
2272	EGR Valve Position Circuit - Voltage below normal, or shorted to low source	27	4	Engine Exhaust Gas Recirculation 1 Valve Position
2273	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage above normal, or shorted to high source	411	3	Engine Exhaust Gas Recirculation 1 Differential Pressure
2274	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage below normal or shorted to low source	411	4	Engine Exhaust Gas Recirculation 1 Differential Pressure
2288	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Least Severe Level	103	15	Engine Turbocharger 1 Speed
2311	Electronic Fuel Injection Control Valve Circuit - Condition Exists	633	31	Engine Fuel Actuator 1 Control Command

Appendix

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
2321	Engine Crankshaft Speed/Position - Data erratic, intermittent or incorrect	190	2	Engine Speed
2322	Engine Camshaft Speed / Position Sensor - Data erratic, intermittent or incorrect	723	2	Engine Speed 2
2346	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe	2789	15	Engine Turbocharger 1 Calculated Turbine Intake Temperature
2349	EGR Valve Control Circuit - Current below normal or open circuit	2791	5	Engine Exhaust GasRecirculation 1 (EGR1) Valve Control
2353	EGR Valve Control Circuit - Current above normal or grounded circuit	2791	6	Engine Exhaust GasRecirculation 1 (EGR1) Valve Control
2357	EGR Valve Control Circuit - Mechanical system not responding or out of adjustment	2791	7	Engine Exhaust GasRecirculation 1 (EGR1) Valve Control
2363	Engine Brake Actuator Driver Output 2 Circuit - Voltage below normal, or shorted to low source	1073	4	Engine (Compression) Brake Output
2367	Engine Brake Actuator Driver Output 2 Circuit - Voltage above normal, or shorted to high source	1073	3	Engine (Compression) Brake Output
2372	Fuel Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	95	16	Engine Fuel Filter
2373	Exhaust Gas Pressure Sensor 1 Circuit - Voltage above normal, or shorted to high source	1209	3	Engine Exhaust Gas Pressure 1
2374	Exhaust Gas Pressure Sensor 1 Circuit - Voltage below normal, or shorted to low source	1209	4	Engine Exhaust Gas Pressure 1
2375	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage above normal, or shorted to high source	412	3	Engine Exhaust Gas Recirculation 1 Temperature
2376	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage below normal, or shorted to low source	412	4	Engine Exhaust Gas Recirculation 1 Temperature
2377	Fan Control Circuit - Voltage above normal, or shorted to high source	647	3	Engine Fan Clutch 1 Output Device Driver

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
2387	VGT Actuator Driver Circuit (Motor) - Mechanical system not responding or out of adjustment	641	7	Engine Variable Geometry Turbocharger Actuator #1
2448	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level	111	17	Engine Coolant
2449	VGT Actuator Controller - Out of Calibration	641	13	Engine Variable Geometry Turbocharger
2468	Engine Crankshaft Speed/Position - Data Valid But Above Normal Operating Range - Moderately Severe Level	190	16	Engine Speed
2554	Exhaust Gas Pressure 1 - Data erratic, intermittent or incorrect	1209	2	Engine Exhaust Gas Pressure 1
2555	Engine Intake Air Heater 1 Circuit - Voltage above normal, or shorted to high source	729	3	Engine Intake Air Heater Driver #1
2556	Engine Intake Air Heater 1 Circuit - Voltage below normal, or shorted to low source	729	4	Engine Intake Air Heater Driver #1
2557	Auxiliary PWM Driver 1 Circuit - Voltage above normal, or shorted to high source	697	3	Auxiliary PWM Driver #1
2558	Auxiliary PWM Driver 1 Circuit - Voltage below normal, or shorted to low source	697	4	Auxiliary PWM Driver #1
2571	Engine Charge Air Cooler Outlet Temperature - Voltage above normal, or shorted to high source	2630	3	Engine Charge Air Cooler 1 Outlet Temperature
2572	Engine Charge Air Cooler Outlet Temperature - Voltage below normal, or shorted to low source	2630	4	Engine Charge Air Cooler 1 Outlet
2634	VGT Actuator Controller - Bad intelligent device or component	641	12	Engine Variable Geometry Turbocharger Actuator #1
2635	VGT Actuator Driver Circuit - Condition Exists	641	31	Engine Variable Geometry Turbocharger Actuator #1
2636	VGT Actuator Driver Circuit - Abnormal update rate	641	9	Engine Variable Geometry Turbocharger Actuator #1
2637	Aftertreatment 1 Diesel Oxidation Catalyst Face Plugged - Root Cause Not Known	5018	11	Aftertreatment Diesel Oxidation

Appendix

Service Fault Code	Service Description	J1939_		J1939_SPN Description
		SPN	FMI	
2638	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level	5298	18	Aftertreatment 1 Diesel Oxidation Catalyst
2646	Engine Coolant Temperature - Condition Exists	110	31	Engine Coolant Temperature
2659	Engine Coolant Temperature - Condition Exists	110	31	Engine Coolant Temperature
2754	Engine Diesel Particulate Filter Intake Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	81	16	Engine Diesel Particulate Filter Intake Pressure
2771	Aftertreatment 1 Outlet NOx Sensor - Abnormal update rate	3226	9	Aftertreatment 1 Outlet NOx
2961	Exhaust Gas Recirculation Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	412	15	Engine Exhaust Gas Recirculation 1 Temperature
2962	Exhaust Gas Recirculation Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	412	16	Engine Exhaust Gas Recirculation 1 Temperature
2964	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	105	15	Engine Intake Manifold #1 Temperature
2976	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Temperature - Data erratic, intermittent or incorrect	3361	2	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit
2998	Engine Torque Limit Feature - Special Instructions	1632	14	Engine Torque Limit Feature
3139	Engine Air Shutoff Circuit - Voltage above normal, or shorted to high source	3667	3	Engine Air Shutoff Status
3141	Engine Air Shutoff Circuit - Voltage below normal, or shorted to low source	3667	4	Engine Air Shutoff
3142	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source	4360	3	Aftertreatment 1 SCR Catalyst Intake Gas
3143	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source	4360	4	Aftertreatment 1 SCR Catalyst Intake Gas Temperature
3144	Aftertreatment 1 SCR Intake Temperature Sensor - Data erratic, intermittent or incorrect	4360	2	Aftertreatment 1 SCR Catalyst Intake Gas Temperature

Service Fault Code	Service Description	J1939		J1939_SPN Description
		SPN	FMI	
3146	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source	4363	3	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature
3147	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source	4363	4	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature
3148	Aftertreatment 1 SCR Outlet Temperature Sensor - Data erratic, intermittent or incorrect	4363	2	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature
3151	Aftertreatment 1 SCR Catalyst System Missing - Condition Exists	4794	31	Aftertreatment 1 SCR Catalyst System
3164	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe	4360	15	Aftertreatment 1 SCR Catalyst Intake Gas Temperature
3165	Aftertreatment 1 SCR Outlet Temperature - Data valid but above normal operational range - Most Severe	4363	0	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature
3186	Tachograph Output Shaft Speed - Abnormal update rate	1623	9	Tachograph output shaft speed
3213	Tachograph Output Shaft Speed - Received Network Data In Error	1623	19	Tachograph output shaft speed
3228	Aftertreatment 1 Intake NOx Sensor - Data erratic, intermittent or incorrect	3216	2	Aftertreatment 1 Intake NOx
3229	Aftertreatment 1 SCR Intake Temperature - Data valid but above normal operational range - Most Severe Level	4360	0	Aftertreatment 1 SCR Catalyst Intake Gas Temperature
3231	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	4360	16	Aftertreatment 1 SCR Catalyst Intake Gas Temperature
3232	Aftertreatment 1 Intake NOx Sensor - Abnormal update rate	3216	9	Aftertreatment 1 Intake NOx
3235	Aftertreatment 1 SCR Outlet Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	4363	16	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature

Appendix

Service Fault Code	Service Description	J1939		J1939 SPN Description
		SPN	FMI	
3237	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage above normal, or shorted to high source	4340	3	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State
3238	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage below normal, or shorted to low source	4340	4	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State
3239	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage above normal, or shorted to high source	4342	3	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State
3241	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage below normal, or shorted to low source	4342	4	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State
3242	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Mechanical system not responding or out of adjustment	3363	7	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater
3251	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range	4765	16	Aftertreatment Diesel Oxidation Catalyst Intake
3258	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Current below normal or open circuit	4340	5	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State
3261	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Current below normal or open circuit	4342	5	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State
3298	Anti-theft Encryption Seed - Out of Calibration	1194	13	Anti-theft Encryption Seed Present Indicator
3313	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source	4765	4	Aftertreatment Diesel Oxidation Catalyst Intake Temperature
3314	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source	4765	3	Aftertreatment Diesel Oxidation Catalyst Intake
3315	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect	4765	2	Aftertreatment Diesel Oxidation Catalyst Intake Temperature

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
3319	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source	3246	3	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature
3326	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Abnormal update rate	91	9	Accelerator Pedal Position 1
3328	Transmission Output Shaft Speed - Abnormal update rate	191	9	Transmission Output Shaft Speed
3329	J1939 Network #2 - Data erratic, intermittent or incorrect	1231	2	J1939 Network #2
3331	J1939 Network #3 - Data erratic, intermittent or incorrect	1235	2	J1939 Network #3
3341	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	107	16	Engine Air Filter 1 Differential Pressure
3418	Transmission Output Shaft Speed - Received Network Data In Error	191	19	Transmission Output Shaft Speed
3419	Sensor Supply 7 Circuit - Voltage above normal or shorted to high source	5125	3	Sensor supply voltage 7
3421	Sensor Supply 7 Circuit - Voltage below normal, or shorted to low source	5125	4	Sensor supply voltage 7
3422	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage above normal, or shorted to high source	4344	3	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State
3423	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage below normal, or shorted to low source	4344	4	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State
3425	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Current below normal or open circuit	4344	5	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State
3488	Anti-Lock Braking (ABS) Controller - Abnormal update rate	563	9	Anti-Lock Braking (ABS) Active
3497	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Least Severe Level	1761	17	Aftertreatment 1 Diesel Exhaust Fluid Tank Level

Appendix

Service Fault Code	Service Description	J1939		J1939_SPN Description
		SPN	FMI	
3498	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Moderately Severe Level	1761	18	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
3525	Wheel-Based Vehicle Speed - Received Network Data In Error	84	19	Wheel-Based Vehicle Speed
3527	Accelerator Pedal or Lever Idle Validation Switch - Received Network Data In Error	558	19	Accelerator Pedal 1 Low Idle Switch
3531	Ambient Air Temperature - Abnormal update	171	9	Ambient Air Temperature
3543	NOx limits exceeded due to Insufficient Reagent Quality - Condition Exists	4094	31	NOx limits exceeded due to Insufficient Diesel Exhaust Fluid Quality
3545	Aftertreatment 1 Outlet NOx Sensor - Abnormal rate of change	3226	10	Aftertreatment 1 Outlet NOx
3547	Aftertreatment Diesel Exhaust Fluid Tank Empty - Condition Exists	4096	31	NOx limits exceeded due to Empty Diesel Exhaust Fluid
3555	Engine Wait to Start Lamp - Abnormal update rate	1081	9	Engine Wait to Start Lamp
3558	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage above normal, or shorted to high source	3361	3	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit
3559	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage below normal, or shorted to low source	3361	4	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit
3562	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage above normal, or shorted to high source	5491	3	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay
3563	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage below normal, or shorted to low source	5491	4	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay
3567	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Current below normal or open circuit	5394	5	Aftertreatment Diesel Exhaust Fluid Dosing Valve
3568	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Mechanical system not responding or out of adjustment	5394	7	Aftertreatment Diesel Exhaust Fluid Dosing Valve
3571	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage above normal, or shorted to high source	4334	3	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure
3572	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage below normal, or shorted to low source	4334	4	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
3574	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Below Normal Operating Range	4334	18	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure
3575	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Above Normal Operating Range	4334	16	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure
3577	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage above normal, or shorted to high source	4376	3	Aftertreatment 1 Diesel Exhaust Fluid Return Valve
3578	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage below normal, or shorted to low source	4376	4	Aftertreatment 1 Diesel Exhaust Fluid Return Valve
3582	Aftertreatment SCR Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level	4364	18	Aftertreatment 1 SCR Conversion Efficiency
3583	Aftertreatment 1 Outlet NOx Sensor Heater - Abnormal rate of change	5031	10	Aftertreatment 1 Outlet Gas NOx Sensor Heater Ratio
3596	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data erratic, intermittent or incorrect	4334	2	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure
3613	SAE J1939 Multiplexing PGN Timeout Error - Abnormal update rate	111	9	SAE J1939 Multiplexing PGN Timeout
3614	Coolant Level Sensor - Received Network Data in Error	111	19	SAE J1939 Multiplexing PGN Timeout
3633	Engine Fan Clutch 2 Control Circuit - Voltage above normal, or shorted to high source	5484	3	Engine Fan Clutch 2 Output Device Driver
3634	Engine Fan Clutch 2 Control Circuit - Voltage below normal, or shorted to low source	5484	4	Engine Fan Clutch 2 Output Device Driver
3641	Transmission Output Retarder - Abnormal update rate	748	9	Transmission Output Retarder
3649	Aftertreatment 1 Intake NOx Sensor Heater - Abnormal rate of change	5024	10	Aftertreatment 1 Intake Gas NOx Sensor Heater Ratio
3681	Aftertreatment 1 Outlet NOx Sensor Power Supply - Data erratic, intermittent or incorrect	3228	2	Aftertreatment 1 Outlet Gas Sensor Power Status
3682	Aftertreatment 1 Intake NOx Sensor Power Supply - Data erratic, intermittent or incorrect	3218	2	Aftertreatment 1 Intake Gas Sensor Power Status

Appendix

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
3697	Engine Control Module Calibration Memory - Bad intelligent device or component	630	12	Engine Control Module Calibration Memory
3712	Aftertreatment SCR Operator Inducement - Data valid but above normal operational range - Most Severe level	5246	0	Aftertreatment SCR Operator Inducement Severity
3714	Engine Protection Torque Derate - Condition Exists	1569	31	Engine Protection Torque Derate
3717	Aftertreatment 1 Outlet NOx Sensor - Out of Calibration	3226	13	Aftertreatment 1 Outlet NOx
3718	Aftertreatment 1 Intake NOx - Out of Calibration	3216	13	Aftertreatment 1 Intake NOx
3724	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Least Severe Level	168	17	Battery Potential / Power Input 1
3725	Aftertreatment 1 Intake NOx Sensor - Abnormal rate of change	3216	10	Aftertreatment 1 Intake NOx
3726	Aftertreatment 1 Intake NOx - Data Valid But Above Normal Operating Range - Moderately Severe Level	3216	16	Aftertreatment 1 Intake NOx
3727	High Pressure Common Rail Fuel Pressure Relief Valve - Mechanical system not responding or out of adjustment	5571	7	High Pressure Common Rail Fuel Pressure
3737	Engine Starter Mode Overcrank Protection - Condition Exists	1675	31	Engine Starter Mode
3741	High Pressure Common Rail Fuel Pressure Relief Valve - Data valid but above normal operational range	5571	0	High Pressure Common Rail Fuel Pressure Relief Valve
3748	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High	3216	20	Aftertreatment 1 Intake NOx
3749	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High	3226	20	Aftertreatment 1 Outlet NOx
3751	Aftertreatment SCR Catalyst System - Mechanical system not responding or out of adjustment	4792	7	Aftertreatment SCR Catalyst
3755	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Data erratic, intermittent or incorrect	5394	2	Aftertreatment Diesel Exhaust Fluid Dosing Valve
3765	Auxiliary Temperature Sensor Input 2 Circuit - Voltage above normal, or shorted to high source	442	3	Auxiliary Temperature 2

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
3766	Auxiliary Temperature Sensor Input 2 Circuit - Voltage below normal, or shorted to low source	442	4	Auxiliary Temperature 2
3843	Cruise Control Disable Command - Abnormal update rate	5603	9	Cruise Control Disable Command
3844	Cruise Control Pause Command - Condition Exists	5605	31	Cruise Control Pause Command
3845	Cruise Control Disable Command - Condition Exists	5603	31	Cruise Control Disable Command
3867	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Below Normal Operating Range - Moderate Severe Level	3364	18	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
3868	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal update rate	3364	9	Aftertreatment 1 Diesel Exhaust Fluid Tank 1
3876	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Mechanical system not responding or out of adjustment	3364	7	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
3877	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Bad intelligent device or component	3364	12	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
3878	Aftertreatment Diesel Exhaust Fluid Quality - Data erratic, intermittent or incorrect	3364	2	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
4151	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Abnormal update rate	5742	9	Aftertreatment Diesel Particulate Filter Temperature
4152	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Abnormal update rate	5743	9	Aftertreatment Selective Catalytic Reduction Temperature
4155	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage Above Normal, or Shorted to high source	5746	3	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay
4156	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage below normal, or shorted to low source	5746	4	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay
4157	Aftertreatment Diesel Exhaust Fluid Return Valve - Mechanical system not responding or out of adjust	4376	7	Aftertreatment 1 Diesel Exhaust Fluid Return Valve

Appendix

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
4158	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Bad intelligent device or component	5742	12	Aftertreatment Diesel Particulate Filter Temperature Sensor Module
4159	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Bad intelligent device or component	5743	12	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module
4161	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage Above Normal, or Shorted to high source	5742	3	Aftertreatment Diesel Particulate Filter Temperature Sensor Module
4162	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage below normal, or shorted to low source	5742	4	Aftertreatment Diesel Particulate Filter Temperature Sensor Module
4163	Aftertreatment Diesel Particulate Filter Temperature Sensor Module-Data Valid But Above Normal Operating Range	5742	16	Aftertreatment Diesel Particulate Filter Temperature Sensor Module
4164	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage Above Normal, or Shorted to high source	5743	3	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module
4165	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage below normal, or Shorted to low source	5743	4	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module
4166	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Data Valid But Above Normal	5743	16	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module
4168	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage Above Normal, or Shorted to High	5745	3	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater
4169	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage below normal, or shorted to low source	5745	4	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater
4171	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Data Valid But Below Normal Operating Range	5745	18	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater
4213	Aftertreatment Regeneration Inhibit Switch - Data erratic, intermittent or incorrect	3695	2	Aftertreatment Regeneration Inhibit Switch

Service Fault Code	Service Description	J1939		J1939_SPN Description
		SPN	FMI	
4215	Anti-Lock Braking (ABS) Active - Condition Exists	563	31	Anti-Lock Braking (ABS) Active
4241	Aftertreatment Diesel Exhaust Fluid Quality - Received Network Data In Error	3364	19	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
4243	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Abnormal Rate of Change	3515	10	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2
4249	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Abnormal Rate of Change	4337	10	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature
4251	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Abnormal Rate of Change	5798	10	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature
4261	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Root Cause Not Known	5743	11	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module
4277	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal Rate of Change	3364	10	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
4437	J1939 Network #4 - Data erratic, intermittent or incorrect	1668	2	J1939 Network #4 - Data erratic
4484	Engine Air Shutoff - Mechanical System Not Responding or Out of Adjustment	3667	7	Engine Air Shutoff
4517	Vehicle Identification Number - Out of Calibration	237	13	Vehicle Identification Number
4533	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage above normal, or shorted to high source	4766	3	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit
4534	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage below normal, or shorted to low source	4766	4	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit
4572	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Abnormal Update Rate	3031	9	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature

Appendix

Service Fault Code	Service Description	J1939		J1939_SPN Description
		SPN	FMI	
4585	Aftertreatment 1 SCR Catalyst System - Special Instructions	4792	14	Aftertreatment 1 SCR Catalyst System
4677	SAE J1939 Multiplexing PGN Timeout Error - Abnormal update rate	639	9	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link)
4731	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Out of Calibration	3031	13	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
4732	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Out of Calibration	1761	13	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
4734	Auxiliary Input/Output 1 - Special Instructions	701	14	Auxiliary I/O #01
4737	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Root Cause Not Known	3031	11	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
4739	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Root Cause Not Known	1761	11	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
4741	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current below normal or open circuit	3364	5	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
4742	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current above normal or grounded circuit	3364	6	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality
4743	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current below normal or open circuit	3515	5	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2
4744	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current above normal or grounded	3515	6	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2
4745	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Root Cause Not Known	3515	11	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
4768	Aftertreatment 1 Diesel Exhaust Fluid Property - Root Cause Not Known	3521	11	Aftertreatment 1 Diesel Exhaust Fluid Property
4769	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Abnormal Rate of Change	1761	10	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
4789	Fan Speed - Data Valid but Above Normal Operational Range - Most Severe Level	1639	0	Fan Speed
4791	Fan Speed - Data Valid but Below Normal Operational Range - Most Severe Level	1639	1	Fan Speed
4842	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Above Normal Operating Range - Least Severe Level	3364	15	Aftertreatment Diesel Exhaust Fluid Quality
4863	Aftertreatment SCR Operator Inducement Active - Condition Exists	5245	31	Aftertreatment Selective Catalytic Reduction Operator Inducement
4951	Maintain ECU Power Lamp - Voltage Above Normal, or Shorted to High Source	6655	3	ECU Power Lamp
4952	Maintain ECU Power Lamp - Voltage Below Normal, or Shorted to Low Source	6655	4	ECU Power Lamp
4956	Variable Geometry Turbocharger Actuator Software - Out of Calibration	6713	13	Variable Geometry Turbocharger Actuator
4957	Variable Geometry Turbocharger Actuator Software - Condition Exists	6713	31	Variable Geometry Turbocharger Actuator
5177	VGT Actuator Driver Circuit - Abnormal update rate	6713	9	VGT Actuator Driver Circuit
5183	Fan Blade Pitch Position Sensor Circuit - Voltage Above Normal, or Shorted to High source	520784	3	Fan Blade Pitch Position Sensor Circuit
5184	Fan Blade Pitch Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source	520784	4	Fan Blade Pitch Position Sensor Circuit
5185	Fan Blade Pitch - Mechanical system not responding or out of adjustment	520784	5	Fan Blade Pitch
5221	Engine Air Shutoff Status - Data erratic, intermittent or incorrect	3667	2	Engine Air Shutoff Status
5248	Tachograph Output Shaft Speed - Out of Calibration	1623	13	Tachograph Output Shaft Speed

Appendix

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
5278	Aftertreatment 1 Diesel Exhaust Fluid Dosing System Frozen - Condition Exists	6802	31	
5291	Engine Emergency Shutdown Switch Activated - Condition Exists	520808	31	Engine Emergency Shutdown Switch Activated
5292	Excessive Time Since Last Engine Air Shutoff Maintenance Test - Condition Exists	520809	31	Excessive Time Since Last Engine Air Shutoff Maintenance Test
5386	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Erratic, Intermittent, or Incorrect	4766	2	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature
5387	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Most Severe Level	4766	0	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature
5388	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	4766	16	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature
5389	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	4766	15	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature
5391	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Abnormal Update Rate	6882	9	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module
5392	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Bad Intelligent Device or Component	6882	12	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module
5393	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal or Shorted to High Source	6882	3	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module
5394	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Below Normal or Shorted to Low Source	6882	4	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module
5395	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known	6882	11	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module
5396	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range - Moderately Severe Level	6882	16	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
5576	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Least Severe Level	107	15	Engine Air Filter 1 Differential Pressure
5585	High Pressure Common Rail Fuel Pressure Relief Valve - Data Valid But Above Normal Operating Range - Least Severe Level	5571	15	High Pressure Common Rail Fuel Pressure Relief valve
5617	Aftertreatment 1 Diesel Oxidation Catalyst System- Special Instruction	524286	31	Aftertreatment 1 Diesel Oxidation Catalyst System
5631	SCR System Cleaning Inhibited Due to System Timeout - Condition Exists	6928	31	SCR System Cleaning Inhibited Due to System Timeout
5632	SCR System Cleaning Inhibited Due to Inhibit Switch - Condition Exists	6918	31	SCR System Cleaning Inhibited Due to Inhibit Switch
5653	SCR Operator Inducement Override Switch - Abnormal Update Rate	6881	9	SCR Operator Inducement Override Switch
5654	SCR Operator Inducement Override Switch - Out of Calibration	6881	13	SCR Operator Inducement Override Switch
5939	Machine Constrained Operation- Abnormal Update Rate. No Communication or an invalid data transfer rate has been detected on the J1939 data link between the ECM and the machine electronic control unit.	520968	9	
5941	Machine Constrained Operation- Received Network Data in Error. The received J1939 datalink message was not valid.	520968	19	
6256	Battery 1 Voltage - Data Valid But Above Normal Operating Range - Moderately Severe Level	168	16	Battery Potential / Power Input 1
6257	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Moderately Severe Level	168	18	Battery Potential / Power Input 1
6258	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage above normal, or shorted to high source	1075	3	Engine Electric Lift Pump for Engine Fuel Supply
6259	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage below normal, or shorted to low source	1075	4	Engine Electric Lift Pump for Engine Fuel Supply

Appendix

Service Fault Code	Service Description	J1939 SPN		J1939 SPN Description
6263	Fan Control Circuit - Voltage above normal, or shorted to high source	647	3	Engine Fan Clutch 1 Output Device Driver
6264	Fan Control Circuit - Voltage below normal, or shorted to low source	647	4	Engine Fan Clutch 1 Output Device Driver
6265	Aftertreatment 1 Diesel Particulate Filter System - Mechanical system not responding or out of adjustment	3936	7	Aftertreatment 1 Diesel Particulate Filter System
6336	Crankcase Breather Filter Heater Circuit - Voltage above normal, or shorted to high source	862	3	Crankcase breather Heater Circuit
6337	Crankcase Breather Filter Heater Circuit - Voltage below normal, or shorted to low source	862	4	Crankcase breather Heater Circuit
6418	Engine Brake Actuator Driver 1 Circuit - Voltage above normal, or shorted to high source	1072	3	Engine (Compression) Brake Output #1
6419	Engine Brake Actuator Driver 1 Circuit - Voltage below normal, or shorted to low source	1072	4	Engine (Compression) Brake Output #1
6421	Engine Brake Actuator Driver Output 2 Circuit - Voltage above normal, or shorted to high source	1073	3	Engine (Compression) Brake Output #2
6422	Engine Brake Actuator Driver Output 2 Circuit - Voltage below normal, or shorted to low source	1073	4	Engine (Compression) Brake Output #2
6456	Engine Fan Clutch 2 Control Circuit - Voltage above normal, or shorted to high source	5484	3	Engine Fan Clutch 2 Output Device Driver
6457	Engine Fan Clutch 2 Control Circuit - Voltage below normal, or shorted to low source	5484	4	Engine Fan Clutch 2 Output Device Driver
6458	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High	3216	20	Aftertreatment 1 Intake NOx
6459	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High	3216	20	Aftertreatment 1 Intake NOx
6462	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High	3226	20	Aftertreatment 1 Outlet NOx
6463	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High	3226	20	Aftertreatment 1 Outlet NOx

Service Fault Code	Service Description	J1939 SPN	J1939_FMI	J1939_SPN Description
6464	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High	3226	20	Aftertreatment 1 Outlet NOx
6467	Fan Speed - Data Valid but Above Normal Operational Range - Most Severe Level	1639	0	Fan Speed
6468	Fan Speed - Data Valid but Below Normal Operational Range - Most Severe Level	1639	1	Fan Speed
	Fan Speed- Data Erratic, Intermittent, or Incorrect	1639	2	Fan Speed
6471	Fan Blade Pitch Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source	520784	3	Fan Blade Pitch Position Sensor Circuit
6472	Fan Blade Pitch Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source	520784	4	Fan Blade Pitch Position Sensor circuit
6473	Fan Blade Pitch - Mechanical system not responding or out of adjustment	520784	5	Fan Blade Pitch
6475	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Mechanical system not responding or out of adjustment	3363	7	Aftertreatment 1 Diesel Exhaust Fluid Tank 1
6476	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level	3363	18	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater
6477	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage above normal, or shorted to high source	5491	3	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay
6478	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage below normal, or shorted to low source	5491	4	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay
6479	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage above normal, or shorted to high source	3363	3	Aftertreatment 1 Diesel Exhaust Fluid Tank 1Heater
6481	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage below normal, or shorted to low source	3363	4	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater
6482	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Current below normal or open circuit	4340	5	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State

Appendix

Service Fault Code	Service Description	J1939		J1939 SPN Description
		SPN	FMI	
6483	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Current below normal or open circuit	4342	5	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State
6484	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Current below normal or open circuit	4344	5	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State
6493	Electronic Throttle Control Actuator Driver Circuit-Voltage above normal, or shorted to high source	3464	3	Electronic Throttle Control Actuator Driver Circuit
6494	Electronic Throttle Control Actuator Driver Circuit-Voltage above normal, or shorted to low source	3464	4	Electronic Throttle Control Actuator Driver Circuit
6496	Electronic Throttle Control Actuator Driver Circuit-Voltage above normal, or shorted to high source	3464	3	Electronic Throttle Control Actuator Driver Circuit
6497	Engine Intake Throttle Actuator Position Sensor Circuit- Voltage above normal, or shorted to high source	51	3	Engine Intake Throttle Actuator Position Sensor Circuit
6498	Engine Intake Throttle Actuator Position Sensor Circuit- Voltage above normal, or shorted to low source	51	4	Engine Intake Throttle Actuator Position Sensor Circuit
6499	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level	3597	18	ECU Power Output Supply Voltage #1
6511	Maintain ECU Power Lamp - Voltage Above Normal, or Shorted to High Source	6655	3	ECU Power Lamp
6512	Maintain ECU Power Lamp - Voltage Below Normal, or Shorted to Low Source	6655	4	ECU Power Lamp
6513	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Data Valid But Below Normal Operating Range	5745	18	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater
6517	Aftertreatment SCR Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level	4364	18	Aftertreatment 1 SCR Conversion Efficiency

Service Fault Code	Service Description	J1939 SPN	FMI	J1939 SPN Description
6521	Aftertreatment Outlet NOx Sensor Circuit- Voltage below normal or shorted to low source	3226	4	Aftertreatment Outlet NOx Sensor Circuits
6522	Coolant Level Sensor 1 Circuit - Voltage above normal, or shorted to high source	111	3	Engine Coolant Level
6523	Coolant Level Sensor 1 Circuit - Voltage below normal, or shorted to low source	111	4	Engine Coolant Level
6524	Engine Oil Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source	175	3	Engine Oil Temperature 1
6525	Engine Oil Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source	175	4	Engine Oil Temperature 1
6526	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Out of Calibration	1761	13	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
6527	Aftertreatment Diesel Exhaust Fluid Return Valve - Mechanical system not responding or out of adjust	4376	7	Aftertreatment 1 Diesel Exhaust Fluid Return Valve
6529	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage Above Normal, or Shorted to high source	5746	3	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay
6531	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage above normal, or shorted to high source	4340	3	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State
6532	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage below normal, or shorted to low source	4340	4	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State
6533	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage above normal, or shorted to high source	4342	3	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State
6534	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage below normal, or shorted to low source	4342	4	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State
6535	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage above normal, or shorted to high source	4344	3	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State

Appendix

Service Fault Code	Service Description	J1939		J1939 SPN Description
		SPN	FMI	
6536	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage below normal, or shorted to low source	4344	4	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State
6537	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay - Mechanical system not responding or out of adjustment	5491	7	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay
6539	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect	4765	2	Aftertreatment Diesel Oxidation Catalyst Intake Temperature
6551	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source	3610	3	Aftertreatment Diesel Particulate Filter Outlet
6552	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source	3610	4	Aftertreatment Diesel Particulate
6553	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Data erratic, intermittent or incorrect	3610	2	Aftertreatment Diesel Particulate Filter Outlet Pressure
6556	Engine Intake Air Heater 1 Circuit - Voltage above normal, or shorted to high source	729	3	Engine Intake Air Heater Driver #1
6557	Engine Intake Air Heater 1 Circuit - Voltage below normal, or shorted to low source	729	4	Engine Intake Air Heater Driver #1
6559	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage below normal, or shorted to low source	3031	4	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
6562	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Root Cause Not Known	1761	11	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
6563	Auxiliary Intermediate (PTO) Speed Switch Validation - Data erratic, intermittent or incorrect	611	2	System Diagnostic Code #1
6565	Aftertreatment 1 Outlet NOx Sensor - Abnormal rate of change	3226	10	Aftertreatment 1 Outlet NOx
6568	Aftertreatment Regeneration Inhibit Switch - Data erratic, intermittent or incorrect	3695	2	Aftertreatment Regeneration Inhibit Switch
6581	Aftertreatment 1 Outlet NOx Sensor Heater - Abnormal rate of change	5031	10	Aftertreatment 1 Outlet Gas NOx Sensor Heater Ratio
6597	SCR System Cleaning Inhibited Due to System Timeout - Condition Exists	6928	31	SCR System Cleaning Inhibited Due to System Timeout



Dynapac (China) Compaction & Paving Equipment Co., Ltd.

Atlas Copco Construction Technique Product Company China
No. 38, QuanWang Road, WuQing High Tech Industrial Park, 301700, Tianjin, China

www.atlascopco.com