DYNAPAC
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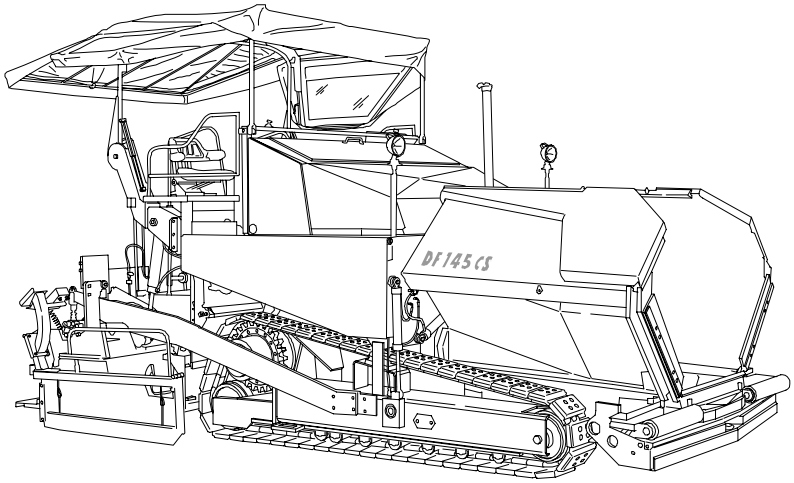
OPERATION
&
MAINTENANCE

Paver finisher
Svedala Demag
DF 145 C
DF 145 CS

Type 438 / 439



Keep this manual for future reference

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V Preface

Safe operation of the machine requires specific knowledge that is imparted by the present operating instructions. The information is provided in a concise, clearly structured form. The individual chapters are arranged in alphabetical order and every chapter starts with page 1. The individual pages are identified by the chapter letter and the page number.
Example: Page B 2 is the second page of chapter B.

These operating instructions cover various machine options. Make sure that during operation and maintenance work the description appropriate to the machine option is used.

Safety instructions and important notes are identified by the following pictograms:

f Precedes safety instructions that must be observed in order to prevent danger to personnel.

m Precedes notes that must be observed to prevent damage to equipment.

A Precedes general notes and explanations.

t Used to indicate standard equipment.

o Used to indicate optional equipment.

In the interest of continued development, the manufacturer reserves the right to make changes to the machine (which will not, however, change the essential features of the type of machine described) without updating the present operating instructions at the same time.

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1 General safety instructions

1.1 Acts, directives, accident prevention regulations

A The locally applicable acts, directives and accident prevention regulations shall be observed, even if the attention is not specifically directed to these.
The operator himself shall be responsible for the observation and performance of the related regulations and actions!

A The following alerts, prohibitions and instructions refer to the risks to which people, machinery and environment are exposed.

A Ignoring these instructions, bans and commands may lead to fatal injuries!

A Furthermore, the Dynapac publication "Directives for the correct and specified application of pavers" shall also be observed.

1.2 Warning instructions

Warning pointing to hazardous place or danger!
Not observing the warning instructions may lead to injuries of life and limb!

Warning: risk of pulling in!

m In this area / with these equipment as a result of rotating or transportation parts, there is a risk of pulling in!
Perform each operation only with equipment swicthed off!

Attention: electric voltage!

m All maintenance and repair work on the screed's electrical system must always be carried out by an electrician!

Attention: suspended load!

m Never stand under suspended load!

Warning: risk of squeezing!

m Risk of squeezing arises due to the operation of certain parts, use of some functions and the movement of the machine.
Always make sure that no one stays in the areas exposed to risk!

Attention: risk of hand injury!

Attention: hot surfaces or hot liquids!

Warning, risk of falling off!

Attention: hazardous batteries!

Attention: materials harmful to health and irritating substances!

Attention: flammable materials!

Attention: gas bottles!

1.3 Prohibitive signs

It is prohibited to open / step on / reach into / perform / adjust during operation or when the traction engine is running!

Do not start the engine/drive!
Maintenance and repair works can be carried out only with the Diesel engine turned off!

Do not sprinkle with water!

Do not extinguish with water!

Do-it-yourself maintenance is prohibited!
Maintenance can be performed by skilled professionals only!

A Contact the Dynapac service!

Danger of fire: do not use open flame and no smoking!

Do not turn on!

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1.4 Protective gear

A The applicable local regulations may define the use of different protective gear! Observe these specifications!

Protect your eyes with googles!

Wear appropriate head protection!

Protect your hearing with appropriate ear mufflers!

Protect your feet with safety footwear!

Always wear tight, conforming working coveralls!
Wear visibility vest for good visibility!

In case of polluted air, wear respiratory mask!

1.5 Environmental protection

A The locally applicable acts, directives and waste disposal regulations shall be observed, even if the attention is not specifically directed to these.
During cleaning, maintenance and repair operation the materials polluting water e.g.:

- lubricants (oils, grease)
- hydraulic oil
- gas oil
- coolant
- detergents

may not enter the soil or the sewer system!

These materials shall be collected, stored, transported in the correct containers until professional disposal!

Material harmful for the environment!

1.6 Fire prevention

A The applicable local regulations may specify the mounting of appropriate fire extinguishers!
Observe these specifications!

Fire fighting device
(optional equipment)

1.7 Further instructions

m Observe the manufacturer's and other instructions!

A e.g. the maintenance instructions of the engine manufacturer

m Description / figure in case of an electrically heated design!

m Description / figure in case of an electrically heated design!

A Correct use and application

A

The “Guidelines for the Correct Use and Application of Paver finishers” compiled by Dynapac are included in the scope of delivery for the present machine. The guidelines are part of the present operating instructions and must always be heeded. National regulations are fully applicable.

The road construction machine described in the present operating instructions is a paver finisher that is suited for laying mixed materials, roll-down concrete or lean-mixed concrete, track-laying ballast and unbound mineral aggregates for foundations for paving.
This machine shall be used, operated and maintained for the purpose of the intended work as included in the operation manual. Any other use is regarded as improper use and can cause injury to persons or damage to the paver finisher or other equipment or property.

Any use going beyond the range of applications described above is regarded as improper use and is expressly forbidden! Especially in those cases where the paver finisher is to be operated on inclines or where it is to be used for special purposes (construction of dumps, dams), it is absolutely necessary to contact the manufacturer.

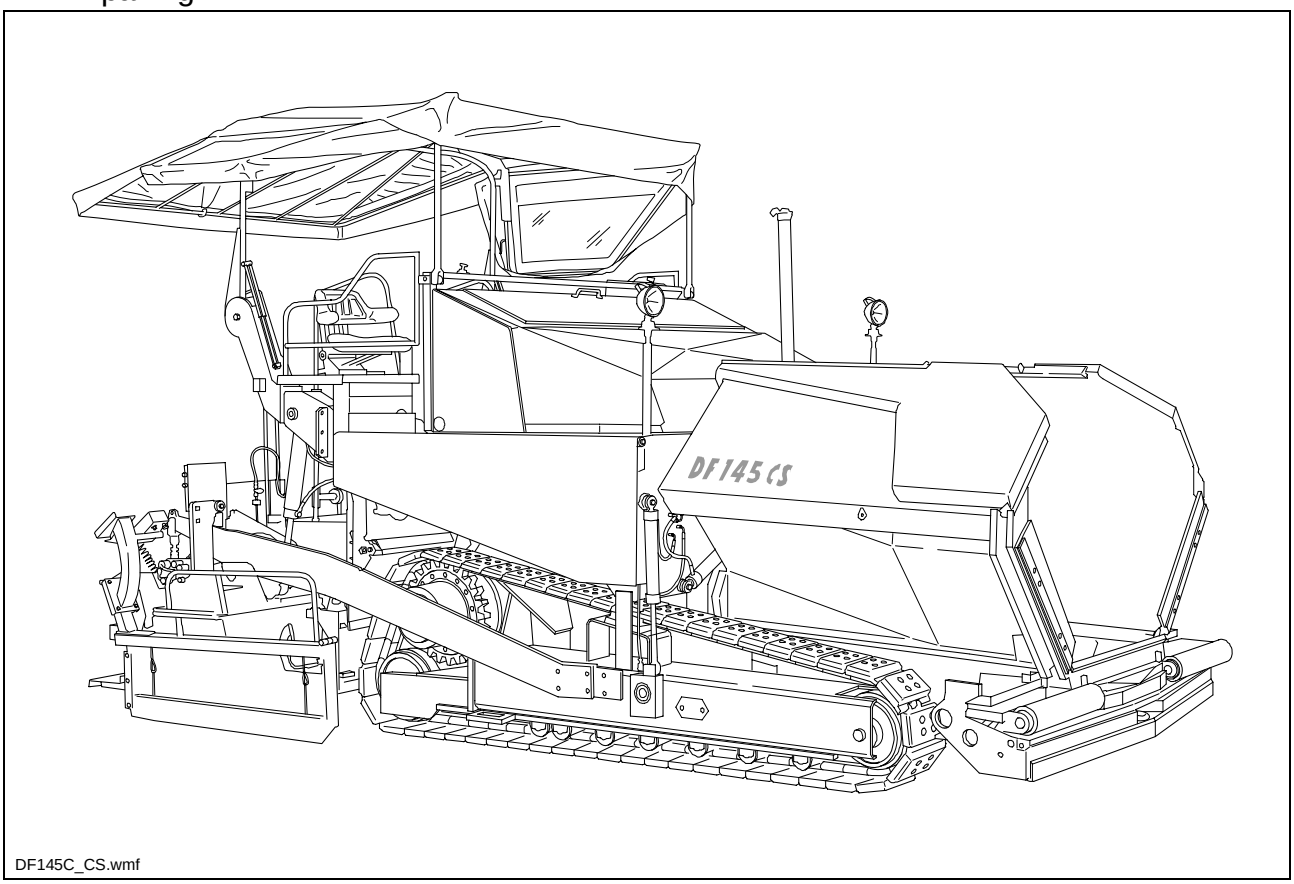
Duties of the user: A “user” within the meaning of the present operating instructions is defined as any natural or legal person who either uses the paver finisher himself, or on whose behalf it is used. In special cases (e.g. leasing or renting), the user is considered the person who, in accordance with existing contractual agreements between the owner and the user of the paver finisher, is charged with the observation of the operating duties.
The user must ensure that the paver finisher is only used in the stipulated manner and that all danger to life and limb of the operator, or third parties, is avoided. In addition to this, it must be ensured that the relevant accident prevention regulations and other safety-related provisions as well as the operating, servicing and maintenance guidelines are observed. The user must also ensure that all persons operating the equipment have read and understood the present operating instructions.

Mounting of attachments: The paver finisher must only be operated in conjunction with screeds that have been approved by the manufacturer. Mounting or installation of any attachments that will interfere with or supplement the functions of the paver finisher is permitted only after written approval by the manufacturer has been obtained. If necessary, the approval of local authorities has to be obtained.
Any approval obtained from local authorities does not, however, make the approval by the manufacturer unnecessary.

B Vehicle description

1 Application

The Svedala Demag DF 145 C / DF 145 CS paver finisher is a caterpillar paver finisher which is used for laying bituminous mixed material, roll-down or lean-mixed concrete, track-laying ballast and unbound mineral aggregates for foundations for paving.



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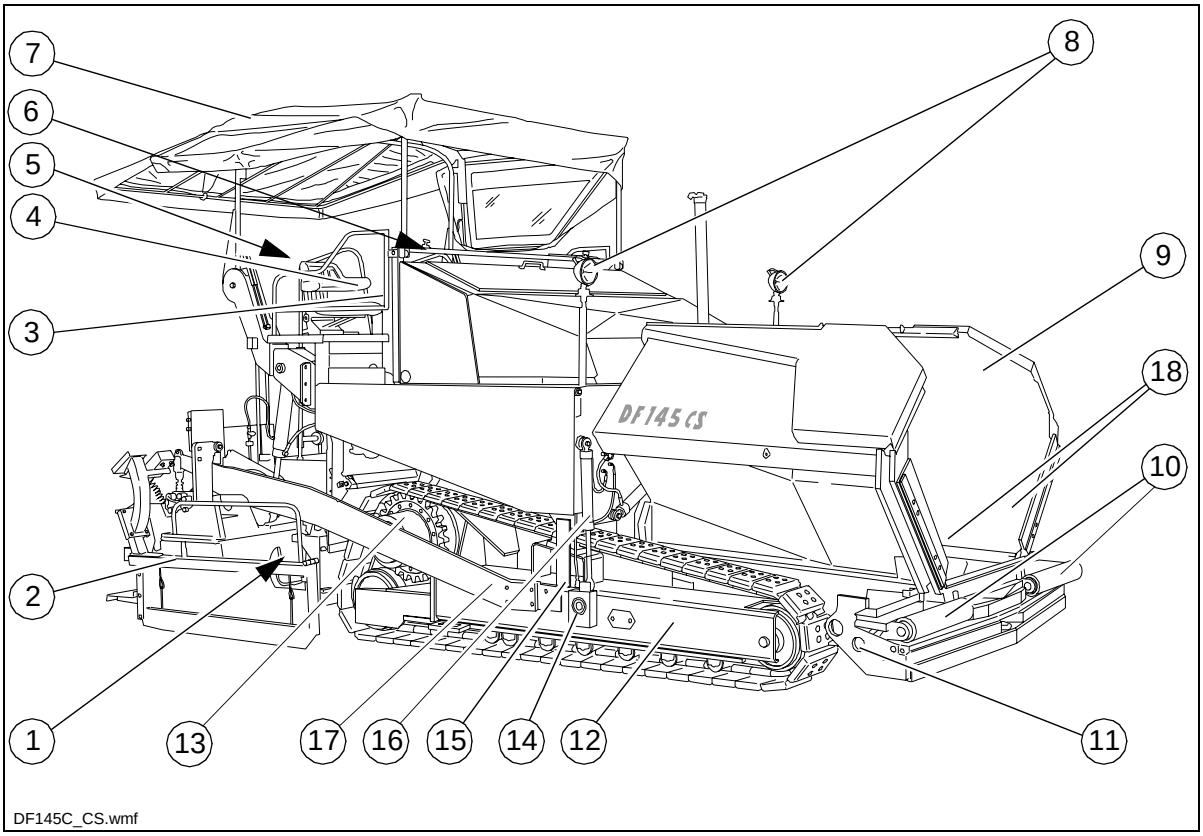
2 Description of assemblies and functions



No.		Denomination
1	t	Auger
2	t	Screed
3	t	Operator’s platform
4	t	Storage space for toolboxes on the left/right sides
5	t	Paving thickness indicator
6	t	Operating panel (can be moved to either side)
7	o	Protective roof
8	o	Working lights
9	t	Material compartment (hopper)
10	t	Truck push rollers
11	t	Tube for sensor rod (direction indicator) and holder for levelling shoe
12	t	Caterpillar drive
13	t	Travel drive of the caterpillar drive
14	t	Traction roller
15	t	Traction crossbeam rail
16	t	Levelling cylinder for paving thickness
17	t	Crossbeam
18	o	Hydraulic hopper lid

t = Standard equipment	o = Optional equipment

2.1 Vehicle

Construction

The paver finisher has a welded steel frame on which the individual components are mounted.

The caterpillar drives compensate uneven areas on the ground; the suspension of the attached screed additionally helps to attain a high paving precision.
The continuously adjustable hydrostatic travel drive allows the speed of the paver finisher to be matched to all work conditions.

The operation of the road construction equipment is considerably facilitated by the automatic material handling system, the independent travel drives and the clearly structured operating components and controls.

The following extra equipment (option) is available:

- Automatic levelling/slope control system
- Ultrasonic sensors for material transfer (controller)
- Additional cut-off shoe
- Larger working widths
- Automatic central lubrication system for the paver finisher and/or the screed
- Protective roof
- Further equipment and upgrade options on request

Engine: The paver finisher is driven by a water cooled diesel engine. For further details see the technical data and the engine's instruction manual.

Drive unit: Both caterpillar drives are directly driven by separate drives. They operate directly, without any drive chains which require maintenance or servicing.
The tension of the caterpillar chains can be readjusted using tensioners.

Hydraulic system: The diesel engine drives the hydraulic pumps for all main drives of the paver finisher via the attached distribution gear and its auxiliary drive shafts.

Travel drive: The continuously adjustable travel drive pumps are connected to the travel drive engines by means of high pressure hydraulic hoses.
These oil motors drive the caterpillar chains via planetary gears that are mounted directly inside the drive wheels of the caterpillar chains.

Steering system/operator's platform: The independent hydrostatic travel drives allow the finisher to be turned on the spot.
The electronic synchronisation, controlled from the operating panel, ensures that the finisher runs straight ahead.
The operating panel can be secured in a position at the left-hand or the right-hand side of the paver finisher by means of a latch accessible from above.

Push roller cross bar: The push rollers for material trucks are fastened to a cross bar that is pivoted at its center.
This cross bar allows to compensate for different distances to the rear wheels of material trucks. The paver finisher thus deviates less from its course and paving in curves is made easier.

Material compartment (hopper): The hopper inlet is equipped with a conveyor system that empties the hopper and transfers the material to the auger.
The hopper can hold approx. 14.2 t.
To facilitate emptying and to improve material transfer, each of the lateral covers of the hopper can be hydraulically moved (option).
The hydraulic front hopper lids (o) ensure that no material remains at the front of the feeding hoppers.

Material transfer: The paver finisher is equipped with two conveyors driven separately that transfer the material from the hopper to the augers.
By scanning the filling height during the paving procedure, the transfer amount or speed is regulated fully automatically.

Augers: The augers are driven and actuated independently from the conveyors. The left-hand and the right hand half of the auger can be controlled separately. The drive system is fully hydraulic.
The conveying direction can be changed towards the center or towards the outside. This ensures that there is always a sufficient supply with material even if an excessive amount of material is required at one side. The auger speed is continuously controlled by sensors that monitor the material flow.

Height adjustment and extension of augers: Height adjustment and extension of augers ensure optimum adaptation to a wide range of paving thicknesses and widths.

The basic configuration allows the height to be adjusted by attaching chains to the tractions crossbeams and by actuating the hydraulic screed lifting device.
When using ratchets for height adjustment (option), barrel nuts at the guide supports in the rear wall are used to adjust the height.
Another variant allows the height to be regulated at the operating panel by means of hydraulic cylinders (option).

Auger segments of different lengths can be attached to easily adapt to the different paving widths.

Automatic levelling/slope control system: The slope control system (option) allows the regulation of the traction point either on the LH or RH sides, by maintaining a difference defined against the opposite side.
To determine the actual value, the two traction crossbeams are linked with a slope control rod.

The slope control system always operates in conjunction with the screed height adjustment of the opposite side.

By adjusting the height of the traction point of the crossbeam (traction roller), the paving thickness of the material or the laying height of the screed can be controlled.
Actuation occurs electro-hydraulically on both sides and can be controlled manually by means of toggle switches or automatically (by means of an electronic grade control system).

Screed lifting device: The screed can be lifted to transport height using the screed lifting device. Lifting occurs electro-hydraulically on both sides by actuating the hydraulic cylinders on the crossbeams and is controlled by means of toggle switches on the operating panel.

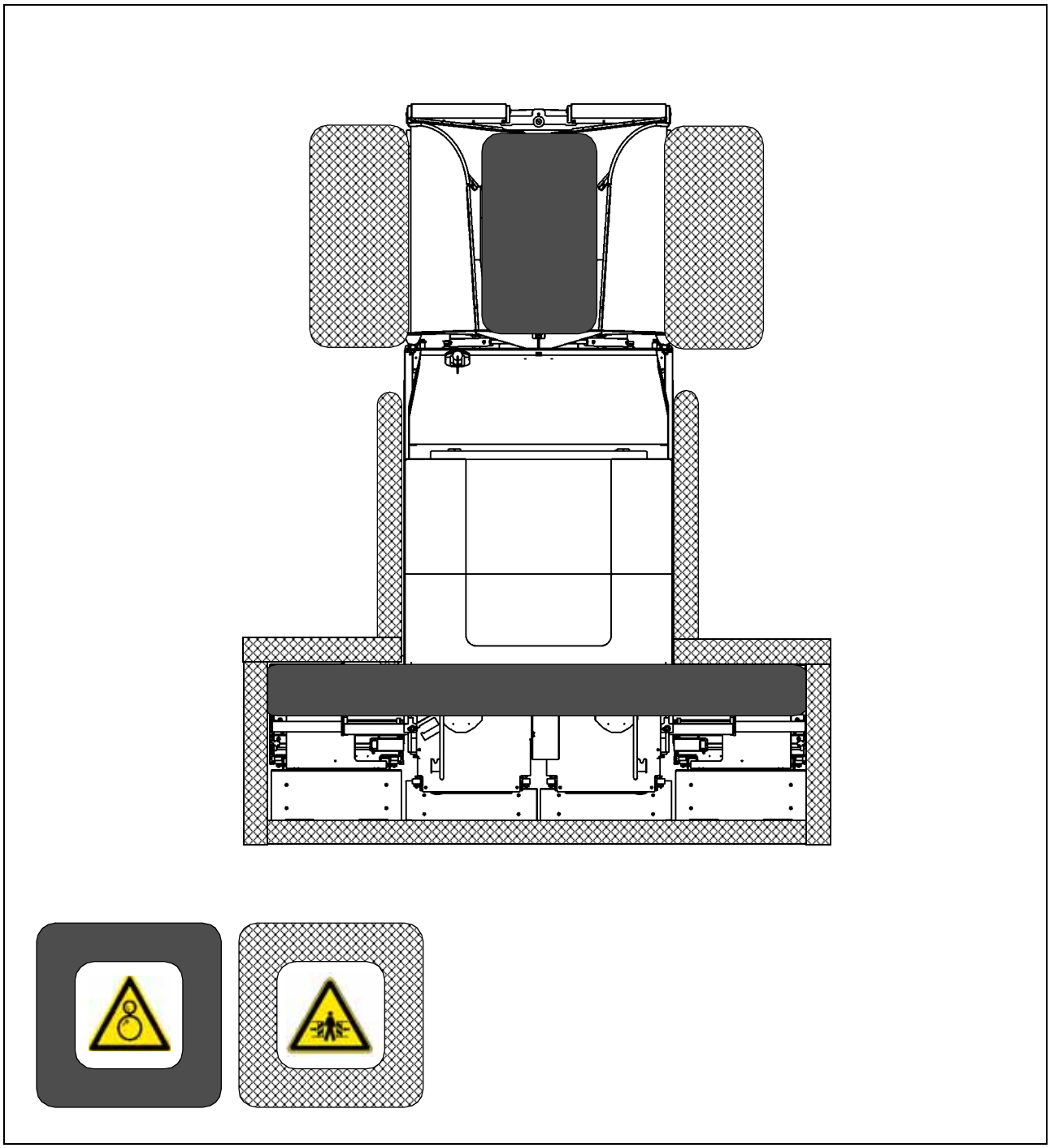
Automatic screed stop and screed charging/relieving device: The automatic screed stop prevents the screed marks caused by a stopped screed. When the paver finisher stops (during a truck change), the screed remains in floating position and relief pressure is applied, thus preventing the screed from sinking while stationary.

The screed relieving device puts a higher load on the traction unit, thus increasing the traction.
Activating the screed charging device can improve the compacting result under different paving conditions.

Central lubrication unit (o **):** The central lubrication pump fitted with a large lubricant tank supplies grease to the various lubrication circuits through various flow dividers. They supply lubricant to the service-sensitive points of lubrication (e.g. bearings) by adjustable intervals.

3 Danger zones

m In these areas of the machine there is a danger of pulling in or crushing due to the rotating, transporting or moving parts!

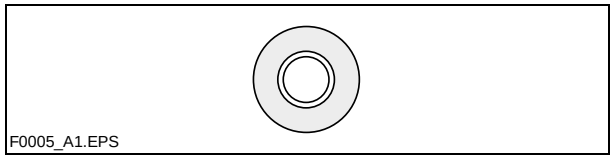


4 Safety devices

Safe operation is only possible when all operating and control elements are functioning correctly and when all safety devices are in position.

A Check the function of these devices at regular intervals.
(see chapter D, section 2.1).

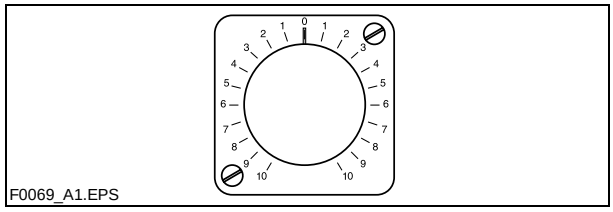
4.1 Emergency stop button



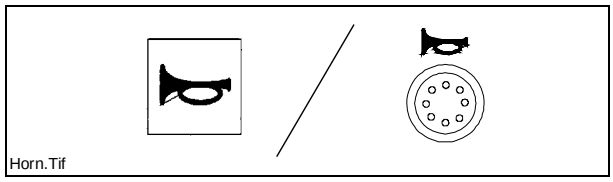
- on the operating panel
- on the two remote control units (option)

m Pressing the emergency stop button switches off the engine, the drives and the steering system. Corrective measures that might be necessary (anti-collision maneuvers, lifting the screed, etc.) are not possible in this case! Risk of accident!

4.2 Steering

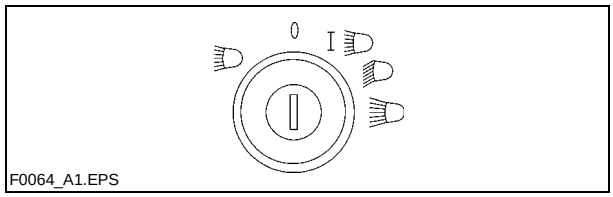


4.3 Horn

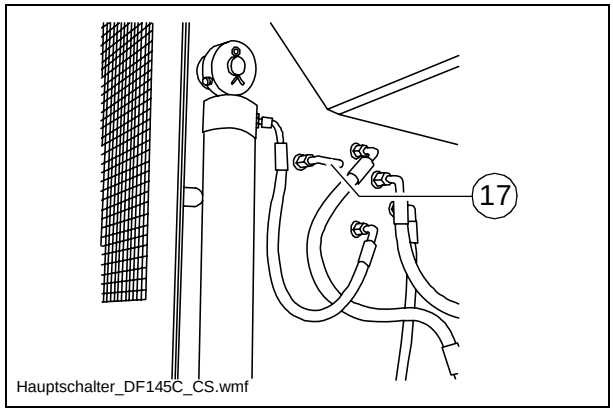


- on the operating panel
- on the two remote control units (option)

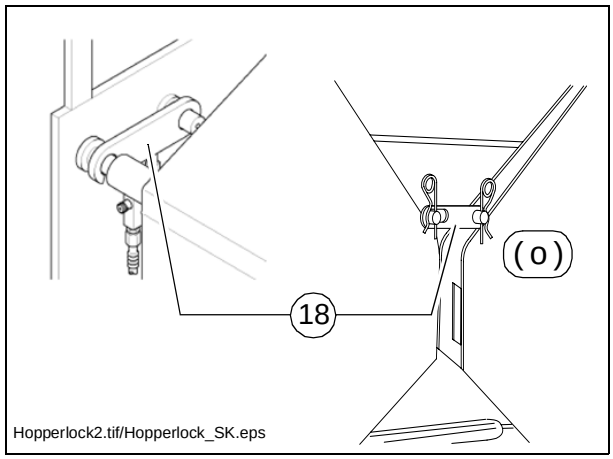
4.4 Ignition key / lights



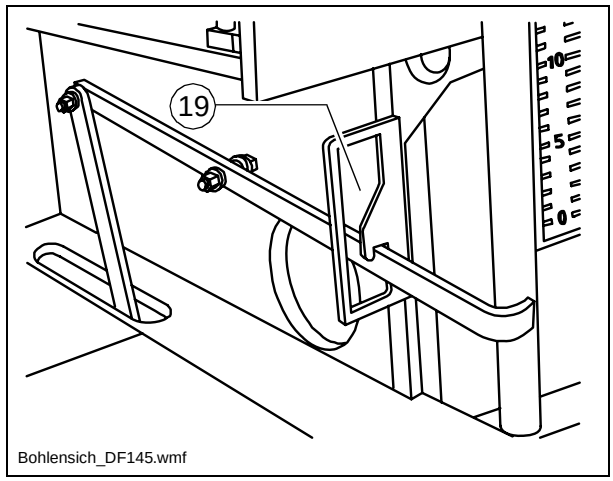
4.5 Main switch (17)



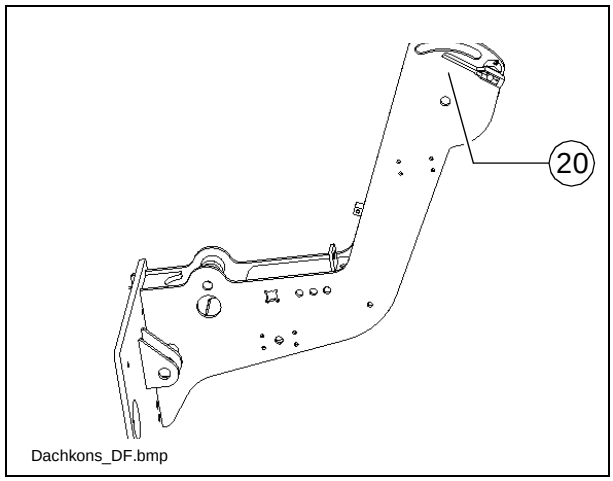
4.6 Hopper transport safeguards (18)

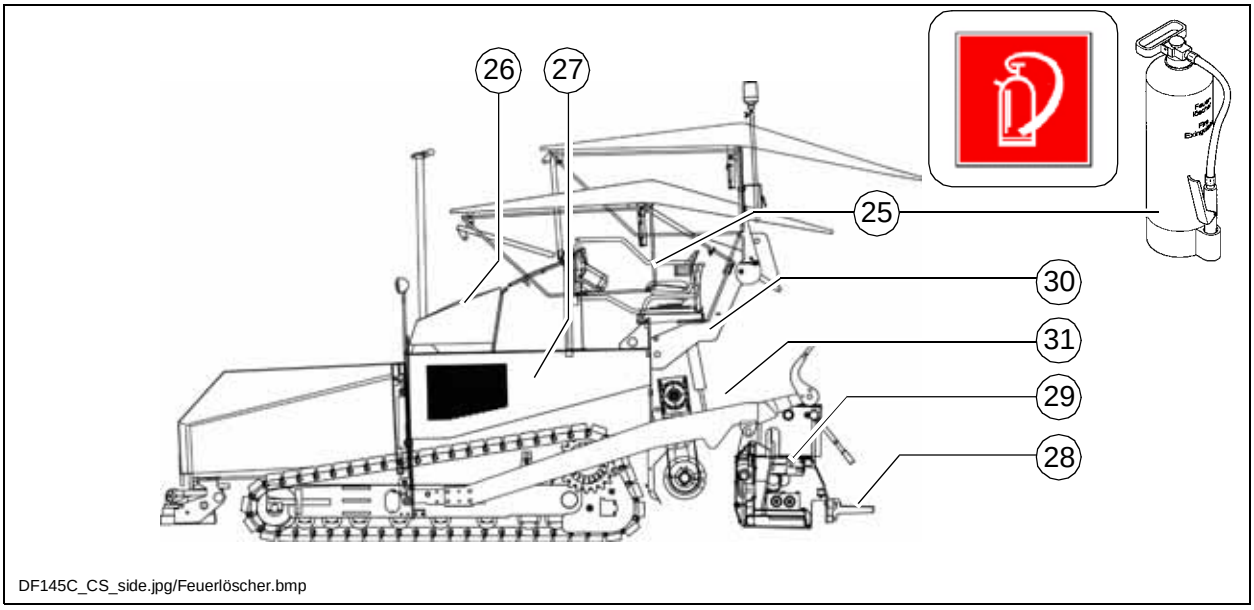


4.7 Screed transport safeguards (19)



4.8 Latch for protective roof (20)





DF145C_CS_side.jpg/Feuerlöscher.bmp

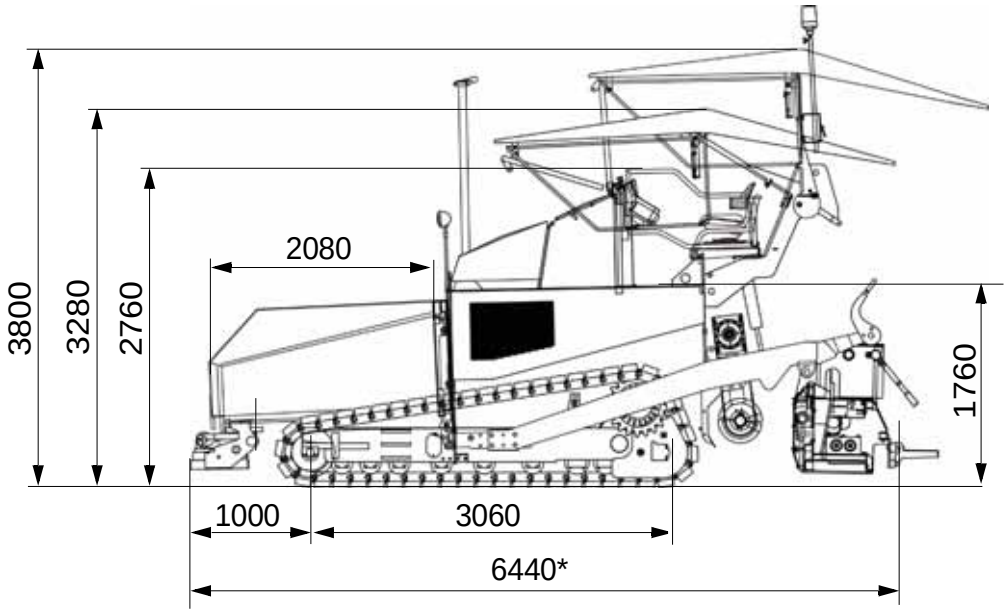
No.	Denomination
25	Fire fighting device
26	Engine hood
27	Lateral flaps
28	Walkway
29	Screed coverings
30	Screed warning light
31	Auger covers

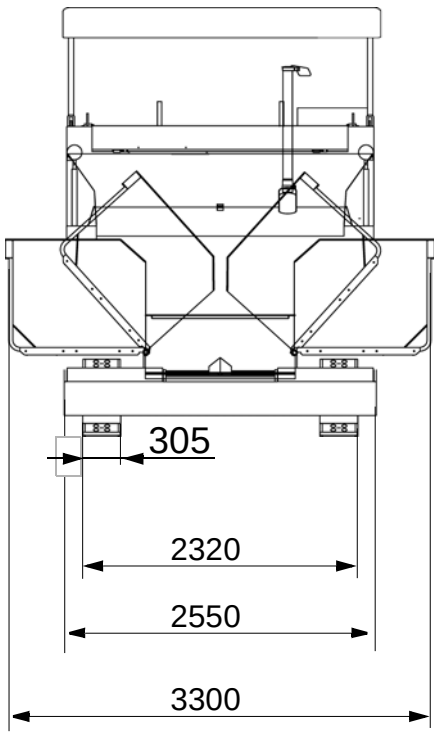
Accessories:

- Wedges
- Warning triangle
- First-aid kit

5 Technical data, standard configuration

5.1 Dimensions (all dimensions in mm)





*SB 30

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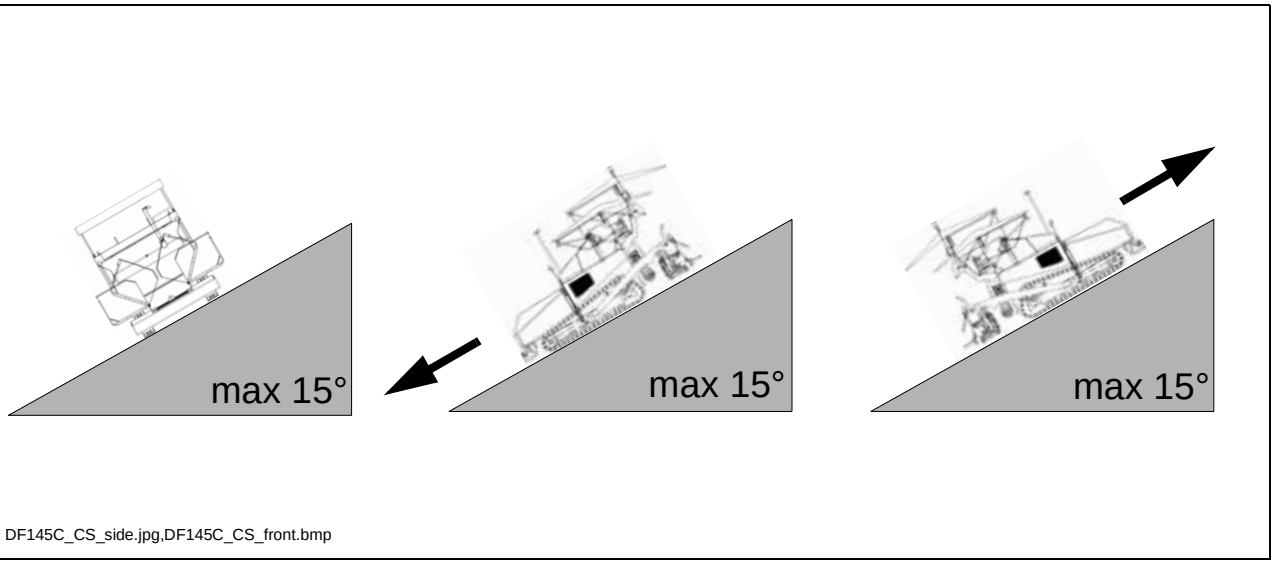
A For the technical data of the screed, see the operating instructions of the screed.

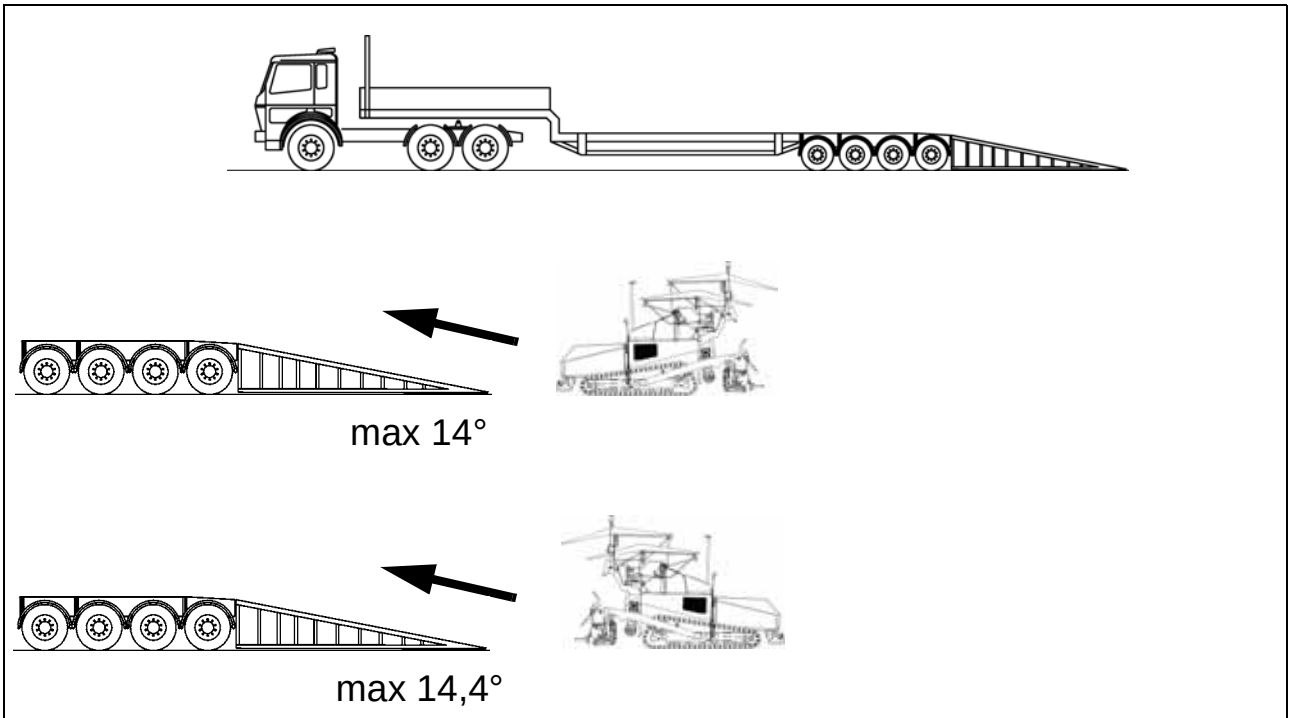
5.2 Allowed angle of rise and slope



DF145C_CS_side.jpg,DF145C_CS_front.bmp

A Before operating your machine in an inclined position (gradient, slope, lateral inclination) which is above the specified limit value, please, consult with the customer service for your machine!

5.3 Allowed angle of driving up



DF145C_CS_side.jpg

5.4 DF 145 C weights (all weights in t)

Paver finisher without screed	approx. 15.3
Paver finisher with screed: - EB 60	approx. 19.2
with extensions for max. working width, additionally max.:	approx.
with filled hopper additionally max.	approx. 14.2

A For the weights of the screed and the screed attachments, see the operating instructions for the screed.

5.5 DF 145 CS weights (all weights in t)

Paver finisher without screed	approx. 16.4
Paver finisher with screed: - EB 51	approx. 20.3
with extensions for max. working width, additionally max.:	approx.
with filled hopper additionally max.	approx. 14.2

A For the weights of the screed and the screed attachments, see the operating instructions for the screed.

5.6 Performance data for the DF 145 C

Screed used	Basic width (without cut-off shoes)	Minimum paving width (with cut-off shoe)	Continuously hydraulically adjustable up to	Maximum paving widths (with extension parts)	
EB 51	2.55	2.00	5.10	8.80	m
EB 51+	2.55	2.00	5.10	*	m
EB 60	3.00	2.45	6.00	9.70	m
EB 60+	3.00	2.45	6.00	*	m
SB 30	3.00	-	-	9.00 (E) 13.00 (gas)	m

*High-compression screeds available on request
The maximum working width depends on the paving conditions!

Travelling speed	0 - 5,0	km/h
Operating speed	0 - 23	m/min
Paving thickness	0 - 350	mm
Max. grain size	40	mm
Theoretical paving performance	900	t/h

5.7 Performance data for the DF 145 CS

Screed used	Basic width (without cut-off shoes)	Minimum paving width (with cut-off shoe)	Continuously hydraulically adjustable up to	Maximum paving widths (with extension parts)	
EB 51	2.55	2.00	5.10	8.80	m
EB 51+	2.55	2.00	5.10	*	m
EB 60	3.00	2.45	6.00	9.70	m
EB 60+	3.00	2.45	6.00	*	m
SB 30	3.00	-	-	9.00 (E) 13.50 (gas)	m

*High-compression screeds available on request
The maximum working width depends on the paving conditions!

Travelling speed	0 - 5,0	km/h
Operating speed	0 - 23	m/min
Paving thickness	0 - 350	mm
Max. grain size	40	mm
Theoretical paving performance	900	t/h

5.8 Travel drive/traction unit

Drive	Hydrostatic drive, continuously controllable
drive unit	Two separately driven caterpillar drives with rubber grouser chains
Turning capacity	Turning on the spot
Speed	See above

5.9 DF 145 C engine

Make/type	Cummins QSB6.7-C205
Model	6-cylinder (water cooled) Diesel engine
Performance	153 KW / 208 HP (at 1800 rpm)
Volume of fuel tank	(see chapter F)

5.10 DF 145 CS engine

Make/type	Cummins QSB6.7-C220
Model	6-cylinder (water cooled) Diesel engine
Performance	172 KW / 230 HP (at 1800 rpm)
Volume of fuel tank	(see chapter F)

5.11 Hydraulic system

Pressure build-up	Hydro-pumps driven by distribution gear (directly connected to the engine)
Pressure distribution	Hydraulic circuits for: - Travel drive - Material transfer and distribution - Screed drives for tamper / vibration (option) - Cylinder actuators for steering, hopper, levelling, screed lifting, extending/retracting screed parts, auger lift (option)
Hydraulic oil reservoir - volume	(see chapter F)

5.12 Material compartment (hopper)

Volume	about 6.5 m^3 = about 14.2 t
Minimum inlet height, center	520 mm
Minimum inlet height, outside	605 mm

5.13 Material transfer

Conveyors	Left and right side separately controllable
Drive	Hydrostatic, continuously controllable
Conveying volume controller	Fully automatic via configurable switching points

5.14 Material distribution

Augers	Left and right side separately controllable
Drive	Hydrostatic central drive, continuously controllable independent from the conveyor Auger halves can be switched to opposite directions
Conveying volume controller	Fully automatic via configurable switching points
Auger height adjustment	- mechanically via chain - mechanically (option) hydraulically (option)
Auger extension	With extension parts (see auger extension chart)

5.15 Screed lifting device

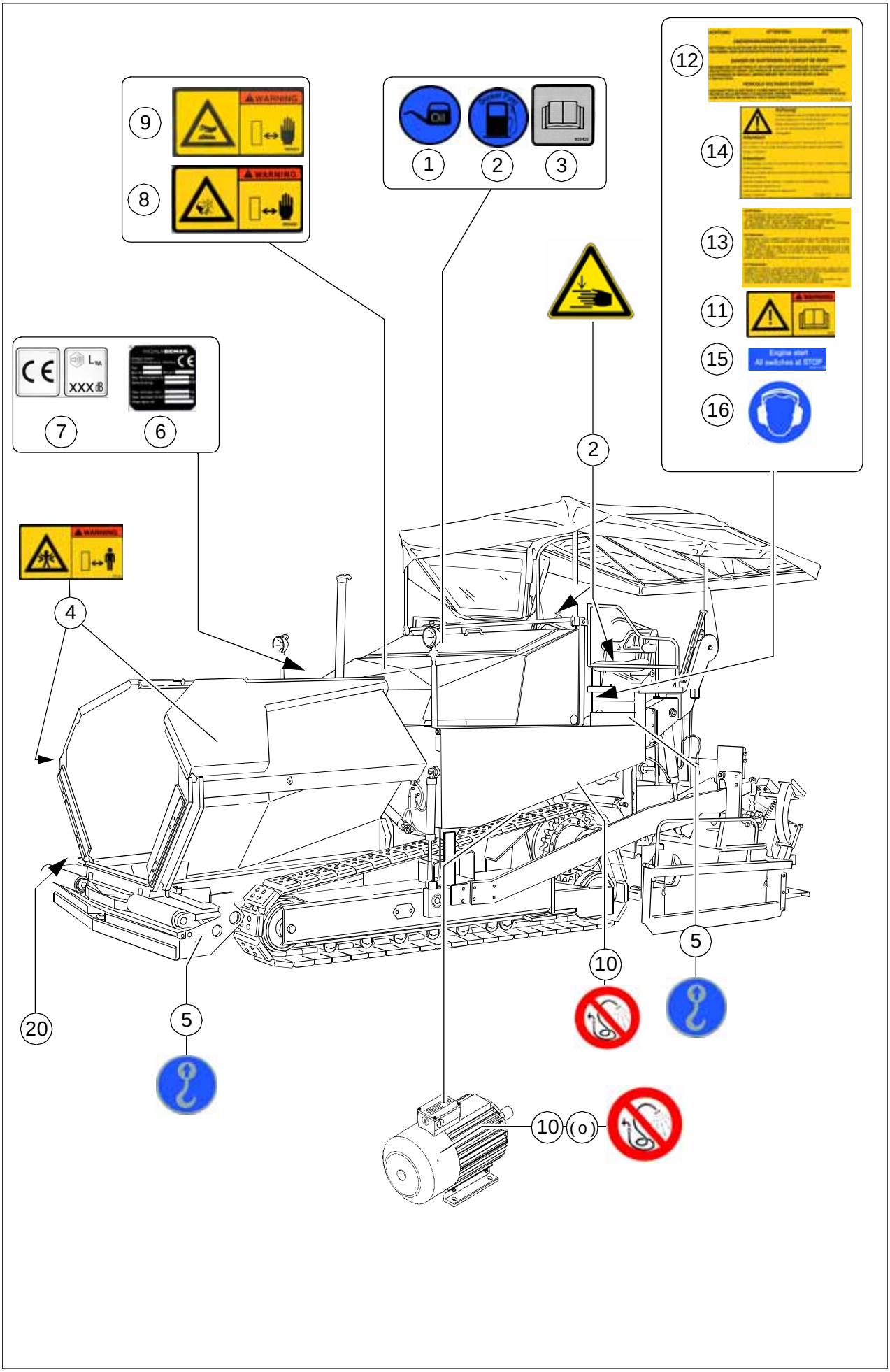
Special functions	At standstill: - Screed stop - Screed stop with pretensioning (max. pressure 50 bar) During paving: - Screed charging - Screed relieving (max. pressure 50 bar)
Levelling system	Mechanical grade control system, optional systems with and without slope control system

5.16 Electrical system

On-board voltage	24 V
Batteries	2 x 12 V, 100 Ah
Alternator (o)	17 kVA / 400 V 20 kVA / 400 V 28 kVA / 400 V
Fuses	see chapter F, section 5

A For the filling volumes of lubricants and operating substances, see chapter F.

6 Location of instruction labels and identification plates



No.	Denomination
1	Label "Filler neck for diesel fuel" *
2	Label "Filler neck for engine oil" *
3	Label "Operating instructions"
4	Warning label "Danger of squeezing!" **
5	Label "Securing or fixing points for crane transportation" **
6	Paver finisher identification label
7	Plate "CE + noise level" (O)
8	Warning plate "Fan danger!"
9	Warning plate "Hot surface!"
10	Plate "Spraying with water prohibited"
11	Label "Heed the operating instructions!" ***
12	Label "High voltage!"
13	Label "Operating instructions for the engine"
14	Plate "Crossbeam lock"
15	Plate "All switches to STOP" ***
16	Label "Wear ear mufflers"
17	Label "Risk of hand injury"
18	Punched vehicle identification number

* Labels are located beneath the engine hood / maintenance flap

** Labels are located on both sides of the paver finisher

*** Label is located on the operating panel, above the steering wheel

6.1 Identification label for the paver finisher (6)

Fertiger3.tif

No.	Denomination
1	Type of paver finisher
2	Year of manufacture
3	Serial number of the paver finisher series
4	Max. permissible operating weight, incl. all extension parts, in kg
5	Max. permissible load on the front axle, in kg
6	Max. permissible load on the rear axle, in kg
7	Rated performance in kW
8	Product identification number (PIN)

A The punched vehicle identification number on the paver finisher must match the product identification number (8).

7 EN standards

7.1 Continuous sound level

m The operator always must use ear protection. The imission value at the ear of the driver varies depending on the materials used for paving and may even rise above 85 dB (A). If no ear protection devices are used, hearing can be impaired.
The noise emission level of the paver finisher was measured under free-field conditions according to EN 500-6 draft, dated March, 1997, and ISO 4872.

DF 145 C vehicle

Sound pressure level at the operator's position (at the height of the head): L_{AF} = 83,1 dB(A)

Sound capacity level: L_{WA} = 109,0 dB(A)

Sound pressure level at the machine

Measuring point	2	4	6	8	10	12
Sound pressure level L_{AFeq} (dB(A))	75,4	72,8	71,9	75,6	72,2	74,9

DF 145 CS vehicle

Sound pressure level at the operator's position (at the height of the head): L_{AF} = 83,1 dB(A)

Sound capacity level: L_{WA} = 110,0 dB(A)

Sound pressure level at the machine

Measuring point	2	4	6	8	10	12
Sound pressure level L_{AFeq} (dB(A))	73,6	74,2	71,8	74,5	73,3	72,8

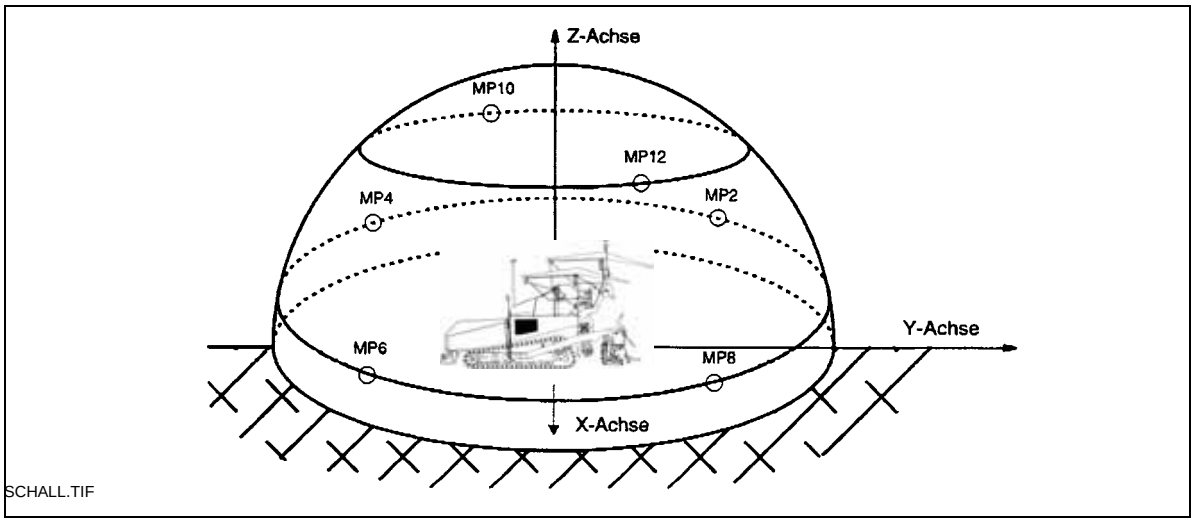
7.2 Operating conditions during measurement

The diesel engine was running at maximum speed. The screed was in working position, lowered to a rubber mat. Tamper and vibration unit were operated at min. 50%, while the augers were operated at a minimum of 40% and the conveyors were operated at a minimum of 10% of their maximum speed.

7.3 Measuring point configuration

Semispherical measuring surface with a radius of 16 m. The machine was at the centre. The measuring points had been assigned the following coordinates:

	Measuring points 2, 4, 6, 8			Measuring points 10, 12		
Coordinates	X	Y	Z	X	Y	Z
	±11.2	±11.2	1.5	- 4.32 +4.32	+10.4 -10.4	11.36 11.36



7.4 Vibration acting on the entire body

When the machine is used properly, the weighted effective acceleration values at the driver's seat of $a_w = 0.5\ m/s^2$ according to EN 1032-1995 draft are not exceeded.

7.5 Vibrations acting on hands and arms

When the machine is used properly, the weighted effective acceleration values at the driver's seat of $a_{hw} = 2.5\ m/s^2$ according to EN 1033-1995 draft are not exceeded.

7.6 Electromagnetic compatibility (EMC)

The following limit values are observed according to the stipulations of the EMC directive 89/336/EEC/08.95:

- Interference emission according to DIN EN 50081-1/03.93:
  < 40 dB µV/m for frequencies of 30 MHz - 230 MHz measured at a distance of 3 m
  < 47 db µV/m for frequencies of 20 MHz - 1 GHz measured at a distance of 3 m

- Interference immunity against electrostatic discharge according to DIN EN 61000-4-2/03.96 (ESD):
  The paver finisher did not show any discernible reactions to contact discharges of ± 4 KV and to air discharges of ± 8 KV.
  The modifications according to test criterion "A" are being met, i.e. the paver finisher continues to work without malfunction during the test.

A Electrical or electronic components and their arrangement may only be modified after written approval by the manufacturer has been obtained.

C 1.5 Transportation

1 Safety regulations for transportation

m Accidents can happen when the paver finisher and the screed are not properly prepared for transportation or when transportation is carried out improperly!

Reduce both the paver finisher and the screed to their basic widths. Remove all protruding parts (such as the automatic levelling system, auger limit switches, aprons, etc.). When transporting under a special permit, secure these parts!

Close the hopper lids and engage the hopper transport safeguards. Lift the screed and engage the screed transport safeguards. Convert the protective roof and engage the latch.

Check that the clamping device for the auger frame is fastened and that the telescopic tube cannot slide out (see chapter E, section 2.5).

Pack all parts that are not permanently fixed to the paver finisher and the screed into the appropriate boxes and into the hopper.
Close all coverings and check that they are securely seated.

In Germany, gas bottles must not be transported on the paver finisher or on the screed.
Disconnect the gas bottles from the gas system and protect them with their caps. Use a separate vehicle to transport them.

When loading via ramps, the paver finisher may slip aside, tilt or topple over.
Drive carefully! Keep the danger area free of persons!

Additional stipulations for transportation on public roads:

m In Germany; caterpillar pavers **must not be driven as self-propelling vehicles** on public roads.
Note that in other countries different regulations may apply.

The operator must be in the possession of a valid permit for vehicles of this type.

The operating panel must be moved to the side of the oncoming traffic and secured in this position.
The driving lights must be properly adjusted.

Only attachments and extension parts may be transported in the hopper, no material or gas bottles!

If necessary, the operator must be assisted by a second person when driving on public roads – especially at road crossings and junctions.

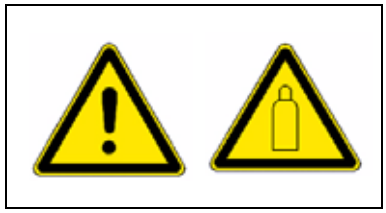
2 Transportation on low-bed trailers

m Reduce the paver finisher and the screed to their basic widths; also remove any attached side plates.
The maximum approach angle is indicated in the section entitled "Technical Data"!

2.1 Preparations

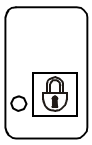
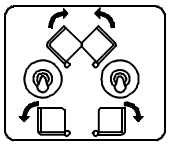
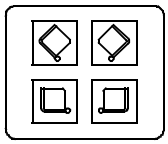
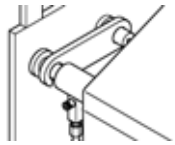
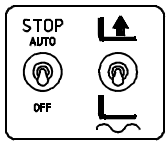
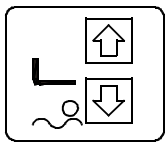
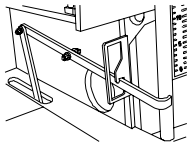
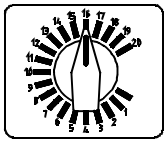
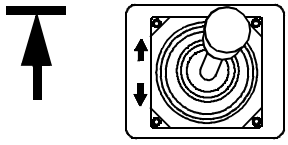
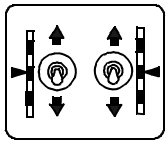
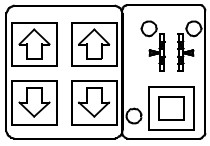
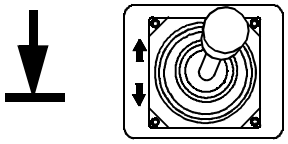
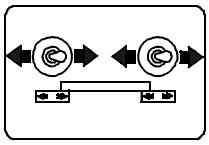
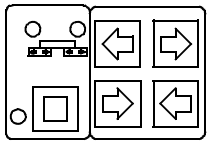
- Prepare the paver finisher for transportation (see chapter D).
- Remove all protruding or loose parts from the paver finisher and the screed (see also Screed operating instructions). Store these parts in a safe place.

f When screed is operated with the optional gas heating system:



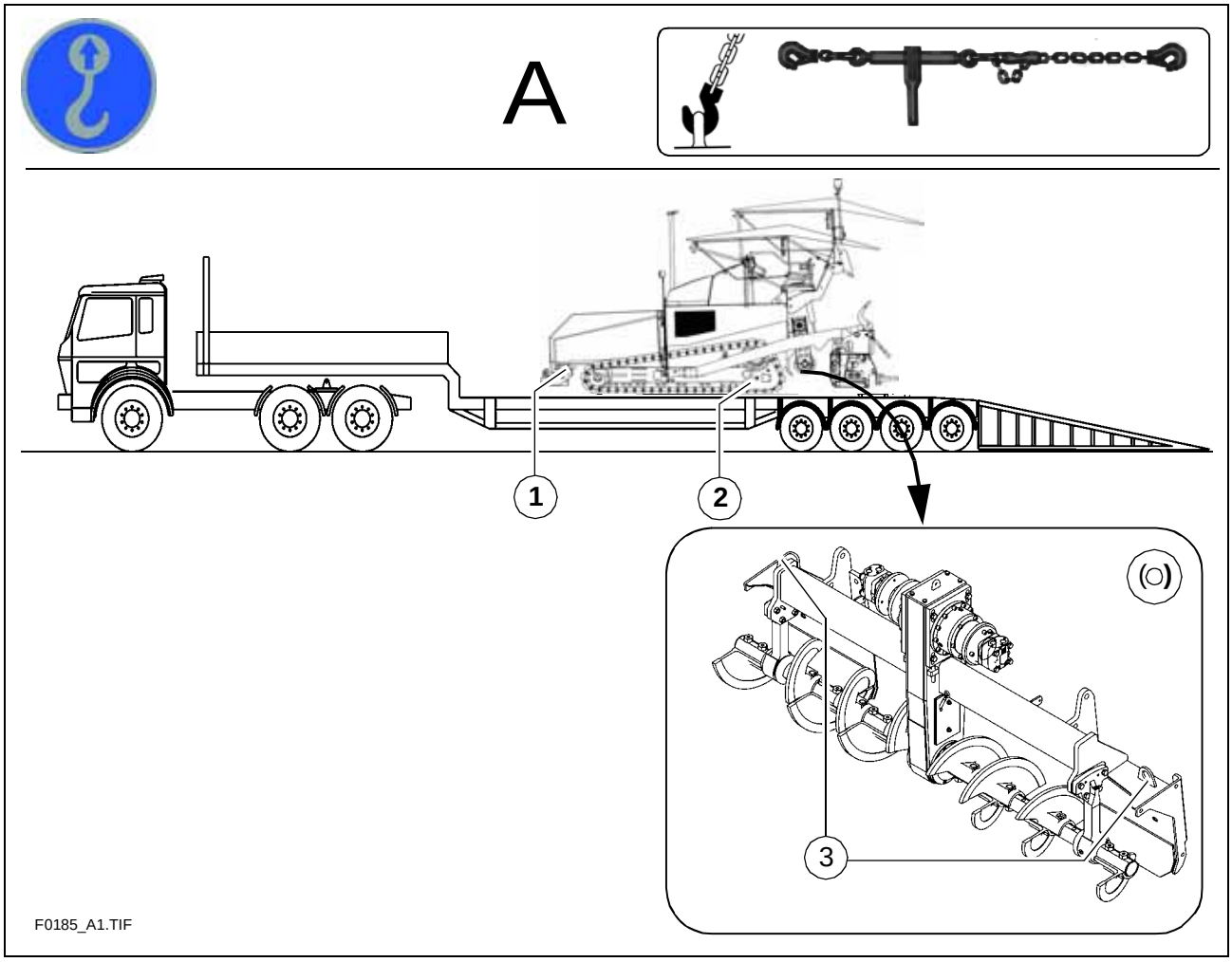
- Remove the gas bottles of the screed heater:
  - Close the main shut-off valves and the bottle valves.
  - Turn off the valves on the bottles and remove the gas bottles from the screed.
  - Transport the gas bottles on a second vehicle; heed all pertaining safety regulations.

.

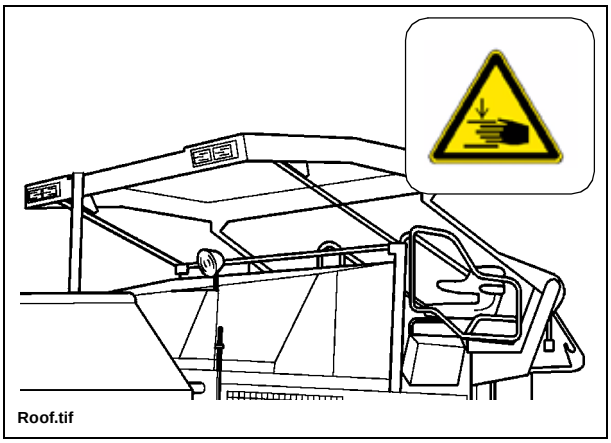
	Operation	Switch	Buttons
	- Disabling the interlocking of operation		
	- Close the hopper halves.		
	- Engage both hopper transport safeguards.		
	- Lift the screed.		
	- Engage screed transport safeguards.		
A Only when remote control is not connected.	- Turn the preselecting regulator to zero.		
	- Move the drive lever forward.		
	- The levelling cylinder are in fully extended position.		
	- Set the drive lever to mid-position.		
	- Retract the screed to the basic width of the paver finisher.		

2.2 Drive onto the low-bed trailer

f Make sure that there are no persons in the danger area during loading.



- Use the work gear and low engine speed to drive onto the low-bed trailer.
- Lower the screed onto wooden blocks on the low-bed trailer.
- Switch off the paver finisher.
- Attach and secure the protective hood to protect the operating panel.
- If necessary, swing down the protective roof:
- Take out the bolts and pull the roof to the front by gripping it with the bow-type handle. When it is in the lower position, secure it with the bolts.



2.3 Secure the paver finisher in its position to the low-bed trailer:

- Use only proper and permitted load fastening devices.
- Use the four securing points provided (1, 2).

A Depending on the equipment of the machine there can be further support points (3) on the auger frame (3)!

- Wait until the exhaust extension pipe has cooled down; then remove it and store it.

2.4 After transportation

- Remove the attachment devices.
- Swing up the protective roof: take out the bolts, push the protective roof forward to raise it and insert the bolts to lock it again.
- Mount the protective tarpaulin if it has been removed.
- Lift the screed to the transportation position and lock it.
- Start the engine and drive from the trailer at a low engine/traction speed.
- Park the paver finisher in a secure spot, lower the screed and switch off the engine.
- Remove the key and/or cover the operating panel with the protective hood and secure it.

3 Transportation

m Reduce the paver finisher and the screed to their basic widths; also remove any attached side plates.

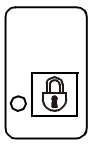
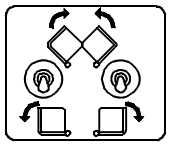
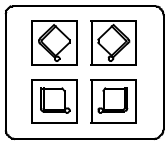
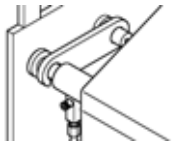
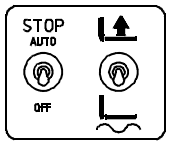
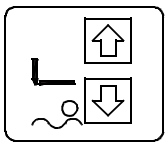
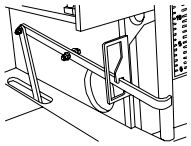
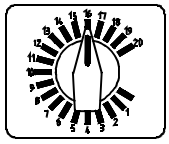
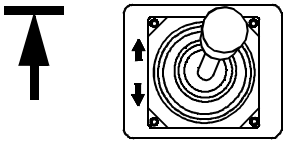
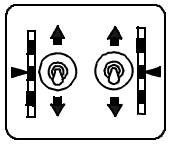
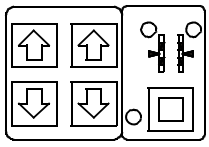
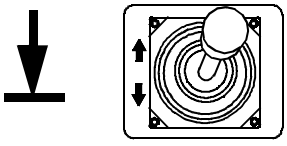
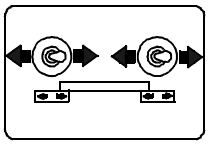
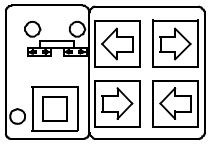
3.1 Preparations

- Prepare the paver finisher for transportation (see chapter D).
- Remove all protruding or loose parts from the paver finisher and the screed (see also Screed operating instructions). Store these parts in a safe place.

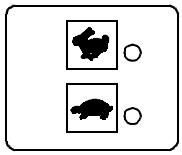
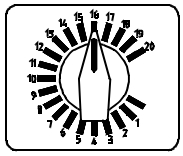
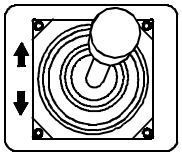
f When screed is operated with the optional gas heating system:

- Remove the gas bottles of the screed heater:
  - Close main shut-off valves and bottle valves.
  - Turn off the valves on the bottles and remove the gas bottles from the screed.
  - Transport the gas bottles on a second vehicle; heed all pertaining safety regulations.

.

	Operation	Switch	Buttons
	- Disabling the interlocking of operation		
	- Close the hopper halves.		
	- Engage both hopper transport safeguards.		
	- Lift the screed.		
	- Engage screed transport safeguards.		
A Only when remote control is not connected.	- Turn the preselecting regulator to zero.		
	- Move the drive lever forward.		
	- The levelling cylinder are in fully extended position.		
	- Set the drive lever to mid-position.		
	- Retract the screed to the basic width of the paver finisher.		

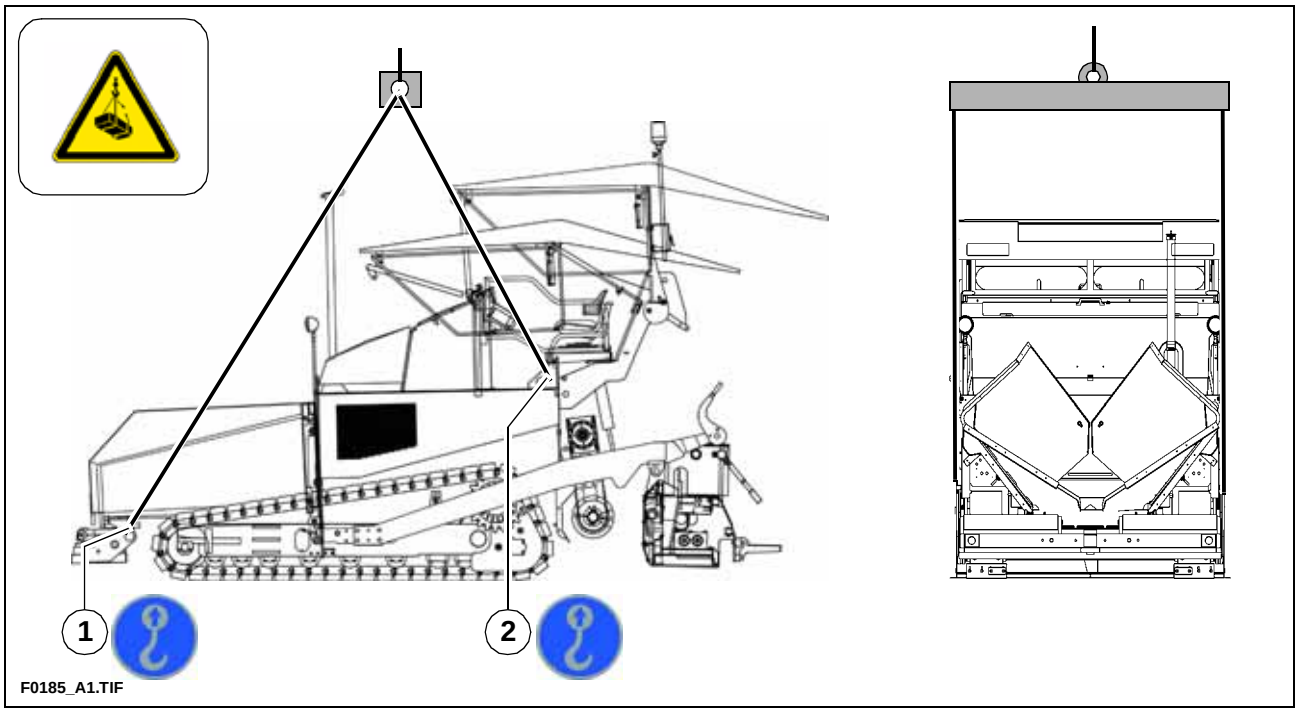
3.2 Driving mode

Warning	Marking	Marking
- Set the Fast/Slow switch to "Hare".		
- Turn the preselector to maximum.		
- Use the drive lever to regulate the speed.	 	

ƒ Press the emergency stop button when a dangerous situation arises!

4 Loading by crane

m Use only lifting gear that can bear the load.
(See Chapter B for weights and dimensions).



A Four lifting eyes (1, 2) are provided for loading the vehicle with a crane.

- Park the paver finisher and render it safe.
- Engage the transport safeguards.
- Remove any attachments and extension parts from the paver finisher and the screed until the basic width has been attained.
- Take off all protruding or loose parts and the gas bottles of the screed heater (see Chapters E and D).
- Swing down the protective roof.
- Attach the lifting gear to the four lifting eyes (1, 2).

m Make sure that the paver finisher remains in a horizontal position during transport!

5 Towing

f Heed all regulations and apply all safety measures applicable for towing heavy construction machines.

m The towing vehicle must be capable of securing the paver, even on slopes.

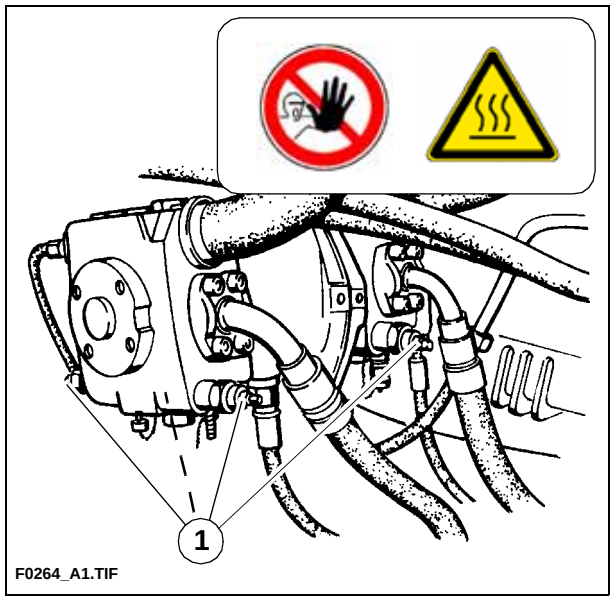
Use only approved tow bars!

If necessary, remove any attachments and extension parts from the paver finisher and the screed until the basic width has been attained.

A hand pump is located in the engine compartment (left side) that must be actuated to be able to tow the machine.
Pressure for releasing the traction system brakes is built up with the hand pump.

m Only release the traction system brakes when the machine is sufficiently secured against accidental rolling or is already properly connected to the towing vehicle.

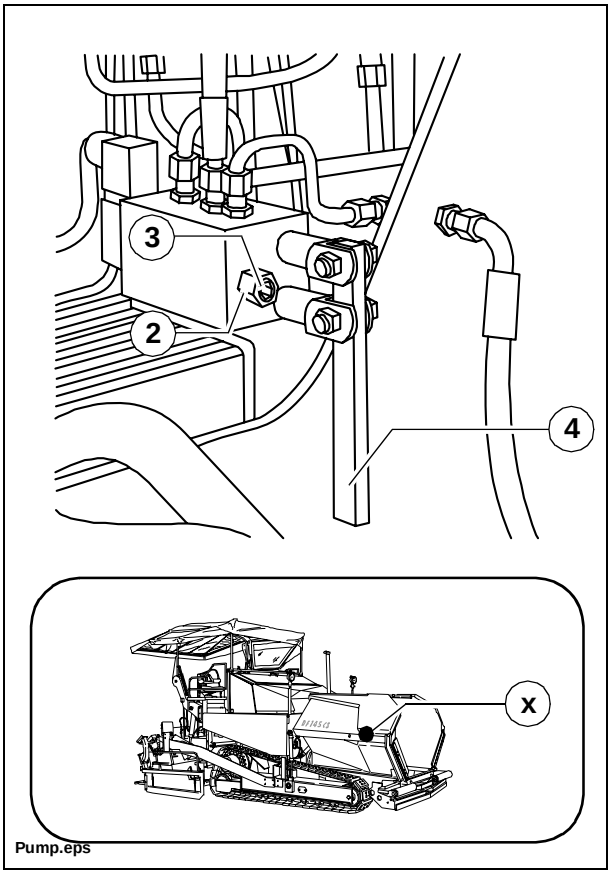
- The high-pressure cartridges (4 units) (1) on the propulsion drive pumps must all be unscrewed approx. 3 complete turns.



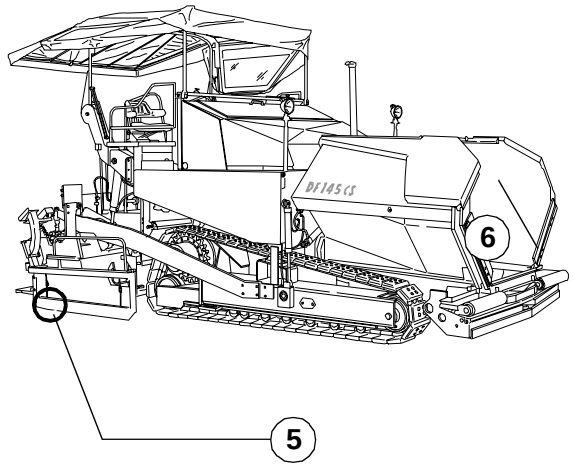
- Release lock nut (2), screw threaded dowel (3) into pump as far as possible and secure with lock nut.
- Actuate lever (4) of hand pump until sufficient pressure has been built up and traction system brakes have been released.
- Attach the tow bar to the coupling (5) located in the bumper.

A Now carefully and slowly tow the paver finisher out of the construction area.

m Always only tow the shortest distance to the means of transport or the next parking possibility.



Following towing, unscrew the threaded dowel (3) a few turns again and lock with the lock nut (2).
To make the machine ready for operation after repair work, the high-pressure cartridges (1) must be screwed back firmly into place.
The traction system brakes are no reactivated and the machine is secured against rolling.

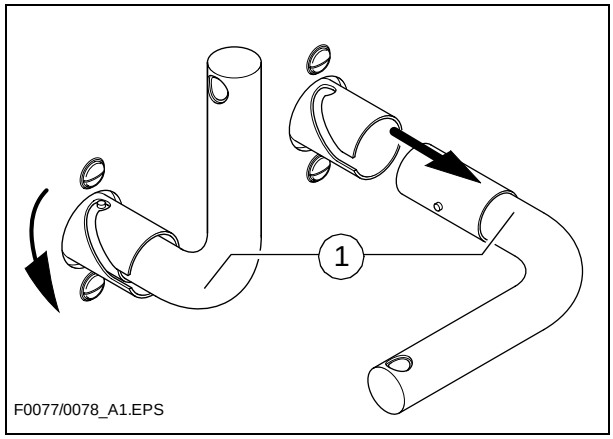


DF145C/CS.wmf

6 Safely parking the vehicle

m When the equipment is parked at a location accessible to the public, it must be secured in such a way that unauthorized persons or playing children cannot damage the vehicle.

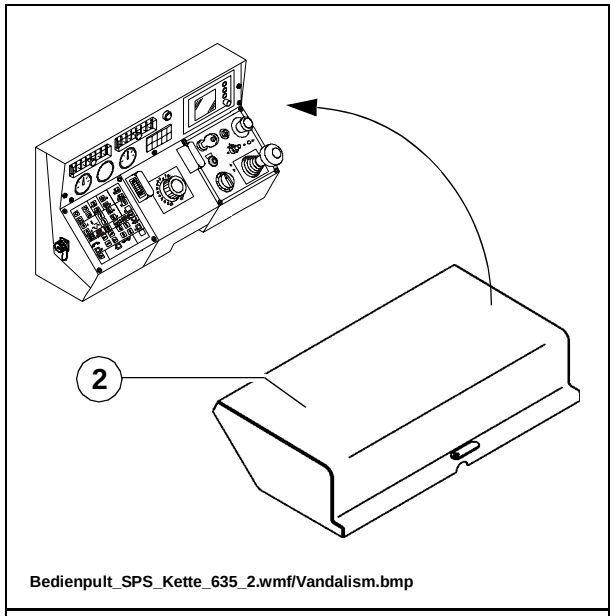
- Pull off the ignition key and the main switch (1) and take it with you – do not hide them somewhere on the machine.



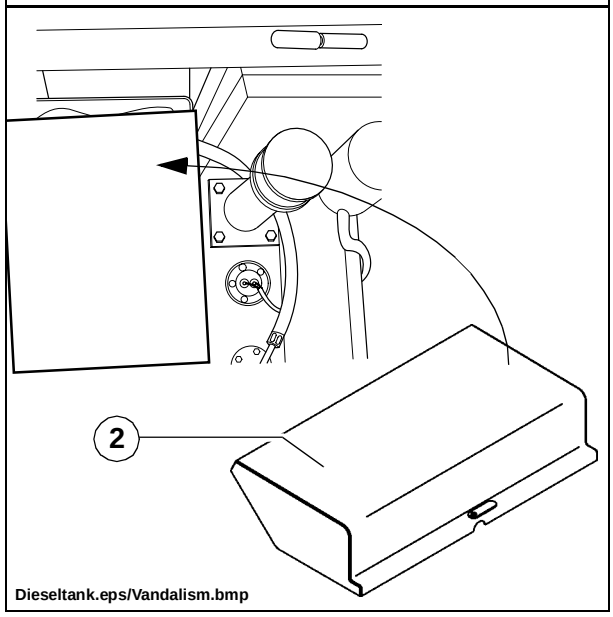
m Do not turn off main switch (1) until 15 seconds after the ignition has been turned off!

A The engine electronics need this length of time to back up data.

- Protect the operating panel with the dust cover (2) and lock it.
- Store loose parts and accessories in a safe place.



A Secure the dust cover (2) during operation with the lock on the terminal box under the maintenance flap on the RH side!



D 1.7 Operation

1 Safety regulations

ƒ Starting the engine, the tractin drive, the conveyor, the auger, the screed or the lifting devices can cause injuries or even the death of persons.
Make sure before starting any of these devices that no-one is working at, in or beneath the paver finisher or within its danger area!

- Do not start the engine or do not actuate any controls when this is expressly forbidden!
  Unless otherwise specified, the controls may only be actuated when the engine is running!

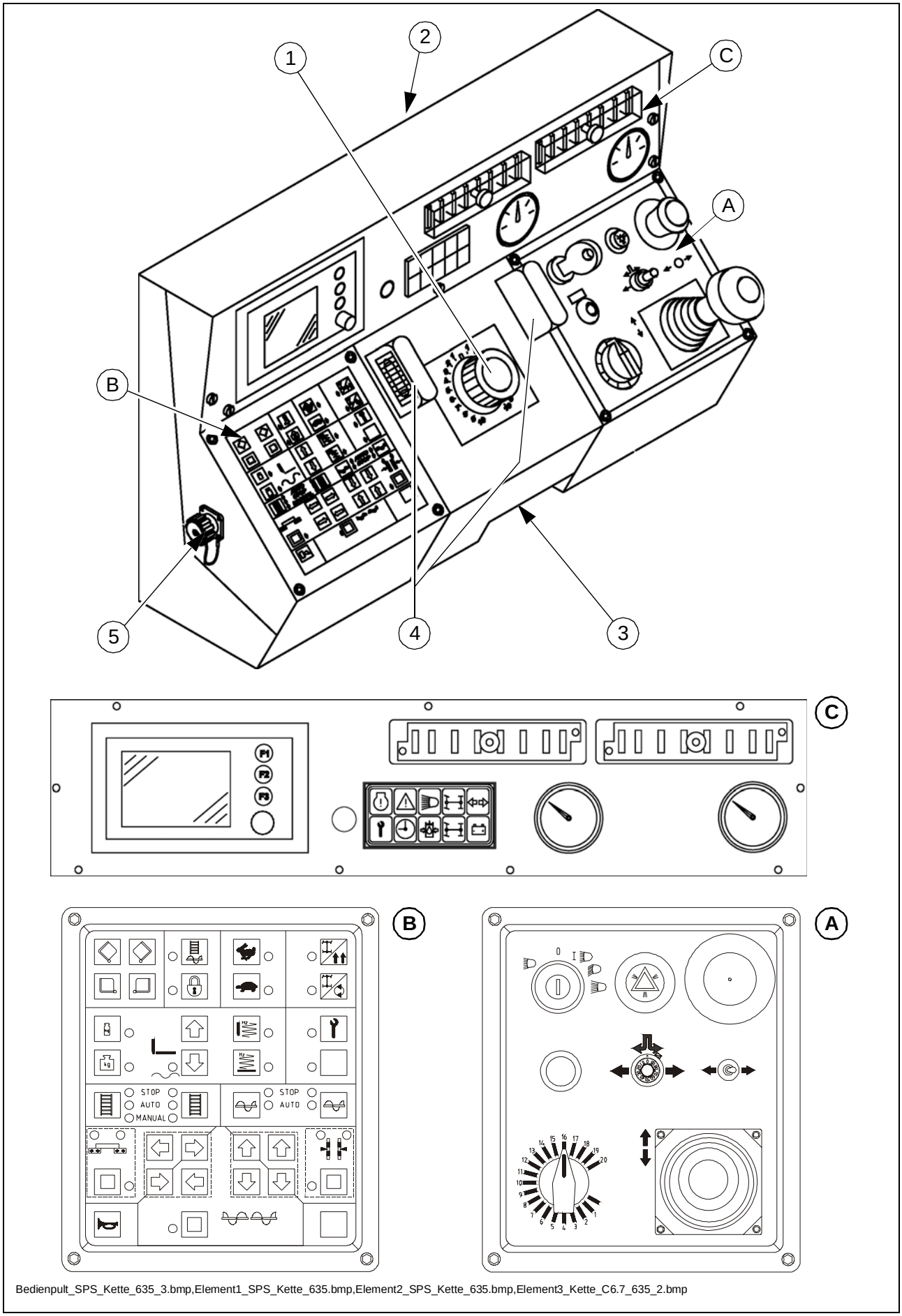
ƒ Never crawl into the auger tunnel or step into the hopper or onto the conveyor. Danger to life and limb!

- Always make sure during operation that no-one is endangered by the machine!
- Ensure that all protective covers and hoods are fitted and secured accordingly!
- When damages are detected, eliminate them immediately! Operation must not be continued when the machine is defective!
- Do not let any persons ride on the paver finisher or the screed!
- Remove obstacles from the road and the work area!
- Always try to choose a drivers's position that is opposite to the flowing traffic! Lock the operating panel and the driver's seat.
- Keep a sufficient safety clearance to overhanging objects, other machines and points of danger!
- Be careful when travelling on rough terrain to keep the paver finisher from slipping, tipping or turning over.

ƒ Always be the master over the machine; never try to use it beyond its capacities!

2 Operating elements

2.1 Operating panel



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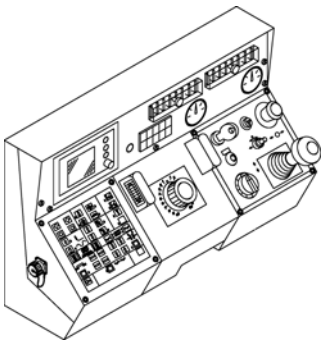
m General notes on the observation of CE regulations

All functions of self-engaging buttons which might provoke a risk during start-up of the diesel engine (conveying function of auger and conveyor) are set to STOP in case of an emergency stop or a control restart. Changes of settings which are performed when the diesel engine is at a standstill („AUTO" or „MANUAL") are reset to „STOP" when the diesel engine is started.
Turning on the spot (button 19) is reset to straight-ahead travel.

Item	Designation	Brief description
1	Steering potentiometer	The steering wheel movement is transferred electrohydraulically. A For precision adjustment, (position „0" = straight ahead) refer to adjustment for straight ahead travel. For turning on the spot, refer to switch (turning on the spot).
2	Retaining bracket for operating panel	For securing the movable operating panel against inadvertent movement at the desired paver finisher height. - Turn the knurled screw at the desired location into the designated notch and secure with the knurled nut. f When not secured, the operating panel can move. Danger of accidents during transportation!
3	Latch for operating panel	In the case of seats which can be swung out beyond the machine contour (option), the operating panel can also be moved beyond the basic width of the paver finisher. Pull out the latch and move the operating panel; let the latch engage again. f An unlatched operating panel can slide out of position. Danger of accidents during transportation!
4	Lights	Lights up instrument panel A / B when the parking light is switched on.
5	Connection	To connect input devices.



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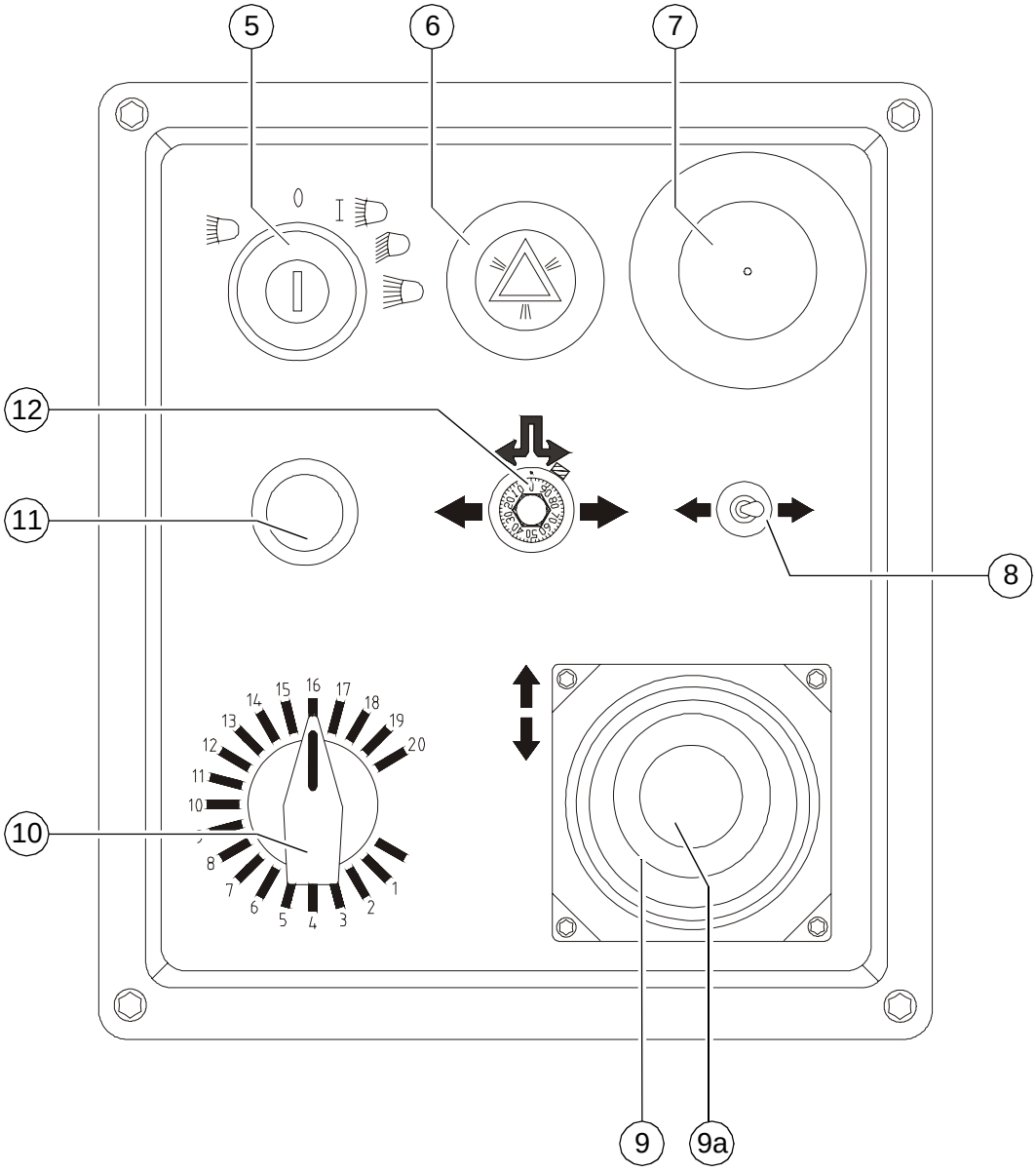
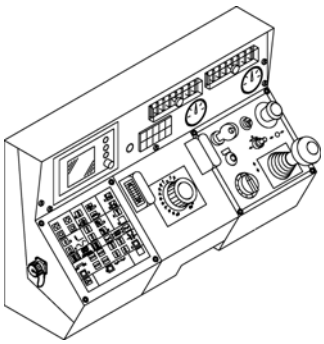


Element2_SPS_Kette_635.bmp

Item	Designation	Brief description
5	Ignition lock and illumination switch	Positions: 0 Ignition and light off 1 Ignition on  Parking/rear lights, instrument panel illumination, working lights (if applicable)  Driving light  High beam
6	Not used	
7	Emergency stop button	In the case of an emergency (danger to persons, possible collision etc.), press in the button! - Pressing the emergency stop button switches off the engine, the drives and the steering system. Making way, lifting the screed or other actions are then no longer possible! Danger! - The emergency stop button does not shut off the gas heater system. Close the main shut-off valve and the valves on the bottles by hand! - In the case of electrical malfunctions, the engine must be turned off manually at the leverage of the injection pump. To restart the engine, the button must be pulled out again.
8	Not used	



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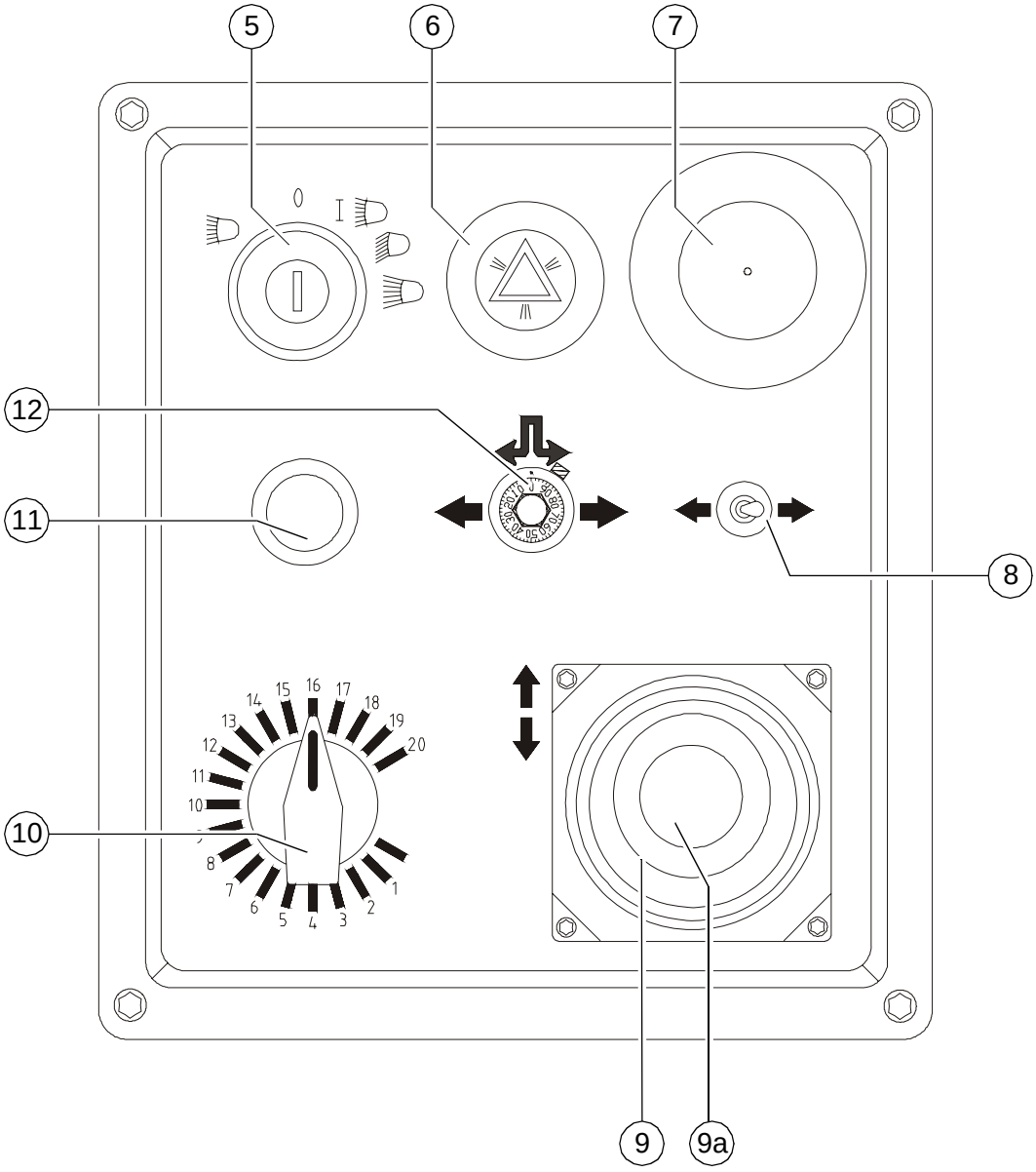
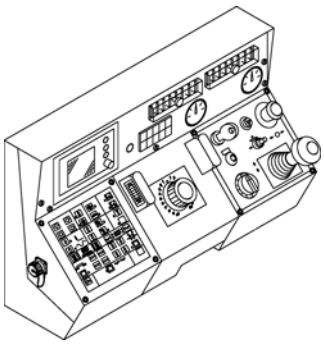


Element2_SPS_Kette_635.bmp

Item	Designation	Brief description
9	Drive lever (forward - reverse)	For switching on the paver finisher functions and for continuously regulating the traction speed – forward or reverse. Zero position: starting is possible; engine at idling speed; no traction drive Depending on the position of the drive lever, the following functions can be activated: Position 1: Conveyor and auger on. Position 2: Screed motion (tamper/vibration) on; traction drive on; increase speed until the stop is reached. Use the preselector to set the maximum speed.
10	Preselector, traction drive	For setting the maximum speed that can be reached when the drive lever is at its stop. A The scale roughly matches the speed in m/min (during paving).
11	Starter	Starting is only possible when the driver lever is in the neutral position. All emergency stop buttons (on the operating panel and the remote controls) must be pulled out. m On some machines, the starter may remain engaged for 5 seconds after the Start switch has been enabled!
12	Straight-ahead travel synchronization	Additional function for machines without synchronization or when sensors in the caterpillar drives are defective. Using this potentiometer, both chains can be synchronized for straight-ahead travel while driving: - Set the steering wheel to position „0”; then adjust the potentiometer until the paver finisher is travelling straight ahead.



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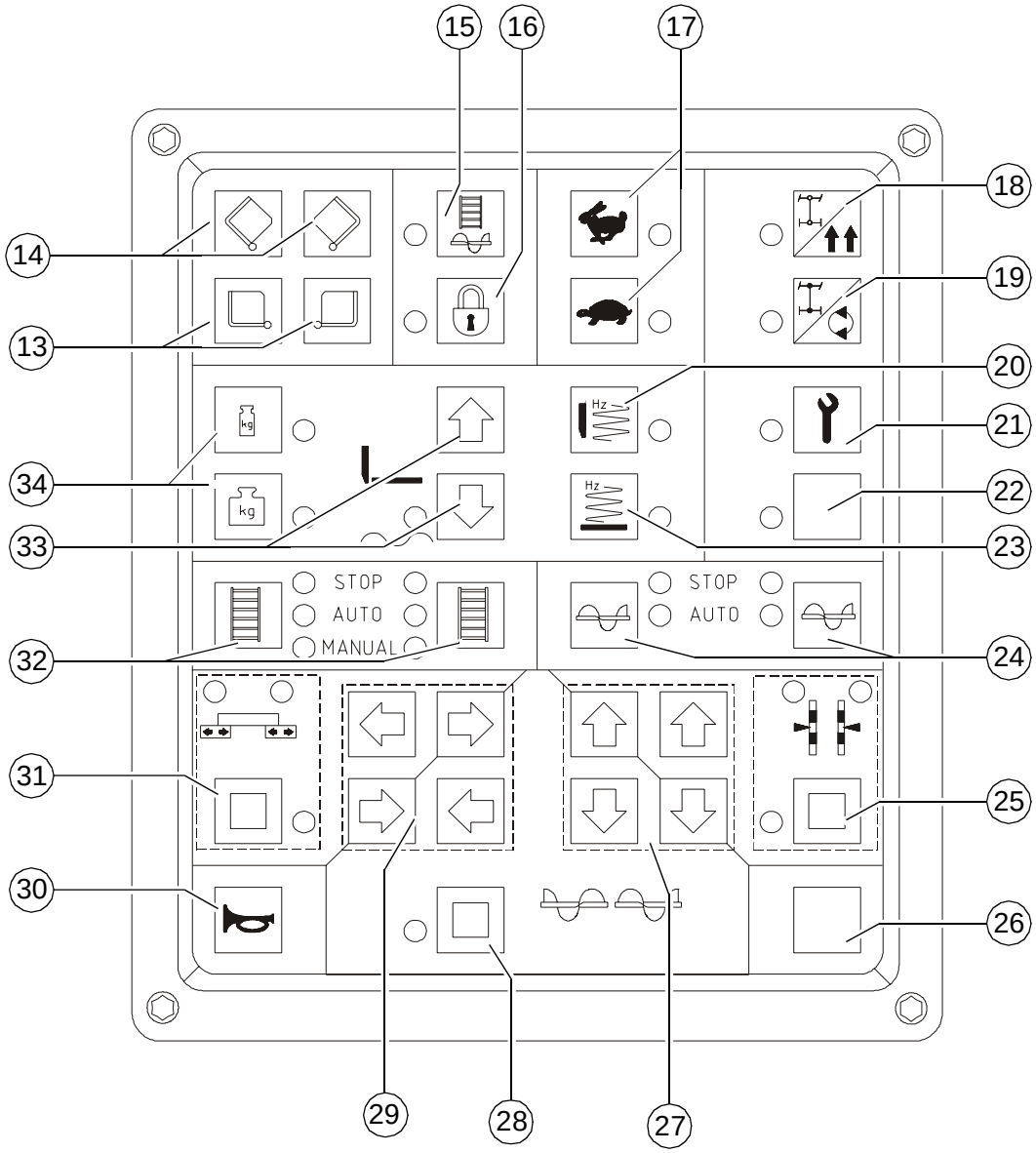
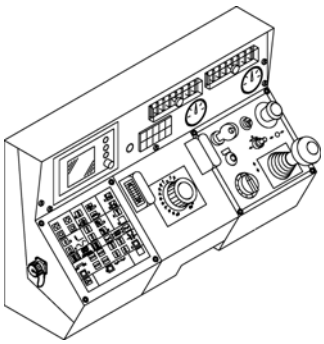


Element1_SPS_Kette_635.wmf

Item	Designation	Brief description
13	Open hopper	Push-button: Left: open left hopper half Right: open right hopper half If both hoppers are hydraulically actuated at the same time (1 valve), either the left button or the right button can be used for operation.
14	Close hopper	Push-button: - Left: close left hopper half - Right: close right hopper half Separate actuation (o): Is required when paving in spaces where there is only limited space at one side or when obstacles obstruct unloading of the truck.
15	Filling the machine for paving	Self-engaging button with LED indication - Operating requirements: button 16 „OFF” Button 15 is used for the filling function: - The diesel engine speed is increased to the preselected nominal speed and all conveying functions (conveyor and auger) which are set to „Automatic” can be activated. **Switching off:** Press button 15 again or tilt the drive lever to the paving position.
16	Main function switch	Self-engaging button with LED indication Button 16 locks all functions necessary for paving. Although the individual functions are set to „Auto”, they are not activated when the drive lever is moved. The set-up is retained, allowing the machine to be re-positioned and unlocked at the installation site. Paving can be continued by moving the drive lever. A Button 16 is set to „ON” when restarting.



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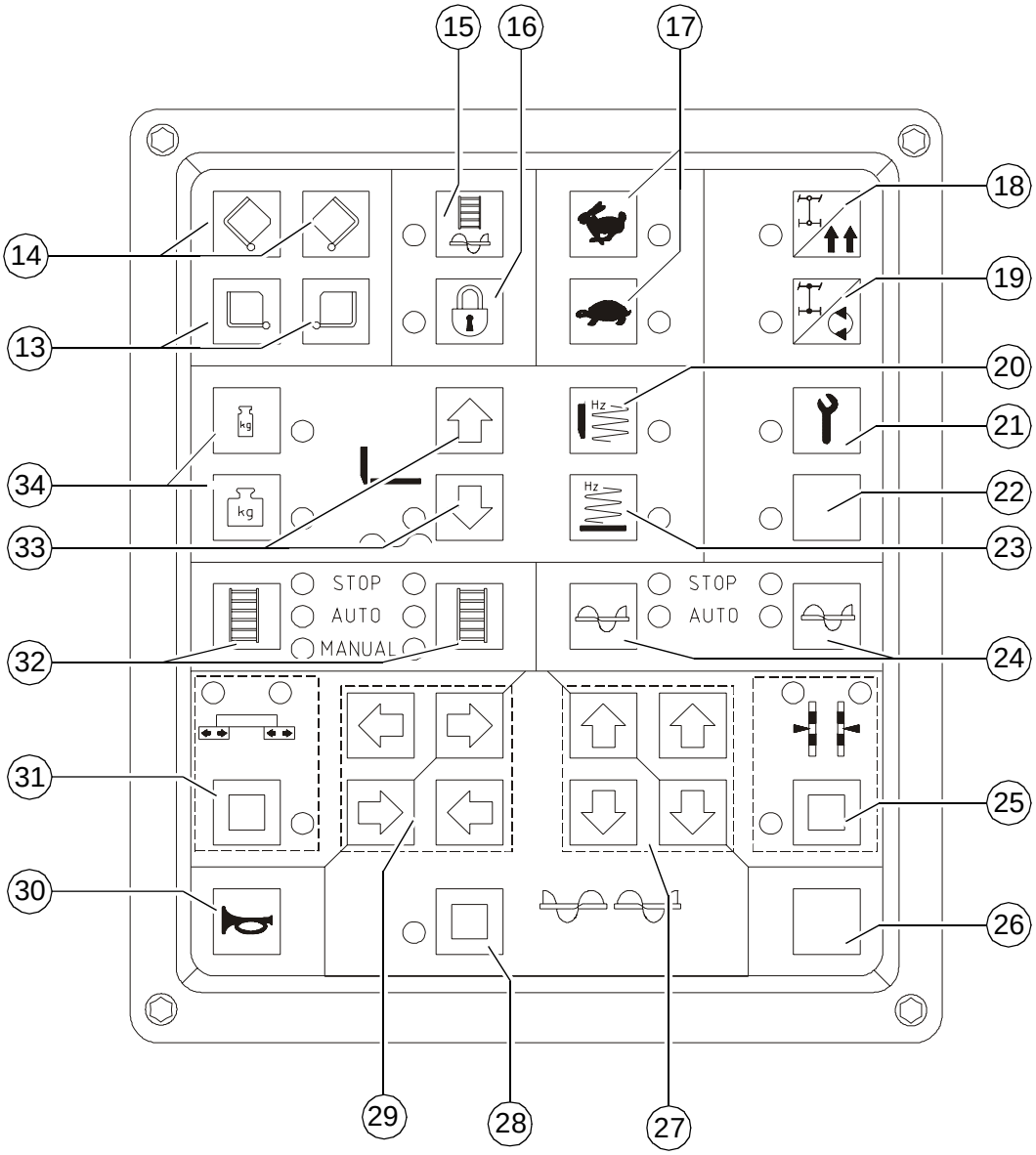
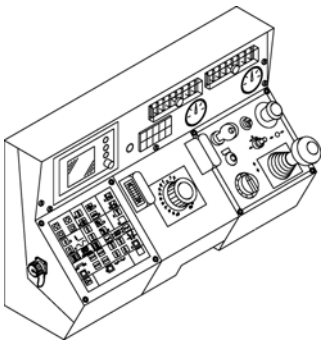


Element1_SPS_Kette_635.wmf

Item	Designation	Brief description
17	Traction drive fast/slow	Self-engaging buttons with LED indication **Hare:** transport speed **Tortoise:** operating speed for paving A When restarting, the buttons are set to working speed (tortoise).
18	Straight-ahead travel	Self-engaging buttons with LED indication A When restarting, the button is set to „Straight-ahead travel”. Normal position for straight-ahead travel. A If the button at the bottom has been inadvertently activated (with the steering knob (1) set to straight-ahead travel), the paver finisher does not move. This is often interpreted as a ‘malfunction’.
19	Turning on the spot	The paver finisher turns on the spot (the caterpillar chains run in opposite directions) when the steering knob (1) is set to „10”. Steering knob turned to the left = paver finisher turns to the left Steering knob turned to the right = paver finisher turns to the right f When the paver finisher turns, persons and objects next to the paver finisher are in extreme danger. Watch the area where the paver finisher turns! Button 17 is set to „tortoise”.
20	Tamper (screed-specific)	Self-engaging button with LED indication - Operating requirements: button 16 must be set to „OFF” Switching function ON or OFF. - The function is activated when moving the drive lever. - Set-up operation is actuated in conjunction with button 21.
21	Set-up operation	When the machine is at a standstill, this button is used for the commissioning of all working functions which are only activated when the drive lever (travelling machine) is moving. Button 21 „ON” Button 16 „OFF” The diesel engine speed is increased to the preselected set value.



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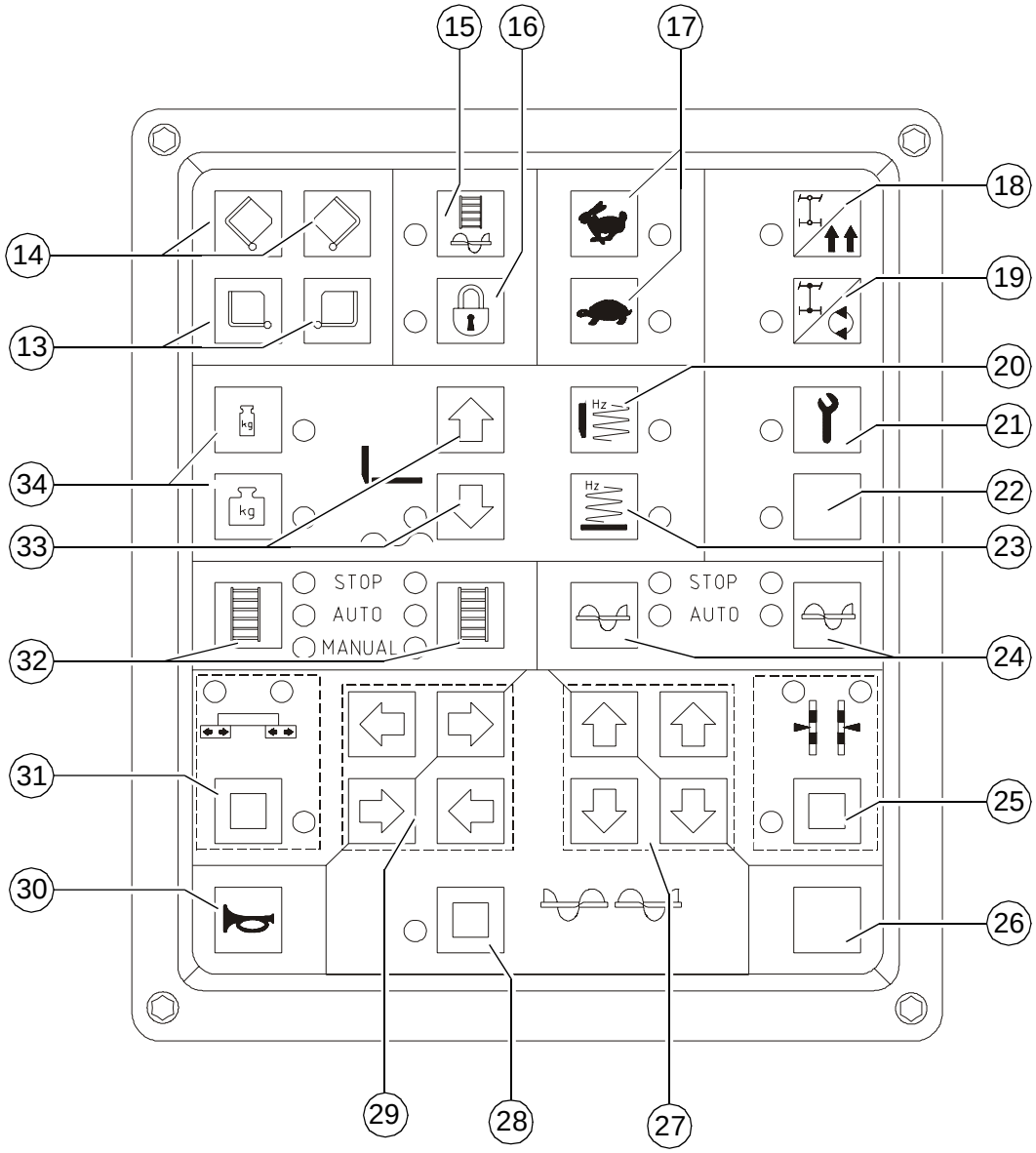
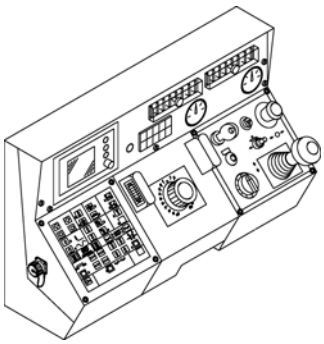


Element1_SPS_Kette_635.wmf

Item	Designation	Brief description
22	Not used	
23	Vibration	Operation and application: see button (20).
24	Auger left/right	Self-engaging buttons with LED indication Toggling between two switching conditions. **Stop:** Operational readiness Auto Reset to STOP in case of an emergency stop or a restart. Button 16 locks the conveying function.
25	Levelling cylinder left/right	Self-engaging button with LED indication For manually actuating the levelling cylinders when automatic levelling is switched off. The switch on the remote control must be set to „manual”. LED „C” (left) and LED „D” (right) indicate the setting. Switched off by pressing the button again or by pressing button 28 or 31. Adjustment of the levelling cylinders occurs by using the appropriate button in the pad (right) for the directions of movement (27). A This function is active even if the remote control is disconnected!
26	Not used	
27	Pad (right) for directions of movement	Used in conjunction with buttons 25, 28 and 31; releases a movement towards the indicated direction.



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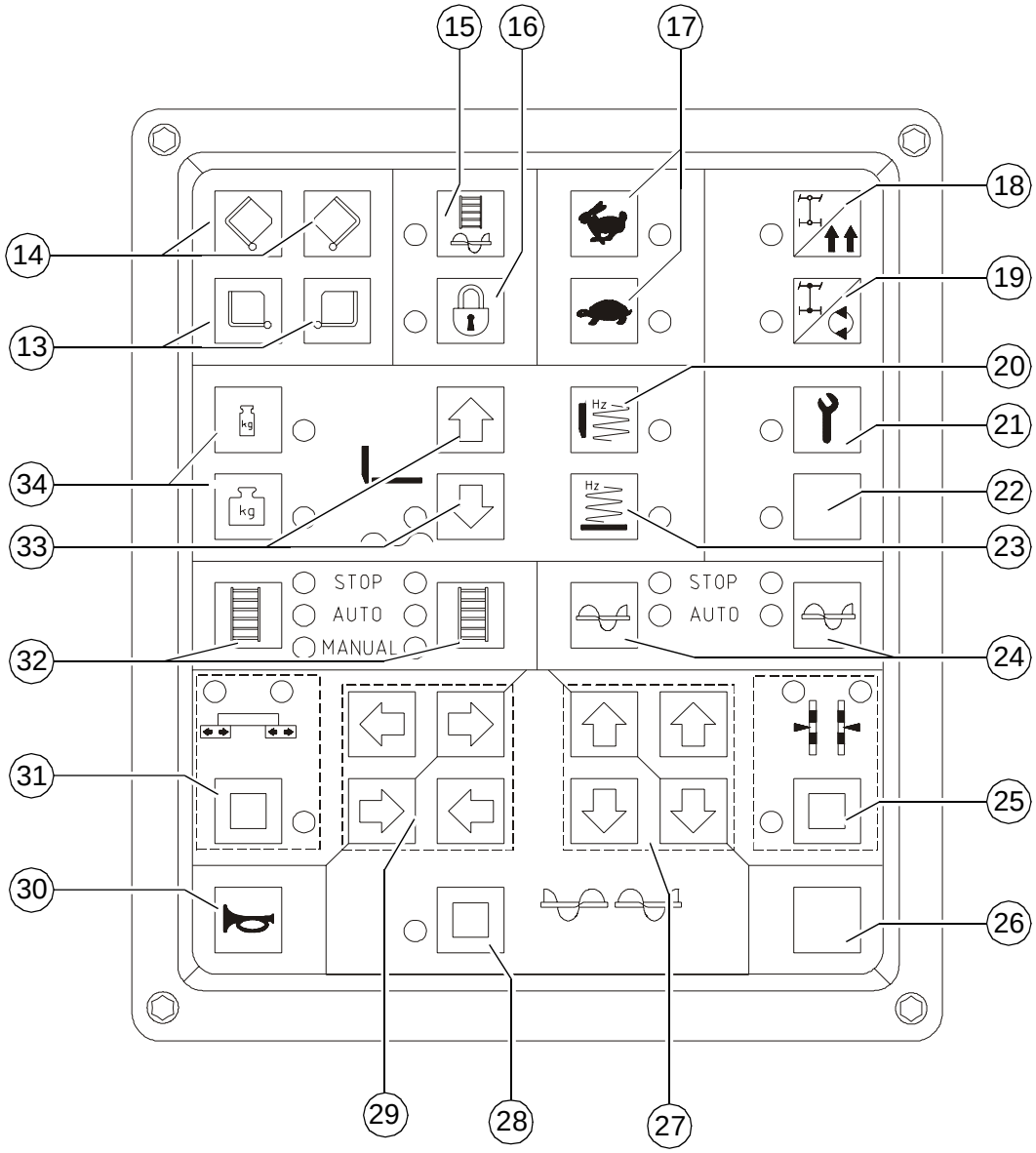
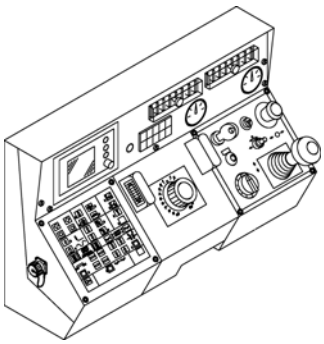


Element1_SPS_Kette_635.wmf

Item	Designation	Brief description
28	„MANUAL” auger operation and lifting/lowering the auger	Self-engaging button with LED indication Switched off by pressing the button again or by pressing button 25 or 31. 1. „MANUAL” auger operation Requirements: button 24 must be set to „AUTO” - Using the buttons in the pad (left) for the directions of movement (29), the conveying speed of the automatic function can be exceeded with full conveying performance in the direction of the corresponding arrow. 2. Lifting/lowering the auger - Using the buttons in the pad (right) for the directions of movement (27), the auger is lifted or lowered to the direction of the arrow.
29	Pad (left) for the directions of movement	Used in conjunction with buttons 25, 28 and 31; releases a movement to the indicated direction.
30	Horn	Must be activated in the case of emergencies and to indicate that the machine starts to move!
31	Extend/retract screed parts	Self-engaging button with LED indication Switched off by pressing the button again or by pressing button 25 or 28. Using the buttons in the pad for the directions of movement, the screed is moved to the indicated direction of the arrow. LED „A” and LED „B” indicate the vario screeds.
32	Conveyor, left/right	Self-engaging buttons with LED indication To change between the three switching states, press the button again: **STOP**: Operational readiness AUTO MANUAL Reset to STOP in case of an emergency stop or a restart. Button 16 locks the conveying function.



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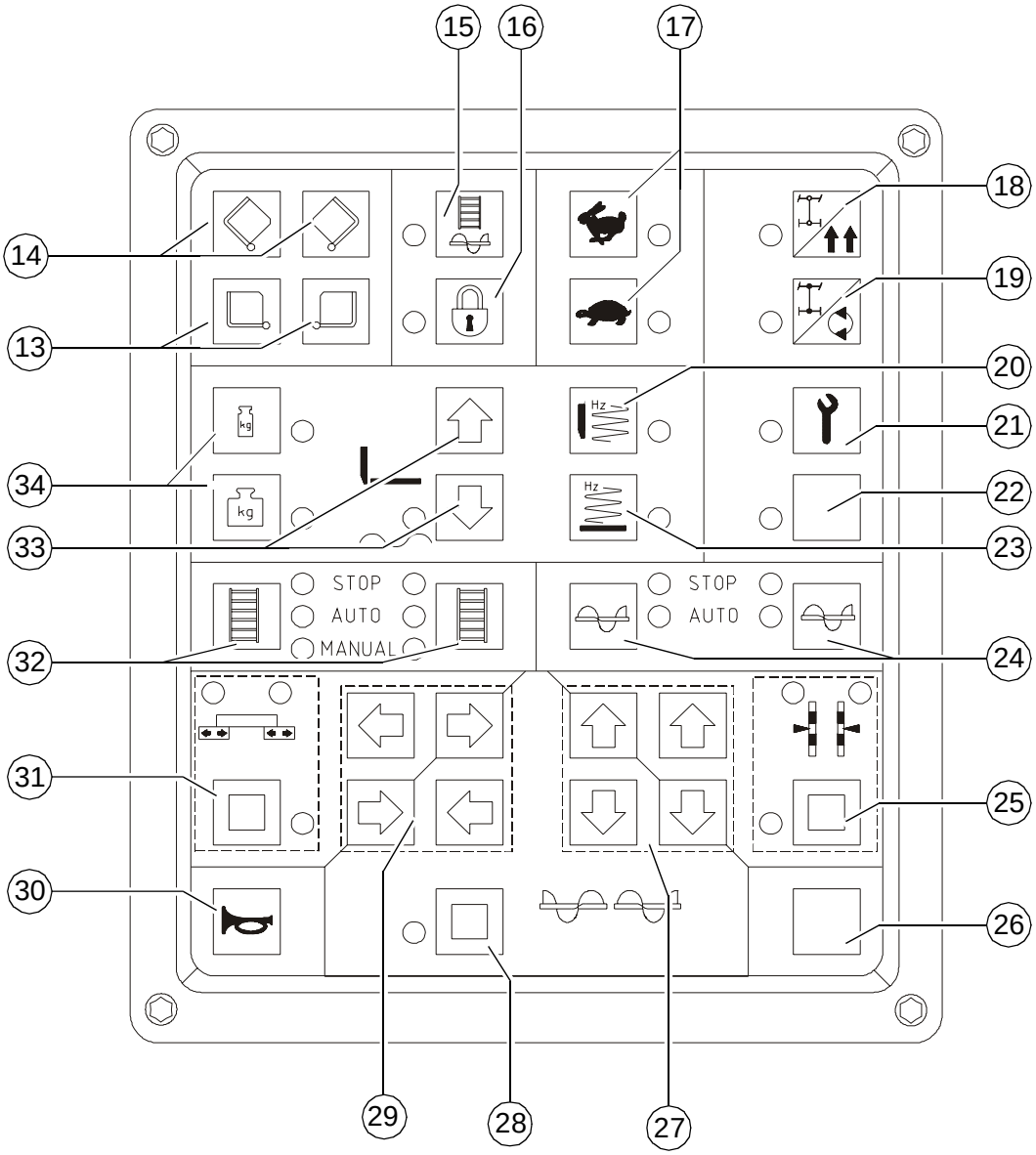
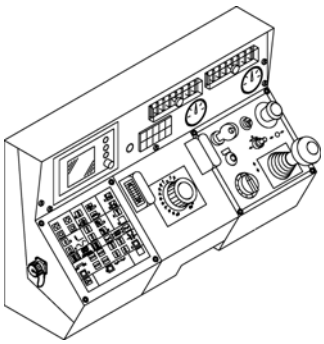


Element1_SPS_Kette_635.wmf

Item	Designation	Brief description
33	Screed position	 Push-button function **Lift screed** A If the drive lever is in its central position, the speed of the engine rises automatically when moving.  Self-engaging button with LED indication **Lower screed/screed in floating position** The button 16 must be set to „OFF” Screed floating position: Pressing the button turns the LED ON and prepares the screed for „floating position”, which is activated by the actuated drive lever (9). Pressing the button again or pressing the button Lift screed turns the LED off**.** Lower screed: - Button function: Keep the button depressed for more than 1.5 sec (LED On). As long as the button is pressed, the screed is lowered. When the button is released, the screed will stop again. (LED Off). - Resting function: Briefly press the button (LED On) - the screed is lowered. Press the button briefly again (LED Off) - the screed stops. m During paving, the screed must always be in the floating position. In the intermission, the screed switches to standby position.
34	Screed charging/ relieving device	Self-engaging buttons with LED indication Switched off by pressing the button again or by toggling between the two buttons. For charging/relieving the screed to influence traction and the compacting ratio. - To pre-adjust the pressure of the hydraulic oil, set this button and button 21 to „ON”.



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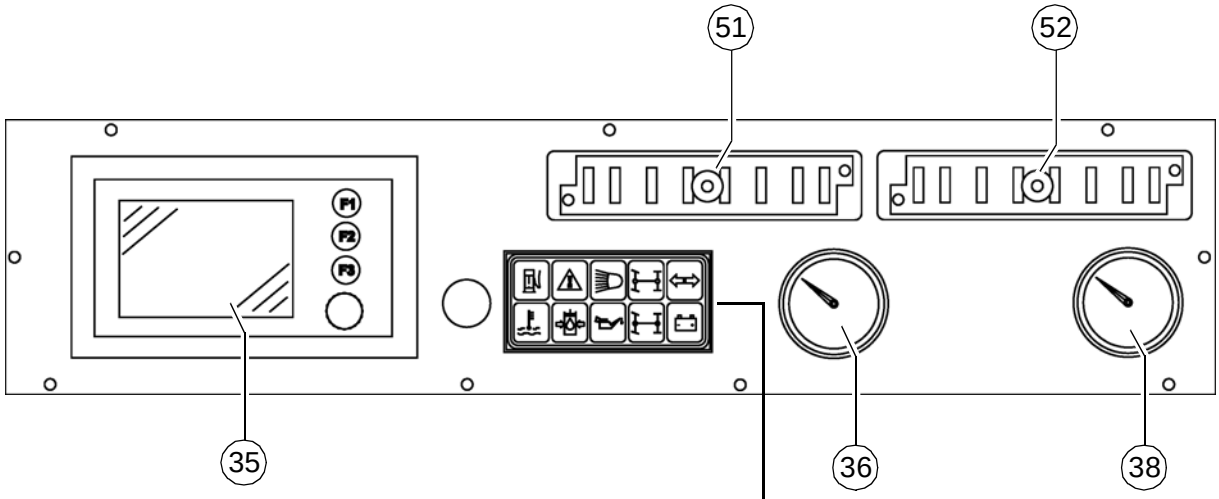
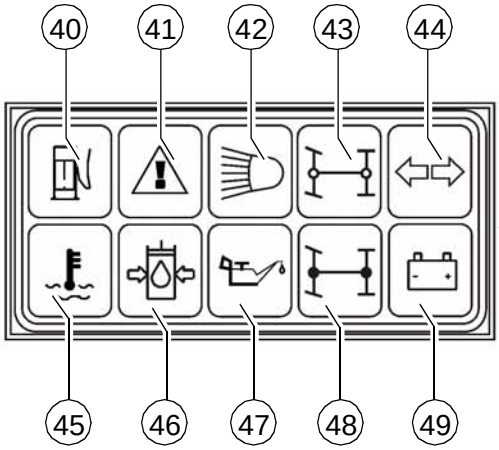
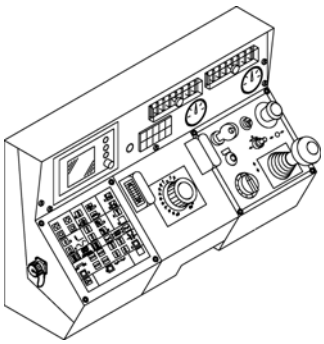




Element3_SPS_Kette_635_2.wmf/Leuchtmodul_SPS_Kette_635.bmp

D_1.7_02_GB.fm 18-28

Item	Designation	Brief description
35	Control setting and display terminal	To query, set and save various operating status and functions as well as for displaying messages related to machine and engine.
36	Hydraulic oil thermometer	Normal display up to 120 °C = 248 °F. m In case of higher temperature stop the machine, (set drive lever (9) to neutral position), and let the engine cool at idling speed. Find the cause and eliminate the fault.
37	Not used	
38	Fuel gauge	Always heed the fuel gauge. m Do not completely empty the diesel tank! Otherwise, the entire fuel system must be ventilated.



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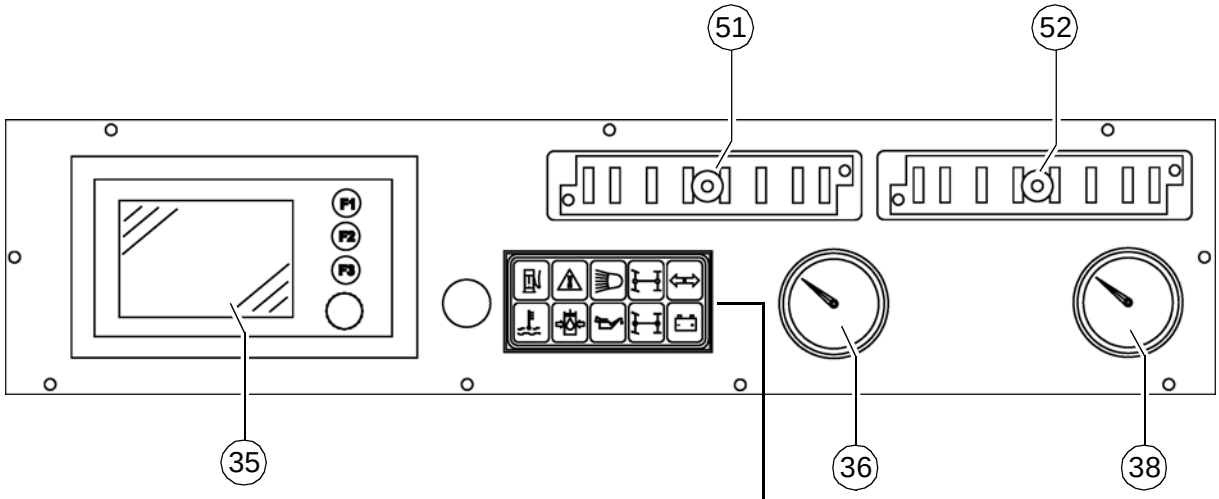
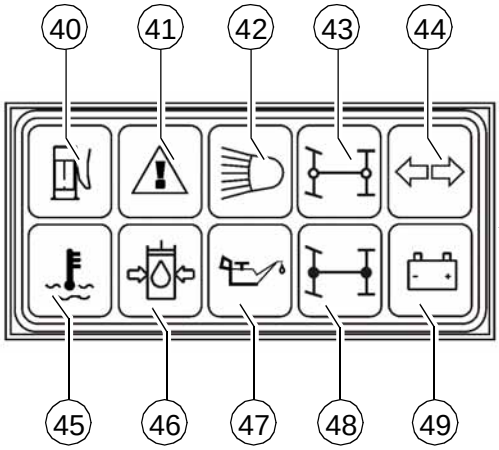
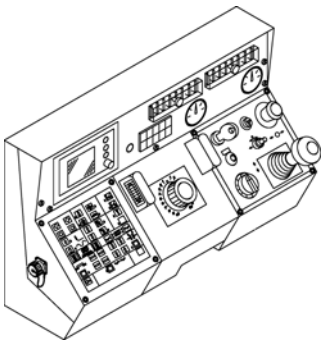




Element3_SPS_Kette_635_2.wmf/Leuchtmodul_SPS_Kette_635.bmp

D_1.7_02_GB.fm 20-28

Item	Designation	Brief description
40	Error message with engine stopping (red)	It is on, if a major fault occurred in the drive engine. For safety reasons the drive engine stops automatically. A After the ignition is turned on, the light comes on for a few seconds for checking.
41	Error message (amber)	The message indicates that an error occurred in the drive engine. The machine can be further operated temporarily. In order to avoid further damage, however, the fault must be repaired within a short time. A After the ignition is turned on, the light comes on for a few seconds for checking.
42	High beam signal lamp (blue)	It is on, if the high beam is turned on (at the ignition switch). f Avoid blinding of the oncoming traffic!
43	Not used	
44	Not used	
45	Maintenance (amber)	It is on when the coolant level is too low in the drive engine. m In order to avoid the damage of the drive engine immediately top up the coolant to the level specified. A After the ignition is turned on, the light comes on for a few seconds for checking.
46	Preheating signal lamp (amber)	After the ignition is turned on, it is on until the air required for combustion in the drive engine is heated up to the required temperature. m Start the engine only when the signal lamps are dark, this will reduce wear and ensure better starting properties.



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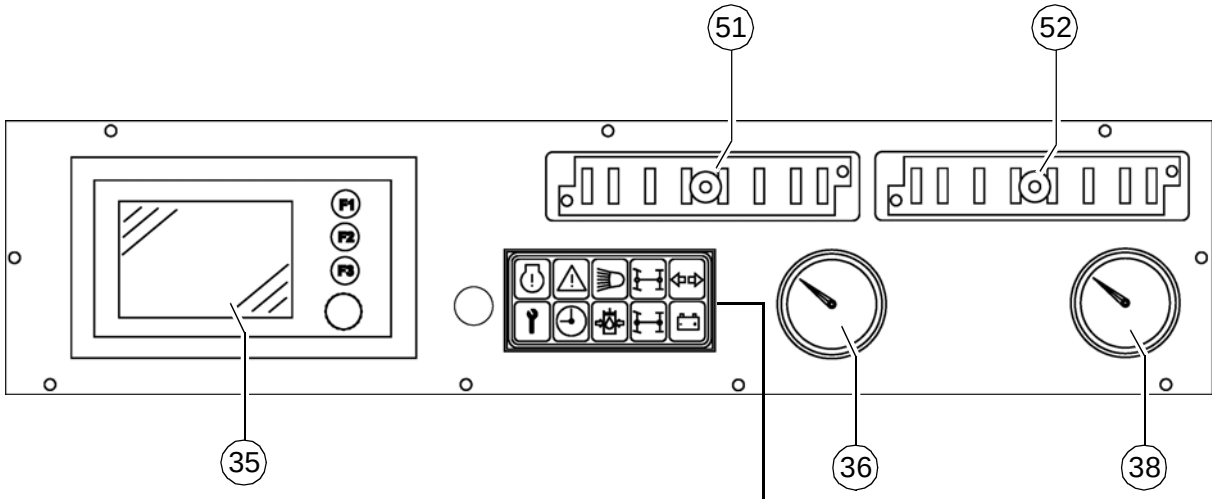
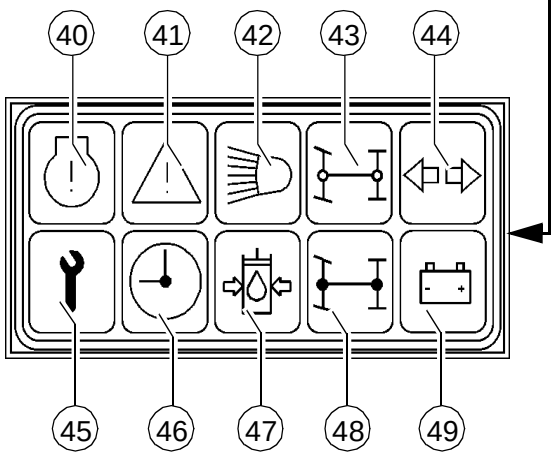
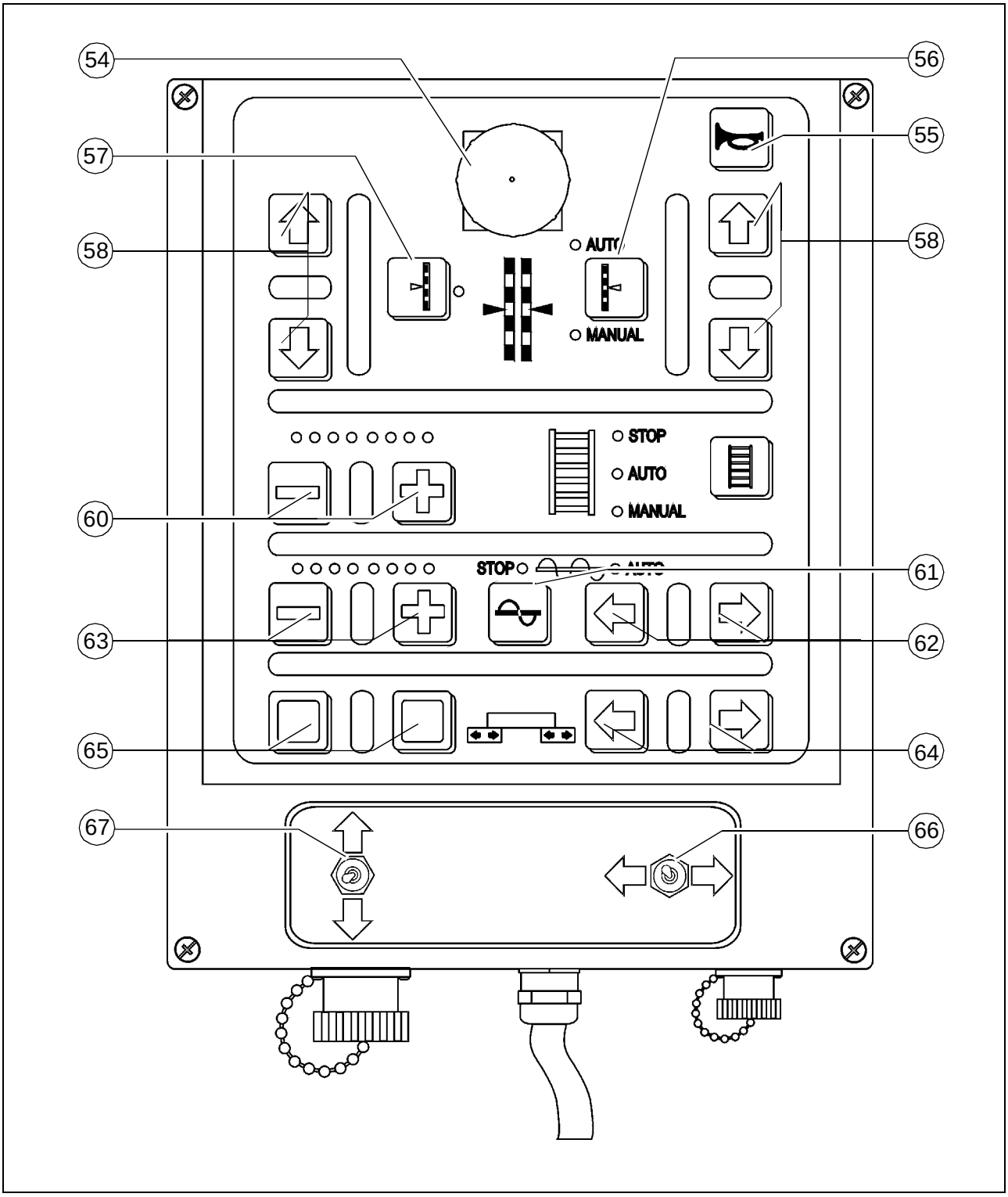




Element3_SPS_Kette_C6.7_2.bmp/Leuchtmodul_SPS_C6.7.bmp

Item	Designation	Brief description
47	Signal lamp of the oil pressure in the hydraulic travel drive (red)	It must go dark soon after start. Take heating into account. The hydraulic oil may be too cold and rigid. m If the light does not go dark, do not switch on the travel drive (see chapter „Failures“). A The lamp goes dark at a pressure below 2.8 bar = 40 psi.
48	Not used	
49	Battery charge signal lamp (red)	It must go dark at a higher speed after start up. - Stop the engine.
50	Not used	
51	Fuse box I.	A For assignment of fuse strips, refer to chapter F.
52	Fuse box II.	A For assignment of fuse strips, refer to chapter F.

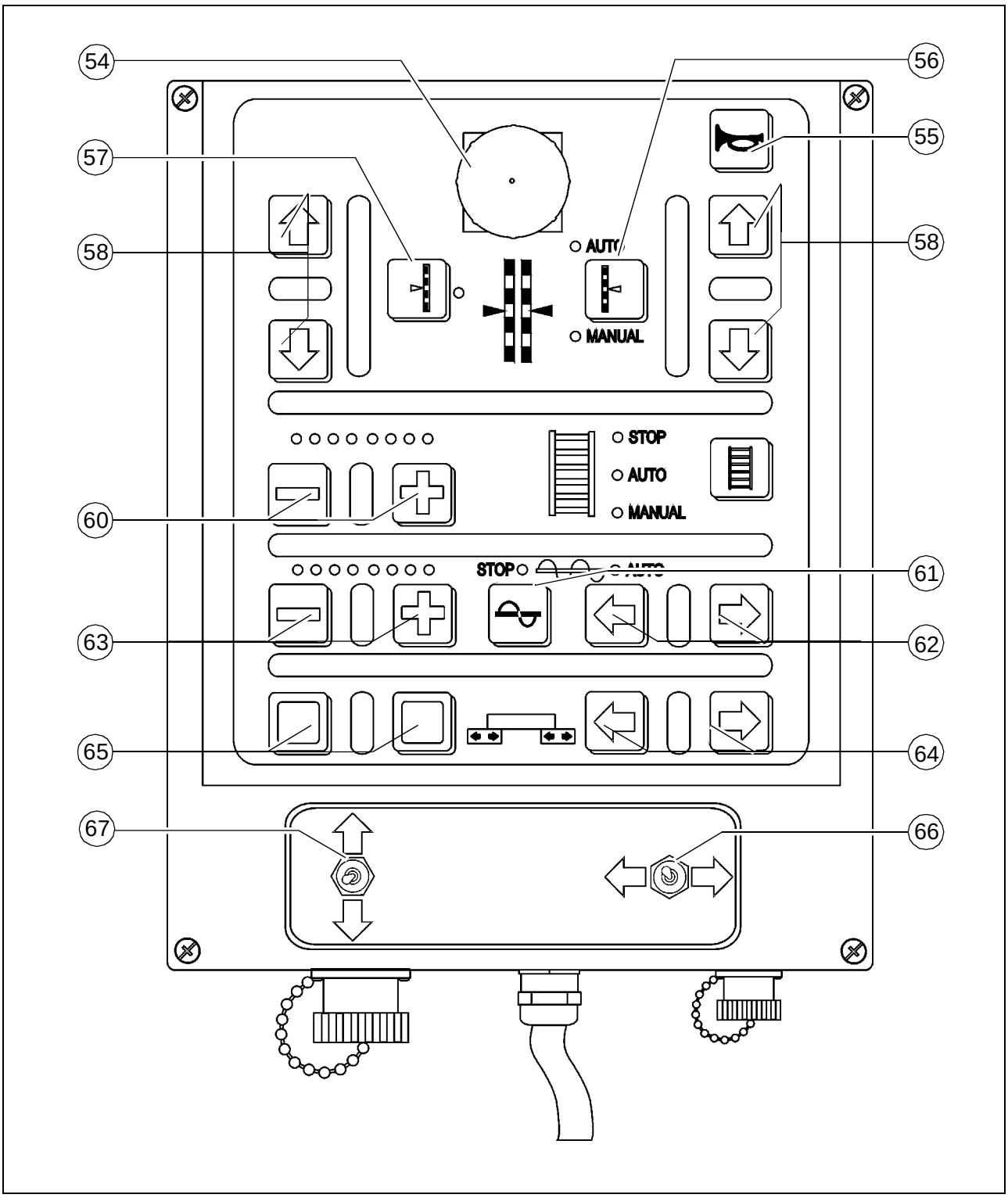
3 Remote control



m Warning! Do not isolate while operating by remote control provided with emergency stopping button (0). This will lead to stopping the machine!

Item	Designation	Brief description
54	Emergency stop button (o)	Its function and use are similar to those of the emergency button (7) on the control panel. It is important in such dangerous situations, which cannot be overseen by the driver.
55	Horn	Its function is similar to the button (30) on the control panel.
56	Levelling cylinder	Its function and use are similar to the function of the button (25) on the control panel. - The switch must be set to „manual“ position.
57	The button of adjusting the leveller on the other side.	It allows the operation of the levelling cylinder on the other side of the paver finisher. The display of the other remote control automatically switches to „manual“ position.
58	Buttons of movement directions	Its function is similar to the button (27) on the control panel.
59	Feeder	Its function is similar to the button (32) on the control panel.
60	Capacity of feeder and LED display	Plus / minus buttons for the modification of transport capacity. Indicated by LEDs. The modifications are saved in „auto“ position by button (59).

A If the function (56) was set to position „auto“, when pressing buttons (58) it will revert to „manual“ mode.



m Warning! Do not isolate while operating by remote control provided with emergency stopping button (0). This will lead to stopping the machine!

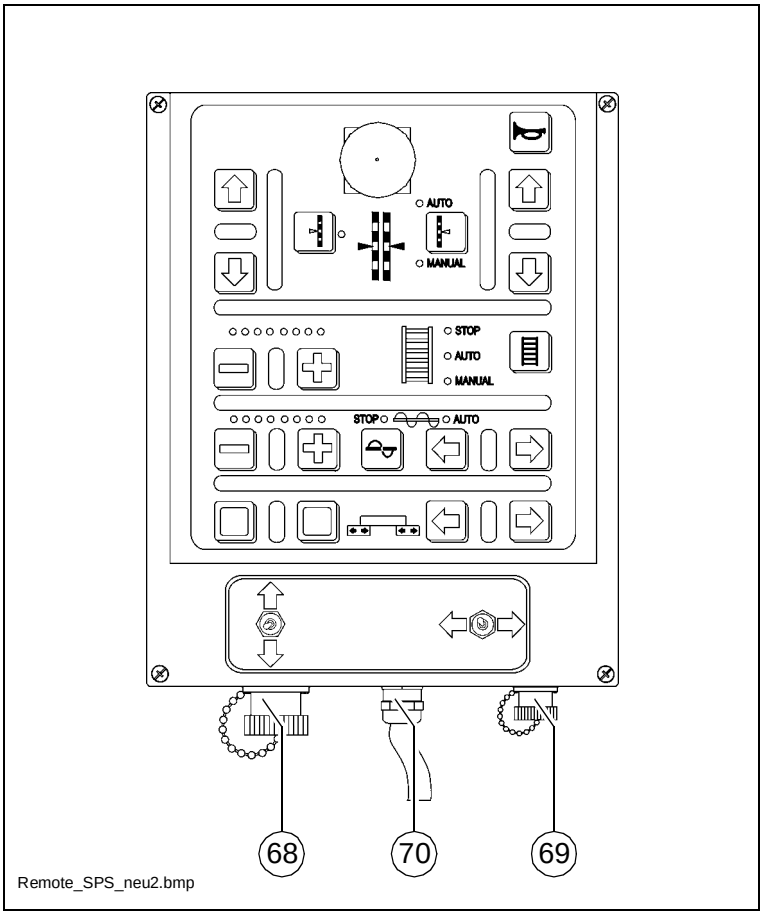
Item	Designation	Brief description
61	Auger	Its function is similar to the button (24) on the control panel.
62	Conveying direction of the auger.	For the adjustment of the transport direction of the auger - switch (61) must be set to „auto“.
63	Transport capacity of the auger and LED display	Plus / minus buttons for the modification of transport capacity. Indicated by LEDs. The modifications are saved in „auto“ position by button (61).
64	Screed extension/ retraction	With these buttons the screed can be moved in the directions indicated by the arrows.
65	has no function	
66	Extending / retracting screed(o)	Use these buttons to move the screed in the direction indicated by the arrow.
67	Levelling cylinder left/right (o)	For manually actuating the levelling cylinders when automatic levelling is switched off. This function must be switched to Manual.

A If the function (61) was set to position „stop“, when pressing buttons (62) it will change to „auto“ mode.

A Basic setting of the delivery capacity of the auger and the feeder, with respect to the various types of courses (number of LEDs):

- Top layer: 4
- Binder course 6
- Load bearing course: 8

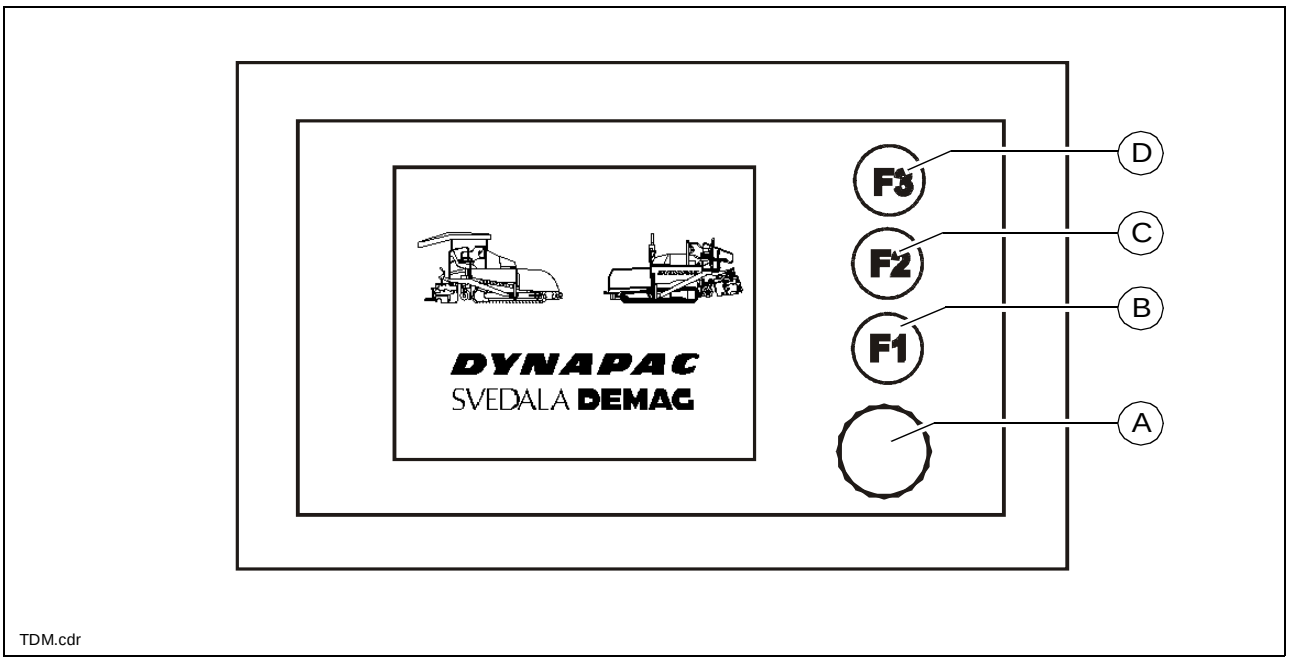
Bottom part



Item	Designation	Brief description
68	Connection to the levelling automatic system	Connect the cable for the grade control unit here.
69	Connection to the end position switch of the auger	Connect the cable for the material limit switch here.
70	Cable for the remote control	Connect to the socket on the screed. (See operating instructions for the screed).

D 2.1 Operation

1 Operation of the input and display terminal

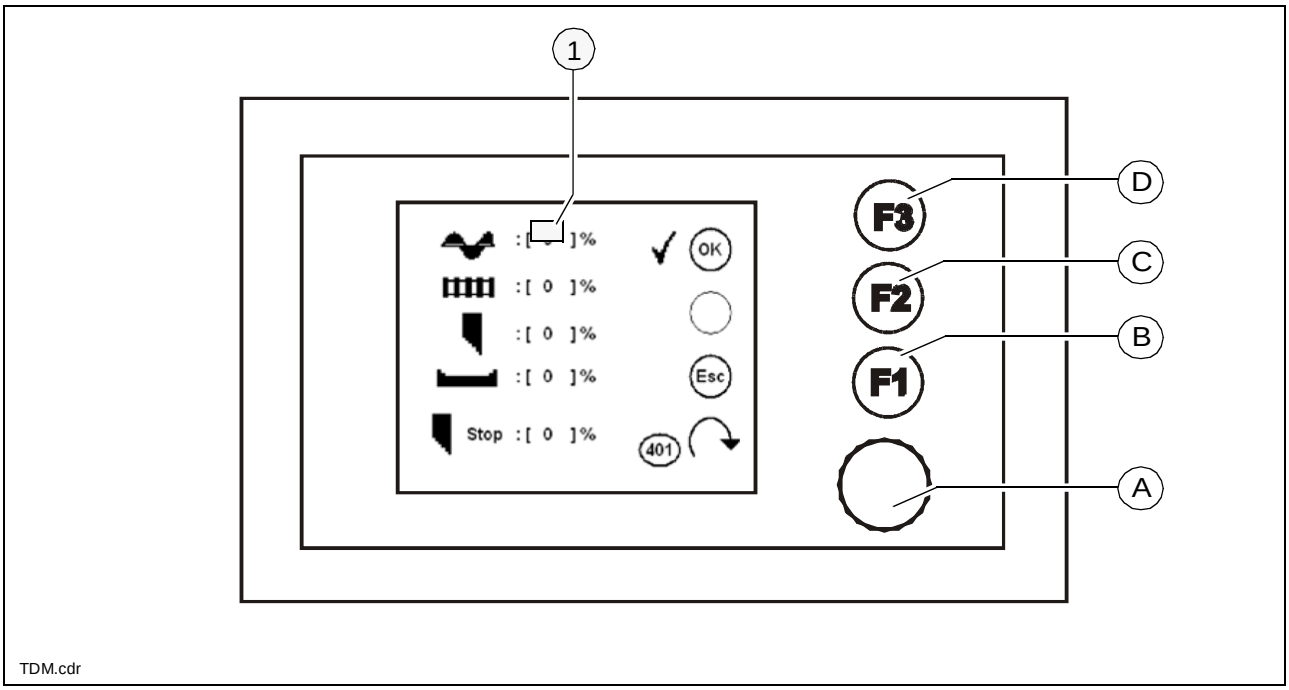


Allocation of the keyboard of the display.

- (A) Encoder (Rotation and pressure):
  - For paging in the menu
  - For selecting various points within one menu
  - For the modification of parameters
  - For confirming the modified parameters

- Buttons (B), (C), (D) F1 - F3:
  - To select the functions displayed on the screen
  - For selecting various points within one menu
  - For the modification of parameters

1.1 Working in the menu



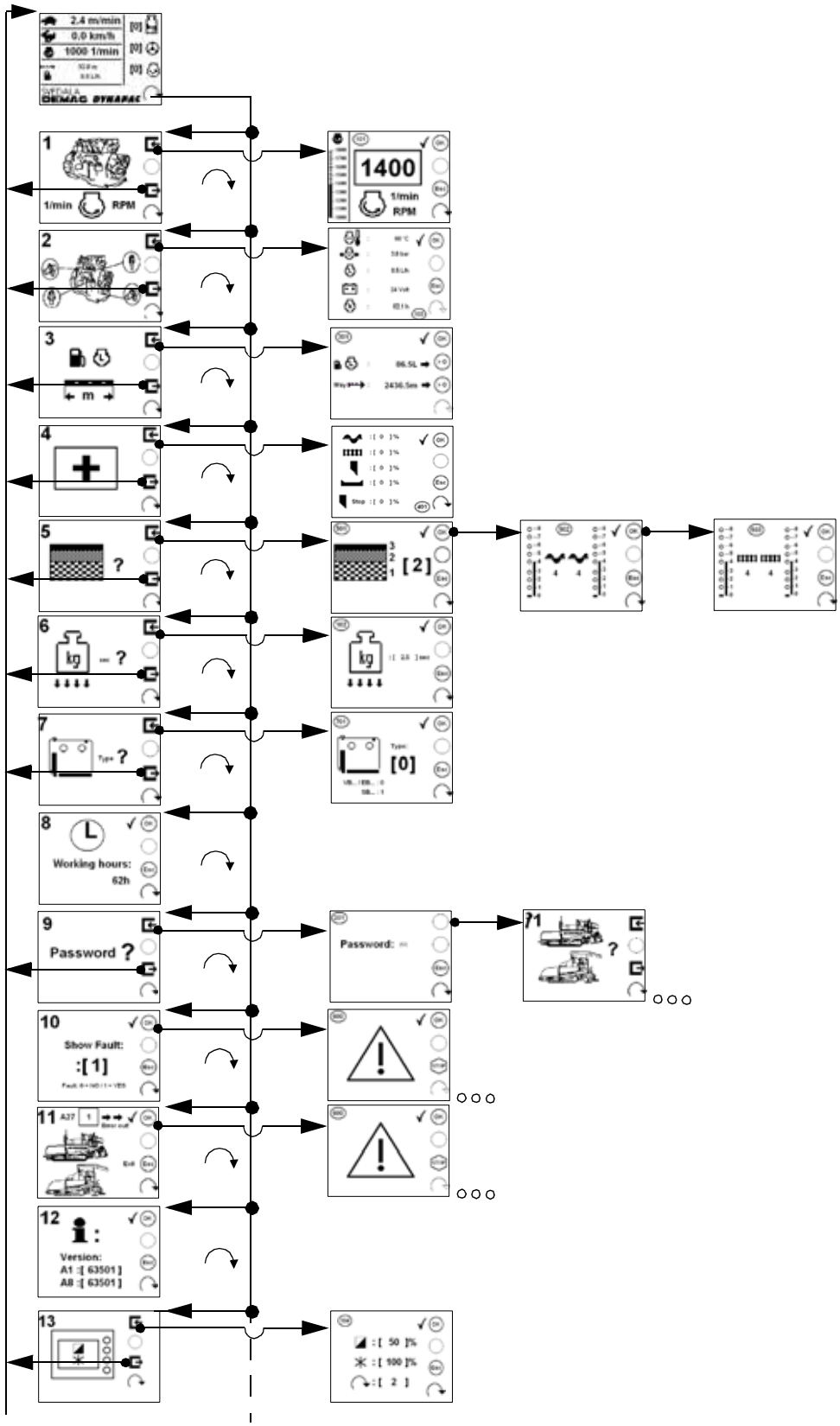
Example: Emergency program (401)

- Rotate (A) Encoder until the selection surface (1) appears.
- Rotate Encoder (A) until the selection surface gets on the menu point required.
- Press (A) Encoder or (B) F2 button to modify the selected menu point.
- Adjust the required value by rotating Encoder (A).
- Press (A) Encoder or (B) F2 button to confirm the set value.

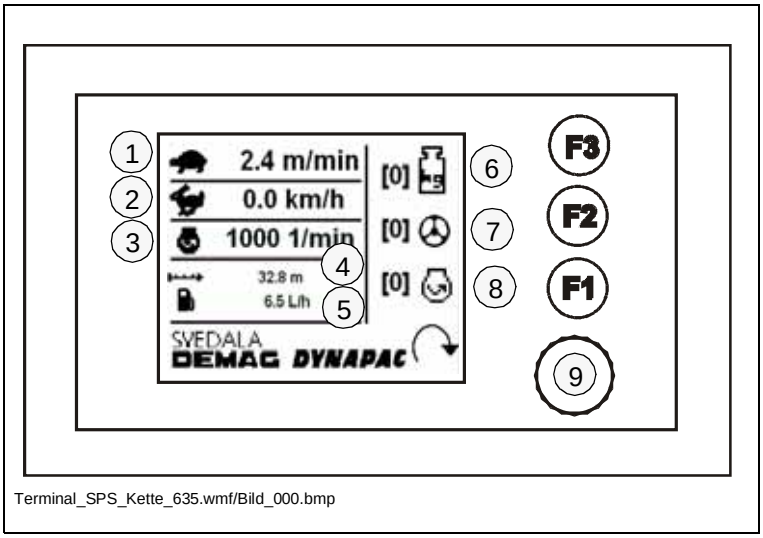
A In the various menus the parameters can be modified directly, without highlighting them with the selection surface!

Menu structure of the setting and display options

The following figure shows the menu structure and operation and it serves the simplification of the procedures in case of various settings and displays.



Main menu 00



Terminal_SPS_Kette_635.wmf/Bild_000.bmp

Display and function menu

- Speed - processing mode (1)
- Speed - Travel (2)
- Engine speed (3)
- Road length meter (4)
- Fuel consumption (5)
- Adjustment possibility „Stopping the screed with pretensioning“ (6)
  - 0=The function is inactive
  - 1=The function is active

A When the drive lever is in neutral position, the screed retains its position with the pressurization of the appropriate cylinder and so the sinking of the screed into the laid material can be avoided.

- Adjustment possibilities of „Steering Automatic System“ (7)
  - 0=The function is inactive
  - 1=The function is active

- Drive engine in „Eco-mode“ (8)
  - The engine speed is regulated to permanent 1600 rpm.

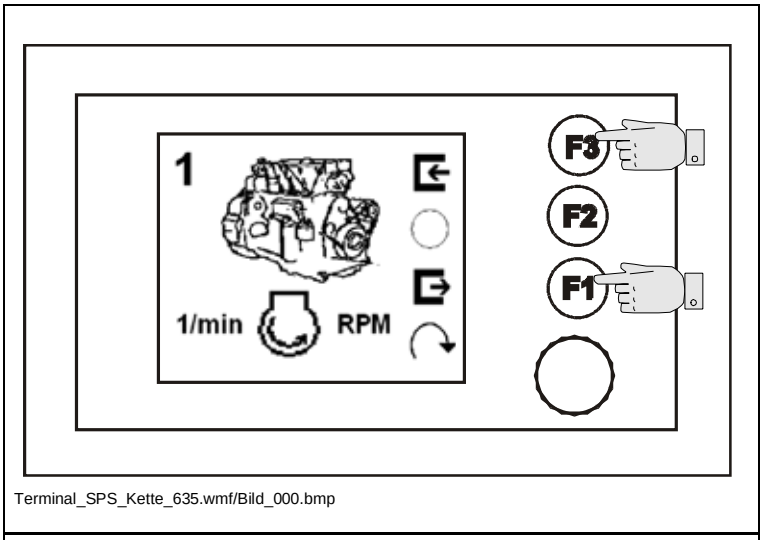
- Open submenu (101) (9)

A In case of activated steering automatic system the steering potentiometer is OFF. Steering is automatic, by sensing the Ski-string.

Menu 01 - Engine speed

Adjustment menu of engine speed (1)

- Open the submenu: F3).
- Back to the main menu: (F1)



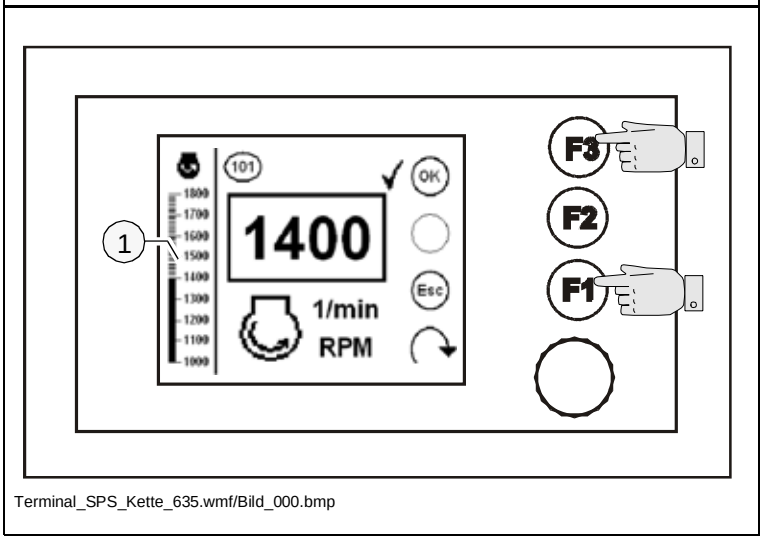
Terminal_SPS_Kette_635.wmf/Bild_000.bmp

Submenu 101 - Setting the engine speed

- Saving, back to the main menu: (F3)
- Resetting changes, back to the main menu: (F1)

A Setting is performed in steps of 50, the speed of the engine directly follows the adjustments.

A Illustration of engine speed by column diagram (1).

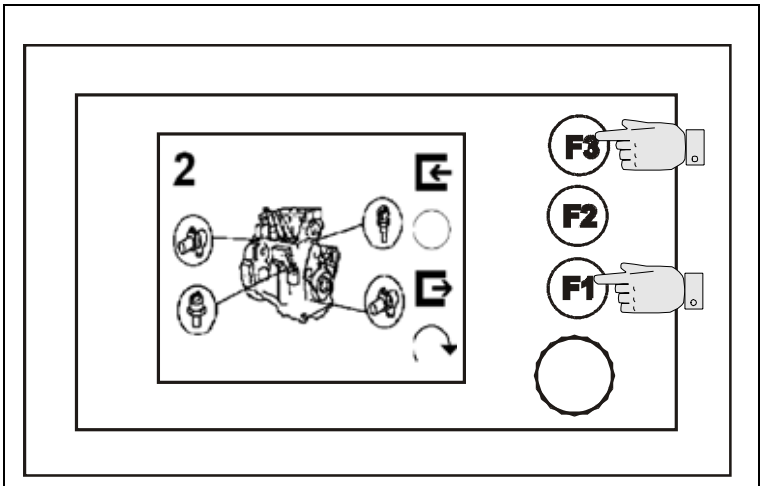


Terminal_SPS_Kette_635.wmf/Bild_000.bmp

Menu 02 - Measuring value of drive engine

Menu to query the various measuring values of the drive engine.

- Open the submenu: (F3)
- Back to the main menu: (F1)



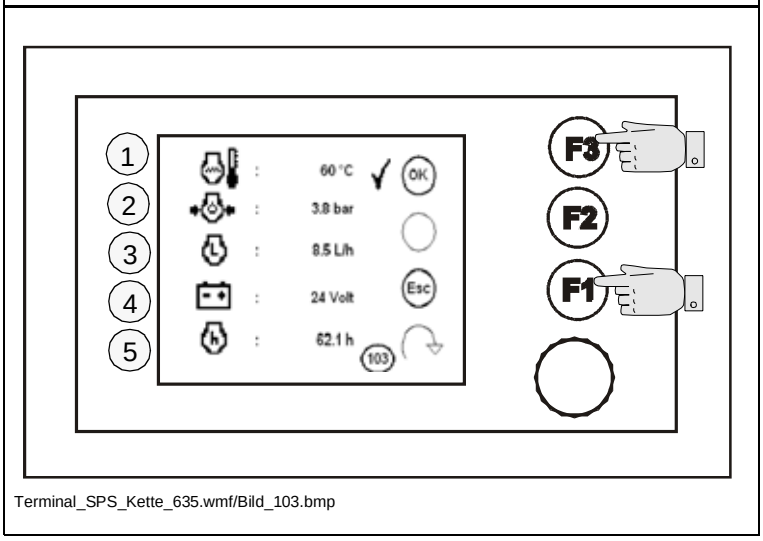
Terminal_SPS_Kette_635.wmf/Bild_000.bmp

Submenu 103 - Display of measuring value Drive engine

Display of the following measuring values:

- Engine temperature (1)
- Engine oil pressure (2)
- Fuel consumption (3)
- Battery voltage (4)
- Number of engine service hours (5)

- Back to menu 02: (F1), (F3)

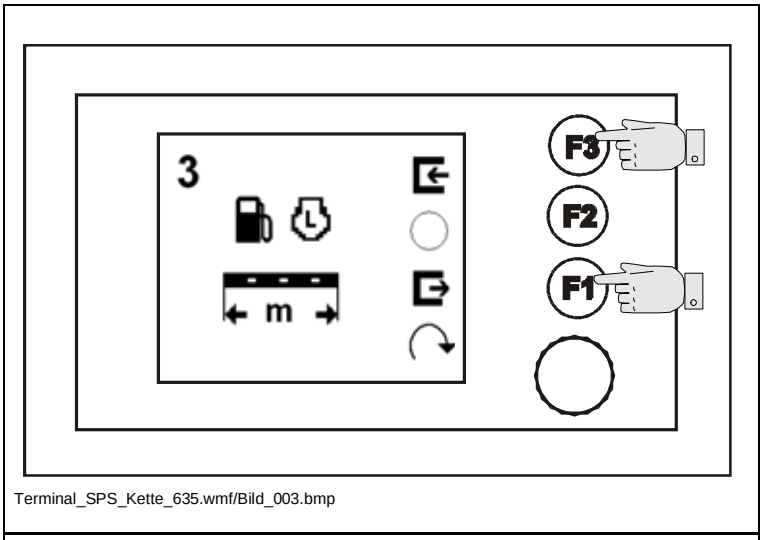


Terminal_SPS_Kette_635.wmf/Bild_103.bmp

Menu 03 - Trip meter and fuel gauge

Menu to query the various operating data

- Open the submenu: (F3)
- Back to the main menu: (F1)

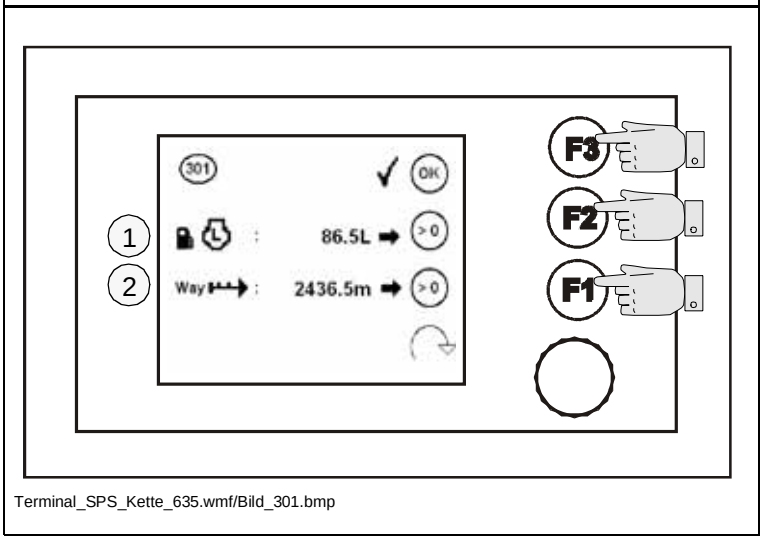


Terminal_SPS_Kette_635.wmf/Bild_003.bmp

Submenu 301 - Road section, fuel consumption display/reset

Display of the following service data:

- Fuel consumed (calculated value) (1)
  - Reset - setting the value to zero, step back Menu 03: (F2)
- Trip covered (2)
  - Reset - setting the value to zero, step back to menu 03 (F1)
- Back to menu 03: (F3)

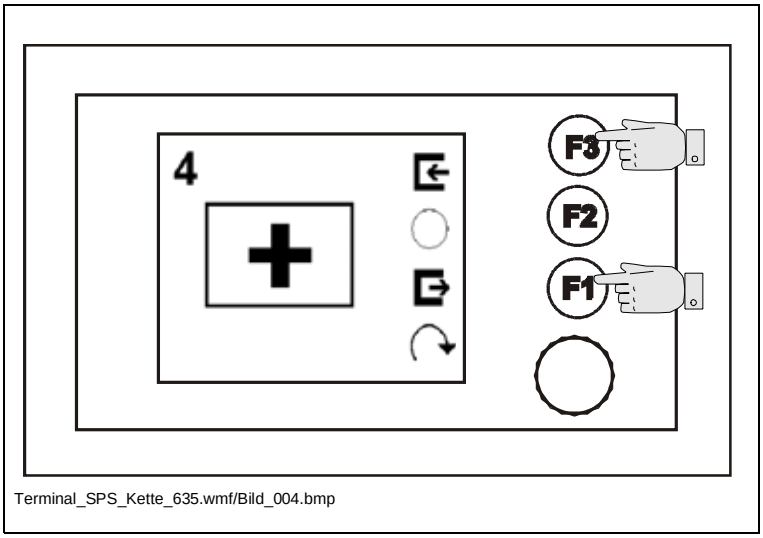


Terminal_SPS_Kette_635.wmf/Bild_301.bmp

Menu 04 - Emergency function / stopping the screed and turning on the tamper

In case of the loss of the specified target value or of the measuring of the actual value (e.g. faulty sensor, transducer), the capacity of the various functions can be set for the automatic operation.

- Open the submenu: (F3)
- Back to the main menu: (F1)

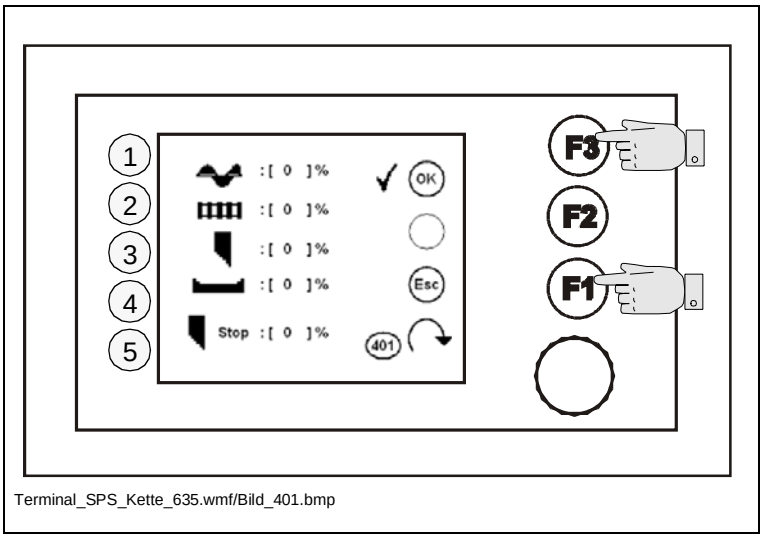


Terminal_SPS_Kette_635.wmf/Bild_004.bmp

Submenu 401 - Emergency functions adjustment

Capacity change is possible in case of the functions below:

- Auger (1)
- Feeder conveyor (2)
- Tamper (3)
- Vibration (4)
- Tamper stop (5)



Terminal_SPS_Kette_635.wmf/Bild_401.bmp

A The current value can be set between 0 and 100%.

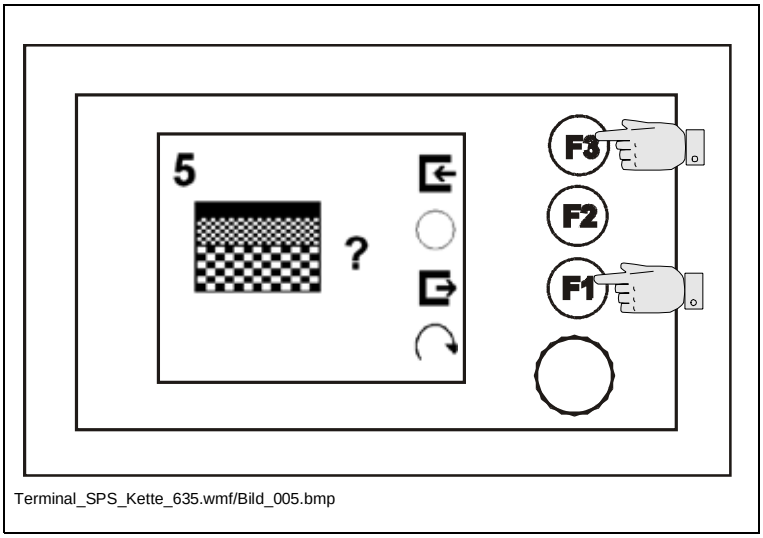
A Adjustments of these functions can be carried out, only if a fault has occurred.

- Resetting of parameters, back to menu 04: (F1)
- Saving of set parameters, back to menu 04: (F3)

Menu 05 - Layer thickness

Menu for setting the type of layer to be processed

- Open the submenu: (F3)
- Back to the main menu: (F1)



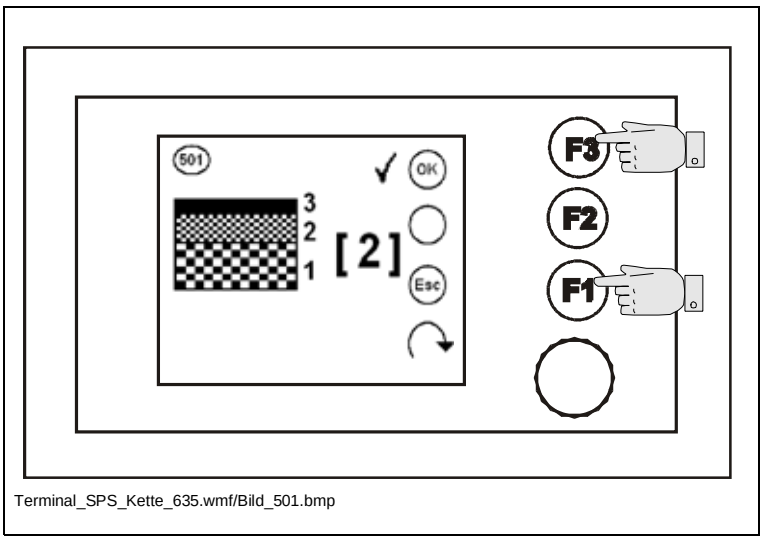
Terminal_SPS_Kette_635.wmf/Bild_005.bmp

Submenu 501 - Preselection of layer thickness

The following types of layers can be selected:

- Top layer: 3 parameters
- Binder course 2 parameters
- Load bearing course: 1 parameter

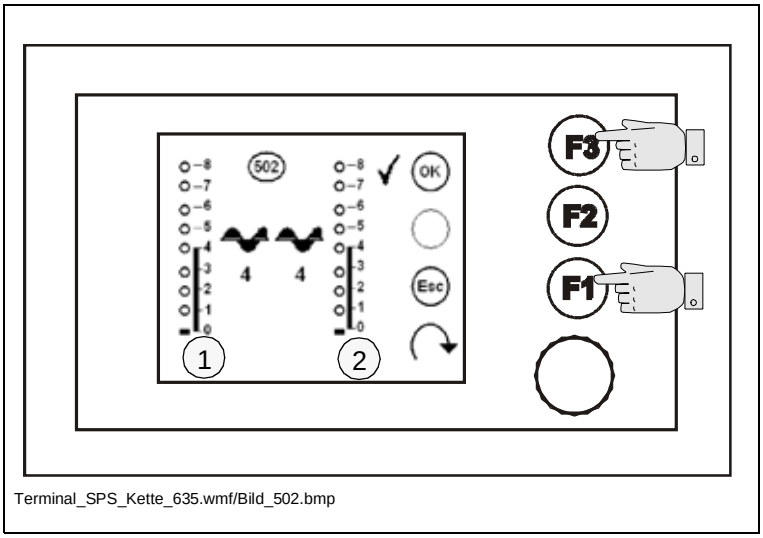
- Saving, opening of submenu: (F3)
- Resetting changes, back to submenu 05: (F1)



Terminal_SPS_Kette_635.wmf/Bild_501.bmp

A Directly to the following submenu: (F3)

Submenu 502 - Setting the speed of auger



Terminal_SPS_Kette_635.wmf/Bild_502.bmp

The speed can be set in 8 stages. The actual speed selected for the applicable feeder auger is shown on displays (1) and (2).

Basic settings applicable to the specific layer types:

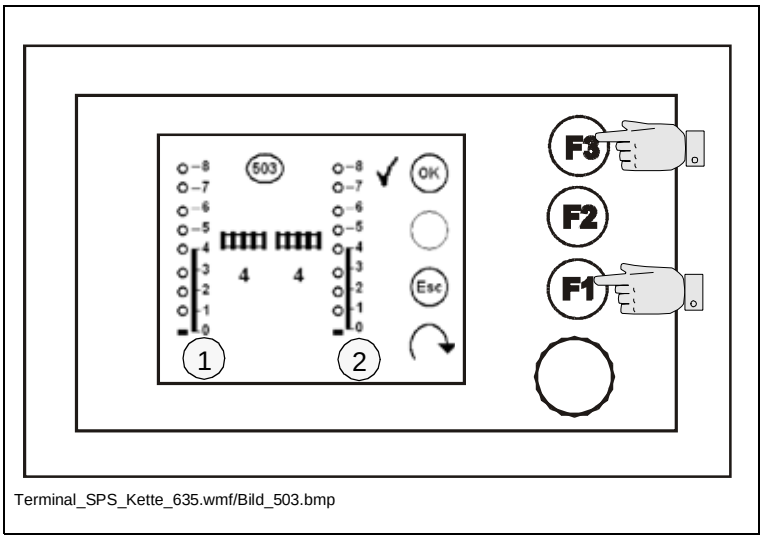
- Top layer: 4
- Binder course 6
- Load bearing course: 8

- Saving, opening of submenu: (F3)
- Resetting changes, back to submenu 05: (F1)

A Directly to the following submenu: (F3)

A The LED signals of the remote control units change according to the settings made.

Submenu 503 - Adjustment of the speed of conveyor



Terminal_SPS_Kette_635.wmf/Bild_503.bmp

The speed can be set in 8 stages. The actual speed selected for the applicable conveyor is shown on display (1) and (2).

Basic settings applicable to the specific layer types:

- Top layer: 4
- Binder course 6
- Load bearing course: 8

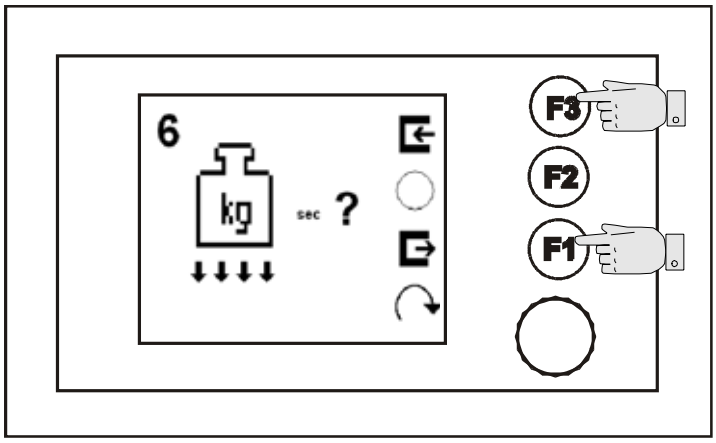
- Saving, back to submenu 05: (F3).
- Resetting changes, back to submenu 05: (F1).

A The LED signals of the remote control units change according to the settings made.

Menu 06 - Screed charging

Menu to set the starting load

- Open the submenu: (F3)
- Back to the main menu: (F1)

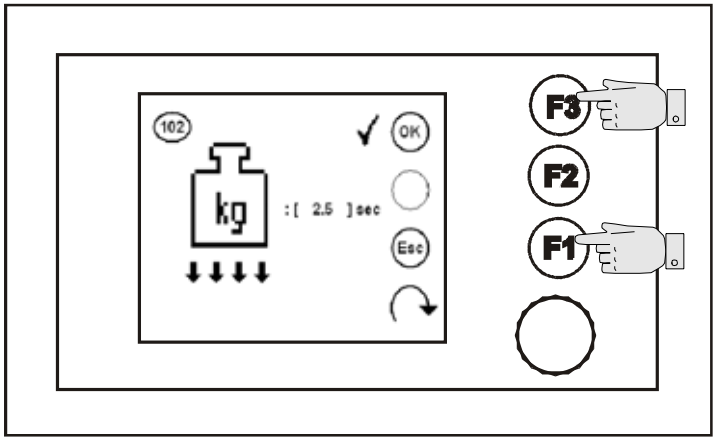


Terminal_SPS_Kette_635.wmf/Bild_006.bmp

Submenu 102 - Starting load setting

Setting the duration of starting load

- Saving, back to submenu 06: (F3)
- Resetting changes, back to menu 06: (F1)

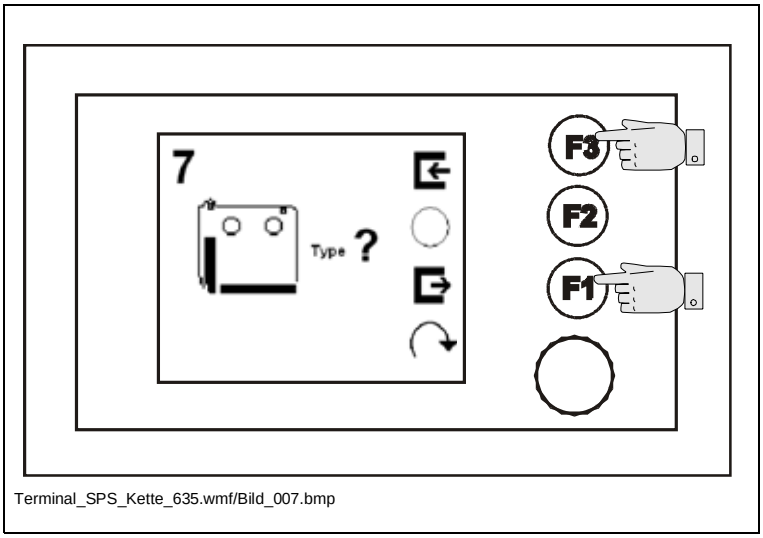


Terminal_SPS_Kette_635.wmf/Bild_102.bmp

Menu 07 - Screed type

Menu for adjusting the screed type

- Open the submenu: (F3)
- Back to the main menu: (F1)



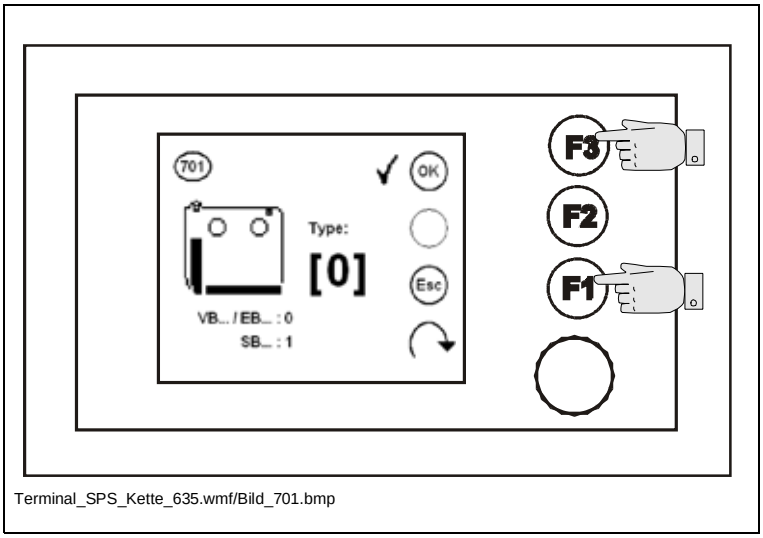
Terminal_SPS_Kette_635.wmf/Bild_007.bmp

Submenu 701 - Setting the screed type

The following screed types can be set:

- VB/EB-screed type: 0 parameter
- SB-screed: 1 parameter

- Saving, back to submenu 07: (F3)
- Resetting changes, back to menu 07: (F1)

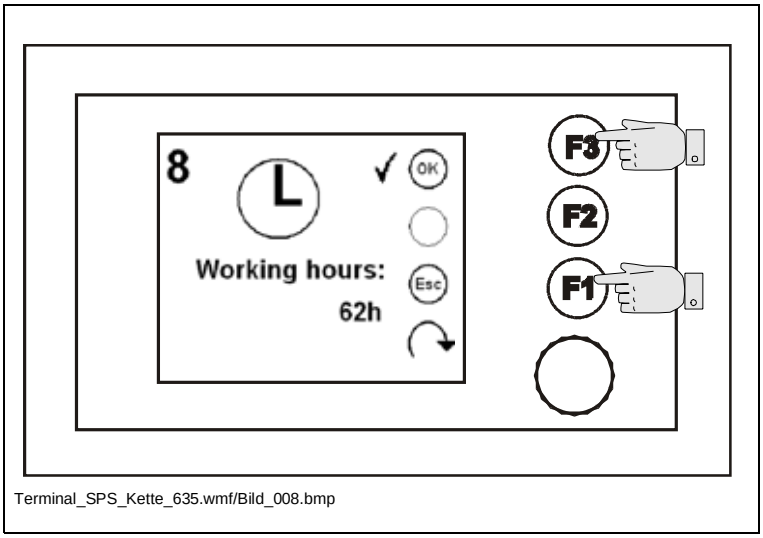


Terminal_SPS_Kette_635.wmf/Bild_701.bmp

Menu 08 - Service hour meter

Menu to query the service hours

- Back to the main menu: (F1) or (F3)

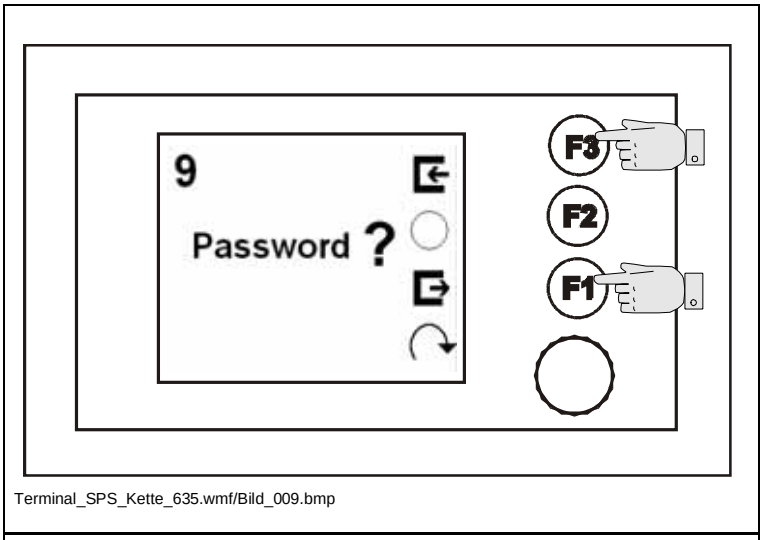


Terminal_SPS_Kette_635.wmf/Bild_008.bmp

Menu 09 - Service

Password protected menu to perform the various service settings

- Password prompt opening: (F3)
- Back to the main menu: (F1)

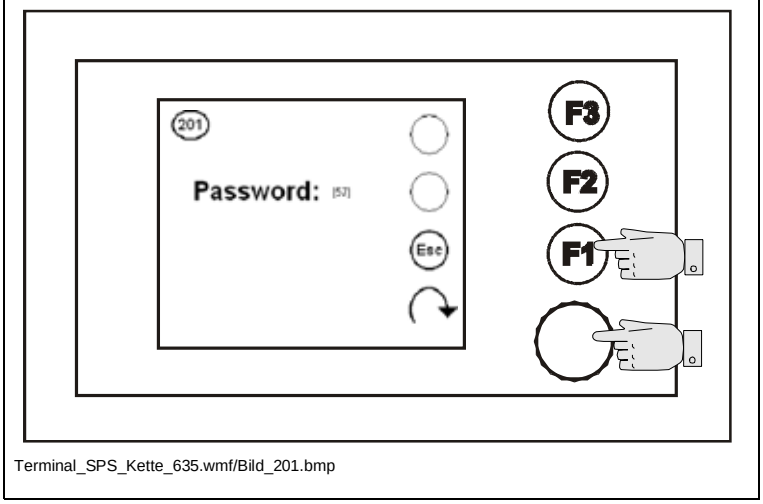


Terminal_SPS_Kette_635.wmf/Bild_009.bmp

Submenu 201 - Password prompt

Enter password:

- The password can be confirmed by pressing the Encoder
- Back to menu 09: (F1)



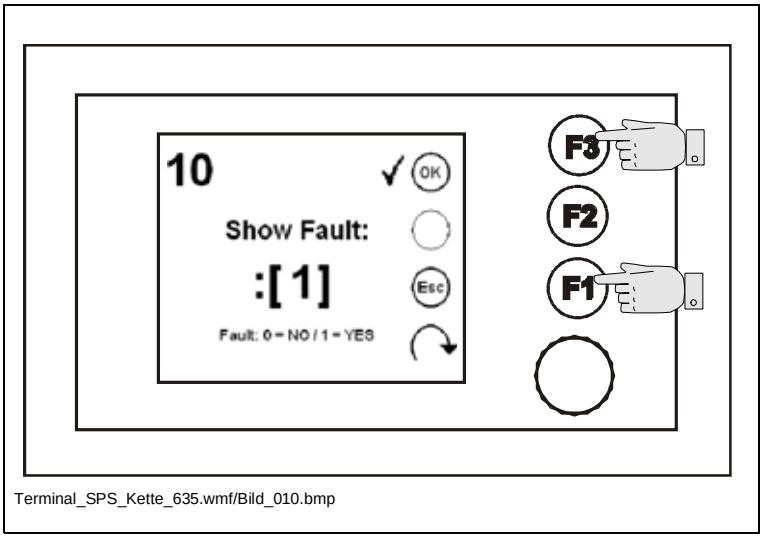
Terminal_SPS_Kette_635.wmf/Bild_201.bmp

Menu 10 - Error memory

Menu for the repeated query of error messages

- Display (0): There is no error message
- Display (1): Fault message can be displayed

- Error message query: (F3)
- Back to the main menu: (F1)

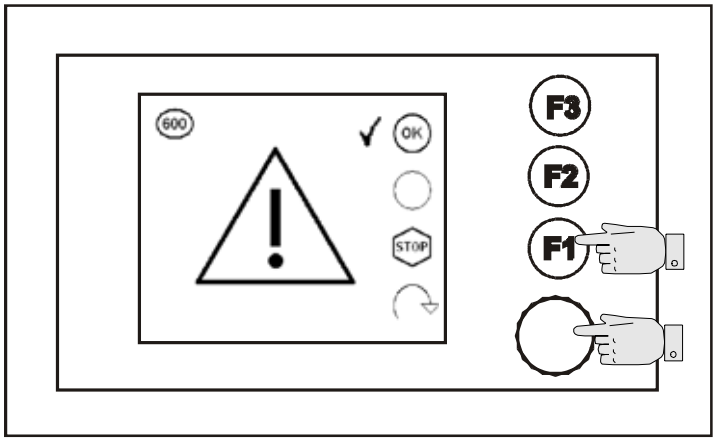


Terminal_SPS_Kette_635.wmf/Bild_010.bmp

Error message display:

A In case of error messages first always the message (600) „Attention“ is displayed

- Error message display: (F3)
- Back to menu 10: (F1)



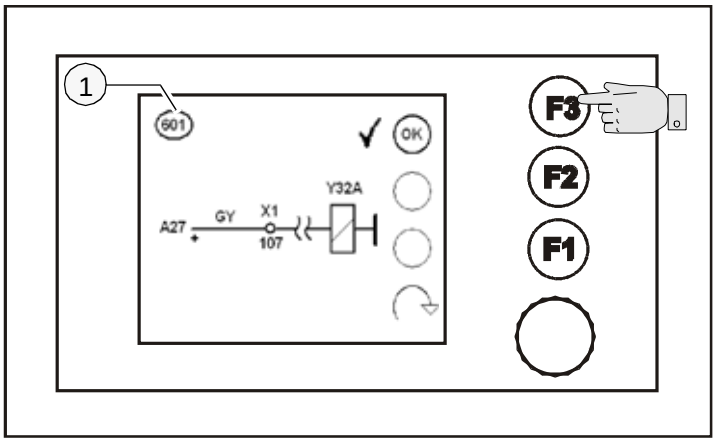
Error display

- Calling down the next fault: (F3)

A If additional faults have also occurred, again the message „Attention“ will be displayed.

A When the last error message was read, the system returns to the main menu.

A All the error messages can be identified in the chapter „Error messages of Terminal“.



Terminal_SPS_Kette_635.wmf/Bild_600.bmp//Bild_601.bmp

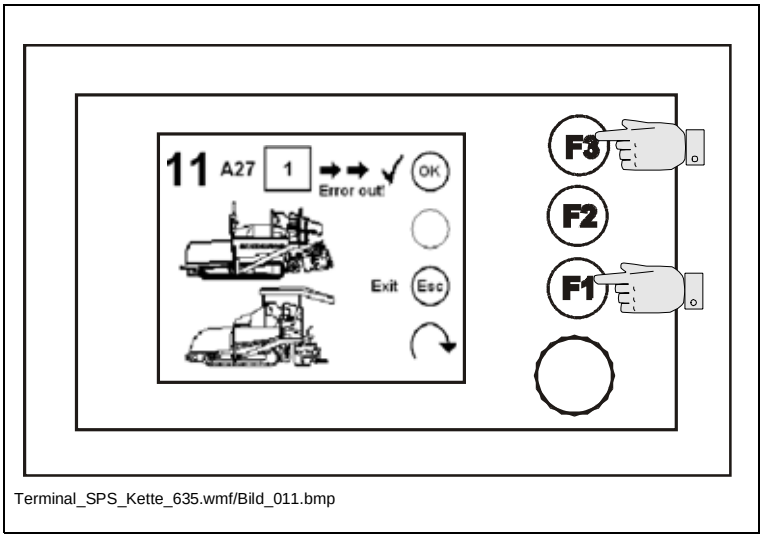
A In case you use the help of Technical Support for your machine, always specify the number of the error message (1).

Menu 11 - Error memory Computer of machine operation

Menu for the repeated query of error messages sent by the computer of machine operation

- Display (0): There is no error message
- Display (1): Fault message can be displayed

- Retrieval of error message: (F3)
- Back to the main menu: (F1)

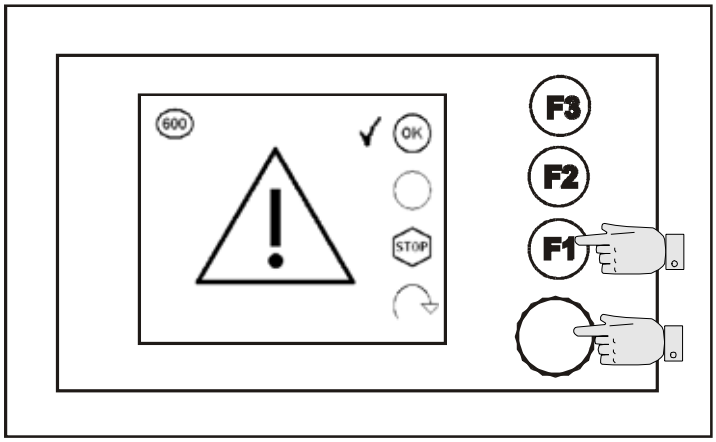


Terminal_SPS_Kette_635.wmf/Bild_011.bmp

Error message display:

A In case of error messages first always the message (600) „Attention“ is displayed

- Error message display: (F3)
- Back to menu 10: (F1)



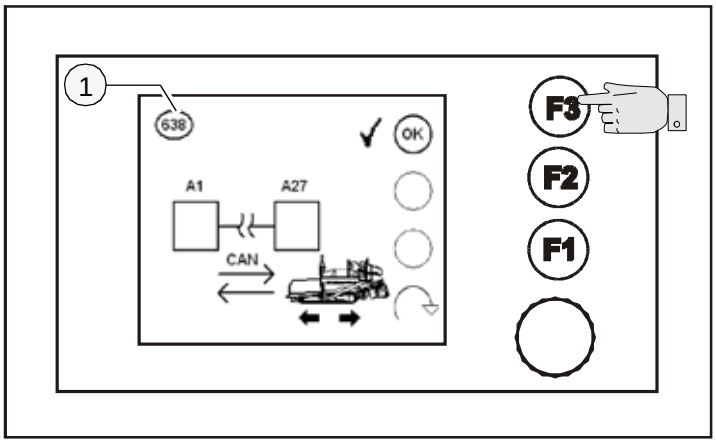
Error display

- Calling down the next fault: (F3)

A If additional faults have also occurred, again the message „Attention“ will be displayed.

A When the last error message was read, the system returns to the main menu.

A All the error messages can be identified in the chapter „Error messages of Terminal“.



Terminal_SPS_Kette_635.wmf/Bild_600.bmp/Bild_638.bmp

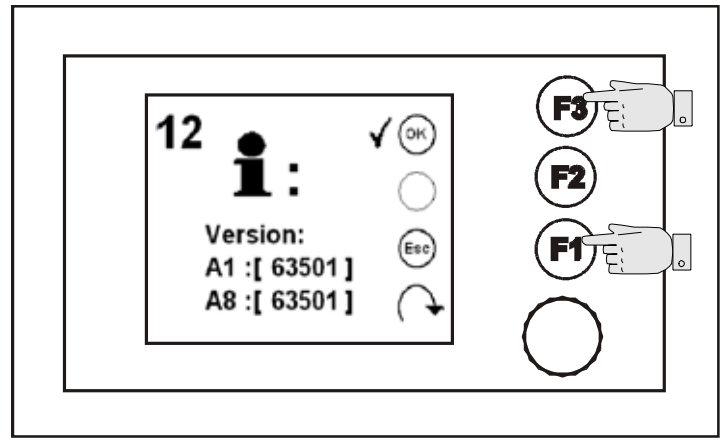
A In case you use the help of Technical Support for your machine, always specify the number of the error message (1).

Menu 12 - Program version

Menu to query the version number of the installed program

A In case you use the help of Technical Support for your machine, always specify the version number of the program.

- Back to the main menu: (F1) or (F3)

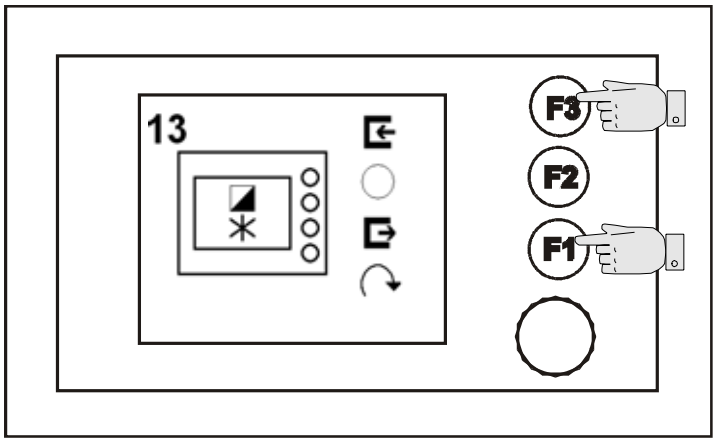


Terminal_SPS_Kette_635.wmf/Bild_012.bmp

Menu 13 - Terminal settings

Menu for the various settings of the terminal

- Open the submenu: (F3)
- Back to the main menu: (F1)

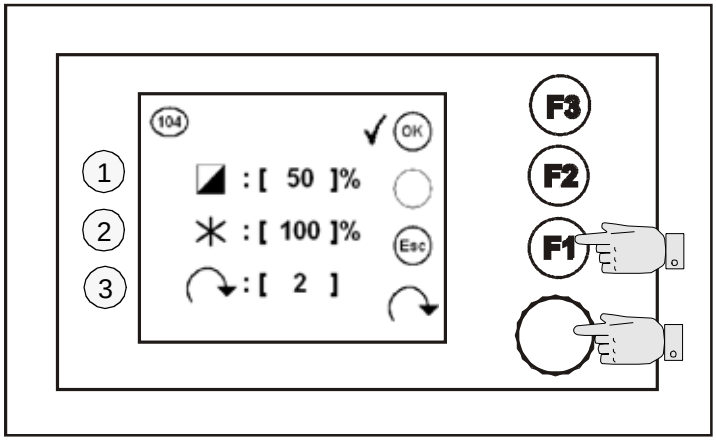


Terminal_SPS_Kette_635.wmf/Bild_013.bmp

Submenu 104 - Terminal settings

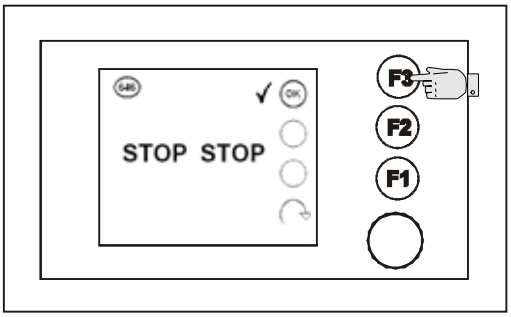
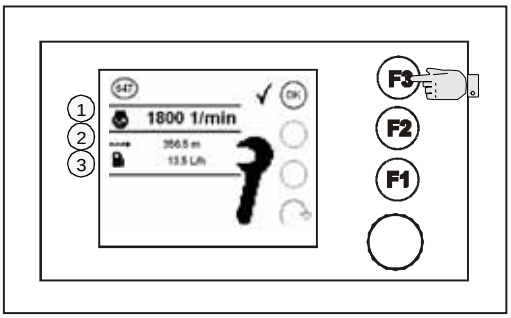
Setting of Contrast (1) brilliance of display (2) and the sensitivity of Encoder (3)

- Saving, back to submenu 13: (F3)
- Resetting changes, back to submenu 13: (F1)



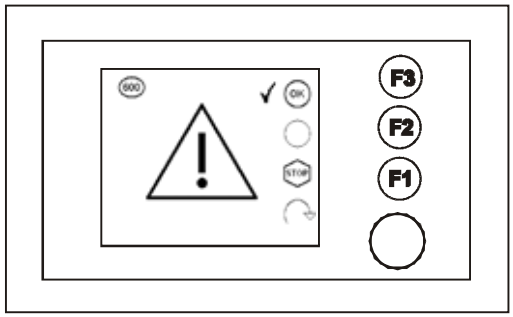
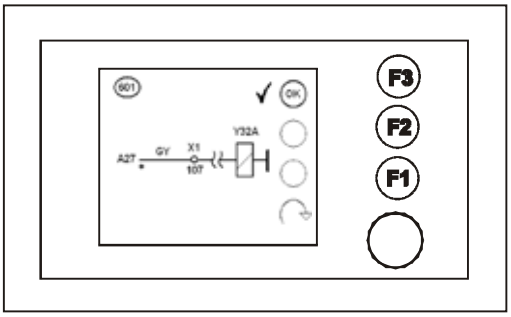
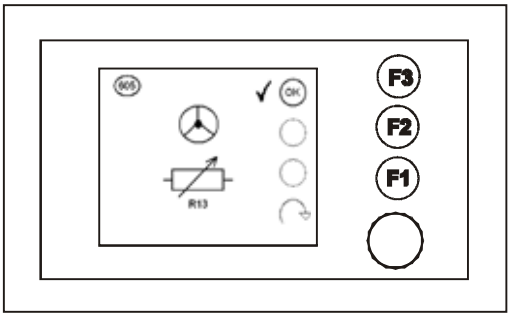
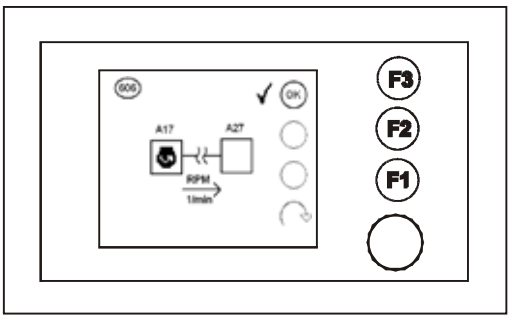
Terminal_SPS_Kette_635.wmf/Bild_104.bmp

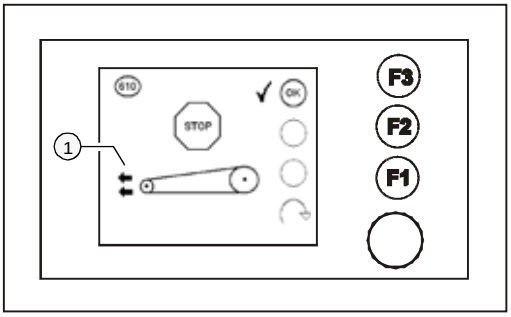
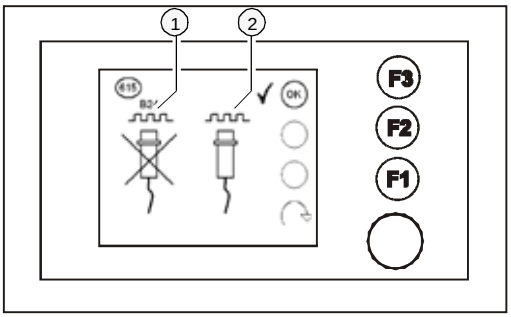
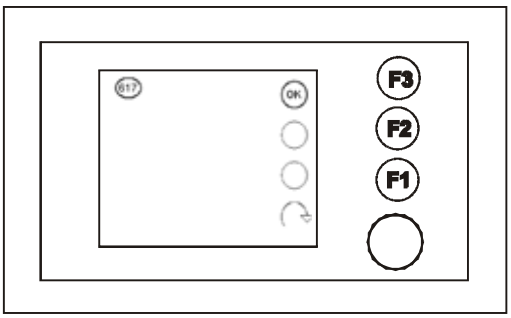
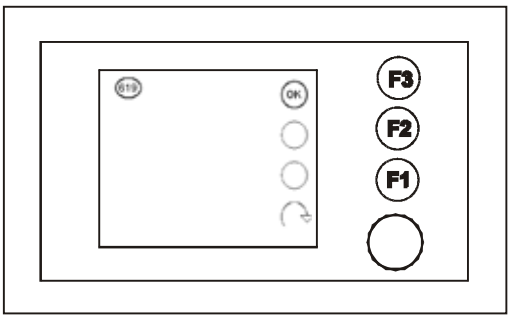
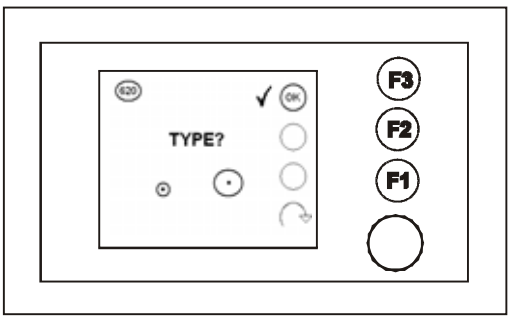
1.2 Further messages on the display

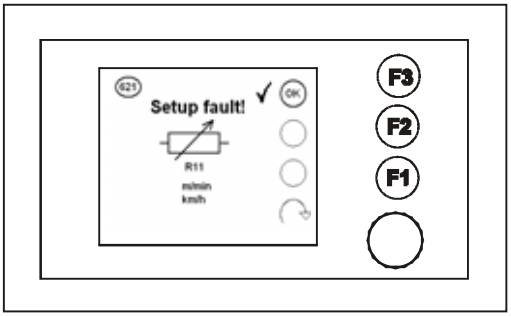
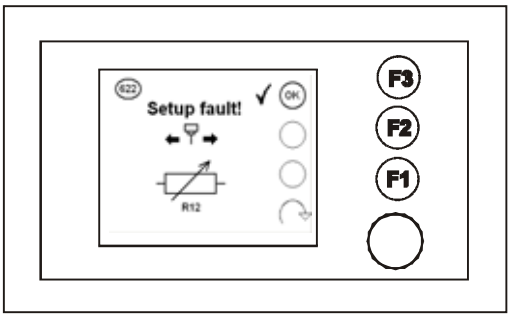
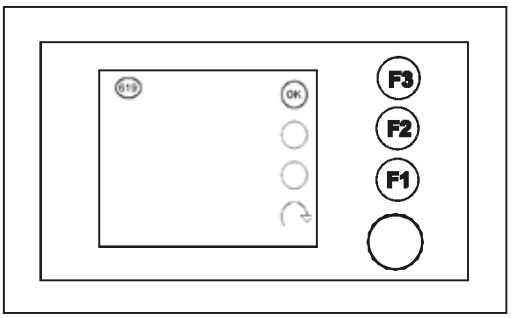
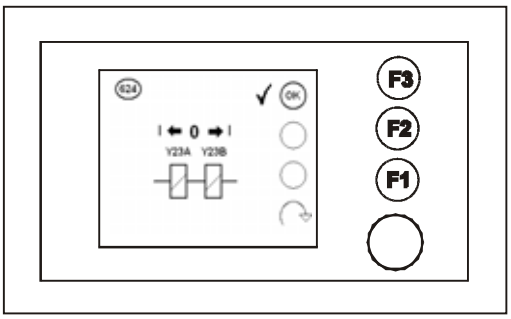
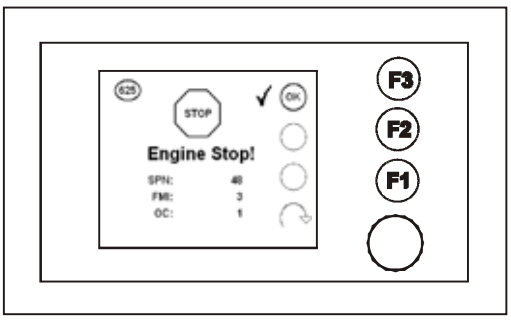
Display No. / report	Display
message 646 Emergency stop button de-pressed - Back to the previous menu: (F3)	
message 647 Adjustment mode Displays: - Engine speed (1) - Trip covered (2) - Fuel consumed (calculated value) (3) - Back to the previous menu: (F3)	

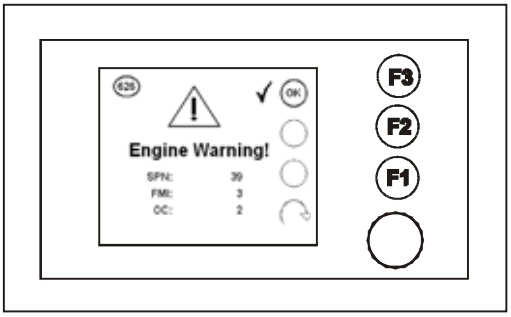
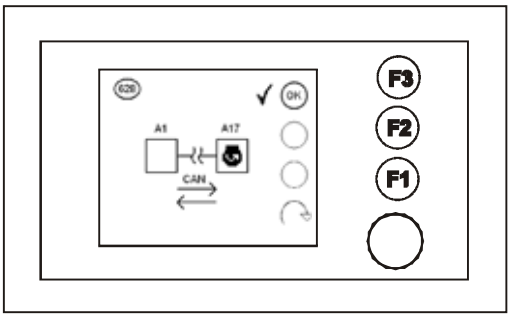
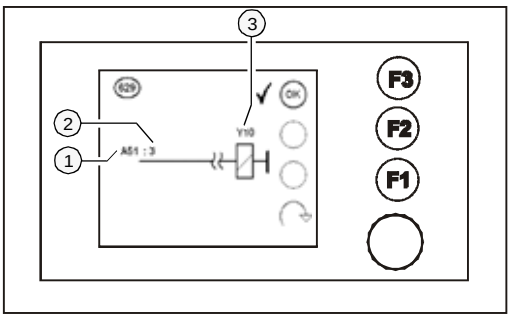
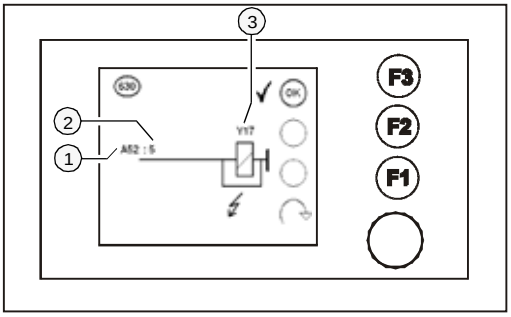
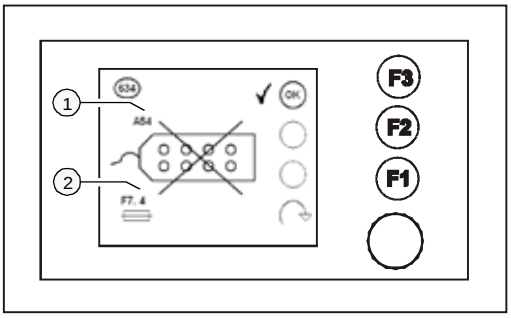
2 Terminal error messages

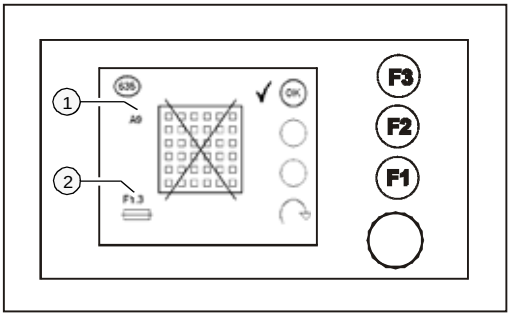
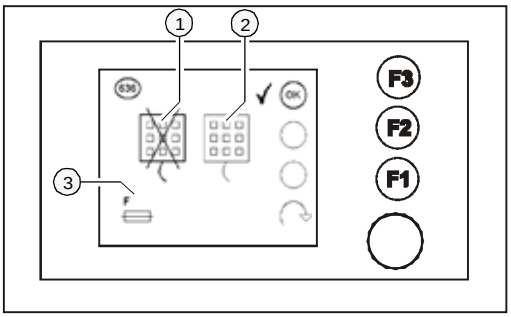
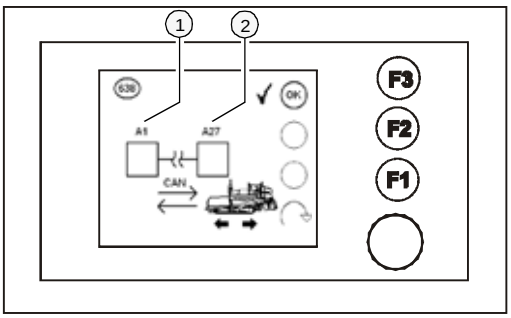
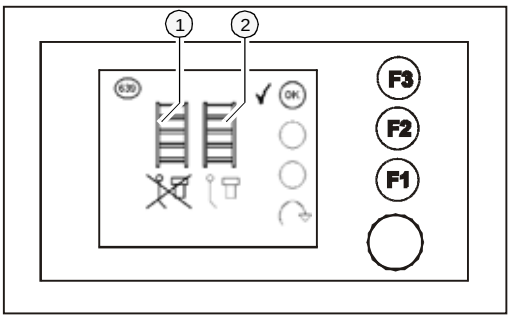
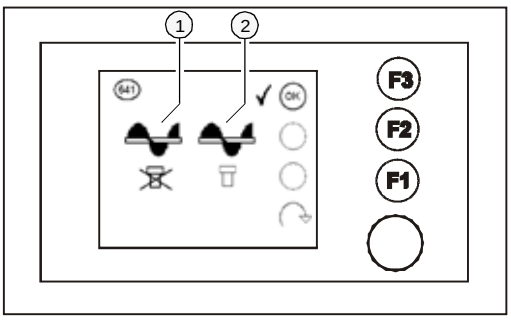
A Each error message is assigned a number. If you use the help of the Technical Support for your machine, please, provide this number and all information included in the error message.

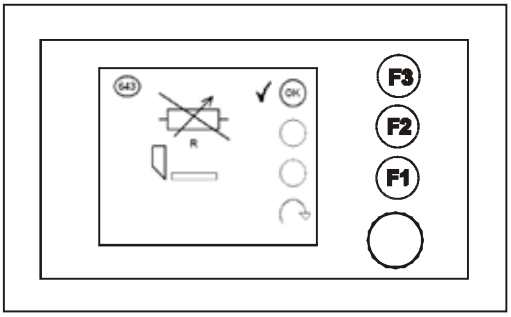
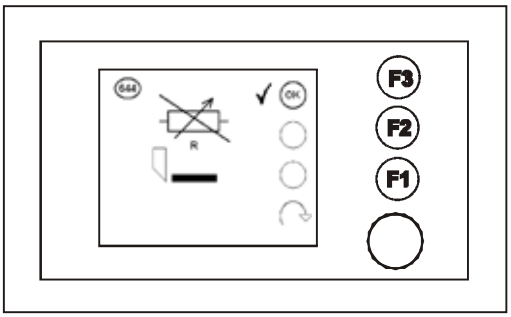
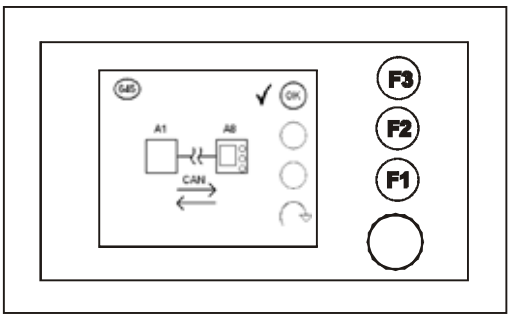
Fault No. / report	Display
600. error message General fault display	
601. error message Broken wire Pump of travel automatic / drive lever	
605. error message - Faulty steering potentiometer	
606. error message - Communication interrupted Drive motor of travel automatic unit	

Fault No. / report	Display
610. error message - „drive lever forward“ locked Variable: - Drive / steering direction (1)	
615. error message - Sensor of running gear faulty Variable: - LH-side sensor (1) - RH-side sensor (2)	
617. error message - Broken line - drive lever pump control	
619. error message - Short circuit / line fault - drive lever potentiometer / drive lever - microswitch (opposite switch)	
620. error message - The type of paver finisher is not set in the service software	

Fault No. / report	Display
621. error message - Setup fault of travel speed potentiometer in the service software.	
622. error message - Drive lever potentiometer setup-fault in the service software.	
623. error message - Short circuit / line fault - drive lever microswitch forward / reverse (parallel switch)	
624. error message - Pump current zero position (dead band) not specified in the service software.	
625. error message Fault with the engine position SPN = part concerned FMI = type of fault OC = frequency of repetition A see chapter „Fault codes of drive engine“.	

Fault No. / report	Display
626. error message - Warning signal of traction engine - SPN = part concerned - FMI = type of fault - OC = frequency of repetition A see chapter „Fault codes of traction engine“.	
628. error message - Communication interrupted Master drive engine	
629. error message - Slave output wire broken Variable: - Slave No. (1) - Slave-output (2) - Controlled element (3)	
630. error message - Slave output short circuit Variable: - Slave No. (1) - Slave-output (2) - Controlled element (3)	
634. error message - Slave fault Variable: - Slave No. (1) - Fuse (2)	

Fault No. / report	Display
635. error message - Keyboard fault / Keyboard fuse faulty	
636. error message - Remote control fault / Keyboard fuse faulty Variable: - LH-side remote control (1) - RH-side remote control (2) - Remote control fuse (3)	
638. error message - Communication interrupted Master drive automatic system A Observe the rules described in Chapter „Instructions for fault messages“.	
639. error message - Conveyor limit switch faulty Variable: - LH-side limit switch (1) - RH-side limit switch (2)	
641. error message - Auger limit switch faulty Variable: - LH-side limit switch (1) - RH-side limit switch (2)	

Fault No. / report	Display
643. error message - Tamper target value potentiometer faulty	
644. error message - Vibrator target value potentiometer faulty	
645. error message - Communication interrupted Master display	

2.1 Instructions related to error messages

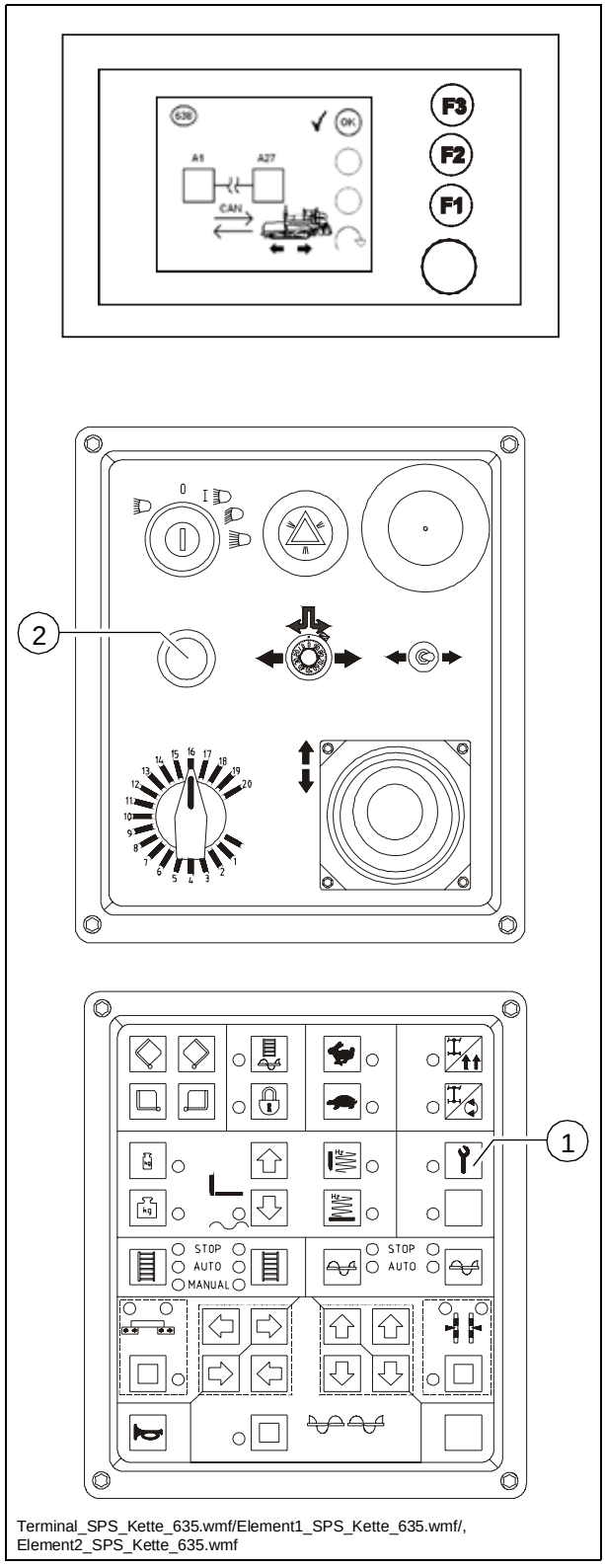
638. error message

Communication interrupted
Master drive automatic system.

A First check if the fuse F5.1 is good.

If the cause of the interrupted data link is not the fuse, the Diesel engine can be started.

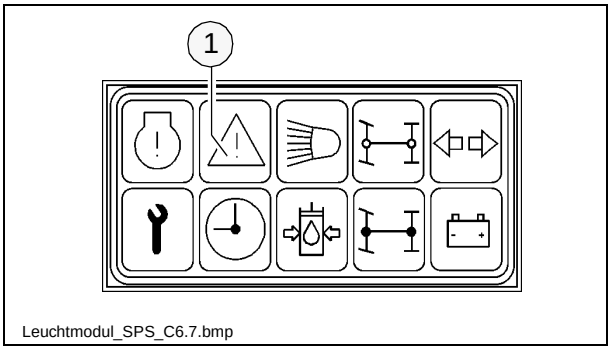
- Switch on button (1) (LED comes on)
- Press start button (2).



Terminal_SPS_Kette_635.wmf/Element1_SPS_Kette_635.wmf/, Element2_SPS_Kette_635.wmf

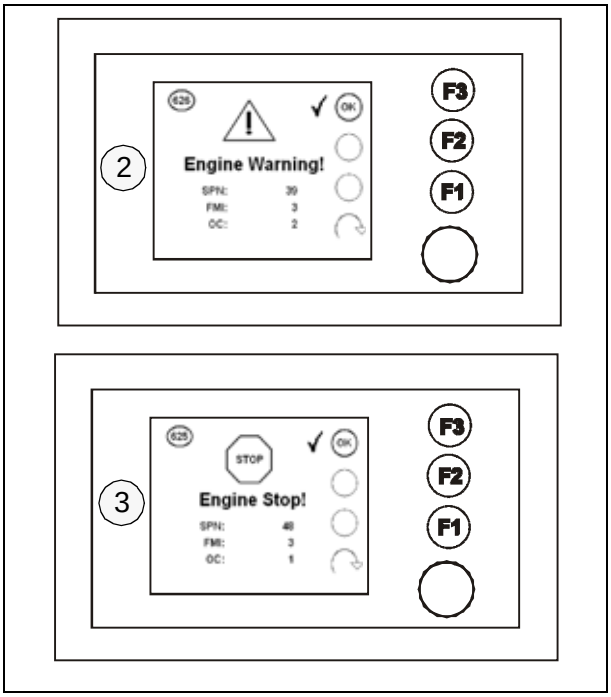
2.2 Fault codes of the traction engine.

If a fault occurs in the traction engine, this is indicated by the specific signal lamp (1) and simultaneously an explanation appears on the display.

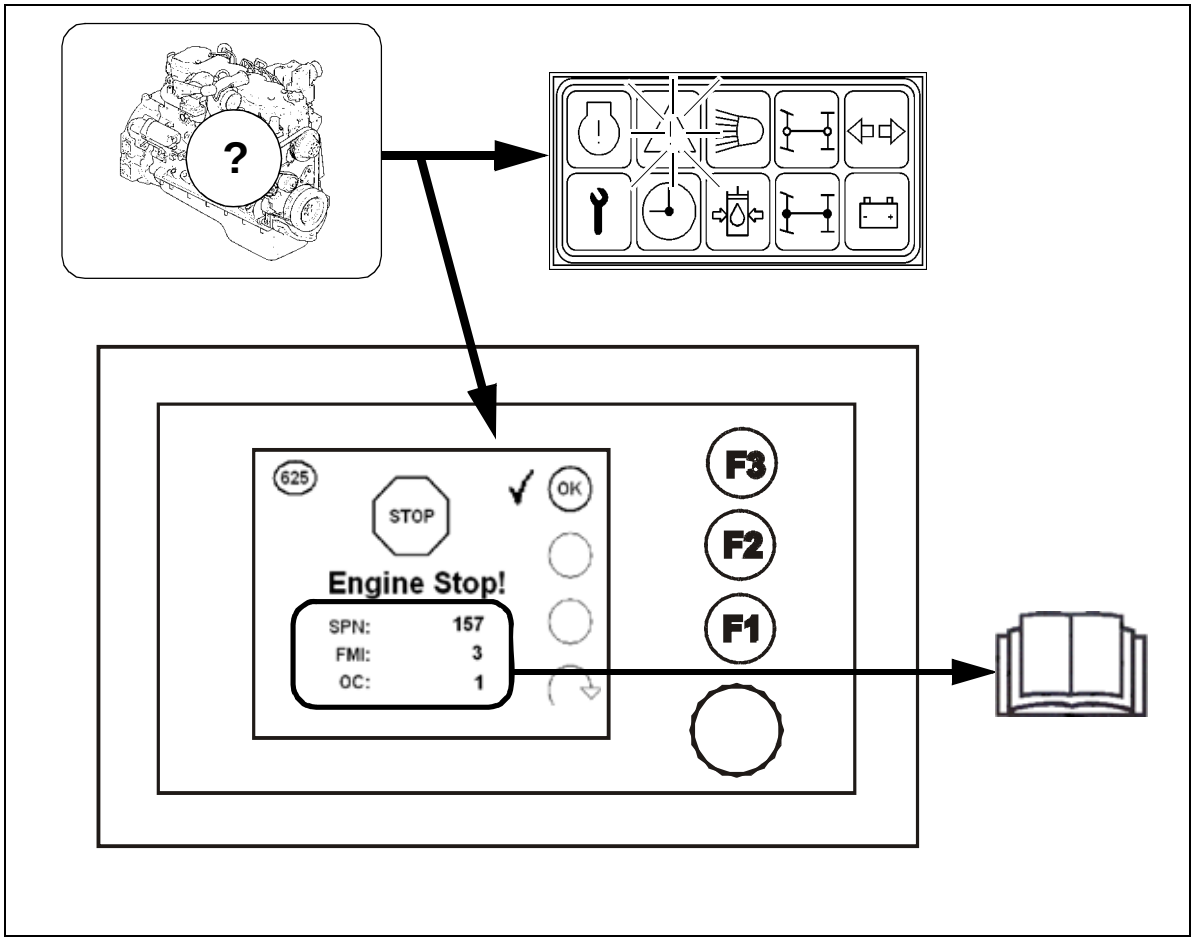


The error message displayed simultaneously includes several error codes, the decoding of which clearly defines the fault.

- The display „ENGINE WARNING“ (2) indicates that a fault has occurred in the traction engine. The machine can be further operated temporarily. In order to prevent further damage, the error should however be rectified as soon as possible.
- „STOP ENGINE!“ (Stop Engine!) display (3) the traction engine is failed to such an extent that the engine immediately stops automatically, or it has to be stopped to avoid further damage.



Example:



Explanation:
The flashing control lamp marks the serious failure of the traction engine and the engine will stop automatically or it has to be stopped.
Display:
SPN: 157
FMI: 3
OC: 1

Cause: Cable failure in the Rail pressure detector.
Effect: The engine switches off.
Frequency: The fault occures for the first time.

m Report the displayed fault code to the customer service of the paver finisher and they will discuss with you the steps to be taken.

2.3 Error messages

Fault Code	J1939 SPN	J1939 FMI	Lamp Color	J1939 SPN Description	Cummins Description
111	629	12	Red	Controller #1	Engine Control Module Critical internal failure - Bad intelligent Device or Component
115	612	2	Red	System Diagnostic Code # 2	Engine Speed/Position Sensor Circuit lost both of two signals from the magnetic pickup sensor - Data Erratic, Intermittent, or incorrect
122	102	3	Amber	Boost Pressure	Intake Manifold Pressure Sensor Circuit – Voltage Above Normal, or Shorted to High Source
123	102	4	Amber	Boost Pressure	Intake Manifold Pressure Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
131	91	3	Red	Accelerator Pedal Position	Accelerator Pedal or Lever Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source
132	91	4	Red	Accelerator Pedal Position	Accelerator Pedal or Lever Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
133	974	3	Red	Remote Accelerator	Remote Accelerator Pedal or Lever Position Sensor Circuit – Voltage Above Normal, or Shorted to High Source
134	974	4	Red	Remote Accelerator	Remote Accelerator Pedal or Lever Position Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
135	100	3	Amber	Engine Oil Pressure	Oil Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
141	100	4	Amber	Engine Oil Pressure	Oil Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
143	100	18	Amber	Engine Oil Pressure	Oil Pressure Low – Data Valid but Below Normal Operational Range - Moderately Severe Level
144	110	3	Amber	Engine Coolant Temperature	Coolant Temperature Sensor Circuit – Voltage Above Normal, or Shorted to High Source
145	110	4	Amber	Engine Coolant Temperature	Coolant Temperature Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
146	110	16	Amber	Engine Coolant Temperature	Coolant Temperature High - Data Valid but Above Normal Operational Range - Moderately Severe Level
147	91	1	Red	Accelerator Pedal Position	Accelerator Pedal or Lever Position Sensor Circuit – Abnormal Frequency, Pulse Width, or Period
148	91	0	Red	Accelerator Pedal Position	Accelerator Pedal or Lever Position Sensor Circuit – Abnormal Frequency, Pulse Width, or Period
151	110	0	Red	Engine Coolant Temperature	Coolant Temperature Low - Data Valid but Above Normal Operational Range - Most Severe Level
153	105	3	Amber	Intake Manifold #1 Temp	Intake Manifold Air Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
154	105	4	Amber	Intake Manifold #1 Temp	Intake Manifold Air Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
155	105	0	Red	Intake Manifold #1 Temp	Intake Manifold Air Temperature High – Data Valid but Above Normal Operational Range - Most Severe Level
187	1080	4	Amber	5 Volts DC Supply	Sensor Supply Voltage #2 Circuit – Voltage Below Normal, or Shorted to Low Source
195	111	3	Amber	Coolant Level	Coolant Level Sensor Circuit - Voltage Above Normal, or Shorted to High Source
196	111	4	Amber	Coolant Level	Coolant Level Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
197	111	18	Amber	Coolant Level	Coolant Level - Data Valid but Below Normal Operational Range - Moderately Severe Level
211	1484	31	None	J1939 Error	Additional Auxiliary Diagnostic Codes logged - Condition Exists
212	175	3	Amber	Oil Temperature	Engine Oil Temperature Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
213	175	4	Amber	Oil Temperature	Engine Oil Temperature Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source
214	175	0	Red	Oil Temperature	Engine Oil Temperature - Data Valid but Above Normal Operational Range - Most Severe Level

Fault Code	J1939 SPN	J1939 FMI	Lamp Color	J1939 SPN Description	Cummins Description
221	108	3	Amber	Barometric Pressure	Barometric Pressure Sensor Circuit – Voltage Above Normal, or Shorted to High Source
222	108	4	Amber	Barometric Pressure	Barometric Pressure Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
227	1080	3	Amber	5 Volts DC Supply	Sensor Supply Voltage #2 Circuit – Voltage Above Normal, or Shorted to High Source
231	109	3	Amber	Coolant Pressure	Coolant Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
232	109	4	Amber	Coolant Pressure	Coolant Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
233	109	18	Amber	Coolant Pressure	Coolant Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level
234	190	0	Red	Engine Speed	Engine Speed High - Data Valid but Above Normal Operational Range - Most Severe Level
235	111	1	Red	Coolant Level	Coolant Level Low - Data Valid but Below Normal Operational Range - Most Severe Level
237	644	2	Amber	External Speed Input	External Speed Input (Multiple Unit Synchronization) - Data Erratic, Intermittent, or Incorrect
238	611	4	Amber	System Diagnostic code # 1	Sensor Supply Voltage #3 Circuit – Voltage Below Normal, or Shorted to Low Source
241	84	2	Amber	Wheel-based Vehicle Speed	Vehicle Speed Sensor Circuit - Data Erratic, Intermittent, or Incorrect
242	84	10	Amber	Wheel-based Vehicle Speed	Vehicle Speed Sensor Circuit tampering has been detected – Abnormal Rate of Change
245	647	4	Amber	Fan Clutch Output Device Driver	Fan Control Circuit - Voltage Below Normal, or Shorted to Low Source
249	171	3	Amber	Ambient Air Temperature	Ambient Air Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
256	171	4	Amber	Ambient Air Temperature	Ambient Air Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
261	174	16	Amber	Fuel Temperature	Engine Fuel Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
263	174	3	Amber	Fuel Temperature	Engine Fuel Temperature Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
265	174	4	Amber	Fuel Temperature	Engine Fuel Temperature Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source
268	94	2	Amber	Fuel Delivery Pressure	Fuel Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
271	1347	4	Amber	Fuel Pump Pressurizing Assembly #1	High Fuel Pressure Solenoid Valve Circuit – Voltage Below Normal, or Shorted to Low Source
272	1347	3	Amber	Fuel Pump Pressurizing Assembly #1	High Fuel Pressure Solenoid Valve Circuit – Voltage Above Normal, or Shorted to High Source
275	1347	7	Amber	Fuel Pump Pressurizing Assembly #1	Fuel Pumping Element (Front) – Mechanical System Not Responding Properly or Out of Adjustment
281	1347	7	Amber	Fuel Pump Pressurizing Assembly #1	High Fuel Pressure Solenoid Valve #1 – Mechanical System Not Responding Properly or Out of Adjustment
284	1043	4	Amber	Internal Sensor Voltage Supply	Engine Speed/Position Sensor (Crankshaft) Supply Voltage Circuit - Voltage Below Normal, or Shorted to Low Source
285	639	9	Amber	SAE J1939 Datalink	SAE J1939 Multiplexing PGN Timeout Error - Abnormal Update Rate
286	639	13	Amber	SAE J1939 Datalink	SAE J1939 Multiplexing Configuration Error – Out of Calibration
287	91	19	Red	Accelerator Pedal Position	SAE J1939 Multiplexing Accelerator Pedal or Lever Sensor System Error - Received Network Data In Error
288	974	19	Red	Remote Accelerator	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Data Error - Received Network Data In Error
293	441	3	Amber	OEM Temperature	Auxiliary Temperature Sensor Input # 1 Circuit - Voltage Above Normal, or Shorted to High Source
294	441	4	Amber	OEM Temperature	Auxiliary Temperature Sensor Input # 1 Circuit - Voltage Below Normal, or Shorted to Low Source
295	108	2	Amber	Barometric Pressure	Barometric Pressure Sensor Circuit - Data Erratic,

Fault Code	J1939 SPN	J1939 FMI	Lamp Color	J1939 SPN Description	Cummins Description
					Intermittent, or Incorrect
296	1388	14	Red	Auxiliary Pressure	Auxiliary Pressure Sensor Input 1 - Special Instructions
297	1388	3	Amber	Auxiliary Pressure	Auxiliary Pressure Sensor Input # 2 Circuit - Voltage Above Normal, or Shorted to High Source
298	1388	4	Amber	Auxiliary Pressure	Auxiliary Pressure Sensor Input # 2 Circuit - Voltage Below Normal, or Shorted to Low Source
319	251	2	Maint	Real Time Clock Power	Real Time Clock Power Interrupt - Data Erratic, Intermittent, or Incorrect
322	651	5	Amber	Injector Cylinder #01	Injector Solenoid Cylinder #1 Circuit – Current Below Normal, or Open Circuit
323	655	5	Amber	Injector Cylinder #05	Injector Solenoid Cylinder #5 Circuit – Current Below Normal, or Open Circuit
324	653	5	Amber	Injector Cylinder #03	Injector Solenoid Cylinder #3 Circuit – Current Below Normal, or Open Circuit
325	656	5	Amber	Injector Cylinder #06	Injector Solenoid Cylinder #6 Circuit – Current Below Normal, or Open Circuit
331	652	5	Amber	Injector Cylinder #02	Injector Solenoid Cylinder #2 Circuit – Current Below Normal, or Open Circuit
332	654	5	Amber	Injector Cylinder #04	Injector Solenoid Cylinder #4 Circuit – Current Below Normal, or Open Circuit
334	110	2	Amber	Engine Coolant Temperature	Coolant Temperature Sensor Circuit – Data Erratic, Intermittent, or Incorrect
338	1267	3	Amber	Vehicle Accessories Relay Driver	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage Above Normal, or Shorted to High Source
339	1267	4	Amber	Vehicle Accessories Relay Driver	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage Below Normal, or Shorted to Low Source
341	630	2	Amber	Calibration Memory	Engine Control Module data lost - Data Erratic, Intermittent, or Incorrect
342	630	13	Red	Calibration Memory	Electronic Calibration Code Incompatibility - Out of Calibration
343	629	12	Amber	Controller #1	Engine Control Module Warning internal hardware failure - Bad Intelligent Device or Component
351	629	12	Amber	Controller #1	Injector Power Supply - Bad Intelligent Device or Component
352	1079	4	Amber	5 Volts DC Supply	Sensor Supply Voltage #1 Circuit – Voltage Below Normal, or Shorted to Low Source
386	1079	3	Amber	5 Volts DC Supply	Sensor Supply Voltage #1 Circuit – Voltage Above Normal, or Shorted to High Source
387	1043	3	Amber	Internal Sensor Voltage Supply	Accelerator Pedal or Lever Position Sensor Supply Voltage Circuit - Voltage Above Normal, or Shorted to High Source
415	100	1	Red	Engine Oil Pressure	Oil Pressure Low – Data Valid but Below Normal Operational Range - Most Severe Level
418	97	15	Maint.	Water in Fuel Indicator	Water in Fuel Indicator High - Data Valid but Above Normal Operational Range – Least Severe Level
422	111	2	Amber	Coolant Level	Coolant Level - Data Erratic, Intermittent, or Incorrect
425	175	2	Amber	Oil Temperature	Engine Oil Temperature - Data Erratic, Intermittent, or Incorrect
428	97	3	Amber	Water in Fuel Indicator	Water in Fuel Sensor Circuit - Voltage Above Normal, or Shorted to High Source
429	97	4	Amber	Water in Fuel Indicator	Water in Fuel Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
431	558	2	Amber	Accelerator Pedal Low Idle Switch	Accelerator Pedal or Lever Idle Validation Circuit - Data Erratic, Intermittent, or Incorrect
432	558	13	Red	Accelerator Pedal Low Idle Switch	Accelerator Pedal or Lever Idle Validation Circuit - Out of Calibration
433	102	2	Amber	Boost Pressure	Intake Manifold Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
434	627	2	Amber	Power Supply	Power Lost without Ignition Off - Data Erratic, Intermittent, or Incorrect

Fault Code	J1939 SPN	J1939 FMI	Lamp Color	J1939 SPN Description	Cummins Description
					Intermittent, or Incorrect
296	1388	14	Red	Auxiliary Pressure	Auxiliary Pressure Sensor Input 1 - Special Instructions
297	1388	3	Amber	Auxiliary Pressure	Auxiliary Pressure Sensor Input # 2 Circuit - Voltage Above Normal, or Shorted to High Source
298	1388	4	Amber	Auxiliary Pressure	Auxiliary Pressure Sensor Input # 2 Circuit - Voltage Below Normal, or Shorted to Low Source
319	251	2	Maint	Real Time Clock Power	Real Time Clock Power Interrupt - Data Erratic, Intermittent, or Incorrect
322	651	5	Amber	Injector Cylinder #01	Injector Solenoid Cylinder #1 Circuit – Current Below Normal, or Open Circuit
323	655	5	Amber	Injector Cylinder #05	Injector Solenoid Cylinder #5 Circuit – Current Below Normal, or Open Circuit
324	653	5	Amber	Injector Cylinder #03	Injector Solenoid Cylinder #3 Circuit – Current Below Normal, or Open Circuit
325	656	5	Amber	Injector Cylinder #06	Injector Solenoid Cylinder #6 Circuit – Current Below Normal, or Open Circuit
331	652	5	Amber	Injector Cylinder #02	Injector Solenoid Cylinder #2 Circuit – Current Below Normal, or Open Circuit
332	654	5	Amber	Injector Cylinder #04	Injector Solenoid Cylinder #4 Circuit – Current Below Normal, or Open Circuit
334	110	2	Amber	Engine Coolant Temperature	Coolant Temperature Sensor Circuit – Data Erratic, Intermittent, or Incorrect
338	1267	3	Amber	Vehicle Accessories Relay Driver	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage Above Normal, or Shorted to High Source
339	1267	4	Amber	Vehicle Accessories Relay Driver	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage Below Normal, or Shorted to Low Source
341	630	2	Amber	Calibration Memory	Engine Control Module data lost - Data Erratic, Intermittent, or Incorrect
342	630	13	Red	Calibration Memory	Electronic Calibration Code Incompatibility - Out of Calibration
343	629	12	Amber	Controller #1	Engine Control Module Warning internal hardware failure - Bad Intelligent Device or Component
351	629	12	Amber	Controller #1	Injector Power Supply - Bad Intelligent Device or Component
352	1079	4	Amber	5 Volts DC Supply	Sensor Supply Voltage #1 Circuit – Voltage Below Normal, or Shorted to Low Source
386	1079	3	Amber	5 Volts DC Supply	Sensor Supply Voltage #1 Circuit – Voltage Above Normal, or Shorted to High Source
387	1043	3	Amber	Internal Sensor Voltage Supply	Accelerator Pedal or Lever Position Sensor Supply Voltage Circuit - Voltage Above Normal, or Shorted to High Source
415	100	1	Red	Engine Oil Pressure	Oil Pressure Low – Data Valid but Below Normal Operational Range - Most Severe Level
418	97	15	Maint.	Water in Fuel Indicator	Water in Fuel Indicator High - Data Valid but Above Normal Operational Range – Least Severe Level
422	111	2	Amber	Coolant Level	Coolant Level - Data Erratic, Intermittent, or Incorrect
425	175	2	Amber	Oil Temperature	Engine Oil Temperature - Data Erratic, Intermittent, or Incorrect
428	97	3	Amber	Water in Fuel Indicator	Water in Fuel Sensor Circuit - Voltage Above Normal, or Shorted to High Source
429	97	4	Amber	Water in Fuel Indicator	Water in Fuel Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
431	558	2	Amber	Accelerator Pedal Low Idle Switch	Accelerator Pedal or Lever Idle Validation Circuit - Data Erratic, Intermittent, or Incorrect
432	558	13	Red	Accelerator Pedal Low Idle Switch	Accelerator Pedal or Lever Idle Validation Circuit - Out of Calibration
433	102	2	Amber	Boost Pressure	Intake Manifold Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
434	627	2	Amber	Power Supply	Power Lost without Ignition Off - Data Erratic, Intermittent, or Incorrect

Fault Code	J1939 SPN	J1939 FMI	Lamp Color	J1939 SPN Description	Cummins Description
692	1172	4	Amber	Turbocharger #1Compressor Inlet Temperature	Turbocharger #1 Compressor Inlet Temperature Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
697	1136	3	Amber	Sensor Circuit - Voltage	ECM Internal Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
698	1136	4	Amber	Sensor Circuit - Voltage	ECM Internal Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
719	22	3	Amber	Crankcase Pressure	Extended Crankcase Blow-by Pressure Circuit - Voltage Above Normal, or Shorted to High Source
729	22	4	Amber	Crankcase Pressure	Extended Crankcase Blow-by Pressure Circuit - Voltage Below Normal, or Shorted to Low Source
731	723	7	Amber	Engine Speed Sensor #2	Engine Speed/Position #2 mechanical misalignment between camshaft and crankshaft sensors - Mechanical System Not Responding Properly or Out of Adjustment
753	723	2	Amber	Engine Speed Sensor #2	Engine Speed/Position #2 Camshaft sync error - Data Erratic, Intermittent, or Incorrect
757	611	31	Amber	Electronic Control Module	Electronic Control Module data lost - Condition Exists
778	723	2	Amber	Engine Speed Sensor #2	Engine Speed Sensor (Camshaft) Error – Data Erratic, Intermittent, or Incorrect
779	703	11	Amber	Auxiliary Equipment Sensor Input	Warning Auxiliary Equipment Sensor Input # 3 (OEM Switch) - Root Cause Not Known
951	166	2	None	Cylinder Power	Cylinder Power Imbalance Between Cylinders - Data Erratic, Intermittent, or Incorrect
1117	627	2	None	Power Supply	Power Lost With Ignition On - Data Erratic, Intermittent, or Incorrect
1139	651	7	Amber	Injector Cylinder # 01	Injector Cylinder #1 - Mechanical System Not Responding Properly or Out of Adjustment
1141	652	7	Amber	Injector Cylinder # 02	Injector Cylinder #2 - Mechanical System Not Responding Properly or Out of Adjustment
1142	653	7	Amber	Injector Cylinder # 03	Injector Cylinder #3 - Mechanical System Not Responding Properly or Out of Adjustment
1143	654	7	Amber	Injector Cylinder # 04	Injector Cylinder #4 - Mechanical System Not Responding Properly or Out of Adjustment
1144	655	7	Amber	Injector Cylinder # 05	Injector Cylinder #5 - Mechanical System Not Responding Properly or Out of Adjustment
1145	656	7	Amber	Injector Cylinder # 06	Injector Cylinder #6 - Mechanical System Not Responding Properly or Out of Adjustment
1239	2623	3	Amber	Accelerator Pedal Position	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Above Normal, or Shorted to High Source
1241	2623	4	Amber	Accelerator Pedal Position	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Below Normal, or Shorted to Low Source
1242	91	2	Red	Accelerator Pedal Position	Accelerator Pedal or Lever Position Sensor 1 and 2 - Data Erratic, Intermittent, or Incorrect
1256	1563	2	Amber	Control Module Identification Input State	Control Module Identification Input State Error - Data Erratic, Intermittent, or Incorrect
1257	1563	2	Red	Control Module Identification Input State	Control Module Identification Input State Error - Data Erratic, Intermittent, or Incorrect
1911	157	0	Amber	Injector Metering Rail	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
2111	32	3	Amber	Coolant Temperature	Coolant Temperature 2 Sensor Circuit - Voltage Above Normal, or Shorted to High Source
2112	52	4	Amber	Coolant Temperature	Coolant Temperature 2 Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
2113	52	16	Amber	Coolant Temperature	Coolant Temperature 2 - Data Valid but Above Normal Operational Range - Moderately Severe Level
2114	52	0	Red	Coolant Temperature	Coolant Temperature 2 - Data Valid but Above Normal Operational Range - Most Severe Level
2115	2981	3	Amber	Coolant Pressure	Coolant Pressure 2 Circuit - Voltage Above Normal, or Shorted to High Source
2116	2981	4	Amber	Coolant Pressure	Coolant Pressure 2 Circuit - Voltage Below Normal, or Shorted to Low Source

Fault Code	J1939 SPN	J1939 FMI	Lamp Color	J1939 SPN Description	Cummins Description
2117	2981	18	Amber	Coolant Pressure	Coolant Pressure 2 - Data Valid but Below Normal Operational Range - Moderately Severe Level
2185	611	3	Amber	System Diagnostic code # 1	Sensor Supply Voltage #4 Circuit – Voltage Above Normal, or Shorted to High Source
2186	611	4	Amber	System Diagnostic code # 1	Sensor Supply Voltage #4 Circuit – Voltage Below Normal, or Shorted to Low Source
2195	703	14	Red	Auxiliary Equipment Sensor	Auxiliary Equipment Sensor Input 3 Engine Protection Critical - Special Instructions
2215	94	18	Amber	Fuel Delivery Pressure	Fuel Pump Delivery Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level
2216	94	1	Amber	Fuel Delivery Pressure	Fuel Pump Delivery Pressure - Data Valid but Above Normal Operational Range – Moderately Severe Level
2217	630	31	Amber	Calibration Memory	ECM Program Memory (RAM) Corruption - Condition Exists
2249	157	1	Amber	Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Most Severe Level
2265	1075	3	Amber	Electric Lift Pump for Engine Fuel	Fuel Priming Pump Control Signal Circuit – Voltage Above Normal, or Shorted to High Source
2266	1075	4	Amber	Electric Lift Pump for Engine Fuel	Fuel Priming Pump Control Signal Circuit – Voltage Below Normal, or Shorted to Low Source
2292	611	16	Amber	Fuel Inlet Meter Device	Fuel Inlet Meter Device - Data Valid but Above Normal Operational Range - Moderately Severe Level
2293	611	18	Amber	Fuel Inlet Meter Device	Fuel Inlet Meter Device flow demand lower than expected - Data Valid but Below Normal Operational Range - Moderately Severe Level
2311	633	31	Amber	Fuel Control Valve #1	Fueling Actuator #1 Circuit Error – Condition Exists
2321	190	2	None	Engine Speed	Engine Speed / Position Sensor #1 - Data Erratic, Intermittent, or Incorrect
2322	723	2	None	Engine Speed Sensor #2	Engine Speed / Position Sensor #2 - Data Erratic, Intermittent, or Incorrect
2345	103	10	Amber	Turbocharger 1 Speed	Turbocharger speed invalid rate of change detected - Abnormal Rate of Change
2346	2789	15	None	System Diagnostic Code #1	Turbocharger Turbine Inlet Temperature (Calculated) - Data Valid but Above Normal Operational Range – Least Severe Level
2347	2629	15	None	System Diagnostic Code #1	Turbocharger Compressor Outlet Temperature (Calculated) - Data Valid but Above Normal Operational Range – Least Severe Level
2362	1072	4	Amber	Engine Compression Brake Output # 1	Engine Brake Actuator Circuit #1 – Voltage Below Normal, or Shorted to Low Source
2363	1073	4	Amber	Engine Compression Brake Output # 2	Engine Brake Actuator Circuit #2 – Voltage Below Normal, or Shorted to Low Source
2366	1072	3	Amber	Engine Compression Brake Output # 1	Engine Brake Actuator Circuit #1 – Voltage Above Normal, or Shorted to High Source
2367	1073	3	Amber	Engine Compression Brake Output # 2	Engine Brake Actuator Circuit #2 – Voltage Above Normal, or Shorted to High Source
2377	647	3	Amber	Fan Clutch Output Device Driver	Fan Control Circuit - Voltage Above Normal, or Shorted to High Source
2384	641	4	Amber	Variable Geometry Turbocharger	VGT Actuator Driver Circuit - Voltage Below Normal, or Shorted to Low Source
2385	641	3	Amber	Variable Geometry Turbocharger	VGT Actuator Driver Circuit - Voltage Above Normal, or Shorted to High Source
2555	729	3	Amber	Inlet Air Heater Driver #1	Intake Air Heater #1 Circuit - Voltage Above Normal, or Shorted to High Source
2556	729	4	Amber	Inlet Air Heater Driver #1	Intake Air Heater #1 Circuit - Voltage Below Normal, or Shorted to Low Source
2557	697	3	Amber	Auxiliary PWM Driver #1	Auxiliary PWM Driver #1 - Voltage Above Normal, or Shorted to High Source
2558	697	4	Amber	Auxiliary PWM Driver #1	Auxiliary PWM Driver #1 - Voltage Below Normal, or Shorted to Low Source

Fault Code	J1939 SPN	J1939 FMI	Lamp Color	J1939 SPN Description	Cummins Description
2963	110	15	None	Engine Coolant Temperature	Engine Coolant Temperature High - Data Valid but Above Normal Operational Range - Least Severe Level
2964	105	15	None	Intake Manifold #1 Temperature	Intake Manifold Temperature High - Data Valid but Above Normal Operational Range - Least Severe Level
2973	102	2	Amber	Boost Pressure	Intake Manifold Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect

2.4 Special functions

Emergency operation program for the case of keyboard failure

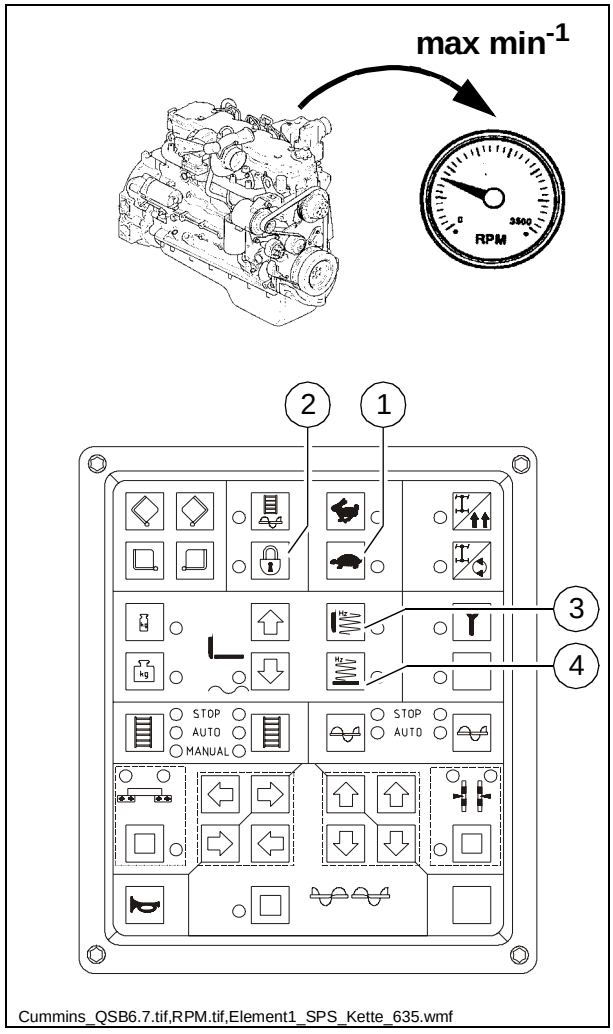
To ensure the pavers operating ability during a display failure, an emergency program will be started automatically.

Following setting and functions will be adjusted and switched on:

- Number of revolutions of the Diesel engine: 1800 min^{-1}
- Traction drive (1) slow (Tortoise)
- Operating main switch (2) OFF
- Tamper (3) switched on
- Vibration (4) switched on

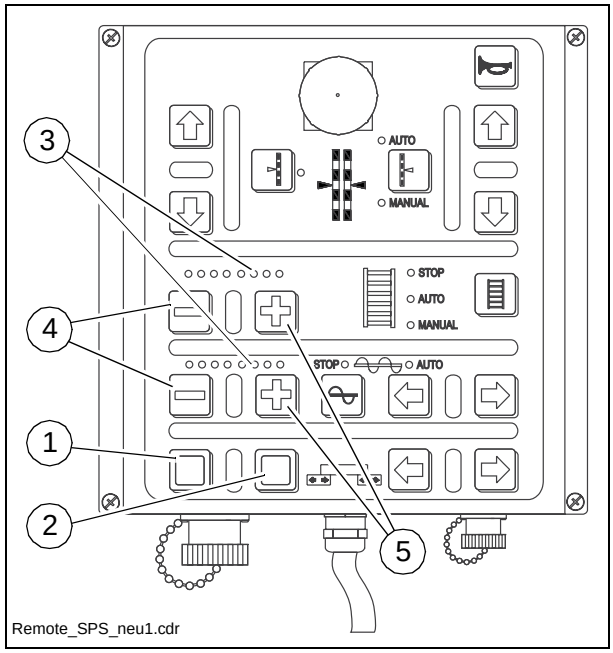
m Connected functions will not be indicated by LED during a display failure!

A Tamper and vibration can be deactivated by the associated rotary potentiometer (set to „zero“).
The frequency of the tamper and vibration can be read off the two associated displays (O).



Cummins_QSB6.7.tif,RPM.tif,Element1_SPS_Kette_635.wmf

Accessory the following function can be switched by using the remote controls:



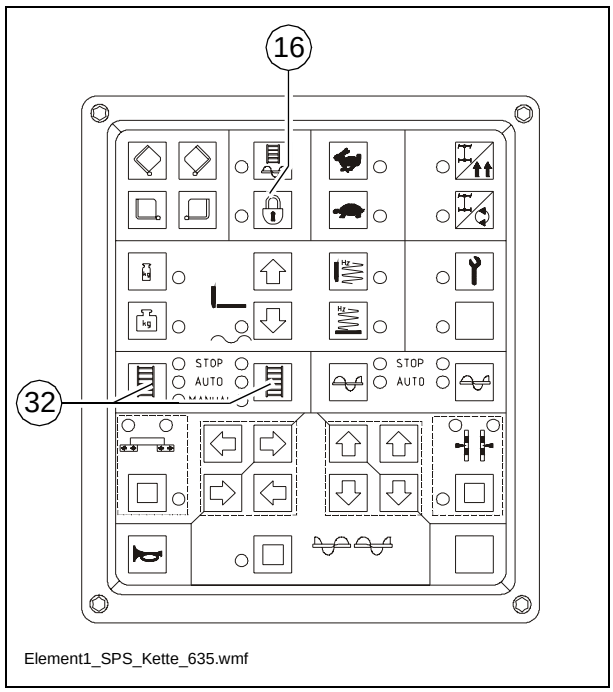
- Press button (1) to close the hopper.
- Press button (2) to open the hopper.
- Lifting the screed:
  - Switch off the LED bar (3) of auger and conveyor completely by using the accompanying Minus-buttons (4).
  - Lift the screed infinitely variable by using both Minus-buttons(4) simultaneously.
- Switching the screed into readiness (floating position):
  - Switch the LED bar (3) of auger and conveyor completely on by using the accompanying Plus-buttons (5).
- Switch the screed into floating position by pressing bothPlus-buttons simultaneously.

m The screed sinks immediately.

A To lift the screed out of floating position, the LED bar of auger and conveyor must be deleted again.

Reversible conveyor

The direction of transport of the conveyor can be changed over to the opposite direction to move material located just in front of the auger back slightly. Material losses, e.g. during transport operations can therefore be avoided.



- Switch main function switch (16) over to „Off“ switch position (LED off).
- Hold down one or both of the buttons (32) in the „STOP“ switch position for approx. 5 seconds.
  The system jumps into the „Manual“ switch position and the conveyor moves approx. 1 metre towards the hopper. The system then jumps back into the „Stop“ switch position.

If necessary, this process can be repeated as many times as required to allow the conveyor to move further in the opposite direction.

D3.4 Operation

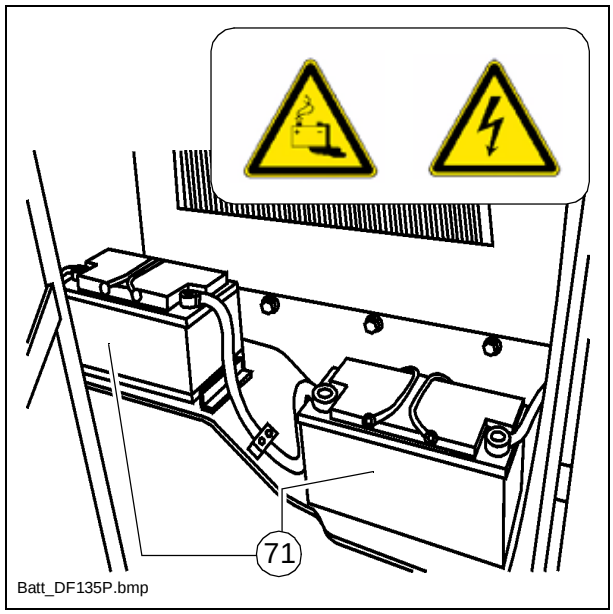
1 Operating elements on the paver finisher

Batteries (71)

The batteries of the 24 V system are located under the left maintenance flap.

A For the specifications, refer to chapter B, "Technical Data". For servicing, see chapter F.

m Heed the instructions when starting the paver finisher externally. (see section "Starting the paver finisher, External starting (starting aid)".



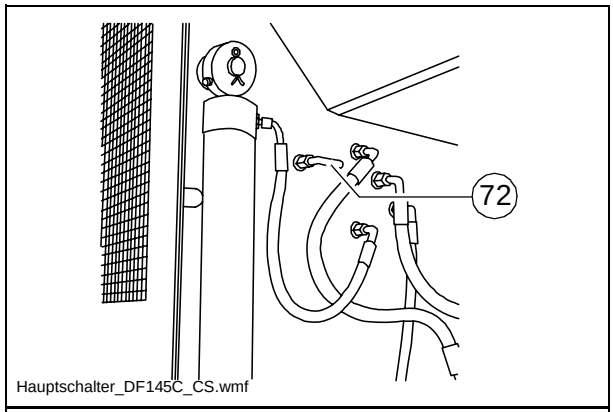
Battery main switch (72)

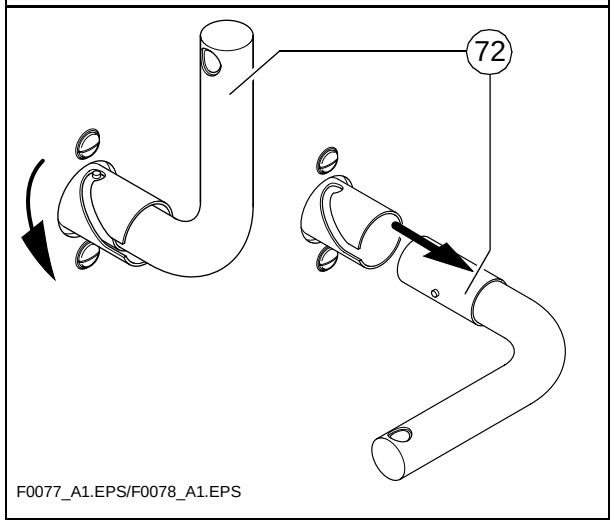
The main switch interrupting the circuit between the battery and the main fuse (72) is located on the right-hand side – between the front wall and the hopper.

- For switching off, turn the key (72) to the left and pull it out.

A Do not lose the key as in this case the paver finisher can no longer be moved!

A For the assignment of all fuses, see chapter F.





Transport safeguards for the hopper (73)

Before parking or transporting the paver finisher, the hopper halves must be swung upwards and the transport safeguards for the hopper must be inserted.

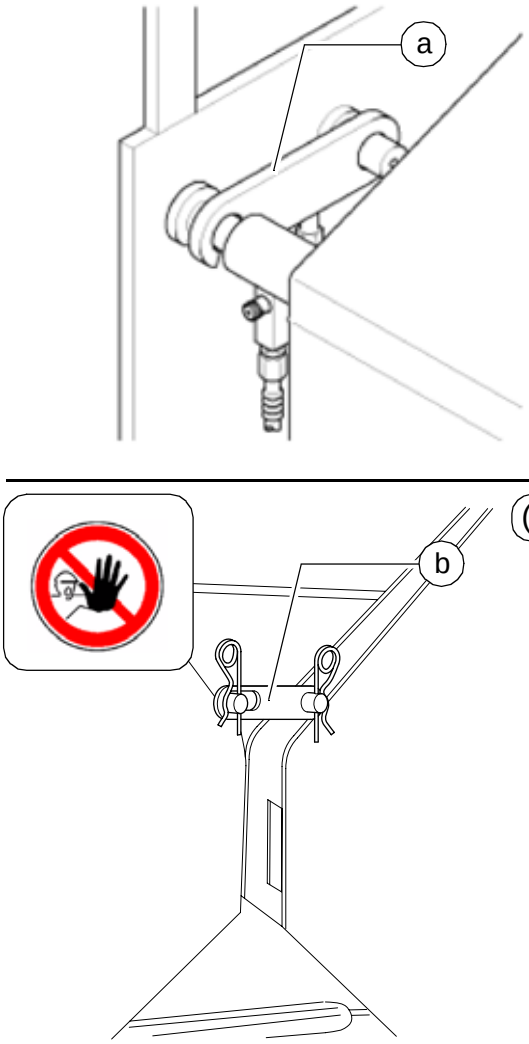
Item:

- (a) - outside on the two hopper halves

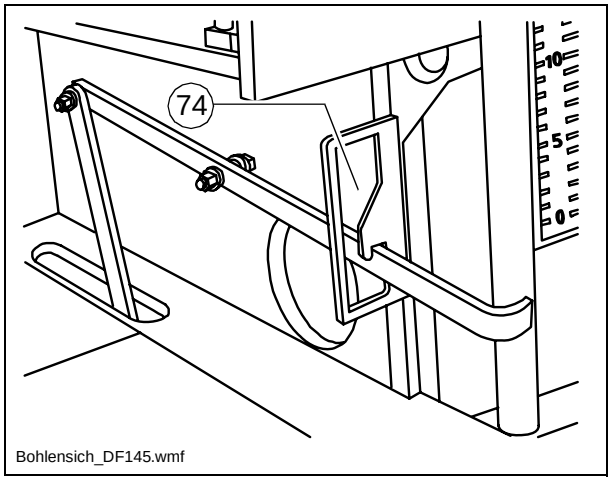
or

- (b) - in the hopper (o)

f Do not enter the hopper while the engine is running! Danger of being caught by the conveyor!
Without transport safeguards inserted, the hopper halves will slowly open; danger during transportation!



Mechanical screed transport safeguard (to the left and the right beneath the driver's seat) (74)



It is used to protect the lifted screed from inadvertent sinking. The screed transport safeguard must be inserted before transportation and when work is finished.

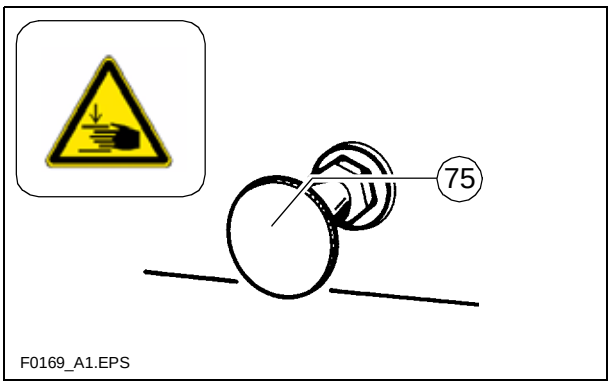
f Transportation with an unsecured screed bears the danger of accidents!

- Lift the screed.
- Actuate the levers.
- Check that the latches (to the left and to the right) engage in the crossbeams.

m If a high level of crowning is set, it is not possible to insert screed transport safeguards!

m **ATTENTION!**
Insert screed lock only at crown adjustment "zero"!
Screed lock only for transportation!
Do not enter or work under screed only secured with screed lock for transportation!
Risk of accident!

Seat lock (behind the driver's seat) (75)



Telescoping seats (o) can be extended beyond the basic width of the paver finisher. They must be locked.

f The seats must not protrude from the vehicle during transportation. Push the seats back to the basic width of the paver finisher!

- Pull out the locking button and move the seat; let the locking button engage again.

f The driver's seat can move when the locking button is not engaged properly. Danger of accidents during transportation!

Separator fluid spraying system (80) (o)

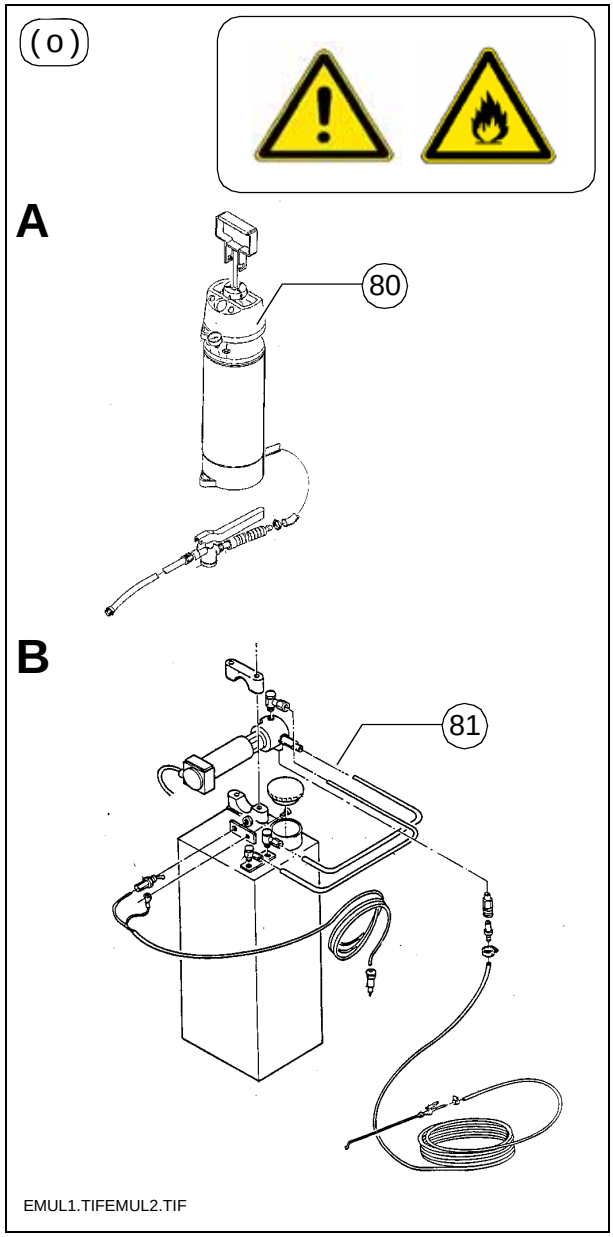
Used to spray the parts coming into contact with asphalt with a separator emulsion.

A Spray bottle with pressure pump

B Spraying system with electric pump (81)

m Only switch on the spraying system when the diesel engine is running; otherwise, the battery will be discharged. Switch off after use.

f Don't spray into open flame or on hot surface! Danger of explosion!



A Further switch options for optional equipment features may be located on the central panel:

On / off switch for additional headlight in the roof (85):

Actuate switch (a) to switch on.

On / off switch for filler pump fuel tank (85a)

If the pump is actuated with the switch (a), the indicator lamp (b) lights up.

f When fuelling, ensure that no fuel penetrates the earth. Switch off the engine and do not smoke. Do not fuel in enclosed spaces. Danger to health! Have a fire extinguisher ready.

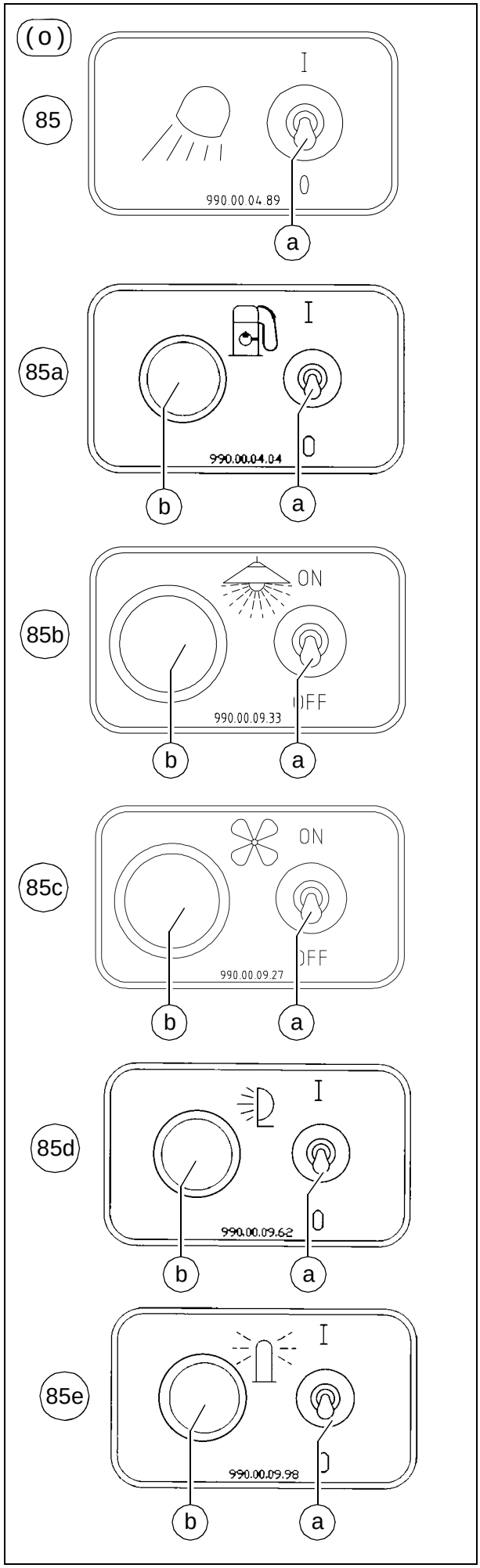
On / Off switch
Special lighting (85b)

If the machine is equipped with additional headlights, these are actuated by means of the switch (a). When switched to the "ON" position, the indicator lamp (b) lights up.

m Switch the additional headlights and special lighting off when the engine is not running, as the battery is otherwise discharged!

On / Off switch
Asphalt fume control system (85c)

In case of the availability of optional asphalt fume control system, this can be turned on by switch (a).
In the switch position "ON" the indicator lamp (b) is on.



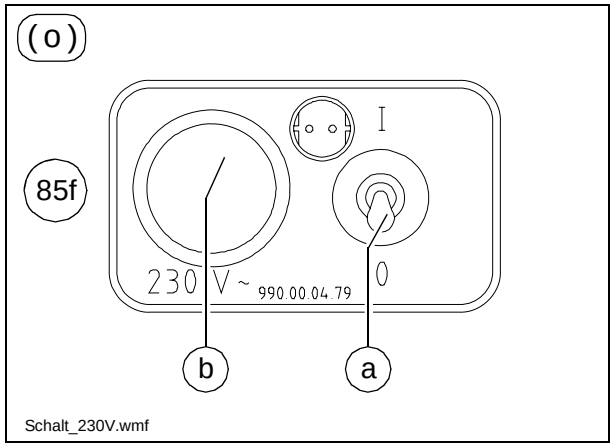
On/Off switch of working lights (85d):

Actuate switch (a) to switch on.
In the switch position "ON" the indicator lamp (b) is on.

On/Off switch of rotary beacon (85e):

Actuate switch (a) to switch on.
In the switch position "ON" the indicator lamp (b) is on.

A If optionally available 230 V systems are installed, an additional switch cabinet is mounted on the paver finisher:



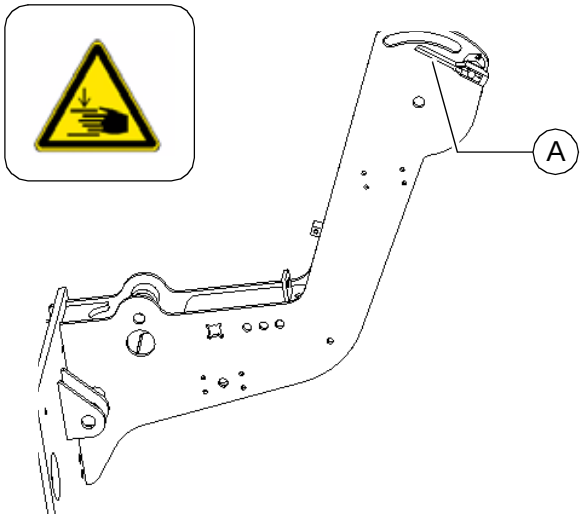
230 V On / Off switch
Connection sockets (85f)

In case of being equipped with 230 V accessories, the connection sockets can be powered through switches (a). In the switch position "I" the indicator lamp (b) is on.

Locking of the collapsible roof (LH and RH on the roofs console) (86)

To lower the roof (for example during transport on a low bed trailer):

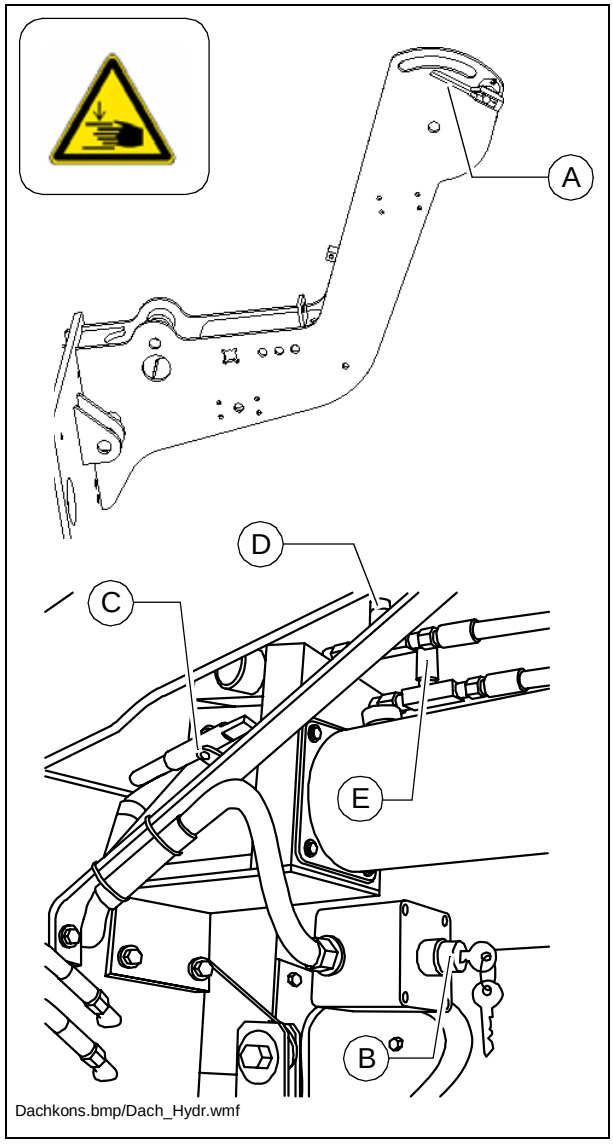
- Loose the twistlock (A).
- Pull the roof frame forward holding the clevis or the frame.
- Arrest the twistlock in the second locking hole.



Dachkons_DF.bmp

Hydraulic folding roof (87) (o)

The hydraulically folding roof is secured by means of a latch (A) at the rear suspension on the left and right sides of the machine. This must be released prior to lowering and raising. Once it has reached its terminal position, the roof must be secured with the latch again.
The hydraulic unit and the key switch (A) for actuating the folding roof hydraulic system are located on the left side of the paver finisher's rear panel.



Dachkons.bmp/Dach_Hydr.wmf

A The roof can be raised and lowered without having to start the drive motor.

- In order to lower the roof, turn the key switch (B) to the right until the roof has been lowered to its minimum level.

f Danger of crushing! Ensure that nobody inserts their fingers or hands into the joint areas or are placed at risk by the lowering roof during the folding procedure.

- In order to raise the roof again, turn the key switch (B) to the left until the roof has been raised to its maximum height.

If it is necessary to raise the roof whilst the battery is discharged, a manual pump is available on the hydraulic unit.

- Actuate the pump lever (C) until the roof can be secured with the latch bolt (A) in its uppermost position.

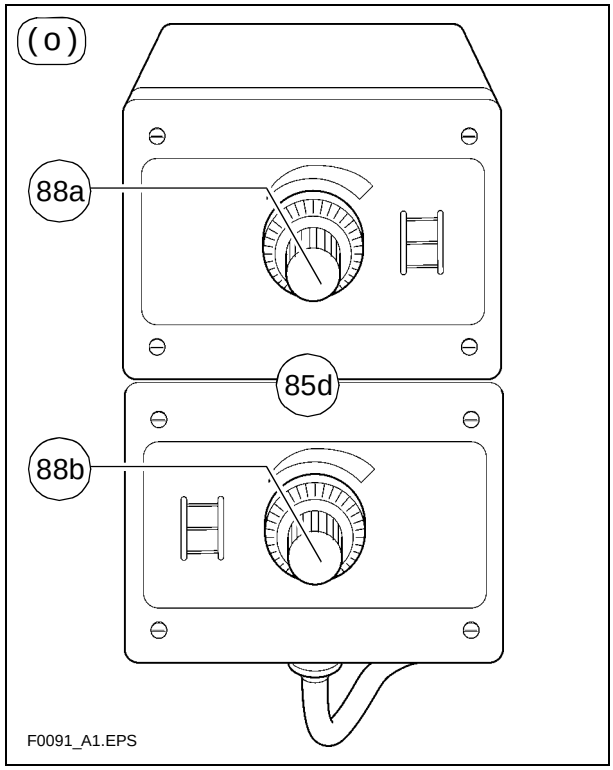
Two throttles are installed to adjust the raising and lowering speed:

- Throttle valve (D): Adjust roof raising speed.
  Turning the adjusting knob in the clockwise direction = lower speed.
  Turning anti-clockwise = higher speed.
- Throttle valve (E): Adjust roof lowering speed.
  Turning the adjusting knob in the clockwise direction = lower speed.
  Turning anti-clockwise = higher speed.

Electric setting of the transportation volume of the conveyor (o) (88)

With this the transport volume of the conveyor can be adjusted when mechanical limit switch or ultrasonic sensor is used.

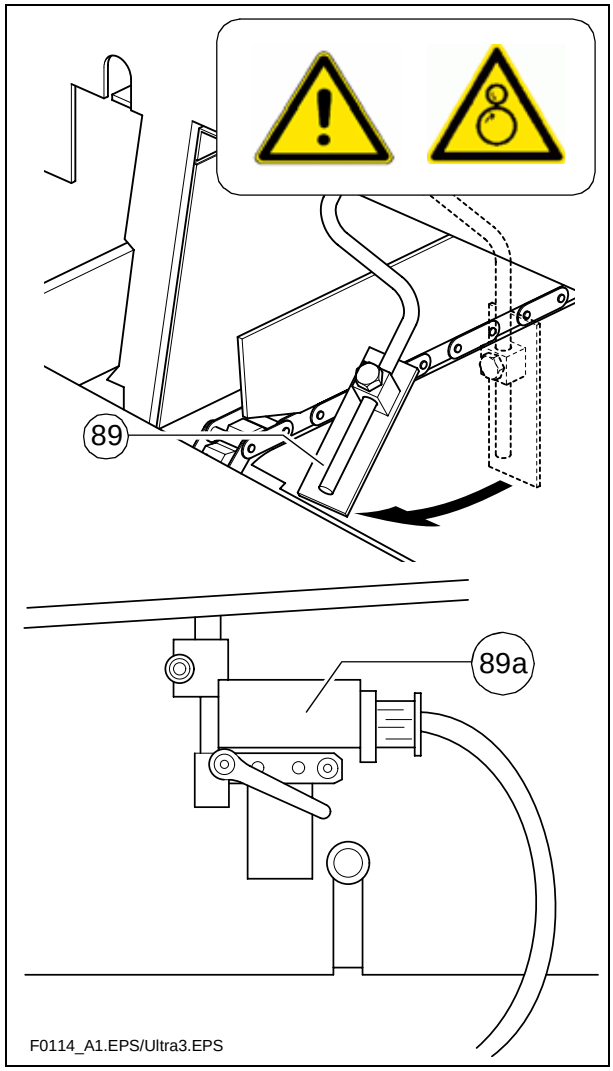
- The "0" position of the scale corresponds to the smallest adjustable volume.
  - RH-side conveyor: (88a)
  - LH-side conveyor: (88b)



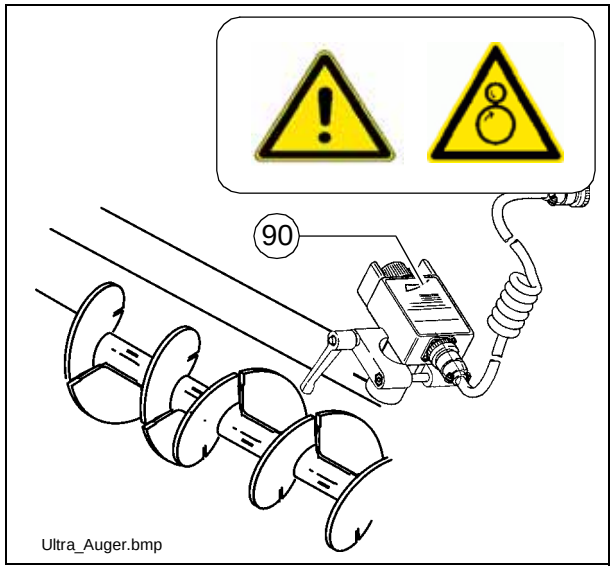
Conveyor limit switches (89):

The mechanical conveyor limit switches (89) or the ultrasonic conveyor limit switches (89a o) control the material flow at the respective conveyor half. The conveyors should stop when the material has roughly reached the area below the auger tube.

A This requires that the auger height has been adjusted correctly (see chapter E).



Ultrasonic auger limit switches (90) (left and right)

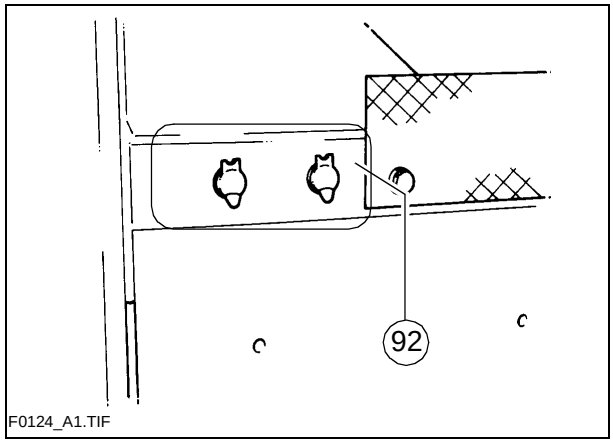


A The limit switches control the material flow at the respective auger half.

The ultrasonic sensor is mounted by means of an appropriate leverage to the side plate. Loose clamping lever for adjustment and modify angle / height of the sensor.
The cables must be connected to the remote control units located at the sides of the screed.

A We recommend to adjust the limit switch positions while the material is distributed.

Sockets for working lights (left and right) (92)



Connect the working lights (24 V) here.

- Power is present when the main switch (72) is switched on.

A As an option, one socket can be used to provide power for an electrically heated seat.

Pressure control valve for screed charging/relieving (93) (o)

Used to adjust the pressure for additional charging/relieving of the screed.

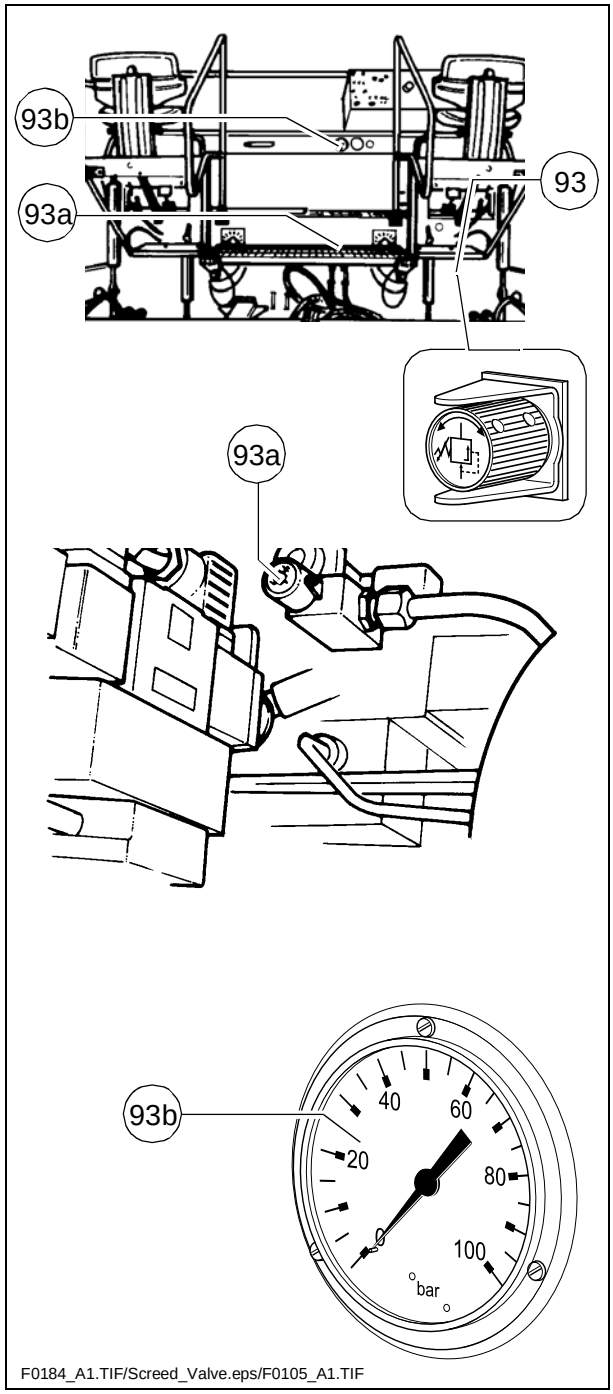
- See "screed charging/relieving device".
  (Chapters "Operating Panel", "Operation").
- Pressure display: see manometer (93b).

Pressure control valve for screed stop with pretensioning (93a) (o)

This valve is located beneath the right-hand bottom flap of the operator's platform.

It is used to adjust the pressure for "screed stop with pretensioning".

- Activation: see "screed charging/relieving device".
  (Chapters "Operating Panel", "Operation").
- Pressure display: see "manometer" (93b).



F0184_A1.TIF/Screed_Valve.eps/F0105_A1.TIF

Manometer for screed charging/relieving and screed stop with pretensioning (93b)

Displays the pressure for

- Screed stop with pretensioning screed stop with pretensioning when the drive lever is set to the neutral position (pressure to be adjusted using valve (93a)));

Screed charging/relieving device when the drive lever is in the third position (pressure to be adjusted using valve (93)).

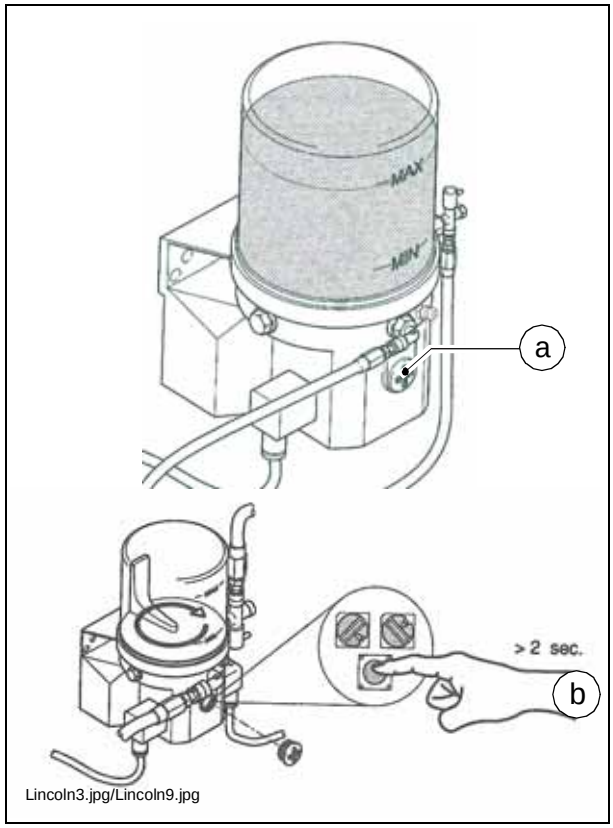
Central lubrication unit (o) (100)

The central lubrication unit turns on in automatic mode when the drive engine starts.

- Pumping time: 12 min
- Duration of the break: 2 h

m It is prohibited to change the factory-set durations of pumping and break without consulting the technical customer service!

A Changing the duration of lubrication and breaks may be necessary when laying mineral or cement bound material mix.



Lincoln3.jpg/Lincoln9.jpg

Manual start of lubrication (pumping time):

- Remove the screw cap (a).
- Keep the starting button (b) depressed for at least 2 sec.
- Replace the screw cap (a).

A Observe the instructions of chapter "Maintenance"!

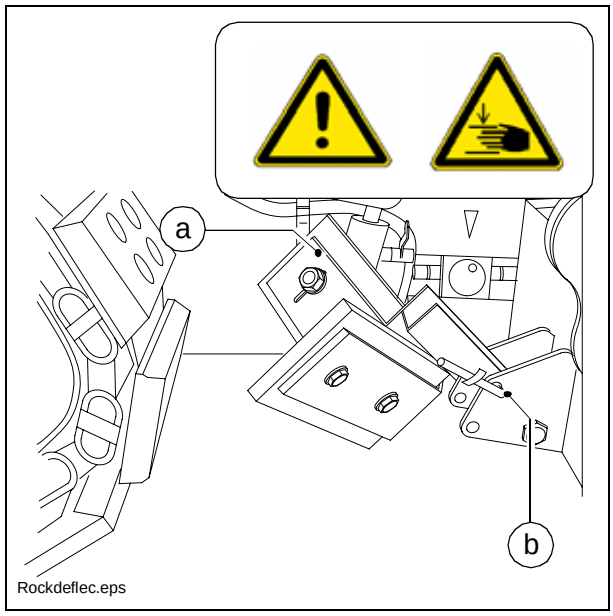
Lane clearer (o) (101)

A swivel-mounted lane clearer (a) is located in front of each track which deflects small obstacles away to one side.

A This lane clearer must only be swivelled down into position during planing operation.

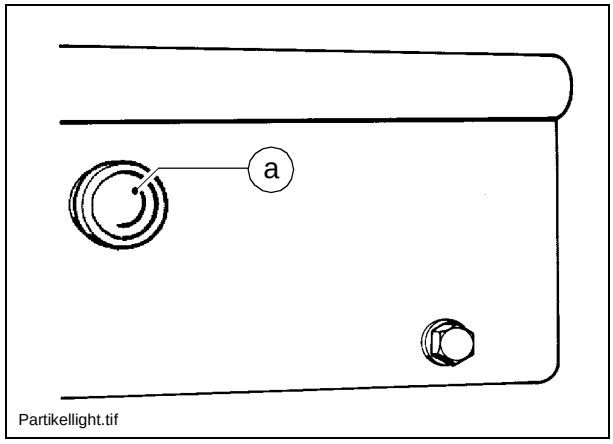
Swivel lane clearer downwards:

- Remove retaining pin and bolt (b).
- Swivel lane clearer (a) into the desired position and secure it with bolt and retaining pin.



Rockdeflec.eps

Particle filter – indicator lamp (102) (o)



A The indicator lamp of the particle filter is found under the control track of the operating panel.

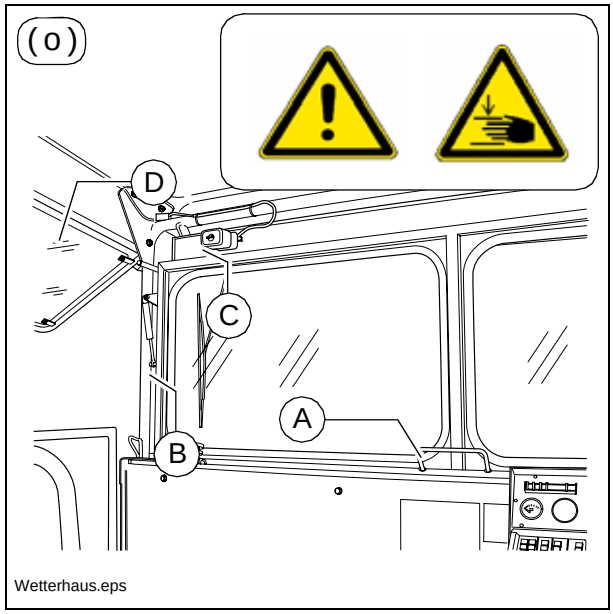
When observing the indicator lamp (a) it is essential (a):

Indicator colour	Operating condition	Cause / action
yellow	No counterpressure	No counterpressure. Check the tightness of the system.
green	Within the measuring range	There is no fault
flashing green	Treshold range - Counterpressure in the warning range	Increase of engine speed to raise the temperature of the exhaust fume.
red	Set value achieved / exceeded	Increase of engine speed to raise the temperature of the exhaust fume. If necessary, clean / replace the particle filter.
flashing red	The temperature or pressure sensor failed	Check and replace, as required, the temperature / pressure sensor

A With the brief increase of the engine speed to the max. range, the filter is cleaned automatically due to the higher temperature of the exhaust fume.
If the indicator lamp still fails to turn on for this action, the filter needs to be cleaned.

See chapter "Maintenance" for cleaning the particle filter.

Front and side window (o) (103)



Wetterhaus.eps

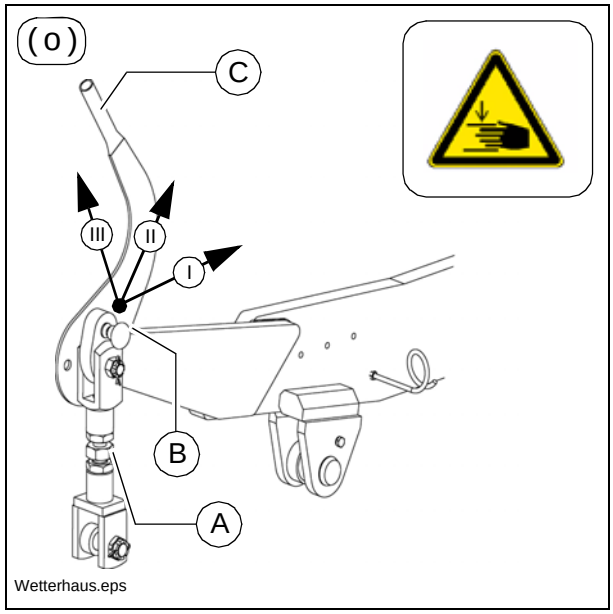
The front window can be folded up for the maintenance works performed at the tank.

- Fold the front window by its handle (A) and lock it on the RH and LH sides with the two locks (B) in the upper position.

Additional functions:

- If necessary, turn on the windscreen wipers on the RH and LH sides (C).
- Swivel side window (D) upwards on bracket (window frame). Before this, the driver's seat must be pushed out of the way.

Adjustment of screed eccentric (o) (104)



To pave thicker layers of material, if the piston rods in the levelling cylinder are operating close to their limit position and if the desired paving thickness cannot be reached, it is possible to alter the approach angle of the screen by adjusting the eccentric.

- Pos I: Paving thickness of up to approx. 7cm
- Pos II: Paving thickness of approx. 7 cm to approx. 14cm
- Pos III: Paving thickness above approx. 14 cm

- The spindle (A) is not adjusted.
- Unfasten lock nuts (B) for eccentric adjustment.
- Swivel screed into desired position using lever (C) then engage the locking knob once again.

A If the levelling unit is connected to a height controller, this has the function of balancing out any rapid rise in the screed position: The levelling cylinders are extended until the correct height is reached.

A The change in approach angle can only take place slowly and uniformly on both sides at once during paving operation, and involves the use of the eccentric adjustment. Failing this, any rapid response in the screed could easily cause waves to appear on the road surface.
The setting process should therefore take place before work starts!

D 4.13 Operation

1 Preparation of operation

Required devices and aids

To avoid delays on site, check before starting work whether or not the following devices and aids are present:

- Wheel loader for transporting heavy extendable parts
- Diesel fuel
- Engine oil and hydraulic oil, lubricants
- Separating fluids (emulsion) and manual injector
- Two filled propane gas bottles
- Shovel and broom
- Scraper (spatula) for cleaning the auger and the hopper infeed area
- Parts that may become necessary for extending the auger
- Parts that may become necessary for extending the screed
- Percentage spirit level + levelling rail, 4 m long
- Levelling wire
- Protective clothing, signal vest, gloves, ear protection

Before starting work
(in the morning or when starting paving)

- Heed the safety instructions.
- Check the personal protective equipment .
- Take an inspection walk around the paver finisher and check for leaks and damages.
- Install parts removed for transportation or for the night.
- When screed is operated with the optional gas heating system, open the closing valves and the main shut-off valve.
- Perform the check according to the "Checklist for the machine operator" given below.

Checklist for the machine operator

Check!	How?
Emergency stop button - on the operating panel - on both remote control units o	Push in the button. The diesel engine and all running drives must stop immediately.
Steering	The paver finisher must immediately follow every steering wheel movement in a precise manner. Check straight ahead travel.
Horn - on the operating panel - on both remote control units o	Briefly press the horn button. The horn must sound.
Lights	Switch on with the ignition key, walk around the paver finisher to check and switch off again.
Screed warning light (with vario screeds)	With the ignition switched on, press the switches for extending/retracting the screed parts. The rear lights must flash.
Gas heater system o : - Bottle holders - Bottle valves - Pressure reducer - Hose break safety devices - Shut-off valves - Main shut-off valve - Connections - Indicator lamps of the switch box	Check: - Secure seat - Cleanliness and tightness - Working pressure 1.5 bar - Function - Function - Function - Tightness - All lamps must light up when the system is switched on

Check!	How?
Auger covers	For larger working widths, the walkway plates must be extended and the auger tunnels must be covered.
Screed covers and walkways	For larger working widths, the walkway plates must be extended. Hinged walkway plates must be swung down. Check that the side shields, the side plates and the covers are securely seated.
Screed transport safeguard	When the screed is lifted, it must be possible to push the locking rods sideways into the recesses in the crossbeams using the lever beneath the seat.
Hopper transport safeguard	When the hopper is closed, it must be possible to fold the catches over the lock studs on the two halves of the hopper.
Protective roof	Both locking bolts must be in the provided bore hole.
Miscellaneous: - Engine hood - Lateral flaps	Check that the hoods and flaps are securely seated.
Accessories: - Wedges - Warning triangle - First-aid kit	The accessories must be in the provided holders.

1.1 Starting the paver finisher

Before starting the paver finisher

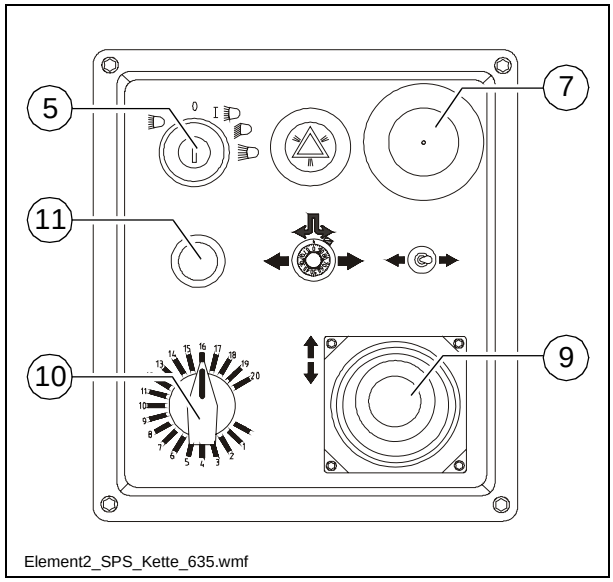
Before starting the diesel engine and beginning operation, the following steps must be performed:

- Daily maintenance of the paver finisher (see chapter F)

m Check the operating hour counter to determine whether or not additional maintenance work (such as monthly or yearly maintenance) must be performed.

- Check the safety devices and protective devices.

"Normal" starting



Set the drive lever (9) to the center position and the speed adjuster (10) to minimum.

- Insert the ignition key (5) in position "0". The lights should be switched off during starting to reduce the current drain on the battery.

A It is impossible to start the machine, if the drive lever is not in the central position or if one of the emergency stop buttons (7) is depressed.
(“STOP“ is seen on the LC display)

- Press the starter button (11) to start the engine. Do not let the starter run permanently for more than 20 seconds; allow for a break of 1 minute after every attempt.

External starting (starting aid)

A The engine can be started with the help of an external power source if the batteries are empty and the starter no longer turns.

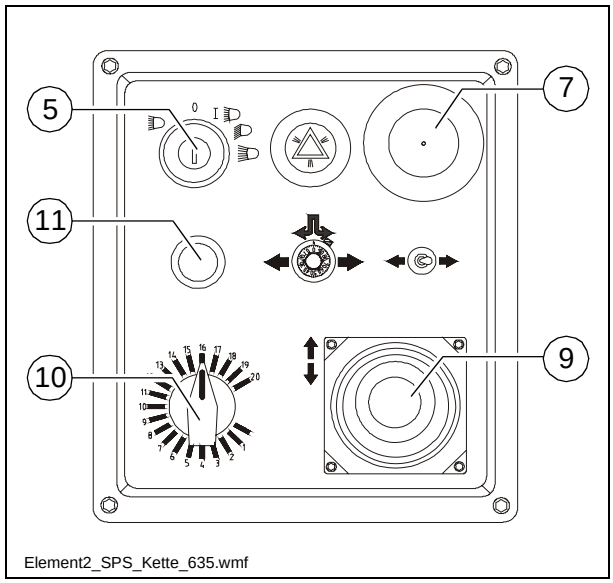
Suitable power sources are:

- Other vehicles with a 24 V system
- Additional 24 V battery
- Start device that is suitable for external starting (24 V/90 A).

m Standard chargers or quick chargers cannot be used for external starting.

To externally start the engine:

- Switch on the ignition, set the drive lever (9) to the center position.
- Use appropriate cables to connect the external power source.



m Observe the polarity! Always connect the negative cable last and disconnect it first!

A It is impossible to start the machine, if the drive lever is not in the central position or if one of the emergency stop buttons (7) is depressed.
("STOP" is seen on the LC display)

- Press the starter button (11) to start the engine. Do not let the starter run permanently for more than 20 seconds; allow for a break of 1 minute after every attempt.

When the engine is running:

- Disconnect the power source.

After starting

To increase the engine speed:

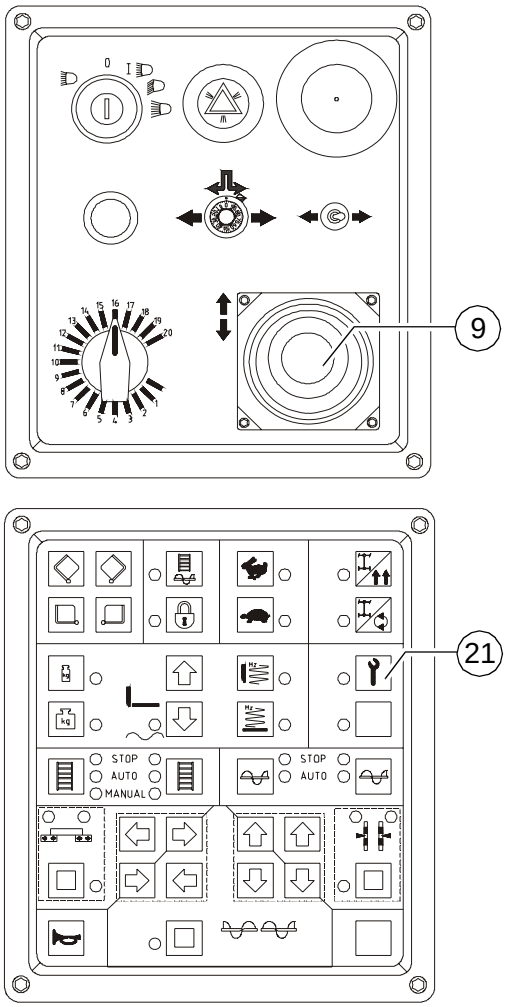
- Set the drive lever (9) to position 1 (slightly off the center position).
- Increase the engine speed by pressing button (21) on the operating panel. The engine speed will be increased to the preselected value.

m Let the paver finisher warm up for approx. 5 minutes if the engine is cold.

Indicator lamps

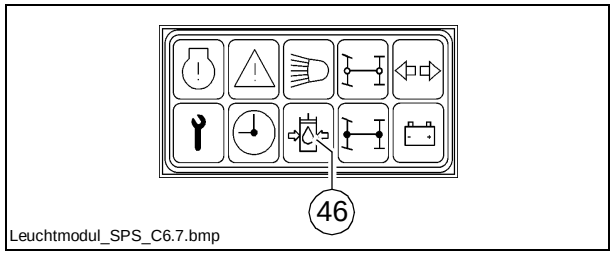
The following indicator lamps must be observed under all circumstances:

For further possible faults, refer to the Engine operating instructions.



Element2_SPS_Kette_635.wmf/Element1_SPS_Kette_635.wmf

Oil pressure indicator lamp for the travel drive (46)



Leuchtmodul_SPS_C6.7.bmp

- Must go out after starting.

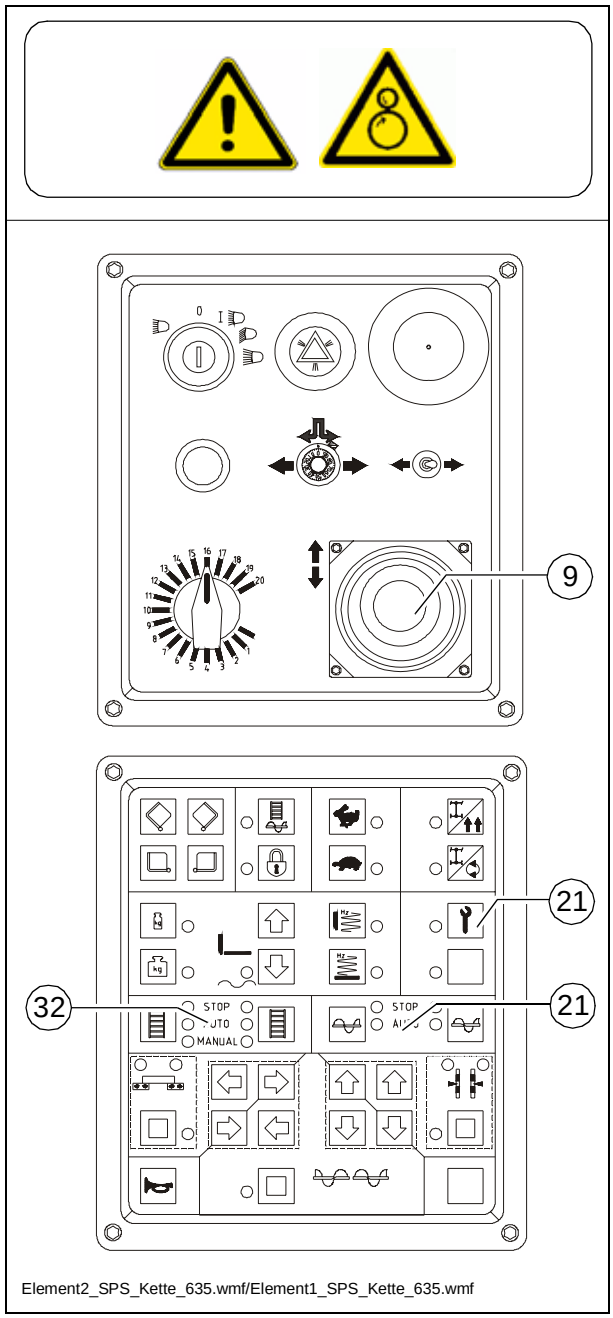
m If the lamp does not go out:
Do not switch on the travel drive! Otherwise, the entire hydraulic system could be damaged.

When the hydraulic oil is cold:

- Set the conveyor switch (32) to "manual" and the auger switch (24) to "auto".
- The remote control has to be connected and the same functions have to be set to "auto".
- Set the drive lever (9) to position 1.
- Press switch (21) to increase engine speed. Conveyor and auger start to operate.
- Let the hydraulics warm up until the indicator lamp goes out.

A The lamp goes out when the pressure drops below 2.8 bar = 40 psi.

For further possible malfunctions, refer to section "Malfunctions".



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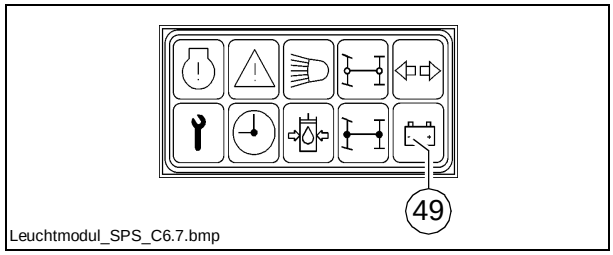
Battery charge indicator (49)



Must go out after starting when the engine revs up.

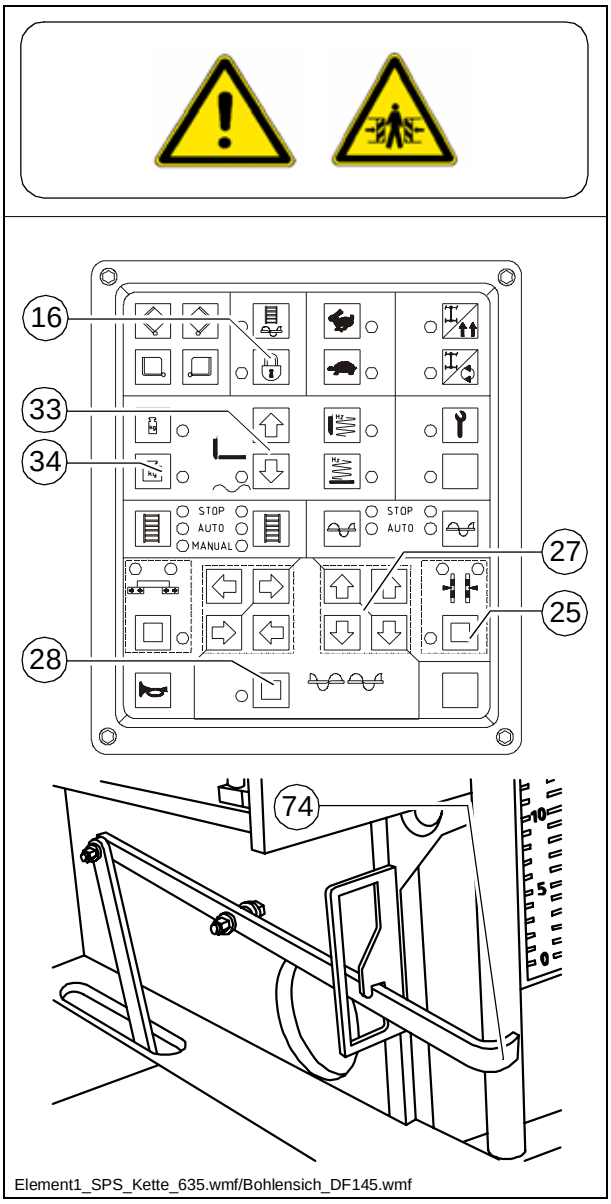
m If the lamp does not go out or lights up during operation: Briefly rev up the engine.
Switch off the engine and determine the cause for the malfunction if the lamp does not go out.

For further possible malfunctions, refer to the section "Malfunctions".

1.2 Operation in case of transportation

Lifting and securing the screed

- Button (16) has to be switched off
- Switch off the buttons (34) and lift the screed full by using button (33).
- Extend the levelling cylinders full by using the buttons (25) and (27).
  The remote control has to be connected and the same function has to be set to "manual".
- Lift the auger crossbeam by using the buttons (28) and (27).
- Insert the screed transport safeguards (74).



Element1_SPS_Kette_635.wmf/Bohlensich_DF145.wmf

Driving and stopping the paver finisher

- Set the Fast/Slow switch (17) to "Hare".
- Set the preselector (10) to mark 10.
- For driving, carefully tilt the drive lever (9) forward or backward according to the drive direction desired.

f In case of an emergency, press the emergency stop button ((7)!

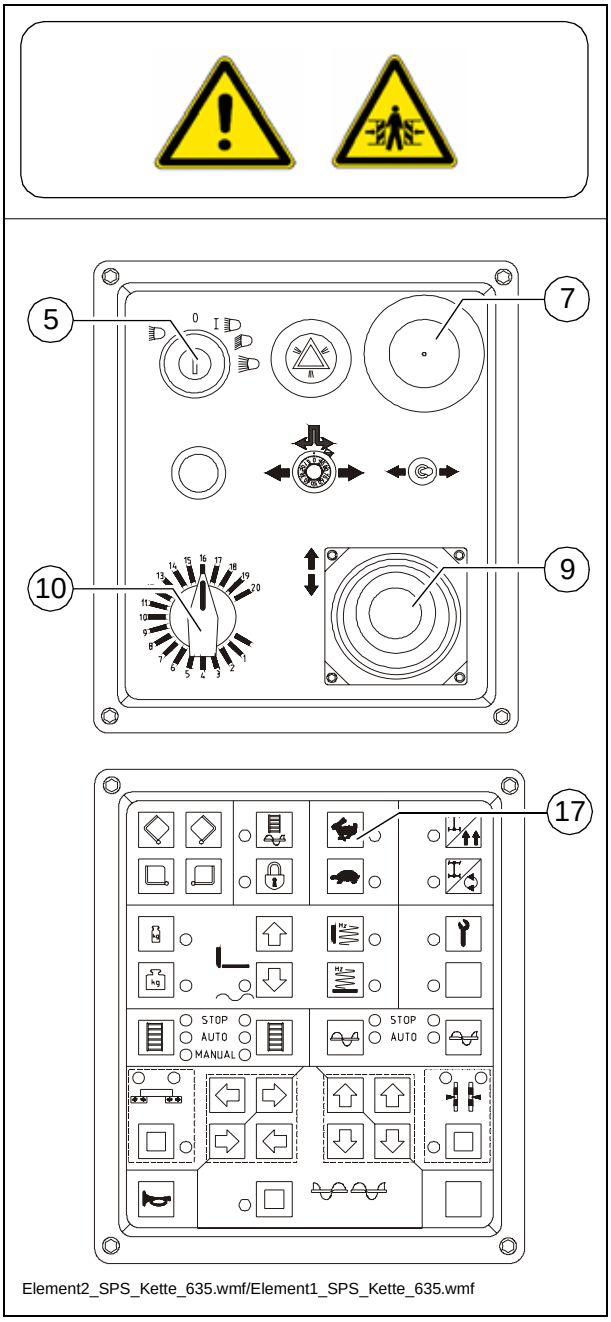
- To stop the paver finisher, set the drive lever (9) to the center position.

Switching off and securing the paver finisher

- Turn the ignition key (5) to the "0" position and pull it out to switch off the engine.

m The battery can get exhausted if the paver finisher is standing still for longer periods of time with the ignition switched on.

- Lower the screed.



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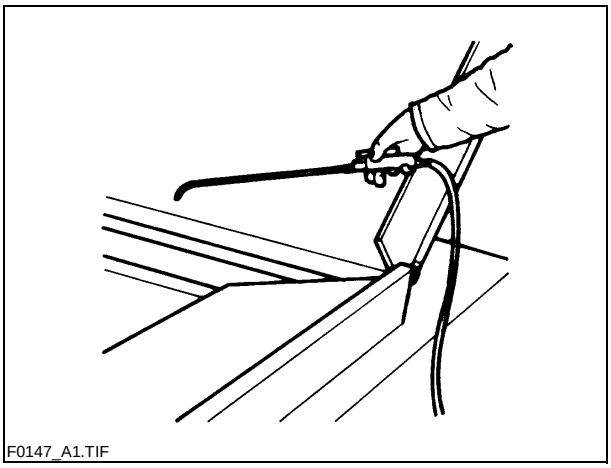
1.3 Preparations for paving

Separating fluid

Spray the parts coming into contact with asphalt (hopper, screed, auger, push roller) with a separator fluid.

m Do not use diesel fuel as it dissolves the bitumen (prohibited in Germany!).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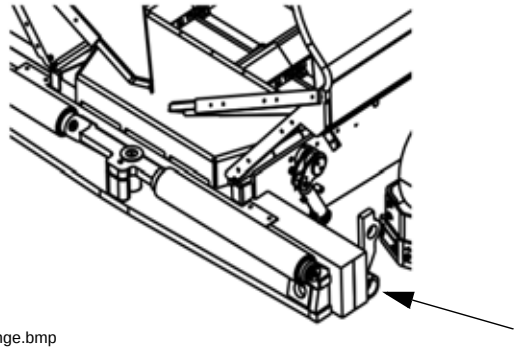
Screed heater

Switch on the screed heater approx. 15–30 minutes (depending on the ambient temperature) before paving begins. Warming up prevents the material from sticking to the screed plates.

Direction marks

To ensure straight paving, a direction mark must be present or established (road edge, chalk lines or similar).

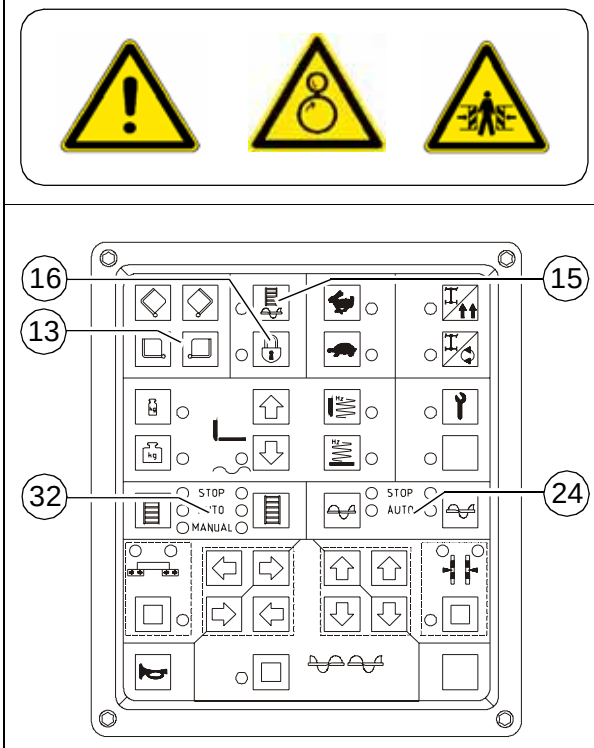
- Slide the operating panel to the desired side and secure it.
- Pull the direction indicator out of the bumper (arrow) and adjust it accordingly.



Stossstange.bmp

Loading/distributing material

- Button (16) has to be switched off.
- Use switch (13) to open the hopper. Instruct the truck driver to dump the material.
- Set the switches for the auger (24) and the conveyor (32) to "auto".
- Press button (15) to fill the machine for paving.



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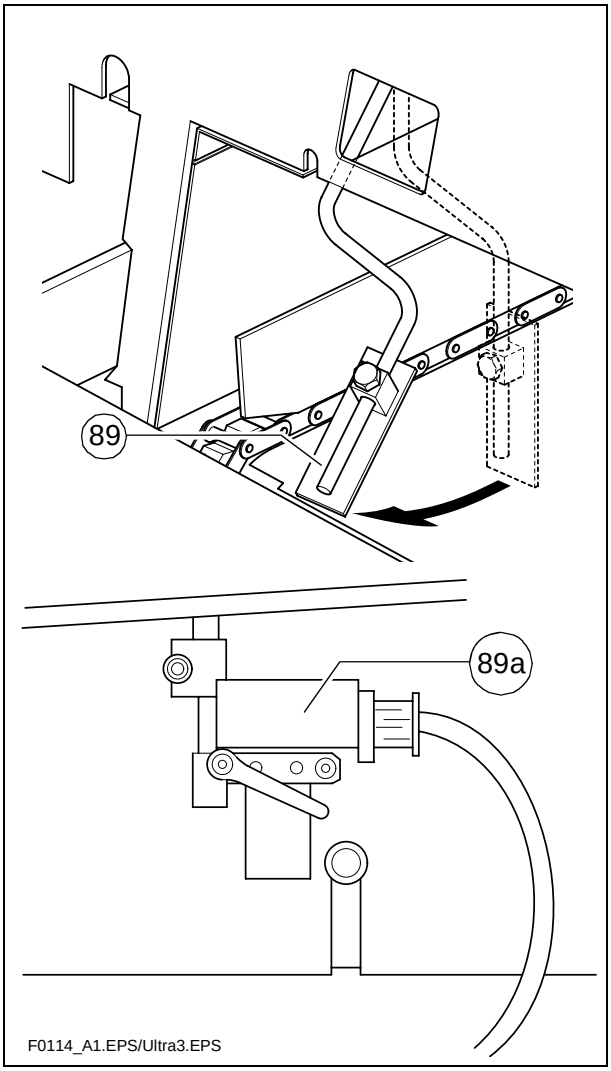
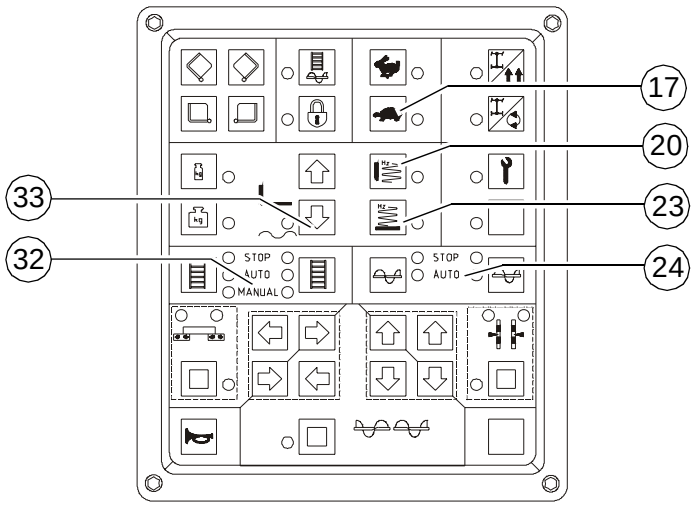
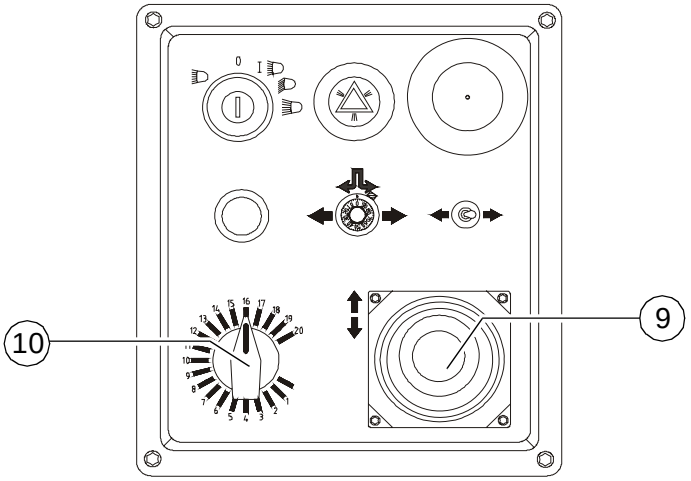
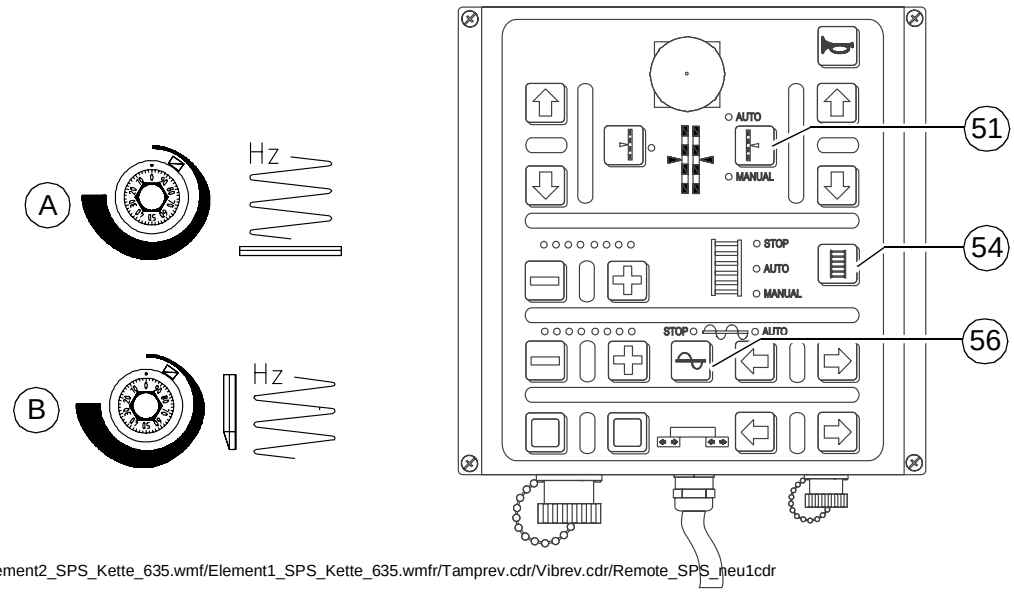
- Switch the conveyors on.
  The limit switches for the conveyors (89) or (89a o must switch off when the material has reached the area beneath the auger crossbeam.
- Check that the material is transferred properly.
  Manually switch on or off the conveyor if the material is not conveyed properly until a sufficient amount of material lies in front of the screed.



1.4 Starting for paving







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Set the switches, levers and controls listed below to the specified positions when the screed has reached its operating temperature and a sufficient amount of material lies in front of the screed:

No.	Switch	Position
17	Travel / work gears	Tortoise-operating speed
10	Travel drive preselector	Mark 6-7
33	Preparation for screed floating position	LED ON
23	Vibration	LED ON
20 o	Tamper	LED ON
24/56	Auger left/right	Auto
32/54	Conveyor left/right	Auto
51	Levelling	Auto
A	Speed regulator, vibration	approx. mark 40-60
B	Speed regulator, tamper	approx. mark 40-60

- Push the drive lever (9) all the way to the front and start driving.
- Observe the distribution of the material and adjust the limit switches if necessary.
- Set the compacting elements (tamper and/or vibration) according to the required compaction ratio.
- Let the paving master check the paving thickness after 5–6 meters and correct if necessary.

Carry out the check in the area of the caterpillar chains or drive wheels as the screed tends to level an uneven ground. The reference points for the layer thickness are the caterpillar chains or drive wheels.

The basic setting of the screed must be corrected when the actual layer thickness deviates significantly from the values indicated by the scales (see the operating instructions for the screed).

A The basic setting is for asphalt material.

1.5 Checks during paving

The following points must be constantly observed during paving:

Paver finisher function

- Screed heater
- Tamper and vibration
- Engine oil and hydraulic oil temperature
- The screed parts must be retracted and extended in time when obstacles are in the way
- Uniform material transport and distribution or supply to the screed; may require corrections to settings of the material switches for conveyor and auger.

A See the section "Malfunctions" when paver finisher functions fail.

Quality of the layer

- Paving thickness
- Slope
- Evenness in the driving direction and at right angles to it (check with 4 m levelling rod)
- Surface structure/texture behind the screed.

A See section "Malfunctions, Problems during Paving" if the paving quality is poor.

1.6 Paving with screed stop and screed charging/relieving

General

The screed hydraulics can be influenced in two ways to attain optimum paving results:

- Screed stop with prestressing
  with the paver finisher halted,
- Screed charging or relieving
  with the paver finisher driving.

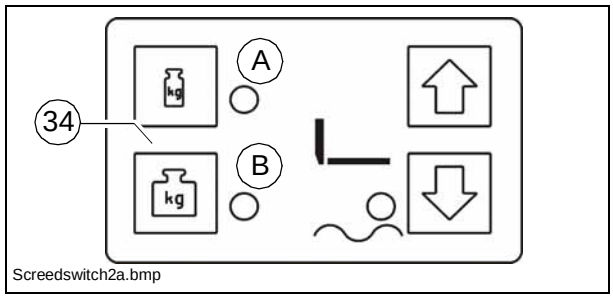
A Relieving reduces the screed weight and increases the traction force.
Charging increases the screed weight, reduces the traction force, but increases the compaction ratio. (To be used with light-weight screeds in exceptional cases.)

Screed charging/relieving

This function charges or relieves the screed regardless of its own dead weight.

Switch (34) has the following positions:

A: Relieving (screed ‘lighter’)
B: Charging (screed ‘heavier’)



Screedswitch2a.bmp

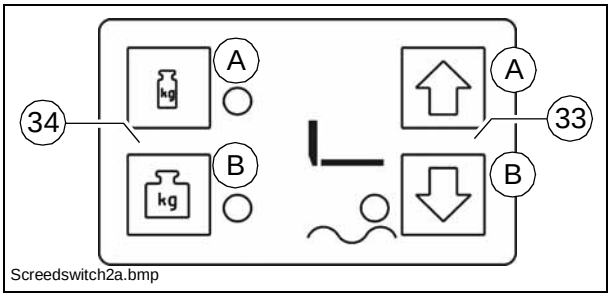
Switch positions "Screed charging/relieving" are only effective when the paver finisher moves. When the paver finisher stops, "screed stop" is automatically selected.

Screed stop with prestressing

With the "Screed stop" function it is possible to block the hydraulic system of the screed, which stops the sinking of the screed in case of temporary stopping.

Switch (34) must be turned off.

- Automatic screed stop when the drive lever is in the center position
- To lift the screed press button (33A).
- For lowering the screed press button (33B) for 1.5 sec.



Screedswitch2a.bmp

m Position (B) is not a sufficient security for transportation or maintenance operations!
The transportation safeguard of the screed must also be inserted for this.

Screed stop with prestressing

As for charging/relieving, a pressure of 2-50 bar can be individually applied to the screed lifting cylinders. This pressure can neutralize the weight of the screed to prevent the screed from sinking into the freshly laid material, thus supporting the screed stop function, especially in those situation where the screed relieving function is used.

The pressure to be applied depends on the load-bearing capacity of the material. If necessary, the pressure must be readjusted or changed as required during the first stops until the lower edge of the screed no longer leaves any marks when the paver finisher moves on again.

A pressure greater than approx. 10-15 bar neutralizes the screed weight, thus preventing the screed from sinking into the material.

A When combining the "screed stop" and "screed relieving" functions, make sure that the pressure difference between the two functions does not exceed 10-15 bar.

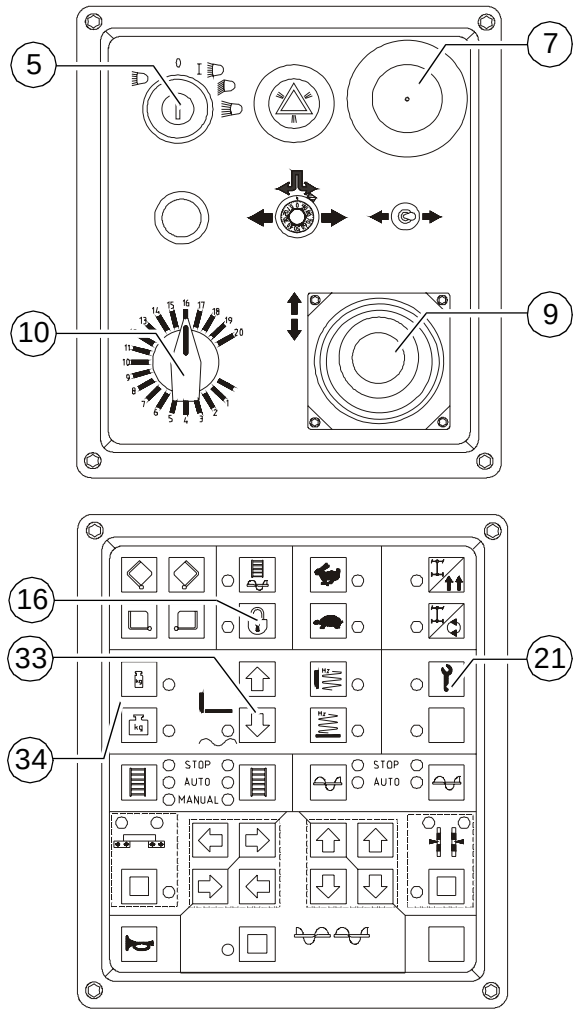
Especially in those cases where the "screed relieving" function is only briefly used as a start-up aid, there is a danger of uncontrolled floating when starting up again.

A If paving is performed with "screed charging" **do not** use the function "stopping of screed with pretensioning".

Adjusting the pressure (o)

Pressure adjustments can only be made while the diesel engine is running. Therefore:

- Start the diesel engine and set the traction controller (10) to zero (precaution against inadvertent advancing).
- Set switch (33) to the floating position.
- Set the drive lever (9) to the center position.
- Set switch (16) to position (LED OFF) and switch (21) to position (LED OFF).
- Use control valve (93a) (below the bottom plate of the operator's platform) to adjust the pressure and read it from the manometer (93b). (Basic setting: 20 bar)



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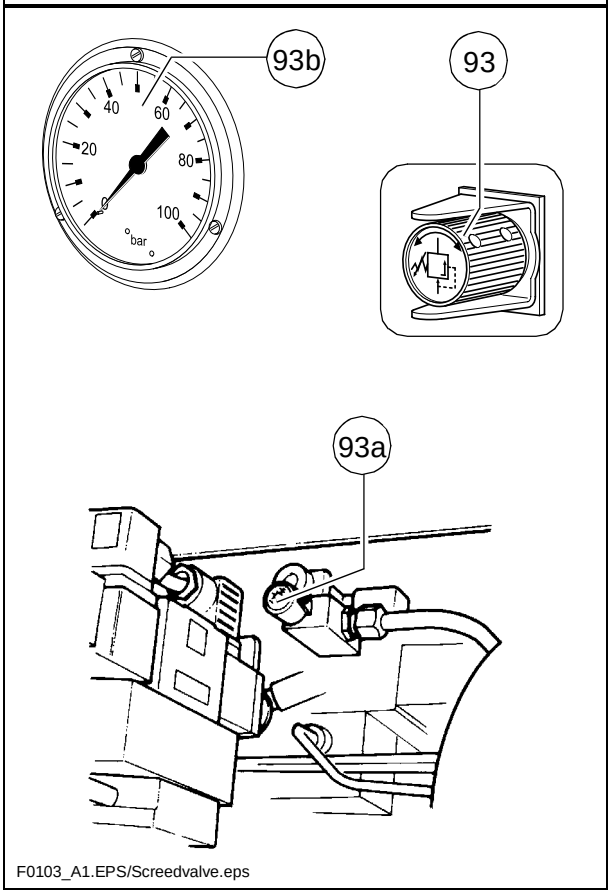
For screed charging/relieving:

- Set the drive lever (9) to the center position.
- Set switch (16) to position (LED OFF) and switch (21) to position (LED ON).
- Set switch (34) to position (LED ON) (relieving 34a) or (charging 34b).
- Adjust the pressure with the regulating valve (93) (at the rear of the paver finisher) and read the value on the pressure gauge (93b).

A When screed charging/relieving is necessary and automatic levelling is used (grade control and/or slope control), the compacting performance changes (layer thickness).

A The pressure can also be set or corrected during paving. (max. 50 bar)



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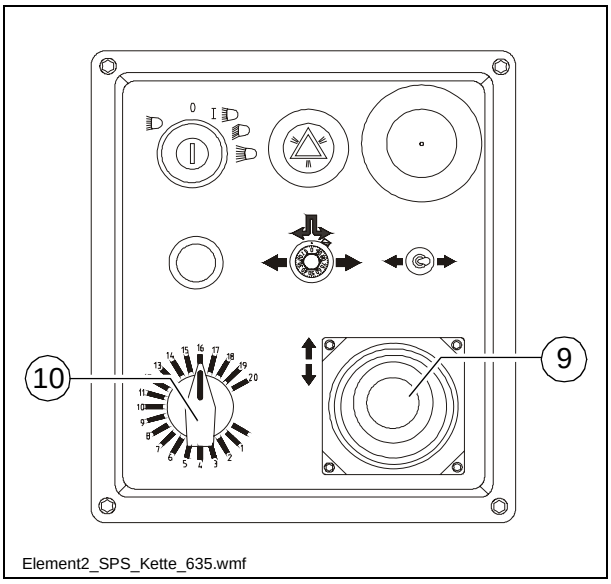
1.7 Interrupting/terminating operation

During breaks: (e.g. the material supply truck is late)

- Determine the approximate duration.
- When cooling down of the material below the minimum paving temperature must be expected, run the paver finisher empty and create an edge like the end of a layer.
- Set the drive lever (9) to the center position.



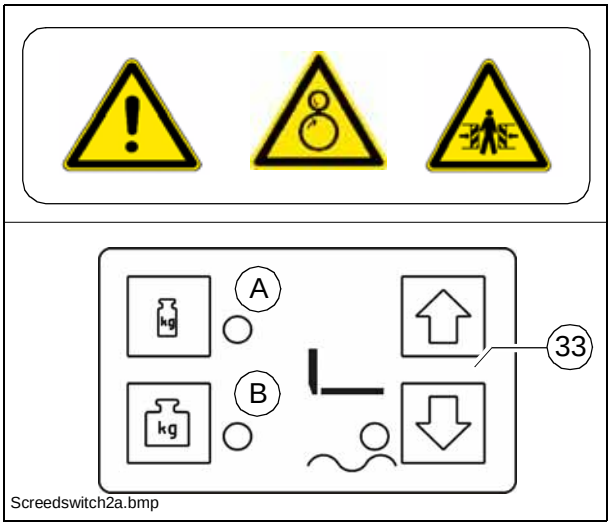
During extended interruptions
(e.g. lunch break)

- Drive lever (9) into centre position, RPM speed adjustment (10) to minimum position.
- Switch off ignition.
- Switch off screed heater (system).
- When screed is operated with the optional gas heating system, close the valves of the bottles.

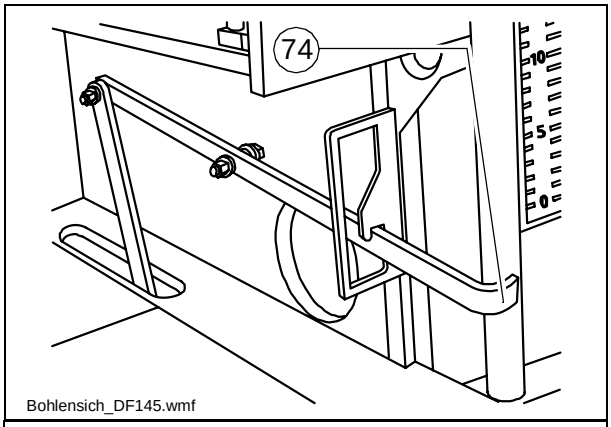
A The screed must be heated up to the correct paving temperature before paving may be restarted.

When work is finished

- Run the paver finisher empty and stop it.
- Lift the screed by using switch (33).
- Retract the screed parts to the basic screed width and lift the auger. Where applicable, completely extend the levelling cylinders.



- Insert the mechanic screed transport safeguard (74) on both screed lifting cylinders.
  - While operating the tampers at a low speed, let any material residues drop out.



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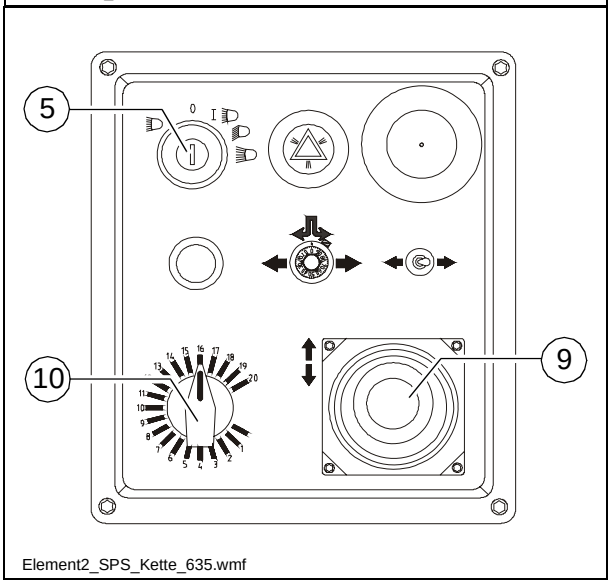
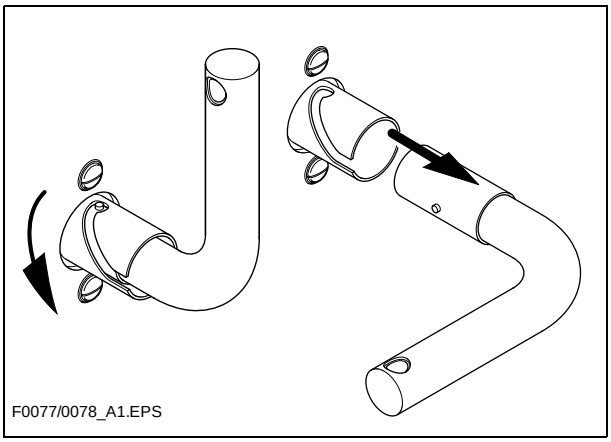
- Set the drive lever (9) to the center position and the speed adjuster (10) to minimum.
- Switch off the ignition (5).
- Switch off screed heater.
- When screed is operated with the optional gas heating system, close the main shut-off valves and the valves of the bottles.
- Remove the levelling units and stow them away in the boxes, close all flaps.
- Remove all parts that extend beyond the paver finisher contour or secure them if the paver finisher is to be transported over public roads on a low-bed trailer.



Element2_SPS_Kette_635.wmf

m Do not turn off main switch until 15 seconds after the ignition has been turned off!

A The engine electronics need this length of time to back up data.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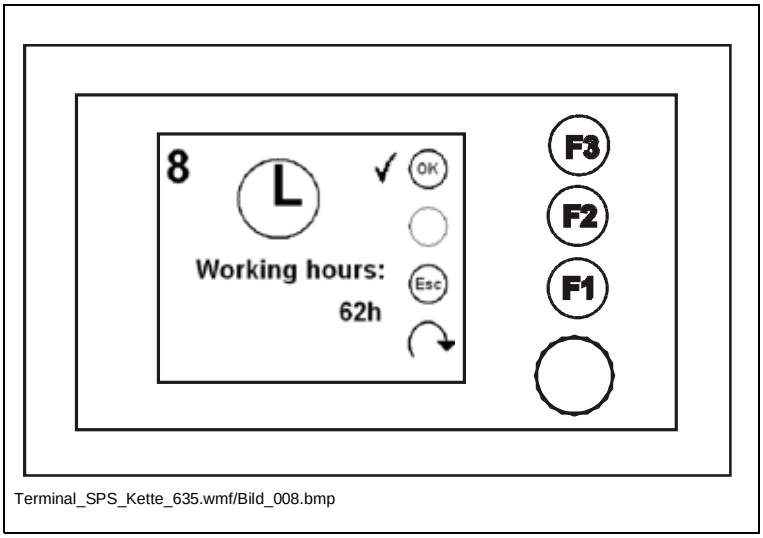
- Read and check the operating hour meter to determine whether maintenance work must be performed (see chapter F).
- Cover and lock the operating panel.
- Remove material residues from the screed and the paver finisher and spray all parts with separator fluid.



Terminal_SPS_Kette_635.wmf/Bild_008.bmp

2 Malfunctions

2.1 Problems during paving

Problem	Cause
Wavy surface ("short waves")	- change in the material temperature, demixing - wrong material composition - incorrect operation of the roller - incorrectly prepared foundation - long standstill times between loads - grade control reference line is not suitable - grade control jumps to the reference line - grade control toggles between up and down (inertia setting is too high) - bottom plates of the screed are loose - bottom plates of the screed are warped or not uniformly worn - screed does not work in the floating position - too much play in the mechanical screed link/suspension - paver finisher speed is too high - augers are overloaded - changing material pressure against the screed
Wavy surface ("long waves")	- change in the material temperature - demixing - roller has stopped on the hot material - roller has turned or roller speed has been changed too fast - incorrect operation of the roller - incorrectly prepared foundation - truck brake is applied too tight - long standstill times between loads - grade control reference line is not suitable - incorrect installation of the grade control - limit switch is not correctly set - screed is empty - screed has not been switched to the floating position - too much play in the mechanical screed link - auger is set too deep - auger is overloaded - changing material pressure against the screed
Cracks in the layer (over the entire width)	- material temperature is too low - change in the material temperature - moisture on the foundation - demixing - wrong material composition - wrong layer height for the maximum grain size - cold screed - bottom plates of the screed are worn or warped - paver finisher speed is too high
Cracks in the layer (center strip)	- temperature of the material - cold screed - bottom plates are worn or warped - wrong crowning

Problem	Cause
Cracks in the layer (outer strip)	- temperature of the material - screed extendable parts are incorrectly installed - limit switch is not correctly set - cold screed - bottom plates are worn or warped - paver finisher speed is too high
Layer composition is not uniform	- temperature of the material - change in the material temperature - moisture on the foundation - demixing - wrong material composition - incorrectly prepared foundation - wrong layer height for the maximum grain size - long standstill times between loads - vibration is too slow - screed extendable parts are incorrectly installed - cold screed - bottom plates are worn or warped - screed does not work in the floating position - paver finisher speed is too high - auger is overloaded - changing material pressure against the screed
Marks in the surface	- truck hits too much against the paver finisher while aligning to the paver finisher - too much play in the mechanical screed link/suspension - truck brake is applied - vibration is too high while standing on a spot
Screed does not react to corrective measures as expected	- temperature of the material - change in the material temperature - wrong layer height for maximum grain size - incorrect installation of the grade control - vibration is too slow - screed does not work in the floating position - too much play in the mechanical screed link - paver finisher speed is too high

2.2 Malfunctions on the paver finisher or screed

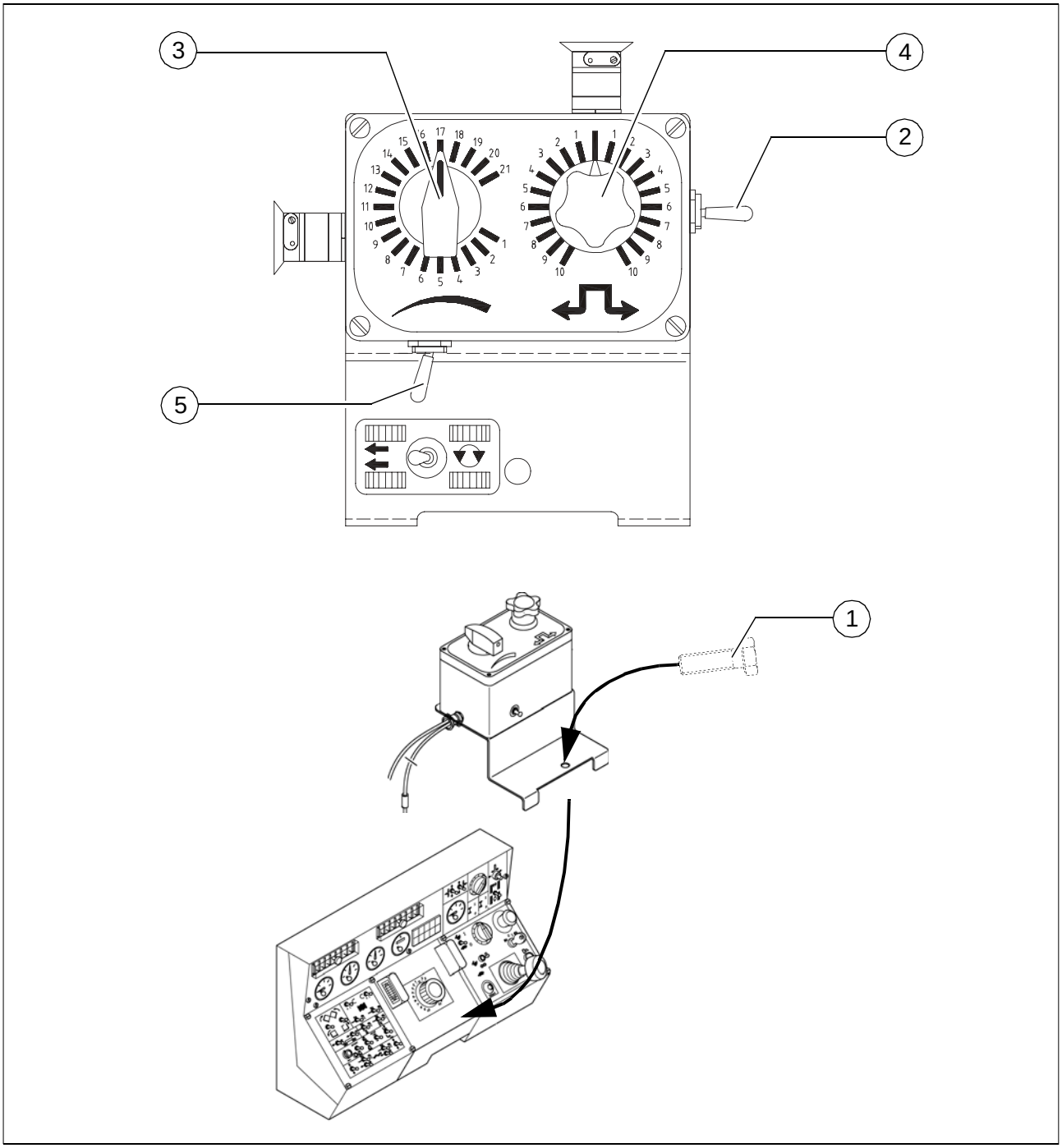
Malfunction	Cause	Remedy
At the diesel engine	Diverse	See operating instructions for the engine
Diesel engine does not start	Batteries empty	See "External starting" (start assistance)
	Diverse	see "Towing"
Tamper or Tamper or vibration does not operate	Tamper is obstructed by cold bitumen	Properly heat the screed
	Hydraulic oil level in the tank is too low	Top up the oil
	Pressure limiting valve is defective	Replace the valve; if necessary, repair and adjust the valve
	Leak in the suction line of the pump	Seal or replace the connections
		Tighten or replace the hose clamps
	Oil filter is soiled	Clean the filter; if necessary, replace the filter
Conveyor or augers run too slowly	Hydraulic oil level in the tank is too low	Top up the oil
	Power supply is interrupted	Check fuses and cables; replace if necessary
	Switch is defective	Replace the switch
	One of the pressure limiting valves is defective	Repair or exchange the valves
	Pump shaft broken	Replace the pump
	Limit switch does not switch or regulate correctly	Check the switch; replace and adjust the switch if necessary
	Pump is defective	Check the high pressure filter for dirt particles; replace if necessary
	Oil filter is soiled	Replace the filter
Hopper cannot be swung open	Engine speed is too low	Increase the speed
	Hydraulic oil level is too low	Top up the oil
	Leak in the suction line	Tighten the connections
	Flow rate regulator defective	Replace
	Leaking seals of the hydraulic cylinder	Replace
	Control valve is defective	Replace
	Power supply interrupted	Check fuse and cables; replace if necessary

Malfunction	Cause	Remedy
Hoppers lowers inadvertently	Control valve is defective	Replace
	Leaking seals of the hydraulic cylinder	Replace
Screed cannot be lifted	Oil pressure too low	Increase the oil pressure
	Leaking seal	Replace
	Screed relieving or charging is switched on	Switch must be in the center position
	Power supply is interrupted	Check fuse and cables; replace if necessary
Crossbeams cannot be lifted or lowered	Switch on the remote control is set to "auto"	Set the switch to "manual"
	Power supply is interrupted	Check fuse and cables; replace if necessary
	Switch on the operating panel defective	Replace
	Excess pressure valve defective	Replace
	Flow rate regulator defective	Replace
	Seals defective	Replace
Crossbeams lower inadvertently	Control valves defective	Replace
	Pilot-controlled non-return valves defective	Replace
	Seals defective	Replace

Malfunction	Cause	Remedy
Traction does not work	Traction drive fuse defective	Replace (Fuse holder on the operating panel)
	Power supply is interrupted	Check potentiometer, cables, connectors; replace if necessary
	Travel drive monitoring (type-specific) defective	Replace
	Electro-hydraulic servo unit of the pump defective	Replace the servo unit
	Insufficient supply pressure	Check and adjust if necessary
		Check the suction filter; replace the supply pump and the filter if necessary
	Drive shaft of hydraulic pumps or engines broken	Replace pump or engine
Irregular engine speed, engine stop function does not work	Fuel level too low	Check the fuel level; refill fuel if necessary
	Fuse "engine speed control" defective	Replace (fuse strip on the operating panel)
	Electrical power defect (line break or short circuit)	Check potentiometer, cables, connectors; replace if necessary

3 Emergency device/steering, travel drive

In case of a malfunction in the electronic drive system it is possible to override the system by an emergency device. This emergency device is included in the tool set of every caterpillar machine.
To install the emergency device all plugs of the travel drive pump servo valves have to be replaced by the plugs of the emergency device. (A short screw driver is necessary for unscrewing the plugs.)
The plug of the hydraulic brake valve is replaced by the corresponding plug of the emergency device.
Electrical power is provided via one of the 24V sockets.
The current power supply is connected as above.
To connect the plugs follow the wiring diagram on the next page.



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Following functions are located in the control unit:

No.	Denomination
1	Mounting screws for holder plate
2	Switch for preselection of the zero position and forward reverse movement
3	Adjustment knob for speed control (Replace speed preselector)
4	Steering knob
5	Switch to turn the paver on the spot

Function

If the emergency device is connected all functions like engine speed, conveyor, auger, tamper and vibration have to be controlled by the drive lever.

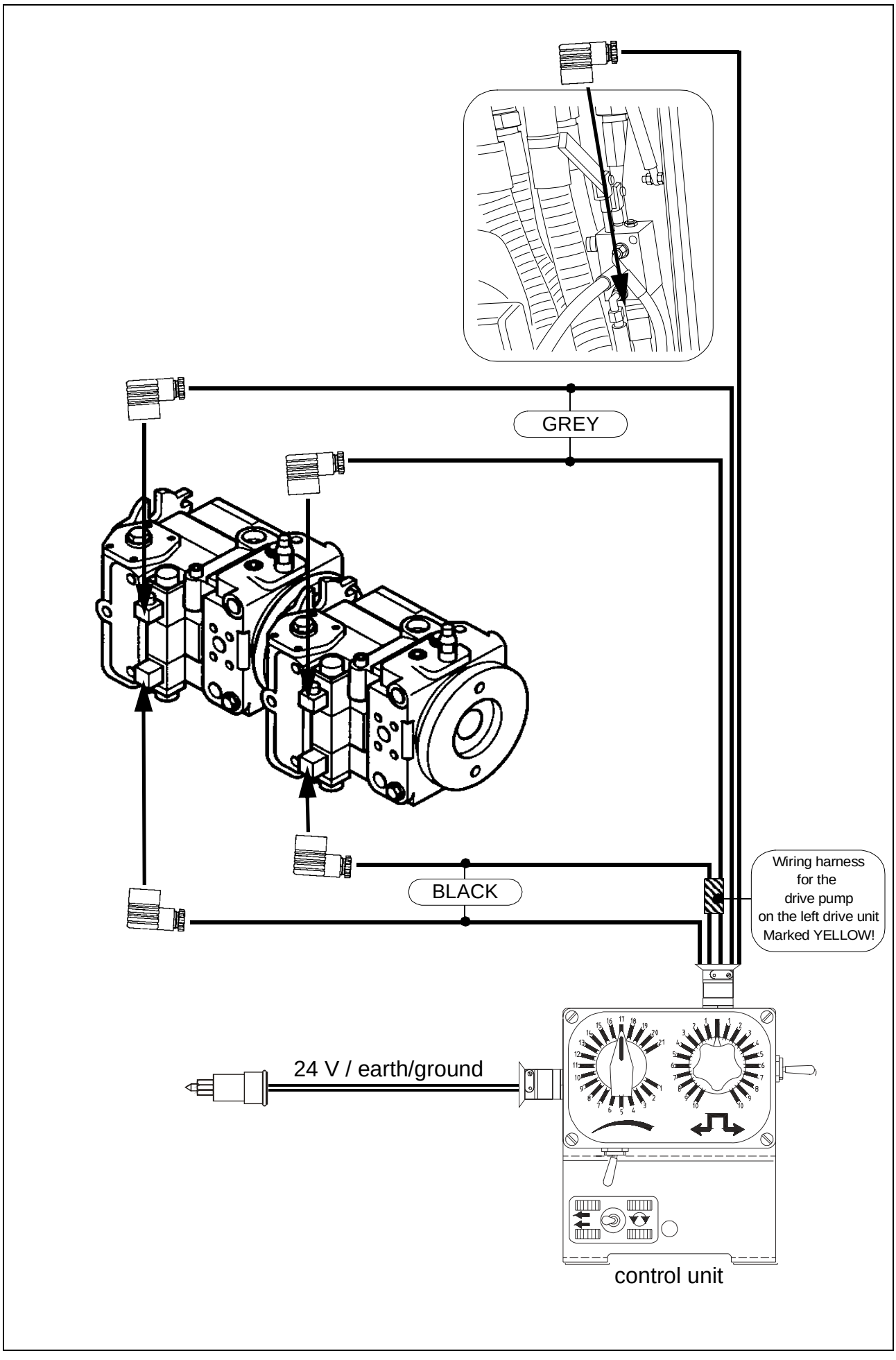
Starting for paving

- Preselect the speed with turning knob (3)
- Push switch (2) in laying direction
- Engage drive lever like under normal conditions
- All other functions (4, 5) have to be in the position described in the instruction manual

Transportation

- Adjust turning knob (3) to a low speed
- Push switch (2) to the recommended direction
- Engage the drive lever to forward direction.
  If the recommended direction is reverse, the drive lever should still be moved to forward direction
- Adjust the driving speed with turning knob (3)
- All other functions have to be in the position described in the instruction manual.

f Whenever the engine is started, switch (2) must be in neutral position because the machine would otherwise set off immediately! Risk of accident!



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E 02 Set-up and modification

1 Special notes on safety

ƒ Danger to personnel by inadvertent starting of the engine, travel drive, conveyor, auger, screed or lifting units.
Unless otherwise specified, work may only be performed when the engine is at a standstill!

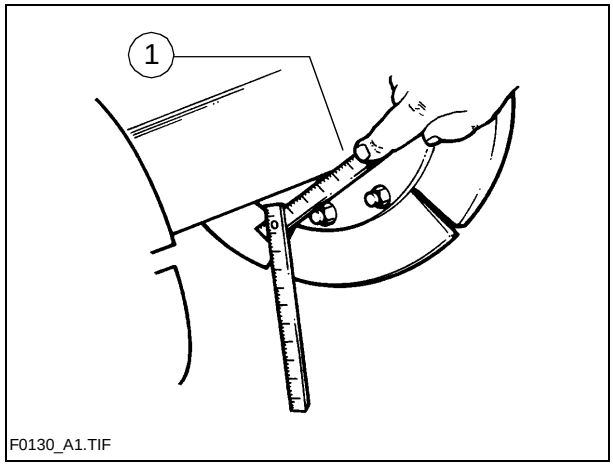
- To protect the paver finisher against inadvertent starting:
  Set the drive lever to the centre position and set the preselector to zero; if applicable, remove the travel drive fuse from the operating panel; pull out the ignition key and the main battery switch.
- Protect raised machine parts (e.g. screed or hopper) against lowering by means of mechanical safeguards.
- Replace spare parts, or have them replaced, properly.

ƒ When connecting or disconnecting hydraulic hoses and when working on the hydraulic system, hot hydraulic fluid may spurt out at high pressure.
Switch off the engine and depressurise the hydraulic system! Protect your eyes!

- Properly re-install all protective devices before re-commissioning the paver finisher.
- The walkway must always reach over the entire width of the screed.
  The hinged walkway (option for all variable screeds) may only be swung up under the following circumstances:
- When paving next to a wall or a similar obstacle.
- During transportation on a low-bed trailer.

2 Distribution auger

2.1 Height adjustment



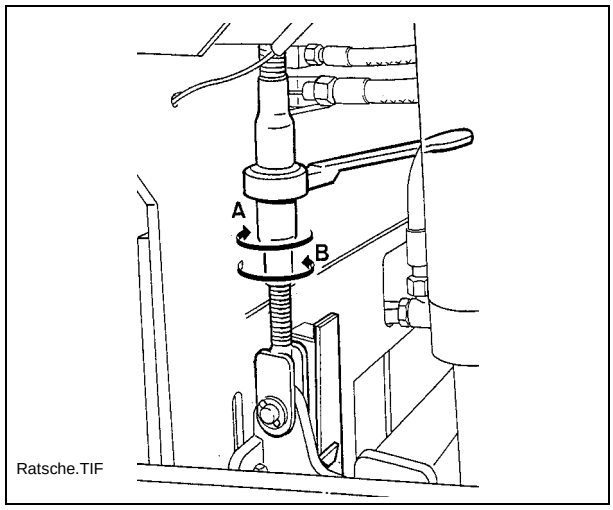
At layer height of up to 15 cm, the height of the auger (1) – measured from its lower edge – should, depending on material mixture be approx. 5 cm (2 inches) above the material layer height, depending on material mix.

Example: Paving thickness 10 cm
Adjustment: 15 cm from the ground

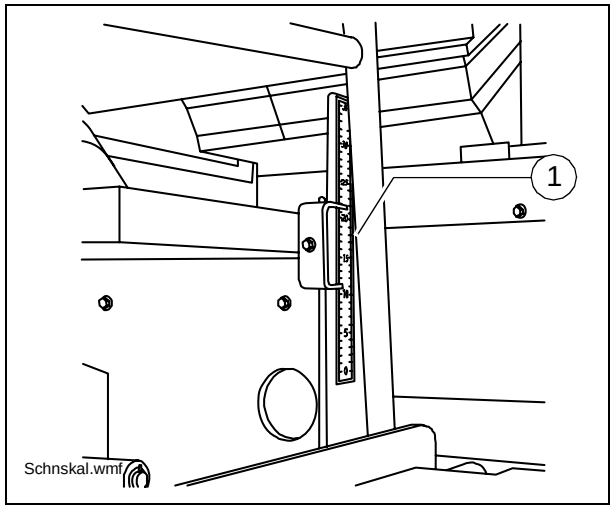
An incorrect height adjustment can result in the following problems during paving:

- Auger too high:
  Too much material in front of the screed; material overflow. When operating with larger widths, demixing and traction problems may occur.
- Auger too low:
  Not enough material that can be precompacted by the auger. Irregularities resulting from this cannot be completely compensated for by the screed (wavy surface). In addition, increased auger segment wear occurs.

2.2 For mechanical adjustment with ratchet

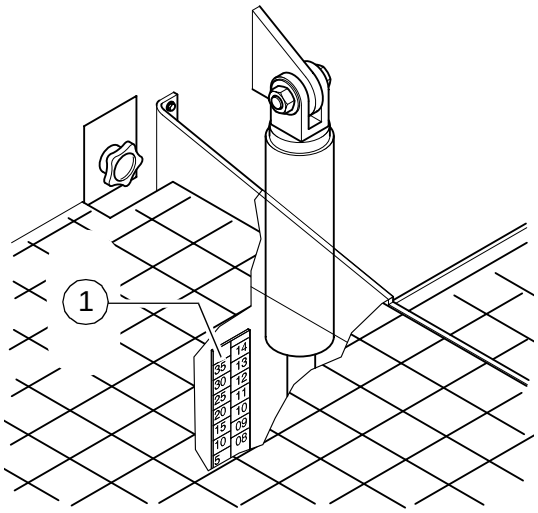


- Set the ratchet direction lever to clockwise or anticlockwise direction.
  Direction of rotation "A": Raise auger
  Direction of rotation "B": Lower auger
- Set the desired height by alternatingly adjusting the right-hand and the left-hand side.
- The current height can be read from the scale (1) in cm or inches (left-hand column = inches, right-hand column = cm).



2.3 With hydraulic adjustment (option)

- Determine the currently set height of the auger crossbeam (left and right) by means of the scale (1).



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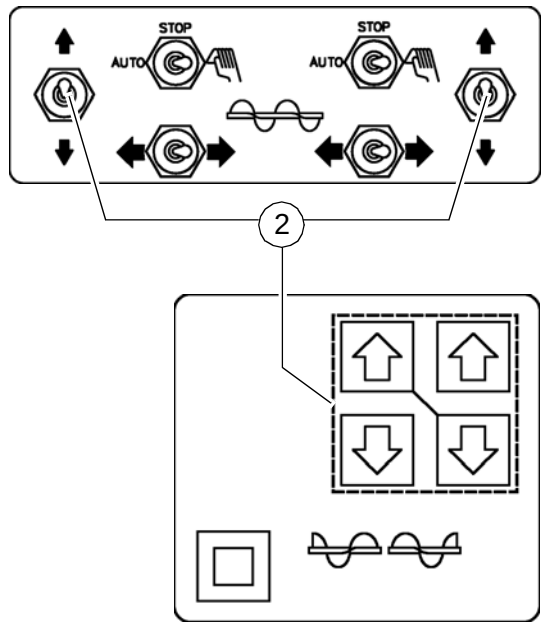
m Actuate both switches (2) simultaneously to avoid auger crossbeam warping.

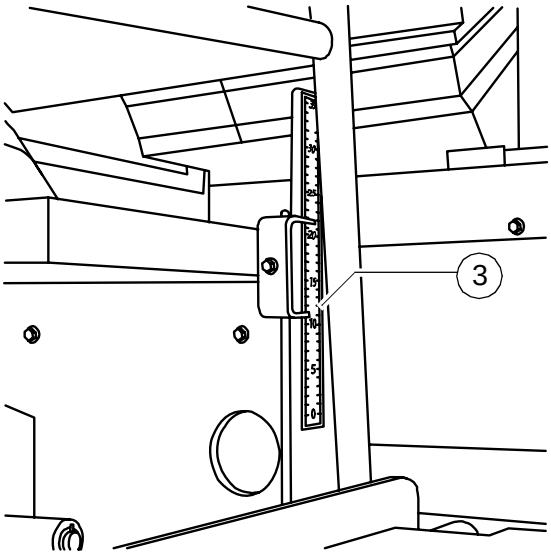
- Check whether the heights on the left and on the right are identical.



Screedlift_konv.bmp/Screedlift_SPS.bmp

A Optionally, the scales (3) for auger height may be located to left / right beside the ladder.

m



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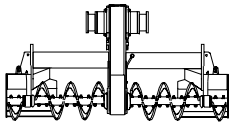
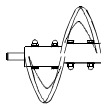
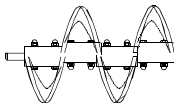
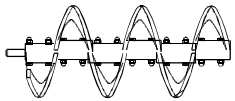
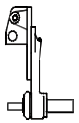
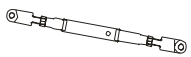
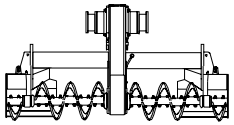
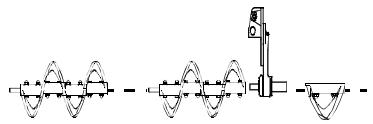
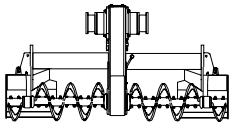
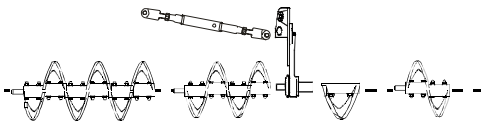
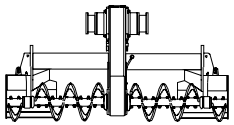
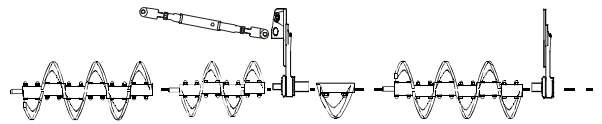
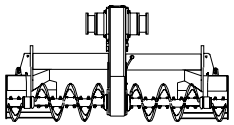
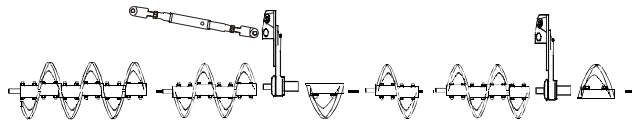
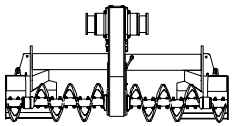
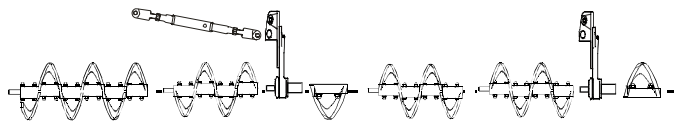
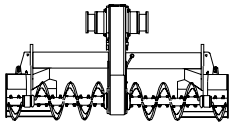
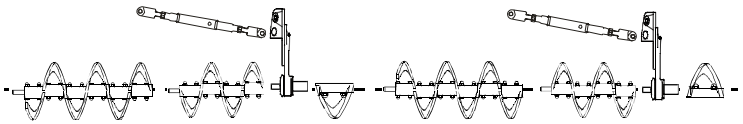
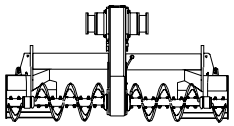
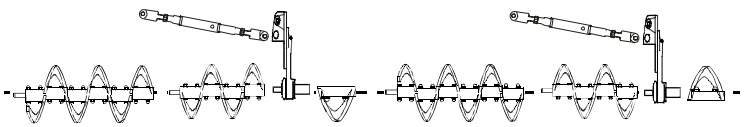
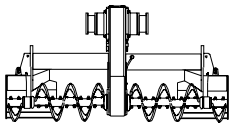
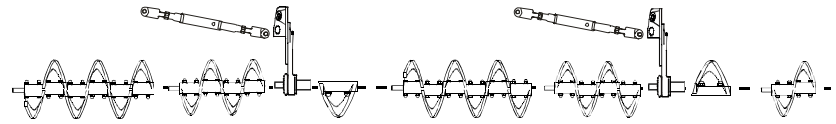
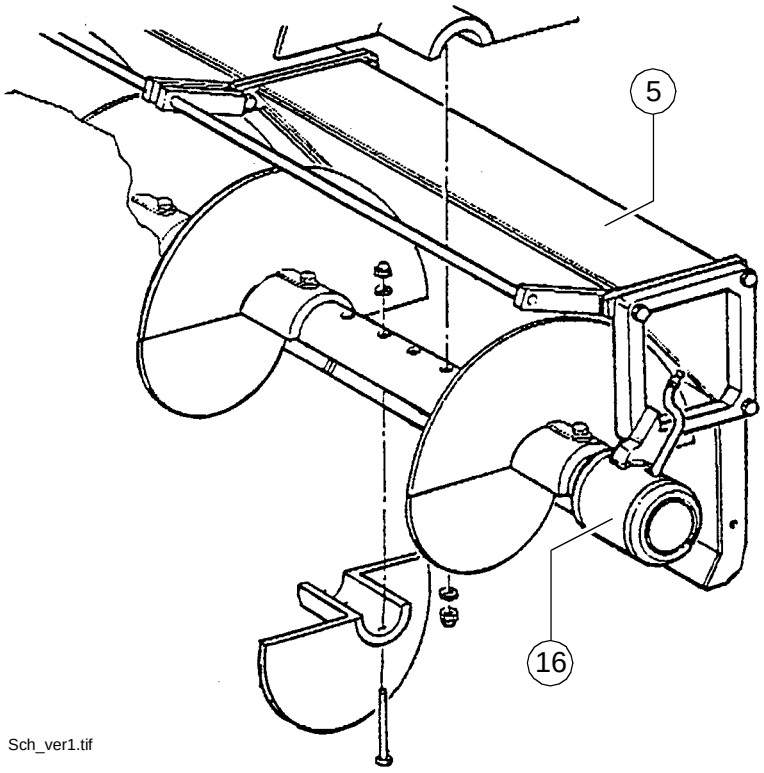
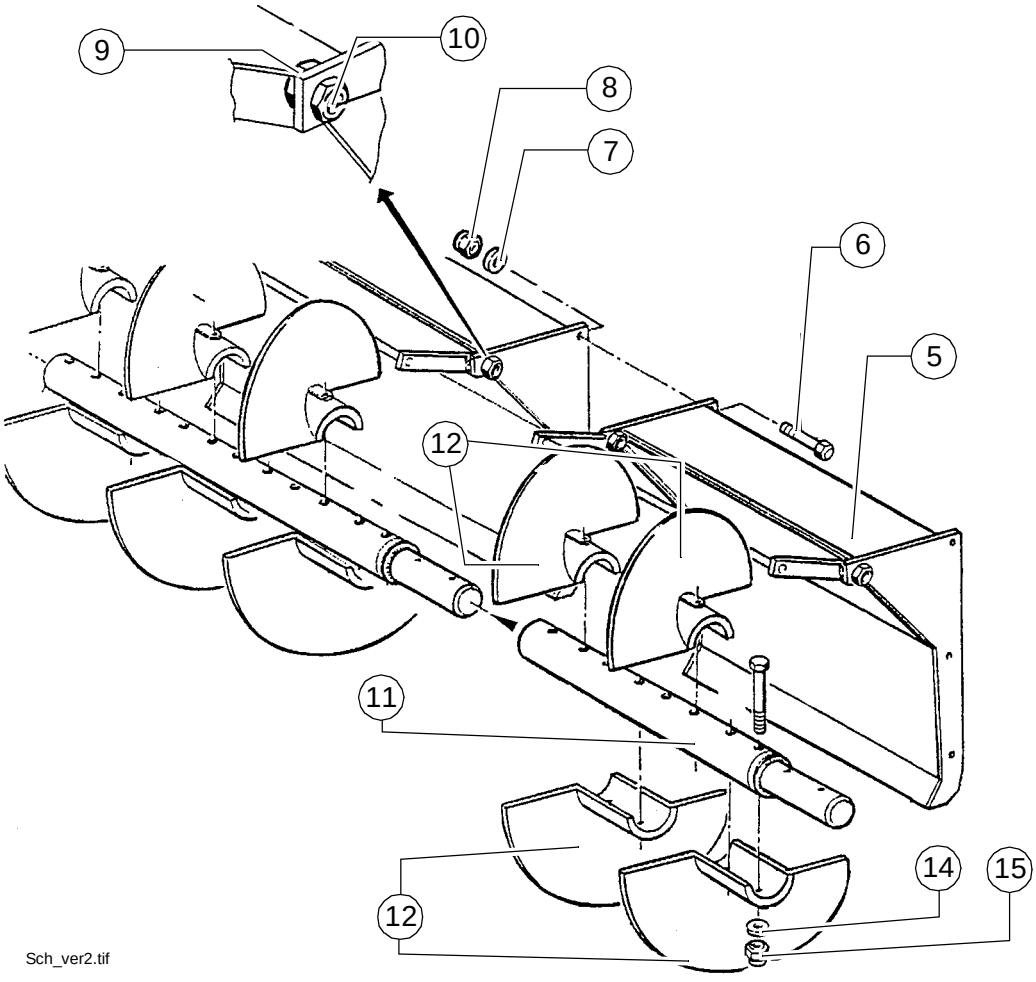
Marking	Meaning
	Basic auger
	Additional auger blade
	Auger extension part 320 mm
	Auger extension part 640 mm
	Auger extension part 960 mm
	Auger thrust bearing
	Auger outer bearing
	brace

Working width		Extension parts / bearings / supports on each side of auger
5,75 - 7,75		
7,25 - 9,25		
8,75-10,75		
9,25-11,25		
9,75-11,75		
10,25-12,25		
10,75-12,75		
11,75-13,75		

3.1 Mounting extension parts



Sch_ver1.tif

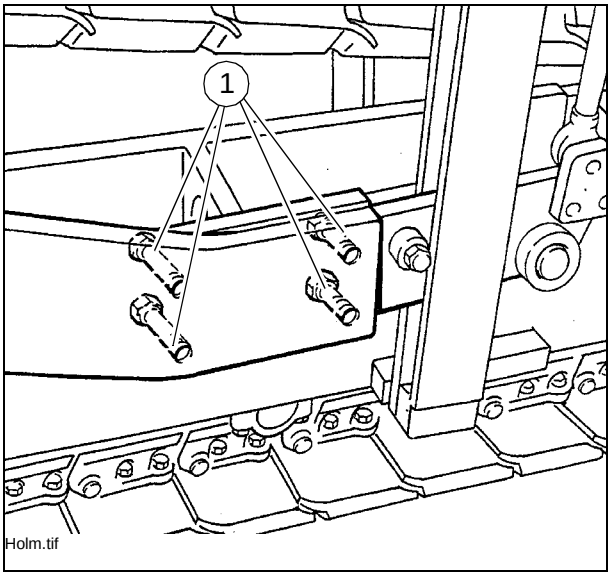


Sch_ver2.tif

- Secure material shaft (5) with screws (6), washers (7) and nuts (8) to the basic unit.
- The material shaft is adjustable to enable it to be aligned with the existing shaft.
- To do this, unfasten nuts (9) and guide aperture (10) for the screw (6).
- Fit auger shaft extension (11) to auger shaft of basic unit.
- Secure auger blade (12) to auger extension with screw (13), washer (14) and nut (15) and, at the same time, secure the auger shafts firmly.

A If the application conditions on the construction site permit an auger extension to be fitted, or render this necessary, always fit the outer auger bearing (16) as soon as the auger extension exceeds 600 mm in length.
For auger width extensions with an outer auger bearing on the basic unit, fit the shorter auger blade to the bearing. Otherwise, when paving thirty-grade material, this could cause destruction between auger blade and bearing.

4 Offset screed position towards back



Depending on planing conditions and requirements, the crossbeam can be moved towards the back.
This positional adjustment enlarges the material shaft between auger and screed.

- Loosen the four fastening screws (1).
- Remove the screws and move the machine forwards.
- The crossbeam remains in its position on slide rails: now tighten the screws (1) back down.

A When paving thin layers, the material can "settle" in front of the screed. When paving thick layers, the screed then climbs better.

5 Screed

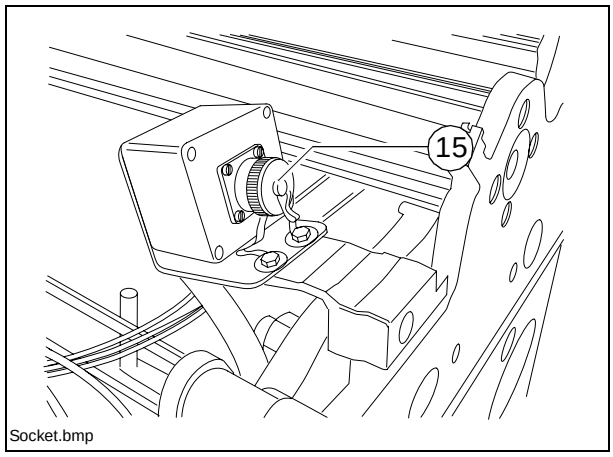
The Screed operating instructions cover all work required for mounting, setting up and extending the screed.

6 Electrical connections

Establish the following connections when the mechanical components have been mounted and set up:

6.1 Connect remote controls

to socket (15) (on the screed).



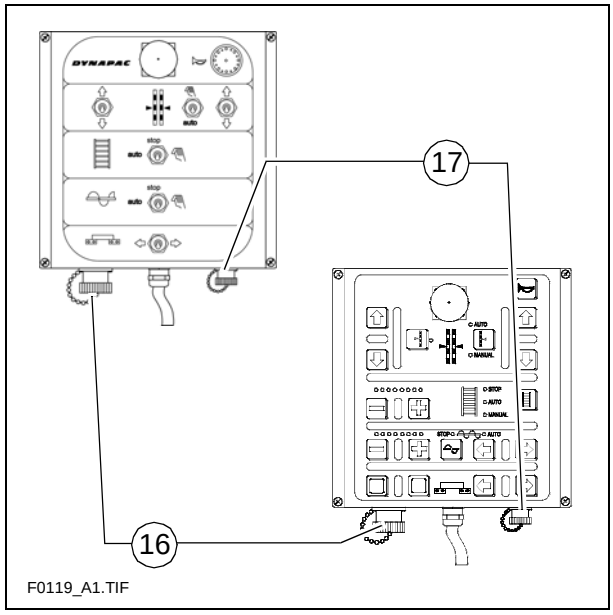
Socket.bmp

6.2 Connect grade control

to socket (16) (on the remote control unit)

6.3 Connect auger limit switches

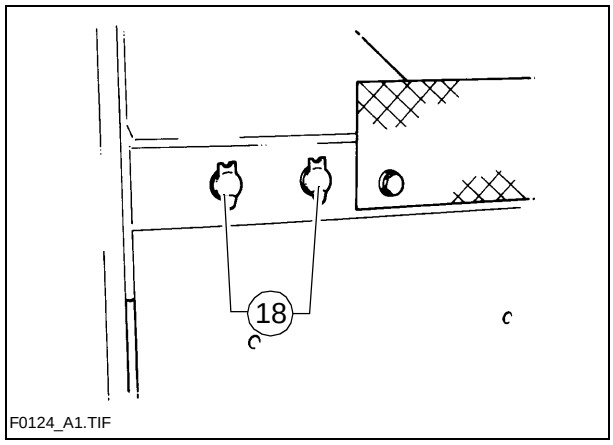
to socket (17) (on the remote control unit)



F0119_A1.TIF

6.4 Connect working lights

to sockets (18) (on the paver finisher).



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F 1.0 Maintenance

1 Notes regarding safety

f **Maintenance work:** Maintenance work may only be carried out when the engine is at a standstill.

Secure the paver finisher and the attachments against inadvertent starting before beginning any maintenance work:

- Set the drive lever to the center position and the speed preselector to zero.
- Remove the traction drive fuse from the operating panel.
- Remove the ignition key and the battery main switch.

f **Lifting and jacking up:** Secure lifted machine parts (e.g. screed or hopper) against lowering by means of mechanical supports.

m **Spare parts:** Use only approved parts and install them according to the specifications! If in doubt, contact the manufacturer!

f **Re-commissioning:** Mount all protective devices before re-commissioning the paver finisher.

f **Cleaning:** Cleaning must not be carried out while the engine is running.
Do not use any inflammable substances (such as petrol).
Avoid directly cleaning electrical parts and insulation material with a steam jet; cover them up beforehand.

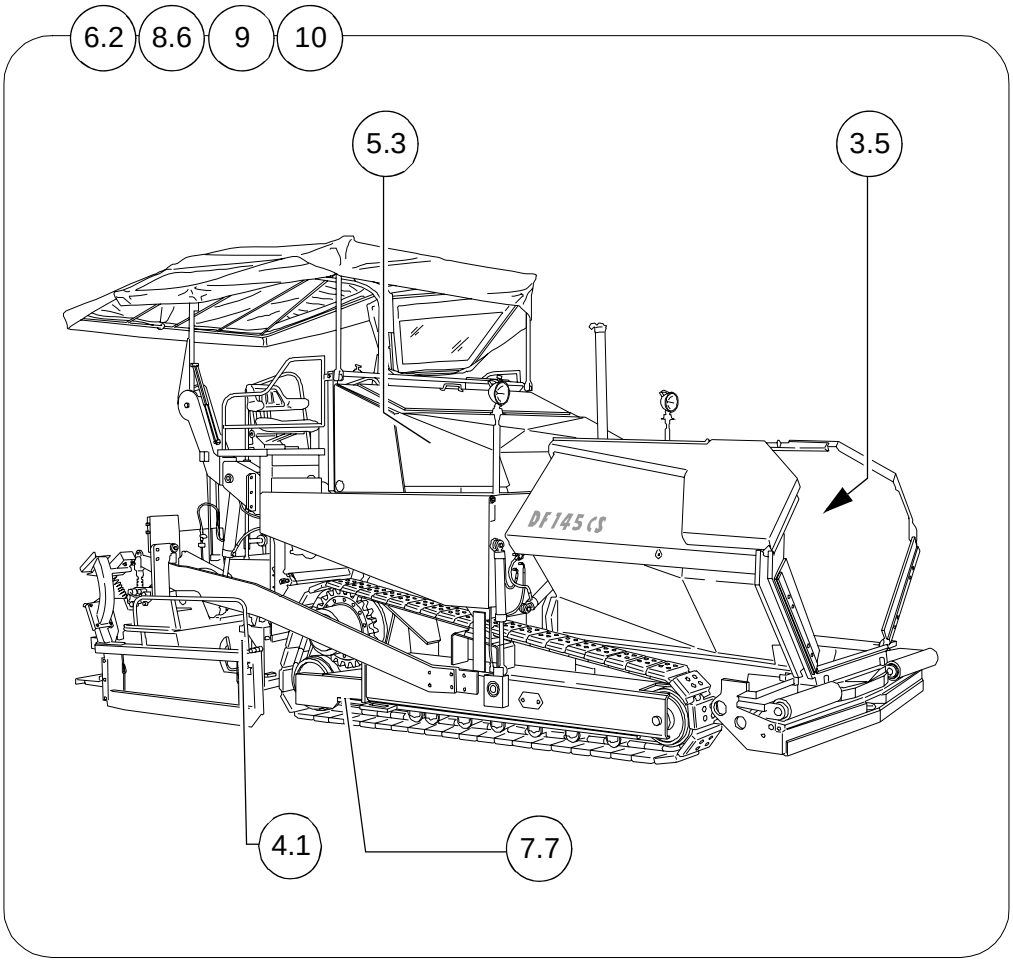
f **Working in closed environments:** Exhaust fumes must be led into the open. Propane gas bottles must not be stored in closed rooms.

m In addition to these Maintenance Instructions, the Maintenance Instructions of the engine manufacturer must always also be observed. All other maintenance work and intervals noted in these instructions are also binding.

A The instructions for the maintenance of the optional equipment are included in the sub-chapters of this chapter.

F 2.9 Maintenance review

1 Maintenance review



Sub-units	Chapter	Maintenance required after the following service hours									
		10	50	100	250	500	1000 / year	2000 / 2 years	5000	20000	as required
Conveyor	F3.5	q		q	q		q				q
Auger	F4.1	q		q	q		q				q
Drive engine	F5.3	q			q	q	q	q			q
Hydraulics	F6.2	q	q			q	q	q			q
Drive units	F7.7			q	q	q	q				q
Electronics	F8.6	q		q	q		q		q	q	q
Lubrication points	F9	q	q					q			q
Checking/stopping	F10	q					q				q

Maintenance required	q

A In this overview, you will find the maintenance intervals for optional machine equipment!

F 3.5 Maintenance - Conveyor

1 Maintenance - Conveyor

1.1 Maintenance intervals

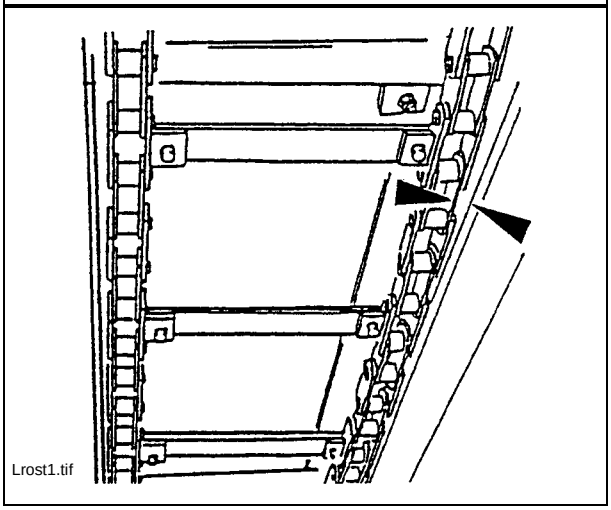
No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1	q								- Conveyor chain - Check tightness	
								q	- Conveyor chain - Adjust tightness	
2			q						- Conveyor drive - drive chains - Check chain tightness	
								q	- Conveyor drive - drive chains - Adjust chain tightness	
3				q					- Conveyor planetary gear - Check oil level	
								q	- Conveyor planetary gear - Top up oil	
						q			- Conveyor planetary gear - Change oil	

Maintenance	q
Maintenance during run-in period	g

1.2 Points of maintenance

Chain tightness of the conveyor (1)

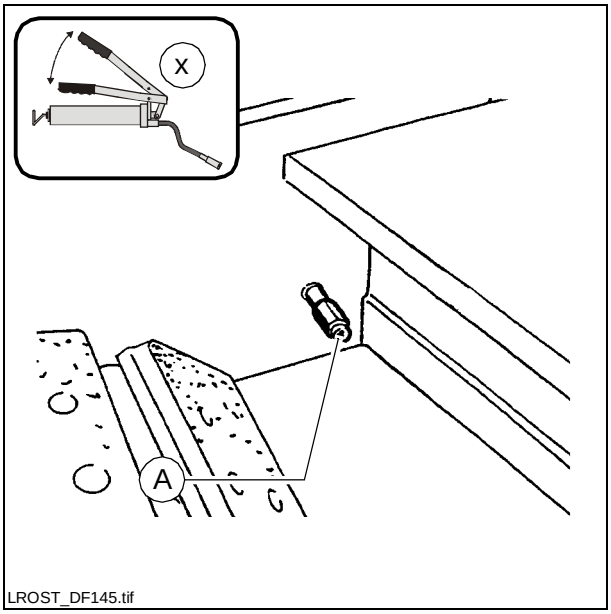
Checking the chain tightness:



For daily inspection look straight through under the bumper. When conveyor chain is correctly tensioned, the lower edge of the chain is approx. 4 cm below the lower edge of the chassis.

m The conveyor chains should not be too tight or too slack. Material between the chains and the sprocket wheel can lead to stoppage or breakage, in case chains are too tight.
If the chains are too slack, it may get stuck in the protruding objects and be damaged.

Adjustment of chain tightness:



A The chain tightness can be adjusted with grease press. The filling connections (A) are located on left and right sides at the front of the machine chassis.

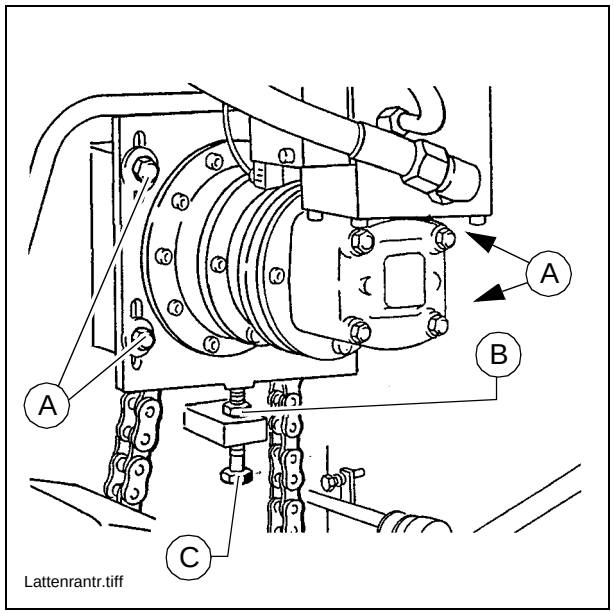
Conveyor drive - drive chains (2)

To **check the chain tension**:

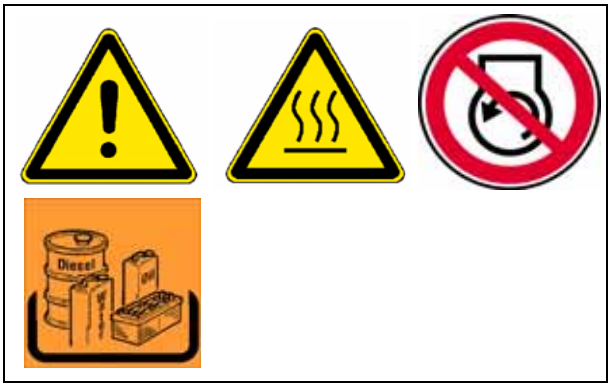
- If the tension has been set properly, the chain must be able to move freely approx. 10 - 15 mm.

To **re-tension** the chains

- Unfasten mounting screws (A) and locknut (B) slightly.
- Use the tensioning screw (C) to set the required chain tightness.
- Re-tighten the mounting screws and the lock nuts.



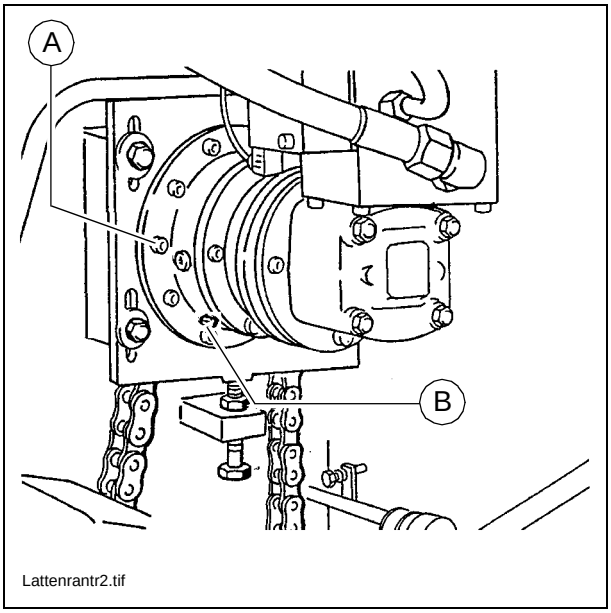
Conveyor drive planetary gear (left and right) (3)



- For **oil level check** unscrew and remove the inspection bolt (A).

A When oil level is correct, the oil comes up to the lower edge of the inspection bore or a small amount of oil escapes through the aperture.

For **filling in** the oil:



- Unscrew the filler screw (A).
- Fill specified grade of oil into filler bore at (A) until the oil level has reached the lower edge of the filler bore.
- Tighten the filler screw (A) back in.

Oil change:

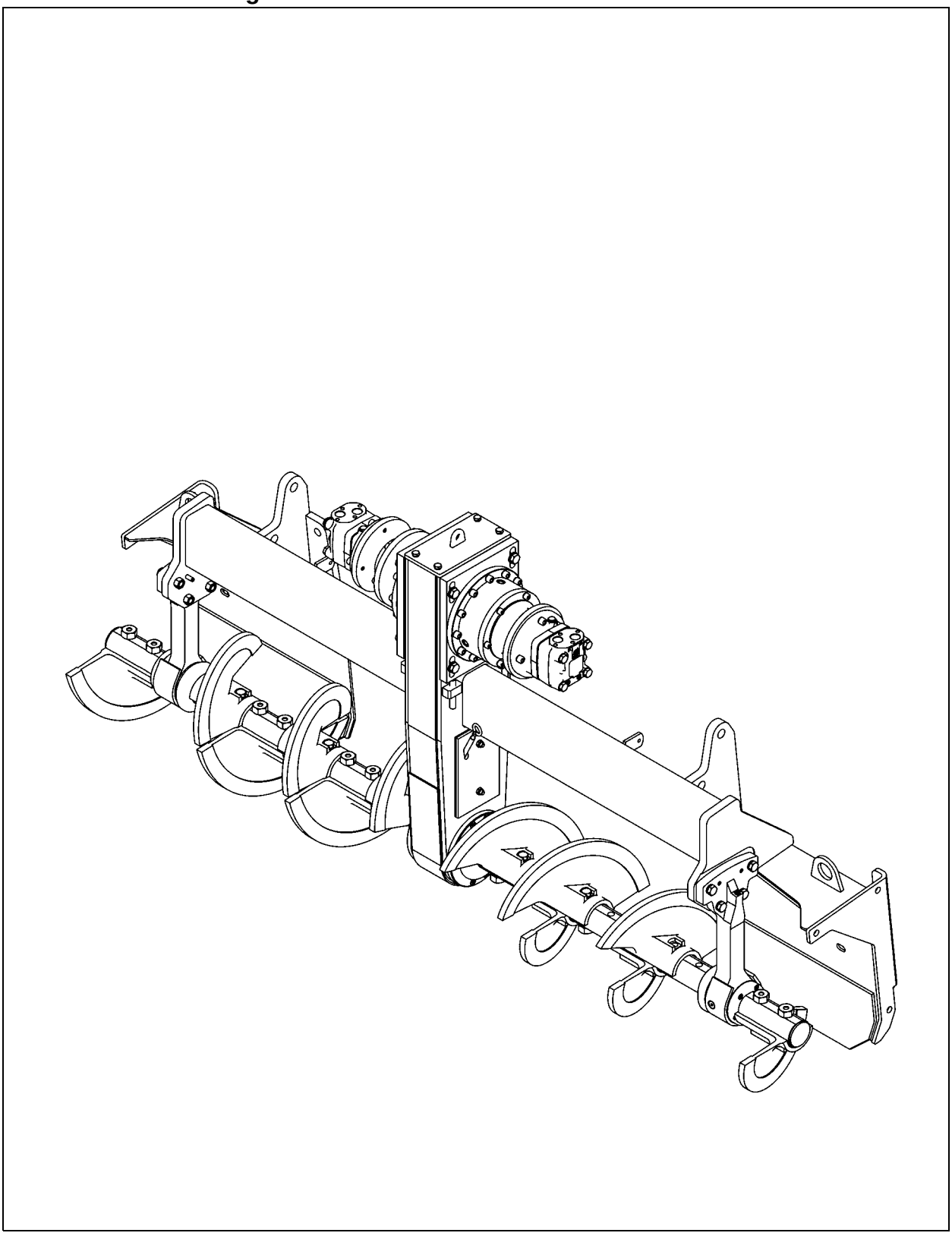
A Change the oil when the engine is at operating temperature.

m Ensure that no dirt or foreign bodies are able to enter the gear.

- Unscrew and remove the inspection and filler screw (A) and drain plug (B).
- Drain the oil:
- Tighten the drain plug (B) back in.
- Fill specified grade of oil into filler bore until the oil level has reached the lower edge of the filler bore (A).
- Tighten the inspection and filler screw (A) back in.

F 4.1 Maintenance - Auger

1 Maintenance - auger sub-unit



1.1 Maintenance intervals

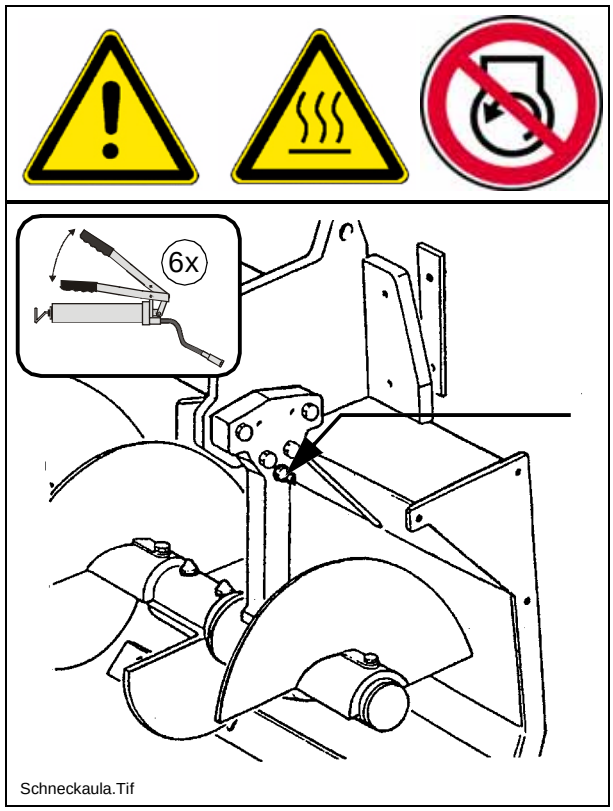
No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1	q								- Auger - outer bearing Lubrication	
2			q						- Auger planetary gear oil level check	
								q	- Auger planetary gear topping up the oil:	
						q			- Auger planetary gear oil change	
3			q						- Auger drive chain checking of tightness	
								q	- Auger drive chain adjustment of tightness	
4				q					- Auger drive case oil level check	
								q	- Auger drive case topping up the oil	
						q			- Auger drive case oil change	

Maintenance	q
Maintenance during run-in period	g

1.2 Points of maintenance

Auger - outer bearing (1)

The grease nipples are located on each side on the top of outer bearing.



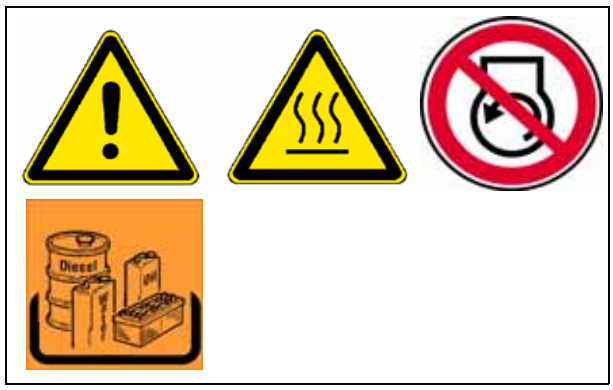
These are to be lubricated after work, to expel the eventually penetrated bitumin residue while hot and to keep the lubrication of the bearing.

A In case of auger extension, slightly untighten the outer rings for the first lubrication of the outer bearings, ensuring better venting.
Following the lubrication the outer rings shall be retightened properly.

A Fill the new bearings using sixty strokes of the grease gun.

Auger planetary gear (2)

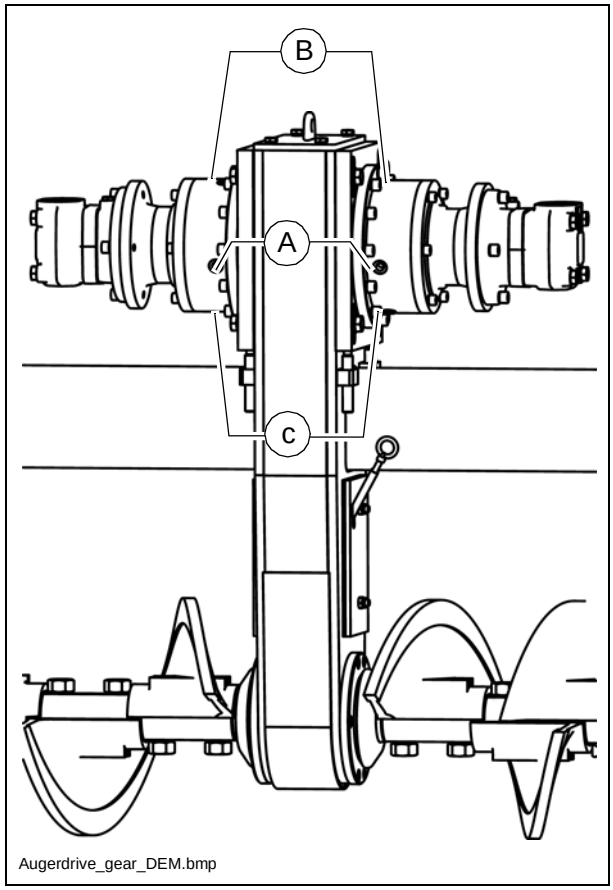
- For **checking the oil level** unscrew the inspection plug (A).



A In case of proper oil level, the oil is at the lower edge of the inspection port or a little oil flows from the hole.

For **filling in** the oil:

- Unscrew inspection plug (A) and the filling plug (B).
- Fill oil of the correct specification through the filling hole (B) until the oil level reaches the lower edge of the inspection hole (A).
- Replace the filling in plug (B) and the inspection plug (A).



Augerdrive_gear_DEM.bmp

For **changing** the oil:

A Change the oil when the engine is at operating temperature.

- Unscrew filling plug (B) and the drain plug (C).
- Drain the oil
- Drive in the oil drain plug (C) again.
- Remove the inspection plug (A).
- Fill oil of the correct specification through the filling hole (B) until the oil level reaches the lower edge of the inspection hole (A).
- Replace the filling in plug (B) and the inspection plug (A).

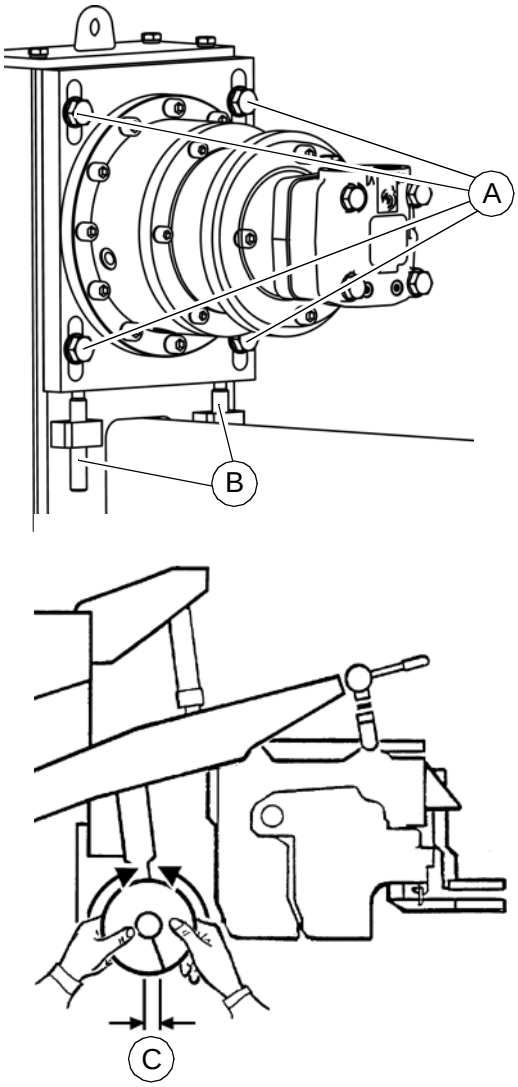
Drive chain (3) of the transport augers

Checking of **chain tightness**:

- Turn the auger by hand to the right and to the left. The free play (C) shall be now 13 to 15 mm measured on the external perimeter of the auger segments.

To **rethighten** the chains:

- Release locking bolts (A).
- Adjust the proper chain tightness with the threaded pins (B):
  - Tighten the threaded pins to 20 Nm using a torque wrench.
  - Thereafter, ease back the threaded pins by one full turn.
- Retighten bolts (A).

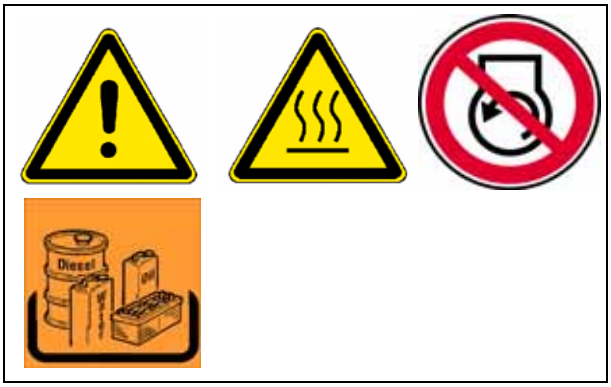


Augerdrive_chain_DEM.bmp/Schnecksp.tif

Auger case (4)

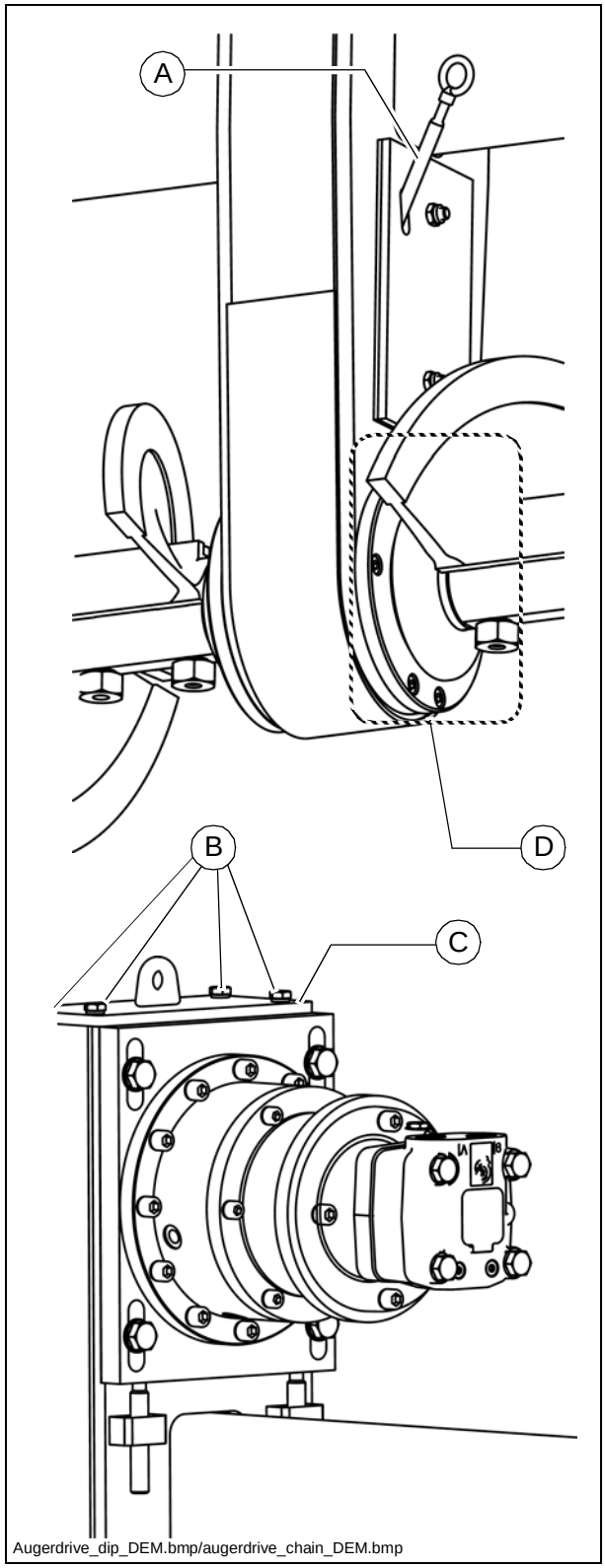
Checking the oil level

A In case of correct oil level, the oil is between the two notches of the dipstick (A).



For **filling in** the oil:

- Unscrew the bolts (B) at the upper cover of the auger case.
- Remove lid (C).
- Fill in oil until the correct level is achieved.
- Remount the lid.
- Check the oil level once again using the dipstick.



Augerdrive_dip_DEM.bmp/augerdrive_chain_DEM.bmp

Change the oil

A Change the oil when the engine is at operating temperature.

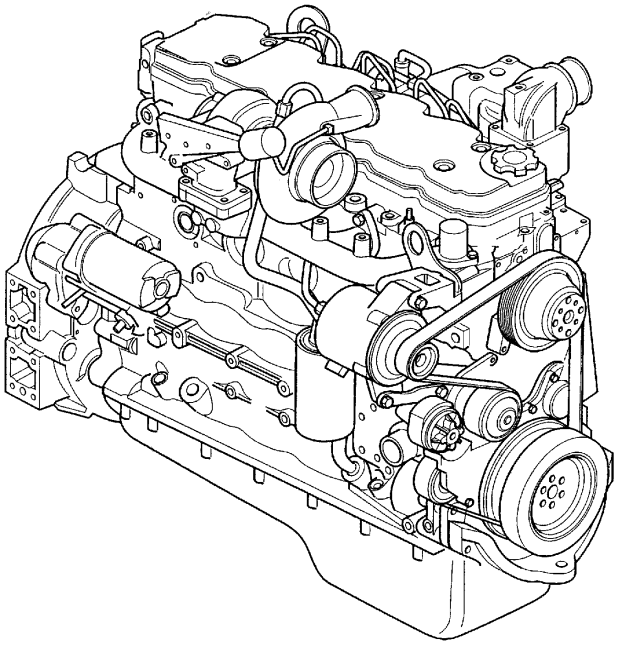
- Place a suitable dish under the auger cases to catch the oil.
- Untighten bolts (D) on the perimeter of the auger shaft flange.

A The oil flows out between the flange and the auger housing.

- Fully drain the oil
- Retighten the flange bolts (D) to correct tightness, diagonally.
- Fill in the specified oil through the open upper cover (C) of the auger housing, until the oil level comes to the approprite height on dipstick (A).
- Refit the lid (C) and bolt (B) properly.

F5.3 Maintenance - Engine

1 Maintenance - Engine



m In addition to these maintenance instructions, the maintenance instructions issued by the engine manufacturer must be adhered to under all circumstances. All other maintenance work and intervals noted in these instructions are also binding.

1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1	q								- Fuel tank Check filling level	
								q	- Fuel tank Refill with fuel	
							q		- Fuel tank Clean the tank and system	
2	q								- Engine lube-oil system Check oil level	
								q	- Engine lube-oil system Top up oil	
					q				- Engine lube-oil system Change oil	
					q				- Engine lube-oil system Change oil filter	
3	q								- Engine fuel system Fuel filter (drain the water separator)	
					q				- Engine fuel system Replace fuel pre-filter	
					q				- Engine fuel system Replace fuel filter	
								q	- Engine fuel system Bleed fuel system	

Maintenance	q
Maintenance during run-in period	g

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
4	q								- Engine air filter Check air filter	
	q								- Engine air filter Empty dust collecting bin	
						q		q	- Engine air filter Air filter cartridge Clean / replace	
5	q								- Cooling system of the engine Check radiator fins	
								q	- Cooling system of the engine Clean radiator fins	
				q					- Cooling system of the engine Check level of the coolant	
								q	- Cooling system of the engine Top up coolant	
							q		- Cooling system of the engine Change coolant	
					q				- Cooling system of the engine Check coolant (additive concentration)	
6				q					- Engine drive belt Check drive belt	
								q	- Engine drive belt Tighten drive belt	
						q			- Engine drive belt Replace drive belt	
7	q								- Engine exhaust system Check particle filter	(o)
				g		q		q	- Engine exhaust system Clean particle filter	(o)

Maintenance	q
Maintenance during run-in period	g

1.2 Points of maintenance

Engine fuel tank (1)

- Check the **filling level** on the gauge on the operating panel.

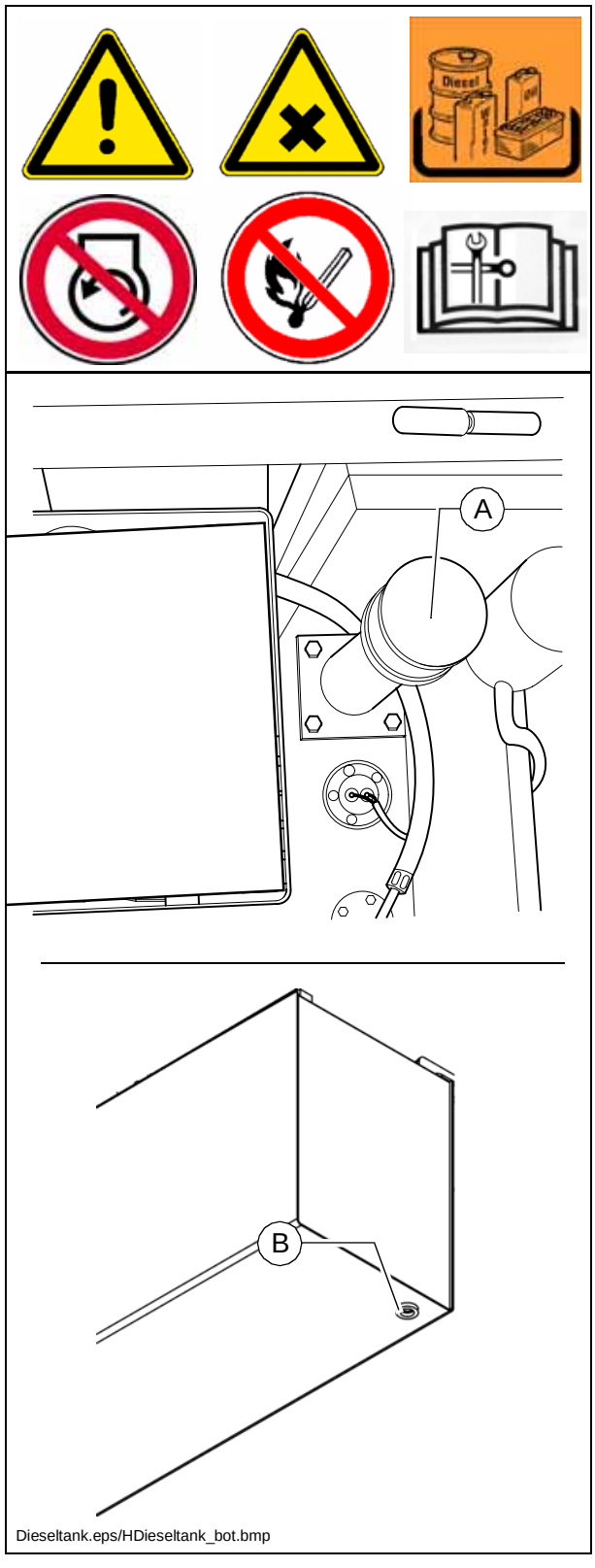
A Fill the fuel tank before each start of work so that the fuel system cannot "run dry" and this way the time consuming venting (bleeding) can be avoided.

For **filling in** the fuel:

- Unscrew cap (A) (under the tank cover).
- Fill in fuel through the filling port until the required filling is achieved.
- Replace the cap (A).

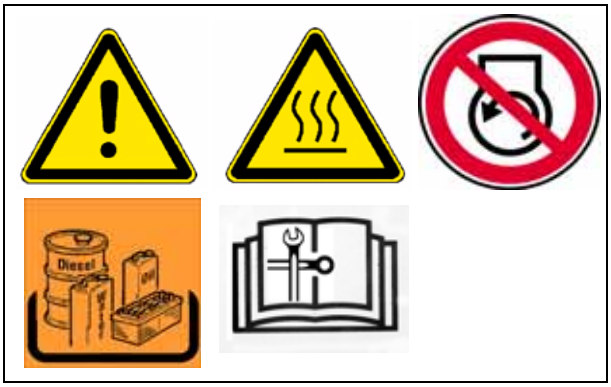
Cleaning of tank and device:

- Unscrew the plug (B) at the bottom of the tank and drain into a collection pan about 1 l fuel.
- After drainage screw back the plug with a new seal ring.



Dieseltank.eps/HDieseltank_bot.bmp

Engine lube-oil system (2)



Checking the oil level

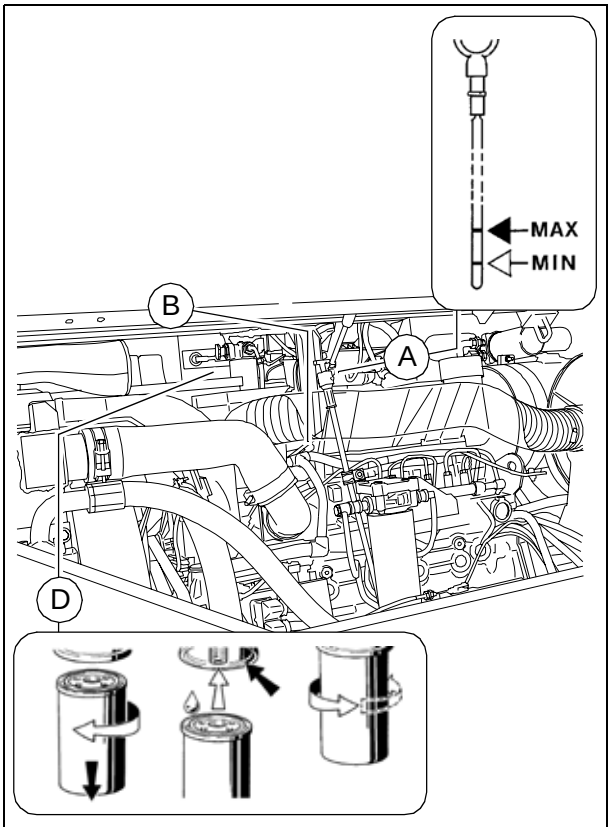
A In case of correct oil level, the oil is between the two notches of the dipstick (A).

A Check the oil level with a paver finisher standing on a flat area!

m If there is too much oil in the engine, the gaskets and seals may get damaged, while too little oil can lead to the overheating of the oil and the damage of the engine.

For **filling in** the oil:

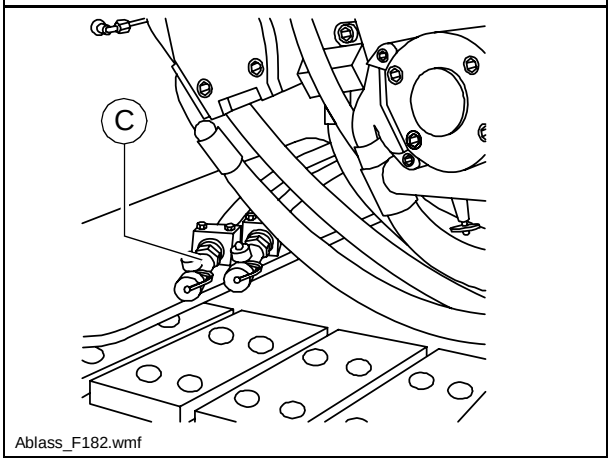
- Remove cap (B).
- Fill in oil until the correct level is achieved.
- Return cap (B).
- Check the oil level once again using the dipstick.



Oil change:

A Change the oil when the engine is at operating temperature.

- Remove the screw cap of the oil drain port (C) and screw on the hose provided as an accessory.
- Place the end of the hose in a dish to catch the oil.
- Open the shutoff valve with a spanner and let the oil fully drain.
- Shut off the valve, remove the hose and return the screw cap.
- Fill in the oil of specified quality through the filling port on the engine until the oil level rises to the correct mark of the dipstick (A).



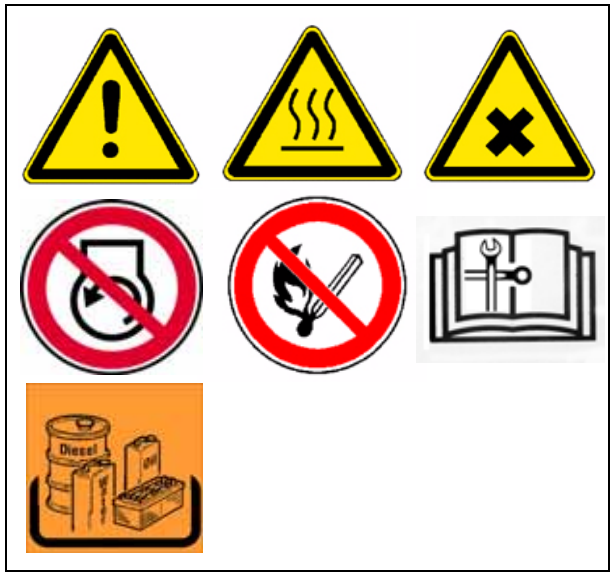
Changing the oil filter:

A As part of the oil change mount the new filter after the used oil was drained.

- Untighten the filter (D) and clean its resting surface.
- Apply thin coat of oil to the seal of the new filter and fill the filter with oil before mounting.
- Tighten the filter by hand.

A After mounting the oil filter check the oil pressure gauge and the proper tightness during the trial operation. Check the oil level once again.

Engine fuel system (3)



A The fuel filter system consists of three filters:

- Pre-filter (A) with water separator
- Main filter (B)

A Depending on the machine, the pre-filter is in the engine compartment or under the tank lid!

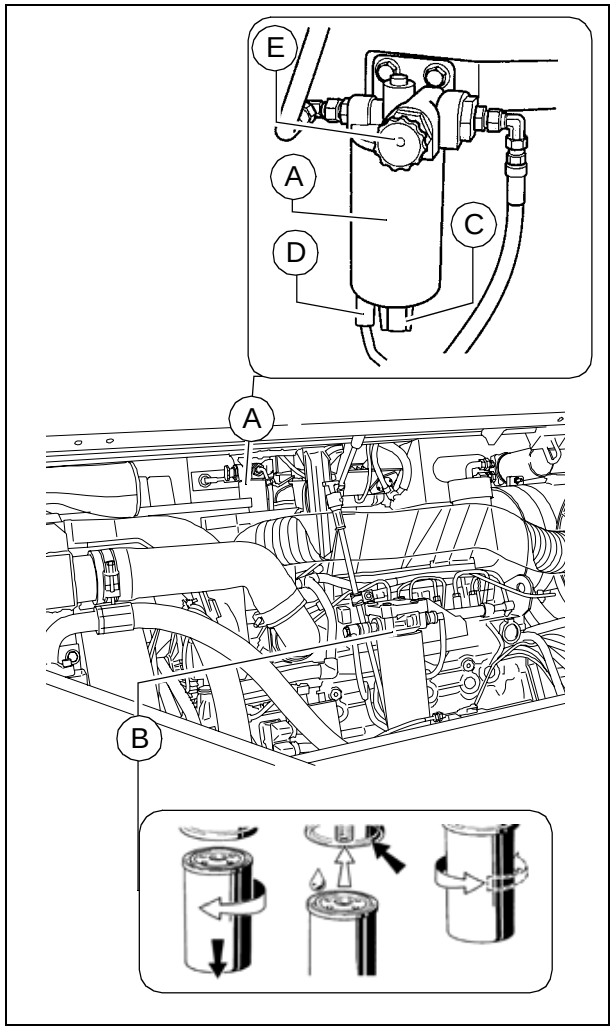
Pre-filter - draining of water

A Empty the collection bin by the specified intervals or when the engine electronic indicates a fault.

There is a drain valve (C) on the underside of the filter cartridge.

- Remove connector (D) from engine electronics and unfasten drain valve (C) until support can be removed.
  Drain off fluid until only clear fuel emerges.
  Then slide the support back into place and hand-tighten the drain valve.
- Replace the connection of the water detector (D).

Changing of pre-filter:



- Pull down the connection of the water detector (D).
- Untighten the filter cartridge (A) using a pair of oil filter tongs or oil filter strap and unscrew it.
- Clean the sealing surface of the filter holder.
- Apply a thin coat of oil to the gasket of the filter cartridge, drive them under the holder and tighten by hand.
- Replace the connection of the water detector (D).
- Vent the filter.

Replacing of main filter:

- Untighten the filter (B) and clean its resting surface.
- Apply a thin coat of oil to the gasket of the new filter.
- Tighten the filter by hand.

A After mounting the filter check for proper tightness during the trial run.

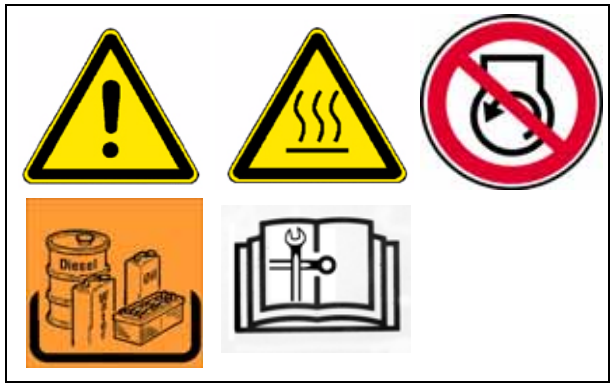
Venting the filter:

- Unscrew handwheel of the pump (E). Pull out and push in handwheel untill the filter is refilled with fuel.

A The system is refilled with fuel when a resistance at the handwheel is noticeable during pumping!

- Screw in handwheel of pump (E).

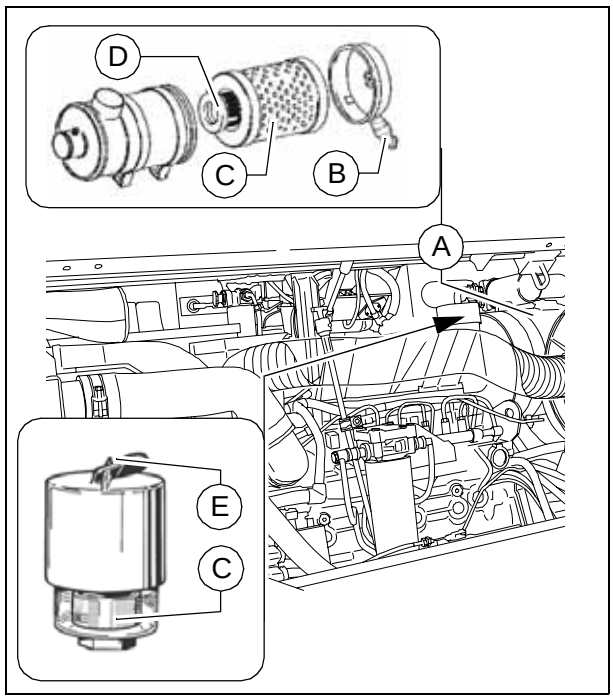
Engine air filter (4)



Emptying the dust collection bin

- Empty the dust collection valve (B) on the air cleaner housing (A) by pressing the discharge port in the direction of the arrow.
- Discharge the eventually compacted dust by pressing together the upper part of the valve.

A Clean the discharge port from time to time.



Cleaning / replacement of the air filter cartridge

A Pollution of the filter of the combustion air depends on the dust content of the air and the mesh size of the filter selected.

A The maintenance of the filter becomes necessary if:

- The maintenance indicator (O) red servicing field (C) is fully visible when the engine is stopped.
- When the engine electronic unit indicates service need
- Open the air filter lid.
- Withdraw the filter cartridge (C) and the safety cartridge (D)

A Clean the filter cartridge (C) and replace min. after one year.

- Blow out with dry pressure air (max. 5 bar) from inside out or tap it (in case of emergency only).

A The cartridges should not get damaged in the process.

- Check the soundness of the filter papers of the filter cartridge (by exposing to light) and the soundness of the seals. Replace them as required.

A Replace the safety cartridge (D) after 5 filter maintenance, but min. after 2 years (never clean it!).

After completing the maintenance works:

- Press the reset button (E) of the maintenance indicator (O). The maintenance indicator is ready for operation once again.

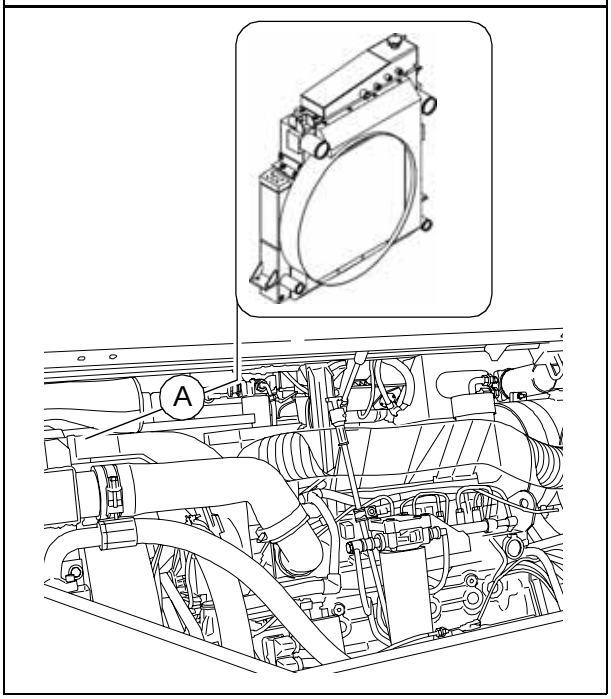
Coolant system of the engine (5)

Checking / topping up of coolant

The coolant level is checked when the engine is cold. Make sure that the anti-freeze and anti-corrosive liquid us sufficient (-25 °C).

f When hot, the system is under pressure. When opening, there is a danger of scalding!

- If necessary fill in sufficient amount of coolant through the open port (A) of the compensating tank.



Changing the coolant

A See operating instructions for the engine.

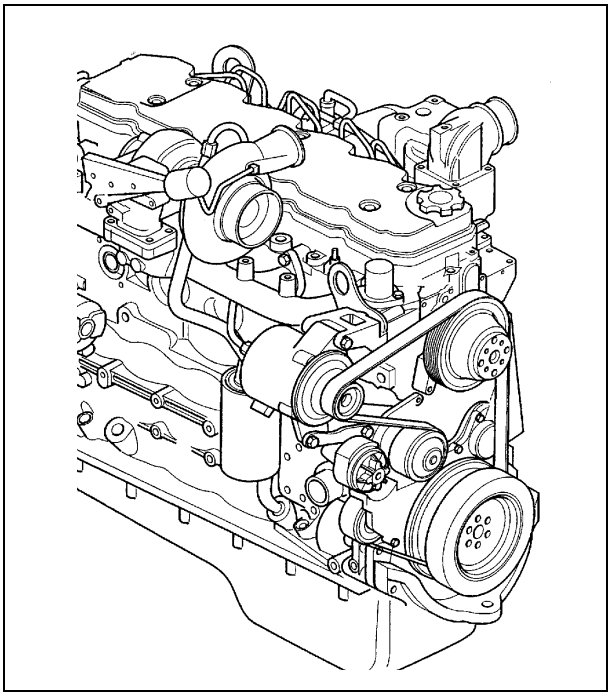
Checking and cleaning of the radiator fins

- If necessary, remove leaves, dust or sand from the radiator.

Engine drive belt (6)

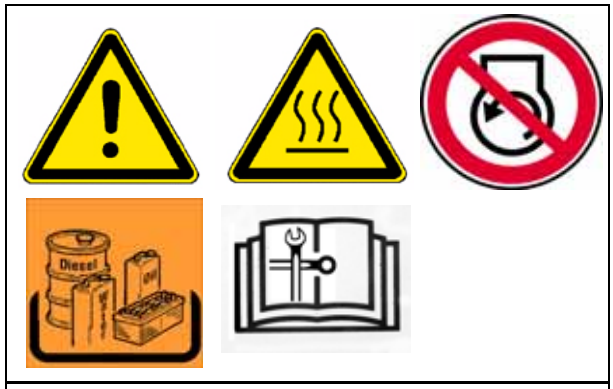
Checking / replacing of drive belt

A See operating instructions for the engine.



Engine exhaust system (7)

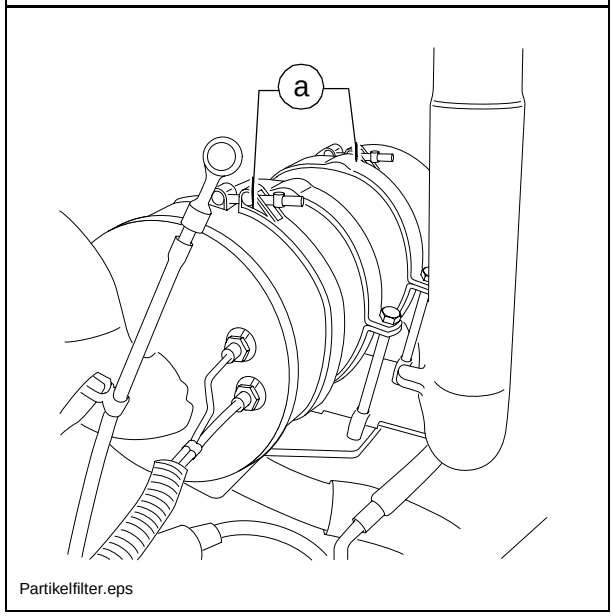
Cleaning of particle filter



m As considerable amount of soot is accumulated in the filter, the cleaning must be performed under an appropriate suction system.

m Clean the filter element removed with oil-free and grease-free pressure air!

- Marking the flow of direction of the exhaust gas on the filter case.
- Remove the filter element by untightening the two clips (a).
- First blow out the inlet side.



Partikelfilter.eps

m The pressure of the compressed air can be max. 5 bars and the nozzle shall not be closer to the filter edge than 10 cm.

- Carefully blow out all the filter passages.
- Turn around the filter element, and repeat the process on the other side as well.
- Repeat the process until no more carbon residue leaves the filter.
- Replace the filter element, taking care of the proper direction of flow.

A After cleaning for a short while more soot discharge is expected during operation.

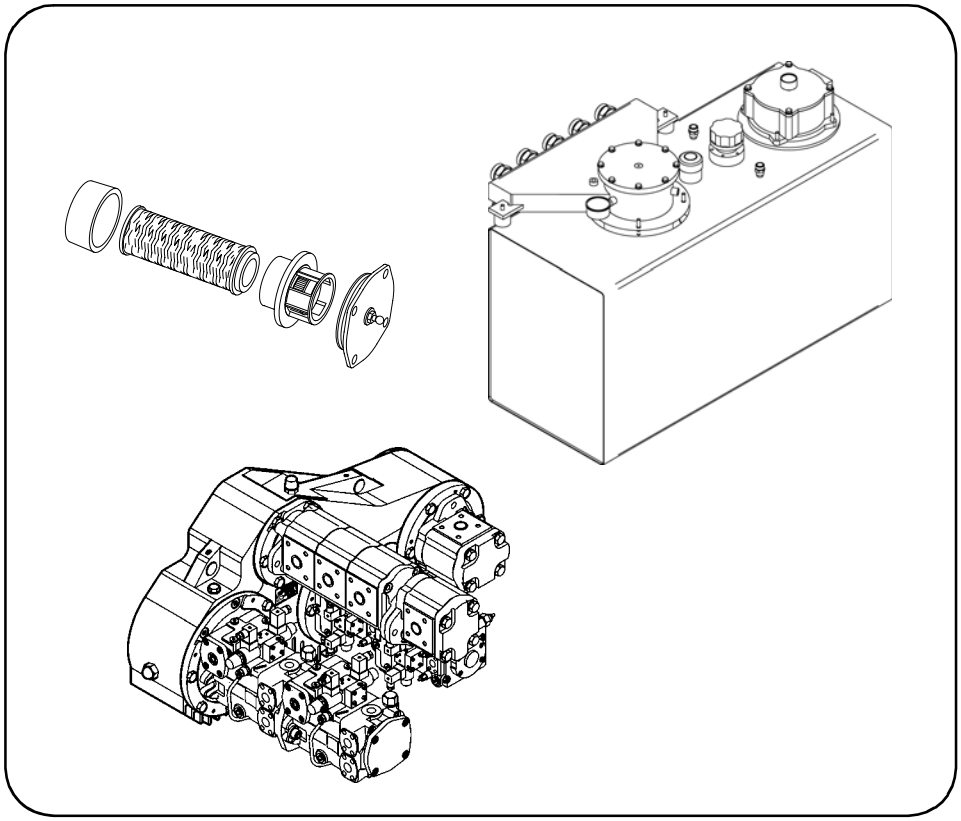
- In case of sticky, oily soot the filter must be heated to about 450°C and the cleaning shall be carried out preferably with the hot filter.

m The filter shall not be cleaned with water/steam or detergent in any case!

f The carbon particles are harmful to your health! In case of filter change or cleaning, wear appropriate protection gear!

F 6.2 Maintenance - Hydraulic system

1 Maintenance - Hydraulic system



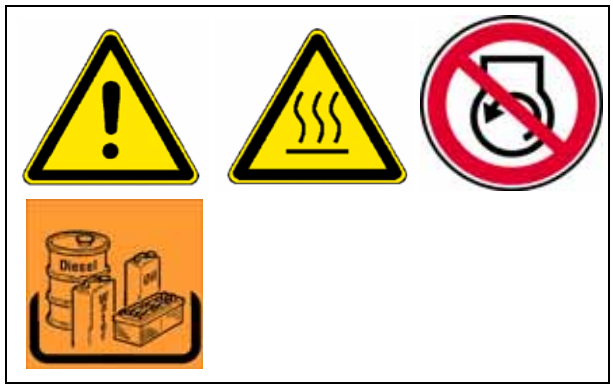
1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1	q								- Hydraulic oil tank - Check filling level	
								q	- Hydraulic oil tank - Top up with oil	
							q		- Hydraulic oil tank - Change oil and clean	
2	q								- Hydraulic oil tank - Check maintenance indicator	
							q	q	- Hydraulic oil tank - Intake / return hydraulic filter; change, vent	
3	q								- High pressure filter - Check maintenance indicator	
								q	- High pressure filter - Replace filter cartridge	
4		q							- Pump distribution gear - Check oil level	
								q	- Pump distribution gear - Top up oil	
						q			- Pump distribution gear - Change oil	
5					q				- Hydraulic hoses - Visual inspection	
							q	q	- Hydraulic hoses - Replace hoses	
6					q			q	- Auxiliary flow filter- Replace filter element	

Maintenance	q
Maintenance during run-in period	g

1.2 Points of maintenance

Hydraulic oil tank (1)



- **Oil level** check on dipstick (A).

A In case of retracted cylinders the oil level shall be at the upper mark.

For **filling in** the oil:

- Remove cap (B).
- Fill in oil through the filling port until the required filling level is achieved on the dipstick (A).
- Return cap (B).

A Regularly clean the vent port of the oil tank from dust and pollution. Clean the surfaces of the oil cooler.

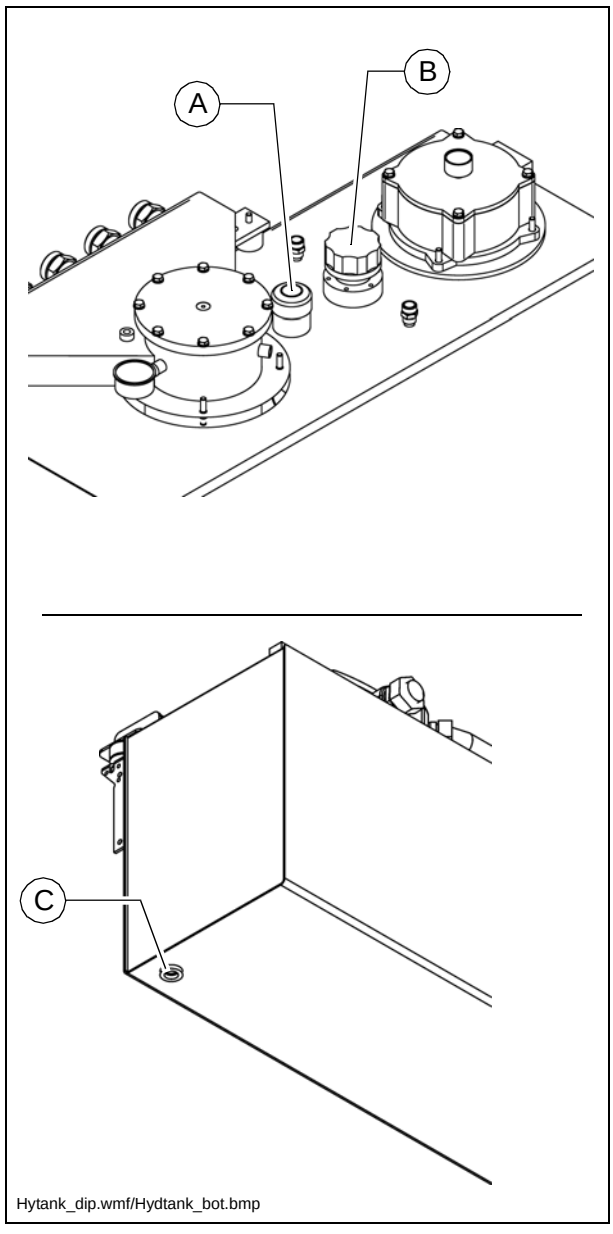
m Use only the recommended hydraulic oils - see section "Recommended hydraulic oils".

For **changing** the oil:

- To drain the hydraulic oil unscrew the drain plug (C) at the bottom of the tank.
- Collect the oil in a bin using a funnel.
- After drainage screw back the plug with a new seal ring.

A Change the oil when the engine is at operating temperature.

m When changing the hydraulic oil also change the filter.



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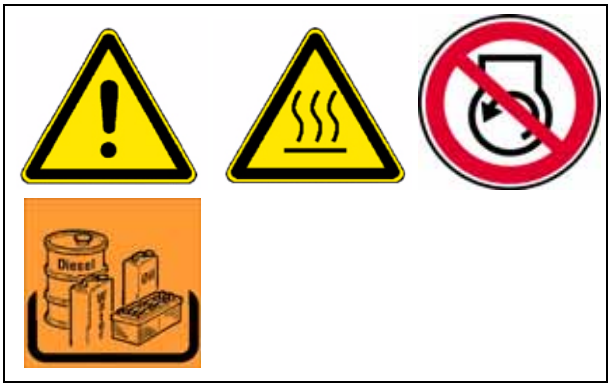
Suction/return flow hydraulic filter (2)



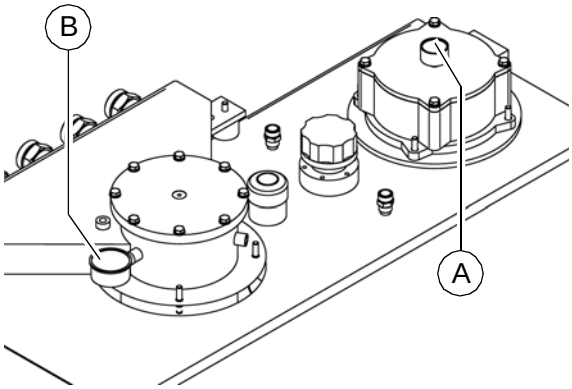
Replace the filter cartridges if the (A) and (B) maintenance indicators reach the red mark.
When changing the hydraulic oil, the filters also need to be changed.

- Unscrew the lid of the filter housing on the hydraulic tank and replace the filter cartridge.

A Do not clean and never use the filter again! Always fit a new filter.

m When changing the hydraulic oil also change the filter.

m Check the seal after changing the filter!



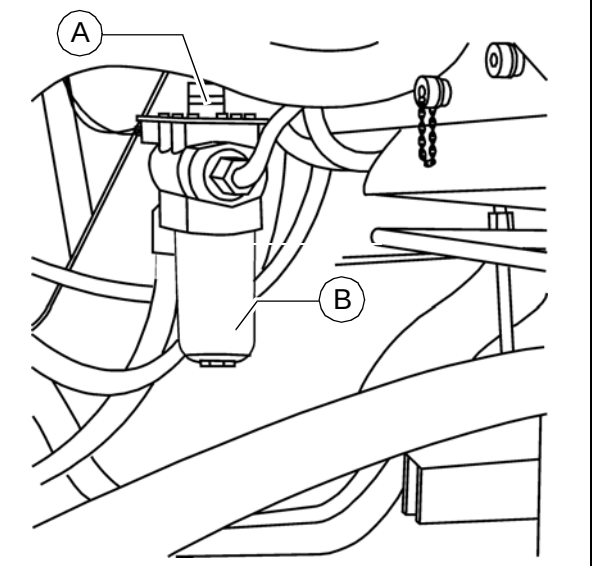
Hydtank_alt2.bmp

High pressure filter (3)

Replace the filter cartridge when the maintenance indicator (A) turns red.

- Unscrew filter house (B).
- Remove the filter cartridge.
- Clean the filter housing.

- Insert the new filter cartridge.
- Replace the seal ring of the filter housing.
- Turn on the filter housing by hand and tighten it using a wrench.
- Start the trial operation and check the tightness of the filter.



A Replace the seal ring whenever the filter cartridge is replaced.

A After the replacement of the filter cartridge the red signal of the maintenance indicator (A) automatically reverts to green.

Pump distribution gear (4)

- Check **oil level** on the viewing glass (A) (at the side of the distribution box).

A The oil level must be up to the center of the viewing glass.

For **filling in** the oil:

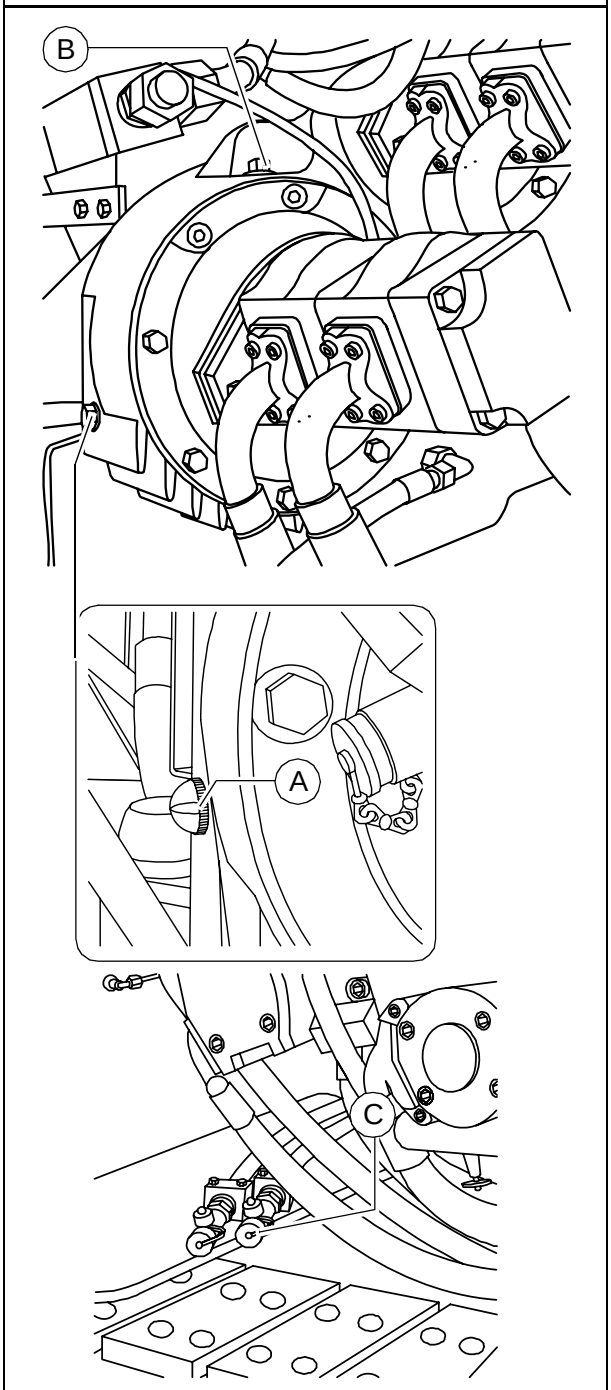
- Unscrew the filler screw (B).
- Fill in oil through the filling port until the required filling level is achieved on the viewing glass (A).
- Return filler screw (B).

m Take care of cleanliness!

Oil change:

Change the oil when the engine is at operating temperature.

- Remove the screw cap of the oil drain port (C) and screw on the hose provided as an accessory.
- Place the end of the hose in a dish to catch the oil.
- Open the shutoff valve with a spanner and let the oil fully drain.
- Shut off the valve, remove the hose and return the screw cap.
- Fill in the oil of specified quality through the filling port on the distribution box (B) until the oil level rises to the center of the viewing glass (A).



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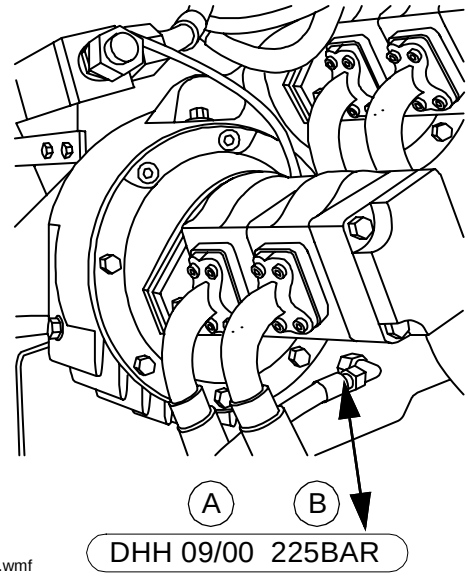
Hydraulic hoses (5)

- Check the condition of the hydraulic hoses specifically.
- Immediately replace the injured hoses.

f The aged hoses may become porous and burst! Risk of accident!

A The numbers stamped in the joints of the hoses state the date of manufacture (A) and the maximum pressure (B) allowed for that hose.

m Do not fit hoses, which were in storage for a long time and check the permitted pressure rating.



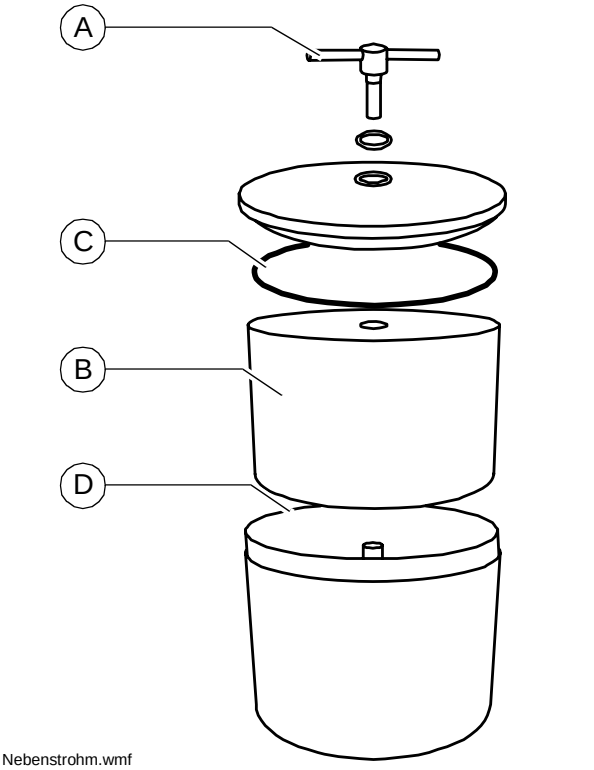
Auxiliary flow filter (6)

Replacing filter element:

- Unfasten screw connection on cover (A) then open the non-return valve briefly to lower the oil level in the filter, then close the non-return valve again.

- Replace filter element (B) and sealing ring (C):
  - Turn filter element clockwise with the help of carrier straps and, at the same time, raise it slightly.
  - Wait for a moment until the oil has escaped downwards, then remove the filter element.
- Check inlet and outlet in filter housing (D).
- As required, top up hydraulic oil level in filter housing then screw down the cover.
- Bleed the fuel system

m Do not remove the cardboard sleeve from the filter element! This is part of the filter!



F 7.7 Maintenance – Drive units

1 Maintenance – Drive units

1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1			q						- Chain tension - Check	
								q	- Chain tension - Adjust	
2				q					- Planetary gear - Check oil level	
								q	- Planetary gear - Top up oil	
						q			- Planetary gear - Change oil	

Maintenance	q
Maintenance during run-in period	g

1.2 Points of maintenance

Chain tightness (1)

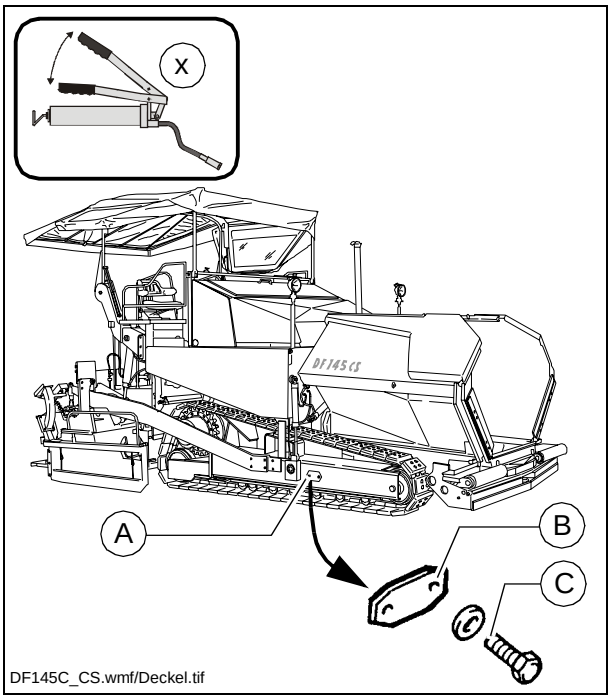
Checking the chain tightness:

m If the chains/tracks are not tensioned sufficiently, they can slip out of their guide formed by rollers, drive gear and idler wheel, thereby increasing wear levels.

m If the chains/tracks are tensioned too tightly, this increases wear on the idler wheel and drive unit mounting, and also increases wear on track bolts and bushes.

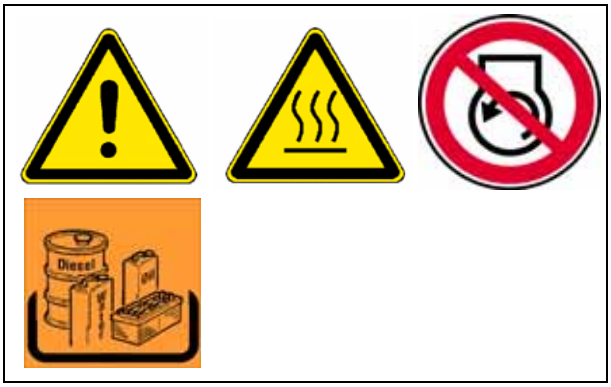
Adjustment of chain tightness:

- The chain tightness can be adjusted with grease press. The filling ports (A) are located on the RH and LH sides of the track chassis.
- Unscrew screws (B).
- Remove cap (B).
- Screw head section for flat nipple (toolbox) onto the grease gun.
- Use the grease gun to press grease into the chain tensioning cylinder until grease starts to escape via the pressure relief valve.
- Refit cover.



A Move the finisher forward or backward and check the setting.

Planetary gear (2)

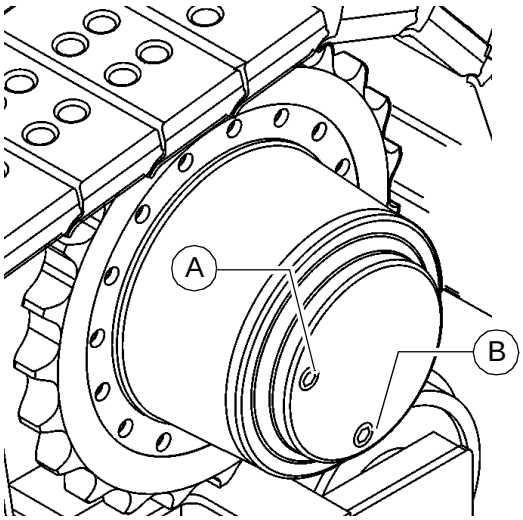


- For **oil level check** unscrew and remove the inspection bolt (A).

A When oil level is correct, the oil comes up to the lower edge of the inspection bore or a small amount of oil escapes through the aperture.

For **filling in** the oil:

- Unscrew the filler screw (A).
- Fill specified grade of oil into filler bore at (A) until the oil level has reached the lower edge of the filler bore.
- Tighten the filler screw (A) back in.



Gear.bmp

Oil change:

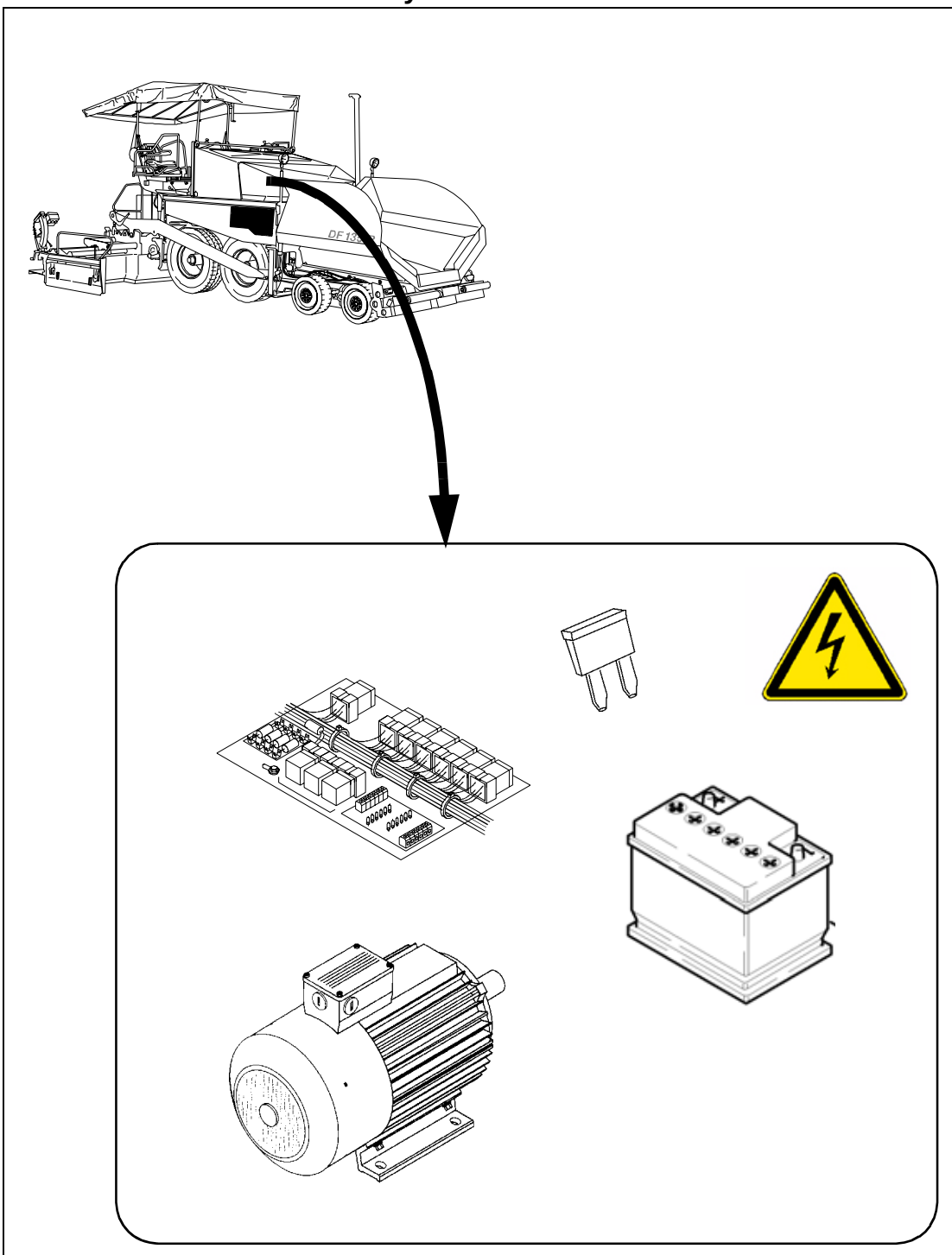
A Change the oil when the engine is at operating temperature.

m Ensure that no dirt or foreign bodies are able to enter the gear.

- Turn conveyor chain sprocket until "oil max" mark is horizontal and drain plug (B) is at the bottom.
- Unscrew and remove the drain plug (B) and filler screw (A) and drain off oil.
- Check gaskets on both screws and replace if necessary.
- Tighten the drain plug (B) back in.
- Fill new oil through the filler bore until the "oil max" mark is reached.
- Tighten the filler screw (A).

F 8.6 Maintenance - Electronic system

1 Maintenance - Electronic system



1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1			q						Filling level of battery electrolyte - check	
								q	Top up with distilled water	
				q					Coat the battery poles with grease	

Maintenance	q
Maintenance during run-in period	g

No.	Interval								Points of maintenance	Remark
	10	50	100	250	1000	5000	20000	as required		
2	q								- Generator Checking of operation of the insulation monitoring Check function	Also see the operation manual of the screed
				q					- Generator Visual checking for pollution or damage - Check the cooling air openings for pollution or clogging, clean as required.	(o)
						q			- Generator Check the ball bearings "by listening" and replace them as required.	(o)
							q	q	- Generator Replace ball bearings	(o)
				q					- Generator Check the drive belts (o) for damage and replace them as required.	(o)
				q					- Generator Drive belts (o) - check tightness and adjust as required.	(o) Only on version with V-belt!
					q				- Generator Replace drive belts (o)	(o)

Maintenance	q
Maintenance during run-in period	g

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
3								q	Electric fuses	

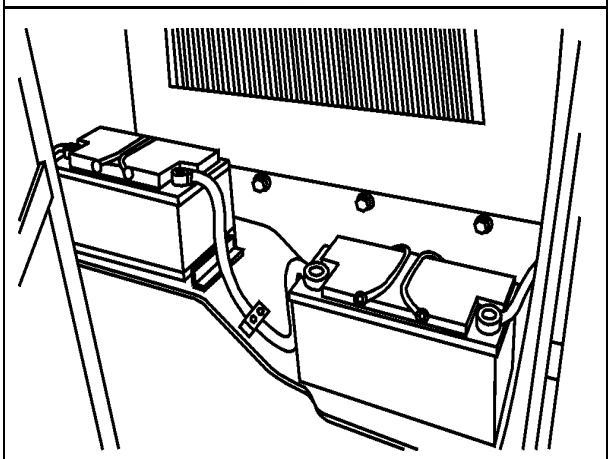
Maintenance	q
Maintenance during run-in period	g

1.2 Points of maintenance

Batteries (1)

Maintenance of batteries

The batteries are filled with the appropriate volume of electrolyte in the factory. The electrolyte level shall be up to the top mark. Top up with ion exchanged water only, when required!



Batt_DF135P.bmp

The shoes shall be free of oxyde and coated with special battery protection grease.

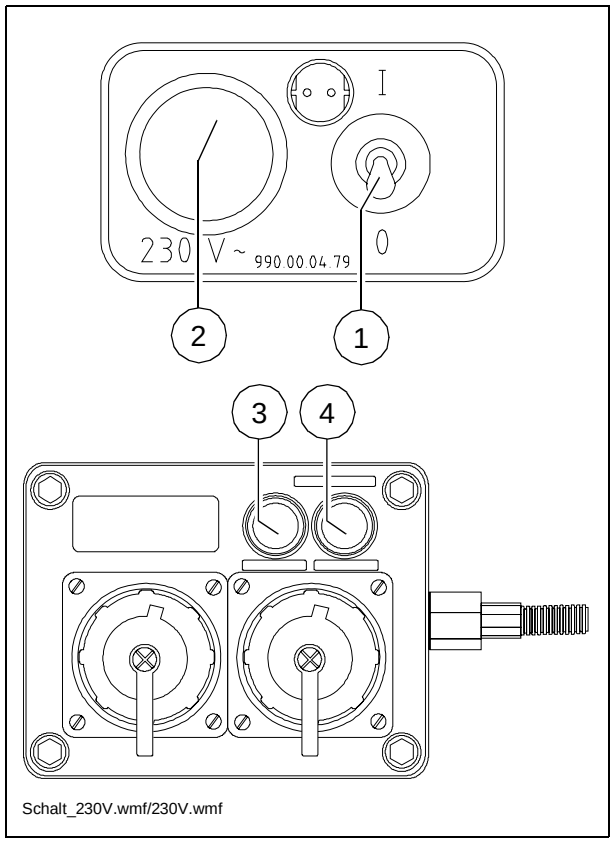
m When removing the batteries always separate the minus pole first and avoid short circuit between the battery poles.

Generator (2)

Checking of operation of the insulation monitoring

A Check insulation daily with operating machine and switched on connection sockets.

- Turn on the electrical equipment with switch (1), indicator lamp (2) comes on.
- Press testing button (3) and the inscription "Insulation Fault" shall come on.
- Depress the button clear (4) and the insulation fault inscription will go dark.



f If the test is completed successfully, work can proceed with the electrical system and external consumers can be used.
If the "Insulation Fault" control light indicates a fault already before pressing the control button, then work cannot proceed with the electrical system and the external consumers. In case of insulation fault the connection sockets are automatically turned off.
Work with the electric system cannot proceed if the simulation does not indicate a failure.

f In case of failures, the electric equipment needs to be tested and repaired by an electrician. With these devices and the equipment work can be resumed only after such test and repair.

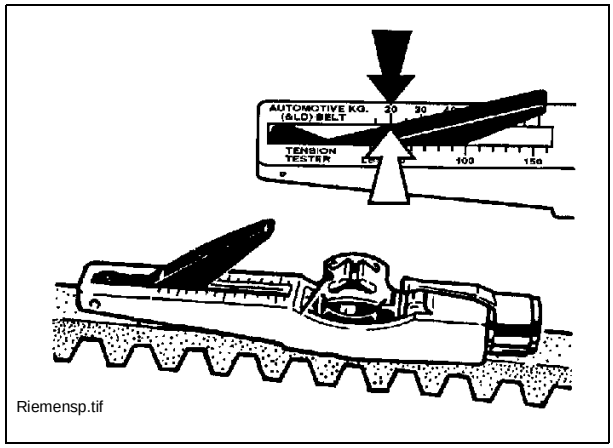
Danger from electric voltage
Failure to comply with the safety precautions and safety regulations can result in electrical shock injuries from the electrical system.
Danger to life!
All maintenance and repair work on the electrical system must always be carried out by an electrician!

Checking of ball bearings / Replacement of ball bearings

A Report the displayed fault code to the customer service of the paver finisher and they will discuss with you the steps to be taken.

Drive belts (V-belt)

Checking belt tension



Riemensp.tif

The tightness of each belt shall be inspected with a tightness checking instrument.

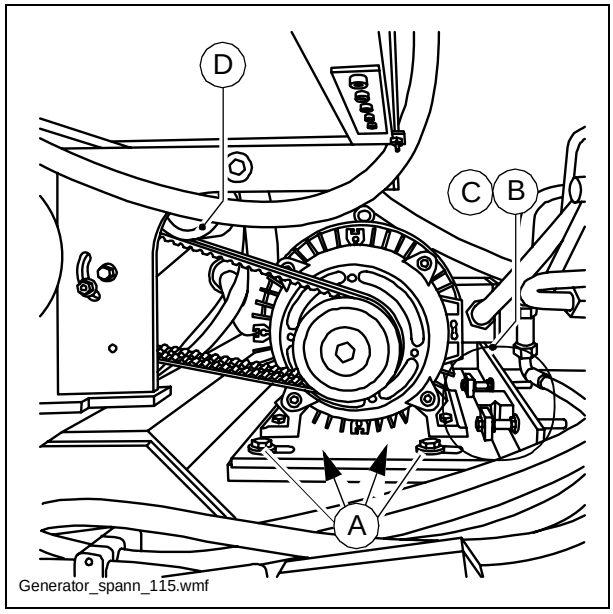
Specified tension:

- in case of first assembly: 550N
- after the run-in period / maintenance interval: 400N

A Instructions for checking of tightness in the description of the tightness measuring instrument.

A The tightness measuring instrument can be ordered according to Article No. 532.000.45!

Adjustment of belt tightness



Generator_spann_115.wmf

- Unfasten the four mounting screws (A) on the alternator carriage.
- Unfasten lock nuts (B) on the tensioning fixture.
- Using the adjusting screws (C), set the required level of belt tension.
- Tighten lock nuts (B) and mounting screws (A) back down.

A No adjustment work is required on the tightening roller (D)!

Replacement of belt

- Reduce the belt tightness on the adjusting device so that the belt can be removed from the pulley.
- Mount the new belt and adjust tightness again.

A Always replace the belts in sets.

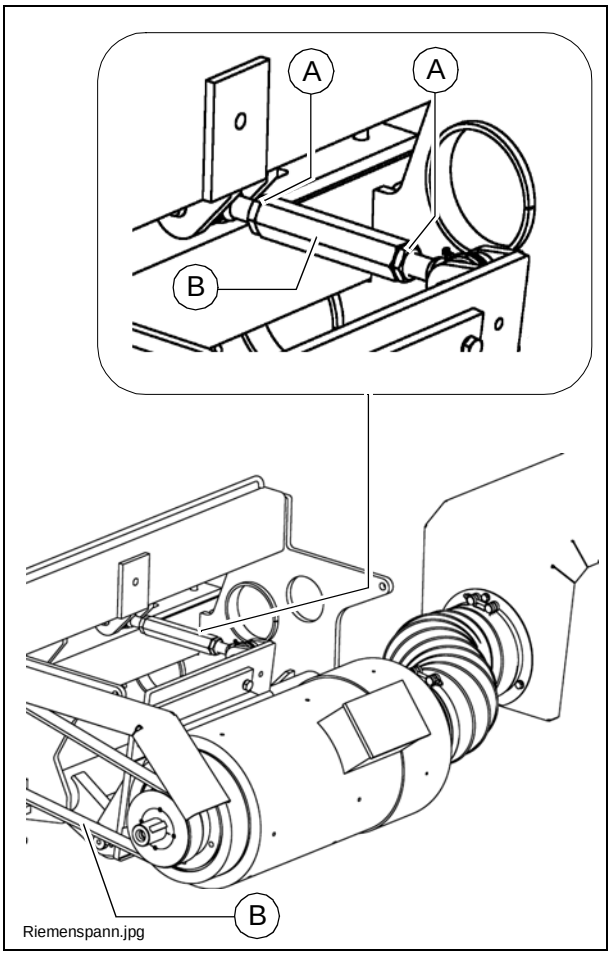
Drive belt (toothed belt)

Replacement of belt

- Unfasten both lock nuts (A) from the clamping lock.
- Rotate and open clamping lock (B) until belt (C) can be replaced.

A Pre-tension newly fitted belt using clamping lock (B).

- Checking / adjusting belt tension



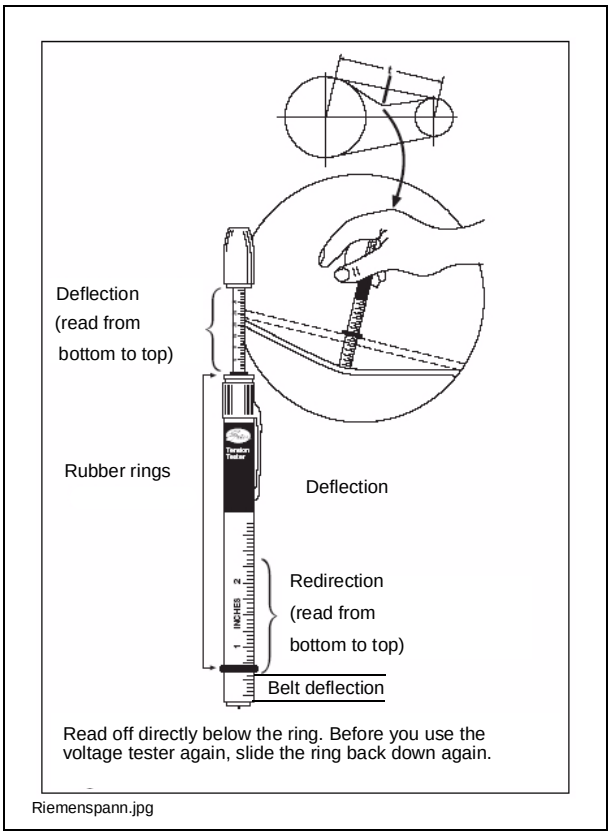
Checking / adjusting belt tension:

A The tension of the V-belt must be checked and set after the belt has been replaced.

- The tension of the belt can only be adjusted using a pre-tensioning test device.

Specified belt tension levels:

- **Generator 17KVA:**
  - Deflection force, min: 101.4N
  - Deflection force, max: 110.6N
  - Belt deflection approx. 9.9mm
- **Generator 20KVA:**
  - Deflection force, min: 72.4N
  - Deflection force, max: 79.0N
  - Belt deflection approx. 5.4mm
- **Generator 28KVA:**
  - Deflection force, min: 92.2N
  - Deflection force, max: 100.5N



Riemenspann.jpg

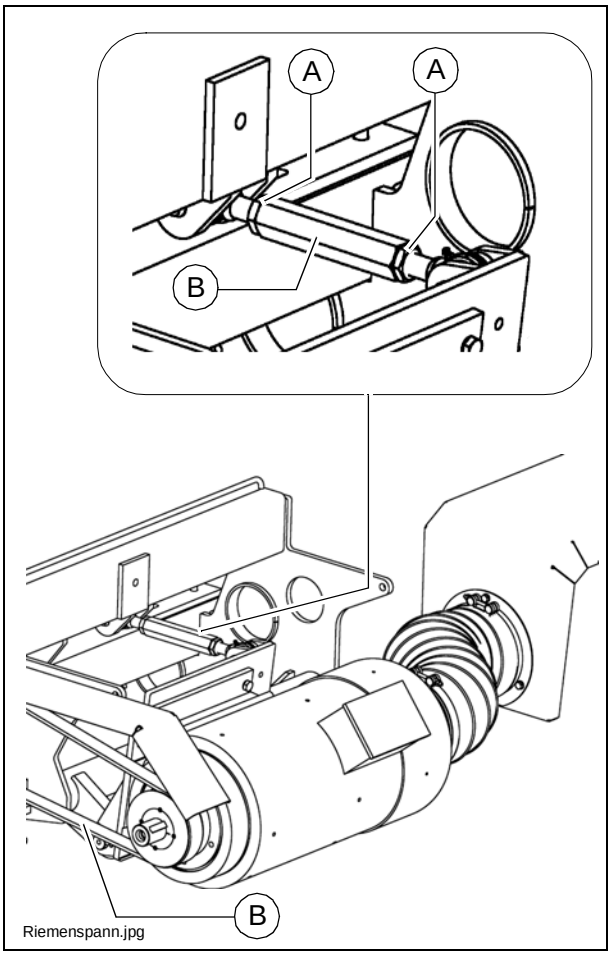
A Belt deflection approx. 5.4mm

If necessary, adjust the belt tension:

- Set belt to correct tension using clamping lock (B).
- Retighten both lock nuts (A).

A Further instructions for checking of tension - see description of the belt pre-tensioning test device.

A A belt pre-tensioning test device can be ordered from Dynapac as a spare part! Item number on request.



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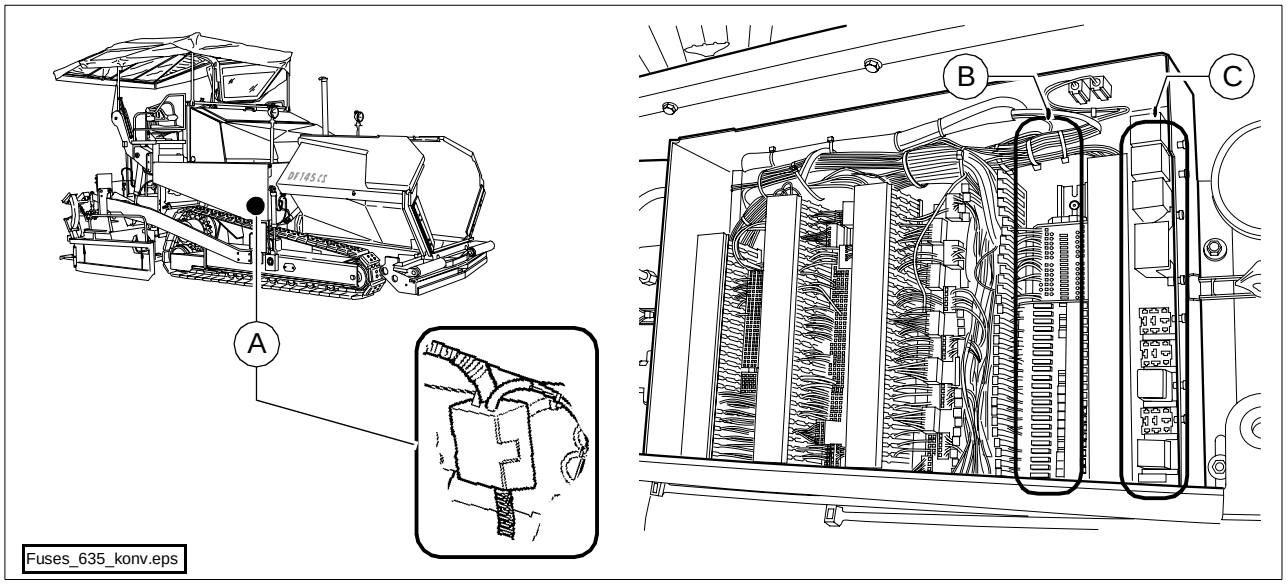
Electric fuses (3)

Type of machine: Conventional electronics

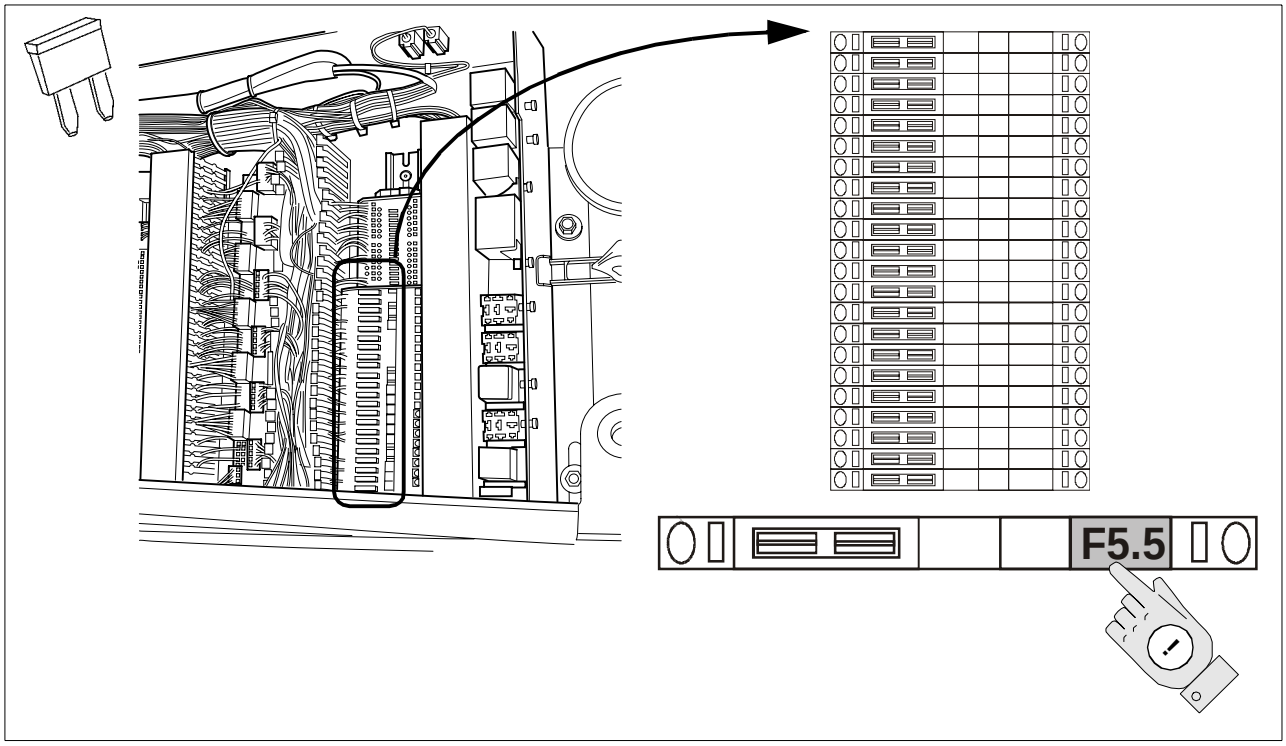


A	Main fuses
B	Fuses in terminal box
C	Relays in terminal box

Main fuses (A)

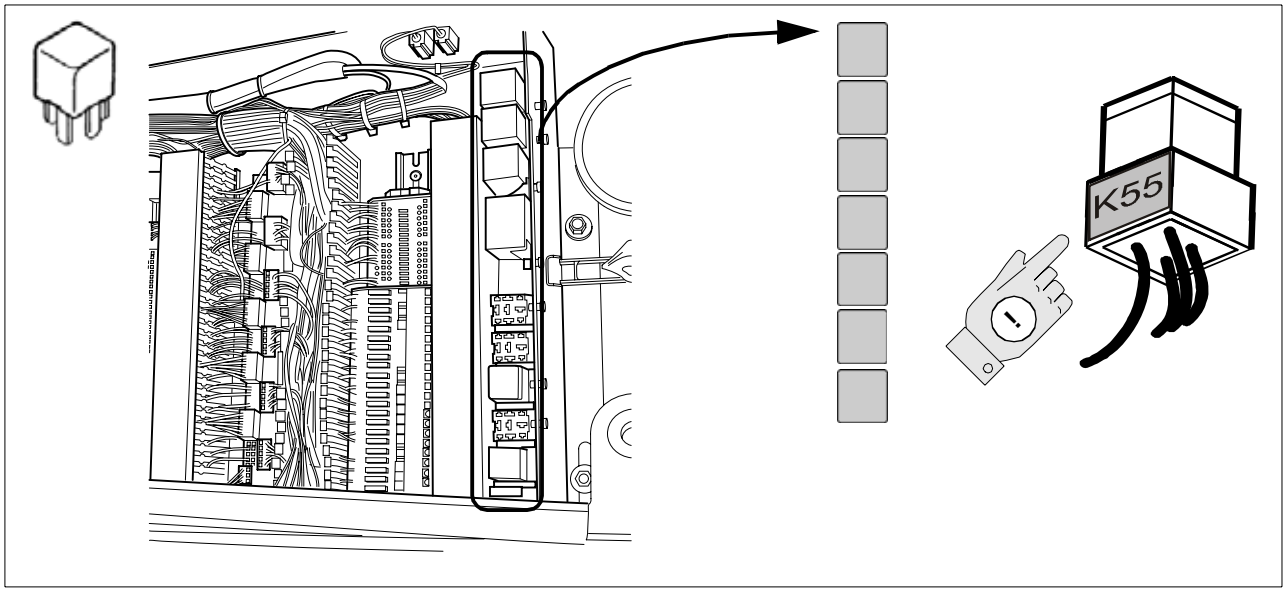
F.		A
3.1	Lighting, engine	50
3.2	Lighting, engine (o)	50

Fuses in terminal box (B)



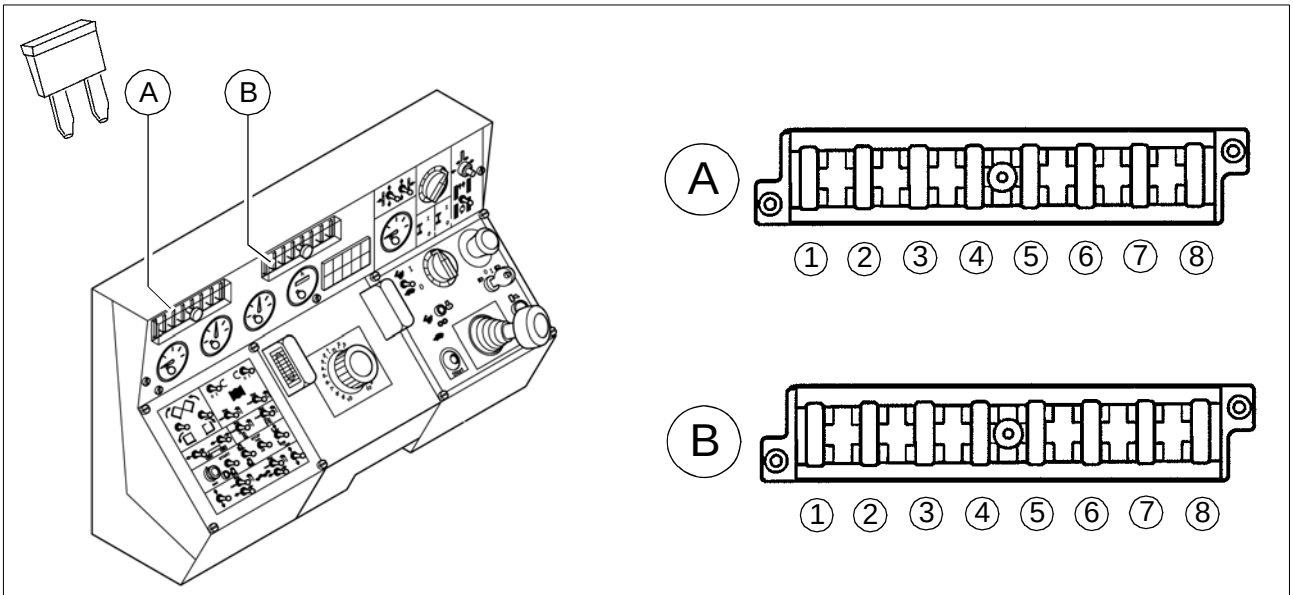
F.		A
5.1	Travel drive	15
5.2	Travel drive	1
5.3	Temperature control, electric heating	10
5.4	Gas heating (o)	10
5.5	Integrated receptacles	10
5.6	Integrated receptacles	10
5.7	Integrated receptacles	10
5.8	Integrated receptacles	10
5.9	Engine start	10
41.1	Engine feedback control	30
4.21	Engine feedback control	1
44	Travel drive	1
51	Spraying system	3
52	Emulsion spraying system	3
53	Diesel tank filler pump	5
54	Rotary beacon	3
55	Lighting on glassfibre-reinforced roof	10
59	Working lights (o)	15
82	Particulate filter (o)	3
83	Asphalt fume control system (o)	3
84	Seat heating	10
85	Windscreen wiper	7,5
86	Reserve	10
96	Height scale	10

Relays in terminal box (C)



K	
11	Engine speed adjustment
15	Engine start
18.1	Screed warning hazard flasher, left
18.2	Screed hazard warning flasher, right
42	Travel drive
44	Compactor lift
74	Screed function
75	Screed function
83	Engine feedback control
88	Auxiliary emergency stop
94	Engine
145	Engine feedback control

Fuses on operating panel



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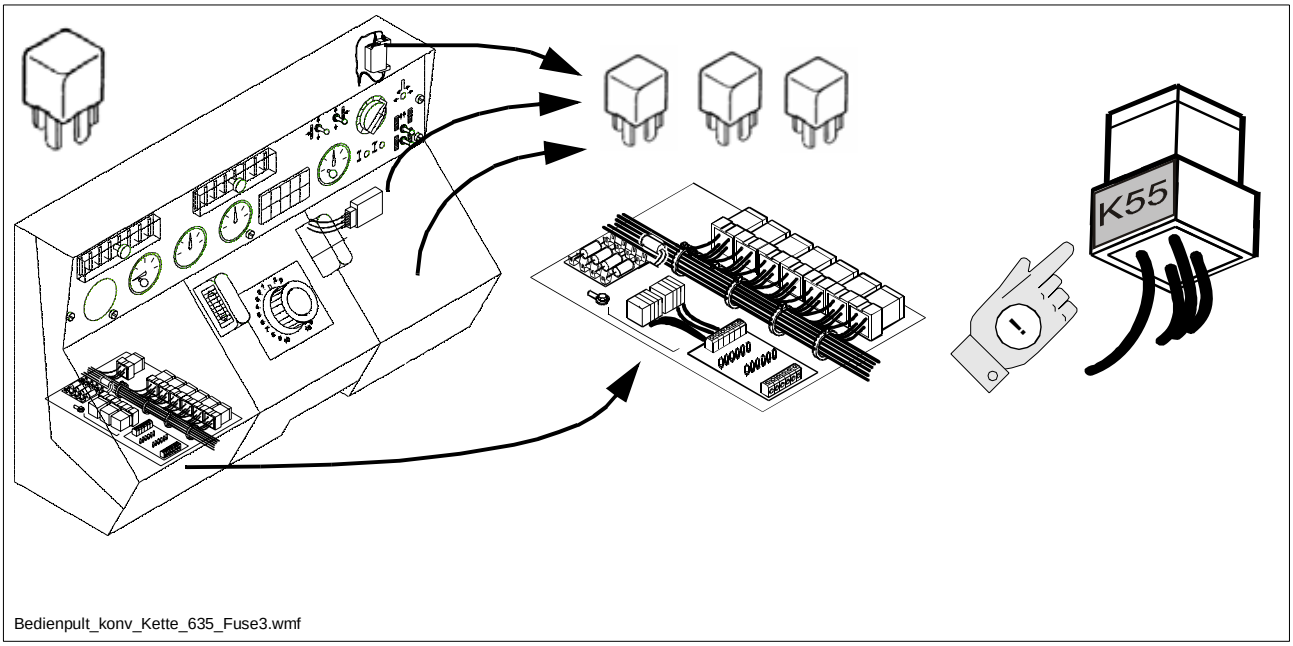
Fuse carrier (A)

No.	F.		A
1.	1.1	Engine start, start interlock, emergency stop, idle speed, reverse buzzer	5
2.	1.2	Locking relay, relay batt. 15+, monitoring equipment	3
3.	1.3	Levelling unit, screed stop	5
4.	1.4	Conveyor, auger, right	5
5.	1.5	Conveyor, auger, left	5
6.	1.6	Tamper, vibration	3
7.	1.7	Hoppers, lifting/lowering screed, extending/retracting screed, power supply screed, compactor lift (o), moving cab (o), lifting/lowering auger (o)	10
8.	1.8	Emergency stop	7.5

Fuse carrier (B)

No.	F.		A
1.	2.1	Free	
2.	2.2	Horn	3
3.	2.3	Crowning (o)	7,5
4.	2.4	High beam headlights, left/right (o)	7,5
5.	2.5	Low-beam headlights, right	3
6.	2.6	Low-beam headlights, left	3
7.	2.7	Parking light, right (o)	3
8.	2.8	Parking lights, left, instrument panel lighting, instrument lighting	3

Relays in operating panel

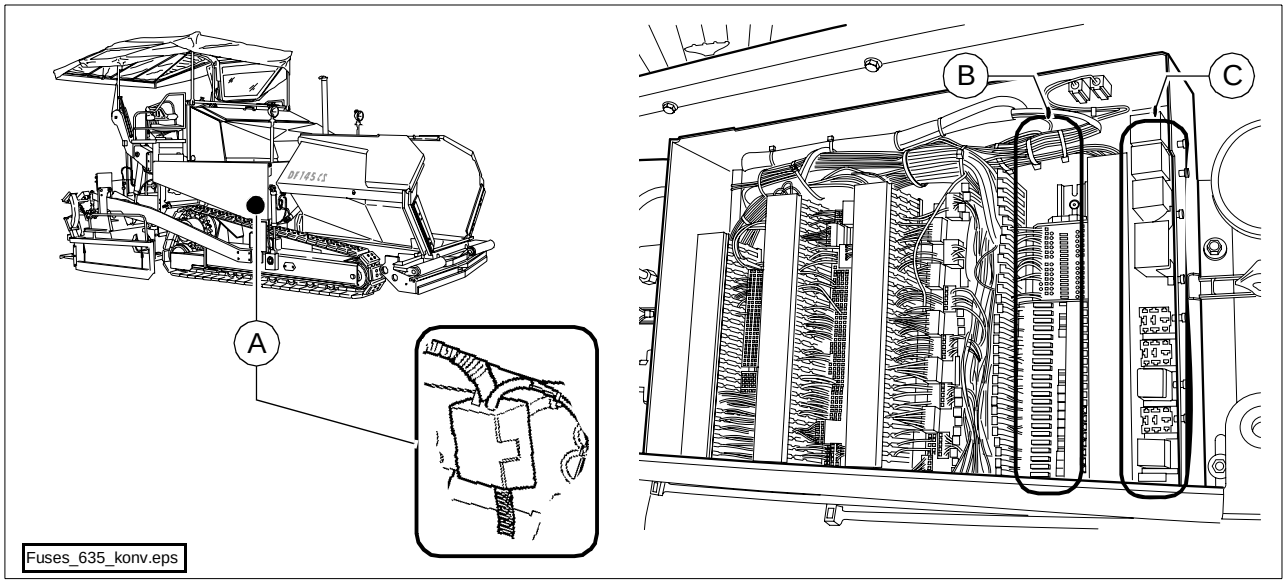


Relays

K	
12	Conveyor/auger, left
13	Conveyor/auger, right
17	Screed functions
31	Emergency stop (VB805/1105, EB50,75)
33	Engine stop
80	Timer relay, rev. auger, left
81	Timer relay, rev. auger, right
149.1	Priority circuit for extending/retracting sceed, right
149.2	Priority circuit for extending/retracting screed, left

Type of machine: PLC electronics

Terminal box

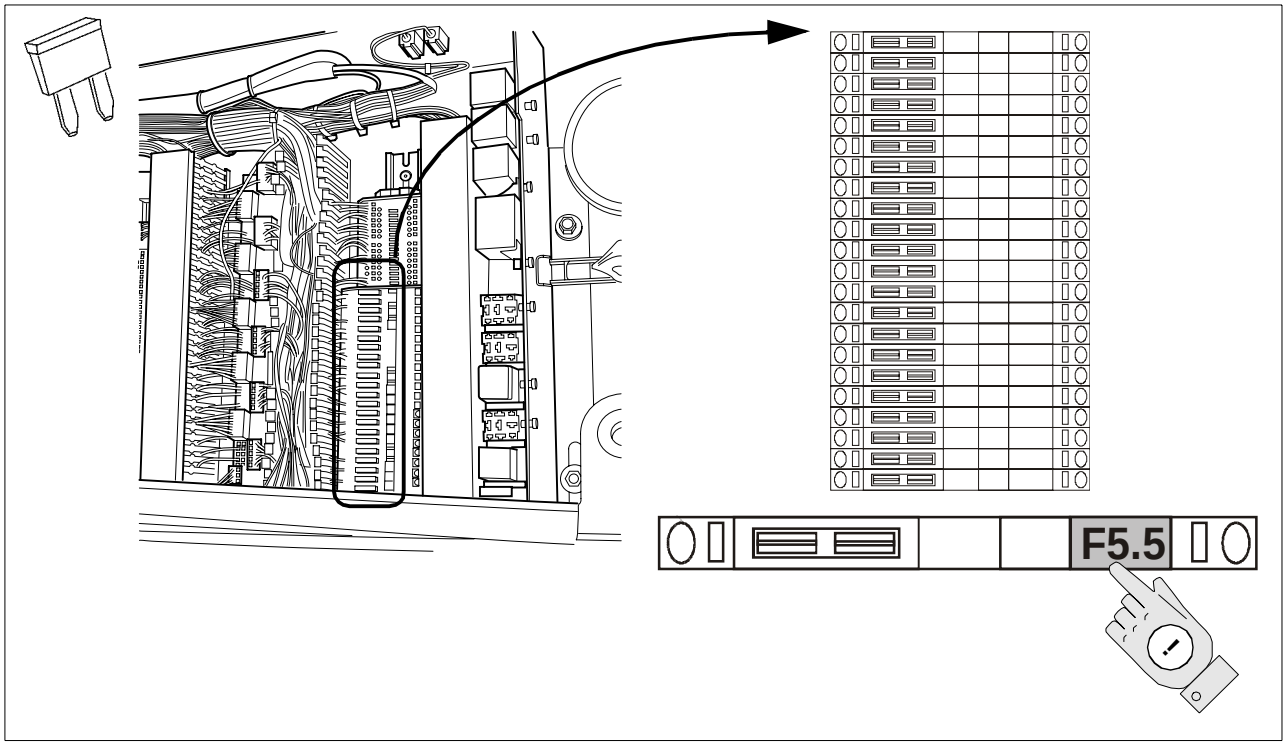


A	Main fuses
B	Fuses in terminal box
C	Relays in terminal box

Main fuses (A)

F.		A
3.1	Lighting, engine	50
3.2	Lighting, engine (o)	50

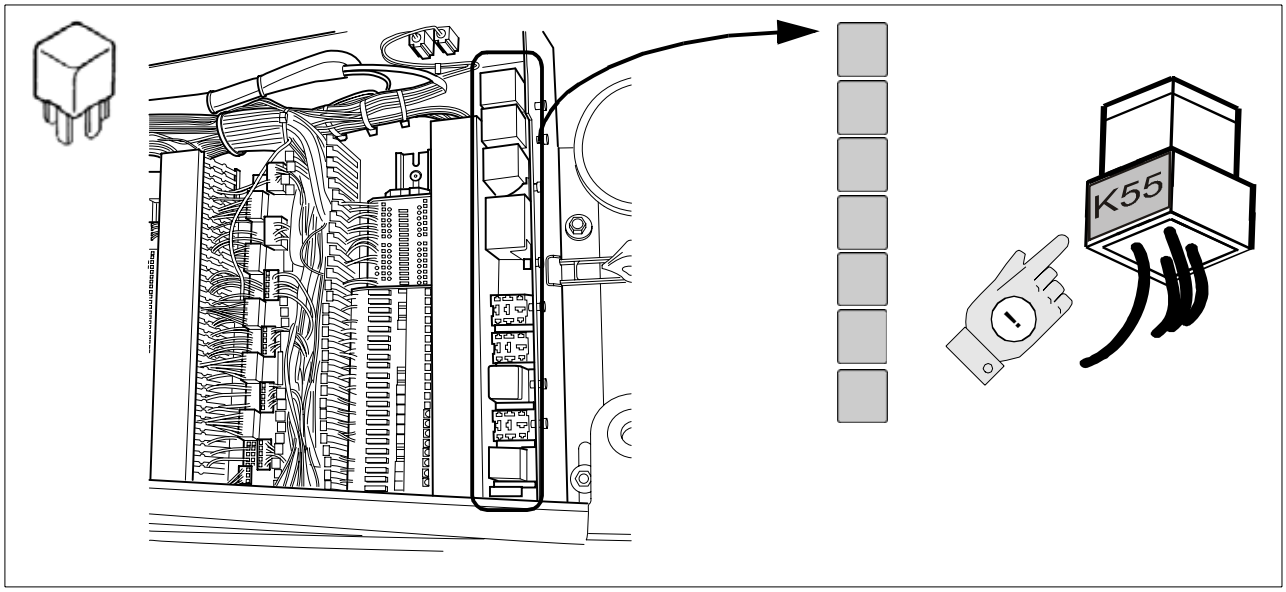
Fuses in terminal box



F.		A
5.1	Travel drive, automatic steering system	15
5.2	Travel drive	1
5.3	Temperature control, electric heating	7.5
5.4	Gas heating, power supply to screed	10
5.5	Integrated receptacles	10
5.6	Integrated receptacles	10
5.7	Integrated receptacles	10
5.8	Integrated receptacles	10
5.9	Engine start	10
7.1	Slave A51	5
7.2	Slave A52	5
7.3	Slave A53	5
7.4	Slave A54	5
7.5	Slave A55	5
7.6	Slave A56 (auxiliary functions)	5
41.1	Power supply for engine electronics	30
41.1	Interface power supply	1
44	Power supply for travel drive	1

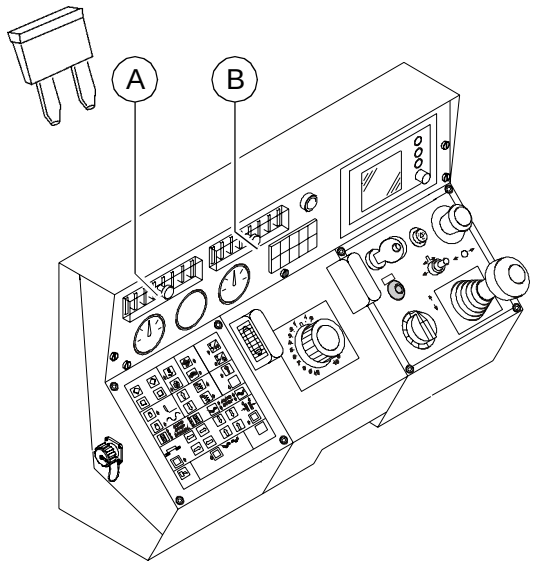
F.		A
51	Spraying system	3
52	Emulsion spraying system	3
53	Diesel tank filler pump	5
54	Rotary beacon	3
55	Lighting on glassfibre-reinforced roof	10
59	Working lights (o)	15
80	Power supply, Master A1	5
82	Particulate filter (o)	3
83	Asphalt fume control system (o)	3
84	Seat heating	10
85	Windscreen wiper	7,5
86	Reserve, engine compartment lighting	10
88	Power supply, Master A1	7,5
96	Lighted height scale	10

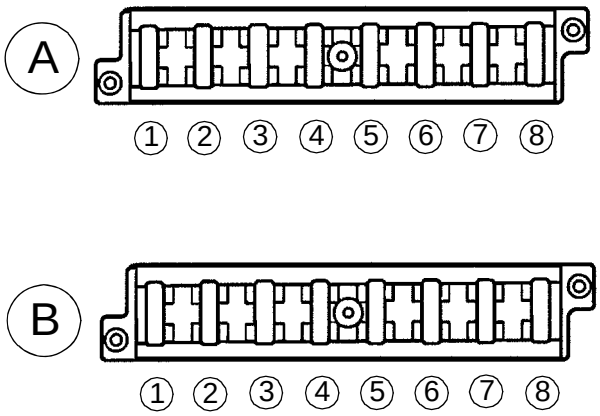
Relays in terminal box (C)



K	
15	Engine start
30	Horn
42	Travel drive
47	Start interlock
49	Reverse buzzer
94	Power supply to terminal 15
145	Engine feedback control

Fuses on operating panel





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Fuse carrier (A)

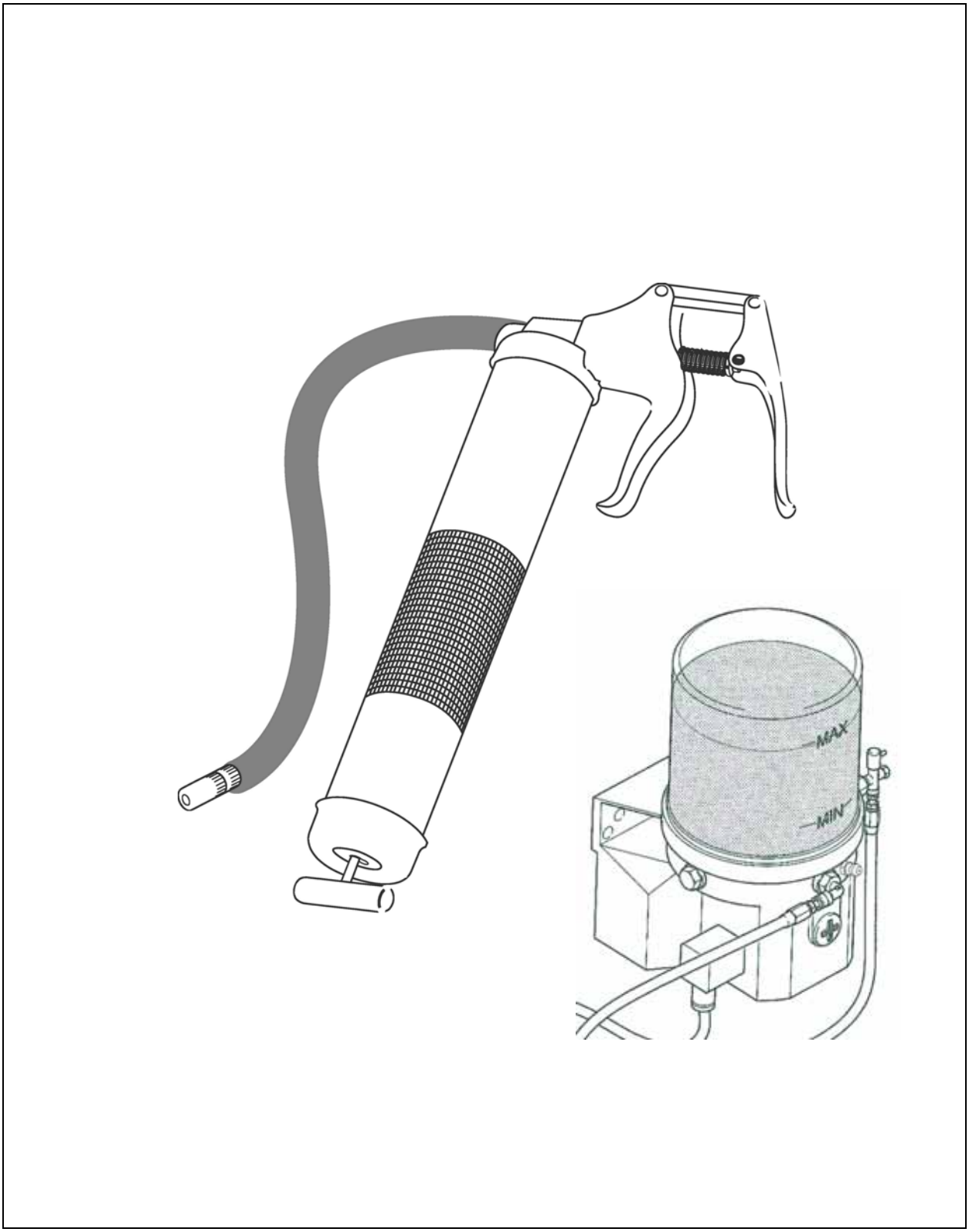
No.	F		A
1.	1.1	Emergency stop	5
2.	1.2	Monitoring equipment, relay batt. 15+,, Engine sensors	5
3.	1.3	Display power supply	3
4.	1.4	Keyboard power supply	3
5.	1.5	Free	
6.	1.6	Free	
7.	1.7	Screed power supply, moving cab (o)	5
8.	1.8	Free	

Fuse carrier (B)

No.	F.		A
1.	2.1	Free	
2.	2.2	Horn, reverse buzzer	3
3.	2.3	Winscreen wiper (o), crowning adjustment	7,5
4.	2.4	High-beam headlights, left/right	7,5
5.	2.5	Working light, front right	3
6.	2.6	Working light, front left	3
7.	2.7	Parking lights, right	3
8.	2.8	Parking lights, left, instrument panel lighting, instrument lighting	3

F 9.0 Maintenance - Points of lubrication

1 Maintenance- Points of lubrication



A The information related to the lubrication points of the various sub-units are included in the specific maintenance descriptions and additional reading is recommended as follows.

A In case of applying a central lubrication unit (o) the number of the lubrication points may differ from the data provided in the description.

1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1	q								- Check the filling level of the lubricant tank	(o)
								q	- Fill up the lubricant tank	(o)
							q		- Vent the central lubrication unit	(o)
	q								- Check the pressure limiting valve	(o)
								q	- Check the leakage of the lubricant at the consumer unit	(o)
2		q							- Bearings	

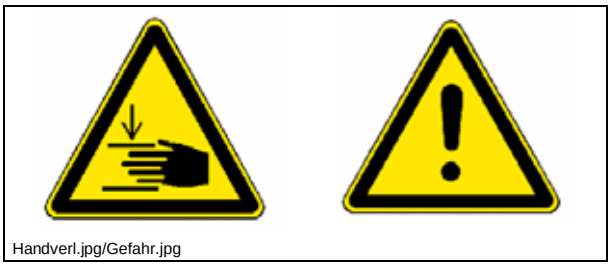
Maintenance	q
Maintenance during run-in period	g

1.2 Points of maintenance

Central lubrication (1)

Danger of injuries!

f Do not reach into the tank when the pump is running.


Handverl.jpg/Gefahr.jpg

f Operate the central lubrication system with a mounted safety valve only!

f During operation do not perform maintenance operations on the safety valve!

f The lubricant ejected may cause injuries as the equipment operates under high pressure!

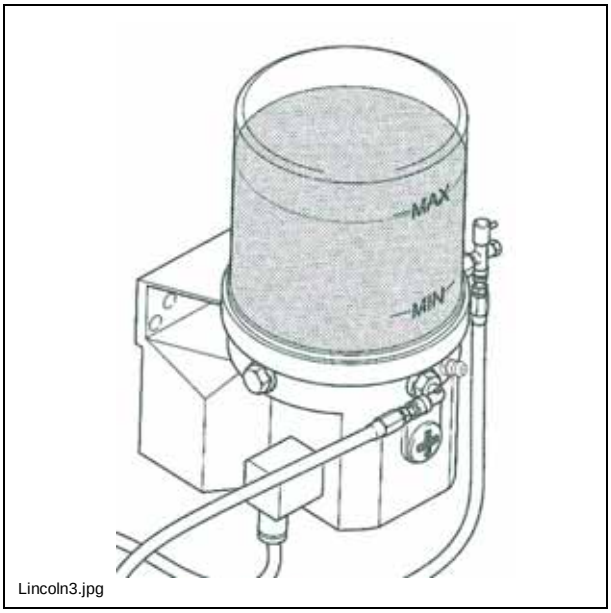
f Make sure that the starting of the diesel engine should be prohibited while work is performed on the equipment!

f Observe the rules applicable to the operation of the hydraulic equipment!

m Take care of perfect cleanliness when work is performed on the central lubrication system.

The lubrication points of the following units can be provided with grease through the central lubrication system:

- Feeder
- Auger
- Steering, axles (wheel type paver finisher)

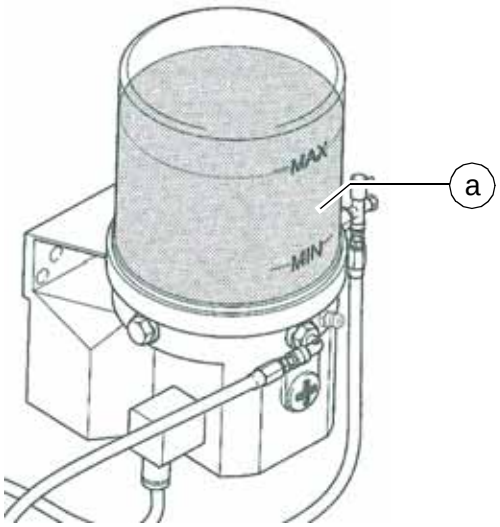


Lincoln3.jpg

Central lubrication unit
Check the filling level

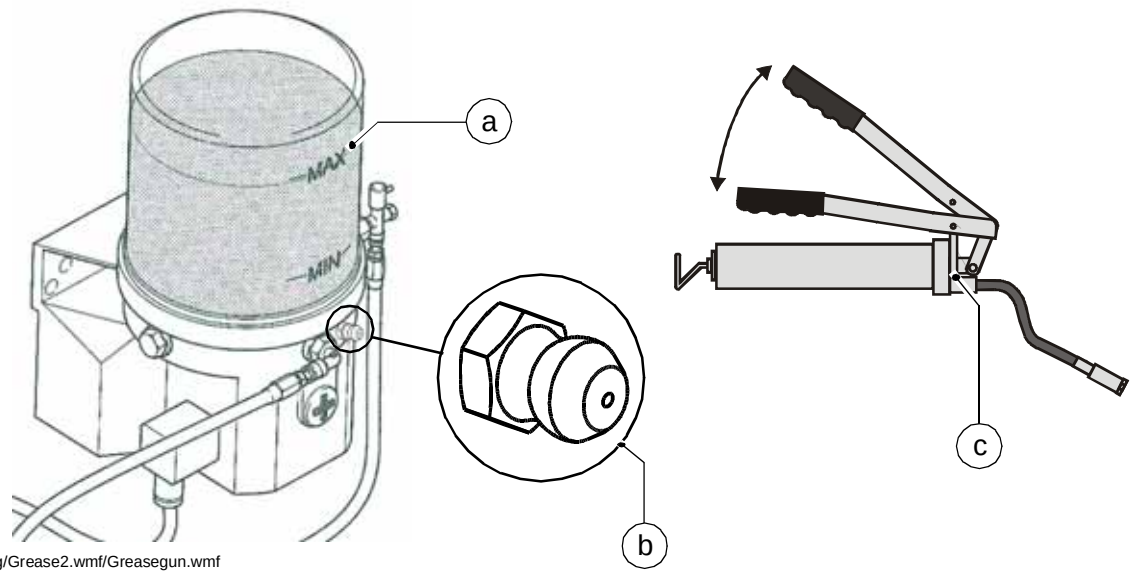
A The lubrication tank shall always be filled so that the system could not „run dry“ and the proper lubrication of the points of lubrication is ensured and there is no need for a time consuming venting operation.

- Always keep the filling level above the „MIN“ mark of the tank (a).



Lincoln3.jpg/Lincoln4.jpg

Fill up the lubricant tank

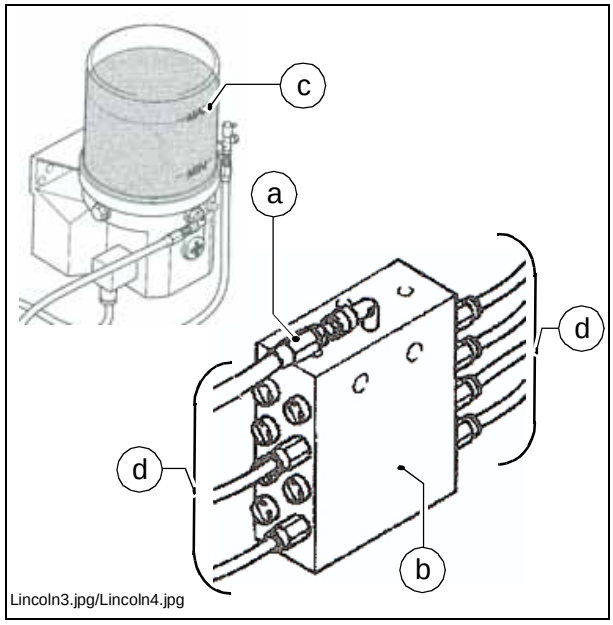


Lincoln3.jpg/Grease2.wmf/Greasegun.wmf

- A grease nipple (b) is mounted for filling on the lubricant tank (a).
- Connect the grease gun (c) supplied with the machine to the filling head (b) and fill the lubricant tank (a) until the MAX mark.

A In case of an empty lubricant tank the pump may work for even 10 minutes before is reaches its full delivery performance after filling.

Vent the central lubrication unit



Lincoln3.jpg/Lincoln4.jpg

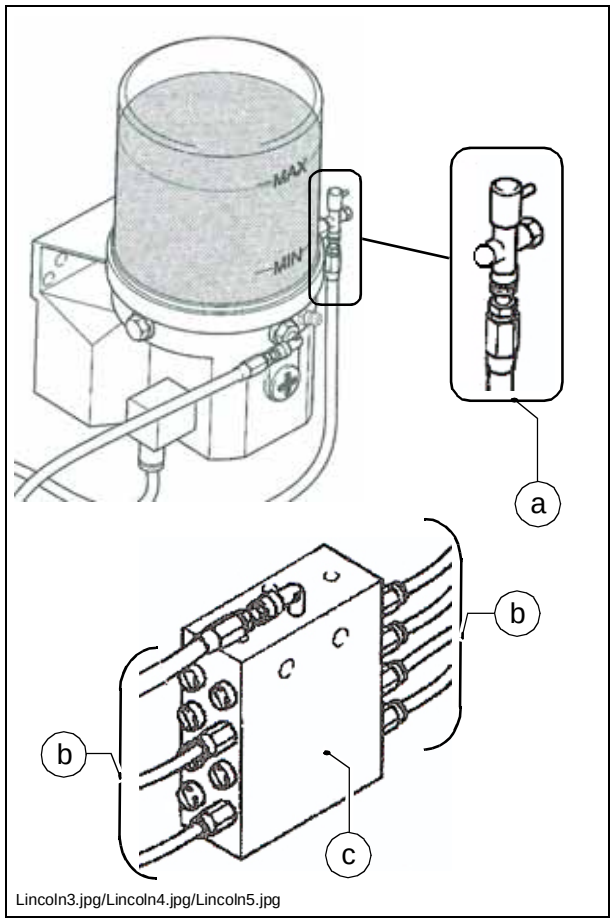
The venting of the lubrication system becomes necessary if the central lubrication unit was operated with an empty lubrication tank.

- Untighten the main line (a) of the lubrication pump at the flow divider (b).
- Start the operation of the central lubrication unit with the refilled lubricant tank (c).
- Leave the pump running until grease is squeezed from previously untightened main line (a).
- Retighten the main line (a) at the flow divider.
- Remove all the manifold lines (d) at the flow divider.
- Reconnect again the manifold lines once lubricant is discharged through them.
- Check the tightness of all the connections and lines.

Check the pressure limiting valve

m

If lubricant is discharged at the pressure limiting valve (a), this refers to failure in the system.
The consumers receive not enough lubricant.



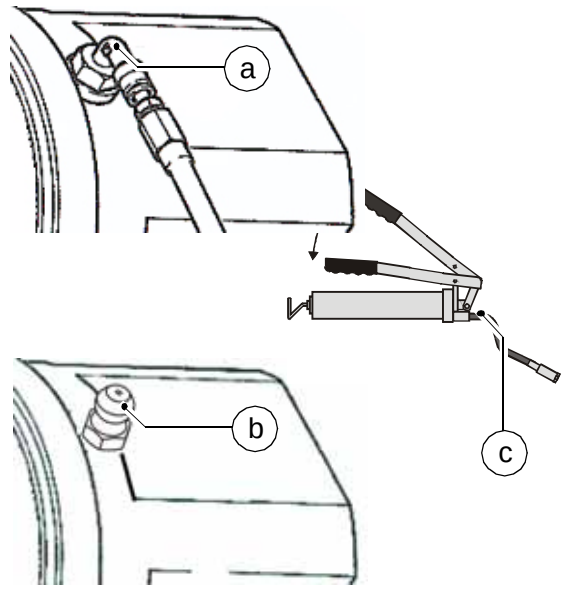
Lincoln3.jpg/Lincoln4.jpg/Lincoln5.jpg

- Disconnect the manifold lines (b), which run from the flow divider (c) to the consumers, one after the other.
- If lubricant is ejected from one of the disconnected distribution pipes (b) under pressure, then the clogging, which led to the tripping of the pressure limit valve, must be searched for in this lubrication circuit.
- After correcting the fault and the repeated connection of all the lines, check once again for lubricant discharge from the pressure limit valve (a).
- Check the tightness of all the connections and lines.

Check the leakage of the lubricant at the consumer unit

Check the continuity of all the lubrication canals at the consumers.

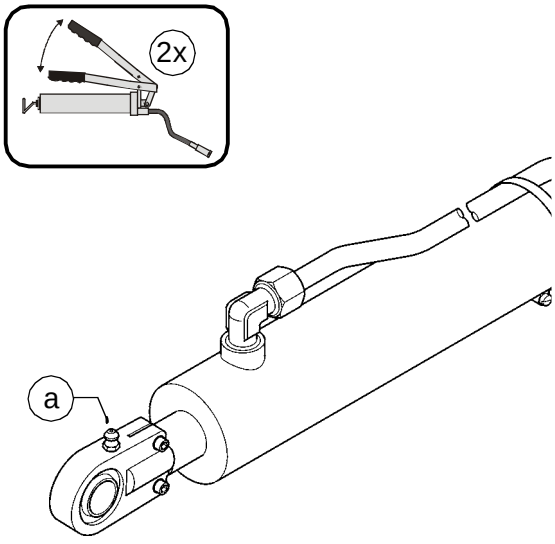
- Disconnect the lubrication pipe (a) and fit a standard grease nipple (b).
- Connect the grease gun (c) supplied with the machine to the grease nipple (b).
- Keep on operating the grease gun until lubricant is visibly discharged.
- If necessary, eliminate the faults of the lubricant flow.
- Refit the lubricant pipelines.
- Check the tightness of all the connections and lines.



Lincoln6.jpg/Lincoln8.jpg/Greasegun.wmf

Bearings (2)

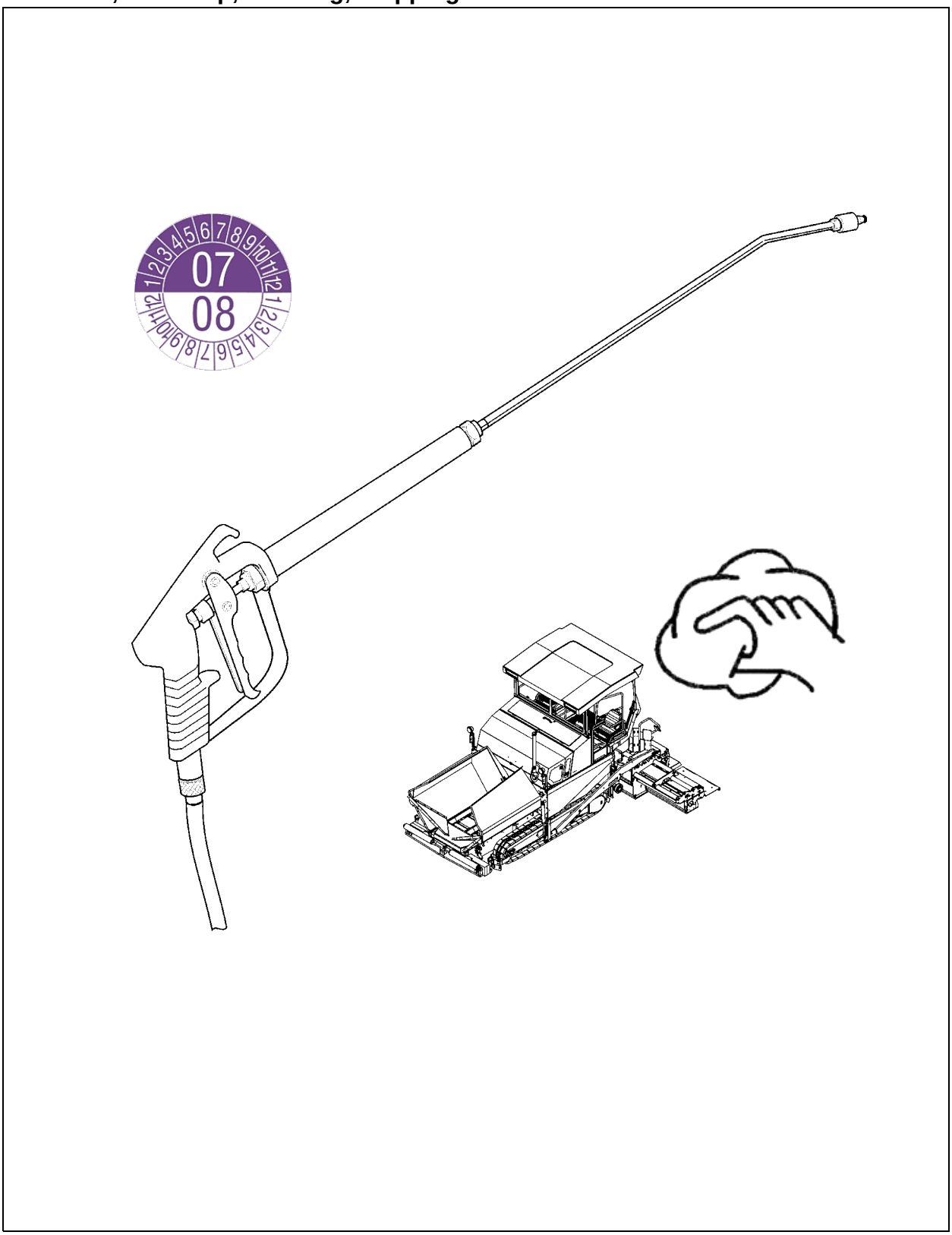
There are grease nipples on the bearing points of the hydraulic cylinder (one each, at the top and bottom) (a).



Zylinder.bmp

F 10.0 Checks, decommissioning

1 Tests, check-up, cleaning, stopping



1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1	q								- General observation	
2						q		q	- Checks by a specialist	
3								q	- Cleaning	
4								q	- Conservation of paver finisher	

Maintenance	**q**
Maintenance during run-in period	**g**

2 General observation

The daily practice includes the walk around the machine with checking the following items:

- Are there injuries on the parts or control elements?
- Are there leaks on the engine, the hydraulics, the gear box, etc.?
- Are all the locking points secure (conveyor, auger, screed)?

m Repair the detected faults immediately in order to avoid risks of accidents and environmental pollution!

3 Checks by a specialist

A Subject the paver finisher, the screed and the optional gas or electric operated equipment to checks by a specialist

- as required (according to the circumstances of application and operating conditions),
- however, minimum once a year, so that the machine retains its reliable operating condition.

4 Cleaning

- Clean all parts which come into contact with the material to be laid.
  - Spray the polluted parts with the separating agent spray equipment (o).

m **Before** cleaning with high pressure jet, lubricate all the bearings with grease as specified.

- Clean the machine with water after laying mineral mixes, lean concrete etc.

m Do not spray water on the bearings, electric or electronic parts.

- Remove the residue of the material laid.

m **After** cleaning with high pressure jet, lubricate all the bearings with grease as specified.

f Risk of slipping! Take care of the cleanliness of the walkways and steps, make sure that they are free of grease and oil.

5 Conservation of paver finisher

5.1 Downtime up to 6 months

- Stop the machine in a place protected from intensive sunshine, wind, moisture and frost.
- Lubricate all the lubrication points with grease as specified, use the optional central lubrication unit as appropriate.
- Change the oil in the Diesel engine
- Tightly seal the muffler of the exhaust pipe.
- Remove the batteries, charge and store them at room temperature in well ventilated premises.

m Recharge the dismounted batteries every 2nd month.

- Protect all shiny metal surfaces, e.g. piston rods of the hydraulic cylinder against corrosion using an appropriate agent.
- If the machine cannot be halted in a closed hall or under a shed, it must be covered with an appropriate canvas. In each case all the air inlets and outlets shall be tightly sealed using plastic film and adhesive tape.

5.2 Downtime between 6 months and 1 year.

- Perform all operations described for „Downtime up to 6 months“.
- After draining the engine oil, fill the engine with conservation oil permitted by the manufacturer of the engine.

5.3 Re-commissioning:

- Perform the operations opposite to what were described in the section „Downtime“.

F 11.2 Lubricants and operating substances

1 Lubricants and operating substances

m Use only the lubricants listed below or comparable qualities of well-known brands.

Use only clean containers (inside and outside) for pouring oil or fuel in.

A Pay attention to the correct filling volumes (see the section "Filling volumes").

m Incorrect oil or lubricant levels promote rapid wear and cause the paver finisher to fail.

m Never mix synthetic oils with mineral oils!

	BP	Esso	Total Fina (Total)	Mobil	Renault	Shell	Wisura
Grease	BP Multi-purpose grease L2	ESSO Multi-purpose grease	Total Multis EP 2	Mobilux 2 Mobiplex 47	Multi-purpose grease	SHELL Alvania Grease EP (LF) 2	Retinax A
Engine oil	See Engine operating instructions. Shell Remula Super-FE 10 W 40 has been filled at the factory.						
Hydraulic oils	See (see section 1.1) Shell Tellus Oil 46 has been factory-filled.						
Gear oil 90	BP Multi EP SAE 90	ESSO GP 90	Total EP 90	MOBIL GX 90	Tranself EP 90	SHELL Spirax G 80 W - 90	
Gear oil 220	BP Energol GR-XP 220	ESSO Spartan EP 220	Total Carter EP 220	MOBIL Mobilgear 630 Mobil-gear SHC 220	Chevron NL Gear Compound 220	SHELL Omala 220	Optimol Optigear 220
	Optimol Optigear 220 has been factory-filled.						
Gear oil 460		ESSO Glycolube 460				SHELL Tivela 460	
Dist. water							
Diesel fuel							
Brake oil, brake fluid	BP Blue original brake fluid	ATE disk brake fluid	Total HB F 4	ELF			
Cooling liquid	Cooling liquid (anti-freeze and corrosion protection) AGIP Antifreeze Spezial 956.99.58.15						

1.1 Hydraulic oils

Preferred hydraulic oils:

a) Synthetic hydraulic liquids based on ester, HEES

Manufacturer	ISO viscosity class VG 46
Shell	Naturelle HF-E46
Panolin	HLP SYNTH 46
Esso	HE 46
Total Fina Elf	Total Biohydran SE 46

b) Mineral oil pressure fluids

Manufacturer	ISO viscosity class VG 46
Shell	Tellus Oil 46
Total Fina Elf	Total Azolla ZS 46

m When switching from mineral oil pressure fluids to biodegradable pressure fluids, please contact our factory advisors!

A Use only clean containers (inside and outside) for pouring oil or fuel in.

1.2 Filling volumes

	Operating substance	Volume
Fuel tank	Diesel fuel	280 litres
Hydraulic oil reservoir	Hydraulic oils	240 litres
Diesel engine (with oil filter change)	Engine oil	See Engine operating instructions.
Pump distribution gear	Gear oil 90	5.5 litres
Planetary gear - drive unit	Gear oil 220	4 litres
Planetary gear - conveyor	Gear oil 220	0.5 litres
Planetary gear - auger	Gear oil 220	0.5 litres
Auger box	Gear oil 460	5.5 litres
Outer auger bearing	Norva HTZ	115 g (per bearing)
Chain tensioner on traction unit	Grease	For each 1 kg

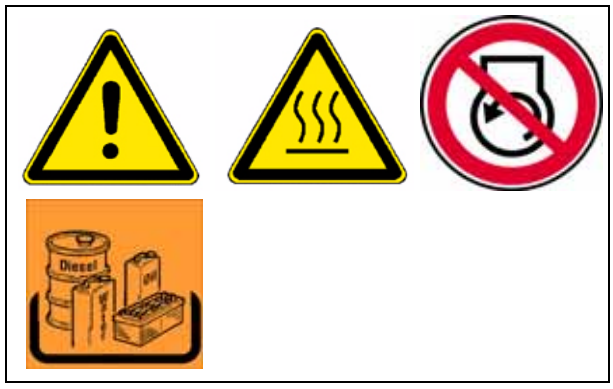
2 Notes on changing over from mineral oil to synthetic oil / synthetic oil to mineral oil

2.1 Drive unit planetary gear

m Never mix synthetic oils with mineral oils!

- Always drain used oil completely.

A Change the oil when the engine is at operating temperature.

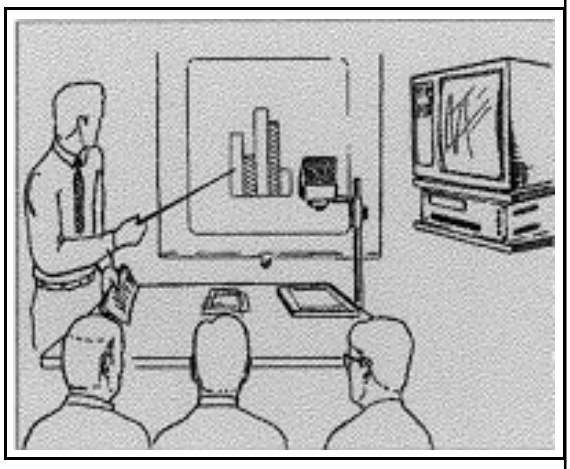


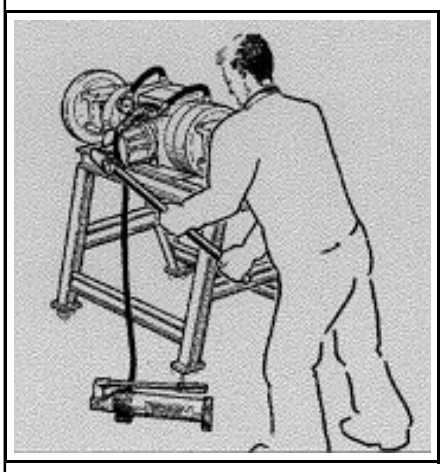
- Flush out assembly with the new grade of oil to be used.
  - Operate drive unit for 10 minutes for flushing purposes.
- Top up correct grade of oil in accordance with the relevant maintenance instructions.

DYNAPAC
Part of the Atlas Copco Group

TRAINING/EDU-CATION

We offer our Customers various training programmes on DYNAPAC equipment in our specialised training centre in our factory. We hold training sessions also for special arrangements in addition to courses and programs held on fixed dates



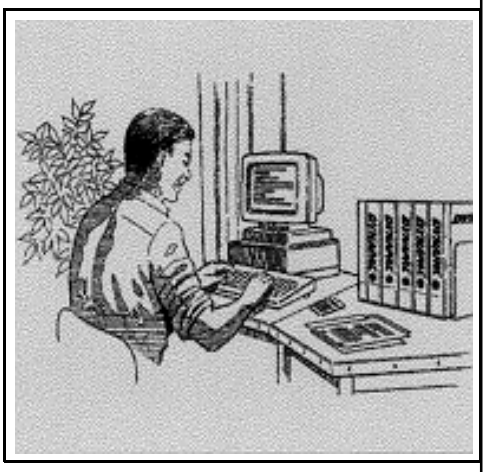


SERVICE

In case of operational failures and questions related to parts, please, contact one of our authorised service representations. Our skilled specialists will arrange for the fast and professional repair.

OPERATING ADVICE

Anytime when our dealers cannot help you, please, feel free to contact us directly. The team of our "Technical Advisors" is at your disposal.



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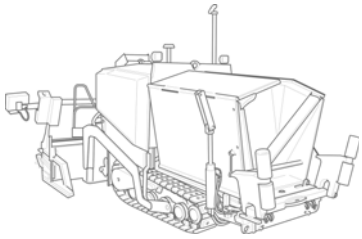

Don’t hesitate to contact
your local dealer for:
service
spare parts
documentation
accessories
and
information
about the complete
Dynapac
paving and planing
range