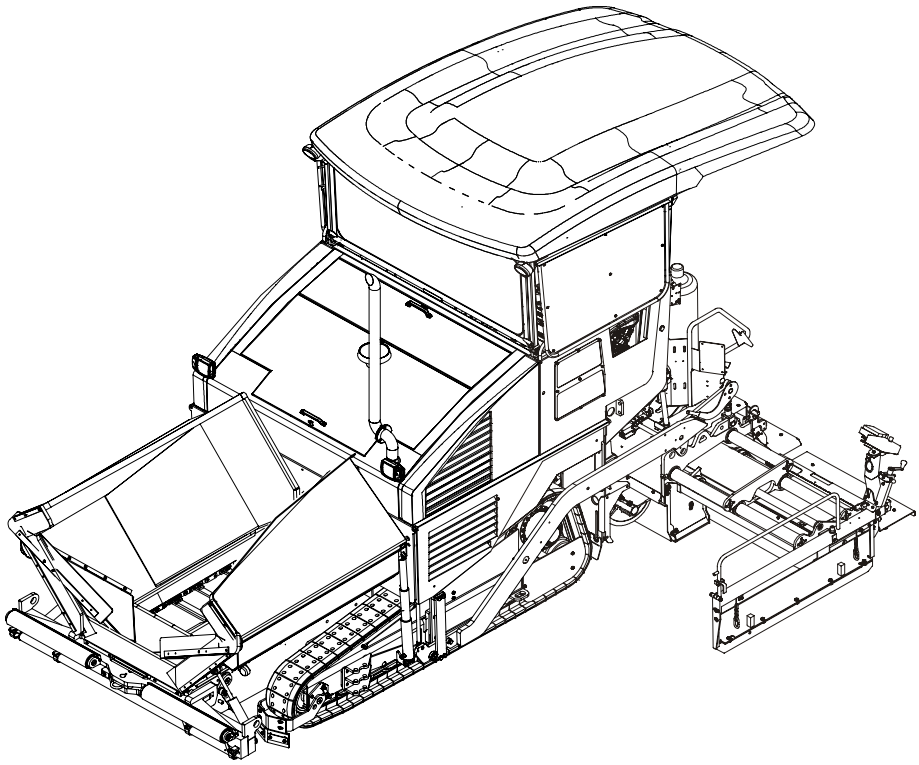
DYNAPAC
Part of the Atlas Copco Group

OPERATION & MAINTENANCE

Paver finisher

SD 115 C
SD 135 C

Typ 35



Keep this manual for future reference

Order number for this manual: 4812026362

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DYNAPAC

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Your Authorized Dynapac Dealer:

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V Preface

Translation of the original operating instructions.

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:

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

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

Precedes general notes and explanations.

- ● Used to indicate standard equipment.

- ○ 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

☞ 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!

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

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

☞ 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!

⚠ 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!

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

Attention: suspended load!

⚠ Never stand under suspended load!

Warning: risk of squeezing!

⚠ 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!

☞ 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

☞ 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!

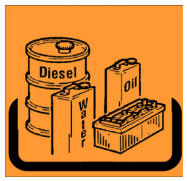
1.5 Environmental protection

☞ 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

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

Fire fighting device
(optional equipment)

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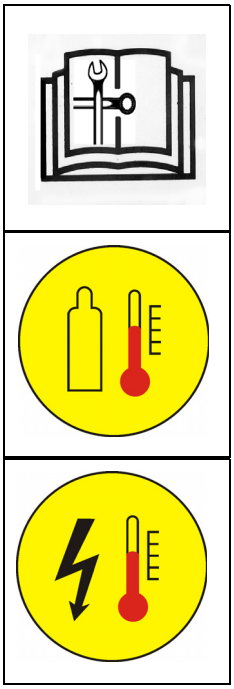
1.7 Further instructions

⚠ Observe the manufacturer's and other instructions!

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



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

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

A Correct use and application

☞ 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.

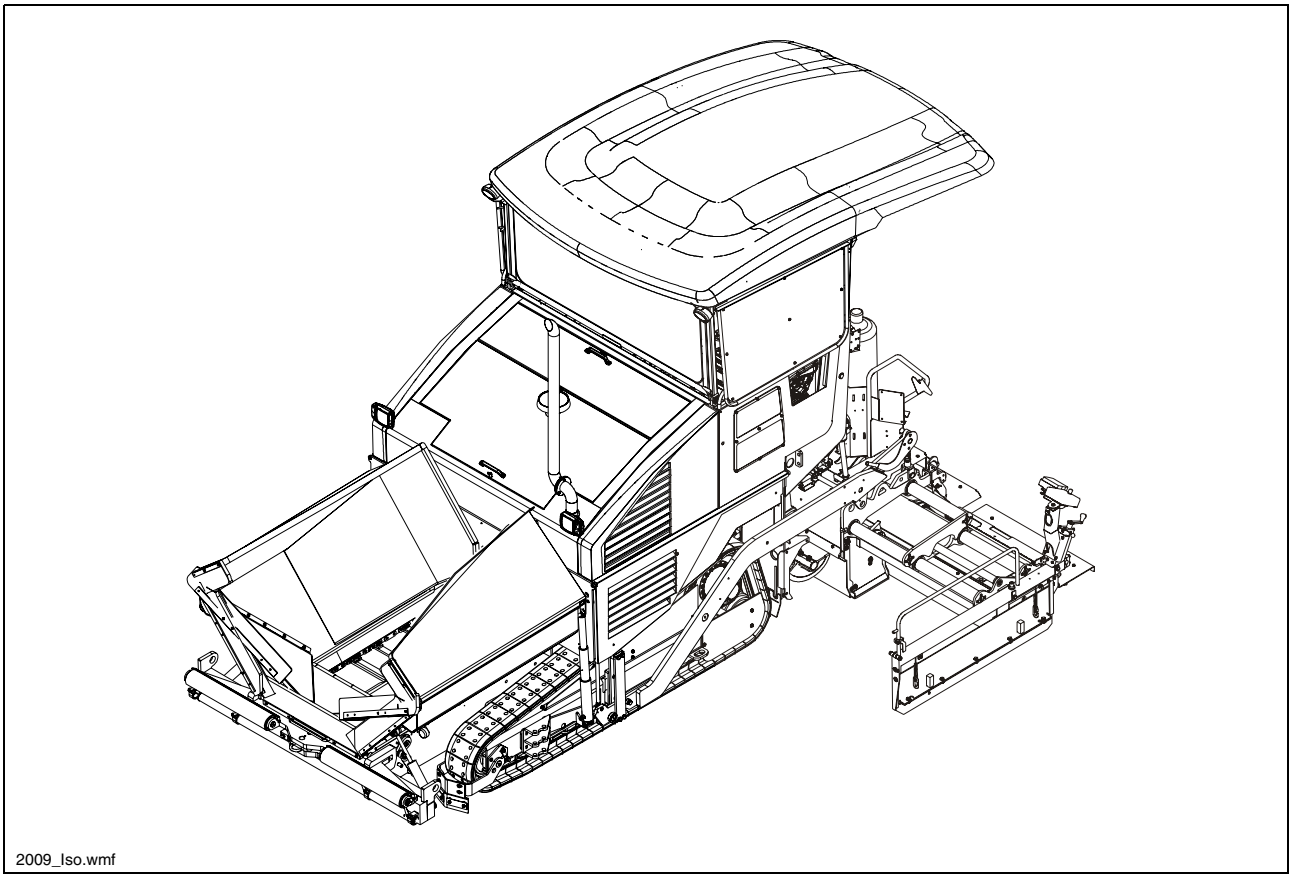
Duties of the user: A “user” within the meaning of the present operating instructions is defined as any natural or legal person who either uses the paver finisher himself, or on whose behalf it is used. In special cases (e.g. leasing or renting), the user is considered the person who, in accordance with 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 Dynapac SD 115 C / SD 135 C is a caterpillar paver finisher that 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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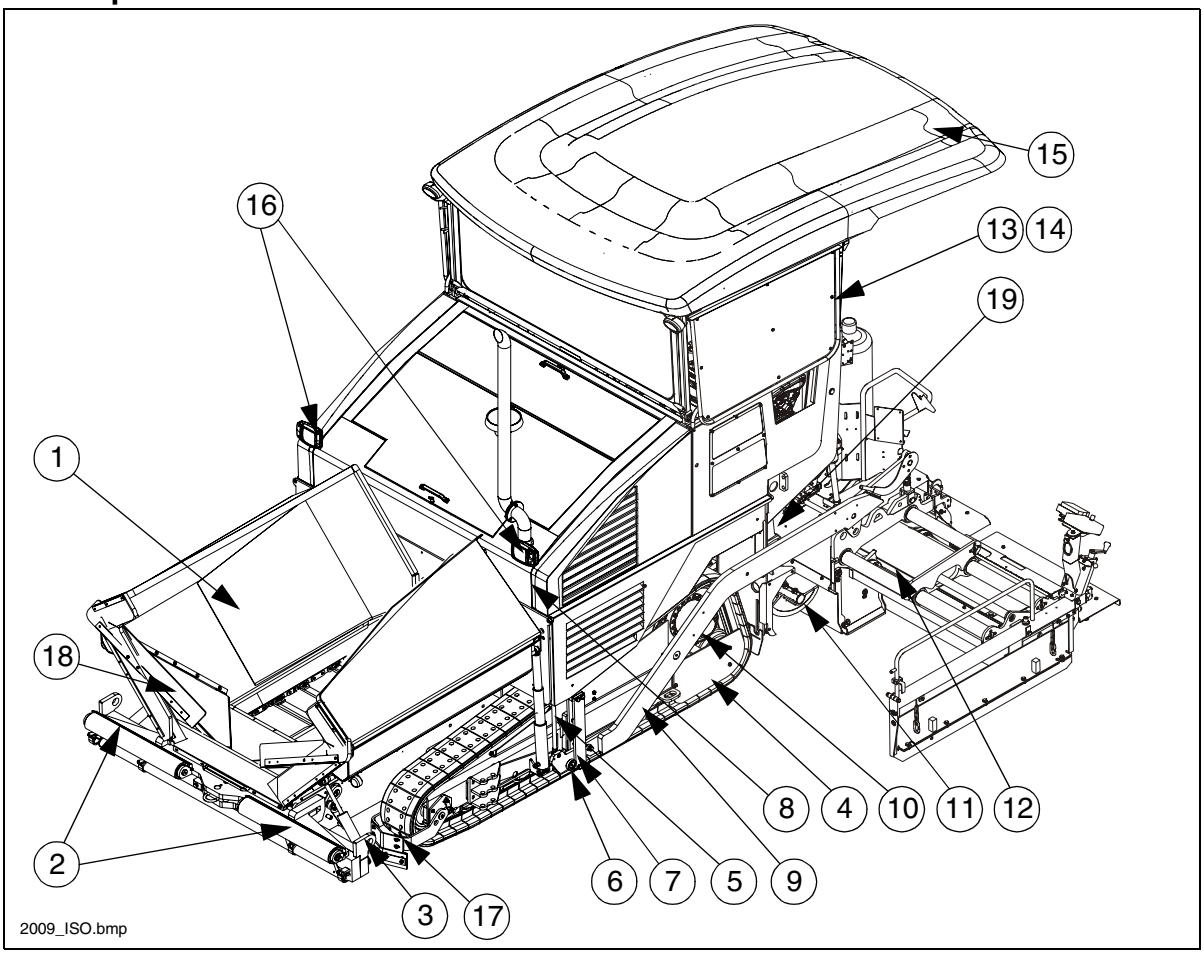


Item		Designation
1	●	Material compartment (hopper)
2	●	Truck push rollers
3	●	Tube for sensor rod (direction indicator) and holder for levelling shoe
4	●	Caterpillar drive
5	●	Levelling cylinder for paving thickness
6	●	Traction roller
7	●	Traction arm rail
8	●	Paving thickness indicator
9	●	Crossbeam
10	●	Travel drive of the caterpillar drive
11	●	Auger
12	●	Screed
13	●	Operator’s platform
14	●	Operating panel (can be moved to either side)
15	○	Protective roof
16	○	Working lights
17	○	Lane cleaner
18	○	Hydraulic front hopper flap
19	○	Asphalt fume control system

● = Standard equipment	○ = 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 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 paver finisher 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.
A swivelling lane cleaner (○), which ensures an even passage during paving, is located in front of each of the drive units. Small obstacles lying in the lane are cleared away to the side.

Hydraulic system: The diesel engine drives the hydraulic pumps for all main paver finisher drives 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 hydraulic 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 paver finisher to be turned on the spot.
The electronic synchronisation, controlled from the operating panel, ensures that the paver 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 crossbar: The push rollers for material trucks are fastened to a crossbar that is pivoted at its centre.
This crossbar allows different distances to the rear wheels of material trucks to be compensated. 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. 13.0 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 flaps (○) 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 centre or towards the outside. This ensures that there is always a sufficient supply of 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 traction 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.

Levelling/slope control system: The slope control system (option) allows the traction point to be regulated at the left-hand or the right-hand side with a defined difference to 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 lifting device is used to lift the screed during transportation. 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.

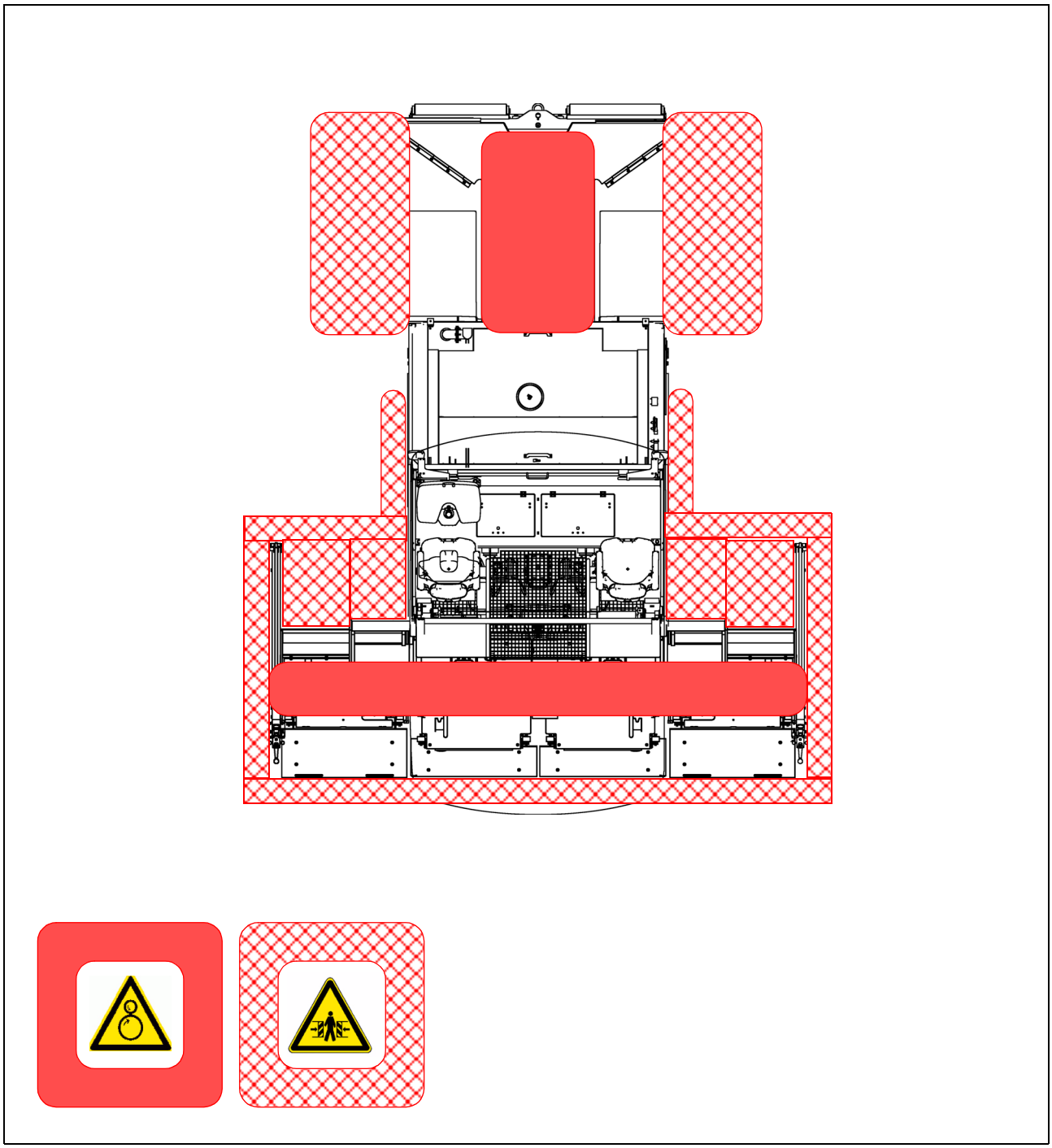
Automatic screed stop and screed charging/relieving device: The automatic screed stop prevents the formation screed marks caused by a stopped screed. When the paver finisher stops (during a truck change), the screed remains in floating position and relief pressure is applied, thus preventing the screed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

3 Danger zones

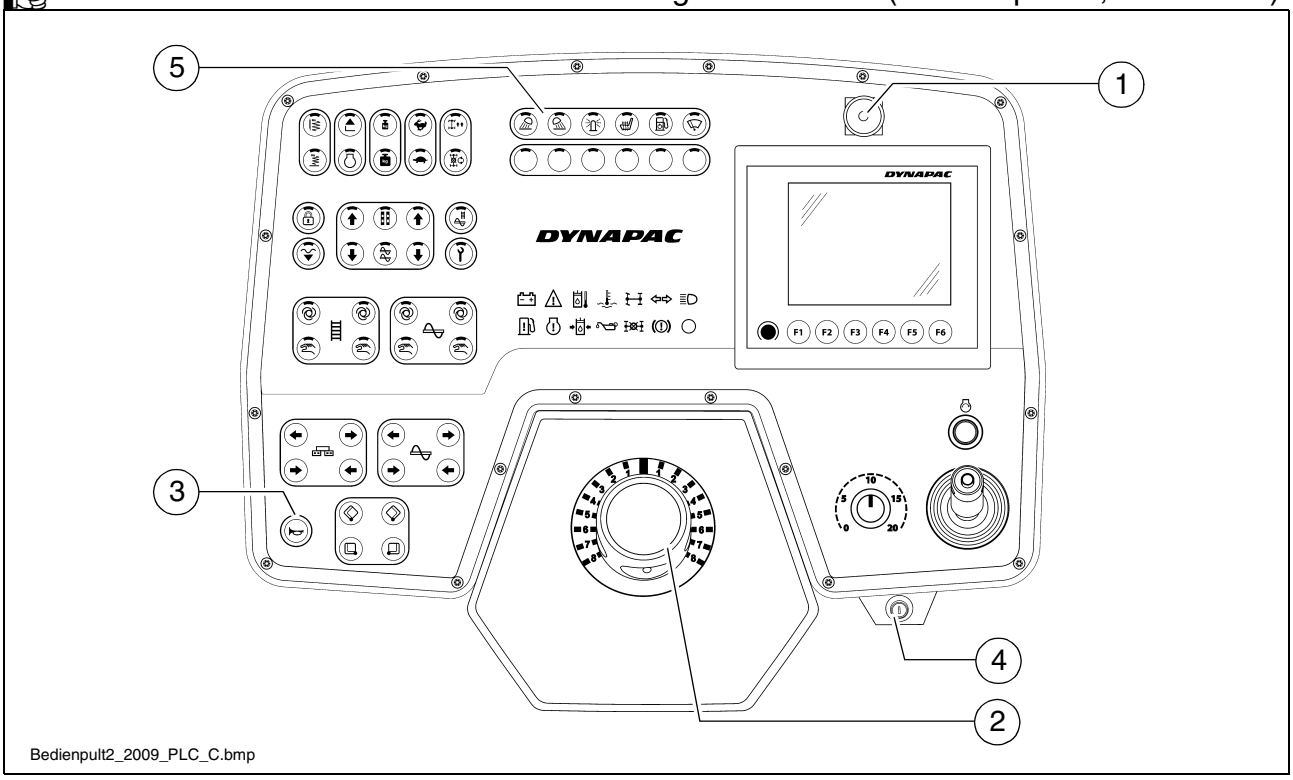
⚠ In these working areas for the machine, there may be a risk of drawing in or crushing during normal operation caused by rotating and conveying elements, or by components in motion.



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.

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



4.1 Emergency stop button (1)

- on the operating panel
- on both remote controls

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

4.2 Steering system (2)

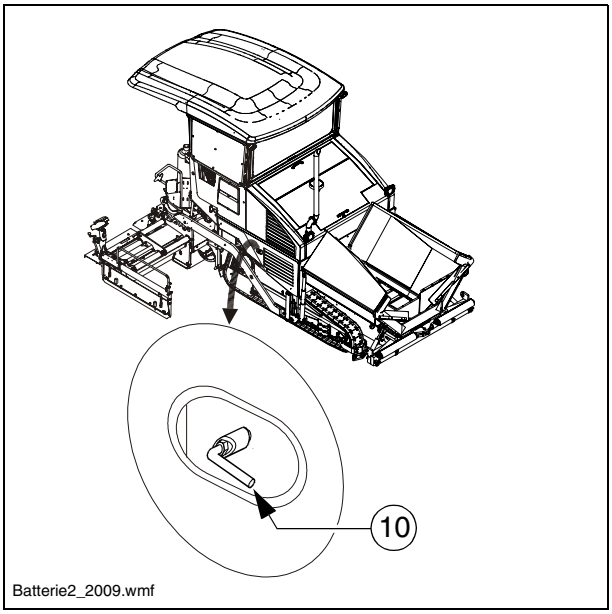
4.3 Horn (3)

- On the operating panel
- on both remote controls

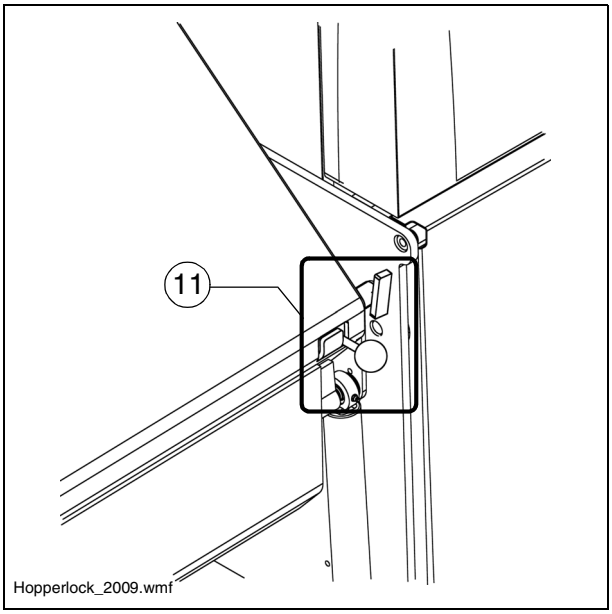
4.4 Ignition key (4)

4.5 Lights (5)

4.6 Main switch (10)

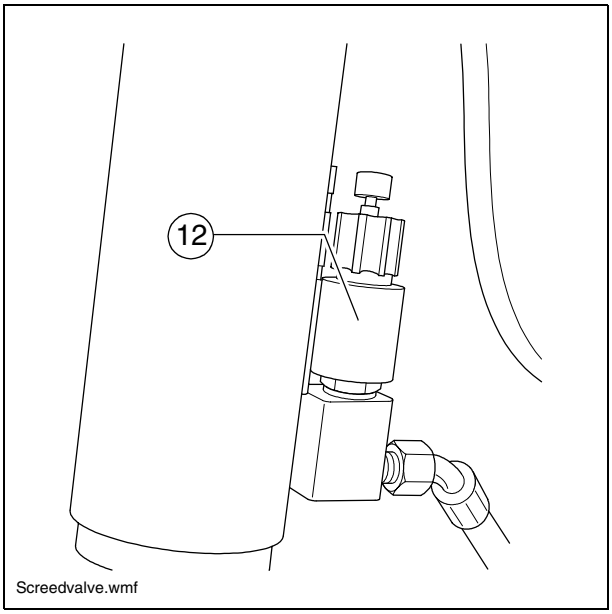


4.7 Hopper transport safeguards (11)

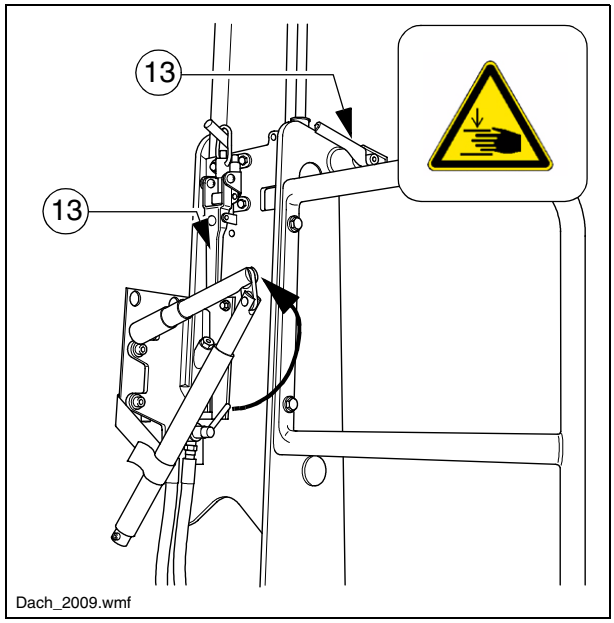


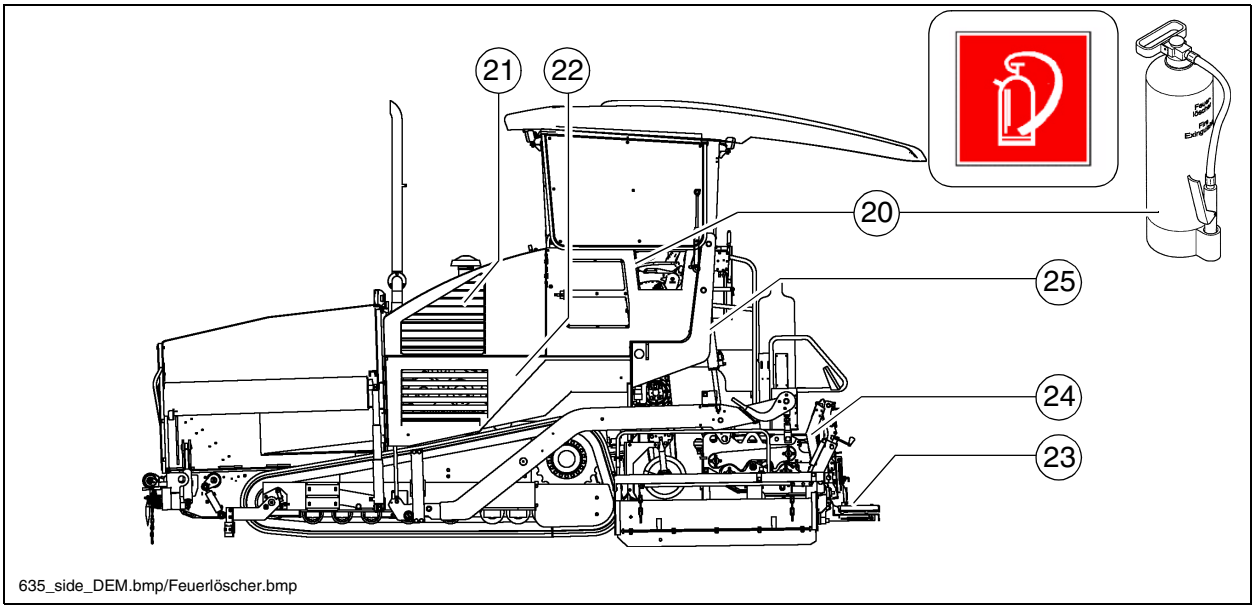
4.8 Screed transport safeguards (12)

☞ During transportation, when the vehicle is switched off or in the event of damage, the screed is held in position via a non-return valve.



4.9 Latch for protective roof (○) (13)





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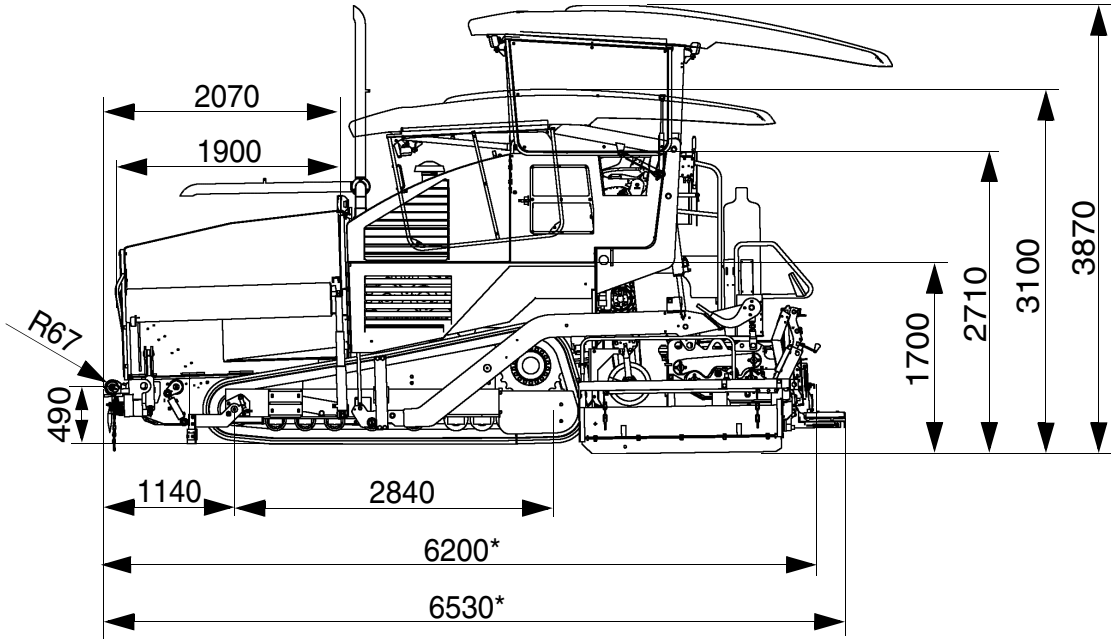
Item	Designation
20	Fire extinguisher (○)
21	Engine panels
22	Lateral flaps
23	Walkway
24	Screed coverings
25	Screed hazard flasher

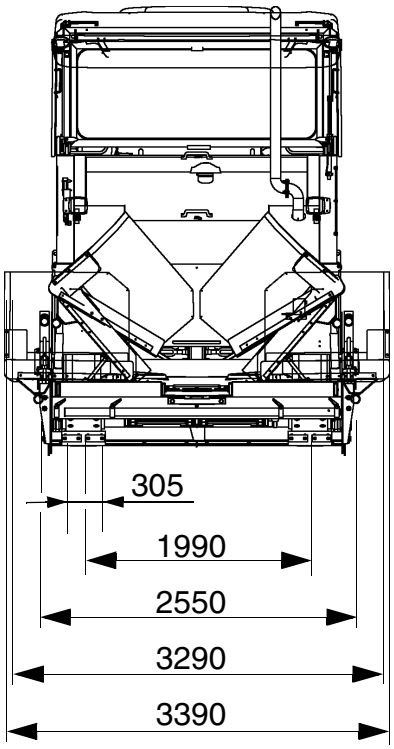
Accessories:

- Wheel chocks
- Warning triangle
- First aid box

5 Technical data, standard configuration

5.1 Dimensions (all dimensions in mm)





*VB 5100

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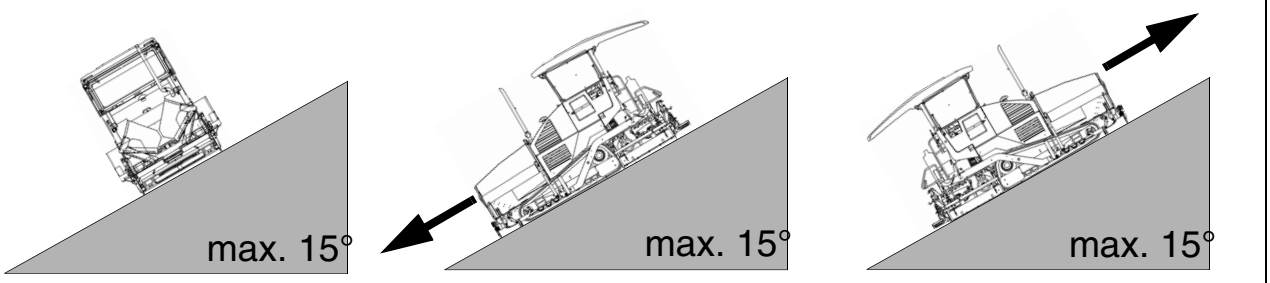
For screed technical data, refer to the screed operating instructions.

5.2 Allowed angle of rise and slope



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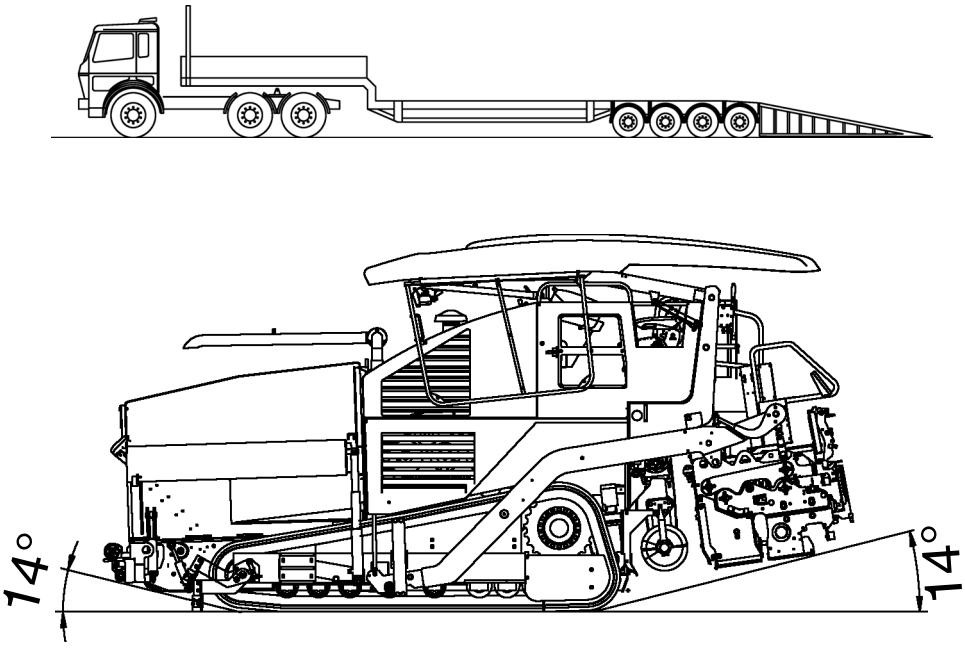
☞ Before operating your machine in an inclined position (gradient, slope, lateral inclination) which is above the specified limit value, please consult the customer service department for your machine!

5.3 Permissible approach angle



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5.4 Weights, SD 115 C (all data in t)

Paver finisher without screed	approx. 16.5
Paver finisher with screed: - VB 5100	approx. 20.0
With extension parts for max. working width, additionally max.:	approx. 5.5
With filled hopper Additionally max.	approx. 13.0

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

5.5 Weights, SD 135 C (all data in t)

Paver finisher without screed	approx. 16.5
Paver finisher with screed: - VB 5100	approx. 20.0
With extension parts for max. working width, additionally max.:	approx. 7.2
With filled hopper Additionally max.	approx. 13.0

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

5.6 Performance data for the SD 115 C

Screed used	Basic width (without cut-off shoes)	Minimum paving width (with cut-off shoe)	Continuously hydraulically adjustable up to	Maximum working widths (with extension parts)	
VB 5100	2.55	2.00	5.10	8.10	m
VB 6000	3.00	2.45	6.00	8.20	m
VB 805E Plus	2.50	2.00	5.00	8.00	m

Transport speed	0 - 4.5	km/h
Operating speed	0 - 25	m/min
Paving thickness	0 - 300	mm
Max. grain size	40	mm
Theoretical paving performance	750	t/h

5.7 Performance data for the SD 135 C

Screed used	Basic width (without cut-off shoes)	Minimum paving width (with cut-off shoe)	Continuously hydraulically adjustable up to	Maximum working widths (with extension parts)	
VB 5100	2.55	2.00	5.10	8.80	m
VB 6000	3.00	2.45	6.00	9.0	m
SB 1250	3.00	2.10	-	10.0	m
VB 805E Plus	2.50	2.00	5.00	8.00	m
VB 1105E Plus	3.00	2.50	6.00	9.00	m

Transport speed	0 - 4.5	km/h
Operating speed	0 - 25	m/min
Paving thickness	0 - 300	mm
Max. grain size	40	mm
Theoretical paving performance	750	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 Engine SD 115 C

Make/type	Deutz TCD 2013 L06 2V
Version	6-cylinder diesel engine (water-cooled)
Performance	120 kW / 163 hp (at 1800 rpm)
Fuel tank capacity	(See chapter F)

5.10 Engine SD 135 C

Make/type	Deutz TCD 2013 L06 2V
Version	6-cylinder diesel engine (water-cooled)
Performance	140 kW / 190 hp (at 1800 rpm)
Fuel tank capacity	(See chapter F)

5.11 Hydraulic system

Pressure generation	Hydraulic pumps via distribution gear (directly flanged to the engine)
Pressure distribution	Hydraulic circuits for: - Travel drive - Material transfer and distribution - Screed lifting drives for tamper / vibration - 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	approx. 6.5 m^3 = approx. 13.0 t
Minimum inlet height, centre	545 mm
Minimum inlet height, outside	620 mm

5.13 Material transfer

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

5.14 Material distribution

Augers	Left and right auger separately controllable
Drive	Hydrostatic central drive, continuously controllable independently of the conveyor Auger halves can be switched to opposite directions
Conveying volume controller	Fully automatic via configurable switching points
Auger height adjustment	- Mechanically - Hydraulically (○)
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 Optional systems with and without Slope control system

5.16 Electrical system

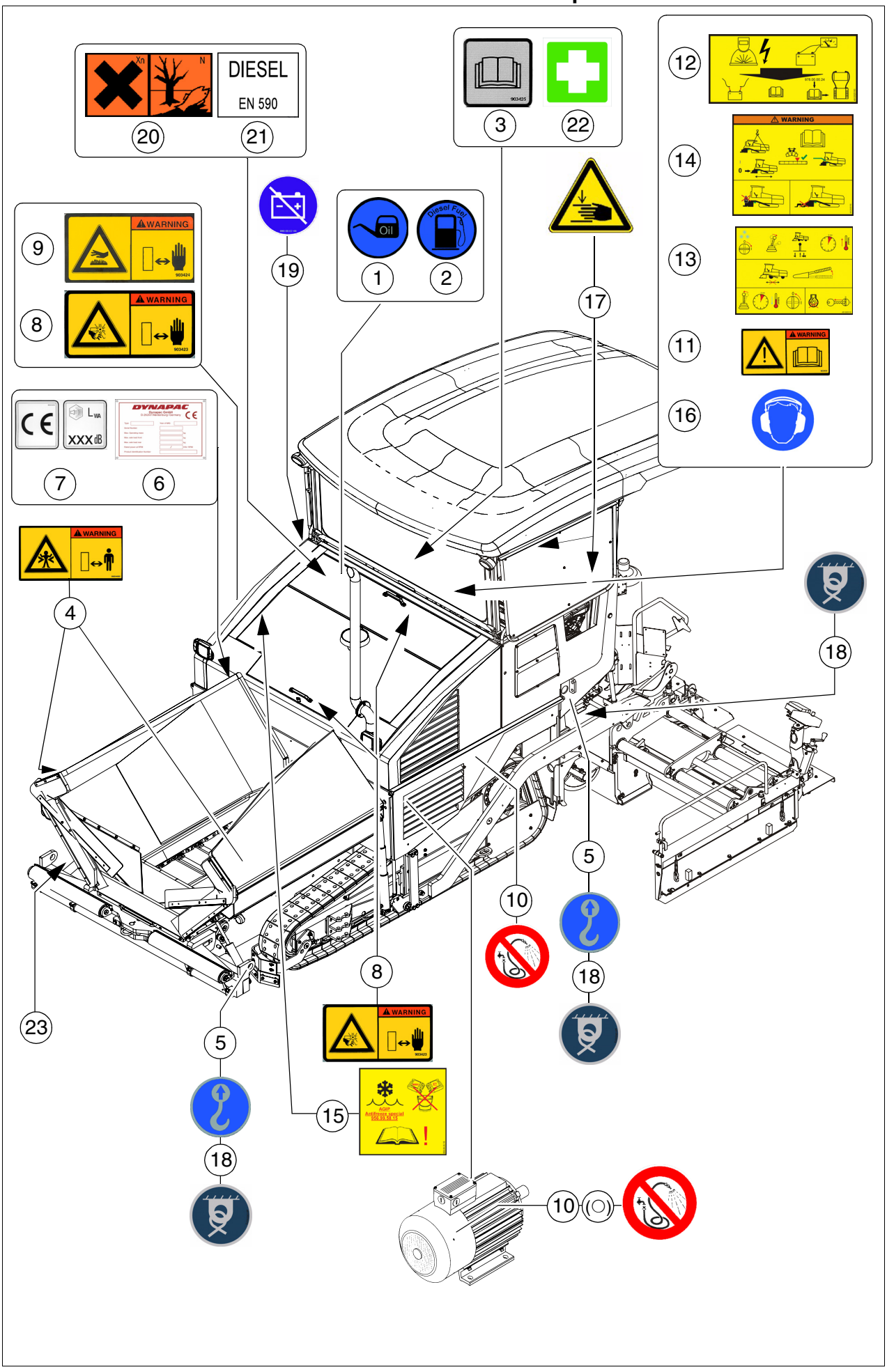
On-board voltage	24 V
Batteries	2 x 12 V, 100 Ah
Alternator (○)	20 kVA / 400 V 28 kVA / 400 V
Fuses	See chapter F, section 5

5.17 Permissible temperature ranges

Operation	-5°C / +45°C
Storage	-5°C / +45°C

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

6 Location of instruction labels and identification plates



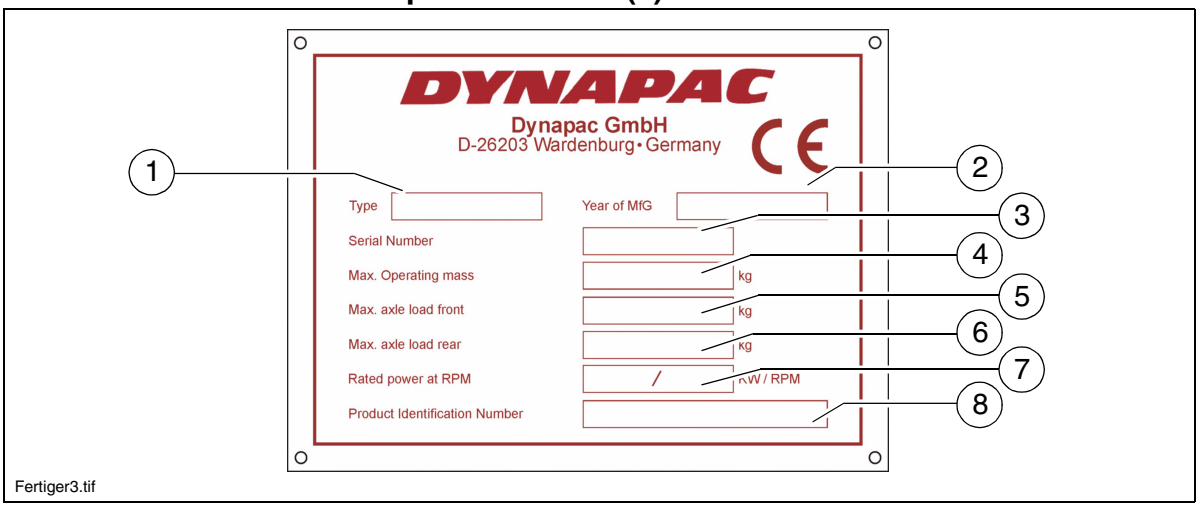
Item	Designation
1	Label „Filler neck for diesel fuel“ *
2	Label „Filler neck for engine oil“ *
3	Label „Operating instructions“*
4	Warning plate „Danger of squeezing!“ **
5	Label „Fixing points for crane transportation“ **
6	Paver finisher identification label
7	Plate „CE + noise level“ (O)
8	Warning plate „Fan danger!“
9	Warning plate „Hot surface!“
10	Label „Spraying with water prohibited“*
11	Label „Heed the operating instructions!“ ***
12	Label „Vehicle electrical system - danger of high voltage“ - Disconnect batteries and electronics during welding work or when charging the batteries, or use a service watchdog in accordance with the instruction manual.
13	Label „Notes on engine starting“ - Let the engine reach operating temperature for 5 minutes at half speed after cold-starting. Move the traction lever slightly from its central position. At the end of work, allow the engine to idle for at least 5 minutes. Remove the ignition key after switching off the engine. Apply the handbrake when the vehicle is stationary (wheeled pavers)
14	Plate „Crossbeam lock“ - Do not enter or work under screed only secured with screed lock. Danger of accidents! With mechanical screed lock: Insert only at crown adjustment „zero“. Screed lock only for transportation purposes.
15	Label „Radiator anti-freeze“ - mixing prohibition*
16	Label „Wear ear mufflers“
17	Label „Risk of hand injury“
18	Label „Lashing point“ - lifting point for transport safeguard**
19	Label „Main battery switch“
20	Label, „Health hazard, environmental hazard“
21	Label „Diesel EN590“
22	Label „First Aid Box“
23	Punched vehicle identification No.

* 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

Item	Designation
1	Paver finisher type
2	Year of construction
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)

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

7 EN standards

7.1 Continuous sound pressure level on the SD 115 C, Deutz TCD 2013L06

⚠ The operator always must use ear protection. The emission 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 the EN 500-6 draft dated March 1997, and ISO 4872.

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

Sound capacity level: L_{WA} = xxxx dB(A)

Sound pressure level at the machine

Measuring point	2	4	6	8	10	12
Sound pressure level L_{AFeq} (dB(A))	xxx	xxx	xxx	xxx	xxx	xxx

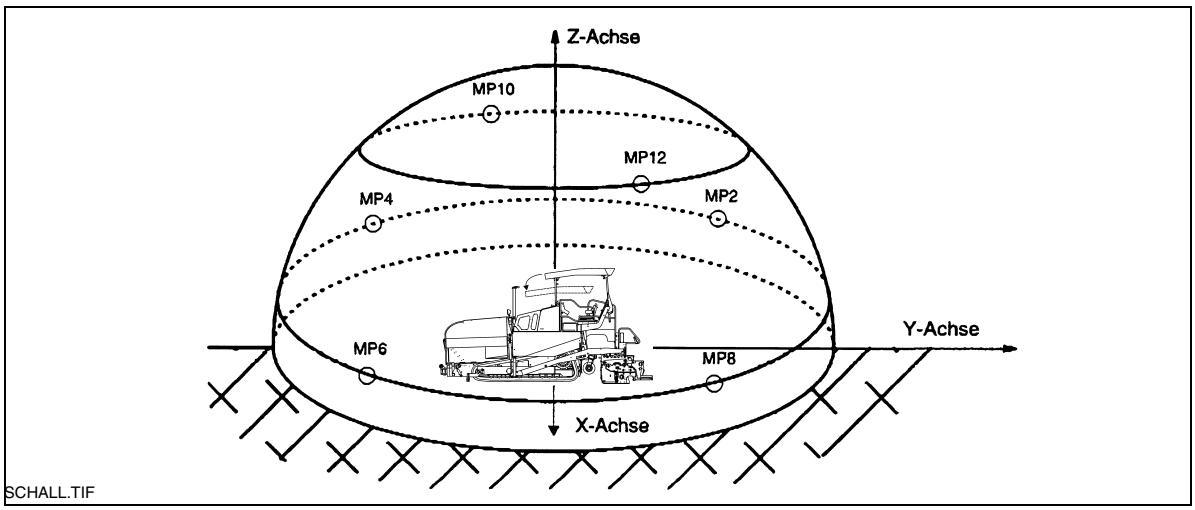
7.2 Operating conditions during measurement

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

Hemispherical 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		
Co-ordinates	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 Continuous sound pressure level on the SD 135 C, Deutz TCD 2013L06

⚠ The operator always must use ear protection. The emission 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 the EN 500-6 draft dated March 1997, and ISO 4872.

Sound pressure level at the operator's position (at the height of the head): L_{AF} = 86.5 dB(A)

Sound capacity level: L_{WA} = 105.6 dB(A)

Sound pressure level at the machine

Measuring point	2	4	6	8	10	12
Sound pressure level L_{AFeq} (dB(A))	73.4	71.2	73.8	72.3	70.0	73.1

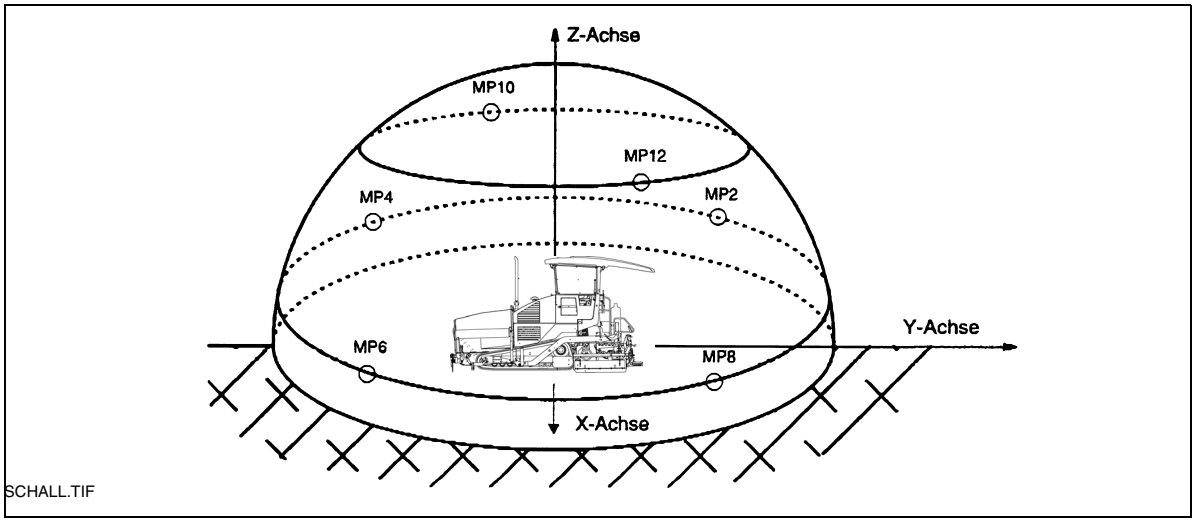
7.5 Operating conditions during measurement

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.

7.6 Measuring point configuration

Hemispherical 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**		
Co-ordinates	X	Y	Z	X	Y	Z
	±11.2	±11.2	1.5	- 4.32 +4.32	+10.4 -10.4	11.36 11.36



C 1.9 Transport

1 Safety regulations for transportation

⚠ 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 crossbeam 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, there is a risk that the machine will slip, tilt or overturn.
Drive carefully! Keep people away from the danger area!

Additional stipulations for transportation on public roads:

⚠ In Germany; caterpillar paver finishers **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

⚠ 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“!

⚠ Check the fill level of the operating substances so that these do not escape when driving on an incline.

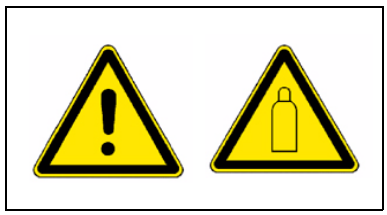
⚠ Attachment and loading equipment must meet the conditions of the applicable accident prevention regulations!

⚠ The weight of the paver finisher must be taken into consideration when selecting the attachment and loading equipment!

2.1 Preparations

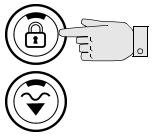
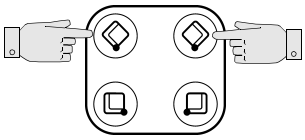
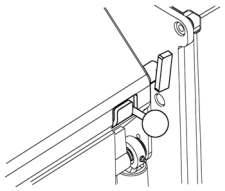
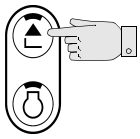
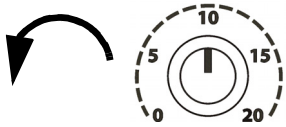
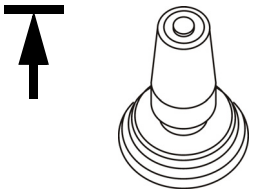
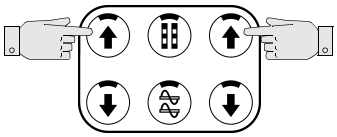
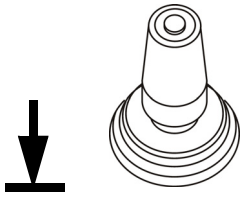
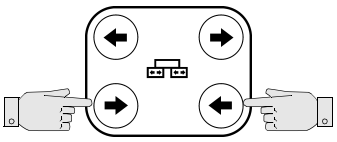
- Prepare the paver finisher for transportation (see chapter D).
- Remove all overlaying or loose parts from paver finisher and screed (see also Operating instructions for the screed). Store these parts in a safe place.
- Move the paver finisher to the uppermost position if necessary.

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



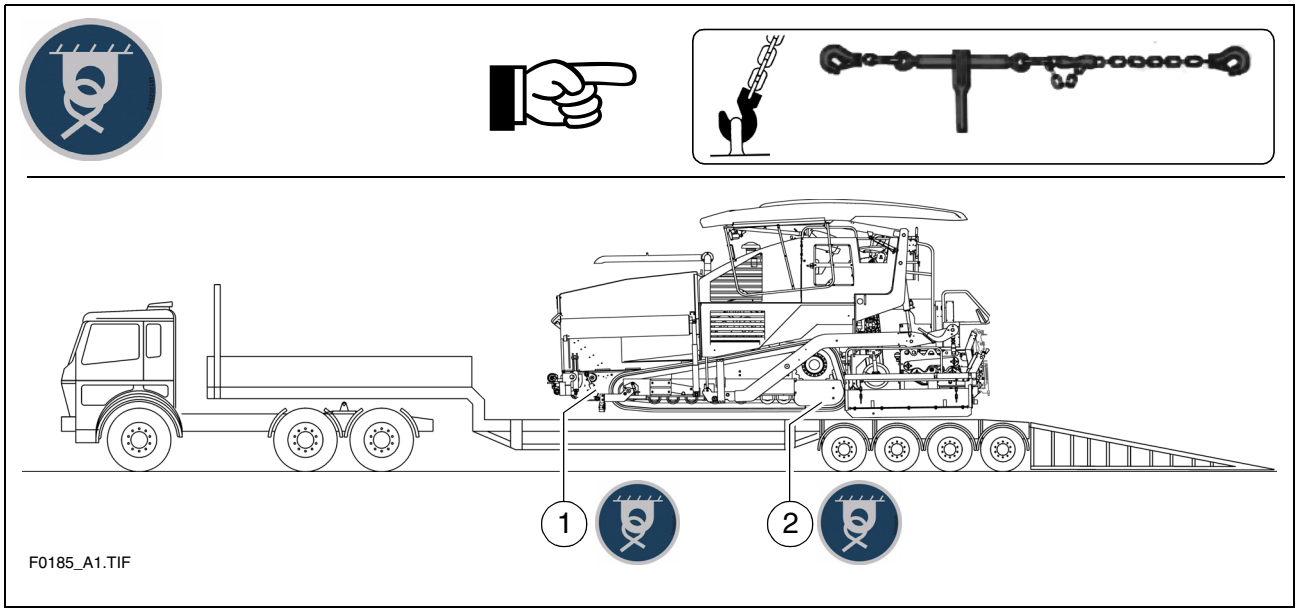
- Remove the gas bottles for the screed heating system:
  - Close the main shut-off valves and the bottle valves.
  - Turn off the valves on the bottles and remove the gas bottles from the screed.
  - Transport the gas bottles on a second vehicle; heed all applicable safety regulations.

.

	Operation	Buttons
Only when remote control is not connected.	- Disabling the interlocking of operation	
	- Close the hopper lids.	
	- Engage both hopper transport safeguards.	
	- Lift the screed.	
	- Turn the preselecting regulator to zero.	
	- Move the drive lever forward.	
	- Extend levelling cylinders completely.	
	- Set the drive lever to the centre position.	
	- Retract the screed parts until the screed matches the basic width of the paver finisher.	

2.2 Driving onto the low-bed trailer

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



- Use the work gear and low engine speeds 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.

- Lower the protective roof (○):

See section entitled „Protective roof“

2.3 Secure the paver finisher to the low-bed trailer:

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

For a paver finisher without roof:

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

2.4 After transportation

- Remove the attachment devices.
- Raise the protective roof (○):

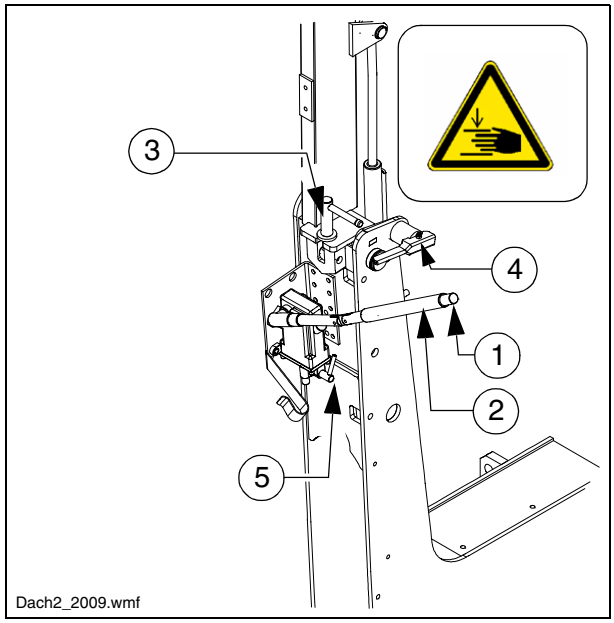
☞ See section entitled „Protective roof“

For a paver finisher without roof:

- Mount the exhaust extension pipe.

- Lift the screed to the transportation position.
- 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 Protective roof (○)



The protective roof can be raised and lowered with a manual hydraulic pump.

☞ The exhaust pipe is lowered or raised together with the roof.

- Remove the lower section of the pump lever (1) from the storage compartment, and connect to the upper section using a pipe (2).
- The locks (3) and (4) on both sides of the roof must be released.
- Set the adjustment lever (5) to the „Raise“ or „Lower“ position.
  - Raise the roof: The lever points forwards.
  - Lower the roof: The lever points backwards.
- Operate the pump lever (1) until the roof has reached the upper or lower limit position.
- When the roof is raised, set both locks (3) and (4) on both sides of the roof; when the roof is lowered, only set one lock (4).

⚠ If the vehicle is equipped with a protective roof, the front window must be swivelled shut and the engine hood must be closed before lowering the roof

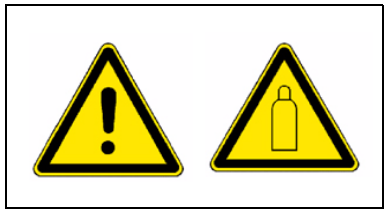
4 Transportation

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

4.1 Preparations

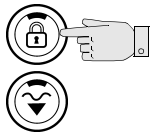
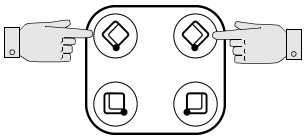
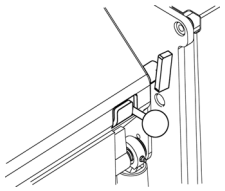
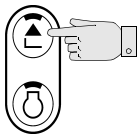
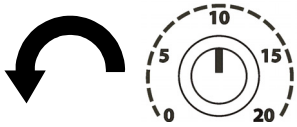
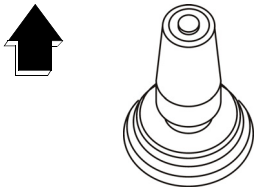
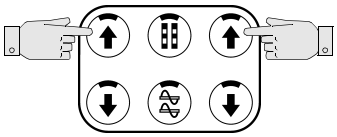
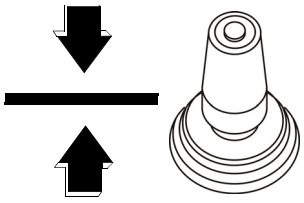
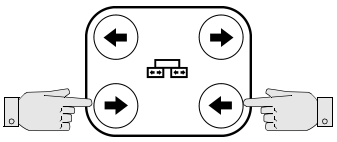
- Prepare the paver finisher for transportation (see chapter D).
- Remove all overlaying or loose parts from paver finisher and screed (see also Operating instructions for the screed). Store these parts in a safe place.

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

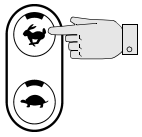
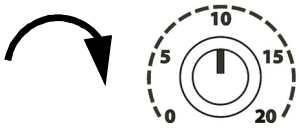
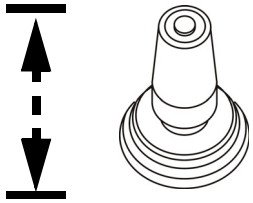


- Remove the gas bottles for the screed heating system:
  - Close main shut-off valves and bottle valves.
  - Turn off the valves on the bottles and remove the gas bottles from the screed.
  - Transport the gas bottles on a second vehicle; heed all applicable safety regulations.

.

	Operation	Buttons
Only when remote control is not connected.	- Disabling the interlocking of operation	
	- Close the hopper lids.	
	- Engage both hopper transport safeguards.	
	- Lift the screed.	
	- Turn the preselecting regulator to zero.	
	- Move the drive lever forward.	
	- Extend levelling cylinders completely.	
	- Set the drive lever to the centre position.	
	- Retract the screed parts until the screed matches the basic width of the paver finisher.	

4.2 Driving mode

Warning	Buttons
- Set the Fast/Slow switch to „Hare“.	
- Turn the preselector to maximum.	
- Use the drive lever to regulate the speed.	

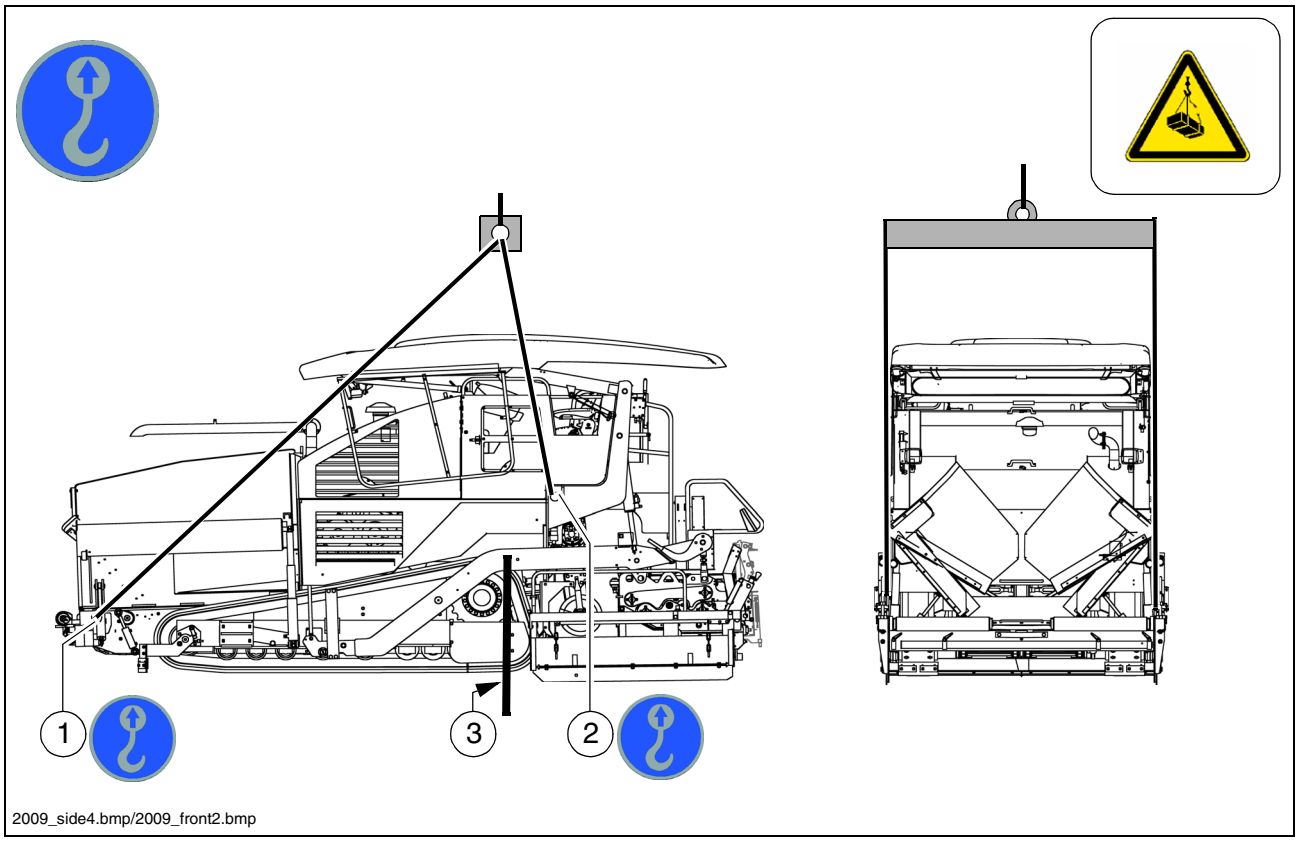
Press the emergency stop button when a dangerous situation arises!

5 Loading by crane

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

⚠ Attachment and loading equipment must meet the conditions of the applicable accident prevention regulations!

⚠ The vehicle's centre of gravity is dependent on the screed which is mounted.



2009_side4.bmp/2009_front2.bmp

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

☞ Depending on the type of screed which is used, the paver finisher's centre of gravity, with the screed mounted, is located in the area of the drive unit's rear reversing roller (3).

- Secure vehicle wherever it is parked up.
- 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).
- Lower the protective roof (○):

☞ See section entitled „Protective roof“

- Attach lifting gear to the four attachment points (1, 2).

⚠ The max. permissible attachment point load is
Attachment point (1): 32.3 kN
Attachment point (2): 85.4 kN

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

6 Towing

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

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

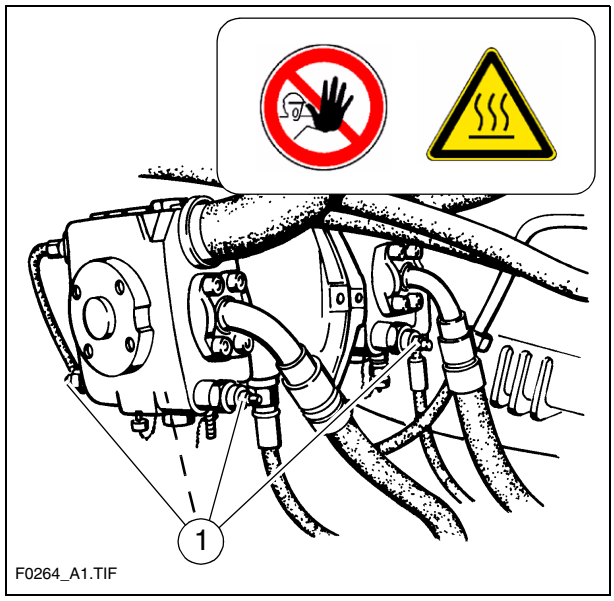
Use only approved tow bars!

If necessary, remove any attachments and accessories 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.

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 travel drive pumps must all be unscrewed approx. 3 complete turns.

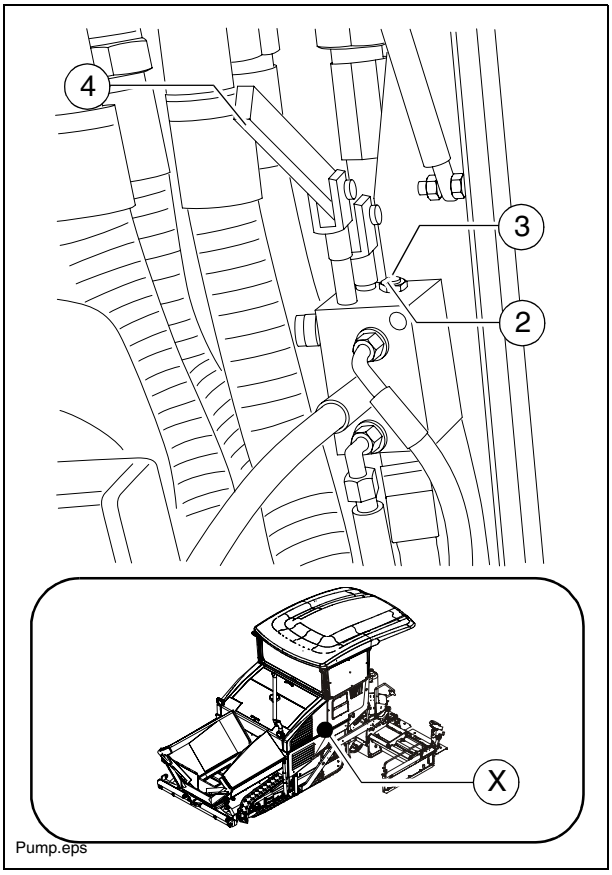


- Release lock nut (2), screw threaded dowel (3) into pump as far as possible and secure with lock nut.
- Actuate lever (4) of hand pump until sufficient pressure has been built up and traction system brakes have been released.
- Attach the tow bar to the coupling (5) located in the bumper.

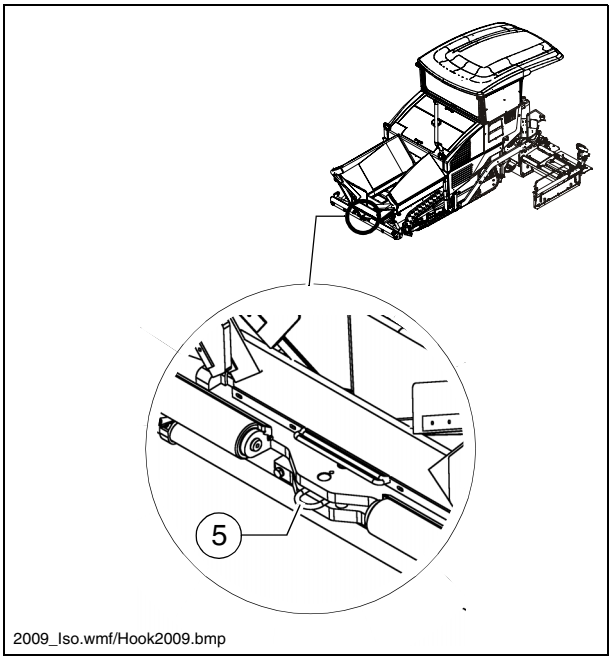
☞ Now carefully and slowly tow the paver finisher out of
the construction area.

⚠ Only ever tow the shortest distance to the means of transport or the next parking possibility.

⚠ The max. permissible towing eye (5) load is: 188 kN.



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 now reactivated and the machine is secured against rolling.



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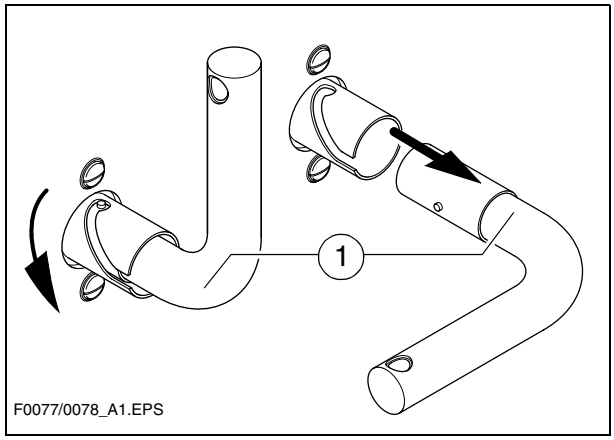
7 Safely parking the vehicle

⚠ When the paver finisher is parked at a location accessible to the public, it must be secured in such a way that unauthorised 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.



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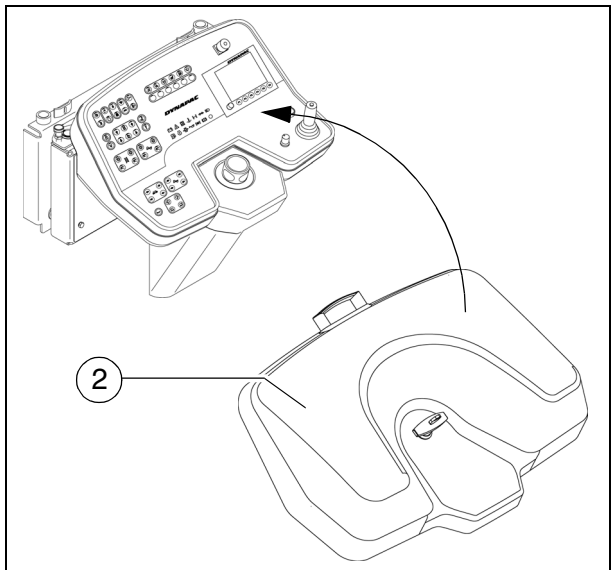
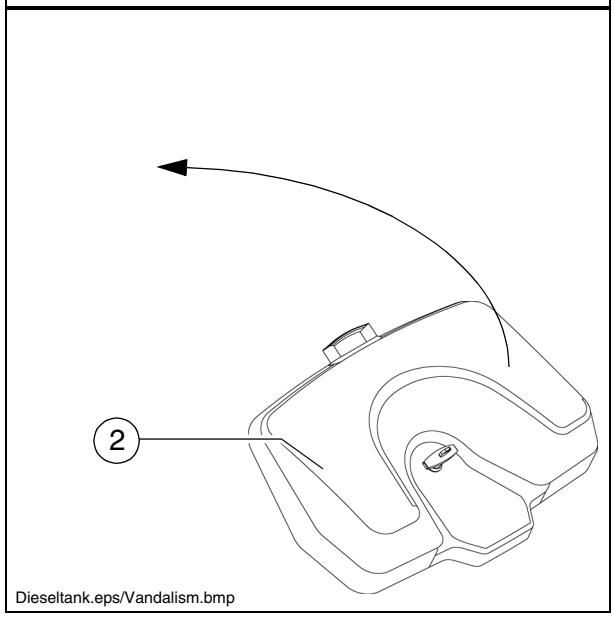
- Protect the operating panel with the dust cover (2) and lock it.
- Store loose parts and accessories in a safe place.



IsoPult_2009.bmp/IsoPult3_2009.bmp

☞ Secure the dust cover (2) during operation with the lock on the terminal box under the maintenance flap on the right-hand side!



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D 1.12 Operation

1 Safety regulations

Starting the engine, the travel 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!

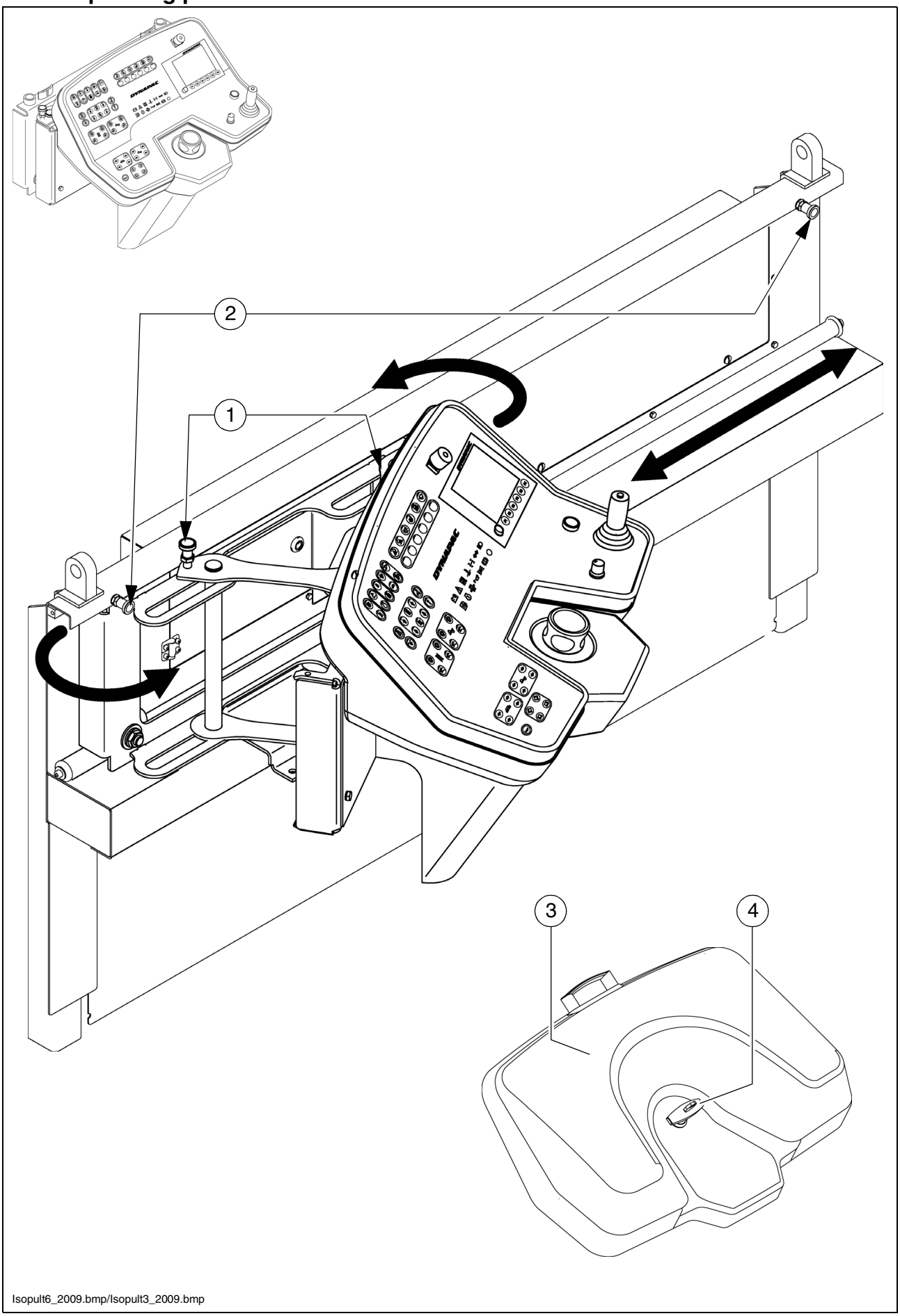
Never crawl into the auger tunnel or step into the hopper or onto the conveyor. Danger to life and limb!

- Always make sure during work that no-one is endangered by the machine!
- Ensure that all protective covers and hoods are fitted and secured accordingly!
- Immediately rectify damage which as been ascertained! 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 driver's position that is opposite to the flowing traffic! Lock the operating panel and the driver's seat.
- Maintain sufficient safety clearance from 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.

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

2 Controls

2.1 Operating panel



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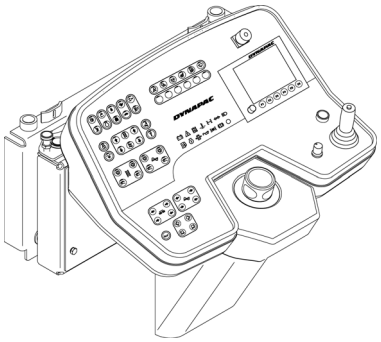
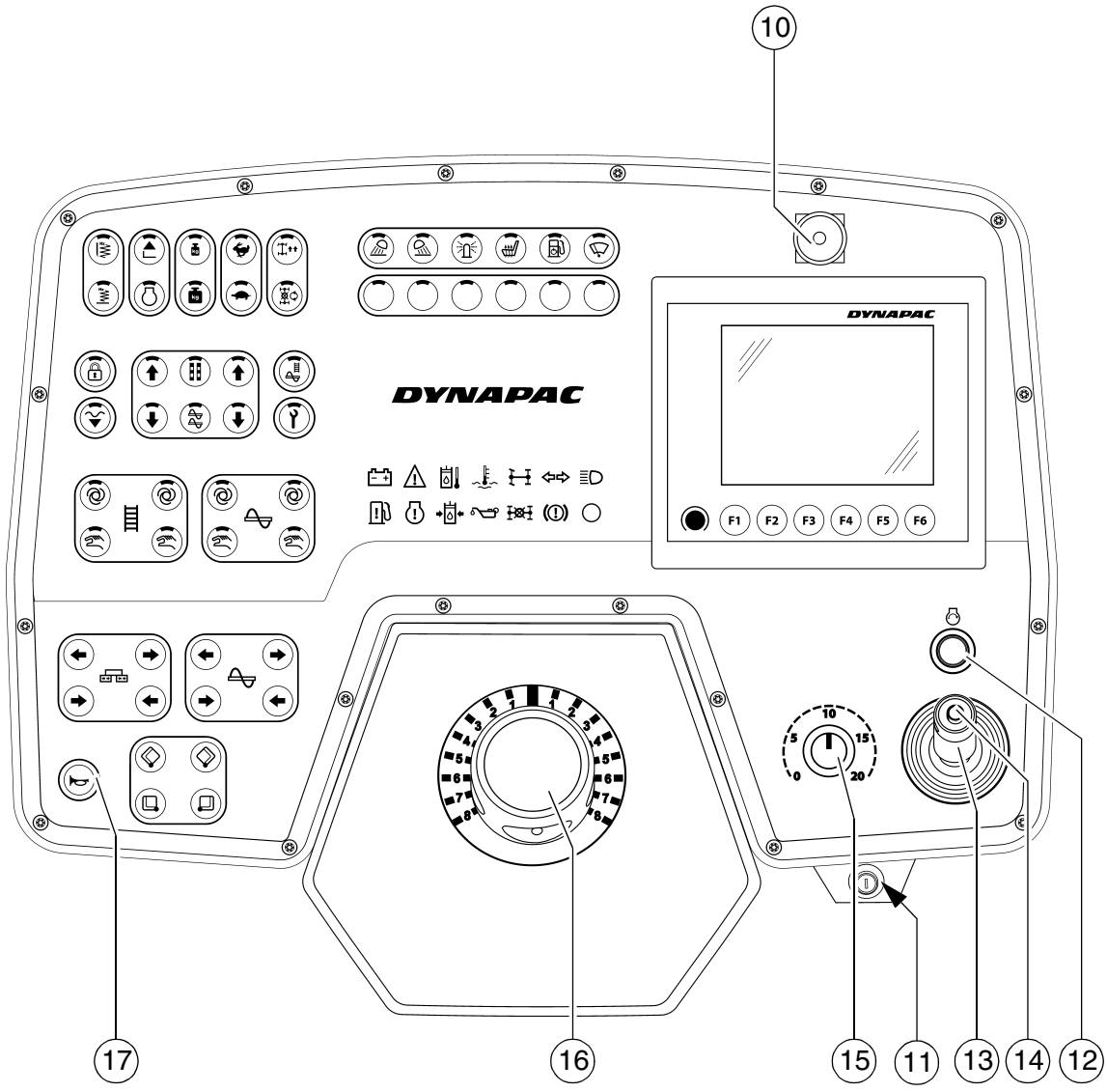
⚠ General notes on adherence to CE regulations

All detent switch functions which may pose a risk on starting the diesel engine (auger and conveyor conveying function) are set to the STOP function in the case of EMERGENCY STOP or restarting the control system. If settings are changed when the diesel engine is stopped („AUTO“ or „MANUAL“), these are reset to „STOP“ on starting the diesel engine.
The „Turning on the spot“ function is reset to „Straight-ahead travel“.

Item	Designation	Brief description
1	Latch swivel operating panel (○)	The entire operating panel can be swivelled for operation beyond the outer edge of the vehicle. - Undo the latch corresponding to the swivelling direction and swivel the operating panel to the desired position. - Engage the latch in the locating bore again. STOP Only adjust the operating panel position whilst the vehicle is stationary! ☞ The operating panel can only be swivelled beyond the outer edge of the vehicle if a telescopic control panel is fitted!
2	Latch shift operating panel	The entire operating panel can be shifted to the left or right driver's seat. - Undo the latch corresponding to the swivelling direction and shift the operating panel to the desired driver's position. - Engage the latch in the locating bore again. STOP Only adjust the operating panel position whilst the vehicle is stationary!
3	Vandalism protection facility	On completion of work, secure the operating panel with the vandalism protection facility.
4	Lock	To lock the vandalism protection facility. - Turn the handle to the locking position and lock.





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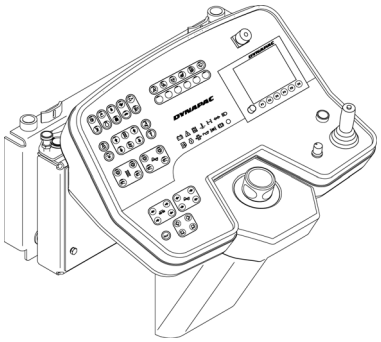
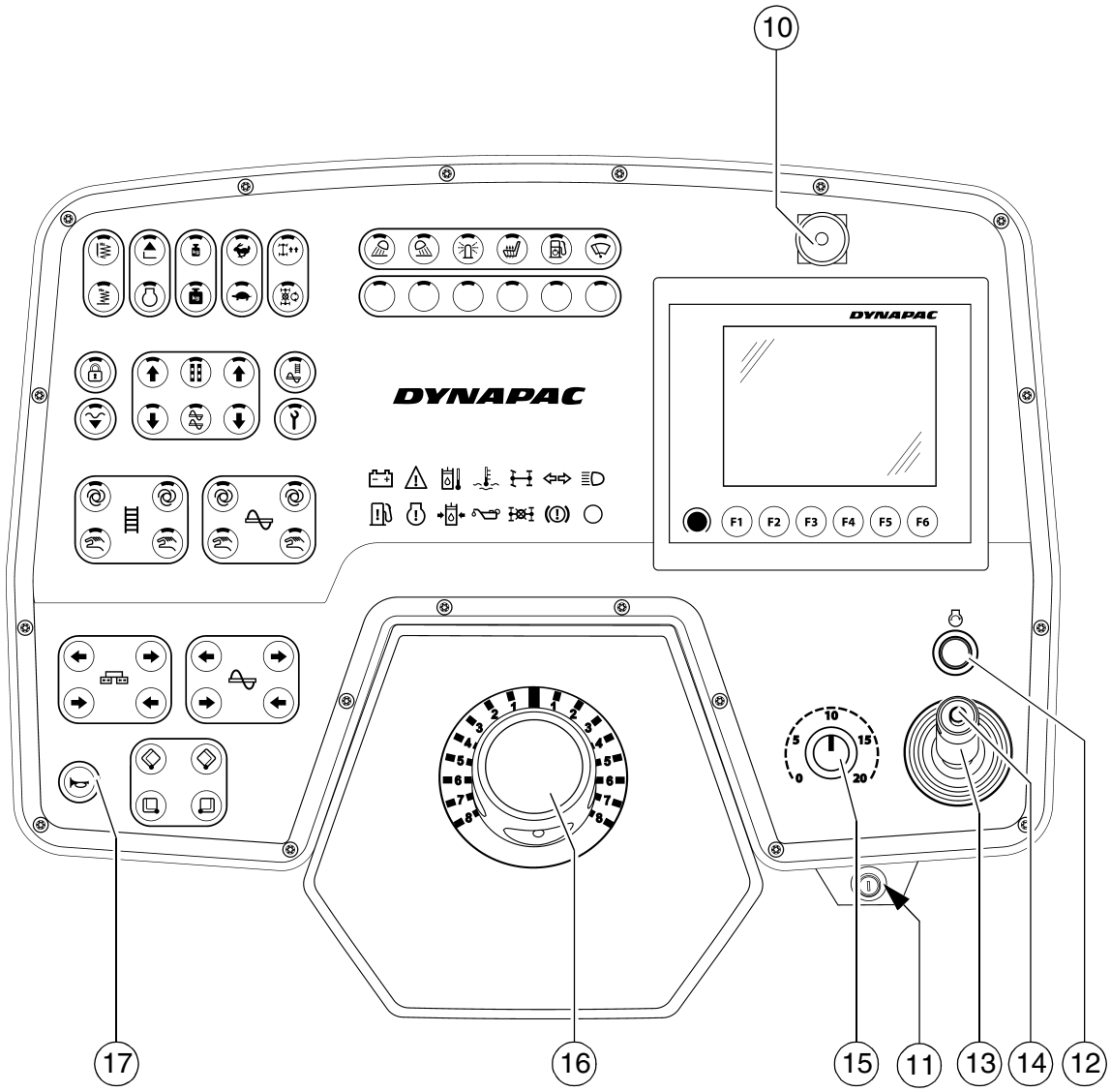
Item	Designation	Brief description
10	Emergency stop button	In the case of an emergency (danger to persons, possible collision etc.), press in the button! - Pressing the emergency stop button switches the engine, the drives and the steering system off. Making way, lifting the screed or other actions are then no longer possible! Danger of accidents! - 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! - To restart the engine, the button must be pulled out again.
11	Ignition lock	To activate the ignition voltage by turning the key. - Switch off by turning the key back to its starting position. ☞ After activating the ignition voltage, the input and display terminal requires a few seconds for the booting process. ☞ On shutting off the vehicle, first switch off the ignition, then deactivate the main switch. ☞ Before the main battery switch is deactivated, a period of at least 10 seconds must elapse after switching off the vehicle.
12	Starter	Starting is only possible when the drive lever is in the centre position. All emergency stop buttons (on the operating panel and the remote controls) must be pulled out.





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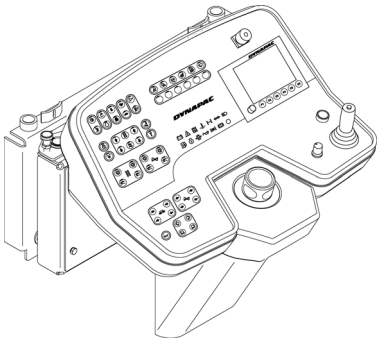
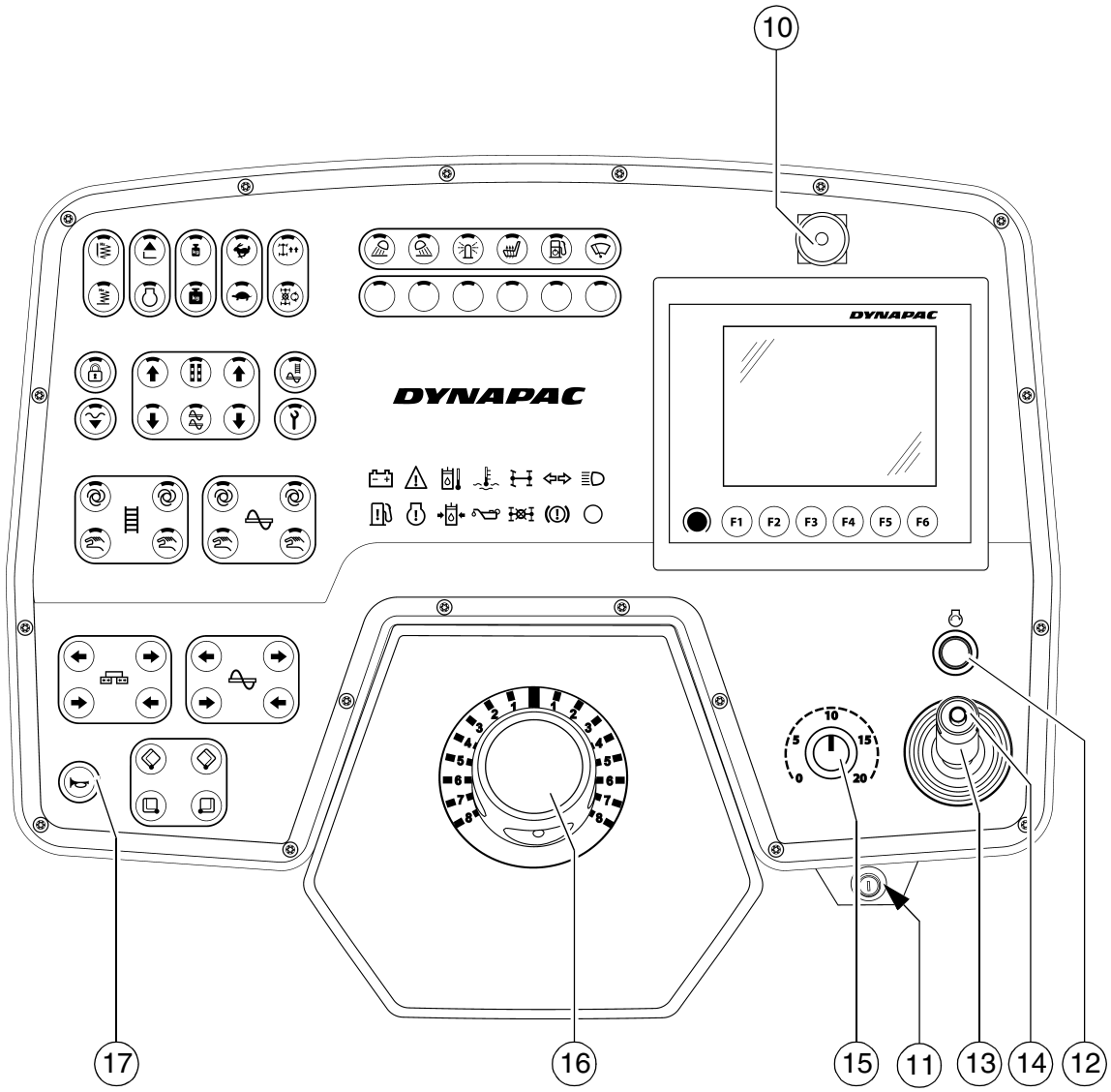
Item	Designation	Brief description
13	Drive lever (traction)	For switching on the paver finisher functions and for continuously regulating the road speed – forward or reverse. Zero position: Starting is possible; engine at idling speed; no travel drive; - To swivel the drive lever out, release by pulling the handle up. Depending on the position of the drive lever, the following functions can be activated: 1st position: - Conveyor and auger on. 2nd position: - Screed motion (tamper/vibration) on; travel drive on; increase speed until the stop is reached. ☞ Use the preselector to set the maximum speed.
14	Horn	Horn (14): Press in the event of danger and as an acoustic signal before the vehicle starts to move! - The horn can also be used to communicate acoustically with the truck driver for material loading!





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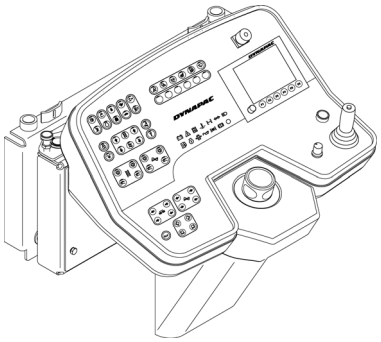
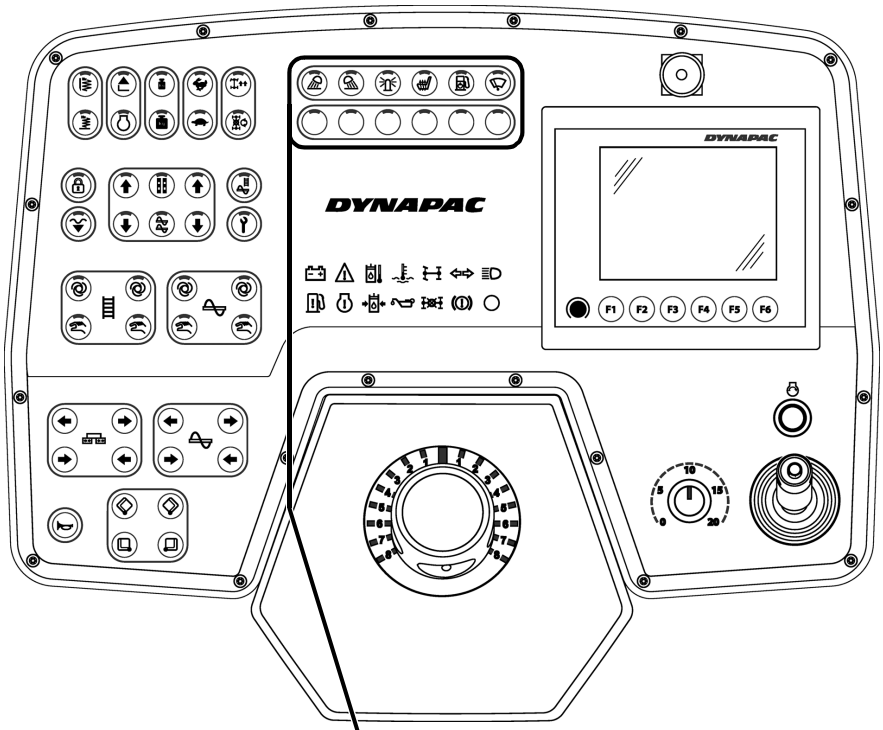
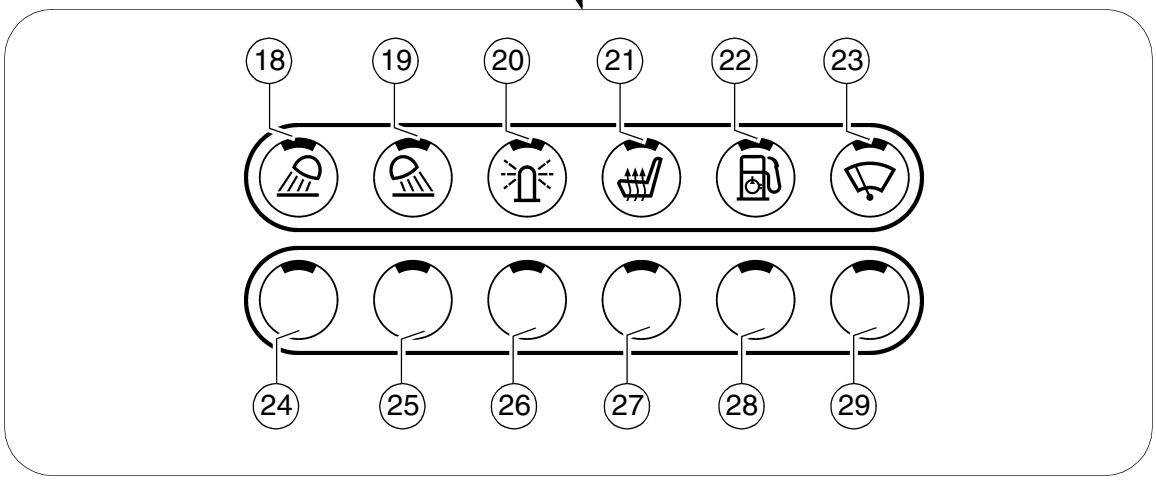
Item	Designation	Brief description
15	Travel drive preselector	For setting the maximum speed that can be reached when the drive lever is at its stop. ☞ The scale roughly matches the speed in m/min (during paving).
16	Steering potentiometer	The steering wheel movement is transferred electrohydraulically. ☞ For precise adjustments (position „0“ = straight-ahead), see the straight-ahead travel synchronisation. For turning on the spot, see switch (Turning on the spot).
17	Horn	Press in the case of emergencies and to indicate when the machine starts to move! ☞ The horn can also be used to communicate acoustically with the truck driver for material loading!







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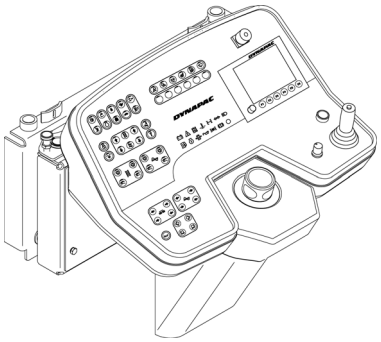
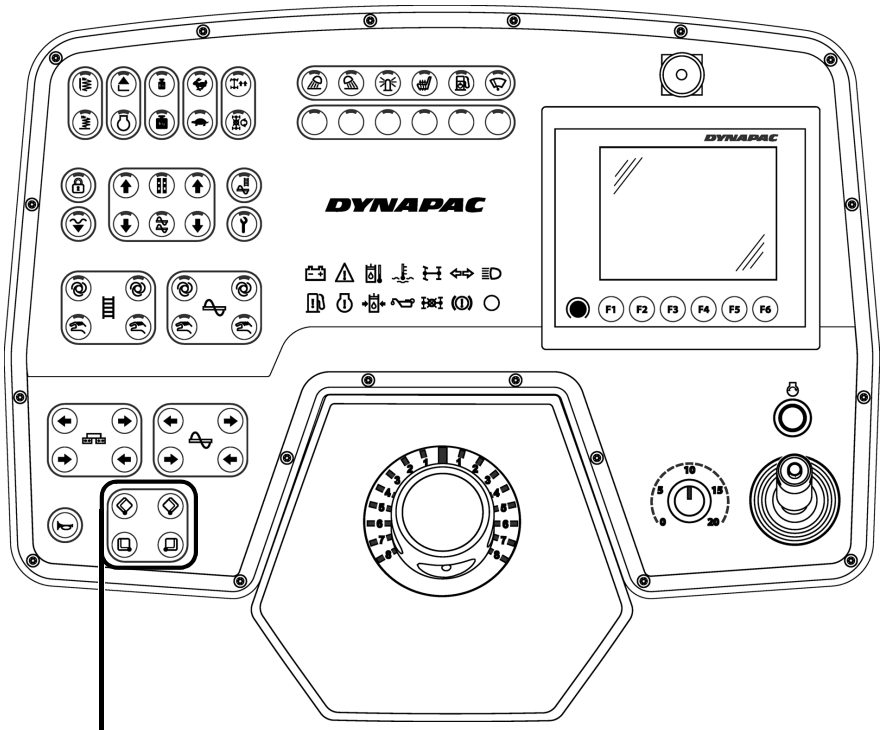
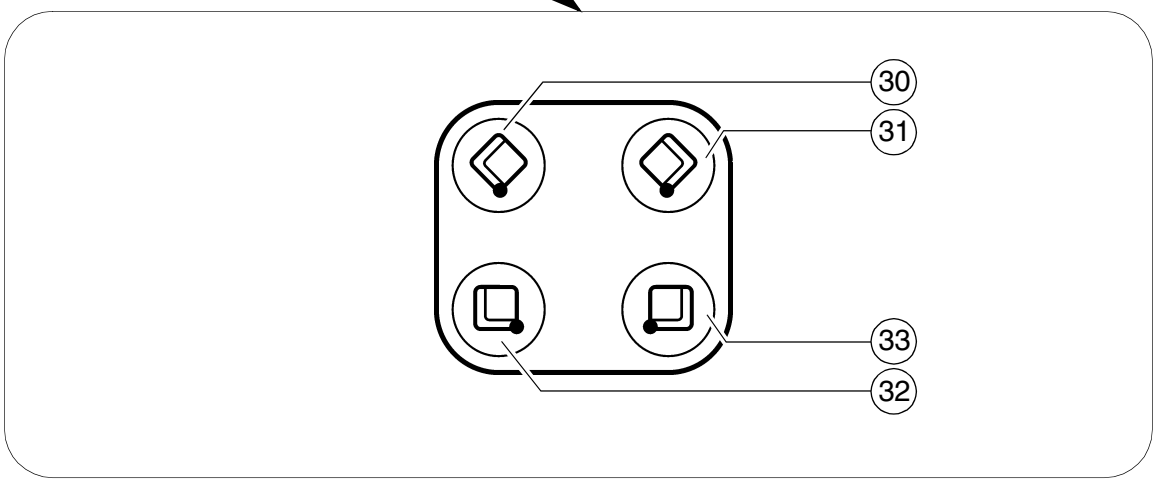
Item	Designation	Brief description
18	Front working lights ON / OFF (○)	Button with detent switch function and LED feedback: - For switching on the front working lights - Switch OFF by pressing the button again  Avoid dazzling other road users!
19	Rear working lights ON / OFF (○)	Button with detent switch function and LED feedback: - For switching on the rear working lights - Switch OFF by pressing the button again  Avoid dazzling other road users!
20	Rotary beacon ON / OFF (○)	Button with detent switch function and LED feedback: - For switching on the rotary beacon - Switch OFF by pressing the button again  Switch on for safety on roads and in the construction site area
21	Seat heating ON / OFF (○)	Button with detent switch function and LED feedback: - For switching on the seat heating - Switch OFF by pressing the button again
22	Filling pump Fuel tank ON / OFF (○)	Button with detent switch function and LED feedback: - For switching on the filling pump - Switch OFF by pressing the button again
23	Windscreen wiper ON / OFF (○)	Button with detent switch function and LED feedback: - For switching on the windscreen wiper - Switch OFF by pressing the button again
24	not used	
25	not used	
26	not used	
27	not used	
28	not used	
29	not used	







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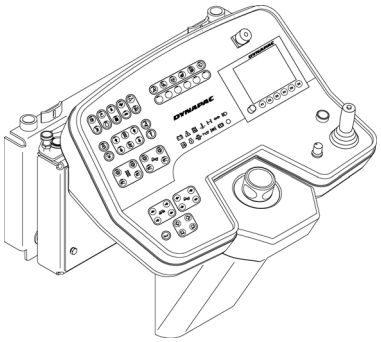
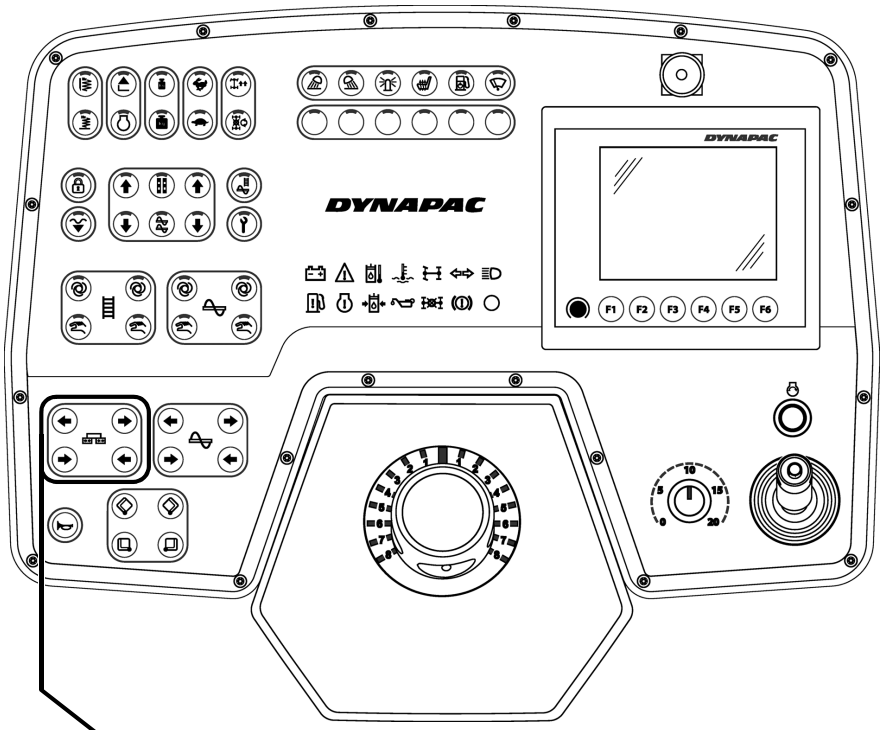
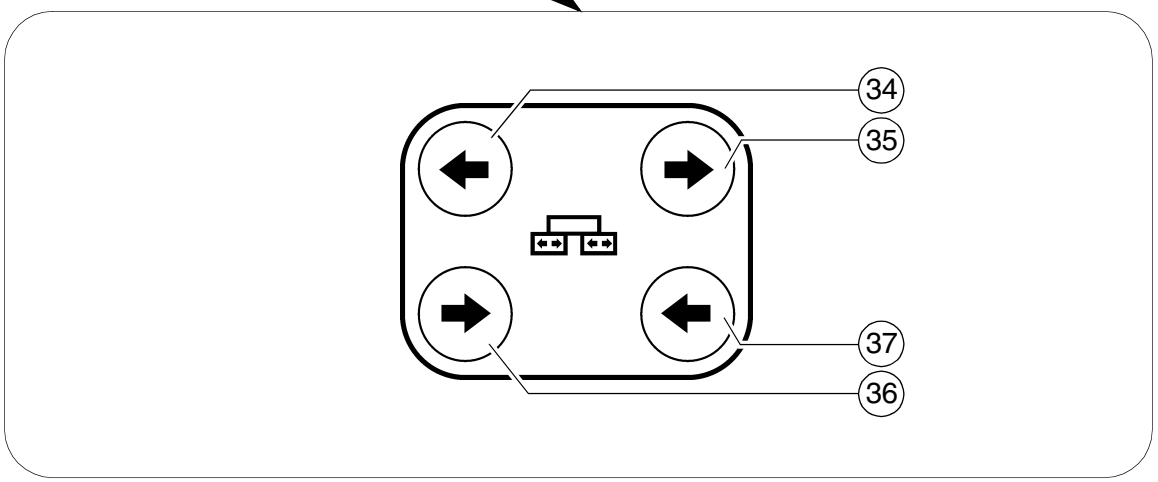
Item	Designation	Brief description
30	Close left hopper	Pushbutton function: - To close the left half of the hopper ☞ Separate actuation (○): Is required when paving in spaces where there is only limited space at one side or when obstacles obstruct truck unloading.
31	Close right hopper	Pushbutton function: - To close the right half of the hopper ☞ Separate actuation (○): Is required when paving in spaces where there is only limited space at one side or when obstacles obstruct truck unloading.
32	Open left hopper	Pushbutton function: - To open the left half of the hopper ☞ If the hoppers are hydraulically actuated at the same time, both the left and the right switch can be used for actuation.
33	Open right hopper	Pushbutton function: - To open the right half of the hopper ☞ If the hoppers are hydraulically actuated at the same time, both the left and the right switch can be used for actuation.







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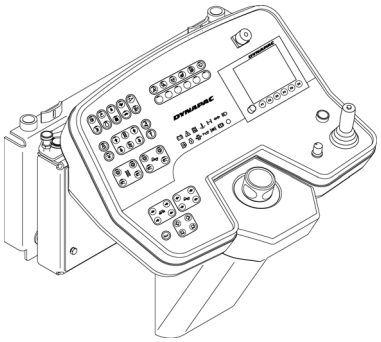
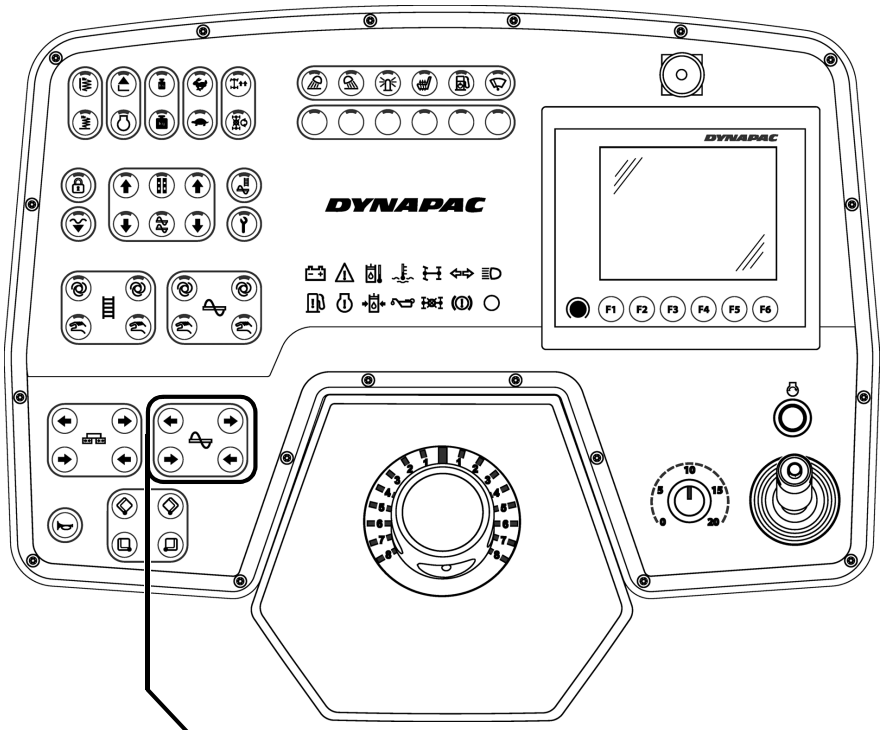
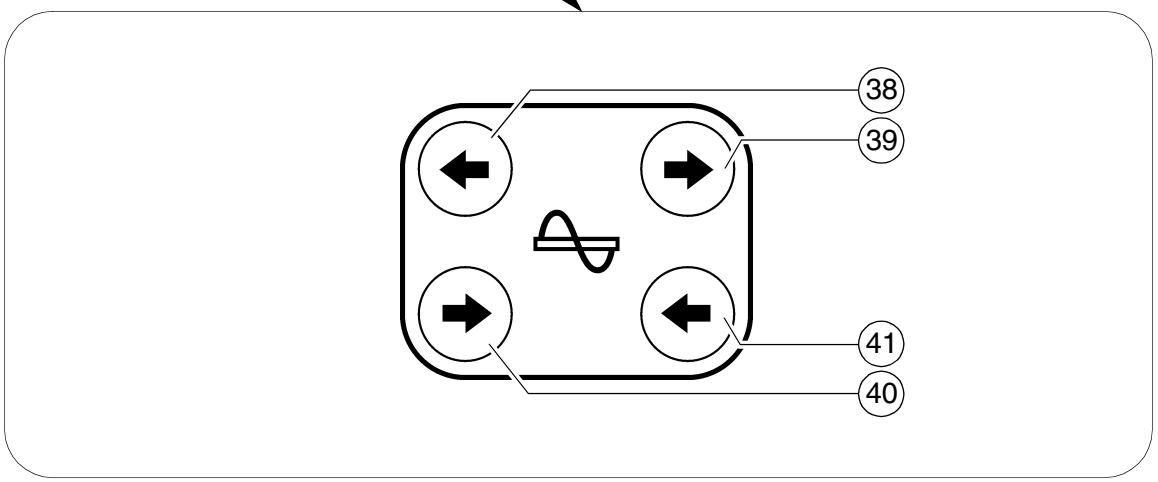
Item	Designation	Brief description
34	Extend left screed	Pushbutton function: - To extend the left half of the screed ☞ This function is not used in vehicle configurations with a screed which cannot be extended.
35	Extend right screed	Pushbutton function: - To extend the right half of the screed ☞ This function is not used in vehicle configurations with a screed which cannot be extended.
36	Retract left screed	Pushbutton function: - To retract the left half of the screed ☞ This function is not used in vehicle configurations with a screed which cannot be extended.
37	Retract right screed	Pushbutton function: - To retract the right half of the screed ☞ This function is not used in vehicle configurations with a screed which cannot be extended.







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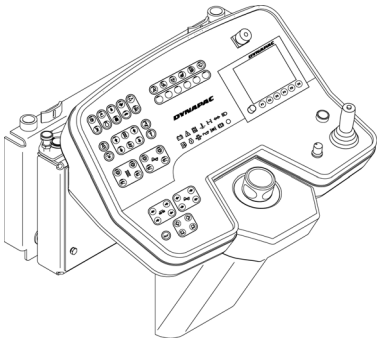
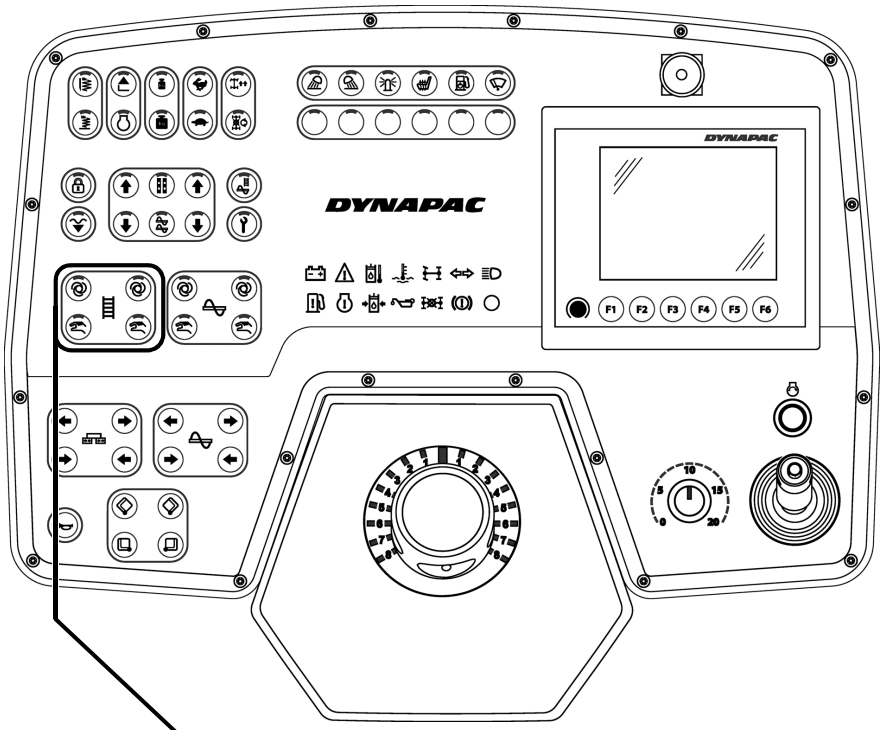
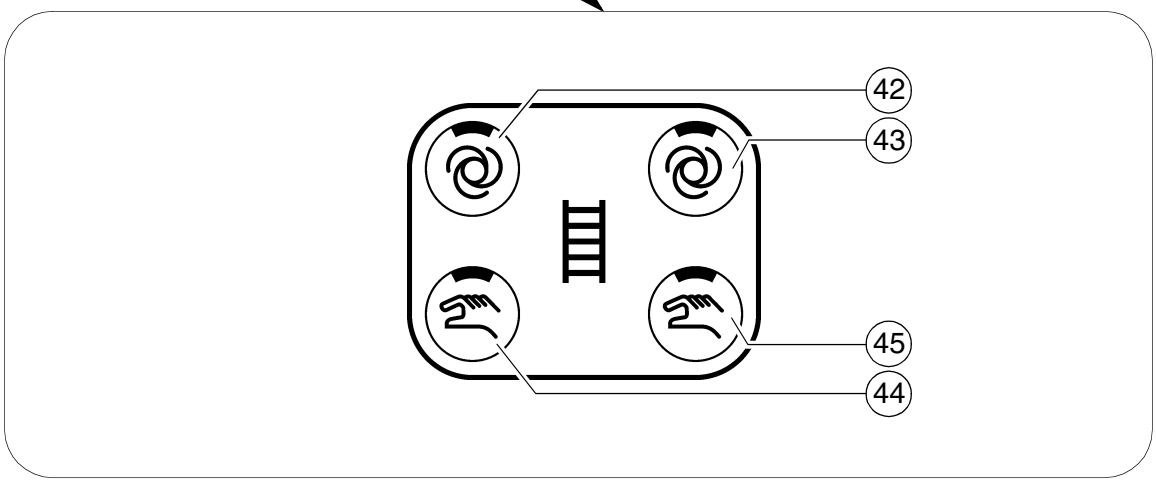
Item	Designation	Brief description
38	Left auger „MANUAL“ conveying direction outwards	Pushbutton function: - To manually trigger the conveying function for the left half of the auger, conveying direction outwards. ☞ For manual triggering, the auger function must be switched to „AUTO“ or „MANUAL“ ☞ On manual triggering, the automatic function is overridden with full feed capacity.
39	Right auger „MANUAL“ conveying direction outwards	Pushbutton function: - To manually trigger the conveying function for the right half of the auger, conveying direction outwards. ☞ For manual triggering, the auger function must be switched to „AUTO“ or „MANUAL“ ☞ On manual triggering, the automatic function is overridden with full feed capacity.
40	Left auger "MANUAL" conveying direction inwards	Pushbutton function: - To manually trigger the conveying function for the left half of the auger, conveying direction inwards. ☞ For manual triggering, the auger function must be switched to „AUTO“ or „MANUAL“ ☞ On manual triggering, the automatic function is overridden with full feed capacity.
41	Right auger „MANUAL“ conveying direction inwards	Pushbutton function: - To manually trigger the conveying function for the right half of the auger, conveying direction inwards. ☞ For manual triggering, the auger function must be switched to „AUTO“ or „MANUAL“ ☞ On manual triggering, the automatic function is overridden with full feed capacity.







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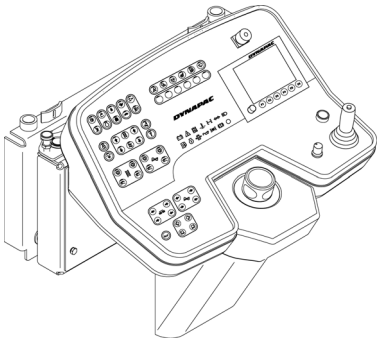
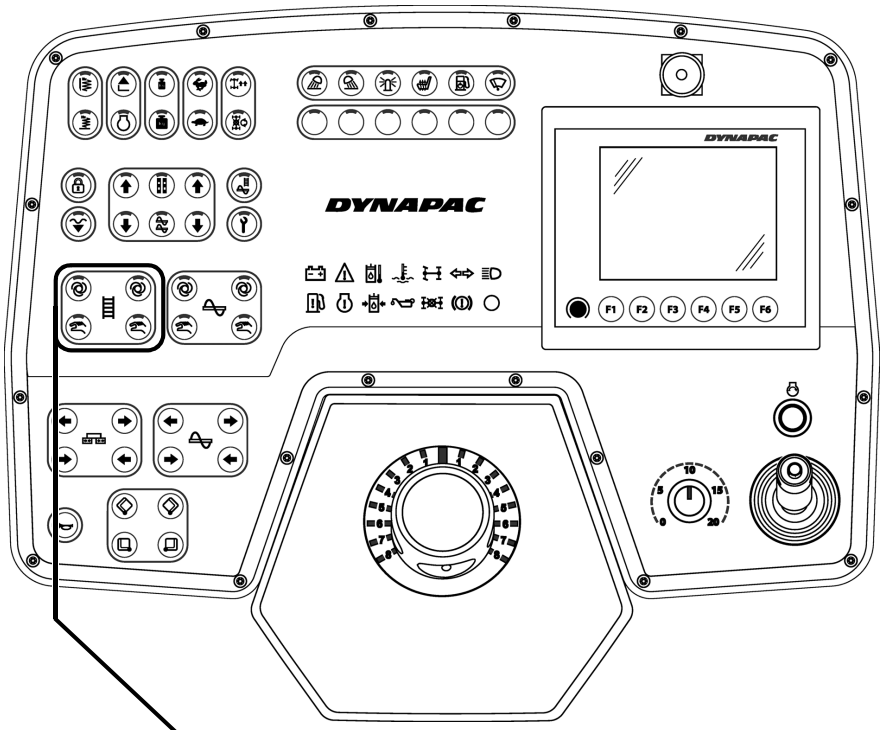
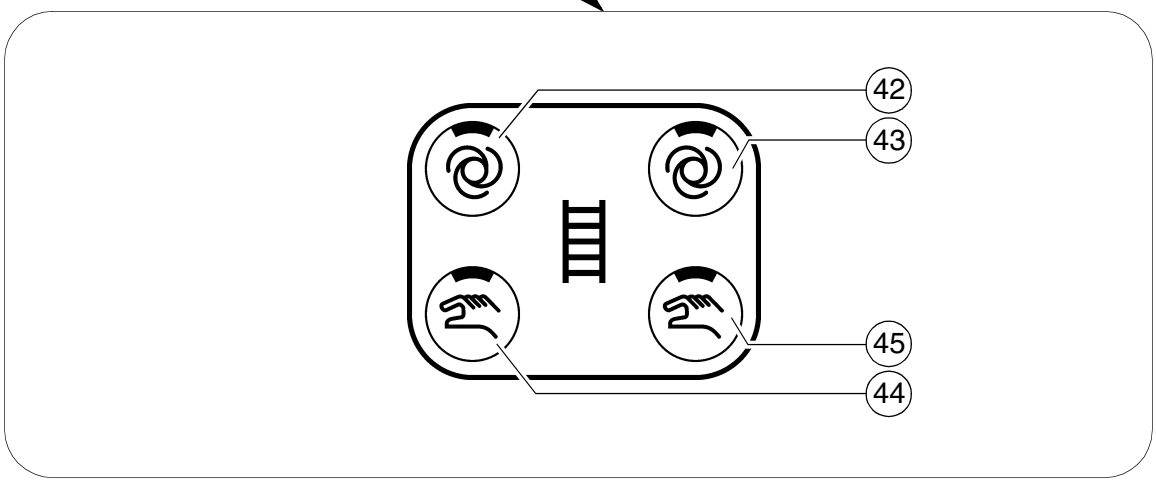
Item	Designation	Brief description
42	Left conveyor „AUTO“	Button with detent switch function and LED feedback: - The conveying function of the left conveyor is switched on when the drive lever is swivelled out and is continuously controlled via the material limit switches in the material tunnel. - Switch OFF by pressing the button again ☞ The function is shut off by pressing the EMERGENCY STOP button or restarting the vehicle. ☞ The main function switch locks the conveying function.
43	Right conveyor „AUTO“	Button with detent switch function and LED feedback: - The conveying function of the right conveyor is switched on when the drive lever is swivelled out and is continuously controlled via the material limit switches in the material tunnel. - Switch OFF by pressing the button again ☞ The function is shut off by pressing the EMERGENCY STOP button or restarting the vehicle. ☞ The main function switch locks the conveying function.







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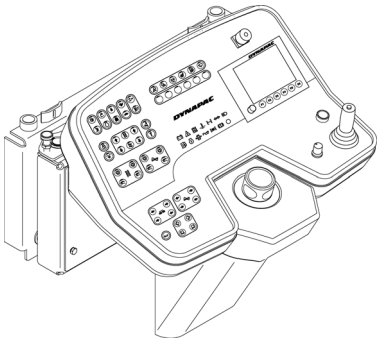
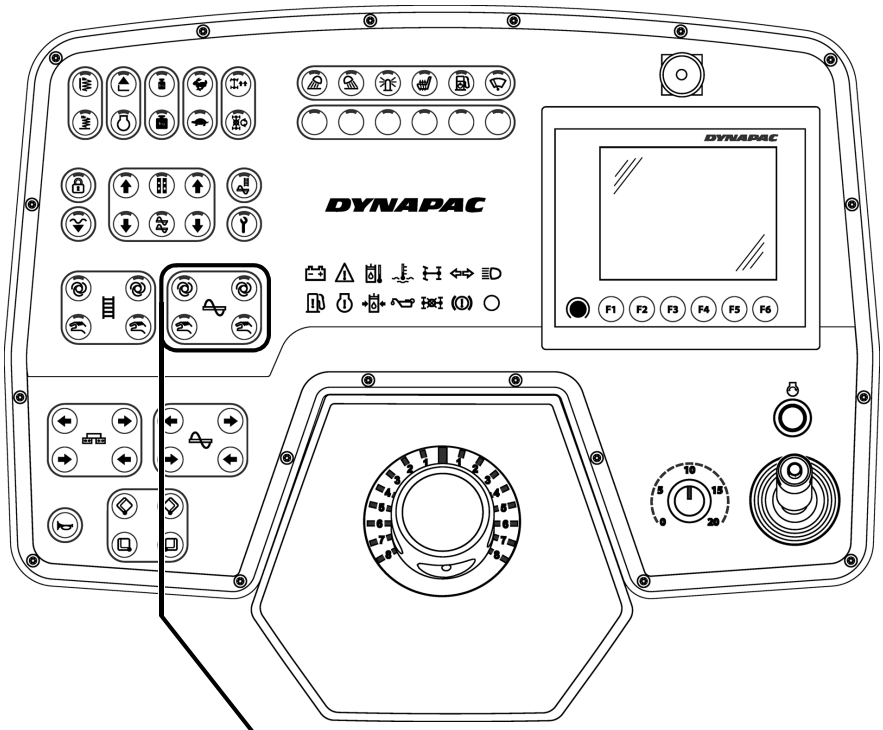
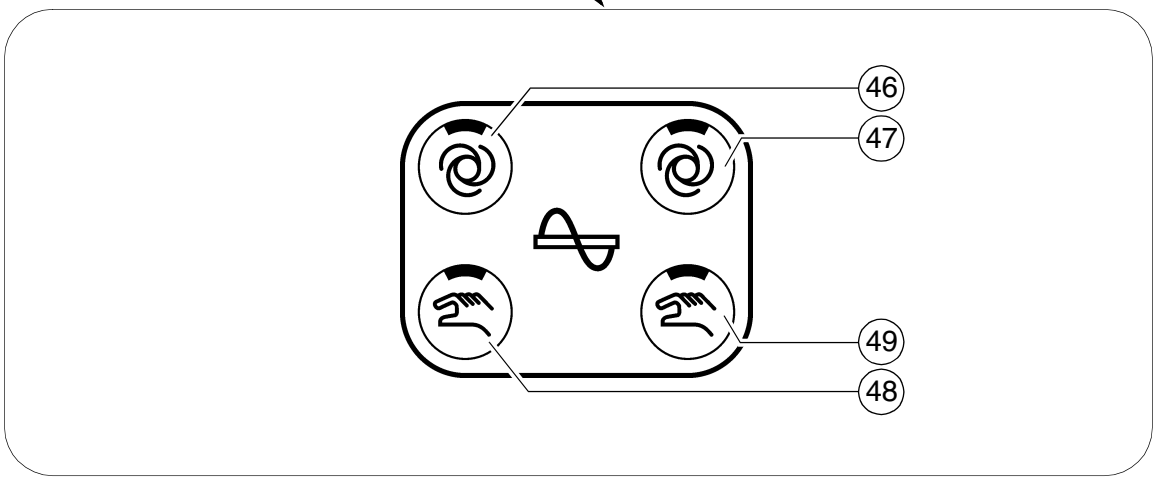
Item	Designation	Brief description
44	Left conveyor „MANUAL“	Button with detent switch function and LED feedback: - The conveying function of the left conveyor is switched on continuously with full feed capacity, without material control via the limit switches in the material tunnel. - Switch OFF by pressing the button again ☞ To avoid excessive conveying, the system is shut off at a defined material height! ☞ The function is shut off by pressing the EMERGENCY STOP button or restarting the vehicle. ☞ The main function switch locks the conveying function.
45	Right conveyor „MANUAL“	Button with detent switch function and LED feedback: - The conveying function of the right conveyor is switched on continuously with full feed capacity, without material control via the limit switches in the material tunnel. - Switch OFF by pressing the button again ☞ To avoid excessive conveying, the system is shut off at a defined material height! ☞ The function is shut off by pressing the EMERGENCY STOP button or restarting the vehicle. ☞ The main function switch locks the conveying function.







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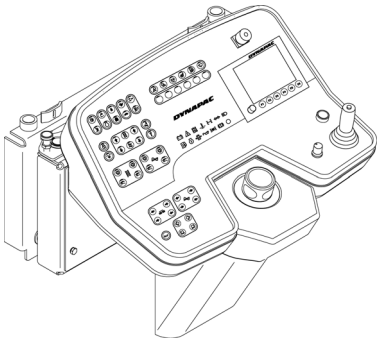
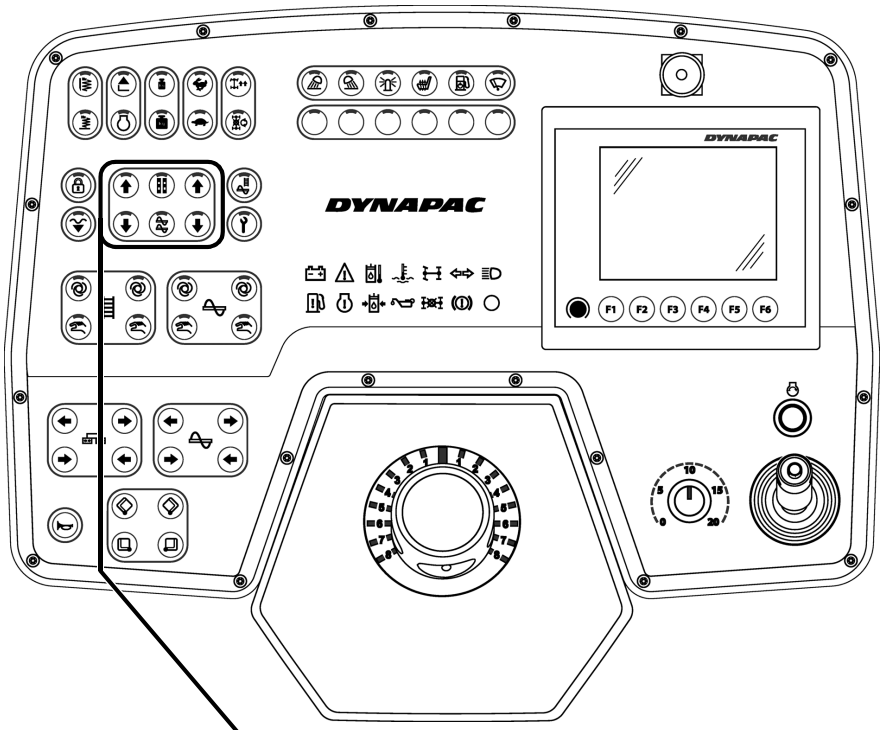
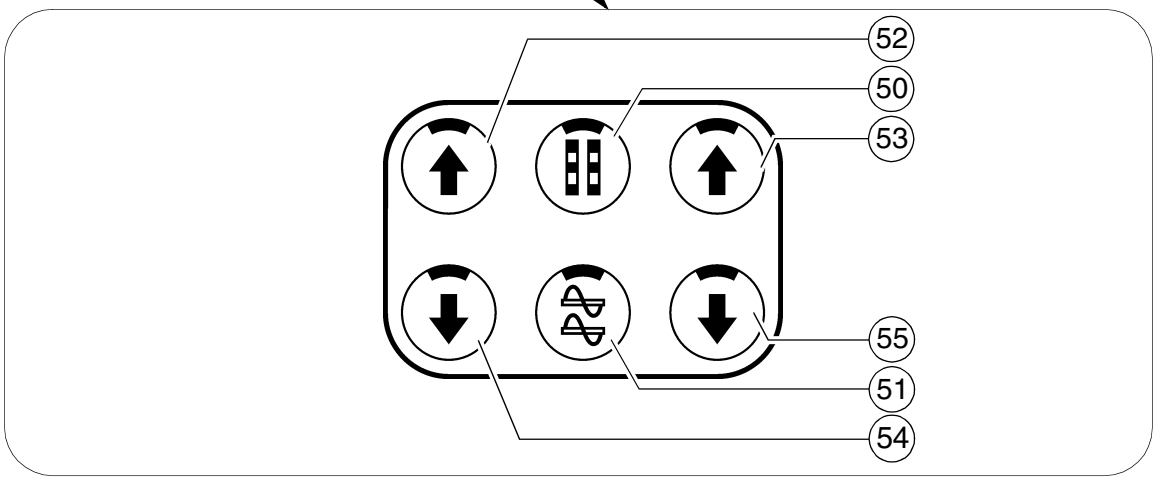
Item	Designation	Brief description
46	Left auger „AUTO“	Button with detent switch function and LED feedback: - The conveying function of the left half of the auger is switched on when the drive lever is swivelled out and is continuously controlled via the material limit switches. - Switch OFF by pressing the button again ☞ The function is shut off by pressing the EMERGENCY STOP button or restarting the vehicle. ☞ The main function switch locks the conveying function.
47	Right auger „AUTO“	Button with detent switch function and LED feedback: - The conveying function of the right half of the auger is switched on when the drive lever is swivelled out and is continuously controlled via the material limit switches in the material tunnel. - Switch OFF by pressing the button again ☞ The function is shut off by pressing the EMERGENCY STOP button or restarting the vehicle. ☞ The main function switch locks the conveying function.
48	Left auger „MANUAL“	Button with detent switch function and LED feedback: - The conveying function of the left half of the auger is switched on continuously with full feed capacity, without material control via the limit switches. - Switch OFF by pressing the button again ☞ The function is shut off by pressing the EMERGENCY STOP button or restarting the vehicle. ☞ The main function switch locks the conveying function.
49	Right auger „MANUAL“	Button with detent switch function and LED feedback: - The conveying function of the right half of the auger is switched on continuously with full feed capacity, without material control via the limit switches. - Switch OFF by pressing the button again ☞ The function is shut off by pressing the EMERGENCY STOP button or restarting the vehicle. ☞ The main function switch locks the conveying function.







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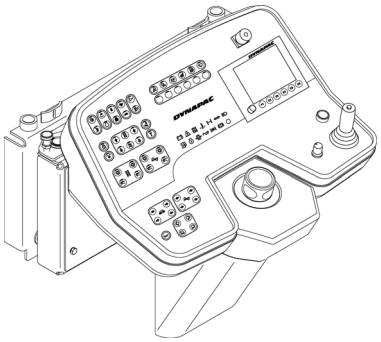
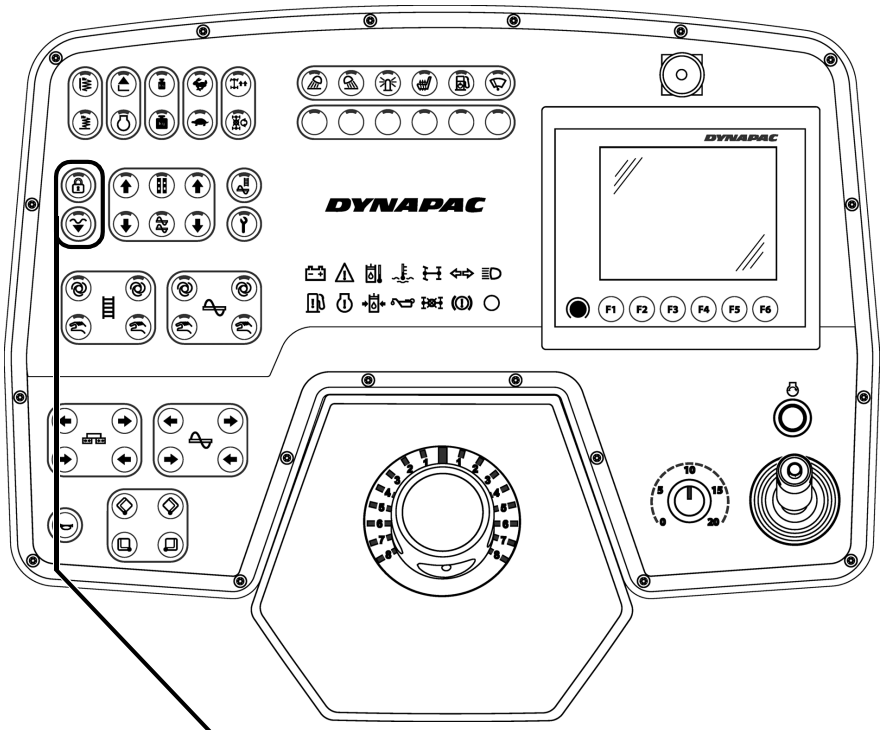
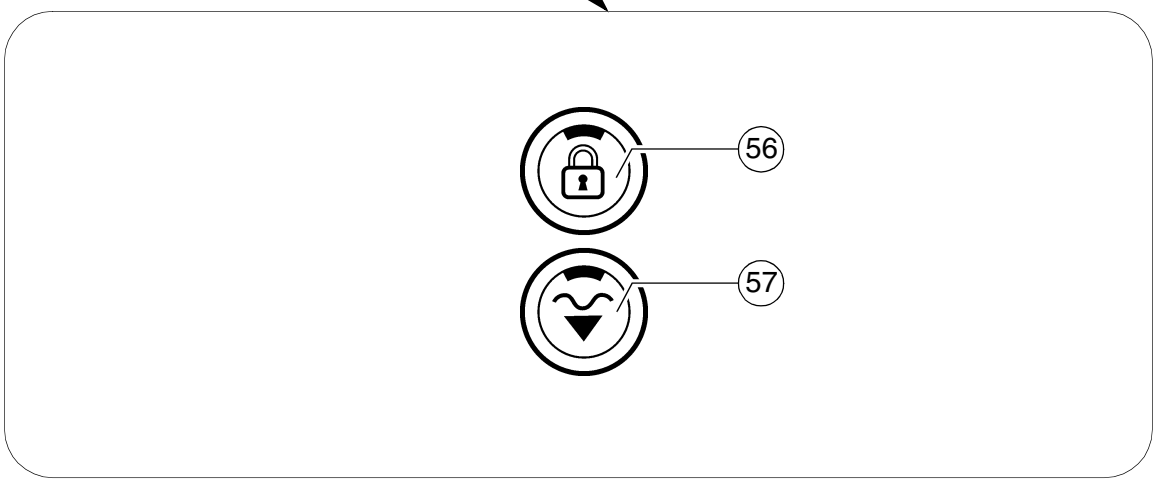
Item	Designation	Brief description
50	Levelling cylinder adjustment	Button with detent switch function and LED feedback: - For manual actuation of the levelling cylinders when the automatic levelling system is switched off. - Switch OFF by pressing the button again ☞ The corresponding switch on the remote control must be switched to „Manual“ for this function. ☞ Levelling cylinder adjustment is carried out with the adjustment buttons in the displayed arrow direction. ☞ This function is also activated when the remote control is not connected!
51	Auger raise/lower (○)	Button with detent switch function and LED feedback: - For hydraulic adjustment of the auger height. - Switch OFF by pressing the button again. ☞ The height can be read on the scales to the left and the right of the auger crossbeam support. Rule of thumb: Paving thickness plus 5 cm (2 inches) equals the auger crossbeam height. ☞ Actuate both relevant adjustment switches at the same time as the auger crossbeam otherwise jams! ☞ Levelling cylinder adjustment is carried out with the adjustment buttons in the displayed arrow direction.







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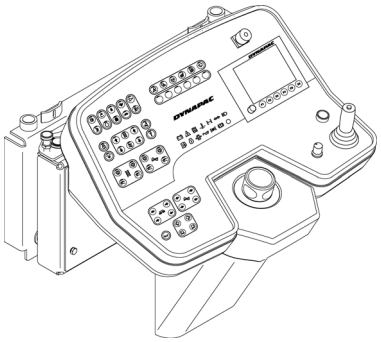
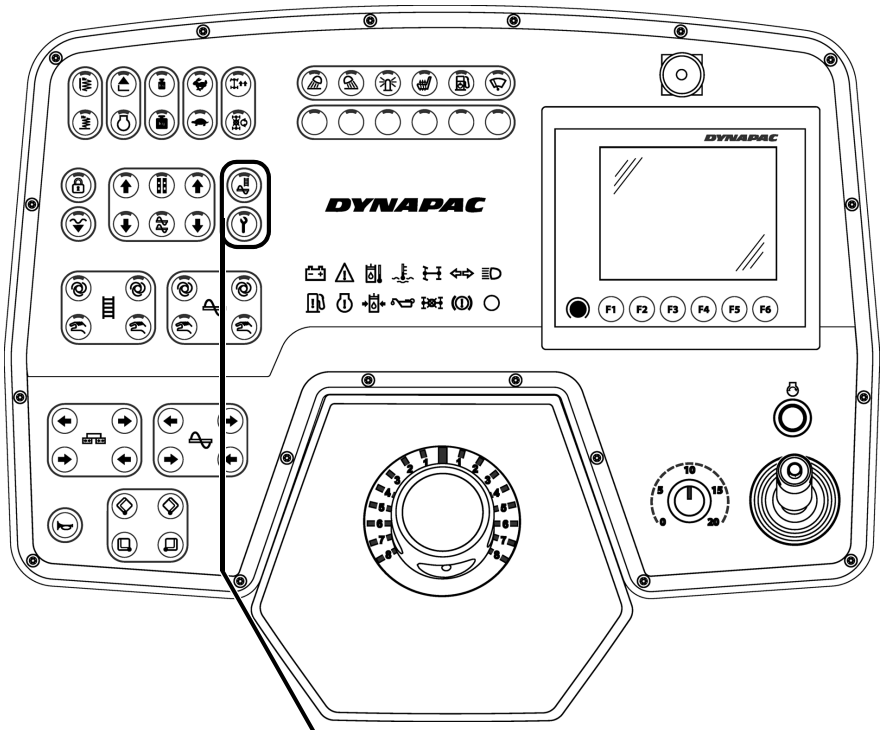
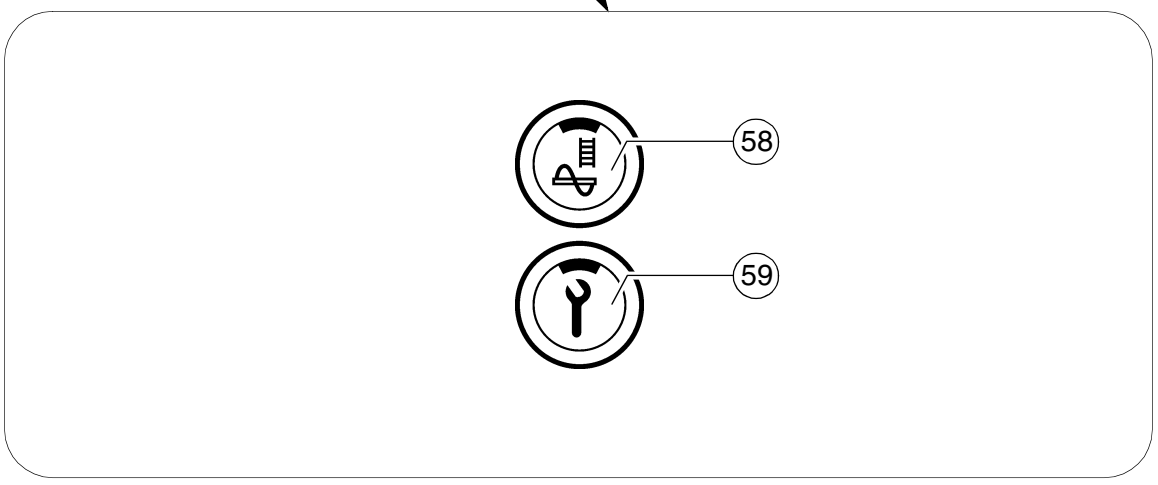
Item	Designation	Brief description
52	Adjustment button: Retract on left / raise + close front hopper lid function	Pushbutton function: - To adjust the selected function in the corresponding direction. Functions (50) / (51) "OFF" - pushbutton function: - To close the front hopper flap.
53	Adjustment button: Retract on right / raise + open front hopper lid function	Pushbutton function: - To adjust the selected function in the corresponding direction. Functions (50) / (51) "OFF" - pushbutton function: - To open the front hopper flap.
54	Adjustment button: Extend / lower on left + close front hopper lid function	Pushbutton function: - To adjust the selected function in the corresponding direction. Functions (50) / (51) "OFF" - pushbutton function: - To close the front hopper flap.
55	Adjustment button: Extend on the left / lower + open front hopper lid function	Pushbutton function: - To adjust the selected function in the corresponding direction. Functions (50) / (51) "OFF" - pushbutton function: - To open the front hopper flap.

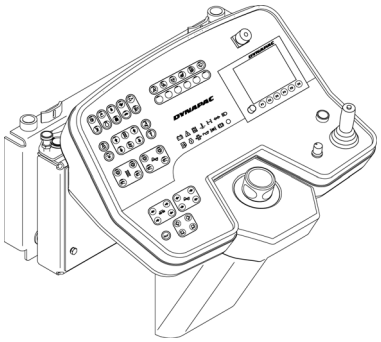


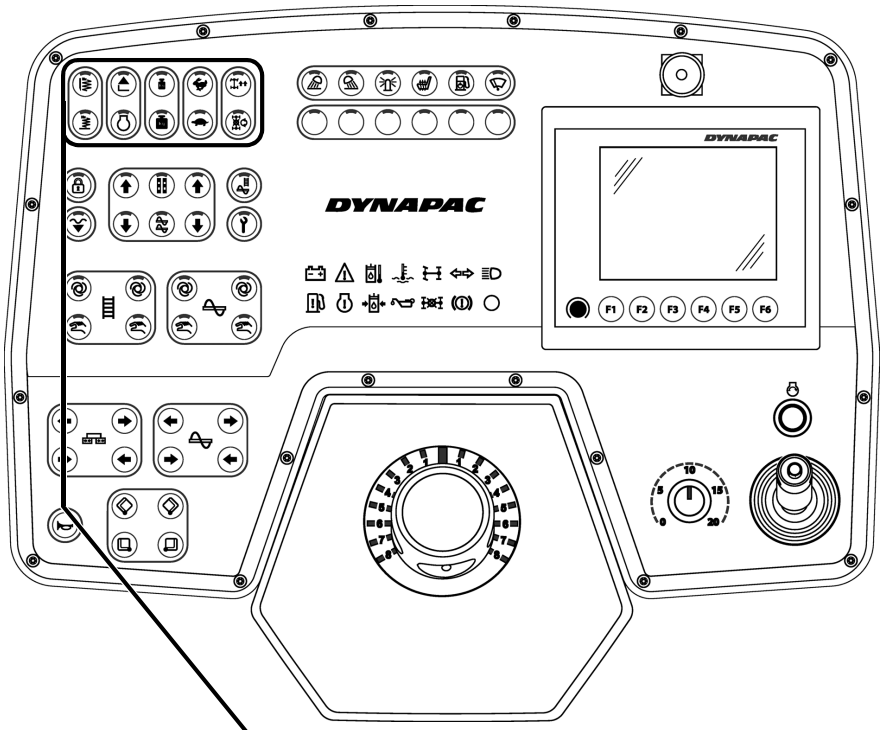


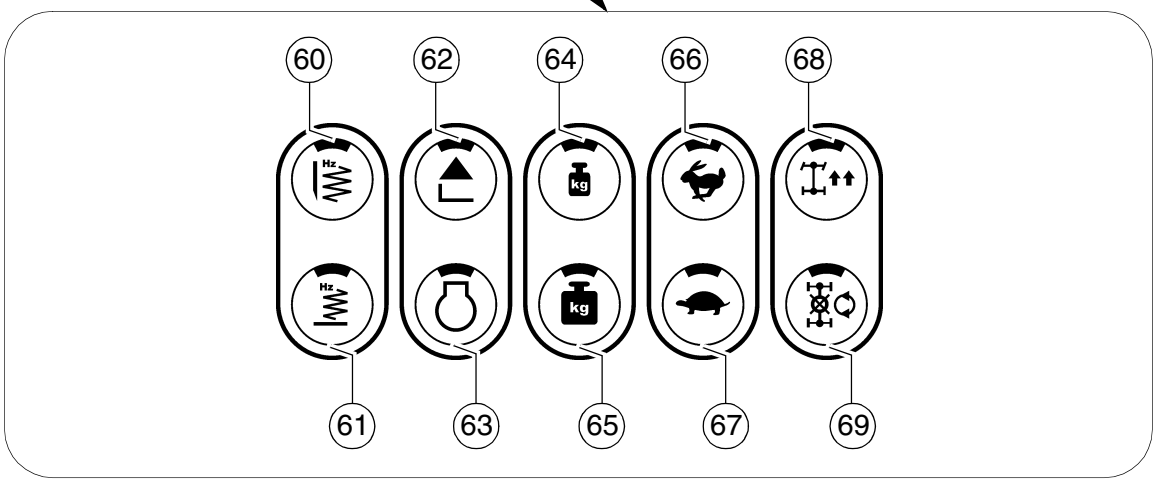


Bedienpult2_2009_PLC_C.bmp

Item	Designation	Brief description
56	Main function switch	Detent switch function and LED feedback: - To lock all functions relevant to paving. Despite „Auto“ settings in the individual functions, these are not activated when the drive lever is swivelled out. - Switch OFF by pressing the button again. ☞ The preset vehicle can be relocated and released at the new paving location. The paving process is continued on swivelling the drive lever out. ☞ On restarting, the function is set to „ON“.
57	Lower screed / screed floating position	Button with detent switch function and LED feedback ☞ The main function switch must be set to the OFF position. - Button function: Keep the button pressed for longer than 1.5 seconds (LED ON). The screed is lowered as long as the button is pressed. When the button is released, the screed is held in the floating position. (LED ON). - Resting function: Press the button briefly (LED ON) - the screed is lowered. Press the button briefly again - the screed is stopped. - Screed floating position: Pressing the button switches the LED ON and the screed is in readiness in the „floating position“, which is activated via the swivelled out drive lever. - Switch off by pressing the button again or via the raise screed button. ☞ During paving, the screed must always be in its floating position. During intermediate stops, the screed is switched to relieving with pretension. ⚠ Check whether the screed transport safeguard is inserted!

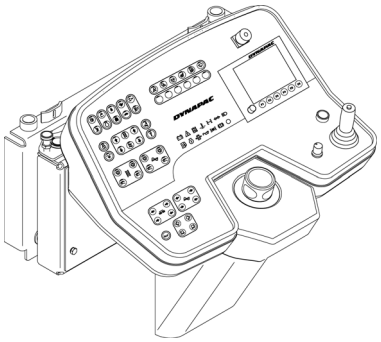


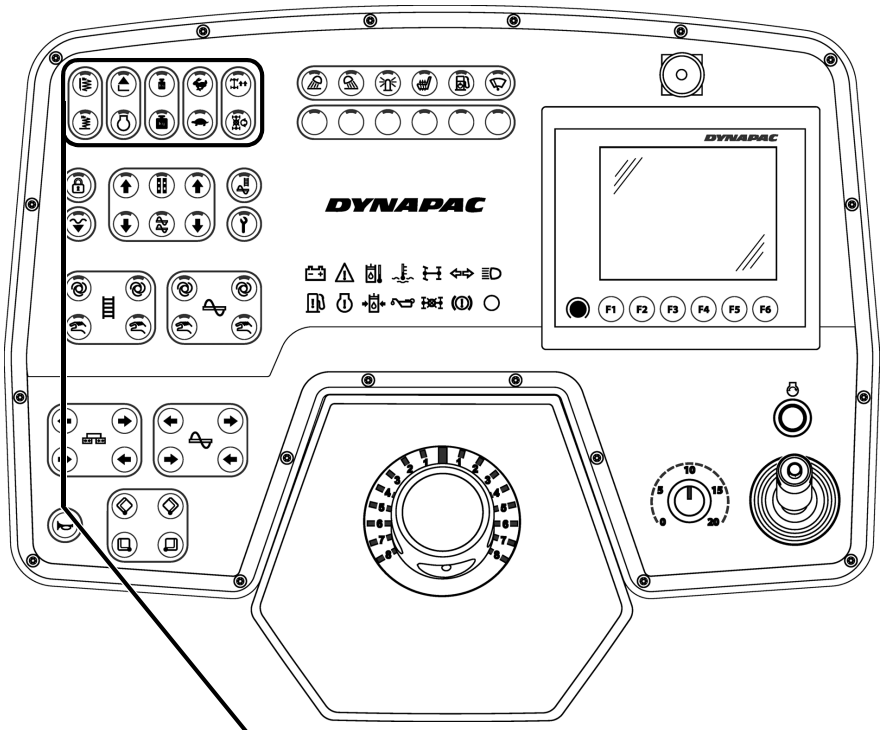


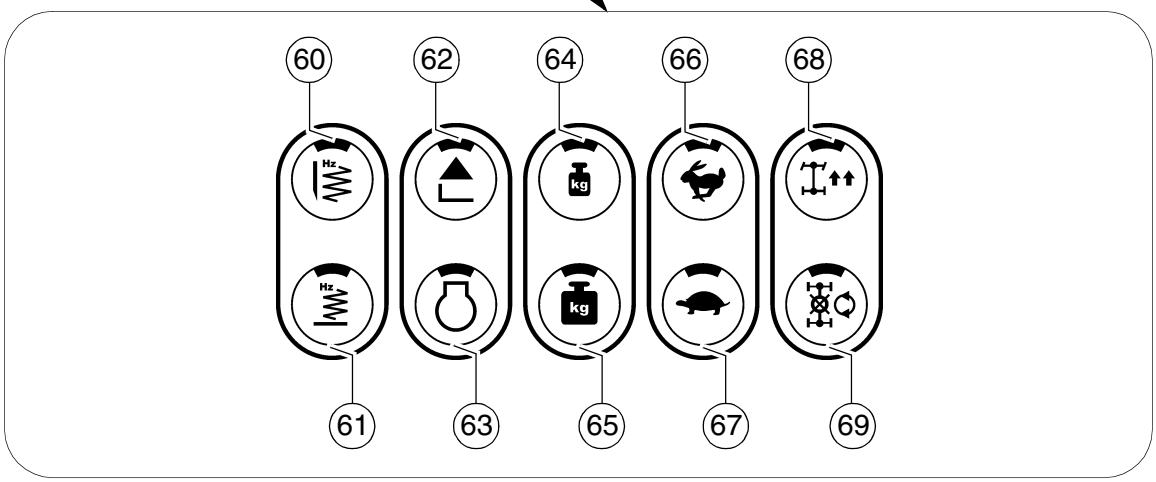


Bedienpult2_2009_PLC_C.bmp

Item	Designation	Brief description
58	Fill vehicle for paving process	Detent switch function and LED feedback: - Filling function for the paving process. The diesel engine's speed is increased to the preselected nominal speed and all conveying functions set to „Automatic“ (conveyor and auger) are engaged. ☞ The main function switch must be set to the OFF position. - Switch OFF by pressing the button again or by swivelling the drive lever out to the paving position.
59	Set-up mode	Detent switch function and LED feedback: - When the vehicle is stationary, this function enables all operating functions, which can only be activated when the drive lever is swivelled out (vehicle driving), to be started up. ☞ The main function switch must be set to the OFF position. ☞ The engine speed is increased to the preselected nominal value.



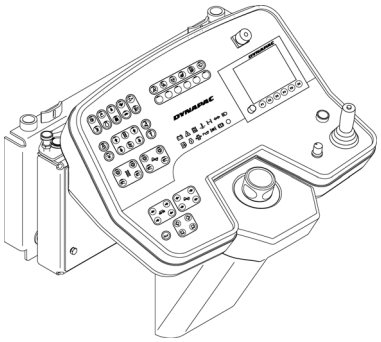


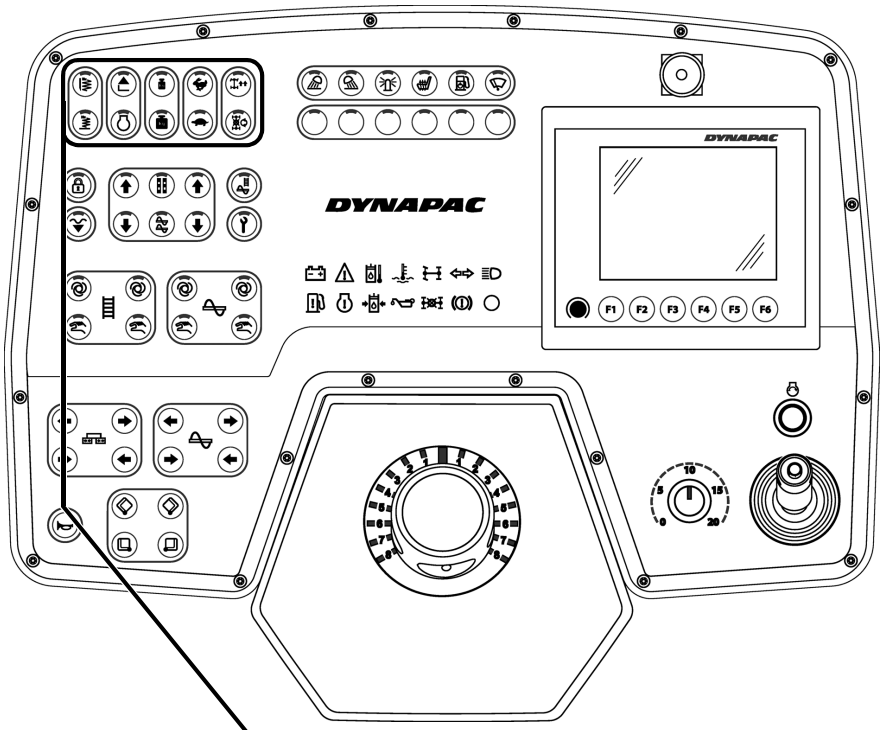


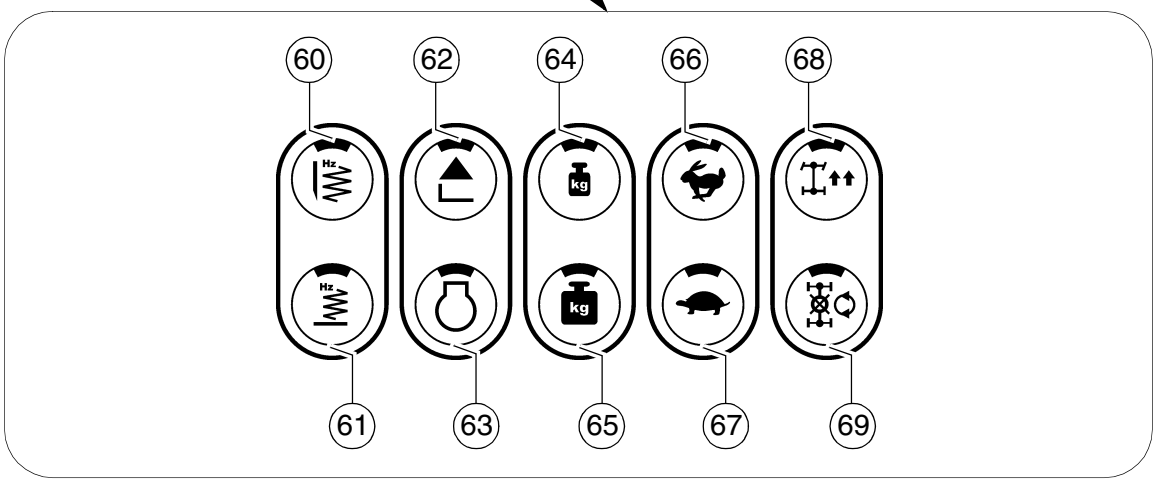
Bedienpult2_2009_PLC_C.bmp

D_1.12_01_EN.fm 32-46

Item	Designation	Brief description
60	Tamper (screed-specific)	Button with detent switch function and LED feedback: - Tamper ON and OFF function. - Activation is carried out by swivelling the drive lever out. - Switch OFF by pressing the button again. ☞ The main function switch must be set to the OFF position. ☞ The function is preset in conjunction with the „Set-up mode“ button.
61	Vibration (screed-specific)	Button with detent switch function and LED feedback: - Vibration ON and OFF function. - Activation is carried out by swivelling the drive lever out. - Switch OFF by pressing the button again. ☞ The main function switch must be set to the OFF position. ☞ The function is preset in conjunction with the „Set-up mode“ button.
62	Raise screed	Pushbutton function with LED feedback: - For raising the screed (LED ON) for switching off the „Screed floating position“ function ⚠ Check whether the screed transport safeguard is inserted!
63	Speed increase	Buttons with detent switch function and LED feedback: - Increases the engine speed to a higher value without swivelling the drive lever out. - Switch OFF by pressing the button again.

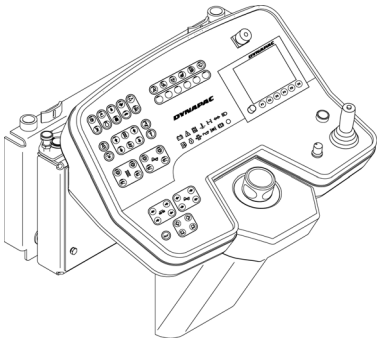


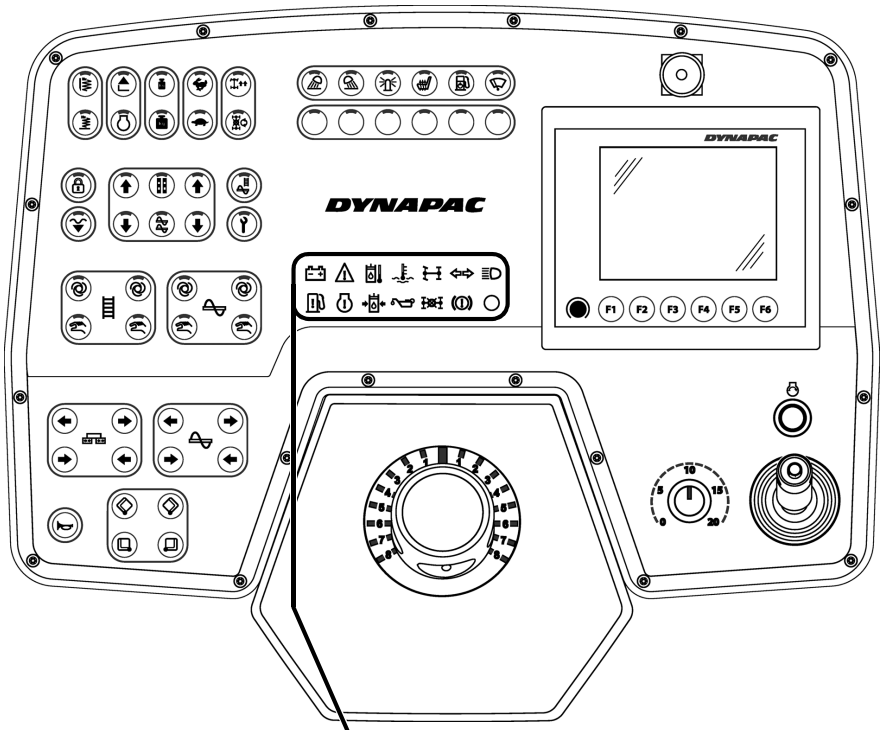


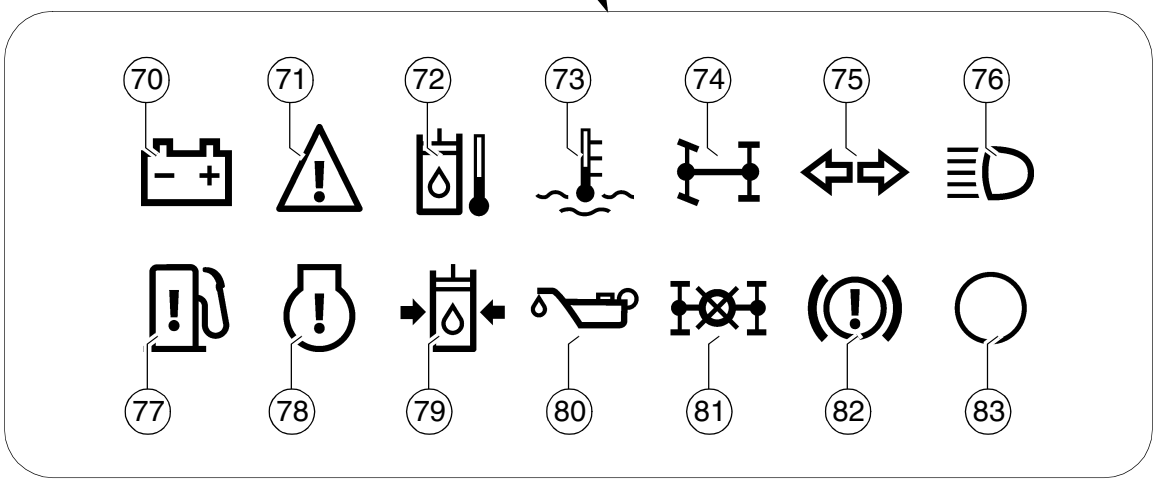


Bedienpult2_2009_PLC_C.bmp

Item	Designation	Brief description
64	Screed relieving	Button with detent switch function and LED feedback: - For relieving the screed to influence the traction force and compaction ratio. - Switch OFF by pressing the button again or switching between screed relieving and screed charging. - To preset the hydraulic oil pressure, switch this button and the „Set-up mode“ button to „ON“.
65	Screed relieving	Button with detent switch function and LED feedback: - For relieving the screed to influence the traction force and compaction ratio. - Switch OFF by pressing the button again or switching between screed relieving and screed charging. - To preset the hydraulic oil pressure, switch this button and the „Set-up mode“ button to „ON“.







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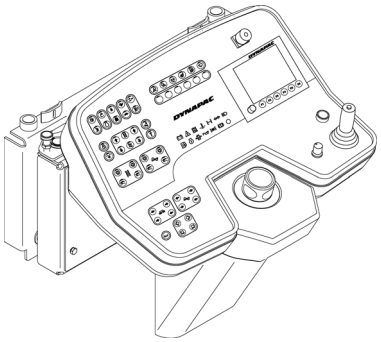
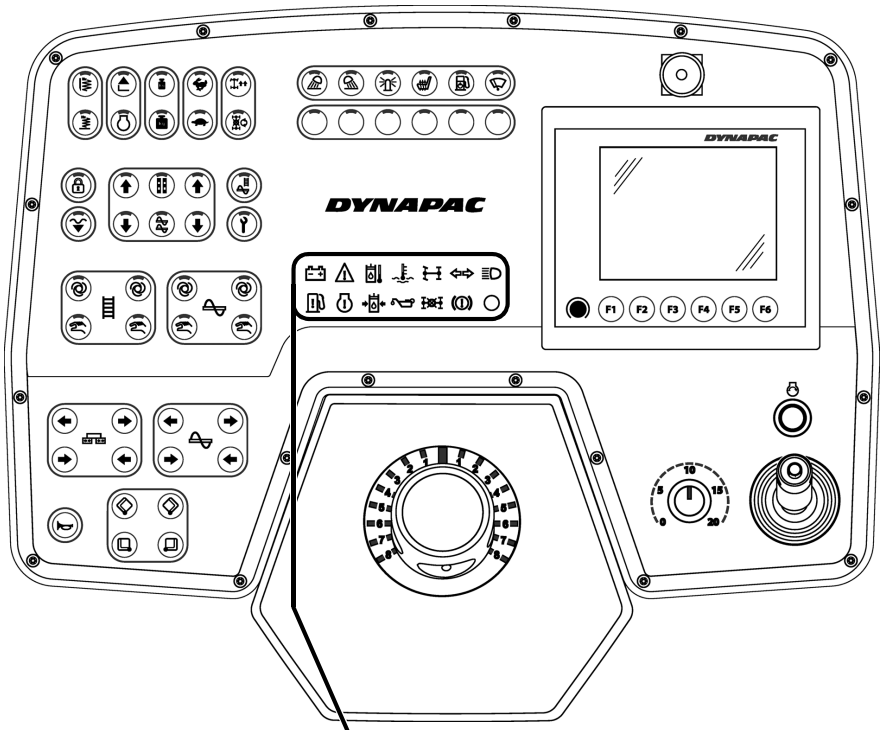
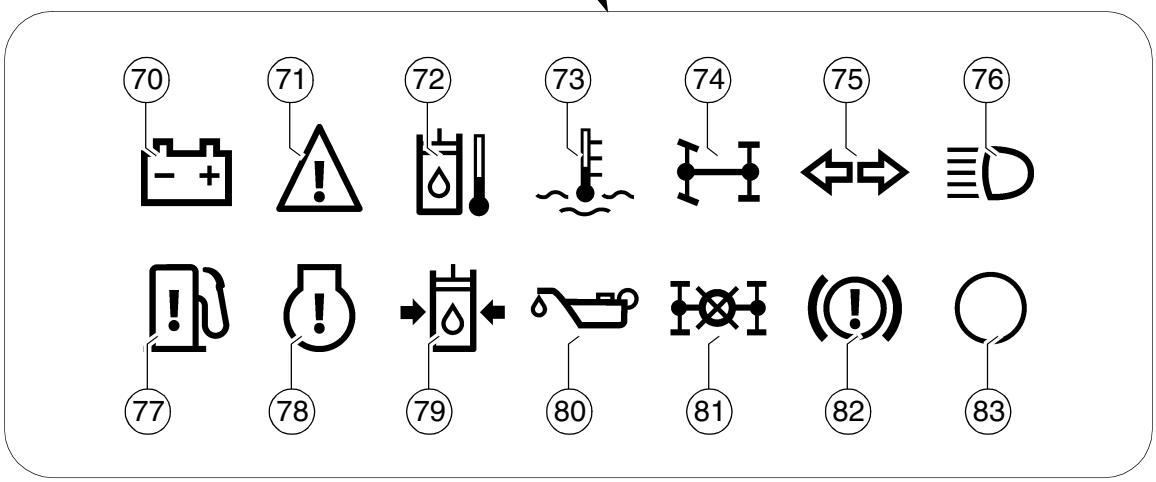
Item	Designation	Brief description
66	Travel drive fast (hare)	Buttons with detent switch function and LED feedback: - To preselect the speed level - transport speed ☞ On restarting, the speed is set to operating speed (tortoise).
67	Travel drive slow (tortoise)	Buttons with detent switch function and LED feedback: - To preselect the speed level - operating speed. ☞ On restarting, the buttons are set to operating speed (tortoise).
68	Straight-ahead travel	Button with detent switch function and LED feedback: - Normal position for straight-ahead travel. ☞ On restarting, the „Straight-ahead travel“ button is set. ☞ If the „Turning on the spot“ function has been inadvertently activated (and the steering is set to straight-ahead travel), the paver finisher does not move. This is often interpreted as a „malfunction“.
69	Turning on the spot	Button with detent switch function and LED feedback: - The vehicle turns on the spot (the caterpillar chains run in opposite directions) when the steering is set to „10“. - Steering turned to the left = vehicle turns to the left - Steering turned to the right = vehicle turns to the right ☞ If the „Turning on the spot“ function has been inadvertently activated (and the steering is set to straight-ahead travel), the paver finisher does not move. This is often interpreted as a „malfunction“. STOP When the vehicle turns, persons and objects next to the paver finisher are in extreme danger. Monitor the area where the paver finisher turns!



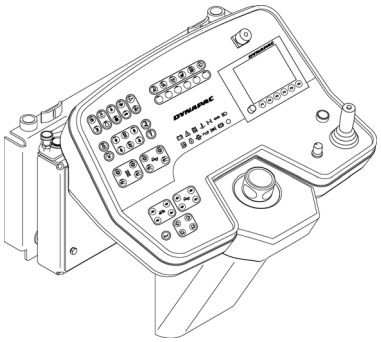


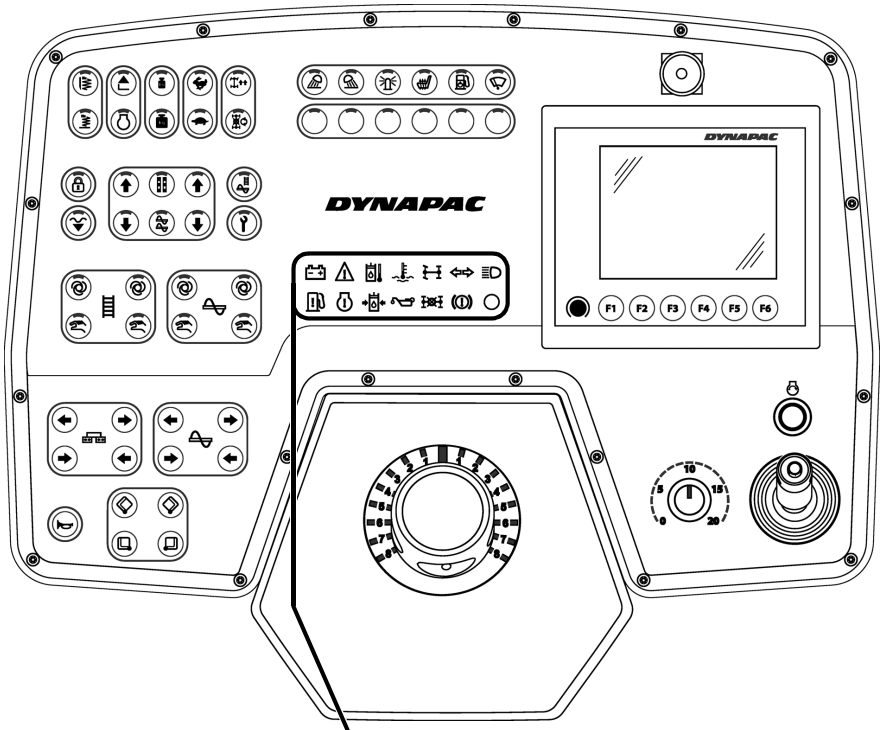


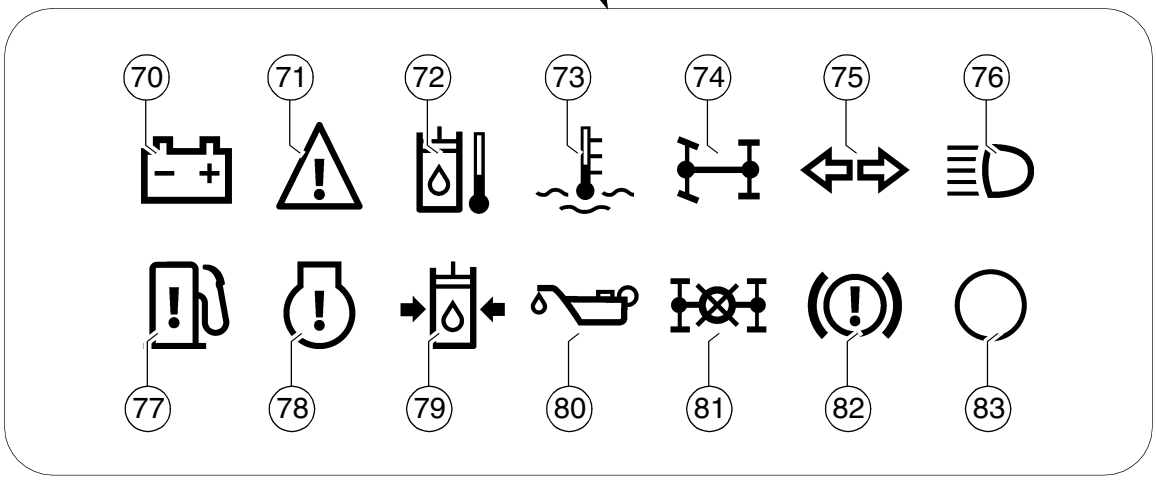
Bedienpult2_2009_PLC_C.bmp

D_1.12_01_EN.fm 38-46

Item	Designation	Brief description
70	Battery charge indicator (red)	Must go out after starting when the engine revs up. - If the light does not go out, switch off the engine
71	Error message (yellow)	Indicates that there is a drive engine fault. Depending on the type of fault, the vehicle can temporarily continue to be operated or, in the case of serious faults, should be shut down immediately to prevent further damage from occurring. Each fault should be rectified as soon as possible! ☞ An error code is displayed via the input and display terminal! ☞ Lights up for a few seconds once the ignition has been switched on for checking purposes.
72	Warning light hydraulic oil temperature	Lights up when the hydraulic oil temperature is too high. ⚠ Stop the paver finisher when higher temperatures are encountered (drive lever to the centre position), let the engine cool down while idling. Determine the cause and correct it if necessary.
73	Engine temperature indicator (red)	Lights up when the engine temperature is too high. ⚠ The engine performance will be throttled down automatically. (Driving mode remains possible). Stop the paver finisher (drive lever to the centre position), let the engine cool down while idling. Determine the cause and rectify if necessary (refer to „Malfunctions“ section). After cooling down to normal temperature, the engine will run with full performance again. ☞ Indicates the fault together with the „Error message“ lamp.
74	not used	
75	not used	
76	not used	
77	„Water in fuel“ warning lamp (red)	Lights up if too much water is detected in the water separator on the fuel system. ⚠ To avoid damaging the drive engine, drain off the separated water immediately as described in the maintenance instructions. ☞ Indicates the fault together with the „Error message“ lamp.





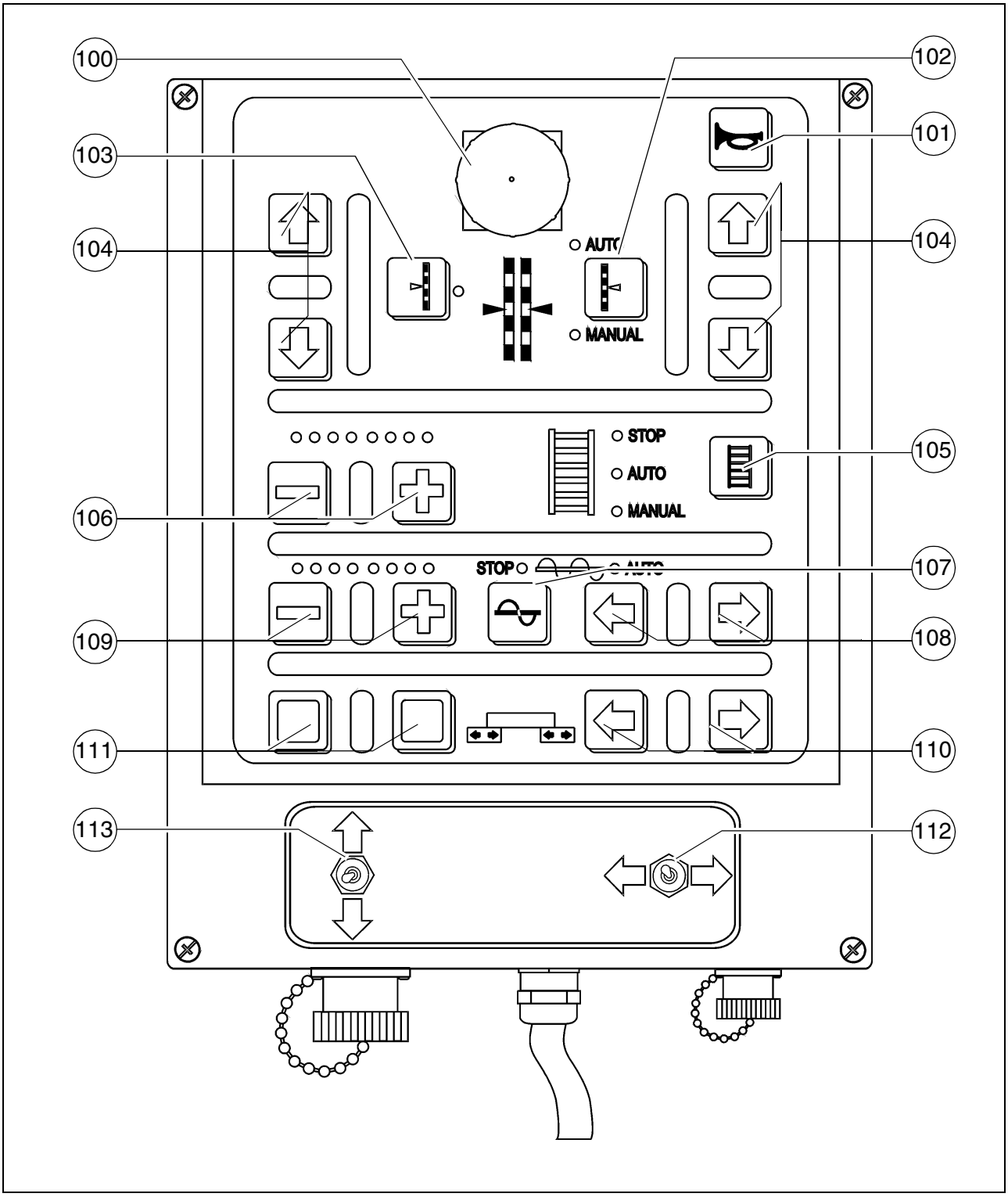


Bedienpult2_2009_PLC_C.bmp

D_1.12_01_EN.fm 40-46

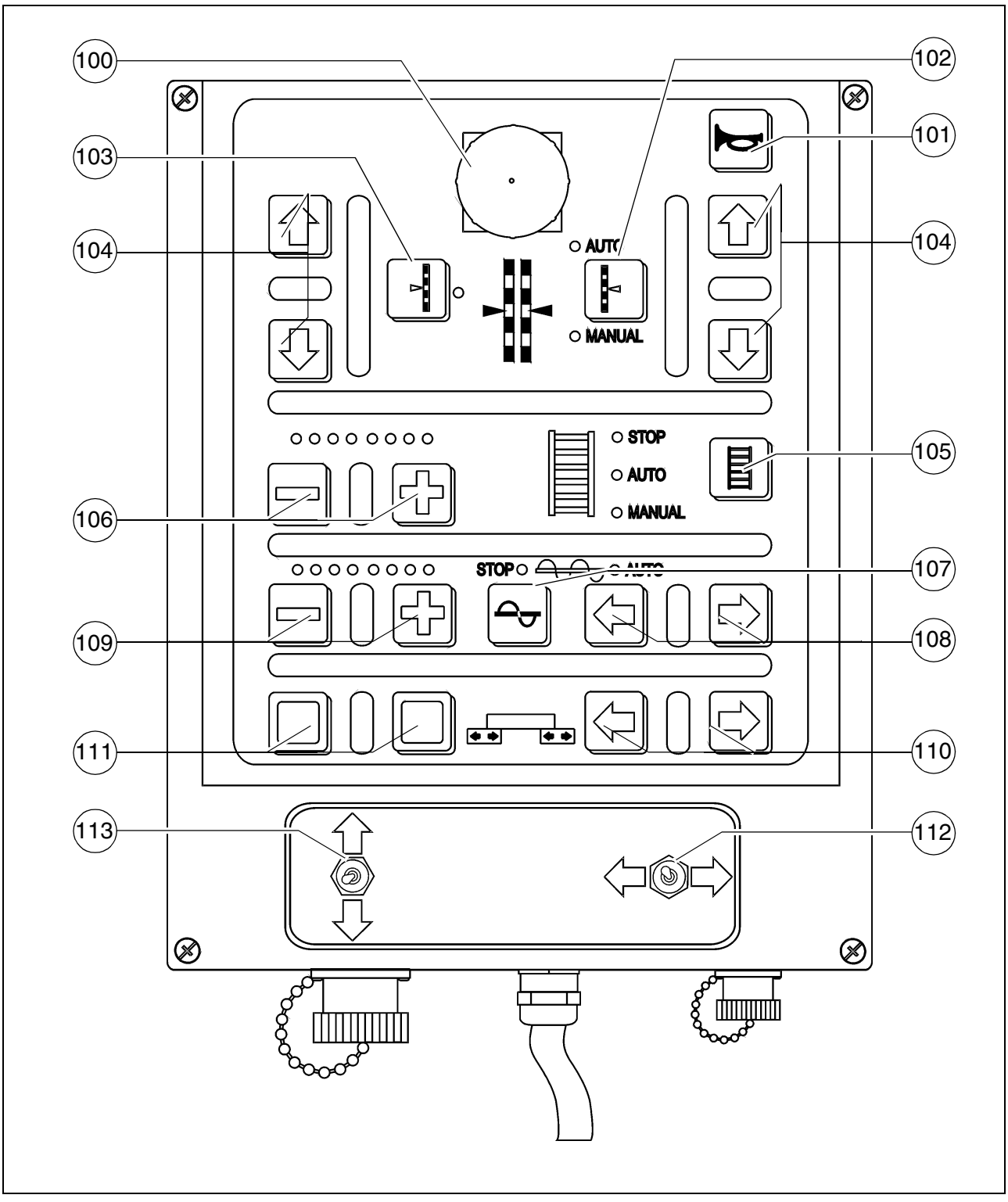
Item	Designation	Brief description
78	Error message with engine stop (red)	Lights up when a serious error has occurred on the engine. The engine is automatically shut down for safety. ☞ An error code is displayed via the input and display terminal! ☞ Lights up for a few seconds once the ignition has been switched on for checking purposes.
79	Oil pressure indicator for the hydraulic traction drive (red)	Must go out right after the engine has been started. Observe warm running. The hydraulic oil is possibly too cold and stiff. ⚠ Do not switch on the traction drive when the lamp does not go out (see the section „Malfunctions“). ☞ The lamp goes out when the pressure drops below 2.8 bar = 40 psi.
80	Oil pressure indicator lamp for the diesel engine (red)	⚠ Lights up when the oil pressure is too low. Switch off the engine immediately! For further possible faults, see Operating instructions for the engine. ☞ Indicates the fault together with the „Error message“ lamp.
81	not used	
82	not used	
83	not used	

3 Remote control



⚠ Attention! Do not disconnect remote controls with emergency stop button (O) during operation! This causes the paver finisher to be shut down!

Item	Designation	Brief description
100	Emergency stop button (○)	Function and application as with the emergency stop button (10) on the operating panel. Important in the case of dangerous situations which cannot be seen by the driver.
101	Horn	Function as for button (17) on the operating panel.
102	Automatic levelling system	Manual: Height adjustment possible with buttons (104) (or the corresponding function on the operating panel) Auto: Automatic height adjustment by means of the grade control system
103	Button for setting the level on the other side	Enables the levelling cylinder on the other side of the paver finisher to be operated. The display on the other remote control automatically jumps to „Manual“.
104	Buttons for movement directions	Function as for buttons (52-55) on the operating panel.
105	Conveyor	Function as for buttons (42-45) on the operating panel.
106	Conveyor feed capacity and LED display	Plus/minus buttons for adjusting the feed capacity. Display via LED. Changes are accepted when the button (105) is switched to the „Auto“ position.



⚠ Attention! Do not disconnect remote controls with emergency stop button (O) during operation! This causes the paver finisher to be shut down!

Item	Designation	Brief description
107	Auger	Function as for buttons (46-49) on the operating panel.
108	Auger conveying direction.	For setting the auger conveying direction. - Switch (107) must be set to the „Auto“ position.
109	Auger feed capacity and LED display	Plus/minus buttons for adjusting the feed capacity. Display via LED. Changes are accepted when the button (107) is switched to the „Auto“ position.
110	Extend/retract screed	Use these buttons to move the screed in the direction indicated by the arrow.
111	not used	
112	Extend / retract screed (○)	Use these buttons to move the screed in the direction indicated by the arrow.
113	Levelling cylinder left/right (○)	For manually actuating the levelling cylinders when automatic levelling is switched off. To do this, the function must be switched to „Manual“.

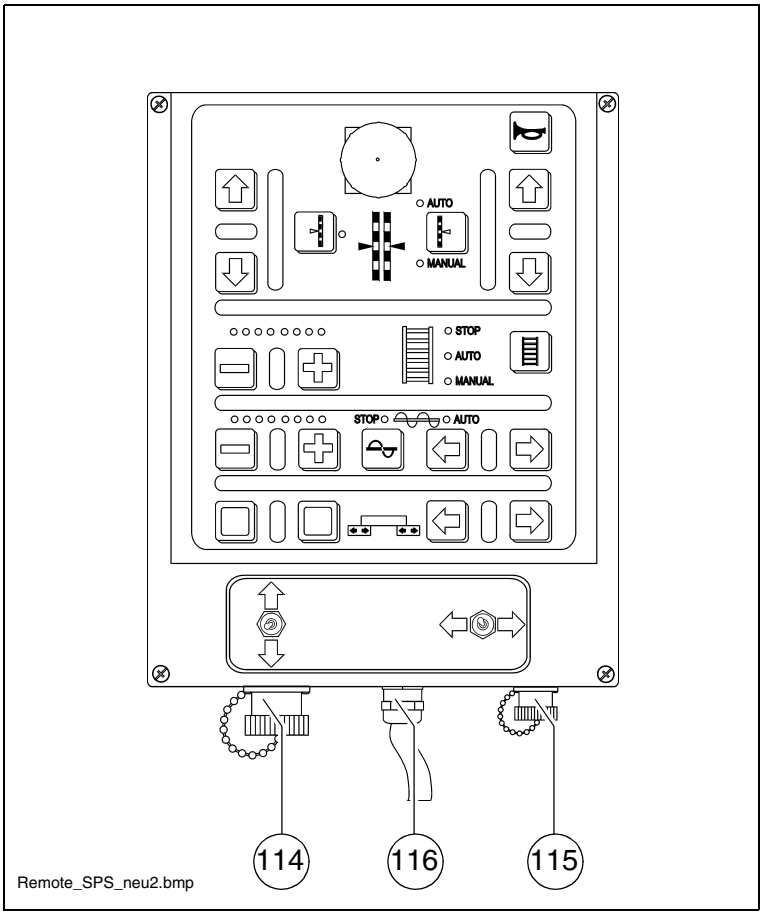
☞ If the function (102) is switched to „Auto“, it switches to „Manual“ whilst actuating the buttons (104).

☞ If the function (107) is switched to „Stop“, it switches to „Auto“ whilst actuating the buttons (108).

☞ Basic auger and conveyor feed capacity for the individual course types (number of LEDs):

- Surface course: 4
- Binder course: 6
- Base course: 8

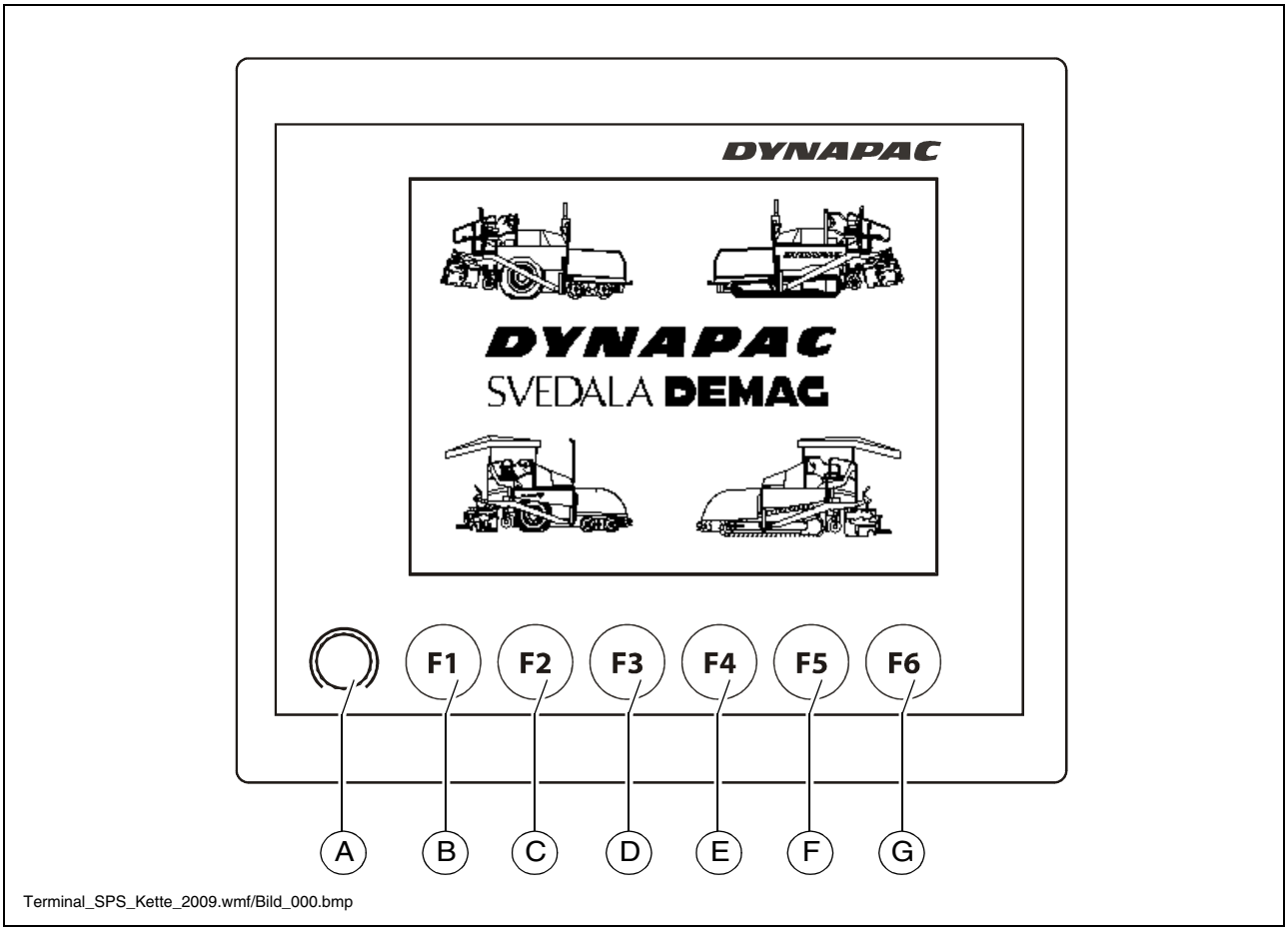
Lower side



Item	Designation	Brief description
114	Socket for automatic levelling system	Connect the connection cable for the grade control system here.
115	Socket for auger limit switch	Connect the cable for the material limit switch here.
116	Connection cable for remote control	Connect the plug to the screed. (See screed operating instructions).

D 2.2 Operation

1 Operation of the input and display terminal



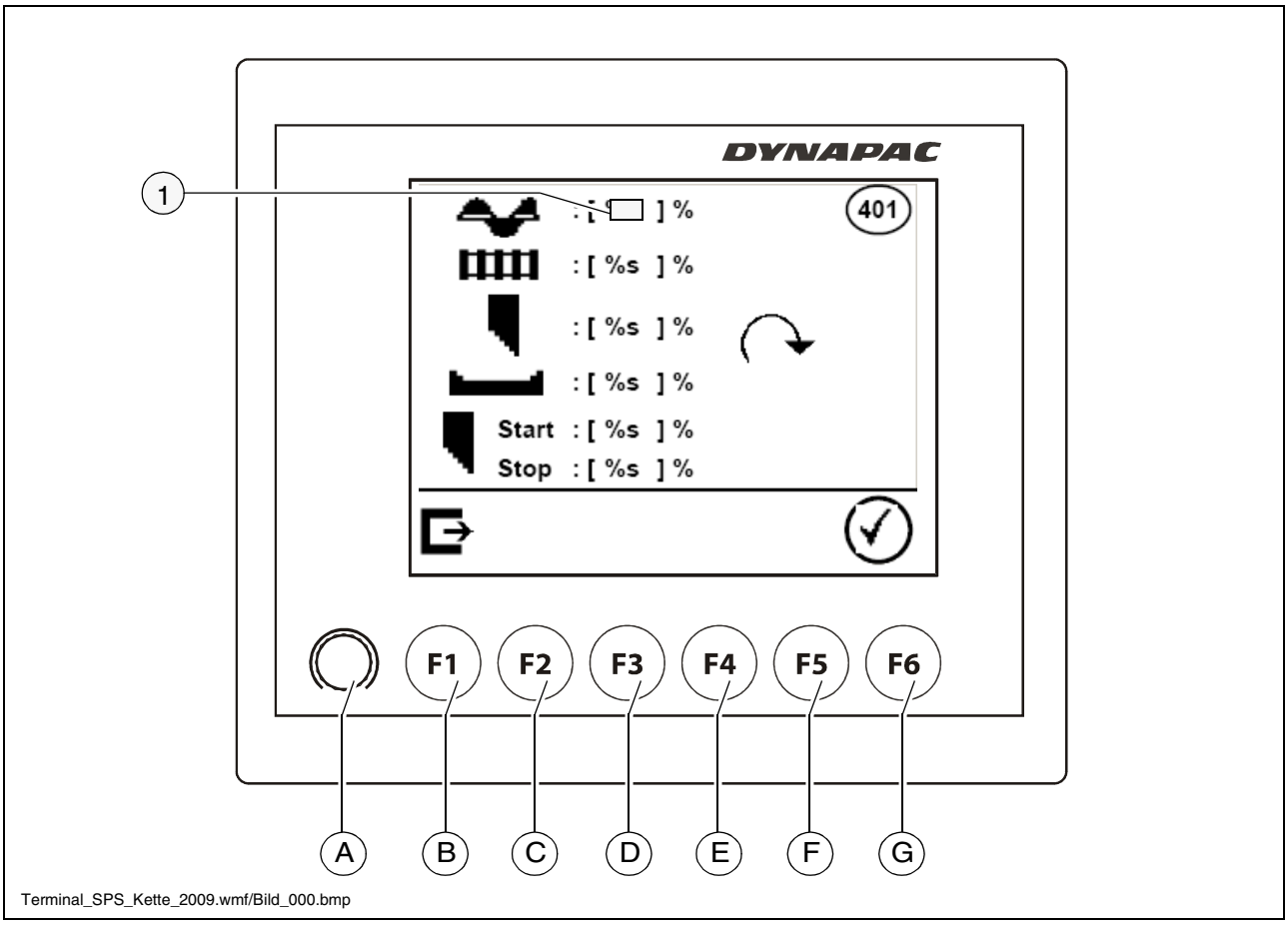
Terminal_SPS_Kette_2009.wmf/Bild_000.bmp

Key layout on the display

- (A) Encoder (turn and push operation):
  - To scroll in the menu
  - To select various options within a menu
  - To change parameters
  - To confirm changed parameters

- (B), (C), (D), (E), (F), (G) keys F1 - F6:
  - To select the functions assigned in the display
  - To select various options within a menu
  - To change parameters

1.1 Menu operation



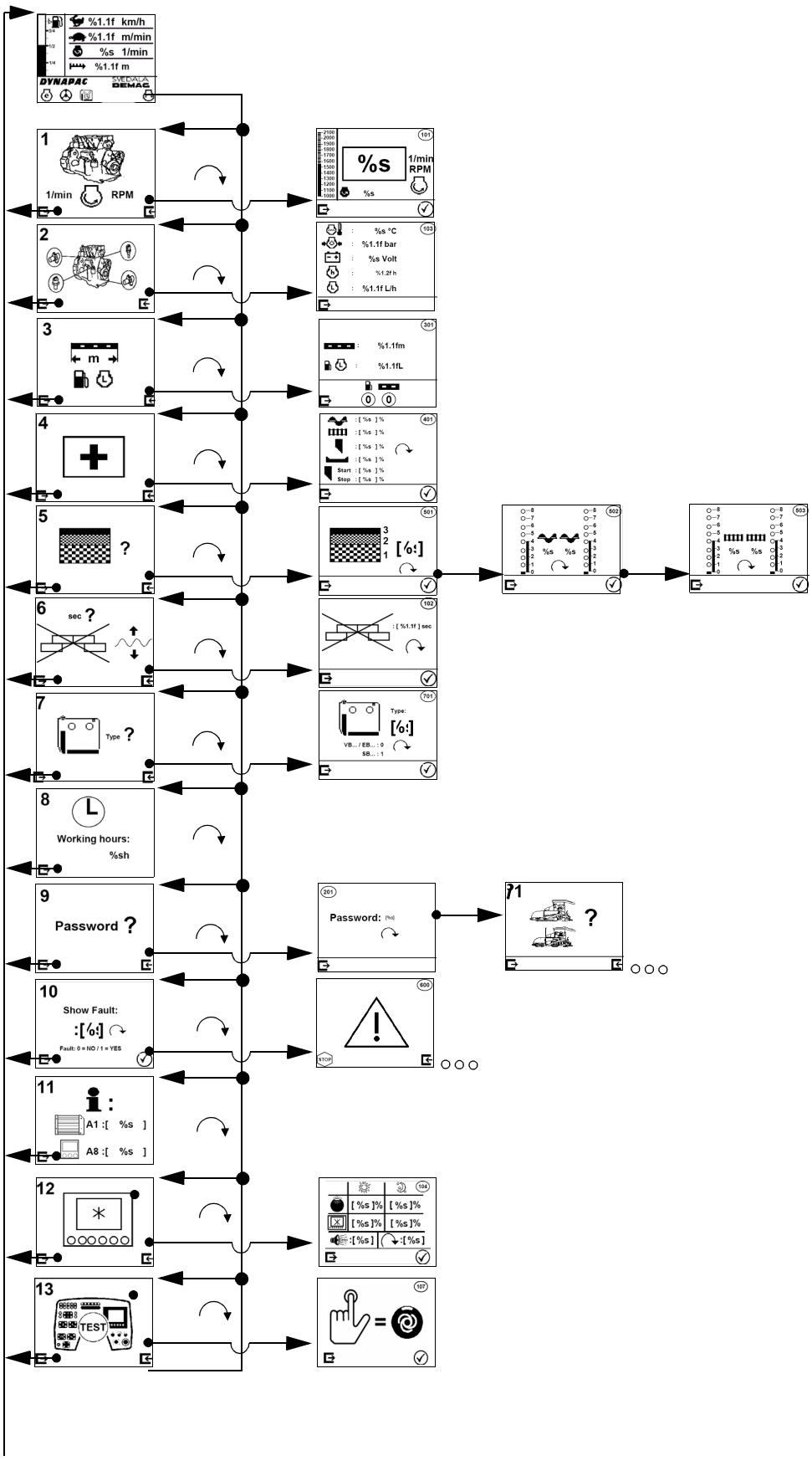
Example: Emergency programme (401)

- Turn the encoder (A) until the selection field (1) appears.
- Turn the encoder (A) again until the selection field is positioned over the desired menu item.
- Press the encoder (A) or key F2 (B) to activate the selected menu item for changing.
- Set the desired value by turning the encoder (A).
- Press the encoder (A) or key F2 (B) to confirm the set value.

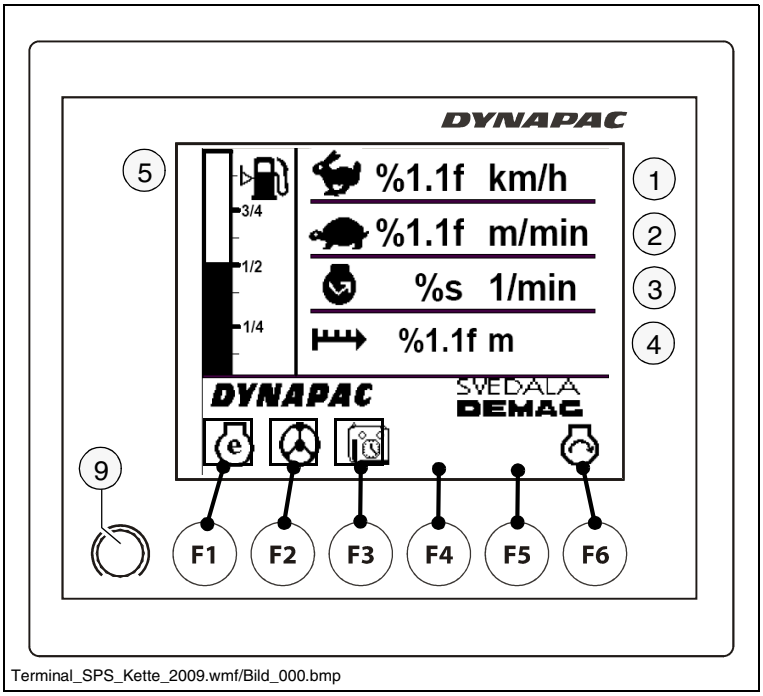
☞ In various menus, the parameters can be changed directly without having to first confirm using the selection field!

Menu structure of the setting and display options

The following illustration shows the menu structure and serves to simplify operation and the procedure in the case of various settings and displays.



Main menu 00



Terminal_SPS_Kette_2009.wmf/Bild_000.bmp

Display and function menu

Displays:

- Speed - driving mode (1)
- Speed - paving mode (2)
- Engine speed (3)
- Distance travelled counter (4)
- Fuel gauge (5)

Selectable functions:

- Drive engine „eco mode“ (F1)
  - The engine speed is constantly regulated to 1600 rpm

- Automatic steering unit (F2)
  - When the automatic steering unit is activated, the steering potentiometer is deactivated. Steering is carried out automatically via ski cable sensing.

- Delayer screed start (F3)
  - The screed is blocked for a set time (starting from the start of the paving process) when one of the screed charging / screed relieving or floating position functions is activated.

☞ The functions are activated by pressing the relevant F key.
A frame around the corresponding symbol confirms that the function has been activated.

Callable function menus:

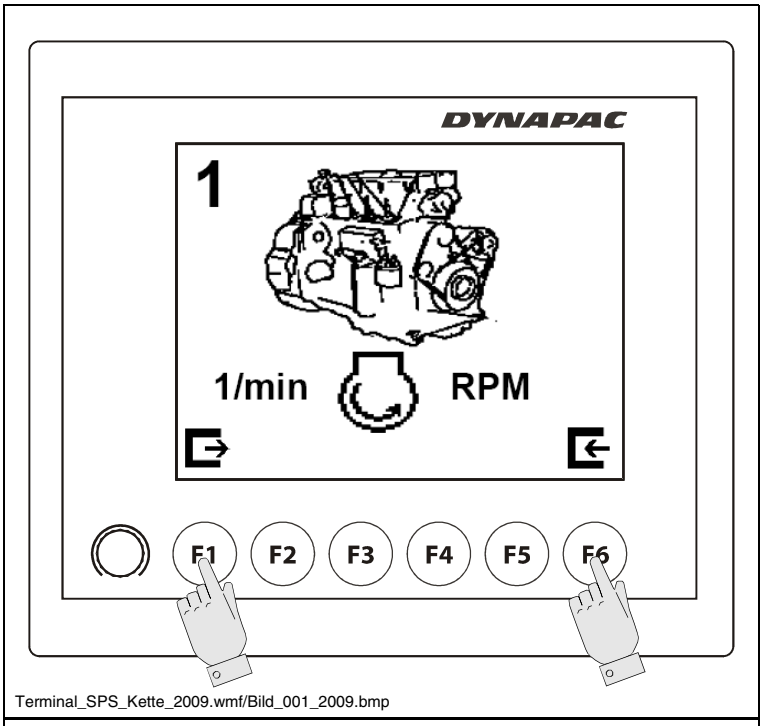
- Engine speed (F6)

- Open sub-menu (101) - engine speed (9)

Menu 01 - Diesel speed

Menu for setting the engine speed (1)

- Open sub-menu: (F6)
- Return to the main menu: (F1)



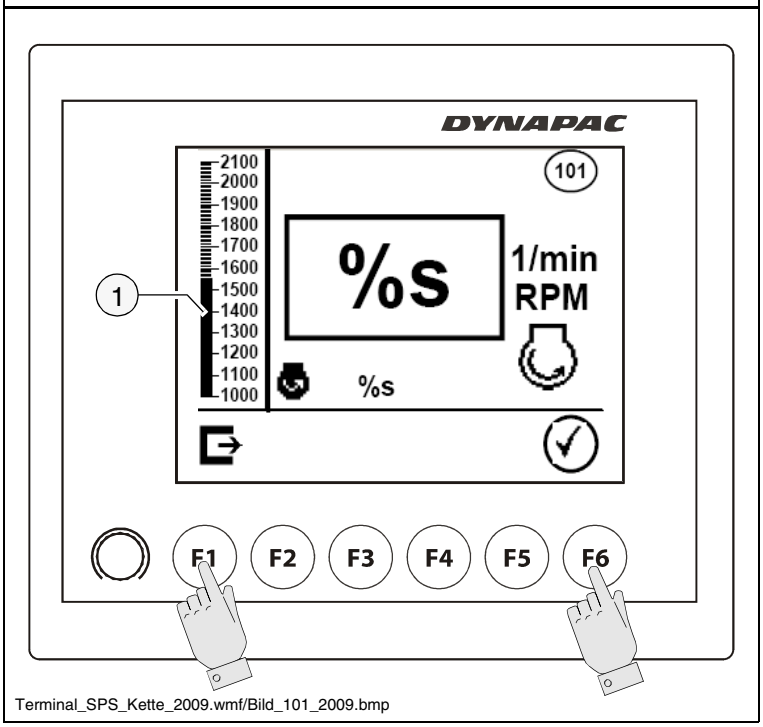
Terminal_SPS_Kette_2009.wmf/Bild_001_2009.bmp

Sub-menu 101 - Diesel speed set-up

- Save, return to the main menu: (F6)
- Undo changes, return to the main menu: (F1)

☞ Adjustment is carried out in steps of 50; the engine speed is adapted directly.

☞ Engine speed display as a bar chart (1).



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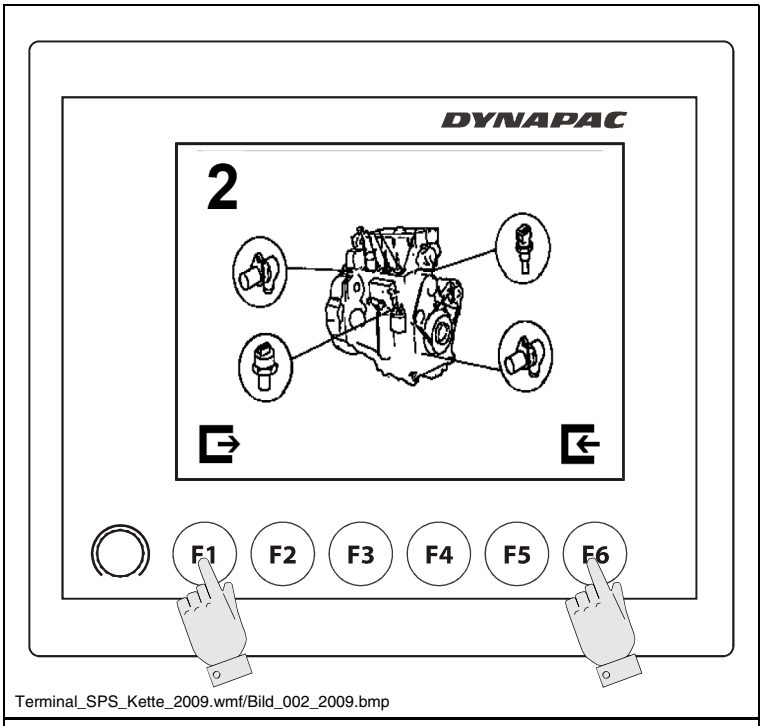
Menu 02 - Drive engine measured values

Menu for querying various drive engine measured values

- Open sub-menu: (F6)
- Return to the main menu: (F1)



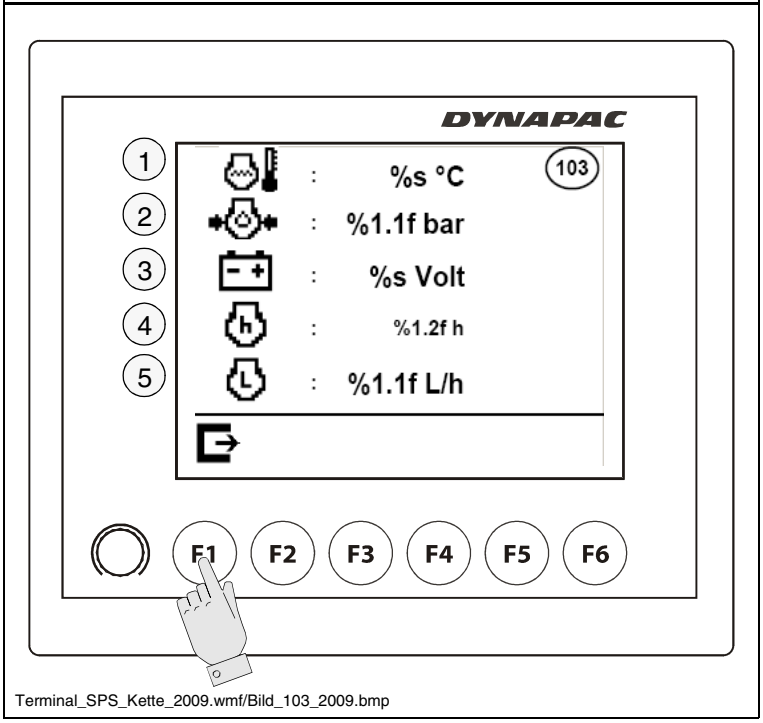
Terminal_SPS_Kette_2009.wmf/Bild_002_2009.bmp

Sub-menu 103 - Drive engine measured value display

Display of the following measuring values:

- Coolant temperature (1)
- Engine oil pressure (2)
- Battery voltage (3)
- Engine operating hours (4)
- Fuel consumption (5)

- Return to menu 02: (F1)

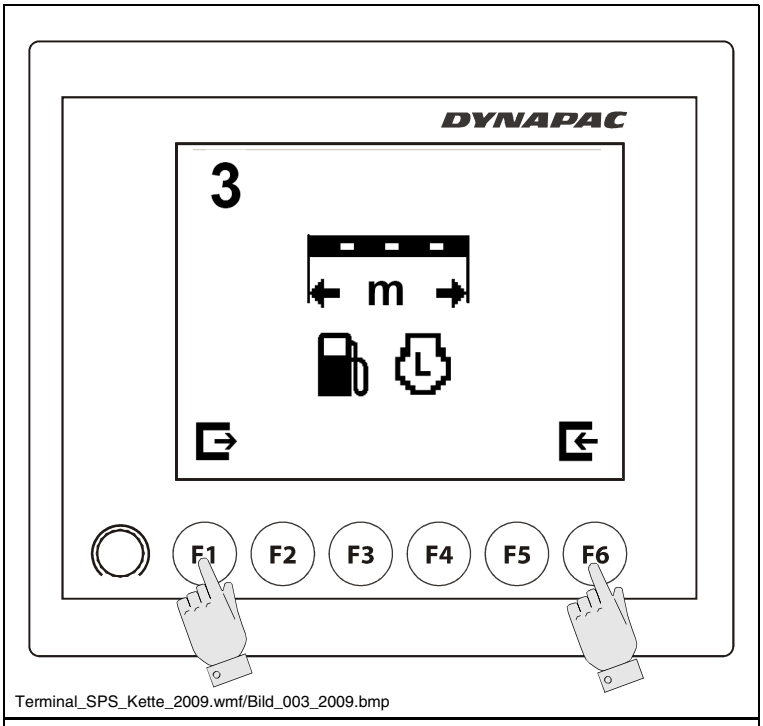


Terminal_SPS_Kette_2009.wmf/Bild_103_2009.bmp

Menu 03 - Distance and fuel display

Menu for querying various operating data

- Open sub-menu: (F6)
- Return to the main menu: (F1)

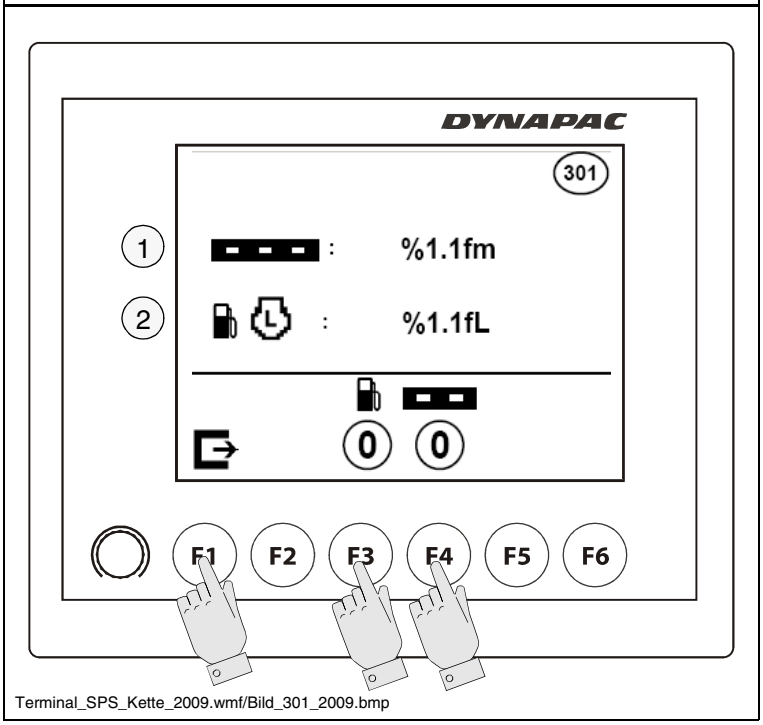


Terminal_SPS_Kette_2009.wmf/Bild_003_2009.bmp

Sub-menu 301 - Display/reset distance travelled, fuel consumption

Display of the following operating data:

- Distance travelled (1)
  - Reset - set value to zero, return to menu 03: (F4)
- Fuel consumption (calculated value) (2)
  - Reset - set value to zero, return to menu 03: (F3)
- Return to menu 03: (F1)

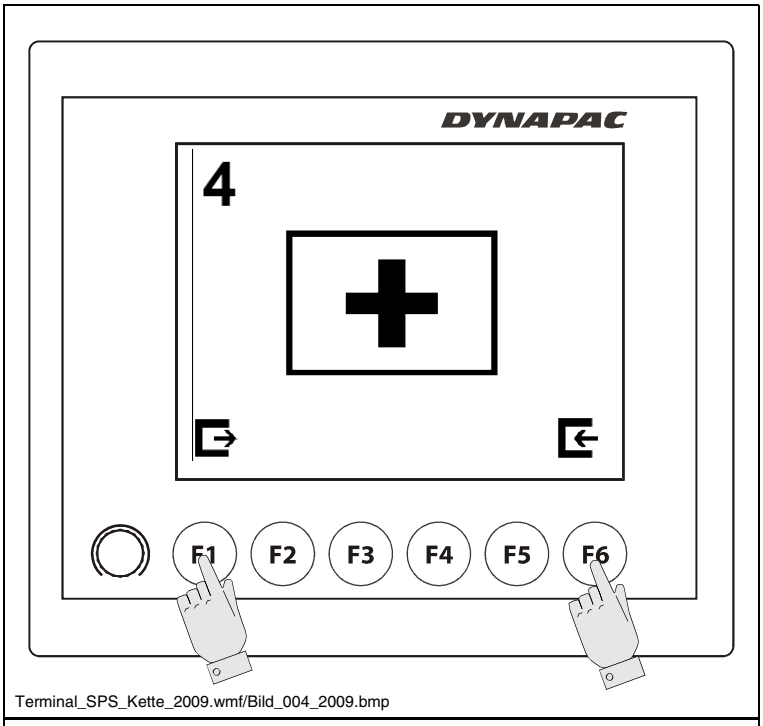


Terminal_SPS_Kette_2009.wmf/Bild_301_2009.bmp

Menu 04 - Emergency function / screed stop and tamper start

In the event that nominal value specification or actual value measurement fail (e.g. sensor defective, remote control failed), the performance of various functions can be set for automatic mode.

- Open sub-menu: (F3)
- Return to the main menu: (F6)



Terminal_SPS_Kette_2009.wmf/Bild_004_2009.bmp

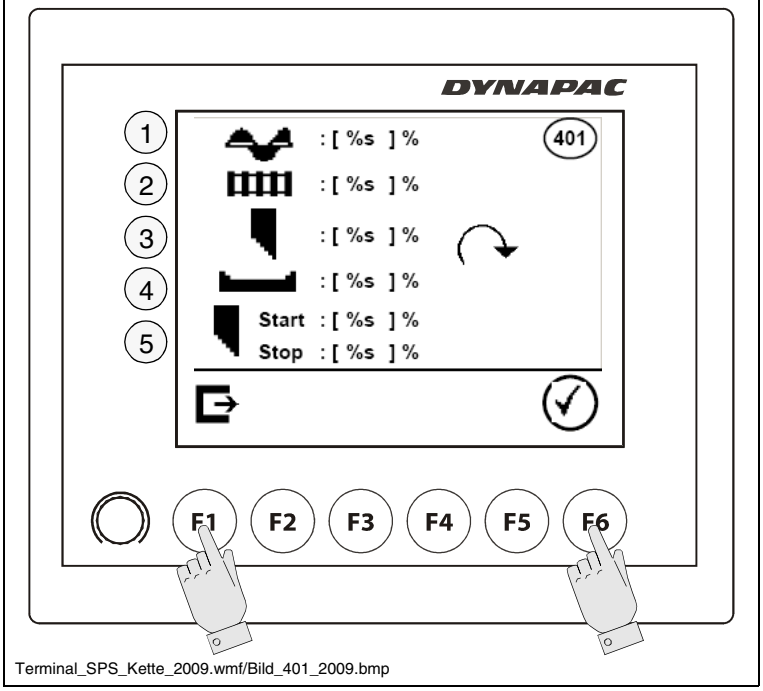
Sub-menu 401 - Emergency function setting

Performance adjustment is possible for the following functions:

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

☞ The current value can be set from 0 to 100%.

☞ Settings in these functions can only be carried out if a failure has occurred.



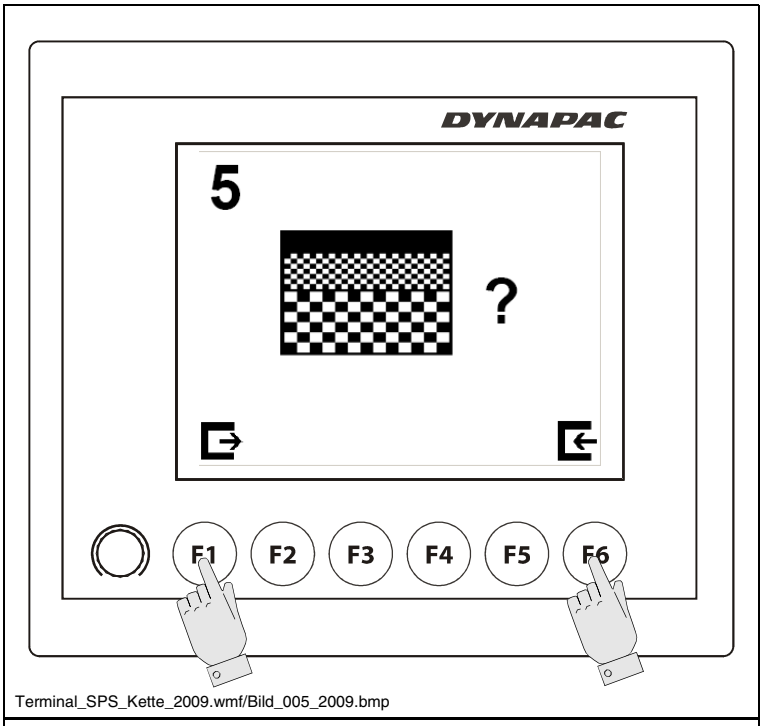
Terminal_SPS_Kette_2009.wmf/Bild_401_2009.bmp

- Reset parameters, return to menu 04: (F1)
- Save set parameters, return to menu 04: (F6)

Menu 05 - Paving thickness

Menu for setting the type of course to be laid

- Open sub-menu: (F6)
- Return to the main menu: (F1)



Terminal_SPS_Kette_2009.wmf/Bild_005_2009.bmp

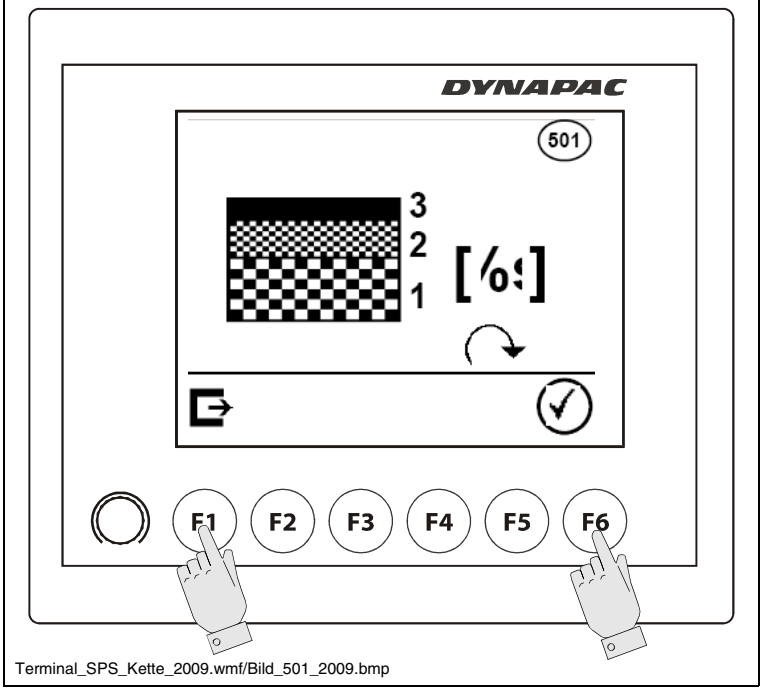
Sub-menu 501 - Paving thickness preselection

Preselection of the following course types:

- Surface course: Parameter 3
- Binder course: Parameter 2
- Base course: Parameter 1

- Save, open sub-menu: (F6)
- Undo changes, return to menu 05: (F1)

☞ Directly to the next sub-menu: (F6)



Terminal_SPS_Kette_2009.wmf/Bild_501_2009.bmp

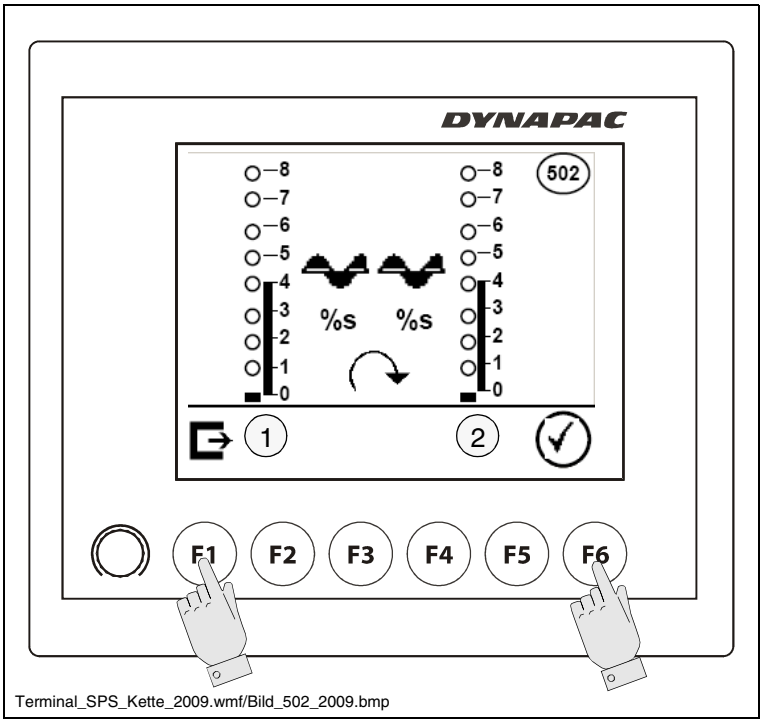
Sub-menu 502 - Auger speed setting

The speed can be set in 8 stages. The set speed stage for the relevant auger is shown in displays (1) and (2).

Basic setting for the individual course types:

- Surface course: 4
- Binder course: 6
- Base course: 8

- Save, open sub-menu: (F6)
- Undo changes, return to menu 05: (F1)



Terminal_SPS_Kette_2009.wmf/Bild_502_2009.bmp

☞ Directly to the next sub-menu: (F6)

☞ The remote controls' LED display changes in line with the settings which have been carried out.

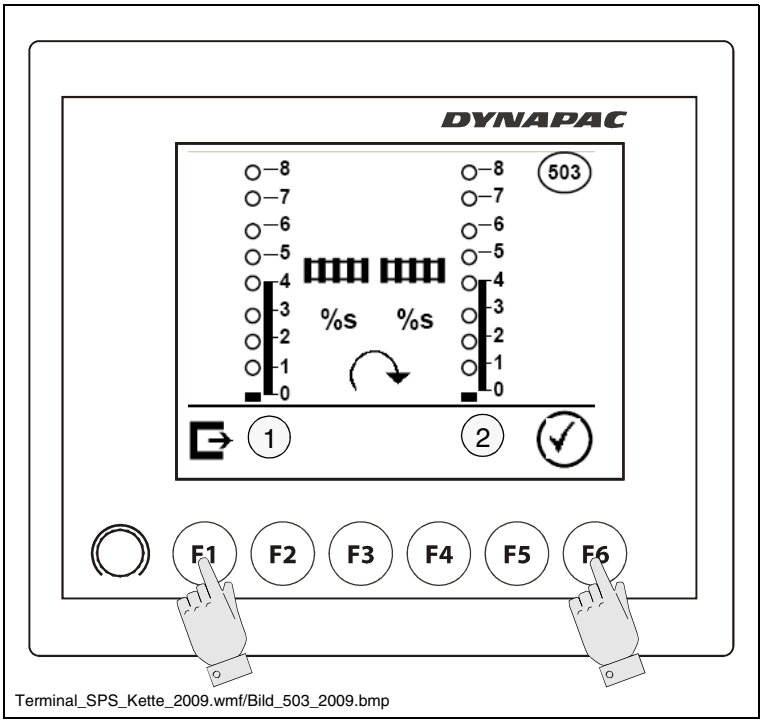
Sub-menu 503 - Conveyor speed setting

The speed can be set in 8 stages. The set speed stage for the relevant conveyor is shown in displays (1) and (2).

Basic setting for the individual course types:

- Surface course: 4
- Binder course: 6
- Base course: 8

- Save, return to menu 05: (F6).
- Undo changes, return to menu 05: (F1).



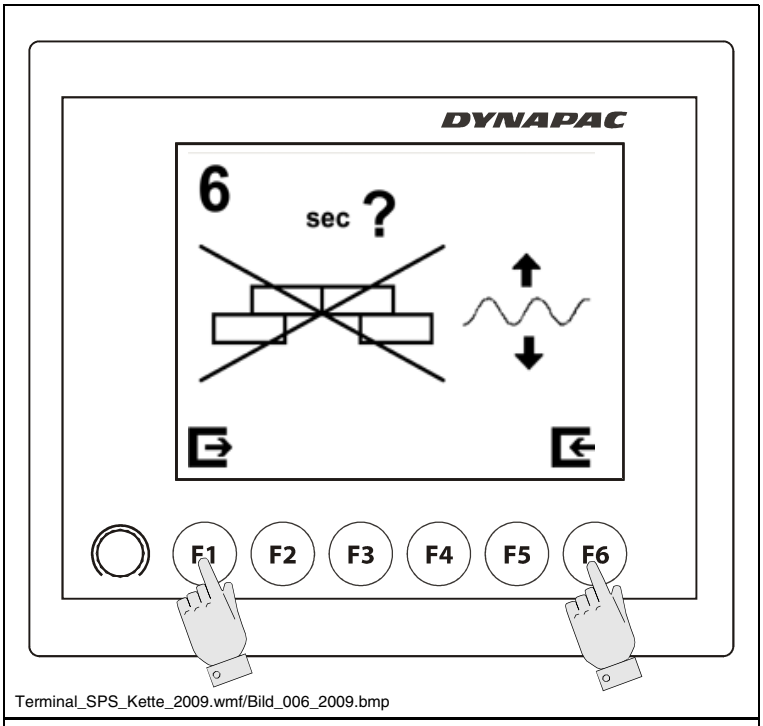
Terminal_SPS_Kette_2009.wmf/Bild_503_2009.bmp

☞ The remote controls' LED display changes in line with the settings which have been carried out.

Menu 06 - Delayed screed start

The screed is blocked for a set time (starting from the start of the paving process) when one of the screed charging / screed relieving or floating position functions is activated.

- Open sub-menu: (F6)
- Return to the main menu: (F1)

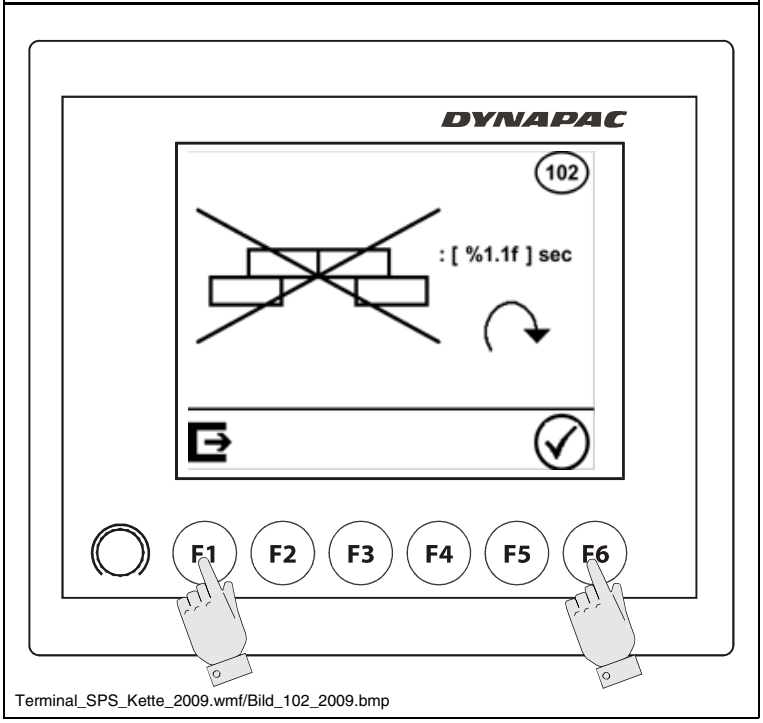


Terminal_SPS_Kette_2009.wmf/Bild_006_2009.bmp

Sub-menu 102 - Delayed screed start setting

Setting the period of time for start-up charging

- Save, return to menu 06: (F6)
- Undo changes, return to menu 06: (F1)

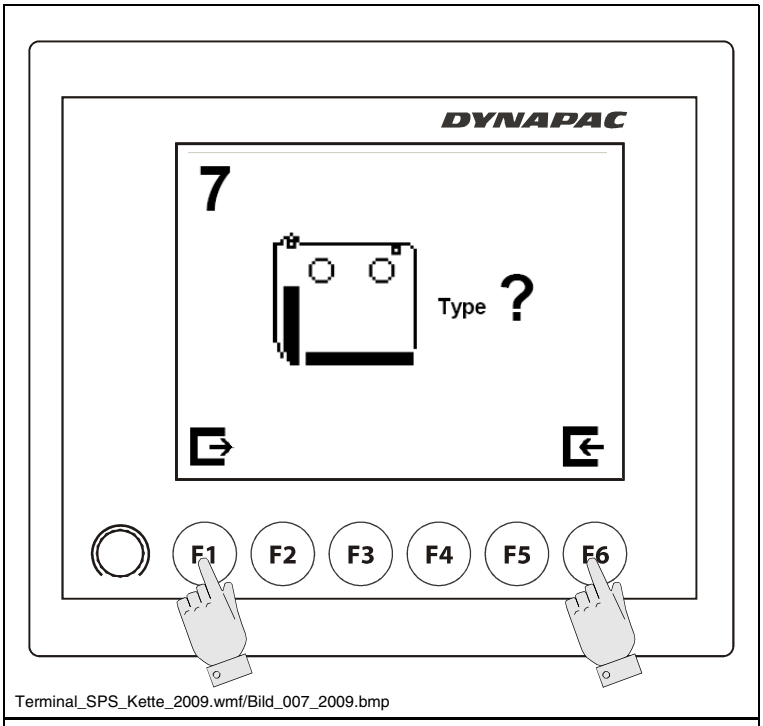


Terminal_SPS_Kette_2009.wmf/Bild_102_2009.bmp

Menu 07 - Screed type

Menu for setting the screed type

- Open sub-menu: (F6)
- Return to the main menu: (F1)



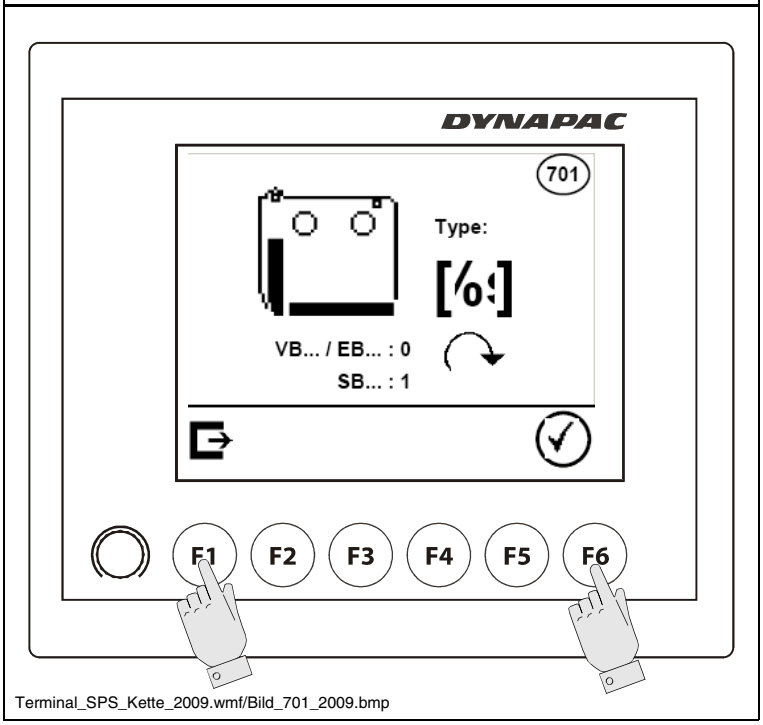
Terminal_SPS_Kette_2009.wmf/Bild_007_2009.bmp

Sub-menu 701 - Screed type setting

Preselection of the following screed types:

- VB/EB screed: Parameter 0
- SB screed: Parameter 1

- Save, return to menu 07: (F6)
- Undo changes, return to menu 07: (F1)

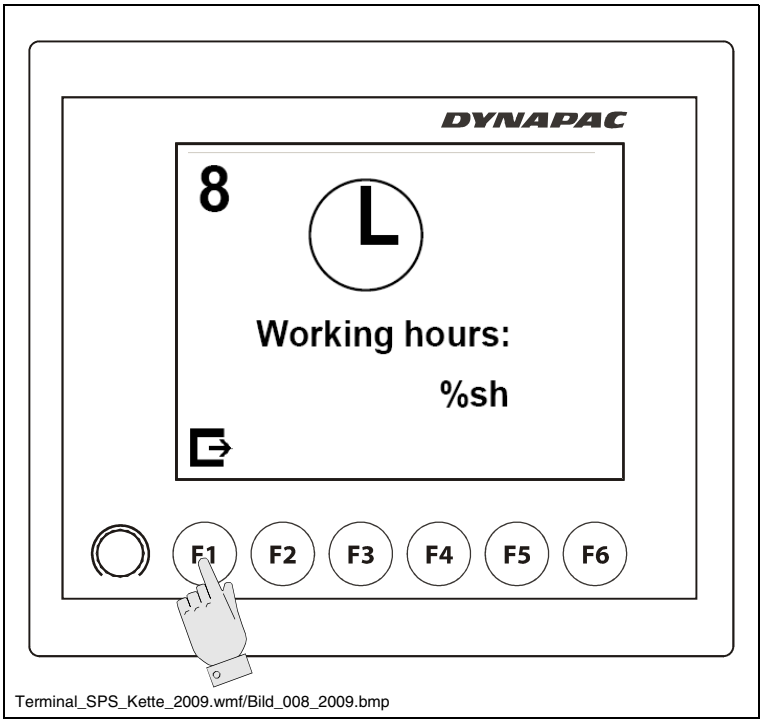


Terminal_SPS_Kette_2009.wmf/Bild_701_2009.bmp

Menu 08 - Operating hour meter

Menu for querying the operating hours

- Return to the main menu: (F1)

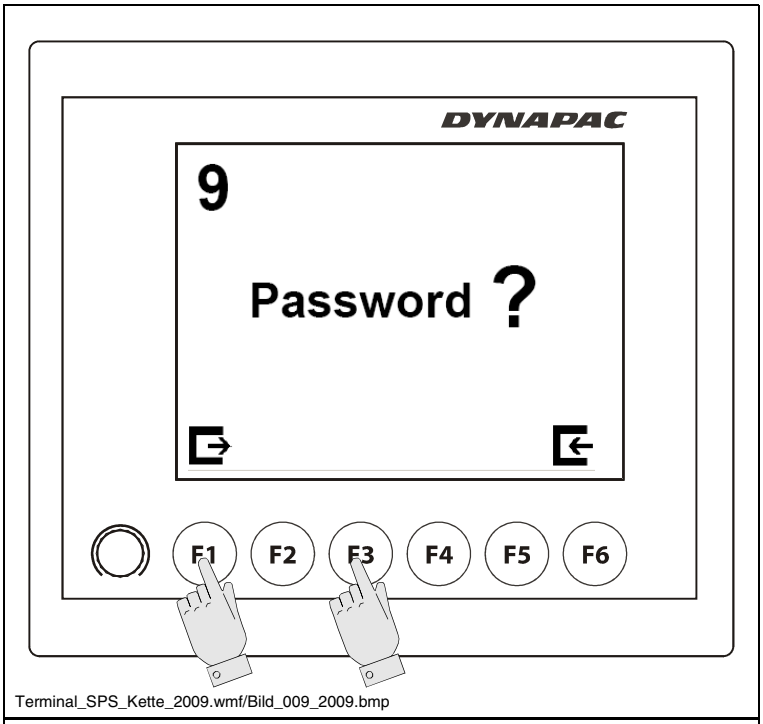


Terminal_SPS_Kette_2009.wmf/Bild_008_2009.bmp

Menu 09 - Service

Password-protected menu for various service settings

- Open password prompt: (F6)
- Return to the main menu: (F1)

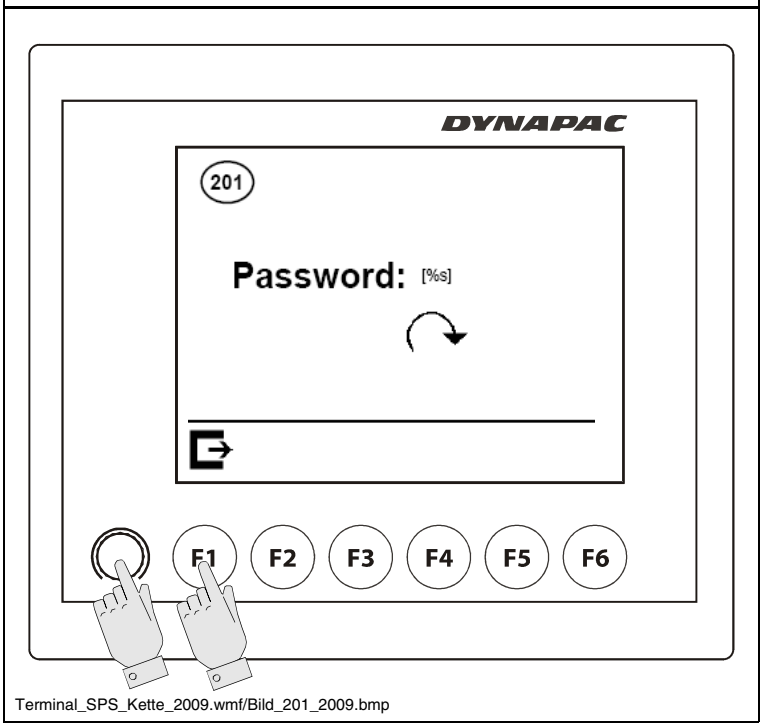


Terminal_SPS_Kette_2009.wmf/Bild_009_2009.bmp

Sub-menu 201 - Password prompt

Password entry:

- Confirm password by pressing the encoder
- Return to menu 09: (F1)



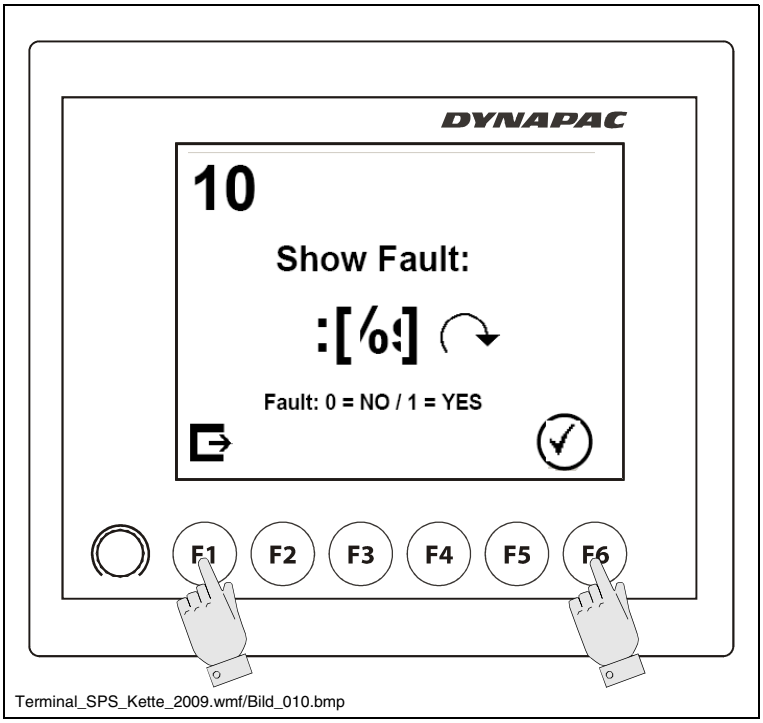
Terminal_SPS_Kette_2009.wmf/Bild_201_2009.bmp

Menu 10 - Error memory

Menu for querying existing error messages again

- Display [0]: No error messages present
- Display [1]: Error messages present

- Call up error messages: (F6)
- Return to the main menu: (F1)



Terminal_SPS_Kette_2009.wmf/Bild_010.bmp

Display error messages:

☞ If error messages are present, the display „Attention“ (600) is always shown first

- Display error messages: (F6)
- Return to menu 10: (F1)

Error display

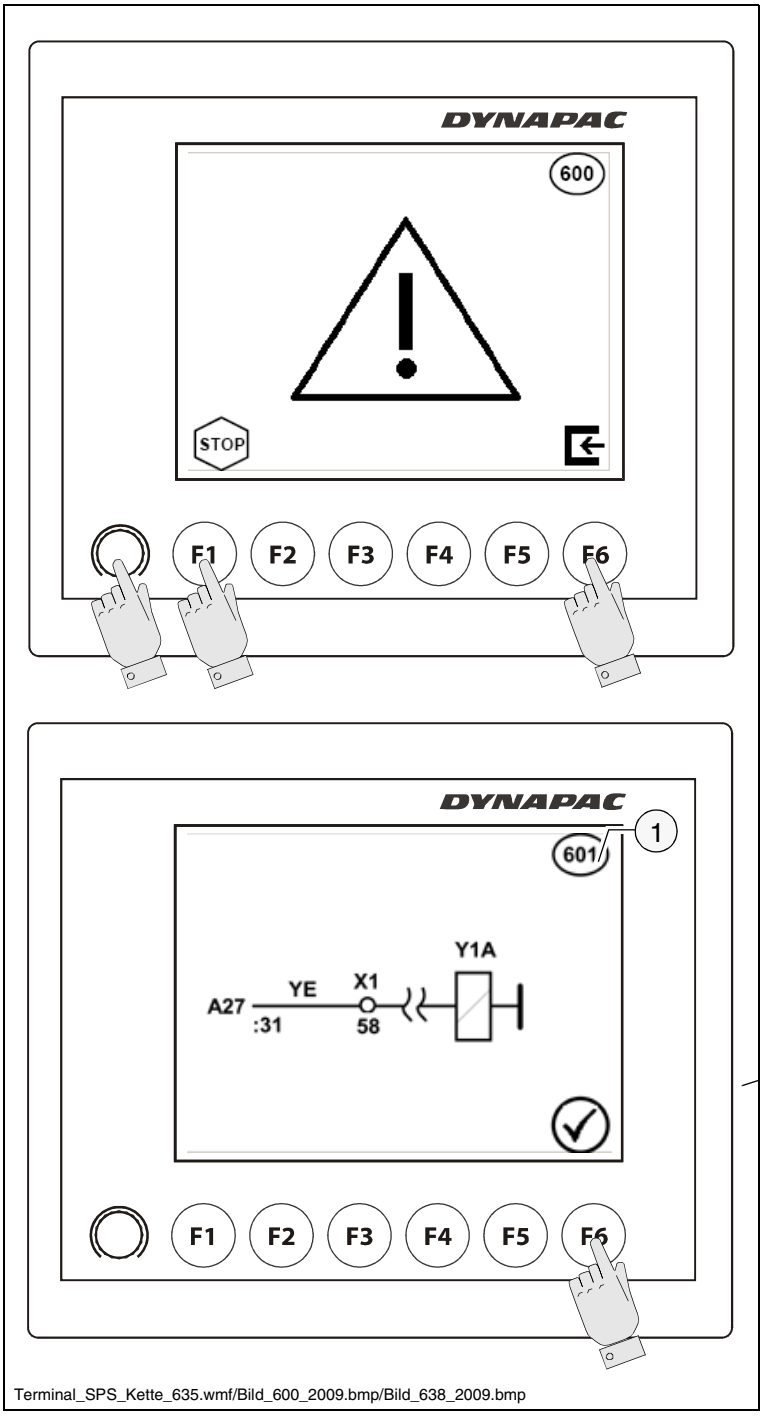
- Call up the next error: (F6)

☞ If a further error is present, the display „Attention“ is shown again.

☞ When the last error has been read out, the system returns to the main menu.

☞ All error messages can be identified in the section „Terminal error displays“

☞ If consultation with Technical Support is required for your vehicle, always specify the number (1) of the error message!



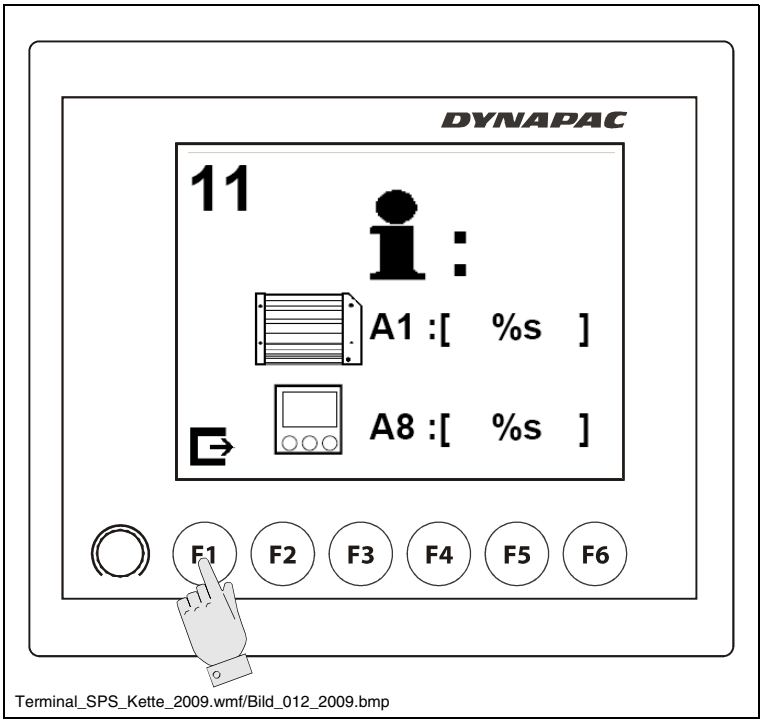
Terminal_SPS_Kette_635.wmf/Bild_600_2009.bmp/Bild_638_2009.bmp

Menu 11 - Programme version

Menu for querying the installed programme version

☞ If consultation with Technical Support is required for your vehicle, always specify the programme version!

- Return to the main menu: (F1)

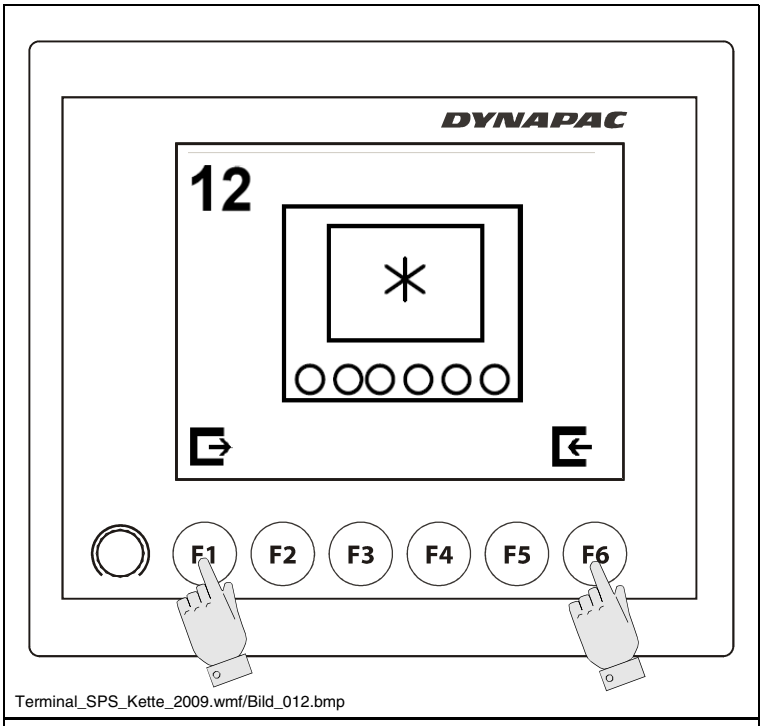


Terminal_SPS_Kette_2009.wmf/Bild_012_2009.bmp

Menu 12 - Terminal settings

Menu for various terminal settings

- Open sub-menu: (F3)
- Return to the main menu: (F1)

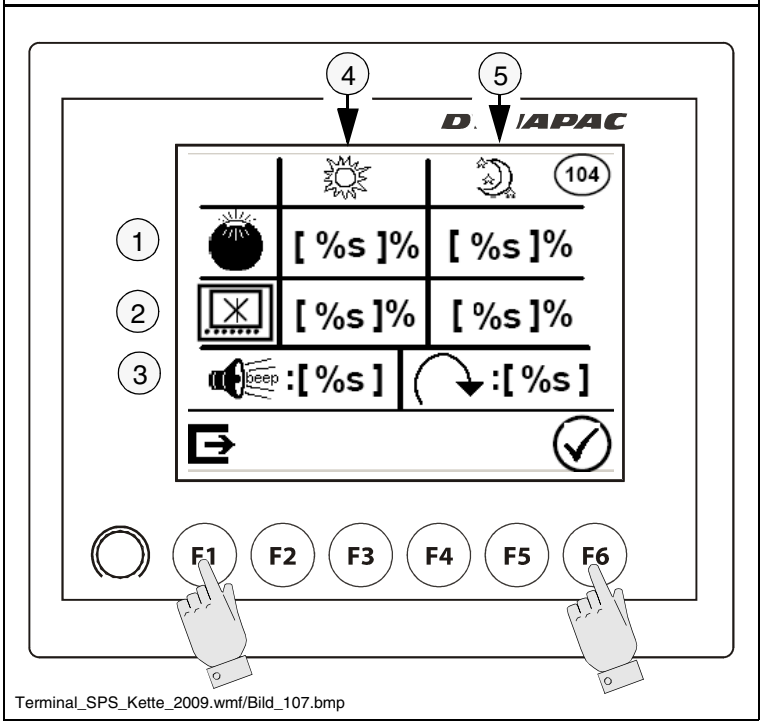


Terminal_SPS_Kette_2009.wmf/Bild_012.bmp

Sub-menu 104 - Terminal settings

The following setting options are available:

- Key illumination brightness (1)
- Display brightness (2)
- Sensitivity of the encoder (3)
- „Beep“ ON / OFF (6) - Warning signal with error messages, until error was acknowledged.



Terminal_SPS_Kette_2009.wmf/Bild_107.bmp

☞ The brightness can be set for both daytime operation (4) and night time operation (5).

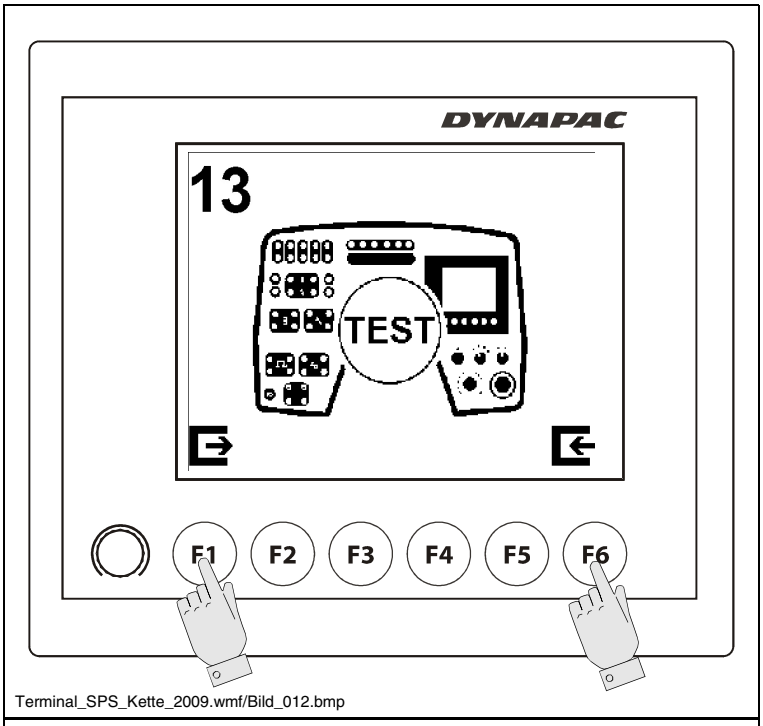
☞ When the working lights are switched on, the system automatically switches to the night time operation settings.

- Save, return to menu 13: (F6)
- Undo changes, return to menu 13: (F1)

Menu 13 - Key function test

Menu for testing the function of the operating panel keys

- Open sub-menu: (F3)
- Return to the main menu: (F1)

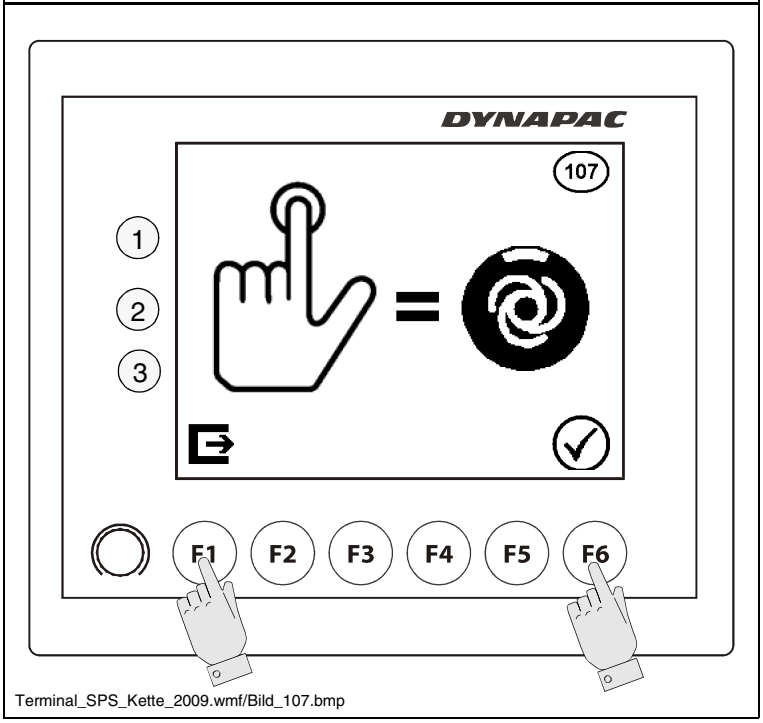


Terminal_SPS_Kette_2009.wmf/Bild_012.bmp

Sub-menu 107 - Key function test

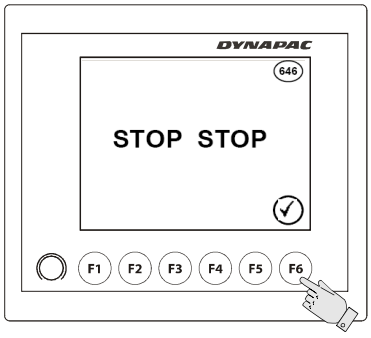
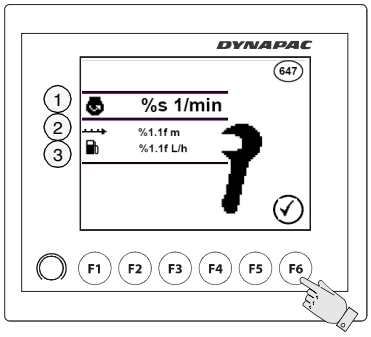
On pressing the individual keys, the relevant key symbol is shown to confirm the function.

- Save, return to menu 14: (F6)
- Undo changes, return to menu 13: (F1)



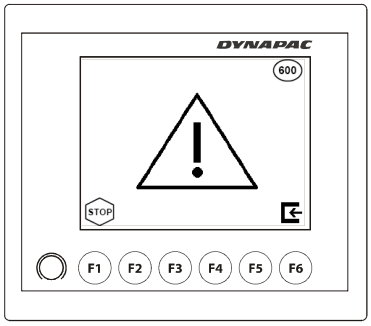
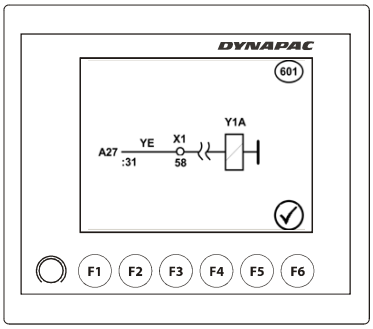
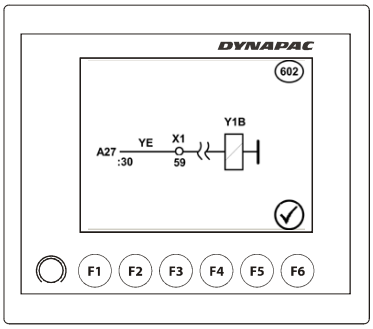
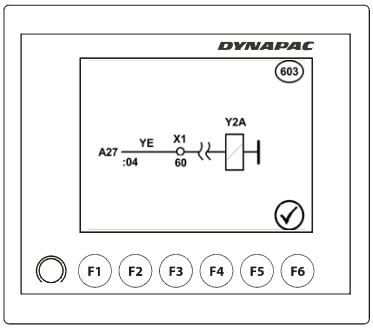
Terminal_SPS_Kette_2009.wmf/Bild_107.bmp

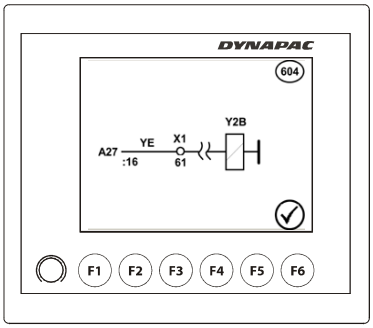
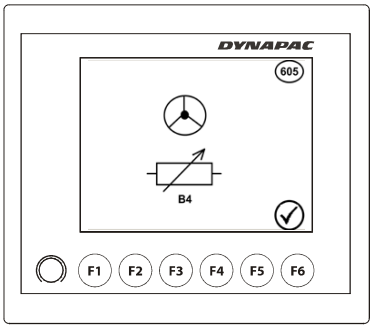
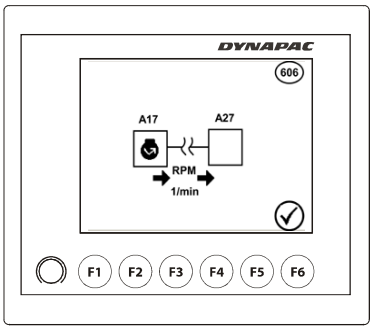
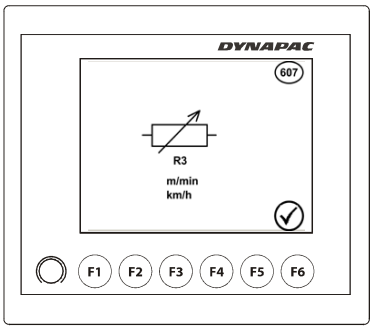
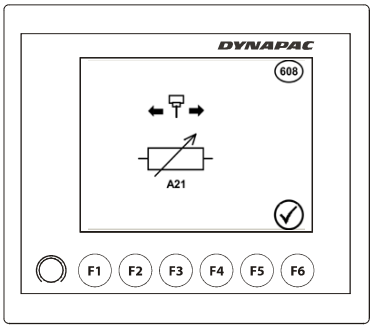
1.2 Further displays

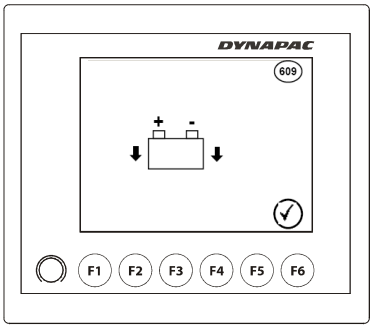
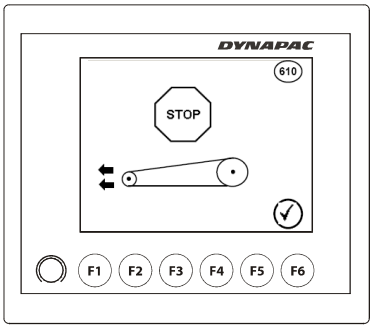
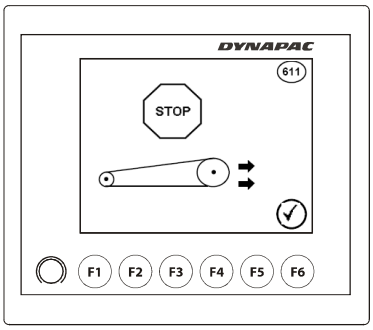
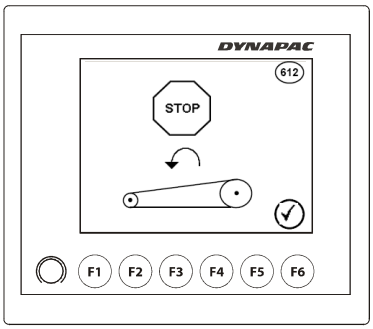
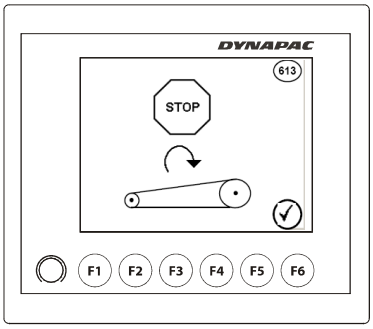
Display No. / meaning	Display
Display 646 Emergency stop button actuated - Return to the previous menu: (F6)	
Display 647 Set-up mode Displays: - Engine speed (1) - Distance travelled (2) - Fuel consumption (calculated value) (3) - Return to the previous menu: (F6)	

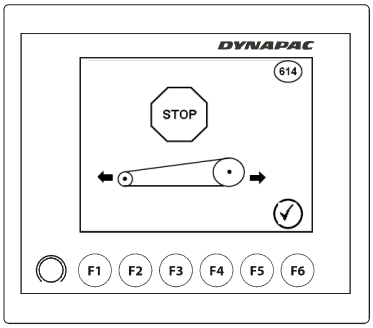
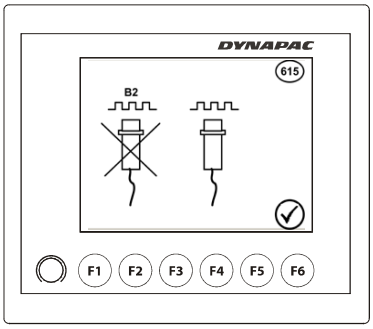
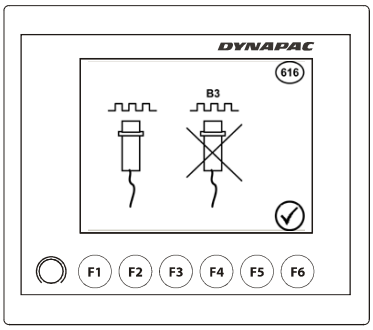
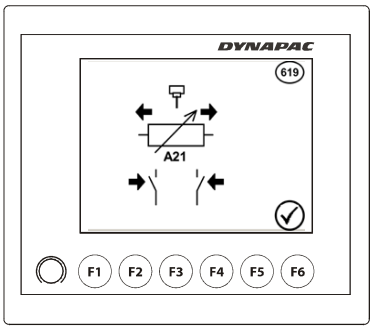
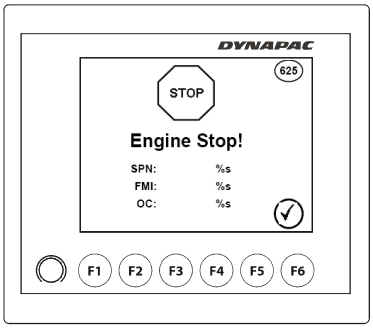
2 Terminal error messages

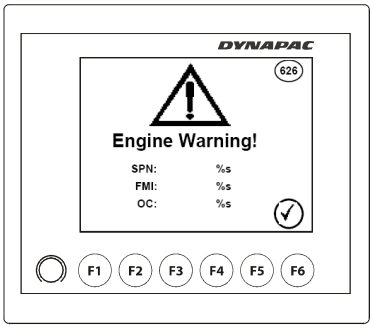
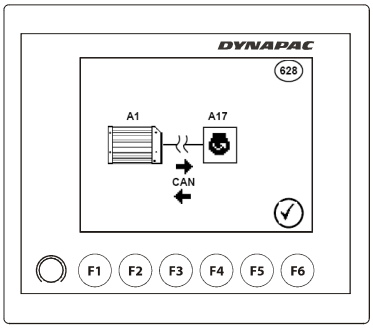
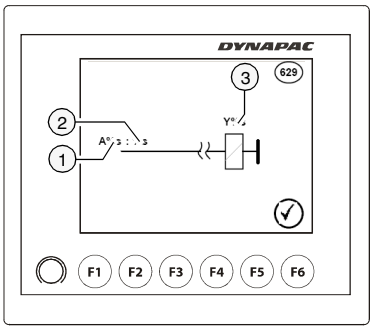
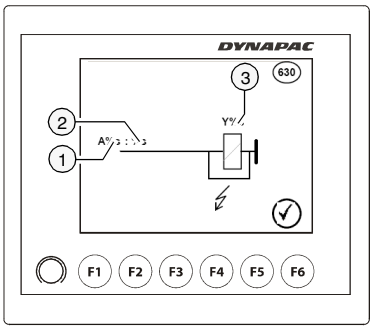
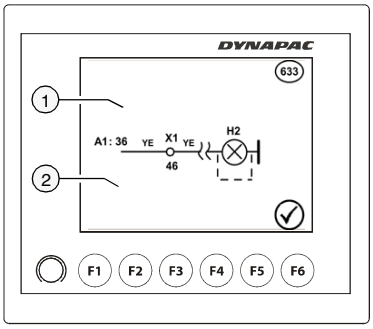
☞ Every error message is assigned a number. If consultation with Technical Support is required for your vehicle, specify this number, together with all other visible information relating to the error message!

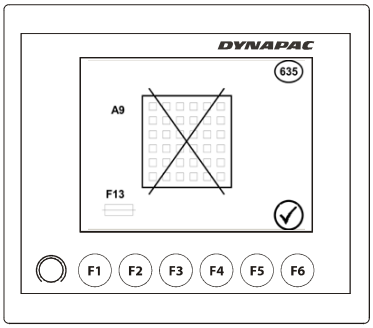
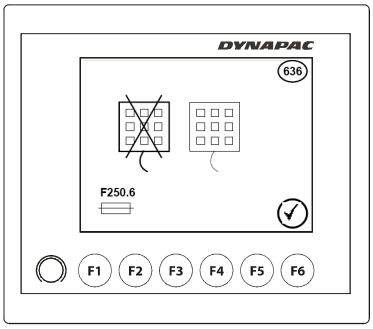
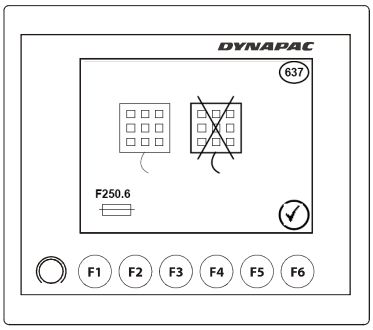
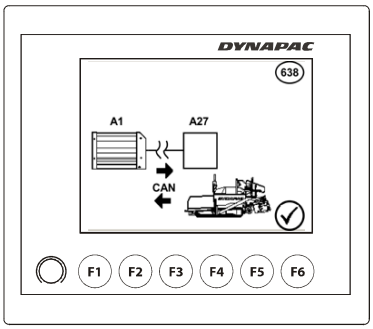
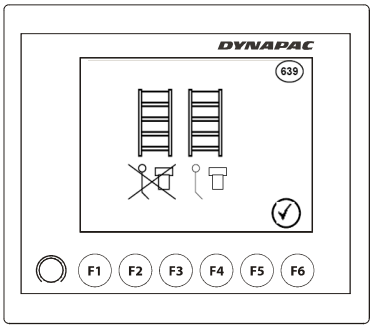
Error No. / meaning	Display
Error message 600 General error display	
Error message 601 Conductor break Automatic drive controller travel drive pump	
Error message 602 Conductor break Automatic drive controller travel drive pump	
Error message 603 Conductor break Automatic drive controller travel drive pump	

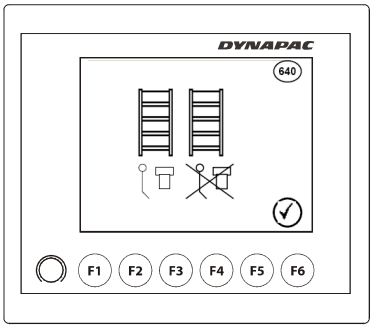
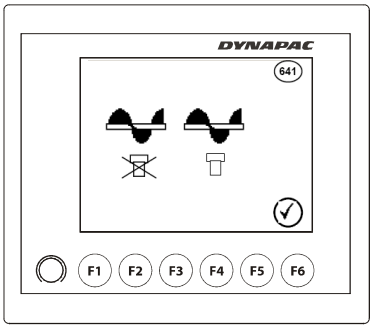
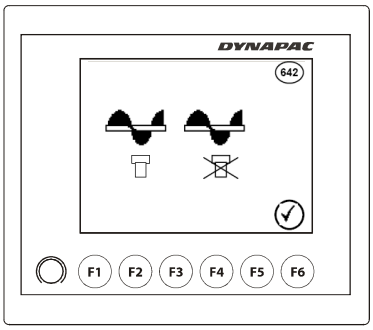
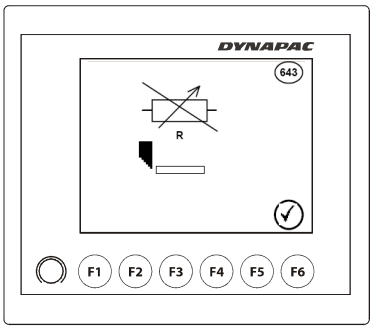
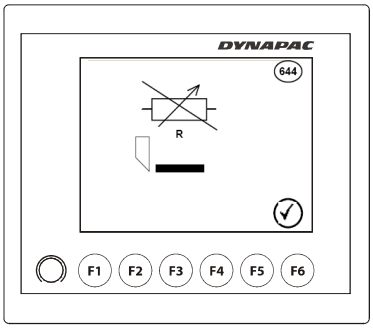
Error No. / meaning	Display
Error message 604 Conductor break Automatic drive controller travel drive pump	
Error message 605 - Steering potentiometer defective	
Error message 606 - Communication interrupted Automatic drive controller drive engine	
Error message 607 - Potentiometer for vehicle speed defective	
Error message 608 - Drive lever potentiometer defective	

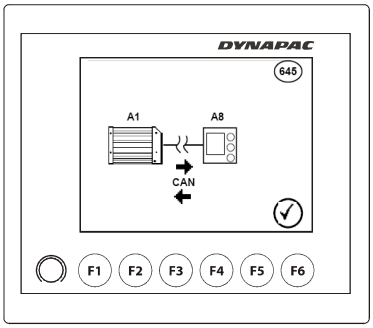
Error No. / meaning	Display
Error message 609 - Battery voltage too low	
Error message 610 - „Forwards driving mode“ blocked Variable: - Driving/steering direction (1)	
Error message 611 - „Backwards driving mode“ blocked	
Error message 612 - „Driving mode - left turn“ blocked	
Error message 613 - „Driving mode - right turn“ blocked	

Error No. / meaning	Display
Error message 614 „Forwards / backwards driving mode“ blocked	
Error message 615 - Left drive unit sensor defective	
Error message 616 - Right drive unit sensor defective	
Error message 619 - Short-circuit / wiring fault - drive lever potentiometer / drive lever microswitch (wiring in opposite direction)	
Error message 625 Error engine stop SPN = affected component FMI = type of error OC = frequency of repetition ☞ See section „Drive engine error codes“!	

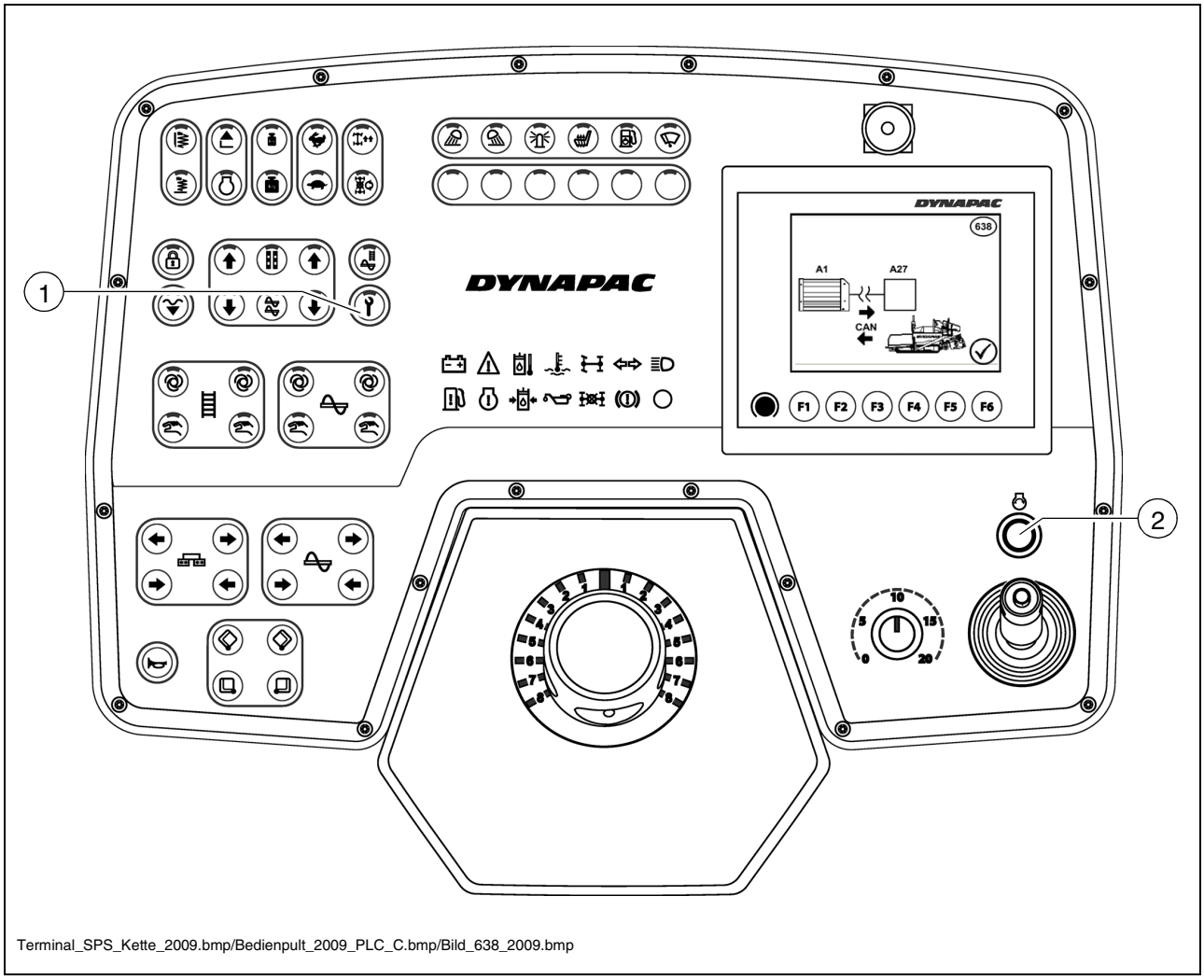
Error No. / meaning	Display
Error message 626 - Drive engine warning message - SPN = affected component - FMI = type of error - OC = frequency of repetition ☞ See section „Drive engine error codes“!	
Error message 628 - Communication interrupted Drive engine master	
Error message 629 - Slave output conductor break variable: - Slave No. (1) - Slave output (2) - Actuated element (3)	
Error message 630 - Slave output short-circuit variable: - Slave No. (1) - Slave output (2) - Actuated element (3)	
Error message 634 - Slave failure variable: - Slave No. (1) - Fuse (2)	

Error No. / meaning	Display
Error message 635 - Keyboard failure / keyboard fuse defective	
Error message 636 - Left remote control failure ☞ Check fuse F250.6	
Error message 637 - Right remote control failure ☞ Check fuse F250.6	
Error message 638 - Communication interrupted Automatic drive controller master ☞ Observe section „Notes on error messages“!	
Error message 639 - Conveyor limit switch defective. - Left limit switch	

Error No. / meaning	Display
Error message 640 - Conveyor limit switch defective. - Right limit switch	
Error message 641 - Auger limit switch defective - Left limit switch	
Error message 642 - Auger limit switch defective - Right limit switch	
Error message 643 - Tamper nominal value potentiometer defective	
Error message 644 - Vibration nominal value potentiometer defective	

Error No. / meaning	Display
Error message 645 - Communication interrupted display master	

2.1 Notes on error messages



Terminal_SPS_Kette_2009.bmp/Bedienpult_2009_PLC_C.bmp/Bild_638_2009.bmp

Error message 638

Communication interrupted
Automatic drive controller master.

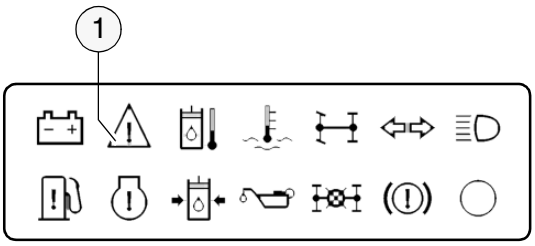
☞ First check whether the fuse for the travel drive computer is intact!

If the fuse is not the cause of the interrupted data link, diesel engine emergency starting can be carried out:

- Activate key (1) (LED on).
- Press starting button (2).

2.2 Drive engine error codes

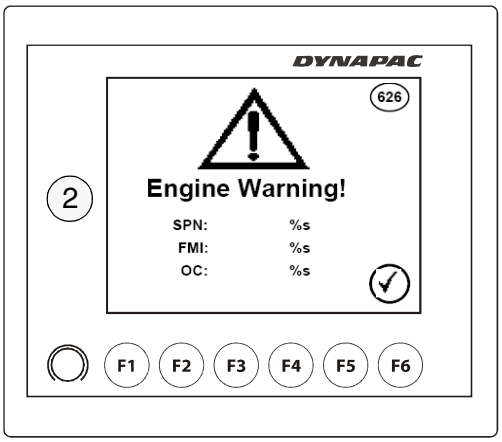
If a fault has been detected on the drive engine, this is indicated by a corresponding warning lamp (1) and simultaneously appears in code on the display.

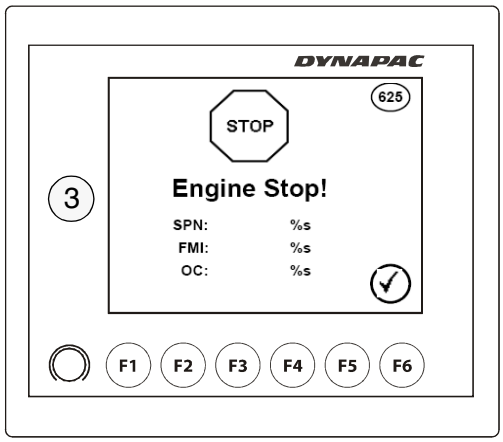


Checklight_2009.bmp

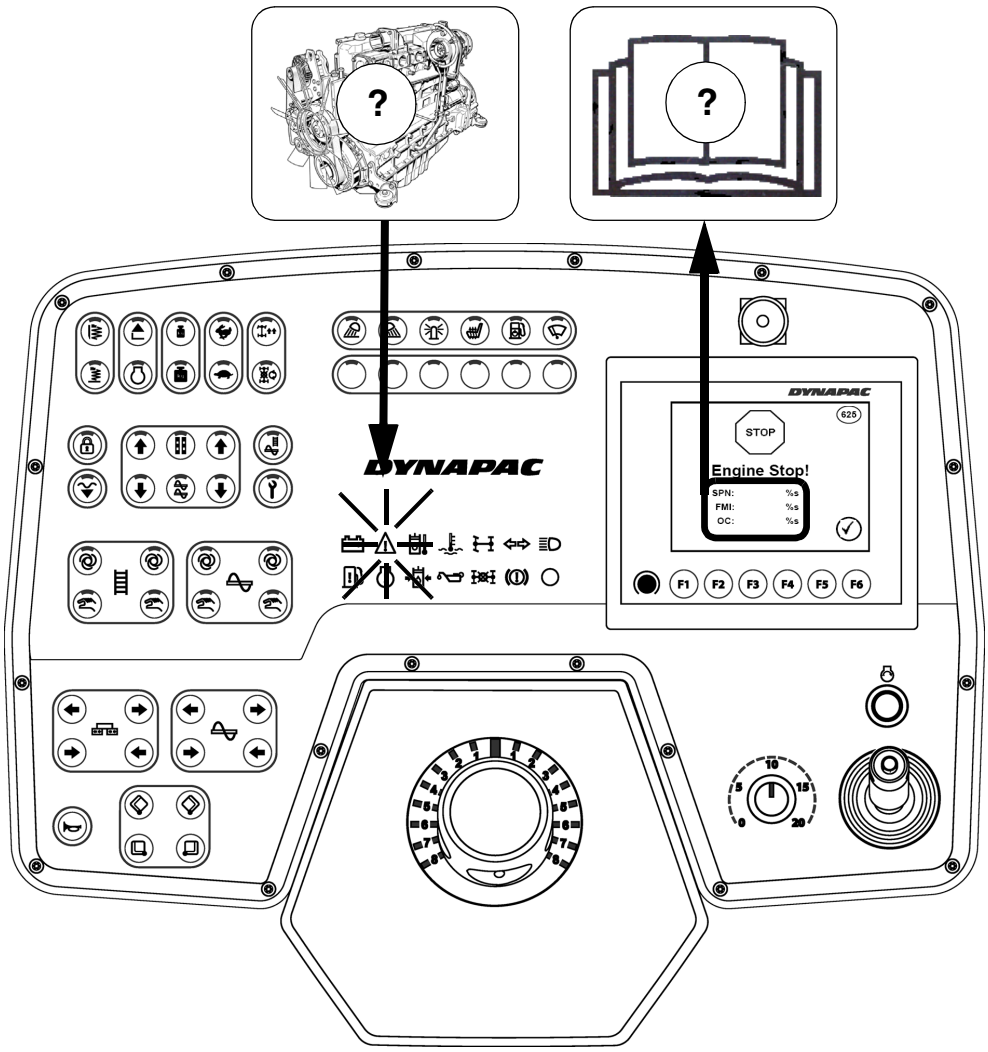
The error message simultaneously shown on the display contains several numerical codes, which uniquely define the fault after decoding.

- „ENGINE WARNING!“ display (2) indicates that there is a fault on the drive engine. The vehicle can continue to be operated on a temporary basis. However, the fault should be remedied quickly to prevent further damage.
- „STOP ENGINE!“ display (3) indicates a serious fault on the drive engine, in which the engine is stopped or has to be stopped immediately to prevent further damage.





Example:



Deutz_2013L06.tif/Bedienpult_2009_PLC_C.bmp/Bild_635_2009.bmp/Book.tif

Explanation:
Warning light and display signal a serious fault on the drive engine with automatic or necessary engine shut-down.
Display:

SPN:	157
FMI:	3
OC:	1

Cause: Cable break on sensor for rail pressure.
Effect: Engine shut-down.
Frequency: Fault occurs for the 1st time.

⚠ Notify the customer service of the error number displayed on your paver finisher; the customer service department will then discuss the further procedure with you.

SPN	Component / Location	Description (Error location)	Defined for DCR	Defined for DMV	Error code SERDIA	ID	Blink code	FMI	Self-curing[1]
29	Hand throttle	Cable break or short circuit, signal implausible compared to signal of idle sensor	●	●	138	HdThrt	1-2-6	2, 3, 4, 11	
84	Vehicle speed signal	Speed above target range, signal missing or implausible	●	●	232	VSSCD1	5-2-1	0, 8, 12, 14	●
91	Accelerator pedal	Cable break or short circuit, signal implausible compared to signal of idle sensor (analog pedal)	●	●	12	APP1	2-2-6	2, 3, 4, 11	
91	Accelerator pedal	Cable break or short circuit, bad PWM signal range or frequency (digital pedal)	●	●	14	APPPwm	2-2-2	2, 8	●
91	Accelerator pedal	Bad PWM pulse-width repetition rate (digital pedal)	●	●	15	APPPwmPer	2-2-2	8, 11	●
94	Fuel low pressure sensor	Cable break or short circuit	●	●	90	FlPSCD	2-1-6	3, 4, 11	●
94	Fuel low pressure	Below target range with system reaction	●	●	91	FlPSCDSysReac	2-1-6	2, 11	●
97	Fuel filter water level sensor	Cable break or short circuit	●	●	87	FlFCD	2-2-8	3, 4, 11	●
97	Water level in fuel filter	Above target range	●	●	89	FlFCD_WtLvl	2-2-8	11, 12	
100	Oil pressure sensor	Cable break or short circuit	●	●	196	OPSCD	2-2-4	0, 2, 3, 4	●
100	Oil pressure sensor	Pressure value implausible low	●	●	197	OPSCD1	2-3-1	1, 11	●
100	Oil pressure	Above target range	●	●	198	OPSCDSysReacHi	2-3-1	0, 11	●
100	Oil pressure	Below target range	●	●	199	OPSCDSysReacLo	2-3-1	1, 11	●
102	Charge air pressure sensor	Cable break or short circuit	●	●	32	BPSCD	2-2-3	2, 3, 4	●
102	Charge air pressure	Outside target range with system reaction	●	●	33	BPSCDSysReac	2-2-3	2, 11	●
105	Charge air temperature sensor	Cable break or short circuit	●	●	149	IATSCD	1-2-8	2, 3, 4, 11	●
105	Charge air temperature	Above target range with system reaction	●	●	150	IATSCDSysReac	2-3-3	0, 11	●
107	Air filter condition	Pressure loss above target range with system reaction	●	●	11	AirFltSysReac	1-3-6	0, 11	●
108	ECU internal error	Ambient pressure sensor defective	●	●	16	APSCD	2-9-2	2, 3, 4, 11	●
110	Coolant temperature sensor	Cable break or short circuit	●	●	55	CTSCD	2-2-5	2, 3, 4	●
110	Coolant temperature	Outside target range with system reaction	●	●	56	CTSCDSysReac	2-3-2	0, 11	●
111	Coolant level	Outside target range with system reaction	●	●	37	CLSCDSysReac	2-3-5	1, 11	
157	Rail pressure sensor	Cable break or short circuit	●		209	RailCD	1-4-7	3, 4, 11	
157	Rail pressure sensor	Deviation of signal during start or after-run above target range	●		210	RailCDOfsTst	1-4-7	0, 1, 11	●
158	Terminal 15	Ignition ON not detected	●	●	226	T15CD	5-1-4	11, 12	
168	Battery	Voltage below target range	●	●	22	BattCD	3-1-8	0, 1, 11	●
168	Battery voltage	Above target range with system reaction	●	●	23	BattCDSysReac	3-1-8	2, 11	●
174	Fuel temperature sensor	Fuel temp. sensor: cable break or short circuit	●	●	133	FTSCD	2-2-7	3, 4, 11	●
174	Fuel temperature	Above target range with system reaction	●	●	134	FTSCDSysReac	2-3-7	0, 11	●
175	Oil temperature sensor	Cable break or short circuit	●	●	201	OTSCD	1-4-4	2, 3, 4	●
175	Oil temperature	Below target range with system reaction	●	●	203	OTSCDSysReac	1-4-4	0, 11	●
190	Engine speed sensor	Engine running with cam-shaft speed signal only	●	●	75	EngMBackUp	2-1-2	11, 12	●

SPN	Component / Location	Description (Error location)	Defined for DCR	Defined for DMV	Error code SERDIA	ID	Blink code	FMI	Self-curing[1]
190	Engine speed sensor	Speed signal from cam-shaft bad or missing	●	●	76	EngMCaS1	2-1-2	8, 11, 12	●
190	Engine speed sensor	Speed signal from crank-shaft bad or missing	●	●	77	EngMCrS1	2-1-2	8, 11, 12	●
190	Engine speed sensor	Speed signals of crank-shaft and cam-shaft are phase-shifted	●	●	78	EngMOfsCaSCrS	2-1-3	2, 11	
190	Overspeed	Engine overspeed with system reaction	●	●	79	EngPrtSysReacFOC	2-1-4	0, 11	
190	Overrun conditions	Overrun conditions with system reaction	●	●	80	EngPrtSysReacORC	2-1-4	11, 14	●
520	CAN message	Missing (message "TSC1-TR")	●	●	126	FrmMngTOTSC1TR	1-1-9	11, 12	
563	Main relay	Short circuit to ground or emergency shut-off (relay 3)	●	●	187	MRlyCDMnRly2	2-6-1	7, 11, 12	
624	Diagnostic lamp	Cable break or short circuit, disabled by ECU	●	●	225	SysLamp	5-1-3	2, 3, 4, 5	
630	ECU internal error	EEPROM memory access	●	●	142	HWEMonEEPROM	2-8-1	11, 12	
639	CAN bus off-state	Cable break or short circuit, off-state (CAN bus A)	●	●	192	NetMngCANAOff	2-7-1	11, 14	●
651	Single injector	Short circuit (injector 1)	●	●	159	InjVlvCyl1A	1-5-4	3, 4, 11, 13	●
651	Single injector	Cable break (injector 1)	●	●	160	InjVlvCyl1B	1-5-4	5, 13	●
652	Single injector	Short circuit (injector 2)	●	●	161	InjVlvCyl2A	1-5-5	3, 4, 11, 13	●
652	Single injector	Cable break (injector 2)	●	●	162	InjVlvCyl2B	1-5-5	5, 13	●
653	Single injector	Short circuit (injector 3)	●	●	163	InjVlvCyl3A	1-5-6	3, 4, 11, 13	●
653	Single injector	Cable break (injector 3)	●	●	164	InjVlvCyl3B	1-5-6	5, 13	●
654	Single injector	Short circuit (injector 4)	●	●	165	InjVlvCyl4A	1-6-1	3, 4, 11, 13	●
654	Single injector	Cable break (injector 4)	●	●	166	InjVlvCyl4B	1-6-1	5, 13	●
655	Single injector	Short circuit (injector 5)	●	●	167	InjVlvCyl5A	1-6-2	3, 4, 11, 13	●
655	Single injector	Cable break (injector 5)	●	●	168	InjVlvCyl5B	1-6-2	5, 13	●
656	Single injector	Short circuit (injector 6)	●	●	169	InjVlvCyl6A	1-6-3	3, 4, 11, 13	●
656	Single injector	Cable break (injector 6)	●	●	170	InjVlvCyl6B	1-6-3	5, 13	●
657	Single injector	Short circuit (injector 7)		●	171	InjVlvCyl7A	1-6-4	3, 4, 11, 13	●
657	Single injector	Cable break (injector 7)		●	172	InjVlvCyl7B	1-6-4	5, 13	●
658	Single injector	Short circuit (injector 8)		●	173	InjVlvCyl8A	1-6-5	3, 4, 11, 13	●
658	Single injector	Cable break (injector 8)		●	174	InjVlvCyl8B	1-6-5	5, 13	●
676	Air heater relay	Cable break or wrong connection	●	●	19	ArHtCD_NoLd	2-6-3	4, 11	
676	Air heater relay	Inoperable during shut-off	●	●	20	ArHtCD_RlyErr	2-6-3	2, 5, 11	
677	Start relay	Start relay (high side): short circuit	●	●	223	StrtCDHS	5-1-2	3, 4, 11	
677	Start relay	Start relay (low side): cable break or short circuit, disabled by ECU	●	●	224	StrtCDLS	5-1-2	3, 4, 5, 11	
701	Reserve output	Short circuit to Ubatt (output 1)	●	●	57	Dummy1CD_Max	-	11	
701	Reserve output	Short circuit to ground (output 1)	●	●	58	Dummy1CD_Min	-	11	
701	Reserve output	Cable break or ECU internal error (output 1)	●	●	59	Dummy1CD_SigNpl	-	11	
702	Reserve output	Short circuit to Ubatt (output 2)	●	●	60	Dummy2CD_Max	-	11	

SPN	Component / Location	Description (Error location)	Defined for DCR	Defined for DMV	Error code SERDIA	ID	Blink code	FMI	Self-curing[1]
702	Reserve output	Short circuit to ground (output 2)	●	●	61	Dummy2CD_Min	-	11	
702	Reserve output	Cable break or ECU internal error (output 2)	●	●	62	Dummy2CD_SigNpl	-	11	
703	Engine operating signal lamp	Cable break or ECU internal error	●	●	81	ESLpCD	1-4-2	2, 3, 4, 5	
704	Coolant temperature warning lamp	Cable break or short circuit	●	●	54	CTLpCD	1-2-3	11	
705	Oil pressure warning lamp	Cable break or short circuit	●	●	195	OPLpCD	1-3-5	2, 3, 4, 5	
729	Air heater relay	Cable break or short circuit	●	●	17	ArHt1	2-6-3	3, 4, 5, 11	●
730	Air heater magnetic valve	Cable break or short circuit	●	●	18	ArHt2	2-6-3	3, 4, 5, 11	●
898	CAN message	Missing (message "TSC1-TE")	●	●	125	FrmMngTOTSC1TE	1-1-8	11, 12	
923	Engine power output	Engine Power output: cable break or short circuit	●	●	74	EngCDTrqCalcOut	5-5-5	2, 3, 4, 5	
975	Fan actuator	Fan actuator: cable break or short circuit	●	●	83	FanCD	2-3-8	2, 3, 4, 5	
1072	Engine brake (internal)	Internal engine brake: cable break or short circuit	●	●	52	CRERCD	5-2-8	3, 4, 5, 11	
1074	Engine brake flap actuator	Engine brake flap actuator: cable break or short circuit	●	●	82	ExFlCD	2-1-9	3, 4, 5, 11	
1079	ECU internal error	Wrong voltage of internal 5V reference source 1	●	●	219	SSpMon1	2-8-2	3, 4, 11	●
1080	ECU internal error	Wrong voltage of internal 5V reference source 2	●	●	221	SSpMon2	2-8-2	3, 4, 11	●
1081	Preheating signal lamp	Cable break or short circuit	●	●	53	CSLpCD	3-2-8	2, 3, 4, 5	
1109	Shut-off request	Shut-off request ignored by operator	●	●	48	CoEngShOffDemIgr	3-4-1	2, 11	
1231	CAN bus off-state	Cable break or short circuit, off-state (CAN bus B)	●	●	193	NetMngCANBOff	2-7-1	11, 14	●
1235	CAN bus off-state	Cable break or short circuit, off-state (CAN bus C)	●	●	194	NetMngCANCOff	2-7-1	11, 14	●
1237	Override switch	Switch hangs	●	●	200	OSwCD	1-4-5	2, 11	●
1322	Multiple cylinders	Misfire detected	●	●	46	CmbChbMisfireMul	2-4-1	11, 12	
1323	Single cylinder	Misfire detected (cylinder 1)	●	●	38	CmbChbMisfire1	2-4-1	11, 12	
1324	Single cylinder	Misfire detected (cylinder 2)	●	●	39	CmbChbMisfire2	2-4-1	11, 12	
1325	Single cylinder	Misfire detected (cylinder 3)	●	●	40	CmbChbMisfire3	2-4-1	11, 12	
1326	Single cylinder	Misfire detected (cylinder 4)	●	●	41	CmbChbMisfire4	2-4-1	11, 12	
1327	Single cylinder	Misfire detected (cylinder 5)	●	●	42	CmbChbMisfire5	2-4-1	11, 12	
1328	Single cylinder	Misfire detected (cylinder 6)	●	●	43	CmbChbMisfire6	2-4-1	11, 12	
1346	Misfire	Misfire detected with system reaction	●		47	CmbChbSysReac	2-4-1	0, 11	
1450	Single cylinder	Misfire detected (cylinder 7)		●	44	CmbChbMisfire7	2-4-1	11, 12	
1451	Single cylinder	Misfire detected (cylinder 8)		●	45	CmbChbMisfire8	2-4-1	11, 12	
1638	Customer-specific sensor	Cable break or short circuit (sensor 2)	●	●	139	HOTSCD	3-1-4	3, 4, 11, 12	●
1638	Customer-specific temperature	Outside target range with system reaction (temperature 2)	●	●	140	HOTSCDSysReac	3-1-4	2, 11	●
2634	Main relay	Short circuit to Ubatt (relay 1)	●	●	182	MnRly1_SCB	1-3-7	3, 11	
2634	Main relay	Short circuit to ground (relay 1)	●	●	183	MnRly1_SCG	1-3-8	4, 11	
2634	Main relay	Short circuit to ground or emergency shut-off (relay 2)	●	●	186	MRlyCD	2-6-1	7, 11, 12	

SPN	Component / Location	Description (Error location)	Defined for DCR	Defined for DMV	Error code SERDIA	ID	Blink code	FMI	Self-curing[1]
2634	Main relay	Short circuit to ground or emergency shut-off (relay 3)	●	●	188	MRlyCDMnRly3	2-6-1	7, 11, 12	
2791	EGR actuator (external)	Short circuit to Ubatt	●	●	69	EGRCD_Max	4-1-4	3, 11	
2791	EGR actuator (external)	Short circuit to ground	●	●	70	EGRCD_Min	4-1-4	4, 11	
2791	EGR actuator (external)	Cable break or ECU internal error	●	●	71	EGRCD_SigNpl	4-1-5	2, 5, 11	
2791	EGR actuator (external)	Cable break or short circuit	●	●	72	EGRCDIntEGR	4-1-6	2, 3, 4, 5	
523212	CAN message	Missing (message "EngPrt" = engine protection)	●	●	106	FrmMngTOEngPrt	3-3-3	11, 12	●
523216	CAN message	Missing (message "PrHtEnCmd" = preheat and engine command)	●	●	110	FrmMngTOPrHtEnCmd	3-3-7	11, 12	●
523218	CAN message	Missing (message "RxCCVS" = cruise control)	●	●	112	FrmMngTORxCCVS	1-1-1	11, 12	●
523222	CAN message	Missing (message "TCO1" = speedo signal)	●	●	118	FrmMngTOTCO1	1-1-6	11, 12	●
523238	CAN message	Missing (message "SwtOut" = switch outputs)	●	●	117	FrmMngTOSwtOut	1-1-5	11, 12	●
523239	CAN message	Missing or value above target range (message "DecV1" = pseudo pedal)	●	●	94	FrmMngDecV1	5-2-6	2, 12	●
523240	CAN message	Missing (message "FunModCtl" = function mode control)	●	●	95	FrmMngFunModCtl	5-2-7	11, 12	●
523350	Multiple injectors	Short circuit (cylinder bank 1)	●	●	153	InjVlvBnk1A	1-5-1	3, 4, 11, 13	●
523351	Multiple injectors	Cable break (cylinder bank 1)	●	●	154	InjVlvBnk1B	1-5-1	5, 13	●
523352	Multiple injectors	Short circuit (cylinder bank 2)	●	●	155	InjVlvBnk2A	1-5-2	3, 4, 11, 13	●
523353	Multiple injectors	Cable break (cylinder bank 2)	●	●	156	InjVlvBnk2B	1-5-2	5, 13	●
523354	ECU internal error	Injector power stage A	●	●	157	InjVlvChipA	1-5-3	2, 3, 12, 14	
523355	ECU internal error	Injector power stage B	●	●	158	InjVlvChipB	1-5-3	12	
523370	Rail pressure	Compression test active: rail-pressure monitoring is going to be disabled	●	●	175	InjVlvErrDet	5-5-5	11, 14	
523420	ECU internal error	Watchdog counter exceeds maximum	●	●	184	Montr	1-3-9	11, 14	
523450	Multi state switch	Cable break or short circuit, input voltage outside target range (switch 1)	●	●	189	MSSCD1	1-4-3	2, 3, 4, 11	●
523451	Multi state switch	Cable break or short circuit, input voltage outside target range (switch 2)	●	●	190	MSSCD2	1-4-3	2, 3, 4, 11	●
523452	Multi state switch	Cable break or short circuit, input voltage outside target range (switch 3)	●	●	191	MSSCD3	1-4-3	2, 3, 4, 11	●
523470	Rail pressure limiting valve	Opening failure	●		208	PRVMon	1-4-6	2, 11, 12, 14	
523470	Rail pressure limiting valve	Opening failure with system reaction	●		236	PRVMonSysReac	1-4-6	11, 12	
523490	ECU internal error	Redundant shut-off conditions detected	●	●	218	SOPTst	1-4-9	3, 4, 11, 12	
523500	CAN message	Time-out of at least one sended message	●	●	131	FrmMngTxTO	2-7-1	11, 12	●
523550	Terminal 50	Engine start switch hangs	●	●	227	T50CD	5-1-5	11, 12	
523550	ECU internal error	Time processing unit (TPU) defective	●	●	228	TPUMon	5-5-5	2, 11	
523561	Begin of injection period	Outside target range or missing (cylinder 1)		●	24	BIPCyl1	5-3-1	2	●
523562	Begin of injection period	Outside target range or missing (cylinder 2)		●	25	BIPCyl2	5-3-2	2	●
523563	Begin of injection period	Outside target range or missing (cylinder 3)		●	26	BIPCyl3	5-3-3	2	●
523564	Begin of injection period	Outside target range or missing (cylinder 4)		●	27	BIPCyl4	5-3-4	2	●
523565	Begin of injection period	Outside target range or missing (cylinder 5)		●	28	BIPCyl5	5-3-5	2	●

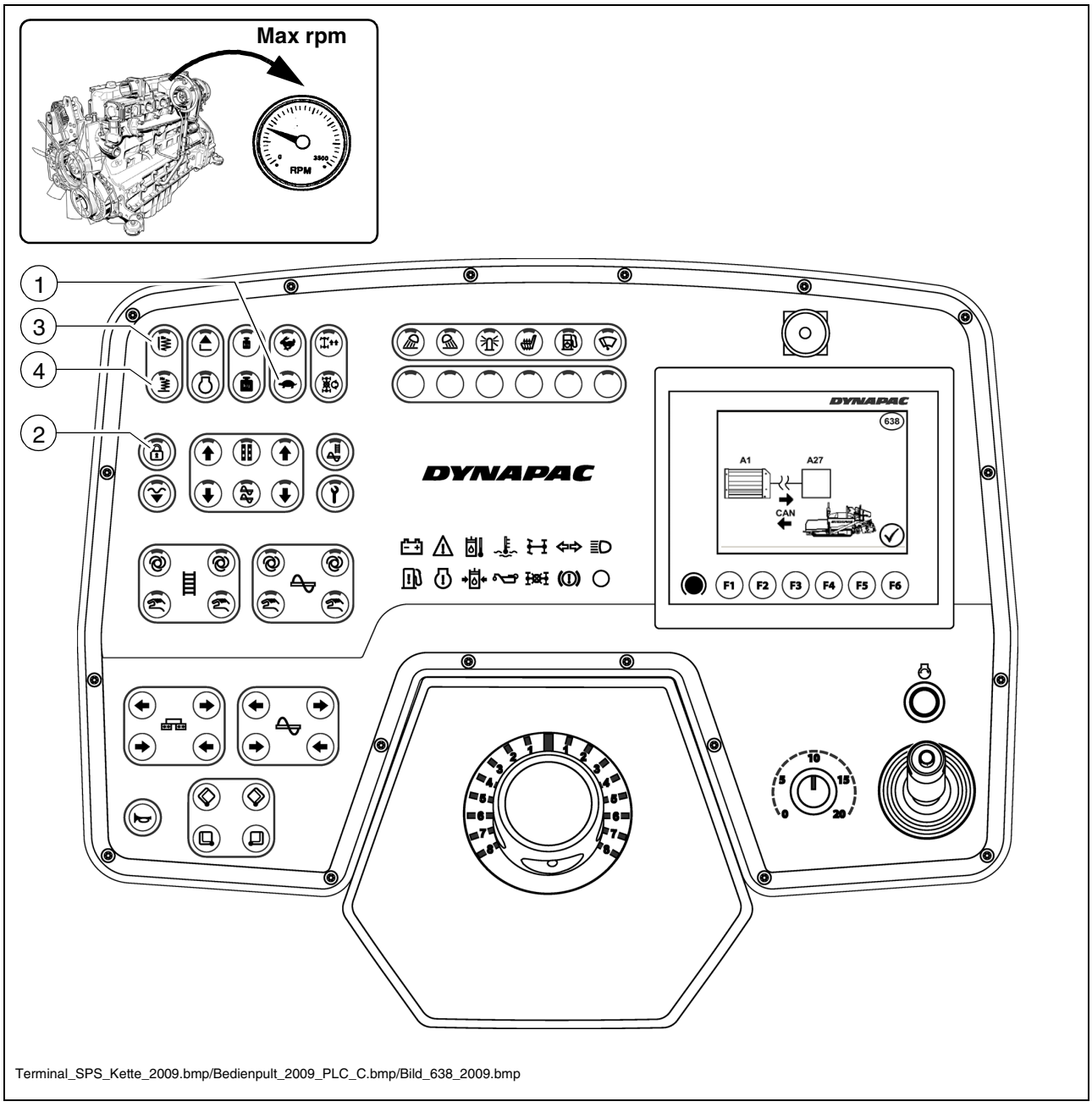
SPN	Component / Location	Description (Error location)	Defined for DCR	Defined for DMV	Error code SERDIA	ID	Blink code	FMI	Self-curing[1]
523566	Begin of injection period	Outside target range or missing (cylinder 6)		●	29	BIPCyl6	5-3-6	2	●
523567	Begin of injection period	Outside target range or missing (cylinder 7)		●	30	BIPCyl7	5-3-7	2	●
523568	Begin of injection period	Outside target range or missing (cylinder 8)		●	31	BIPCyl8	5-3-8	2	●
523600	ECU internal error	Serial communication interface defective	●	●	235	WdCom	5-5-5	11, 12	
523601	ECU internal error	Wrong voltage of internal 5V reference source 3	●	●	222	SSpMon3	2-8-2	3, 4, 11	●
523602	Fan speed	Above target range with system reaction	●	●	86	FanCDSysReac	2-3-8	2, 11	●
523604	CAN message	Missing (message "RxEngTemp" = engine temperature)	●	●	113	FrmMngTORxEngTemp	1-1-2	11, 12	●
523605	CAN message	Missing (message "TSC1-AE")	●	●	120	FrmMngTOTSC1AE	1-1-8	11, 12	
523606	CAN message	Missing (message "TSC1-AR")	●	●	121	FrmMngTOTSC1AR	1-1-9	11, 12	
523607	CAN message	Missing (message "TSC1-DE")	●	●	122	FrmMngTOTSC1DE	1-1-8	11, 12	
523608	CAN message	Missing (message "TSC1-DR")	●	●	123	FrmMngTOTSC1DR	1-1-9	11, 12	
523609	CAN message	Missing (message "TSC1-PE")	●	●	124	FrmMngTOTSC1PE	1-1-8	11, 12	
523610	CAN message	Missing (message "TSC1-VE")	●	●	127	FrmMngTOTSC1VE	1-1-8	11, 12	
523611	CAN message	Missing (message "TSC1-VR")	●	●	128	FrmMngTOTSC1VR	1-1-9	11, 12	
523612	ECU internal hardware monitoring	A recovery occurred which is stored as protected	●	●	143	HWEMonRcyLocked	5-5-5	11, 14	
523612	ECU internal hardware monitoring	A recovery occurred which is not stored	●	●	144	HWEMonRcySuppres-sed	5-5-5	11, 14	
523612	ECU internal hardware monitoring	A recovery occurred which is visible in the error memory	●	●	145	HWEMonRcyVisible	5-5-5	11, 14	
523612	ECU internal hardware monitoring	Overvoltage	●	●	146	HWEMonUMaxSupply	5-5-5	3, 11	
523612	ECU internal hardware monitoring	Undervoltage	●	●	147	HWEMonUMinSupply	5-5-5	4, 11	
523613	Rail pressure	Positive deviation (speed dependent) outside target range	●		211	RailMeUn0	1-3-4	0, 11	●
523613	Rail pressure	Positive deviation (flow dependent) outside target range (⇨ leakage!)	●		212	RailMeUn1	1-3-4	0, 11	●
523613	Rail pressure	Negative deviation (flow dependent) outside target range	●		213	RailMeUn2	1-3-4	0, 11	●
523613	Rail pressure	Negative deviation (speed dependent) outside target range	●		214	RailMeUn3	1-3-4	1, 11	●
523613	Rail pressure	Pressure above target range	●		215	RailMeUn4	1-3-4	0, 11	●
523613	Rail pressure	Implausible (leakage, injector needle blocked in open position)	●		216	RailMeUn7	1-3-4	2, 11	●
523615	Metering unit valve	Flow rate outside target range	●		176	MeUnCD_ADC	1-3-5	3, 4, 11	
523615	Metering unit valve	Not connected or output disabled	●		177	MeUnCDNoLoad	1-3-5	5, 11, 12	
523615	Metering unit valve	Short circuit to Ubatt	●		178	MeUnCDSCBat	1-3-5	11, 12	
523615	Metering unit valve	Short circuit to ground	●		179	MeUnCDSCGnd	1-3-5	11, 12	
523617	ECU internal error	Communication with chip CJ 940 disturbed	●	●	141	HWEMonCom	5-5-5	11, 12	
-	Customer-specific sensor	Cable break or short circuit (sensor 1)	●	●	136	GOTSCD	1-3-3	2, 3, 4, 11	●
-	Customer-specific temperature	Outside target range with system reaction (temperature 1)	●	●	137	GOTSCDSysReac	1-3-3	2, 11	●

FMI	Description
0	Data valid but above normal operational range
1	Data valid but below normal operational range
2	Data erratic, intermittent, or incorrect
3	Voltage above normal or shorted high
4	Voltage below normal or shorted low
5	Current below normal or open circuit
6	Current above normal or grounded circuit
7	Mechanical system not responding properly

FMI	Description
8	Abnormal frequency, pulse width,or period
9	Abnormal update rated
10	Abnormal rate of change
11	Failure mode not identifiable
12	Bad intelligent device or component
13	Out of Calibration
14	Special Instructions
15	Reserved

2.5 Special functions

Emergency programme on keyboard failure



Terminal_SPS_Kette_2009.bmp/Bedienpult_2009_PLC_C.bmp/Bild_638_2009.bmp

To guarantee temporary paver finisher operability in the event that the keyboard fails, an emergency programme is automatically started.

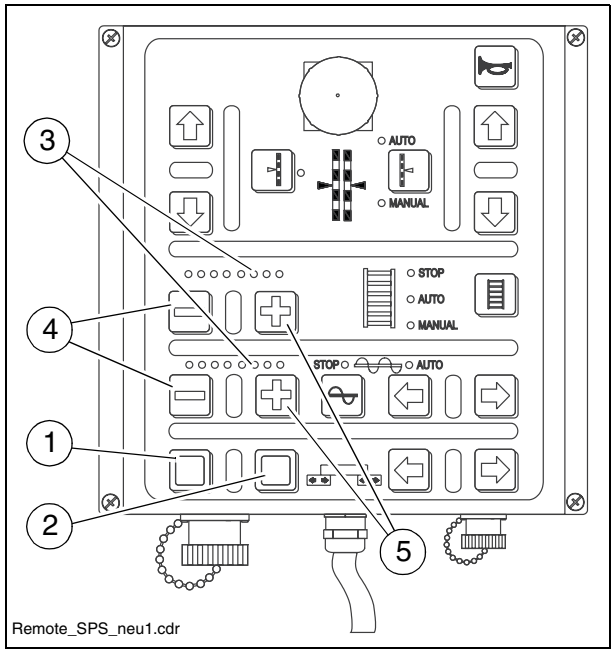
The following values and functions are activated or set:

- Diesel engine speed to 1800 rpm
- Travel drive (1) to operating speed (tortoise)
- Main function switch (2) to off
- Tamper function (3) engaged
- Vibration function (4) engaged

⚠ In the event of keyboard failure, the engaged functions are not confirmed via the relevant LED!

☞ Tamper and vibration can be switched off via the relevant rotary potentiometers (set to „zero“).
The tamper and vibration frequency can be read off via the two relevant displays (O).

The remote controls can additionally be used to activate the following functions:

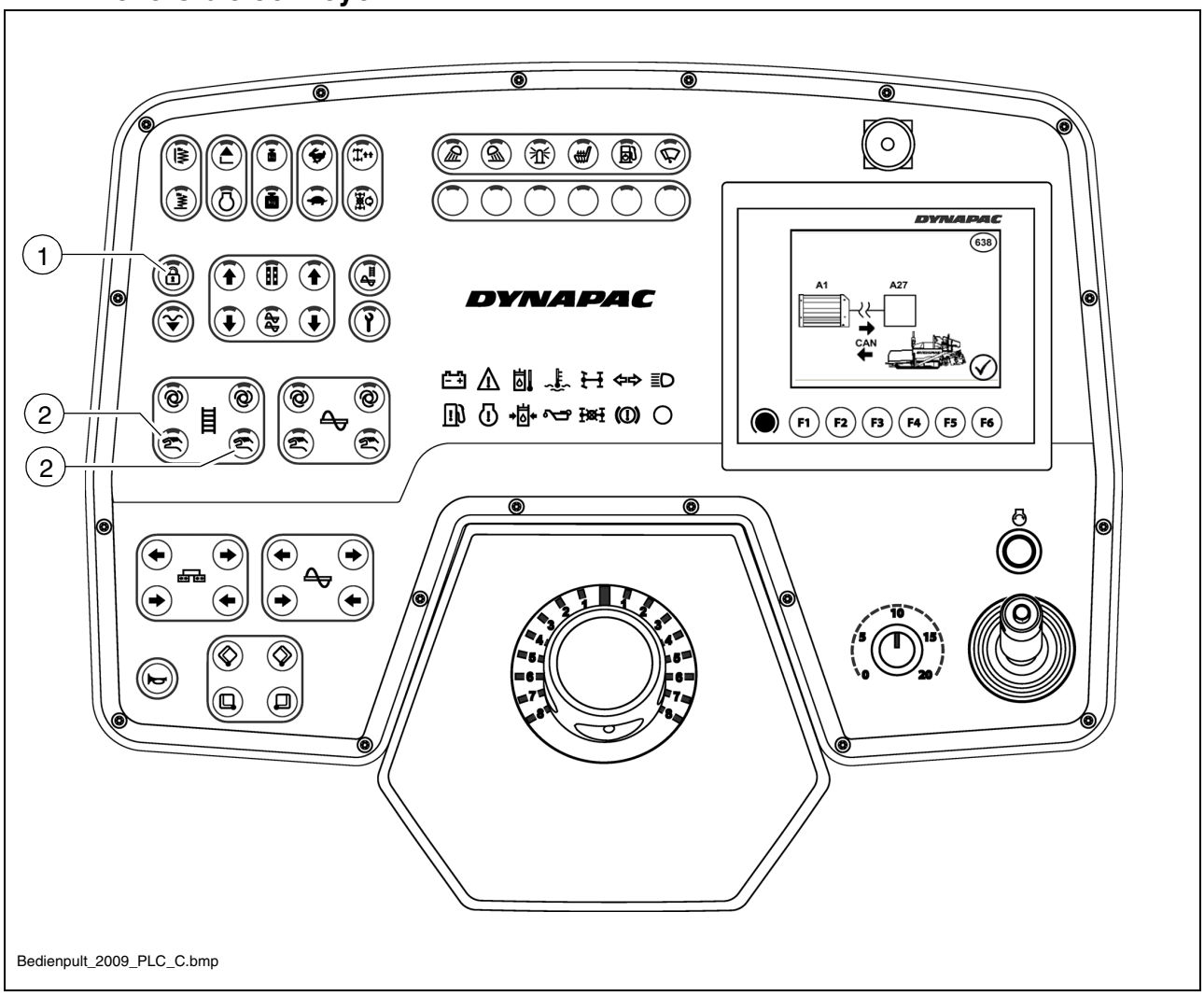


- By pressing button (1), the hopper is closed.
- By pressing button (2), the hopper is opened.
- Raise screed:
  - Switch off the auger and conveyor (3) bar LEDs by pressing the relevant minus buttons (4).
  - Raise the screed continuously by pressing the two minus buttons (4) together.
- Make the screed ready (floating position):
  - Fully engage the auger and conveyor (3) bar LEDs by pressing the relevant plus buttons (5).
- Switch the screed to the floating position by pressing the two plus buttons (5) together.

⚠ The screed is lowered immediately!

☞ To raise the screed from the floating position, the auger and conveyor bar LEDs first have to be cleared again.

Reversible conveyor



The conveyor's direction can be reversed in order to slightly reverse any paving material which may be positioned just in front of the auger. This enables e.g. material losses to be avoided during transportation.

- Switch the main function switch (1) to the „off“ position (LED off).
- Keep one or both buttons (2) depressed for approx. 1 second.
  The conveyor moves a distance of approx. 1 metre towards the hopper.

☞ If necessary, this process can be repeated as often as required to allow the conveyor to run further in the reverse direction.

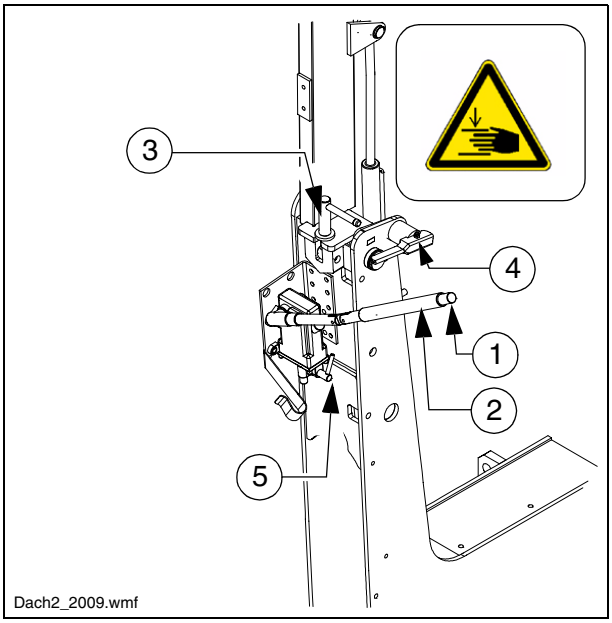
D 3.8 Operation

1 Operating elements on the paver finisher

1.1 Operating elements on the operator's control station

Protective roof (○)

The protective roof can be raised and lowered with a manual hydraulic pump.



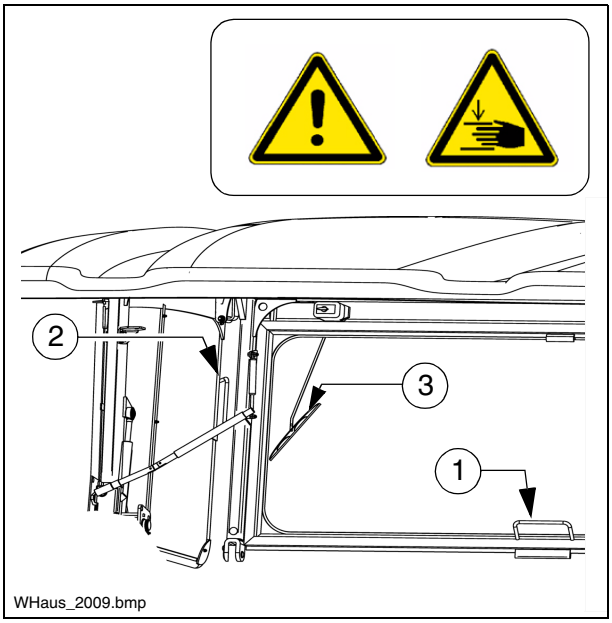
☞ The exhaust pipe is lowered or raised together with the roof.

- Remove the lower section of the pump lever (1) from the storage compartment, and connect to the upper section using a pipe (2).
- The locks (3) and (4) on both sides of the roof must be released.
- Set the adjustment lever (5) to the „Raise“ or „Lower“ position.
  - Raise the roof: The lever points forwards.
  - Lower the roof: The lever points backwards.
- Operate the pump lever (1) until the roof has reached the upper or lower limit position.
- When the roof is raised, set both locks (3) and (4) on both sides of the roof; when the roof is lowered, only set one lock (4).

⚠ If the vehicle is equipped with a protective roof, the front window must be swivelled shut and the engine hood must be closed before lowering the roof!

Protective roof (○)

The protective roof is equipped with an additional front window and two side windows.



☞ The front window must be swivelled up for maintenance work in the tank area.

- The front window can be swivelled out in the direction of travel with the bracket (1).

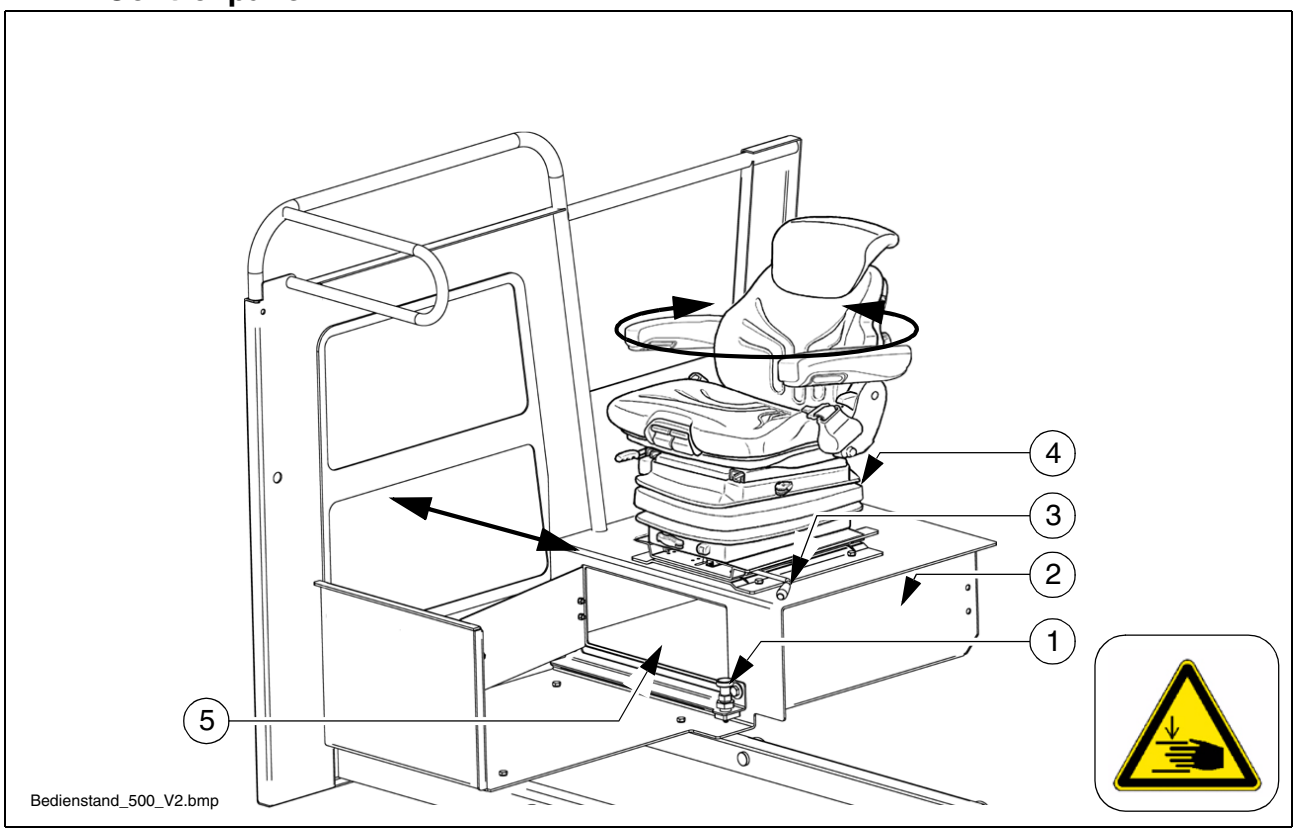
☞ If equipped with a telescoping seat console, the side window must be swivelled up before telescoping.

- The side windows can be swivelled out to the side with the bracket (2).

Windscreen wiper (○)

- Activate the windscreen wiper (3) on the operating panel if necessary.

Control panel



Telescoping seat console (○)

The seat console can be shifted beyond the outer edge of the vehicle, providing the driver with a better view of the paving area in this position.
The seat console is additionally equipped with a rotary facility.

Lateral adjustment:

- Pull the locking knob (1)
- Shift the seat console (2) to the desired position
- Engage the locking knob (1).

Rotary facility:

- Pull the locking lever (3)
- Swivel the seat (4) to the desired position
- Engage the locking lever (3).

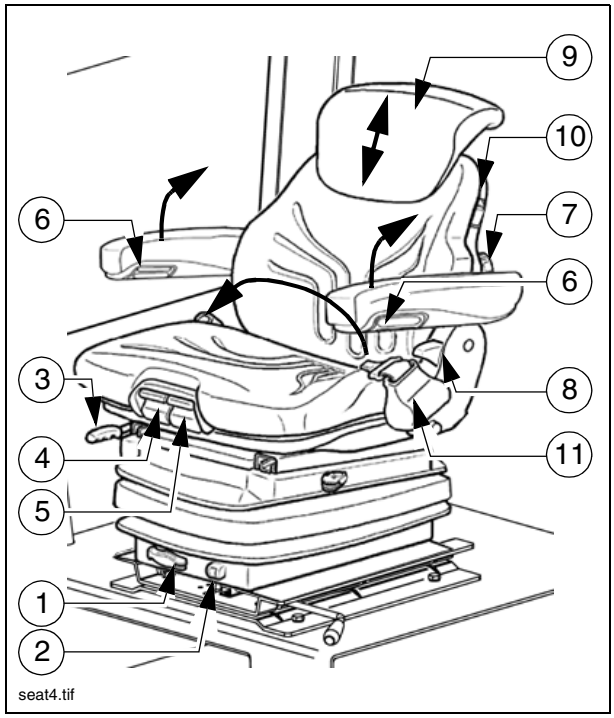
STOP After locking the seat console, it must no longer be possible to shift it to another position!

Storage compartment

A storage compartment (5) is located beneath the driver's seat.
The vehicle documentation or a first aid box can be stored here, for example.

- Open or close the flap by turning the lock.

Driver's seat, type I



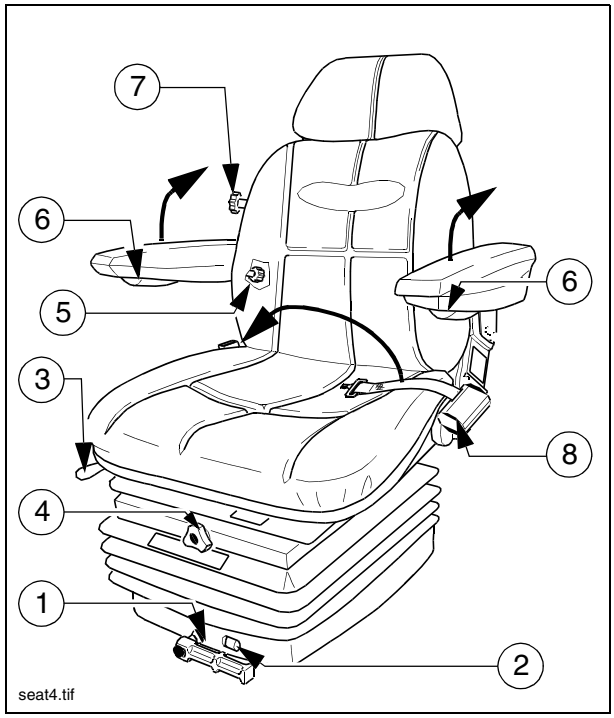
To avoid damage to health, the individual seat settings should be checked and adjusted before starting the vehicle.

After locking the individual elements, it must no longer be possible to shift then to another position.

- **Weight setting (1):** The relevant driver's weight should be set by turning the weight adjustment lever when the driver's seat is unoccupied.
- **Weight indicator (2):** The set driver's weight can be read off at the viewing window.
- **Longitudinal adjustment (3):** Longitudinal adjustment is released by actuating the locking lever.
  The locking lever must engage in the desired position.
- **Seat depth adjustment (4):** The seat depth can be individually adjusted. Raise the button to adjust the seat depth. The desired position is set by simultaneously sliding the seat surface forwards or backwards.
- **Seat inclination adjustment (5):** The seat surface's longitudinal inclination can be individually adjusted. Raise the button to adjust the inclination. The seat surface inclines to the desired position by simultaneously loading or relieving it.
- **Armrest inclination (6):** The armrest's longitudinal inclination can be adjusted by turning the handwheel. Turning outwards raises the front of the armrest; turning inwards lowers it at the front.
  In addition, the armrests can be folded up fully.
- **Lumbar support (7):** Both the height and the extent of the convexity in the backrest padding can be individually adjusted by turning the handwheel to the left or right.
- **Backrest adjustment (8):** The backrest is adjusted via the locking lever. The locking lever must engage in the desired position.
- **Back extension (9):** By pulling out via perceptible detents, the height can be individually adjusted up to a limit stop. To remove the back extension, the limit stop is overcome with a jolt.
- **Seat heating ON/OFF (10):** The seat heating is switched on and off by actuating the switch.
- **Seat belt (11):** The seat belt must be applied before starting up the vehicle.

The seat belts must be replaced following an accident.

Driver's seat, type II



To avoid damage to health, the individual seat settings should be checked and adjusted before starting the vehicle.

After locking the individual elements, it must no longer be possible to shift then to another position.

- **Weight setting (1):** The relevant driver's weight should be set by turning the weight adjustment lever when the driver's seat is unoccupied.
- **Weight indicator (2):** The set driver's weight can be read off at the viewing window.
- **Longitudinal adjustment (3):** Longitudinal adjustment is released by actuating the locking lever.
  The locking lever must engage in the desired position.
- **Seat height adjustment (4):** The seat height can be individually adjusted. Turn the handle in the desired direction to adjust the seat height.
- **Backrest adjustment (5):** The backrest inclination can be continuously adjusted. Turn the handle in the desired direction to adjust.
- **Armrest inclination (6):** The armrest's longitudinal inclination can be adjusted by turning the handwheel. Turning outwards raises the front of the armrest; turning inwards lowers it at the front.
  In addition, the armrests can be folded up fully.
- **Lumbar support (7):** Both the height and the extent of the convexity in the backrest padding can be individually adjusted by turning the handwheel to the left or right.
- **Seat belt (8):** The seat belt must be applied before starting up the vehicle.

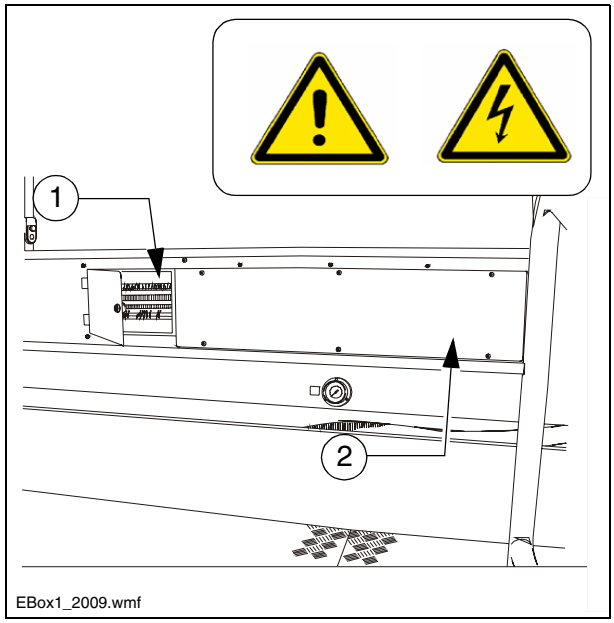
The seat belts must be replaced following an accident.

Fuse box

The terminal box, which contains all fuses and relays, etc. is located beneath the operating panel guide.

- The left box (1) contains the electrical fuses, the right box (2) contains the relays.
- A key for box (1) is included in the vehicle's scope of delivery; box (2) is equipped with quick-action locks.

☞ An assignment plan for fuses and relays can be found in chapter F8.



EBox1_2009.wmf

Batteries

The batteries (1) for the 24 V system are located behind the right lateral flap.

☞ For the specifications, refer to chapter B, „Technical Data“. For maintenance, see chapter „F“.

⚠ External starting must only be carried out according to the instructions (see section „Starting the paver finisher, external starting (starting aid)“.

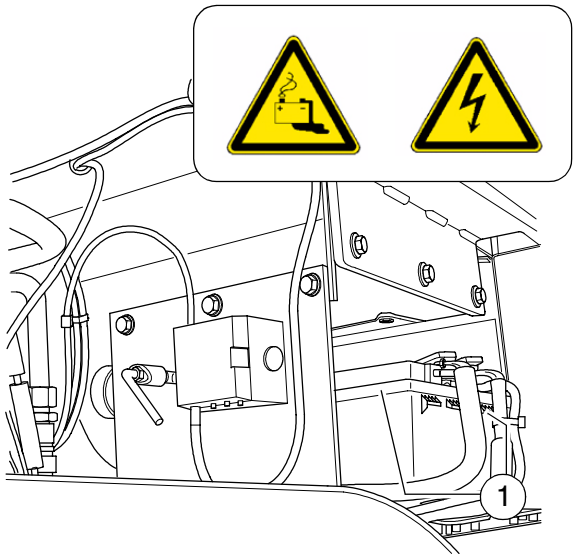
Main battery switch

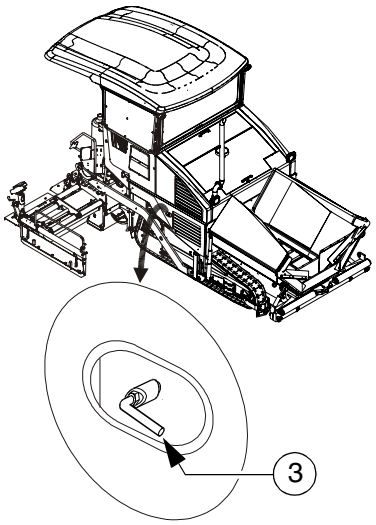
The main switch interrupting the circuit between the battery and the main fuse is located under the left maintenance flap.

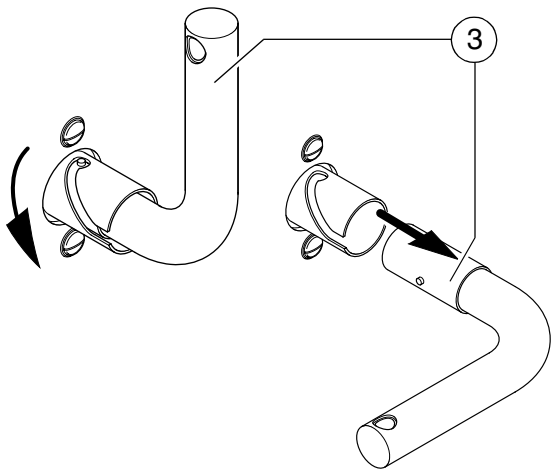
☞ For the assignment of all fuses, see chapter F.

- To interrupt the battery's current circuit, turn the key pin (3) to the left and pull it out.

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







Batterie_2009.wmf/Batterie2_2009.wmf/F0077_A1.eps//F0078_A1.eps

Hopper transport safeguard

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

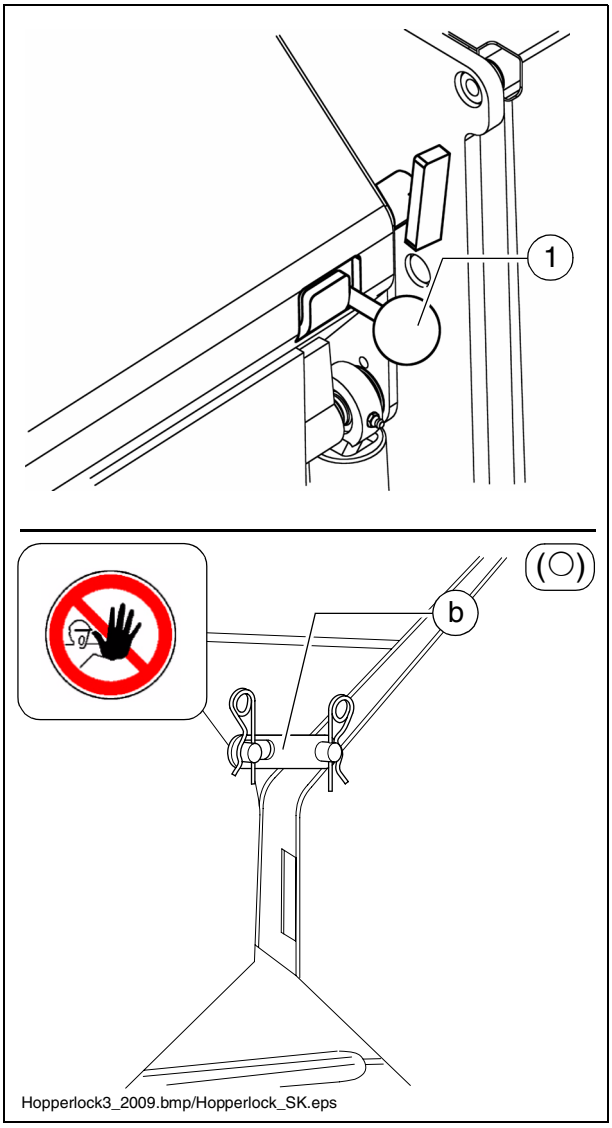
Position:

- (1) - outside on the two hopper halves

or

- (b) - in the hopper (○)

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!



Paving thickness indicator

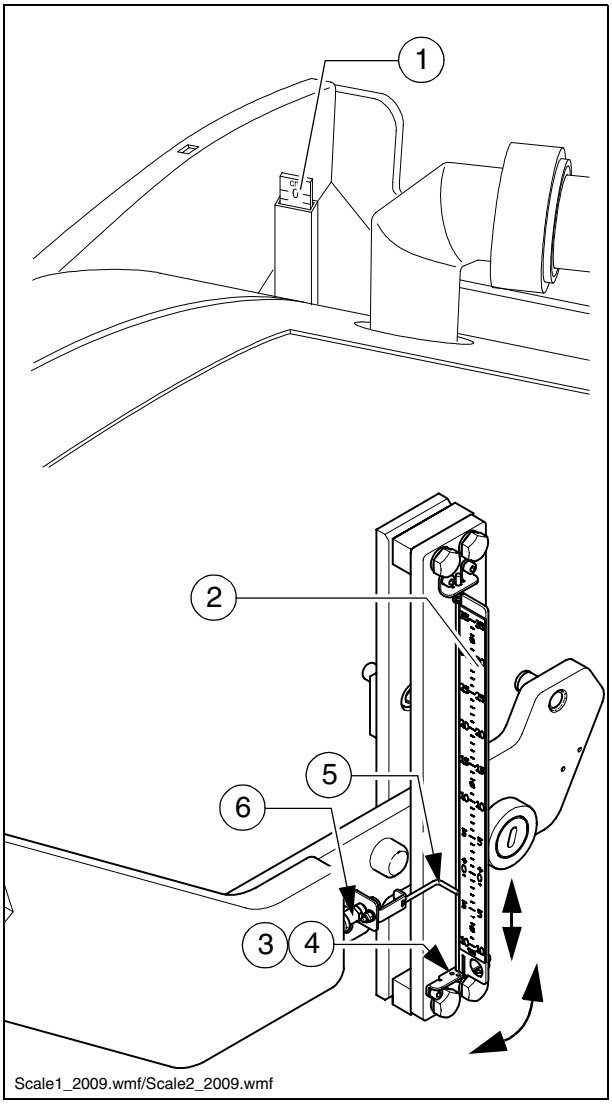
Two scales, on which the currently set paving thickness can be read off, are located on the left and right sides of the vehicle.

- In the area of the engine hood (1) for the vehicle driver.
- On the crossbeam guide (2) for the screed personnel.
- To change the reading position, the scale (2) can be raised and lowered again in one of the adjacent locating bores (3) (front/rear).

STOP To transport the vehicle, the scale (2) must be raised and lowered again in one of the outer locating bores (4) (front/rear).
The pointer (5) must be swivelled by 90° using the locking knob (6).

☞ In normal paving situations, the same paving thickness should be set on both sides of the vehicle!

⚠ Avoid parallax errors!

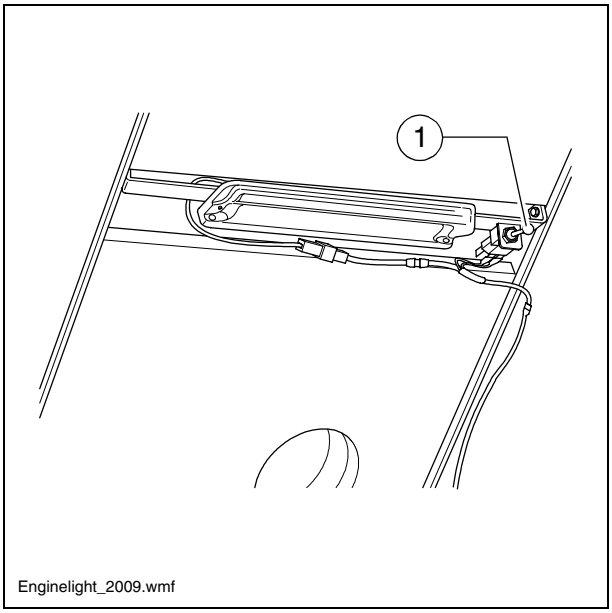


Scale1_2009.wmf/Scale2_2009.wmf

Engine compartment lighting

☞ The engine compartment lighting can be activated when the ignition is switched on.

- On/off switch (1) for the engine compartment lighting.

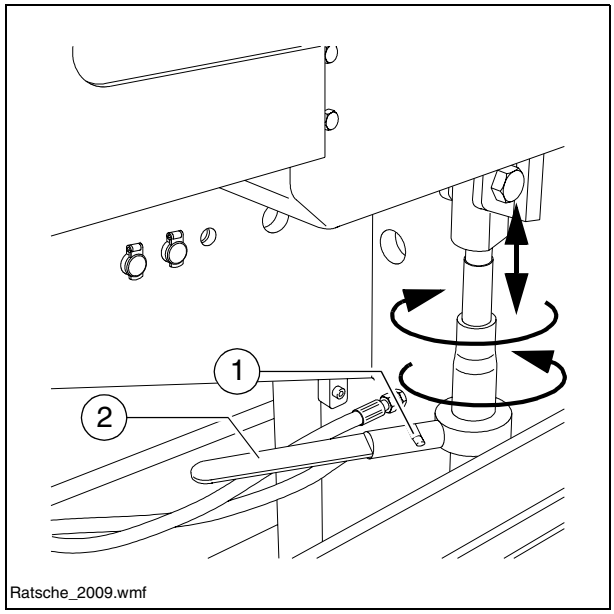


Enginelight_2009.wmf

Auger height adjustment ratchet (○)

For mechanical adjustment of the auger height

- Set the ratchet direction lever (1) to the clockwise or anti-clockwise direction. Turning anti-clockwise lowers the auger, turning clockwise raises the auger.
- Actuate the ratchet lever (2)
- Set the desired height by alternatingly actuating the left and right ratchets.



Ratsche_2009.wmf

☞ The current height can be read on both auger height indicators.

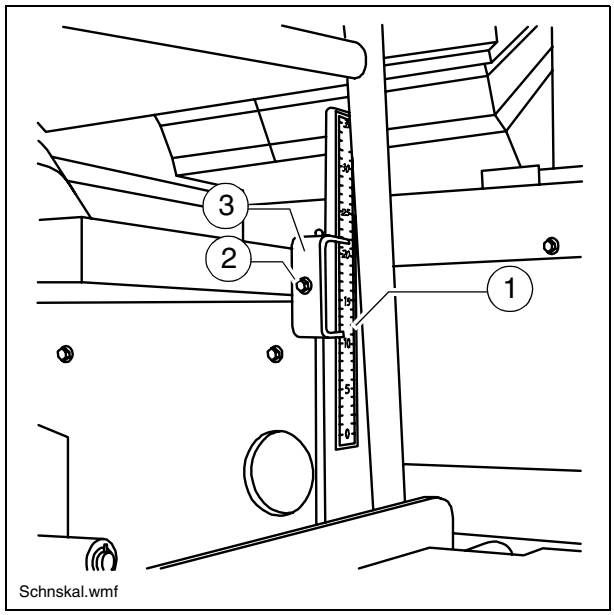
☞ Observe the notes on adjusting the auger height in the chapter „Set-up and modification“!

Auger height indicators (○)

A scale (1), on which the currently set auger height can be read off, is located on the left and right sides of the ladder.

☞ Display in cm or inches (○)

- To adjust the indicator, the bolt (2) can be released and the pointer (3) can be shifted to the desired position.
- Tighten the bolt (2) again following adjustment.



Schnskal.wmf

⚠ When setting the auger height, adjustment must be carried out evenly on both sides to prevent the auger from jamming!

Screed transport safeguard

During transportation, when the vehicle is switched off or in the event of damage, the screed is held in position via a non-return valve.

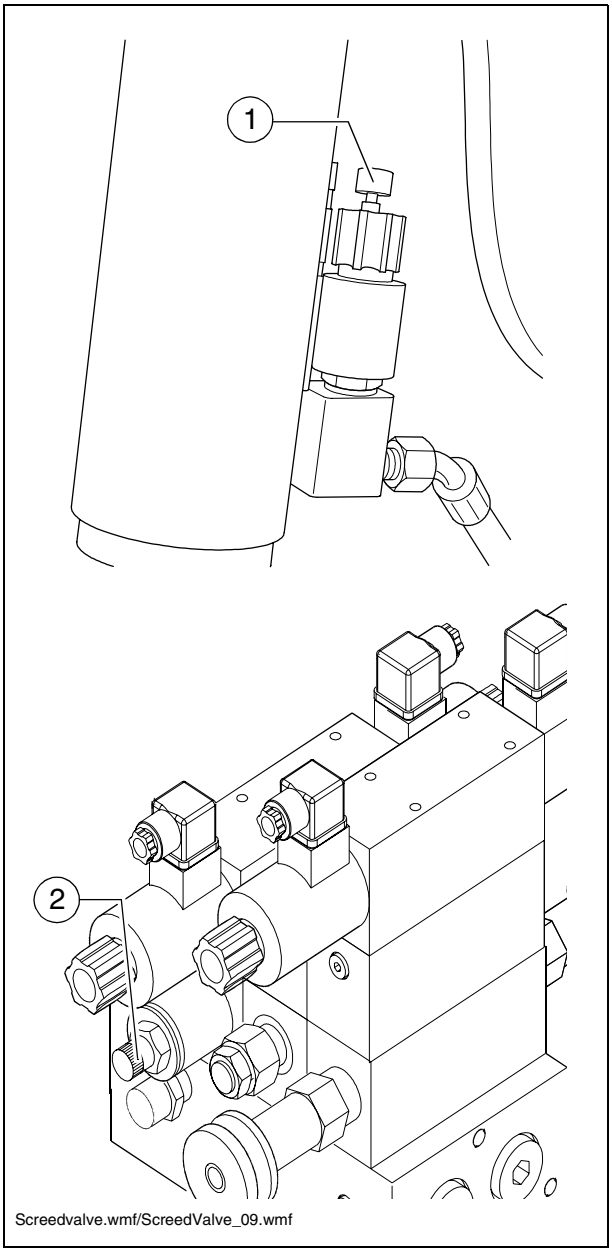
If it is necessary to lower the screed when the vehicle is deenergised, the non-return valve on the hydraulic block can be opened manually.

- Open the non-return valves on both hydraulic cylinders by screwing the knurled screw (1) in.
- Open the non-return valve on the hydraulic block at the knob (2):
  - Press the knob in and engage by turning anti-clockwise.

The screed is lowered as long as the knob on the non-return valve is pressed in.

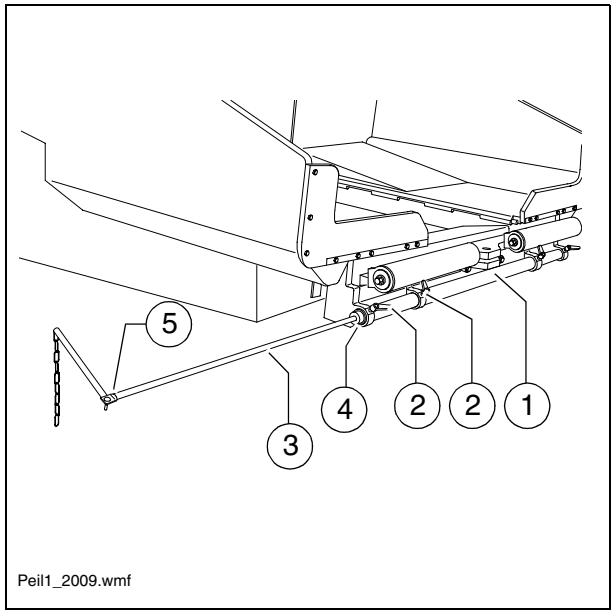
Ensure that there is nobody in the danger area!

For „normal“ operation, unscrew the knurled screw (1) on both hydraulic cylinders again and set the knob (2) to its original position.



Screedvalve.wmf/ScreedValve_09.wmf

Sensor rod / sensor rod extension



Peil1_2009.wmf

The sensor rod acts as an orientation aid for the vehicle driver during paving.
Along the defined paving route, the vehicle driver can use the sensor rod to follow a tensioned reference wire or another marking.

The sensor rod runs along the reference wire or over the marking. Steering deviations can therefore be ascertained and corrected by the driver.

⚠ Use of the sensor rod increases the basic width of the paver finisher.

STOP If the sensor rod is used, ensure that there is no one in the machine's danger area!

☞ The sensor rod is adjusted when the vehicle is positioned, with its set working width, on the paving route and the reference marking running parallel to the paving route has been set up.

Adjusting the sensor rod:

- The sensor rod (1) is located on the face end of the vehicle and can be pulled out to the left or right after releasing the four clamping levers (2).

☞ The sensor rod extension is not pulled out in the case of low working widths.

- Once the sensor rod has been set to the desired width, the clamping levers (b) must be tightened again.
- In the case of larger working widths, the sensor rod extension (3) can be pulled out from the sensor rod.
- The pulled-out sensor rod extension is secured with a screw (4).

☞ Depending on the side of the vehicle on which the sensor rod extension is used, the entire sensor rod may have to be removed and re-inserted on the other side of the vehicle!

- After releasing the wing nuts (5), the angle and height of the sensor rod extension's end section can be adjusted.
- Tighten the wing nuts (5) again following adjustment.

Separator fluid spraying system (○)

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

- Connect the spray hose (1) with quick-action coupling (2).
- Actuate button (3) to activate and deactivate the pump.
  - The indicator lamp (4) lights up when the emulsion pump is running.
- Actuate the manual valve (5) to spray.

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

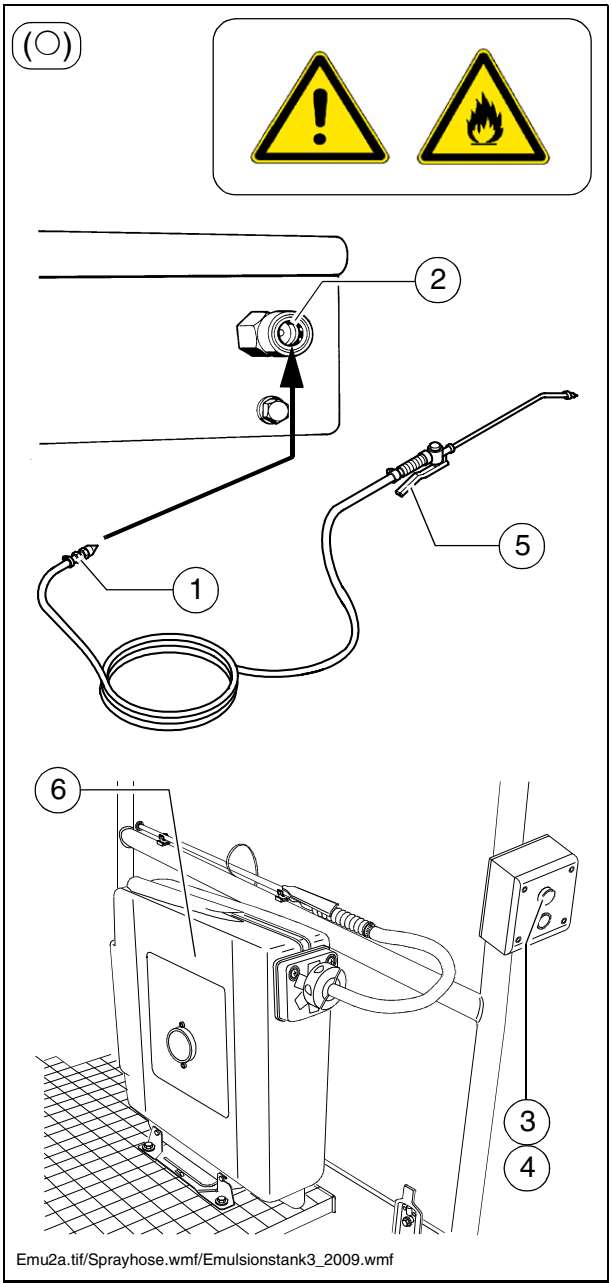
☞ A permanently installed hose package (6) for the spraying system is available as an option.

- Pull the hose out of the device until a click is audible. When released, the hose automatically engages here. The hose is automatically retracted into the guide after pulling and discharging again.

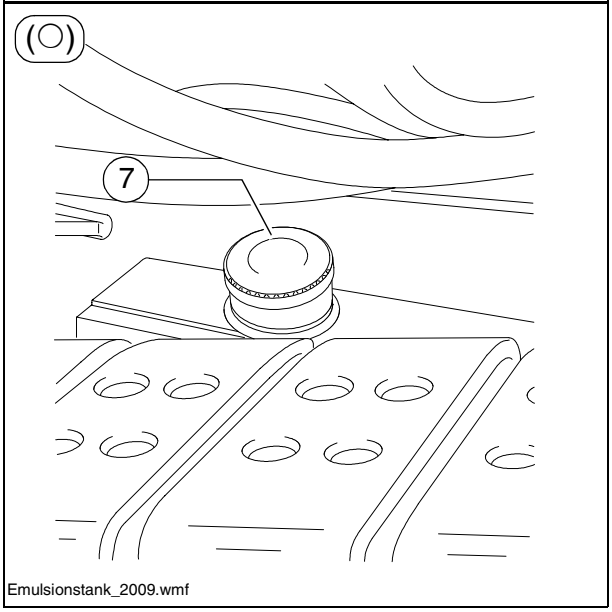
STOP Do not spray onto open flames or hot surfaces! Danger of explosion!

☞ The spraying system is fed via a canister (7) behind the left drive unit.

STOP Refill the canister only while the machine is stationary!



Emu2a.tif/Sprayhose.wmf/Emulsionstank3_2009.wmf



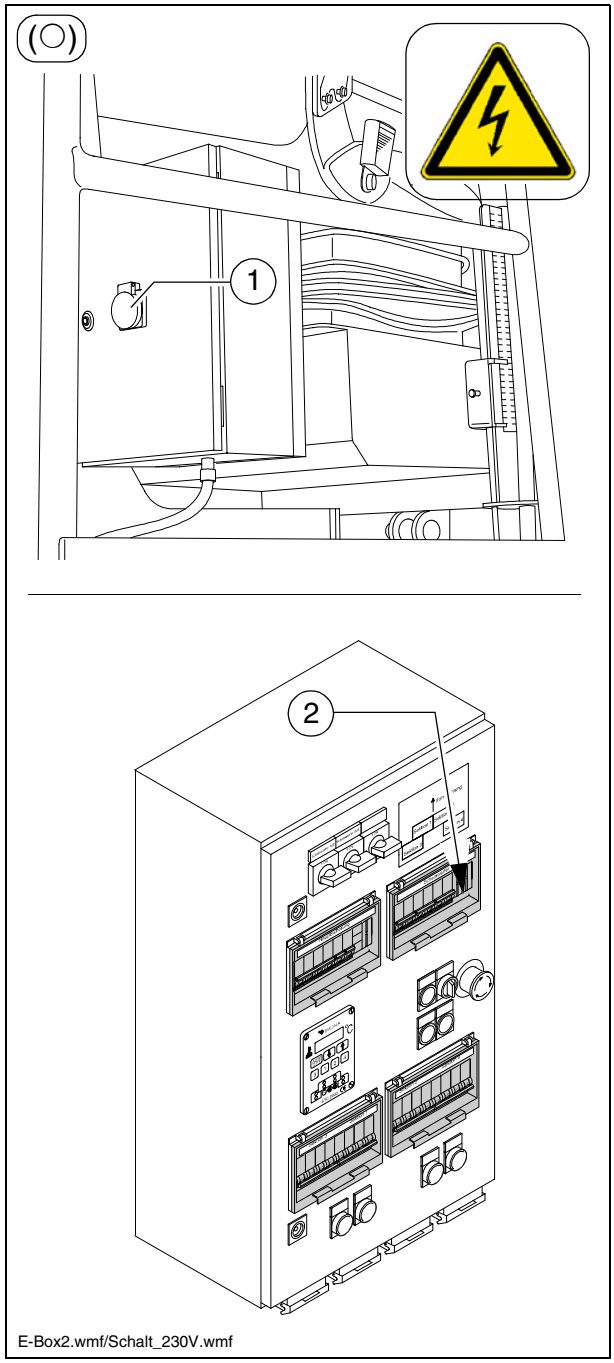
Emulsionstank_2009.wmf

230 V system (○)

☞ If equipped with a 230 V system, an additional switch cabinet is mounted on the paver finisher.

- An additional 230 V consumer can be operated at the socket (1).
- This is engaged via the relevant fuse block (2) in the screed heater's switch cabinet.

☞ If no consumer is operated at the socket, the socket should not be engaged!

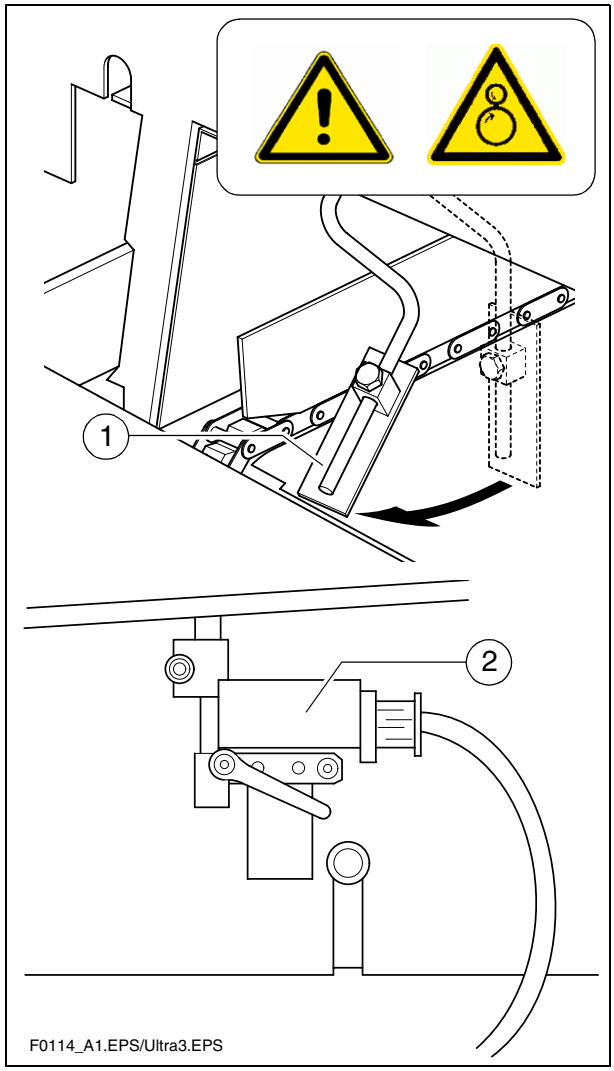


E-Box2.wmf/Schalt_230V.wmf

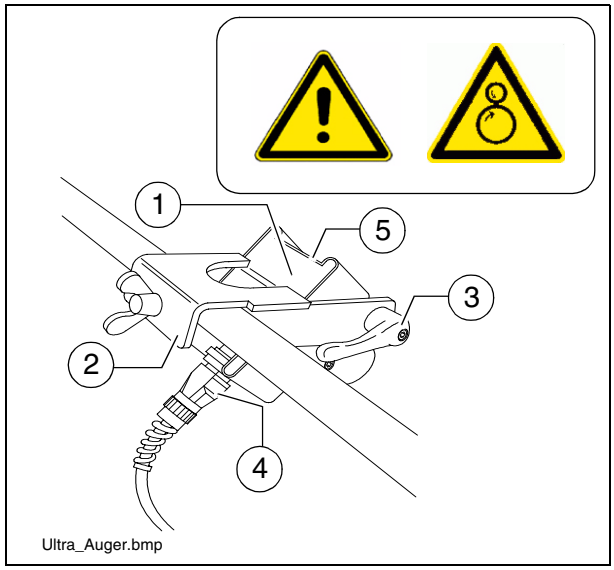
Conveyor limit switches

The mechanical conveyor limit switches (1) or the ultrasonic conveyor limit switches (2) control the material flow on the relevant half of the conveyor. The conveyors should stop when the material has roughly reached the area below the auger tube.

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



Ultrasonic auger limit switches (left and right)



☞ The limit switches control the material flow at the relevant half of the auger without contact.

The ultrasonic sensor (1) is secured to the side shield via a bracket (2). To adjust, release the clamping lever / stop screw (3) and adjust the sensor's angle. The connection cables (4) are connected to the remote controls located at the sides of the screed.

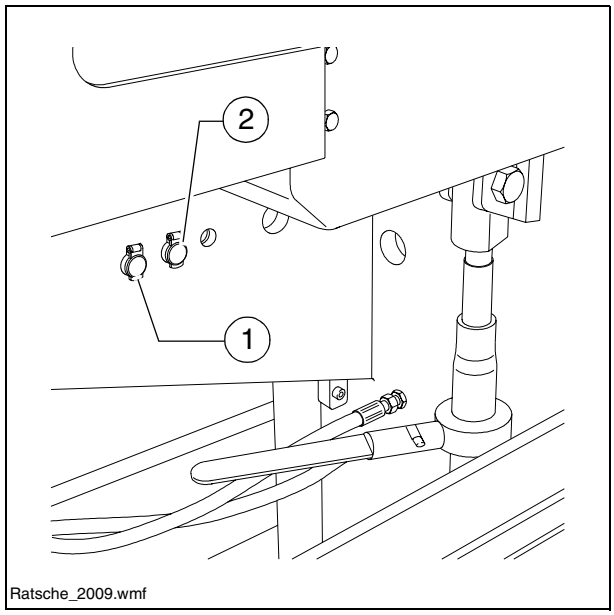
☞ The sensors should be adjusted so that 2/3 of the augers are covered with the paving material.

☞ The paving material must be conveyed over the full working width.

☞ We recommend adjusting the limit switch positions during material distribution.

☞ In vehicles with a PLC control system, the deactivation point is set on the remote control. In vehicles with a conventional control system, the sensor is fitted with a controller (5) for setting the deactivation point.

24 volt / 12 volt sockets (○) (left and right)



24 V sockets (1) are located beneath the left/right seat consoles.
Additional working lights can be connected here, for example.

(○) A 12 V socket (2) is additionally located on the left-hand side
of the vehicle.

- Voltage is present when the main switch is switched on.

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

Pressure control valve for screed charging/relieving

A valve (1) is used to set the pressure for additional screed charging/relieving.

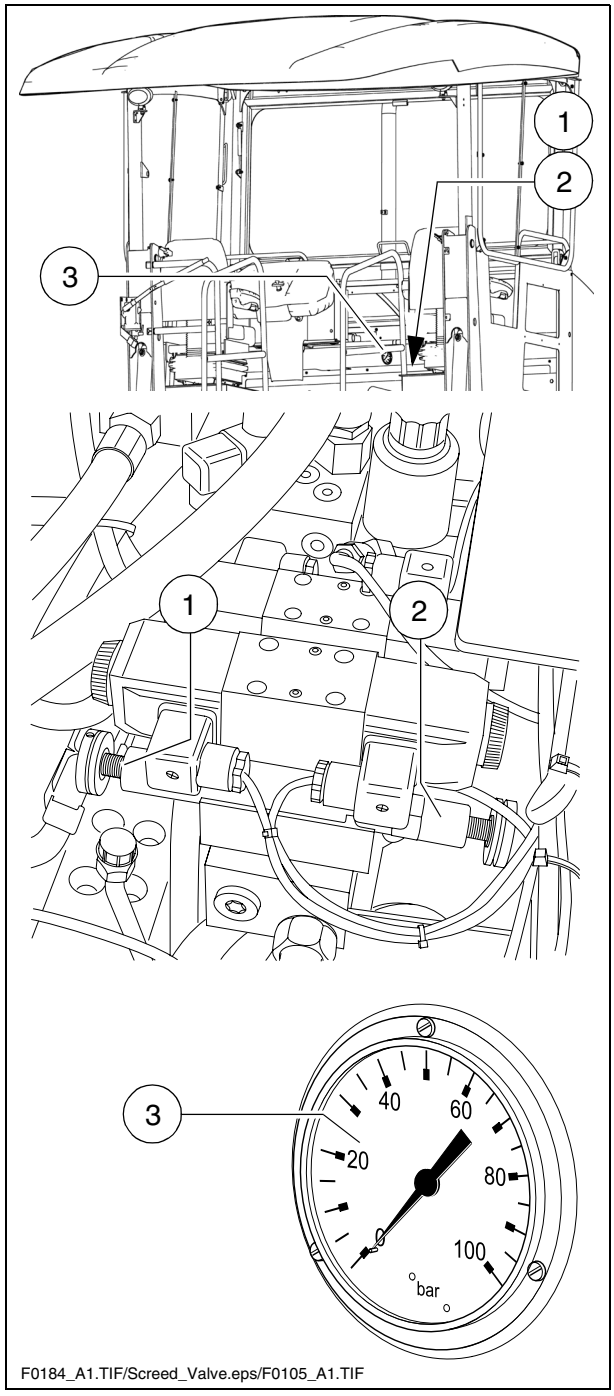
- Switching on, see screed charging/relieving
  (Chapters „Operating panel“, „Operation“).
- For pressure indication, see manometer (3).

Pressure control valve for screed stop with pretensioning

This valve (2) is located beneath the 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“).
- For pressure indication, see manometer (3).



F0184_A1.TIF/Screed_Valve.eps/F0105_A1.TIF

Manometer for screed charging/relieving and screed stop with pretensioning

The manometer (3) indicates the pressure for:

- Screed stop with pretensioning when the drive lever is set to the neutral position (pressure setting with valve (2));

Screed charging/relieving when the drive lever is in the third position (pressure setting with valve (1)).

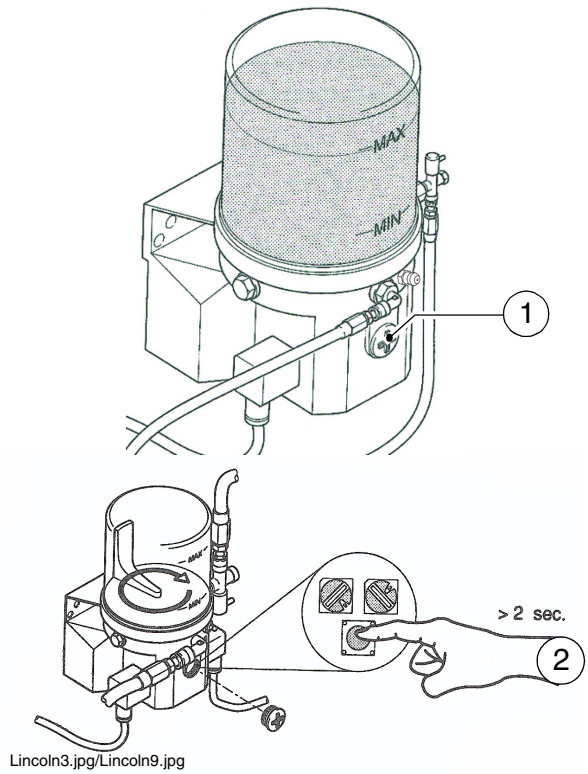
Central lubrication system (○)

The central lubrication system is activated in automatic mode as soon as the drive engine is started.

- Pumping time: 12 min
- Pause time: 2 h

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

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



Lincoln3.jpg/Lincoln9.jpg

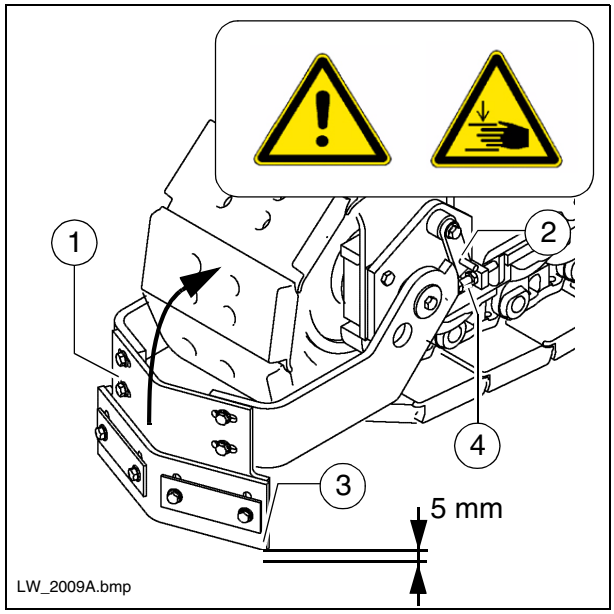
Manual start of lubrication (pumping time):

- Remove the screw cap (1).
- Keep the starting button (2) depressed for at least 2 sec.
- Replace the screw cap (1).

☞ Observe the instructions in section „Maintenance“!

Lane clearer (○)

A swivelling lane clearer (1), which deflects small obstacles away to one side, is located in front of both drive units.



☞ The lane clearers should only be swivelled down during paving.

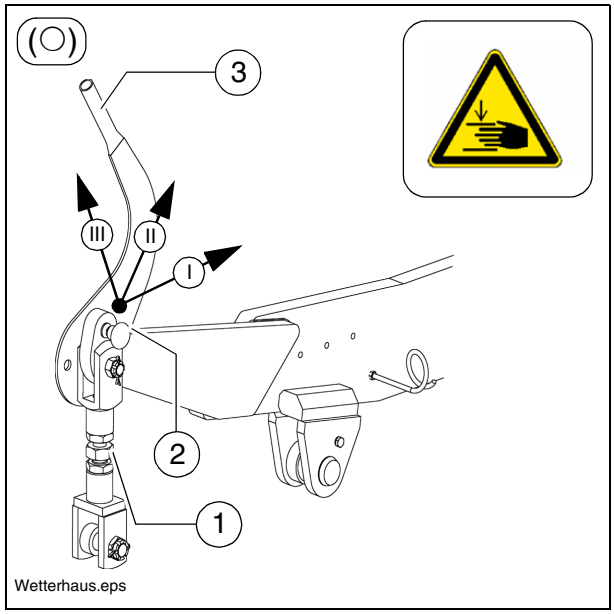
Swivelling the lane clearers:

- Swivel the lane clearer (1) up and secure in the uppermost position with a shackle (2).
- To lower the lane clearer, it must be raised a little and the shackle (2) must be swivelled back.

⚠ To avoid collisions, the lane clearer must be adjusted so that a few mm are available between the ground and the blade (3).

☞ The blade's level above the ground is adjusted with a bolt (4).

Screed eccentric adjustment (○)



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 screed by adjusting the eccentric.

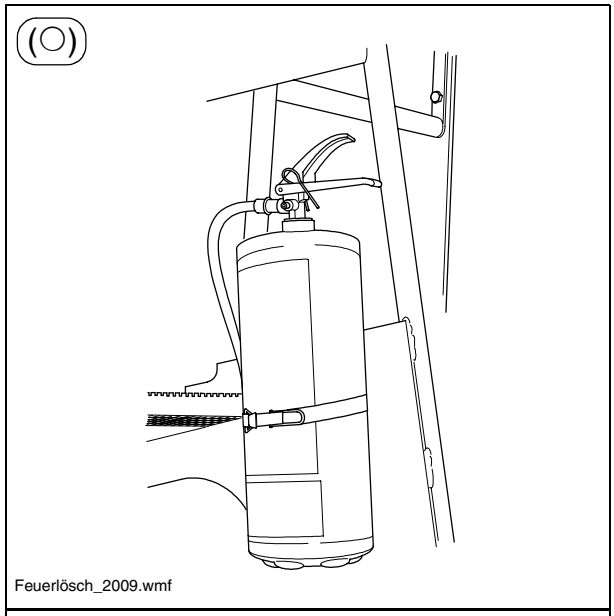
- Pos. I: Paving thickness up to approx. 7 cm
- Pos. II Paving thickness of approx. 7 cm to approx. 14 cm
- Pos. III Paving thickness above approx. 14 cm

- The spindle (1) is not adjusted.
- Unfasten locks (2) for eccentric adjustment.
- Swivel screed to the desired position using the lever (3), and engage the locking knob again.

☞ 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.

- 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 eccentric adjustments. 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!

Fire extinguisher (○)

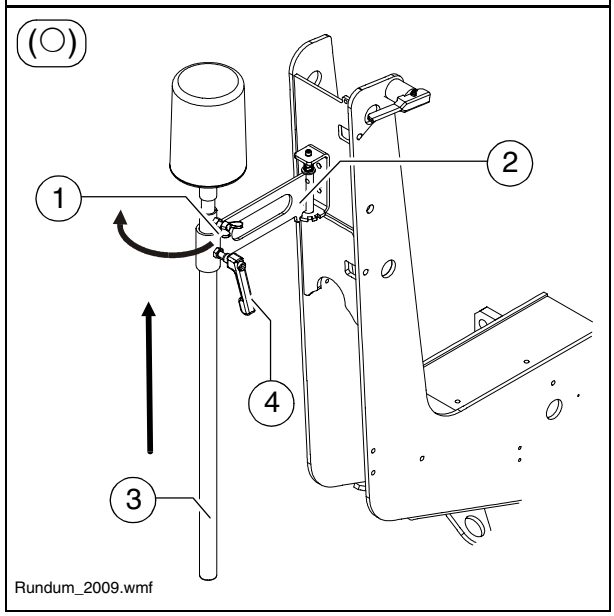


☞ The suitable fire extinguisher version must be selected by the vehicle operator depending on the type of operation.

☞ The paver finisher personnel must be familiarised with fire extinguisher operation.

☞ Observe the inspection intervals for the fire extinguisher!

Rotary beacon (○)



⚠ The function of the rotary beacon must be checked daily before starting work.

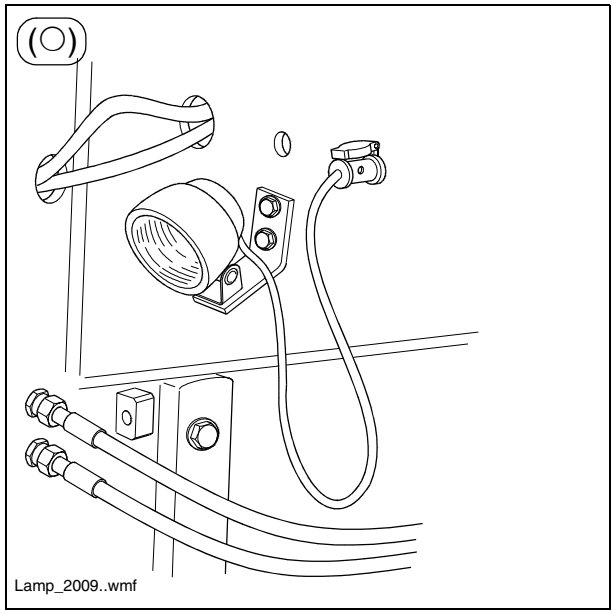
- Place the rotary beacon onto the plug-in contact and secure with a wing bolt (1).
- Raise the bracket (2), swivel to the outer position and allow to engage there.
- Slide the rotary beacon with tube (3) to the desired height and secure with the clamping bolt (4).
- Activate the function on the operating panel as necessary.

☞ The rotary beacon is easy to remove and should be stored securely at the end of work.

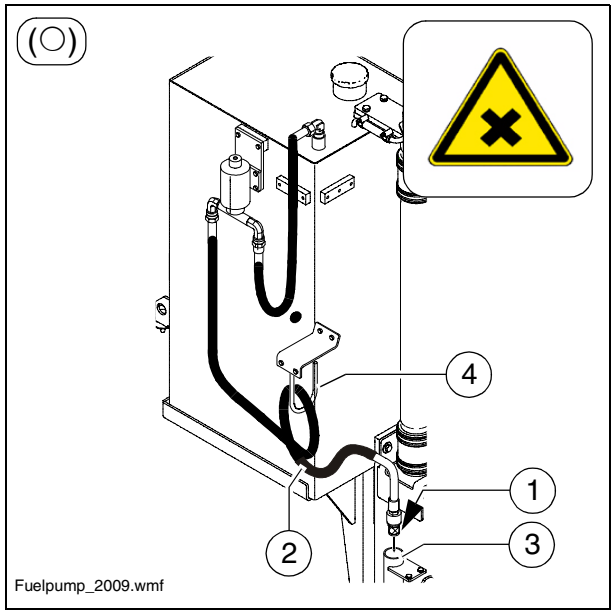
Auger compartment lighting (○)

Two working lights are located on the left and right on the roof console for illuminating the auger compartment.

☞ These are activated together with the other working lights on the operating panel!



Fuelling pump (○)



⚠ The fuelling pump must only be used to pump diesel fuel.

⚠ Foreign bodies which are larger than the mesh size of the intake cage (1) lead to damage. An intake cage must therefore always be used.

⚠ Each time fuelling is carried out, the intake cage (1) must be checked for damage, and must be replaced if damaged. Do not work without it under any circumstances, as the fuelling pump is not otherwise protected against foreign bodies.

- Insert the suction hose (2) into the container which is to be emptied.

☞ To enable the container to be emptied completely, the suction hose must reach down to the floor of the container.

- Activate the function on the operating panel as necessary.

⚠ The fuelling pump does not shut off automatically. Therefore, never leave the pump unattended when fuelling!

⚠ Never operate the pump without pumping a fluid. The risk of damaging your diesel pump is run if it runs dry.

- To end fuelling, switch the function „off“ on the operating panel.
- Place the end of the hose, with the intake cage, into its cup (3) so that no diesel is able to escape into the environment.
- Gather up the hose and place it over the bracket (4).

Power moon (○)

The power moon is a special, illuminated balloon with shadow-reducing and anti-dazzle light.

STOP Use of the power moon increases the height of the paver finisher.

STOP Note the passage height of bridges and tunnels.

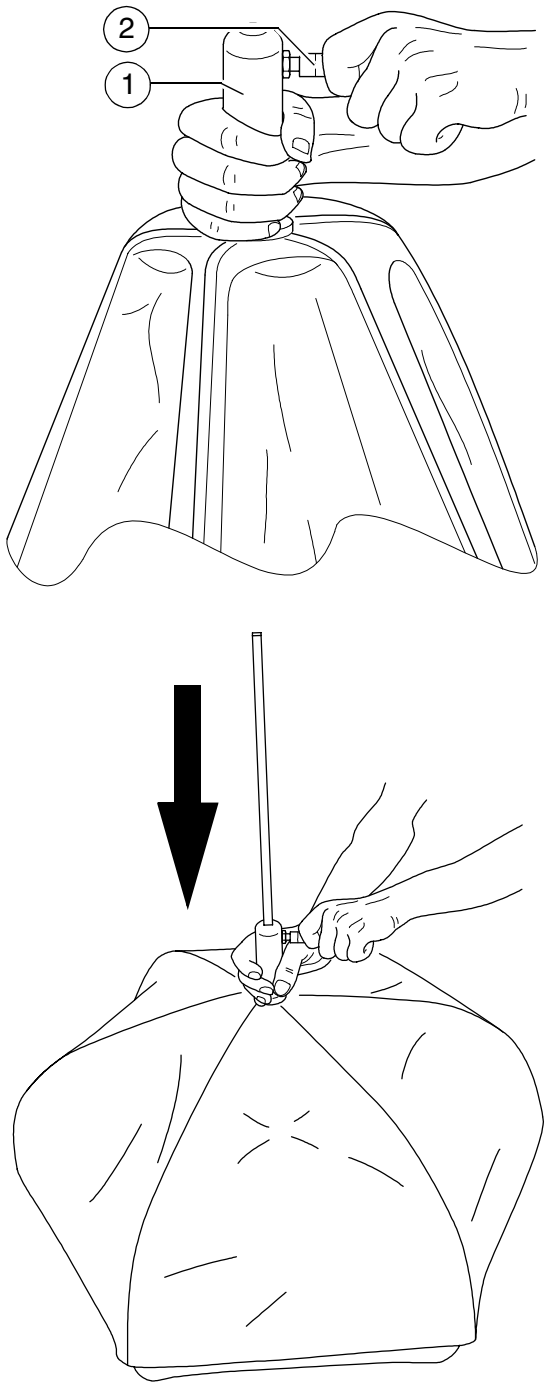
STOP The power moon must not be used in the vicinity of highly flammable materials (e.g. petrol and gas); a safety distance of at least 1 metre must be maintained from combustible materials.

STOP A safety distance of at least 50 m must be maintained from high-voltage lines, and at least 2.5 m from railway track voltage lines.

STOP The power moon must not be operated if the electric supply cables or connectors are damaged.

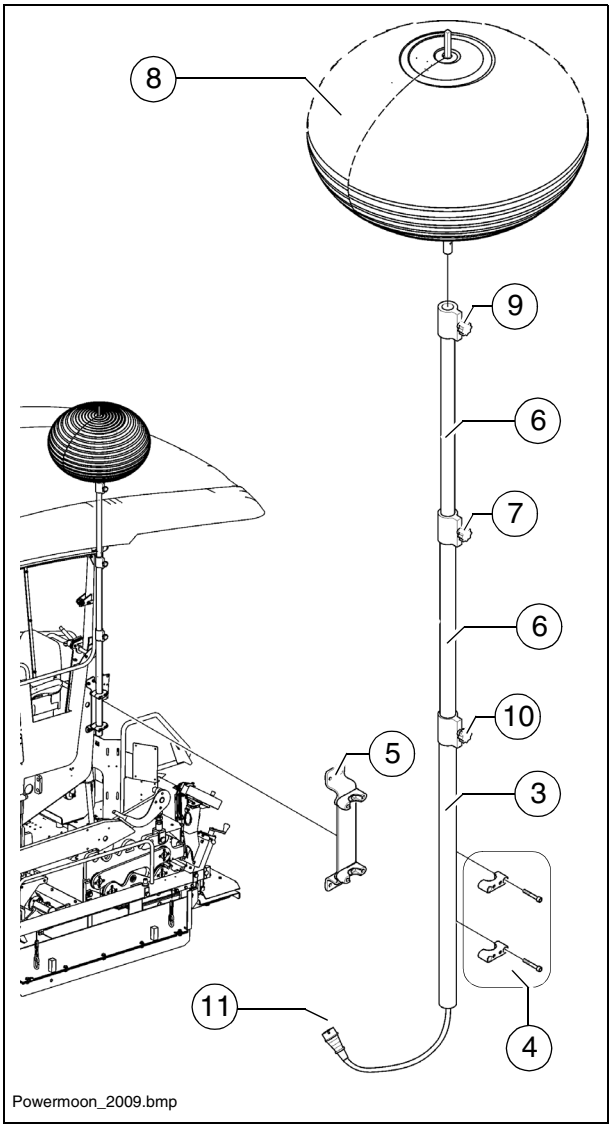
- Hold the handle (1) tightly and pull the detent pin (2) out.
- Press the handle down until the detent pin engages.

⚠ Before starting up, check whether the Velcro seal around the power moon is closed. If the skin is damaged, it must be repaired or replaced. The bulbs must be checked for firm seating and damage.



Powerm1.wmf/Powerm2.wmf

- Secure the lower part of the tripod (3) to the preassembled bracket (5) using the relevant assembly parts (4).
- Connect the tripod sections (6) and secure with stop screws (7).
- Place the power moon's journal (8) onto the top part of the tripod and secure with the stop screws (9).
- Finally, place the assembled tripod sections, together with the power moon, onto the lower part of the tripod (3) and secure with the stop screws (10).
- When the power moon has been fully assembled and secured, the power moon connector (11) can be connected to its current supply.
- The power moon is switched off by removing the power connector (11) from the socket.



Powermoon_2009.bmp

D 4.17 Operation

1 Preparing for 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 extension parts
- Diesel fuel
- Engine oil and hydraulic oil, lubricants
- Separator 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.

Check list for the machine operator

Check!	How?
Emergency stop button - on the operating panel - on both remote control units ○	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 ○	Briefly press the horn button. Horn signal must sound.
Lights	Switch on with the ignition key, walk around the paver finisher to check and switch off again.
Screed hazard flasher (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 (○): - 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 indicator lamps must light up when the system is switched on

Check!	How?
Auger coverings	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.
Hopper transport safeguard	When the hopper is closed, it must be possible to push the locking bolts on both halves of the hopper into the relevant locating bores.
Screed transport safeguard	The screed must be held in its relevant position by the hydraulic non-return valves.
Protective roof	Both locking bolts must be in the provided bore hole.
Miscellaneous: - Engine panels - Lateral flaps	Check that the hoods and flaps are securely seated.
Accessories: - Wheel chocks - Warning triangle - First aid box	The accessories must be in the provided holders.

1.1 Starting the paver finisher

Before starting the paver finisher

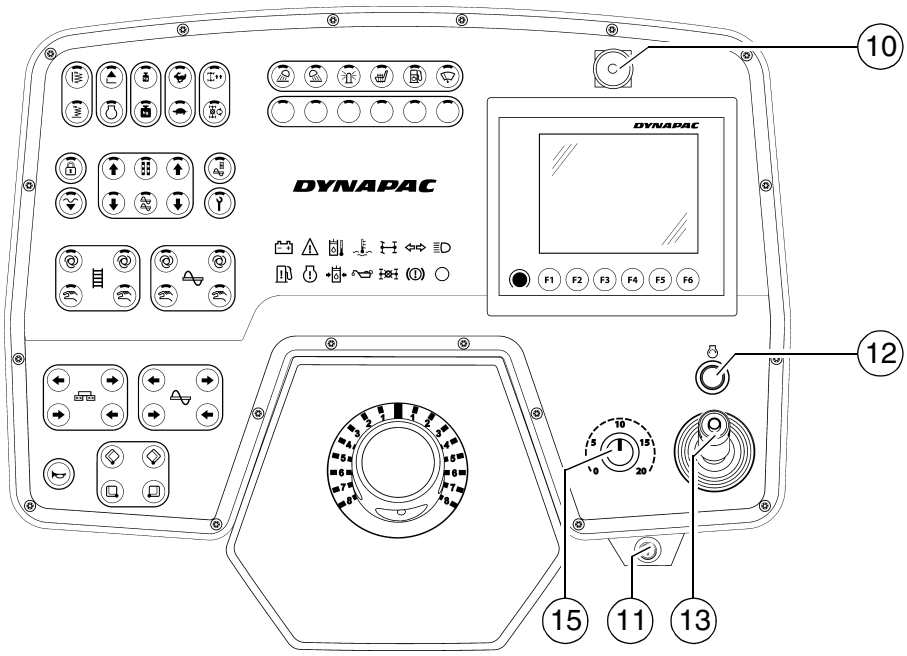
Before starting the diesel engine and beginning operation, the following steps must be performed:

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

⚠ Check the operating hour counter to determine whether or not additional maintenance work (e.g. monthly or annual maintenance) must be performed.

- Check the safety devices and protective devices.

„Normal“ starting



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- Set the drive lever (13) to the centre position and the travel drive preselector (15) to minimum.
- Insert the ignition key (11) in position „0“.

⚠ The lights should be switched off during starting to reduce the current drain on the battery.

☞ 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 (10) is depressed.
(„STOP“ is seen on the LC display)

- Press the starter button (12) 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)

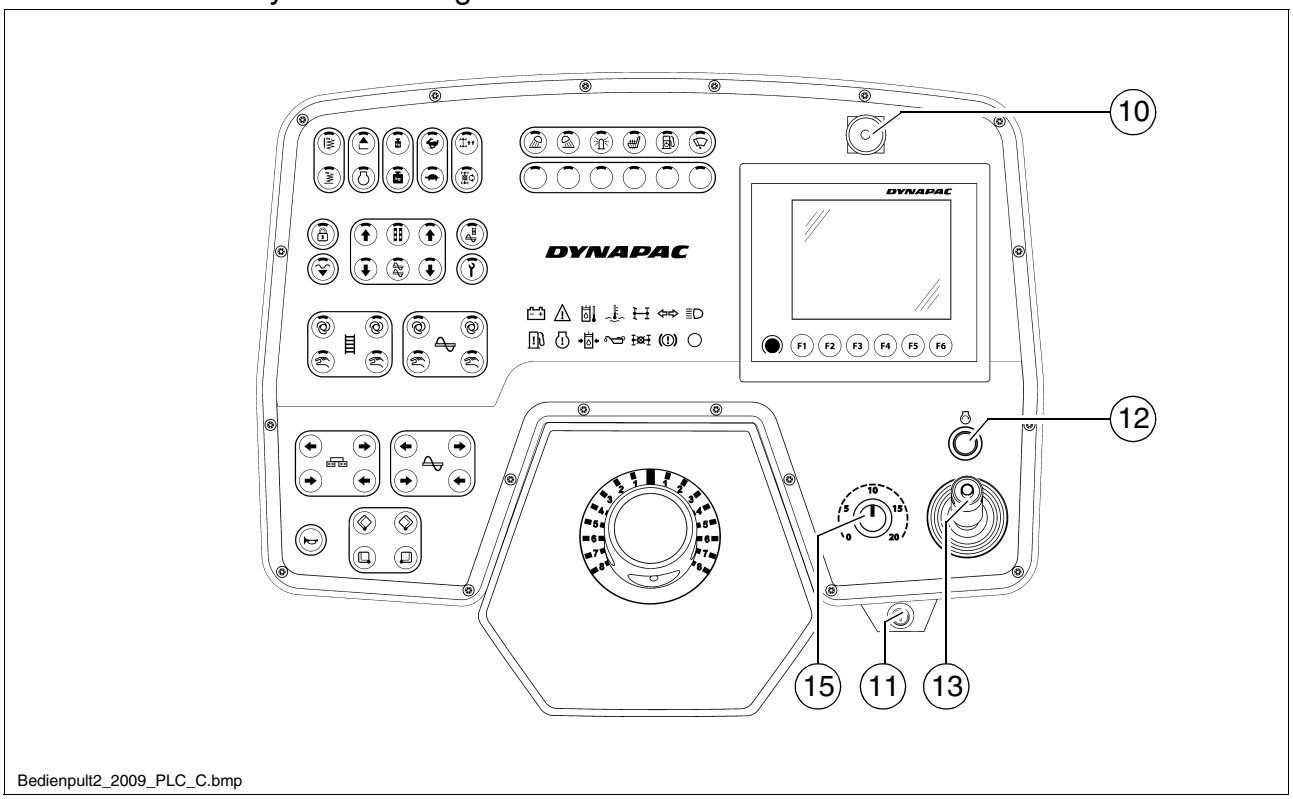
☞ The engine can be started with the help of an external power source if the batteries are empty and the starter no longer turns.

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).

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

To externally start the engine:



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- Switch on the ignition (11), set the drive lever (13) to the centre position and the travel drive preselector (15) to minimum.
- Use appropriate cables to connect the external power source.

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

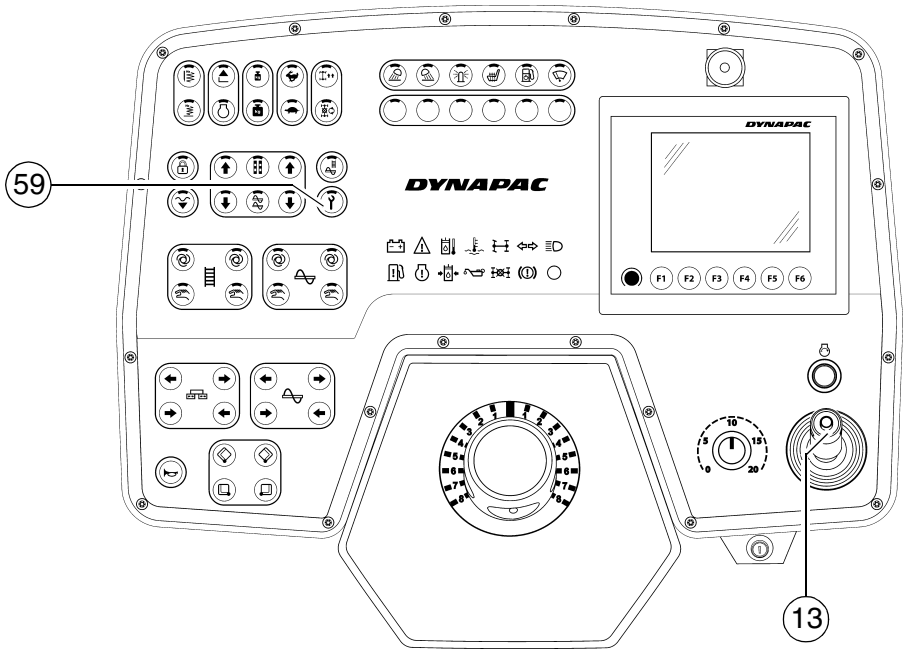
☞ It is impossible to start the machine, if the drive lever is not in the central position or if one of the emergency stop buttons (10) is depressed.
(“STOP“ is seen on the LC display)

- Press the starter button (12) 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



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To increase the engine speed:

- Set the drive lever (13) to position 1 (slightly off the centre position).
- Press button (59) to increase engine speed.

☞ The engine speed is increased to the preset value.

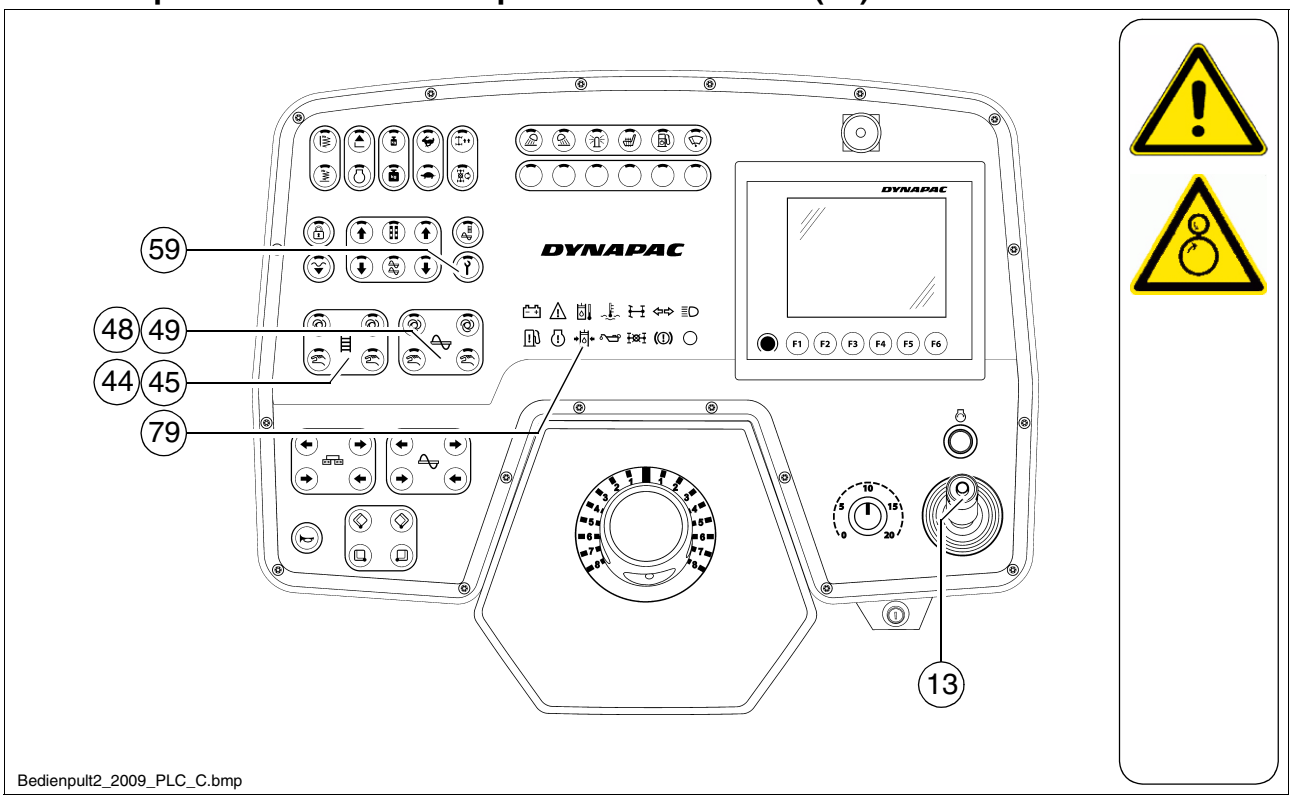
⚠ Let the paver finisher warm up for approx. 5 minutes if the engine is cold.

Observe indicator lamps

The following indicator lamps must be observed under all circumstances:

For further possible faults, refer to the Operating instructions for the engine.

Oil pressure indicator lamp for the travel drive (79)



- Must go out after starting.

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

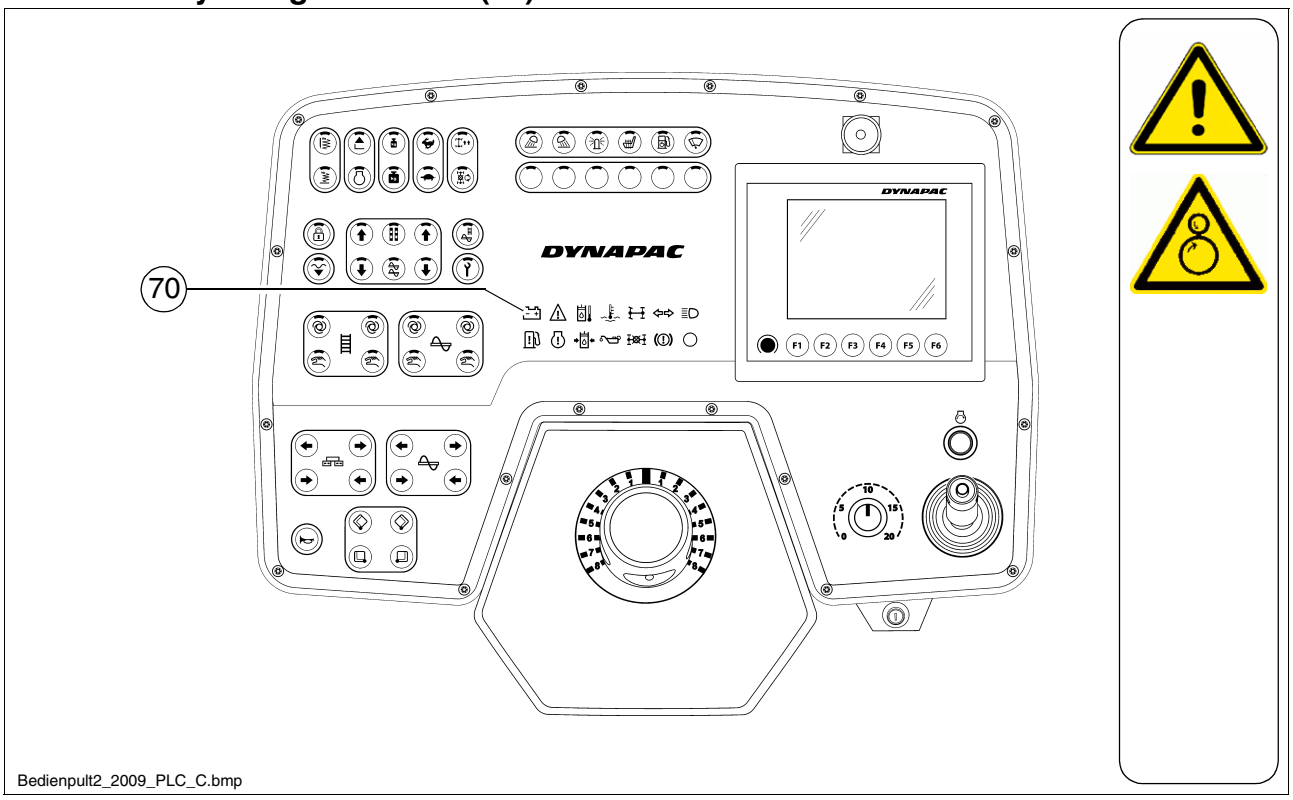
When the hydraulic oil is cold:

- Set the conveyor switch (44)/(45) to „manual“ and the auger switch (48)/(49) to „manual“.
- The remote control must be connected and the auger functions must be set to „auto“.
- Set the drive lever (13) to position 1.
- Press switch (59) to increase engine speed. Conveyor and auger start to operate.
- Let the hydraulics warm up until the indicator lamp goes out.

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

For further possible malfunctions, refer to section „Malfunctions“.

Battery charge indicator (70)



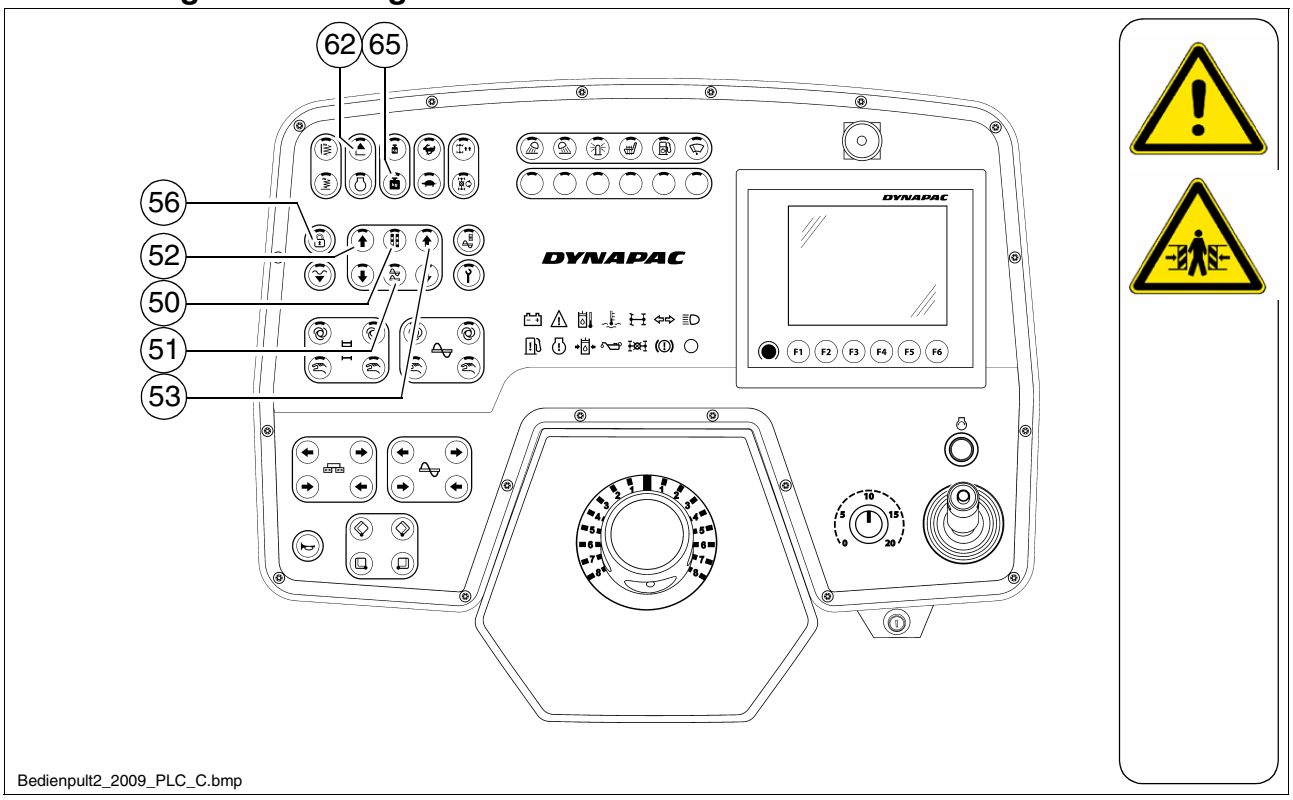
Must go out after starting when the engine revs up.

⚠ 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



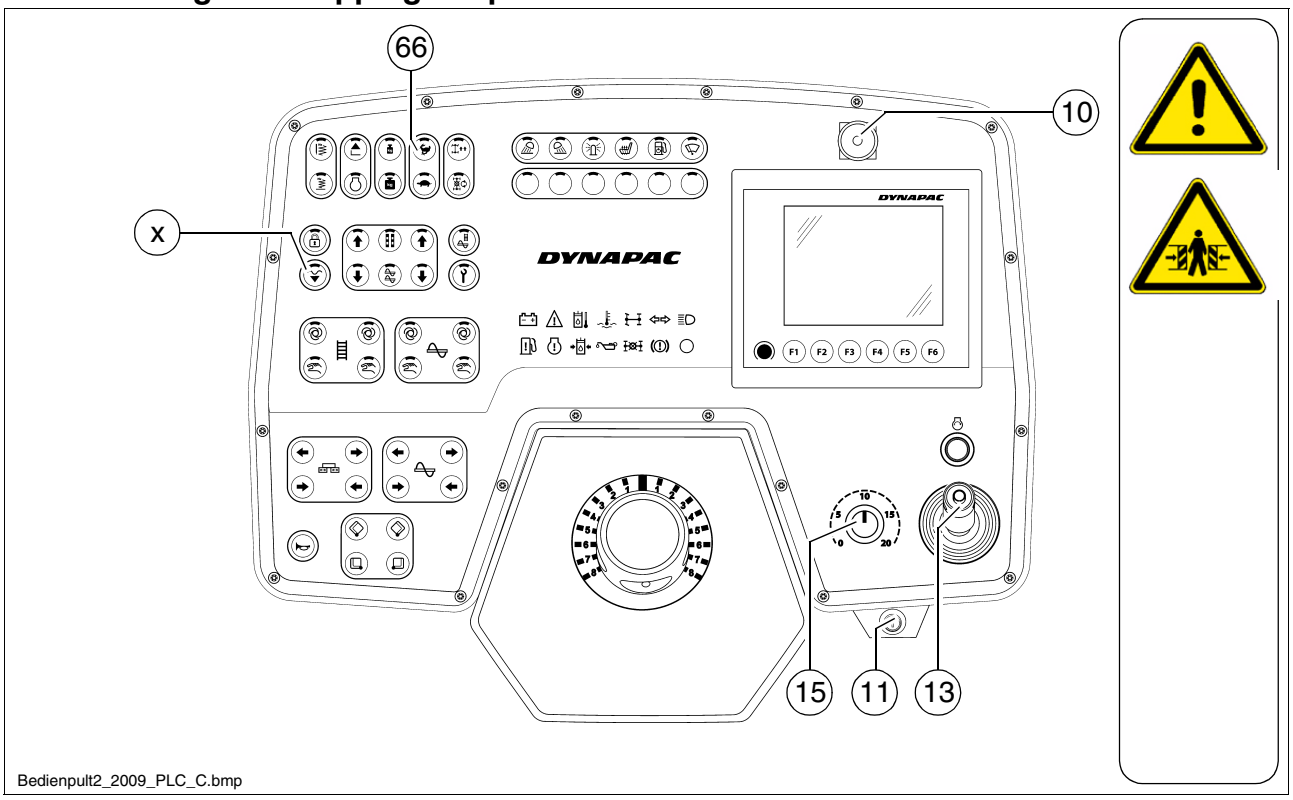
- Switch (56) must be switched off
- Switch off the switch (65) and raise the screed using switch (62).
- Extend the levelling cylinders completely using the switches (50)/(52)/(53).

☞ The remote control must be connected and this function must be set to „Manual“.

- Raise the auger crossbeam using the switches (51)/(52)/(53).

☞ The screed is hydraulically secured in the raised position.

Driving and stopping the paver finisher



- Set the Fast/Slow switch (66) to „Hare“.
- Set the preselector (15) to mark 10.
- For driving, carefully tilt the drive lever (13) forward or backward according to the drive direction desired.

STOP In case of an emergency, press the emergency stop button ((10)!

- To stop the vehicle, move the drive lever (13) into its centre position.

Switching off and securing the paver finisher

- Turn the ignition key (11) to the „0“ position and pull it out to switch off the engine.

⚠ The battery may be exhausted if the paver finisher stands still for longer periods of time with the ignition switched on.

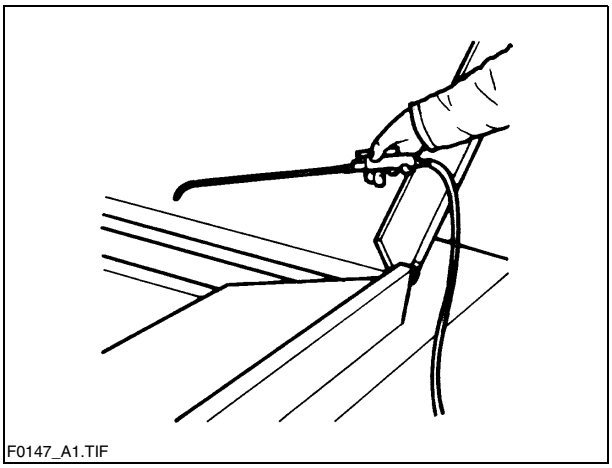
- Lower the screed.

1.3 Preparations for paving

Separator fluid

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

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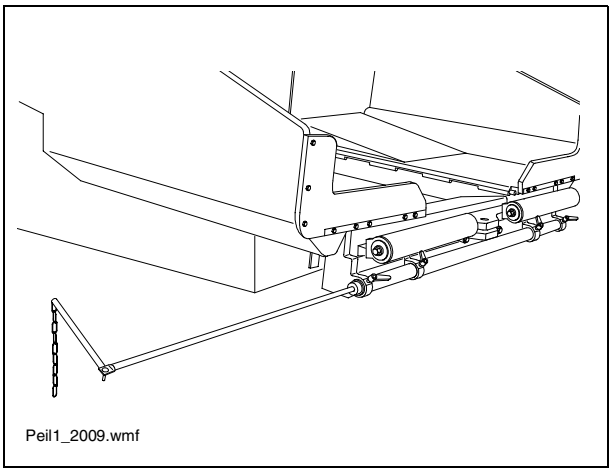
Screed heater system

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.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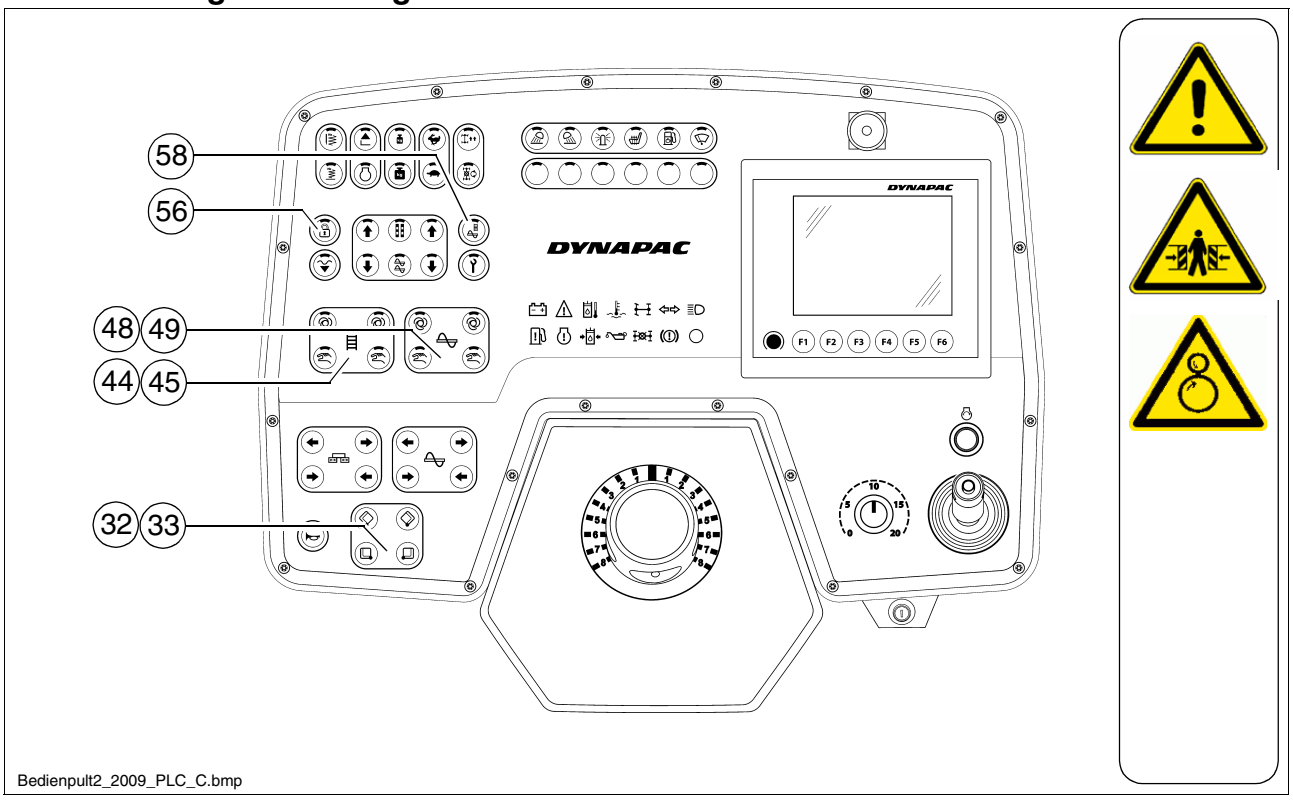
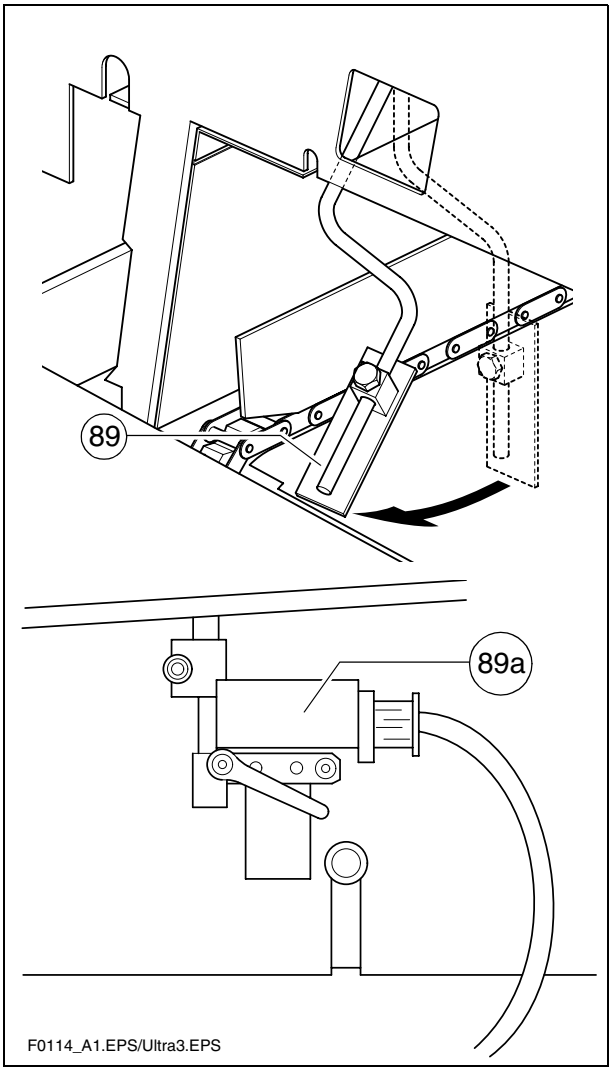
Loading/distributing material

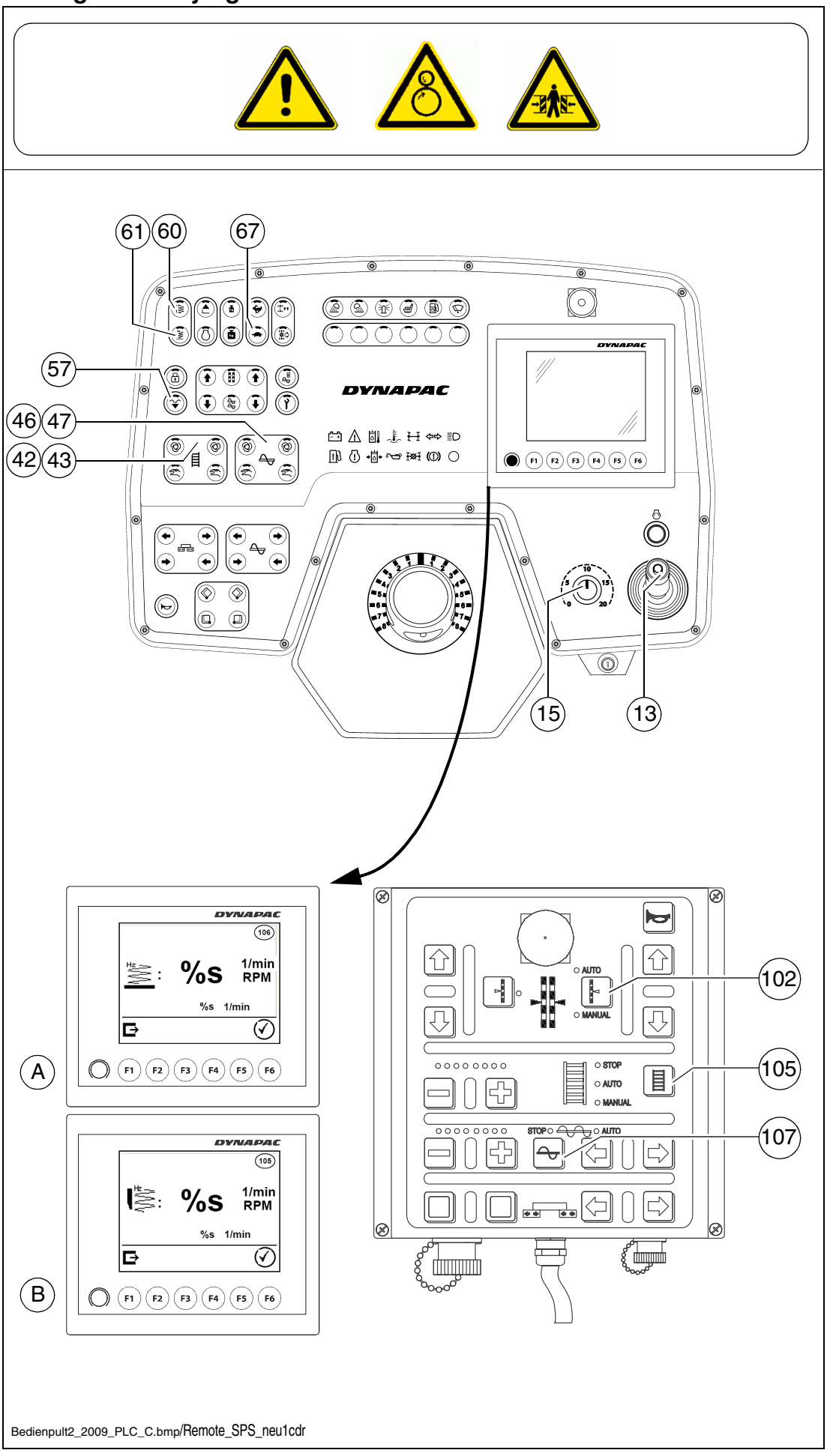


- Button (56) has to be switched off.
- Use switch (32)/(33) to open the hopper.
  Instruct the truck driver to dump the material.
- Set the switches for the auger (48)/(49) and the conveyor (44)/(45) to „Auto“.
- Activate function (58) to fill the vehicle for the paving process.

- Switch the conveyors on.
  The limit switches for the conveyors (89) or (89a○ 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 Driving off for laying



Bedienpult2_2009_PLC_C.bmp/Remote_SPS_neu1cdr

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:

Item	Travelling direction	Position
67	Traction drive fast/slow	Tortoise-operating speed
15	Travel drive preselector	Mark 6-7
57	Preparation for screed floating position	LED ON
61	Vibration	LED ON
60	Tamper	LED ON
42/43	Auger left/right	auto
107		
46/47	Conveyor left/right	auto
105		
102	Levelling	auto
A	Speed regulator, vibration	approx.40-60
B	Speed control for the tamper	approx.40-60

- Push the drive lever (13) 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 / 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).

☞ The basic setting is for asphalt material.

1.5 Checks during paving

The following points must be constantly observed during paving:

Paver function

- Screed heater system
- 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.

☞ 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.

☞ See section „Malfunctions, problems during paving“ if the paving quality is poor.

1.6 Paving with screed stop and screed charging/relieving

General

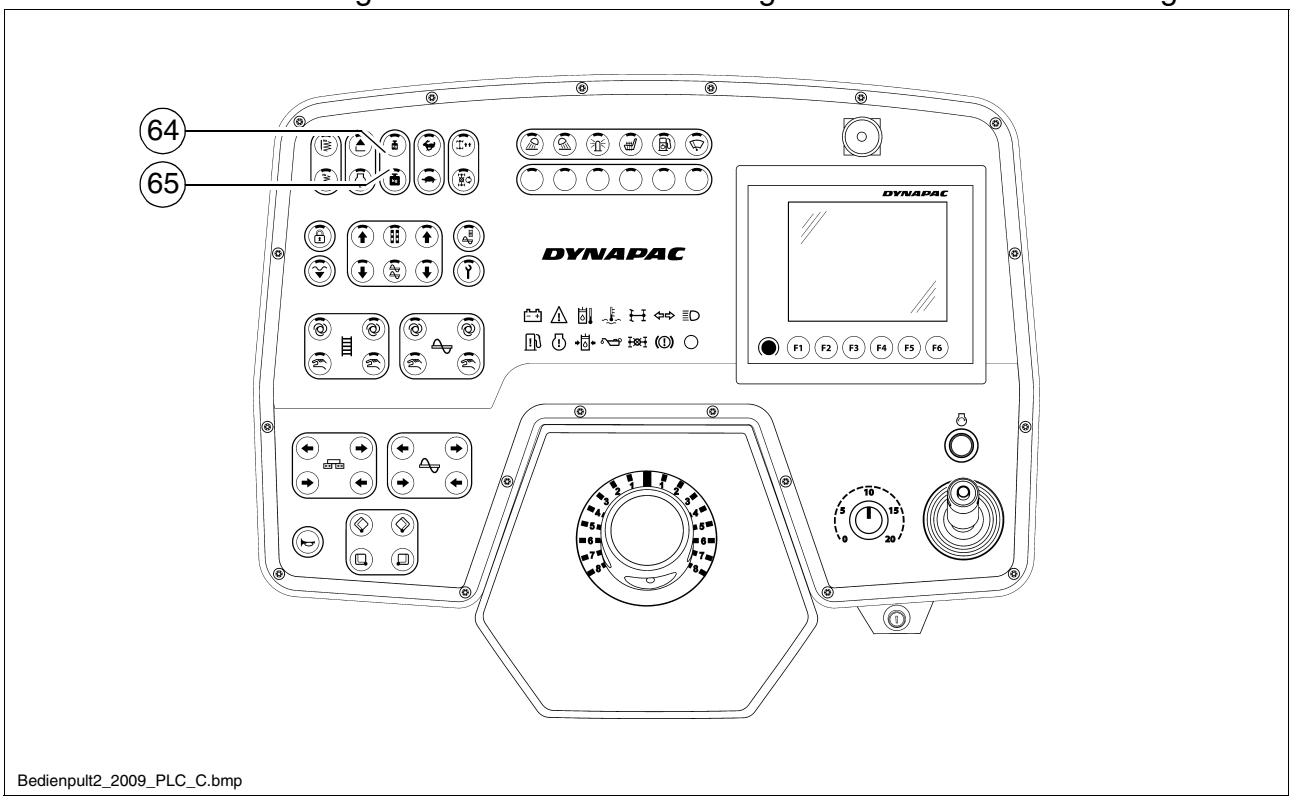
The screed hydraulics can be influenced in two ways to attain optimum paving results:

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

☞ 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.



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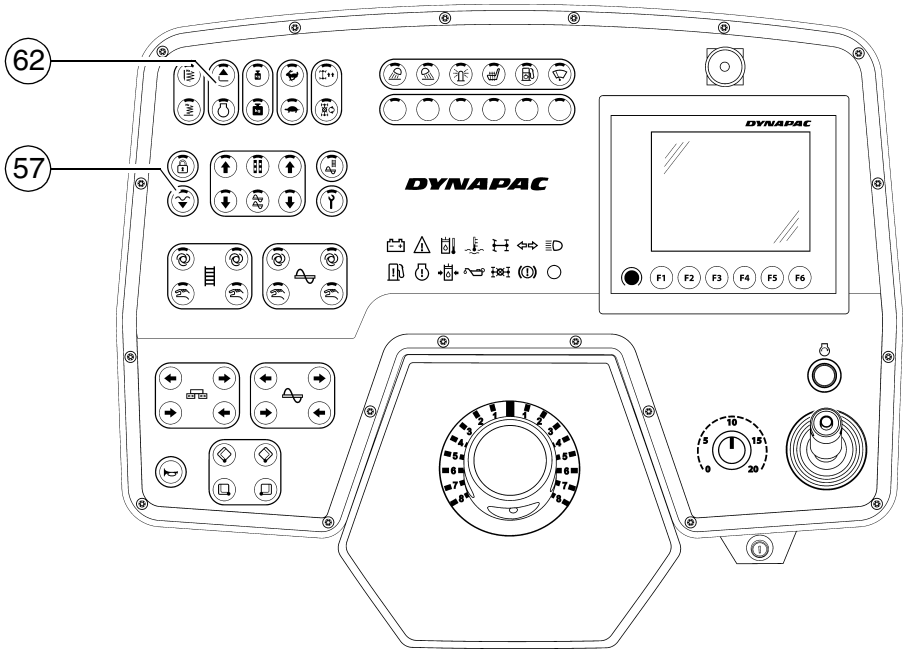
Function (64) Relieving (screed „lighter“)
Function (65) Charging (screed „heavier“)

The „Screed charging and relieving“ functions are only effective when the paver finisher moves. When the paver finisher stops, „Screed stop“ is automatically selected.

Screed stop with prestressing

Via „Screed stop“, the screed is held by the relieving pressure and the counter pressure of the material to prevent the screed from sinking in when the paver finisher stops during paving.



Bedienpult2_2009_PLC_C.bmp

- Automatic screed stop when the drive lever is in the centre position
- To raise the screed press switch (62).
- To lower the screed:

  - Resting function: Keep button (57) pressed for longer than 1.5 seconds. The screed is lowered as long as the button is pressed. When the button is released, the screed is stopped again.
  - Button function: Press button (57) briefly - the screed is lowered. Press the button briefly again - the screed is stopped.

As in the case of screed charging and relieving, a pressure of 2-50 bar is separately applied to the screed lifting cylinders. This pressure can neutralise the weight of the screed to prevent the screed from sinking into the freshly laid material, thus supporting the screed stop function, especially in situations where the screed relieving function is used.

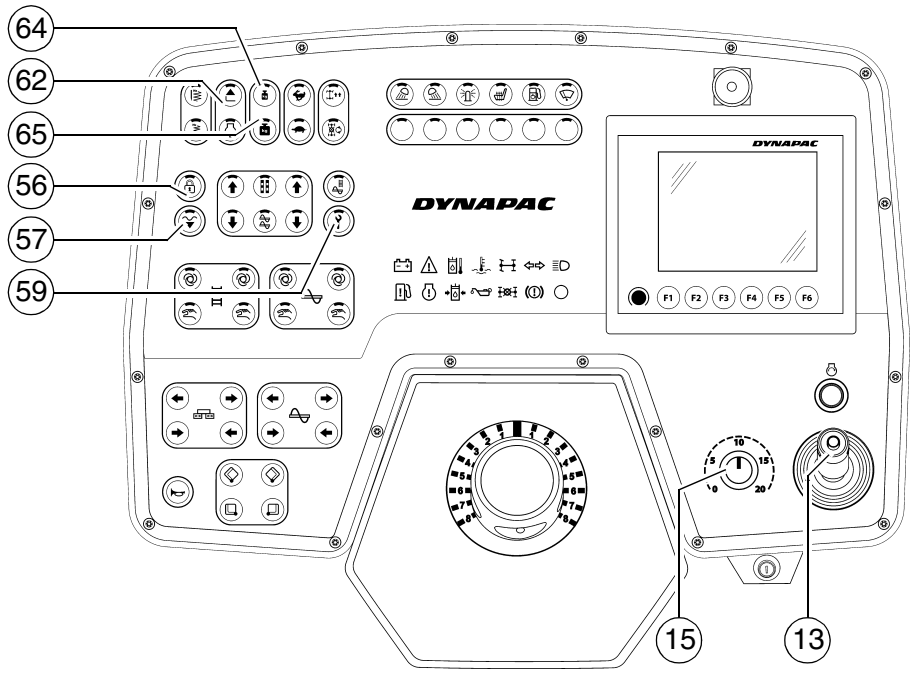
The pressure to be applied depends on the load-bearing capacity of the material. If necessary, the pressure must be readjusted or changed as required during the first stops until the lower edge of the screed no longer leaves any marks when the finisher moves on again.

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

☞ 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.

Adjusting the pressure (○)



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

- Start the diesel engine and turn the traction controller (15) back to zero (precaution against inadvertent advancing).
- Activate the „floating position“ using switch (57).

Screed stop (with prestressing):

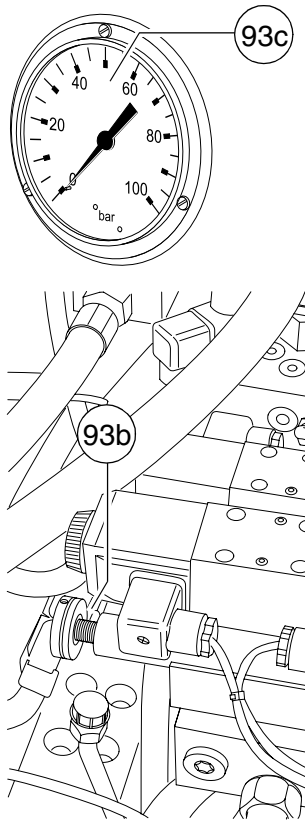
- Set the drive lever (13) to the centre position.
- Set switch (56) to position (LED OFF) and switch (59) to position (LED OFF).
- Use control valve (93a) (below the bottom plate of the operator's platform) to adjust the pressure and read it off at the manometer (93c).
  (Basic setting: 20 bar)

For screed charging/relieving:

- Set the drive lever (13) to the centre position.
- Set switch (56) to position (LED OFF) and switch (59) to position (LED ON).
- Select the desired function (LED ON):
  - (Relieving (64))
  - (Charging (65))
- Use control valve (93b) (below the bottom plate of the operator's platform) to adjust the pressure and read it off at the manometer (93c).

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

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



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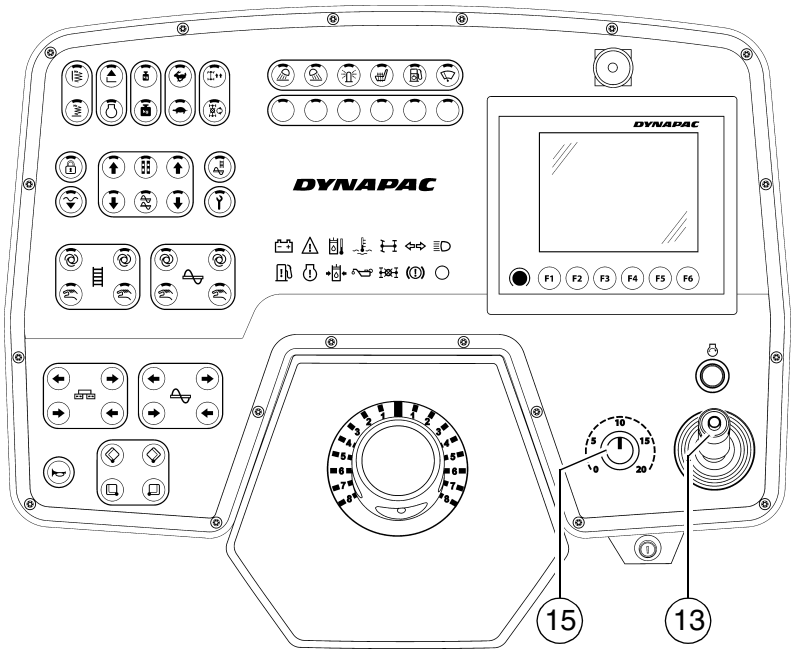
1.7 Interrupting/terminating operation

During breaksin paving (e.g. the material supply truck is late)



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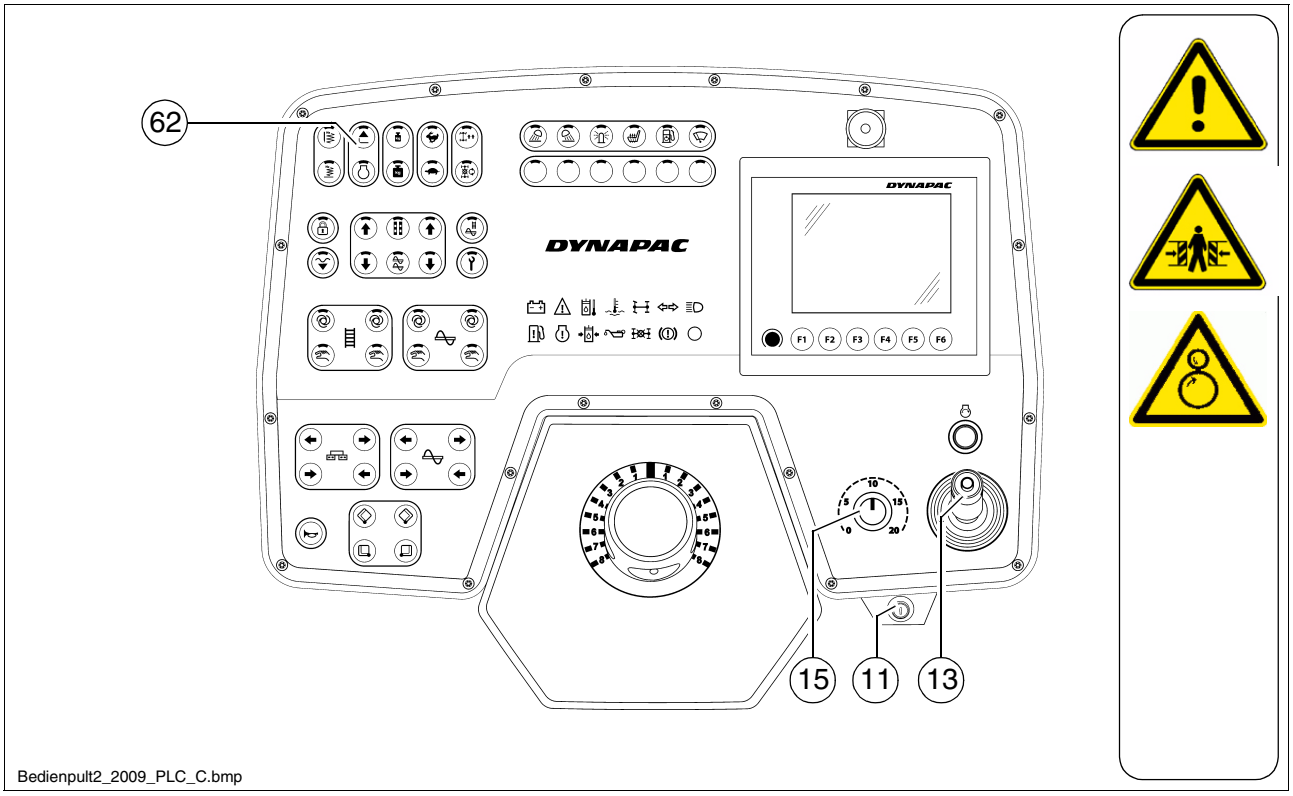
- Determine the approximate duration.
- When cooling down of the material below the minimum paving temperature must be expected, run the paver finisher empty and create an edge like the end of a layer.
- Set the drive lever (13) to the centre position.

During longer breaks(e.g. lunch break)

- Drive lever (13) into centre position, RPM speed adjustment (15) to minimum position.
- Switch off the ignition.
- Switch the screed heater system off.
- When screed is operated with the optional gas heating system, close the valves of the bottles.

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

When work is finished



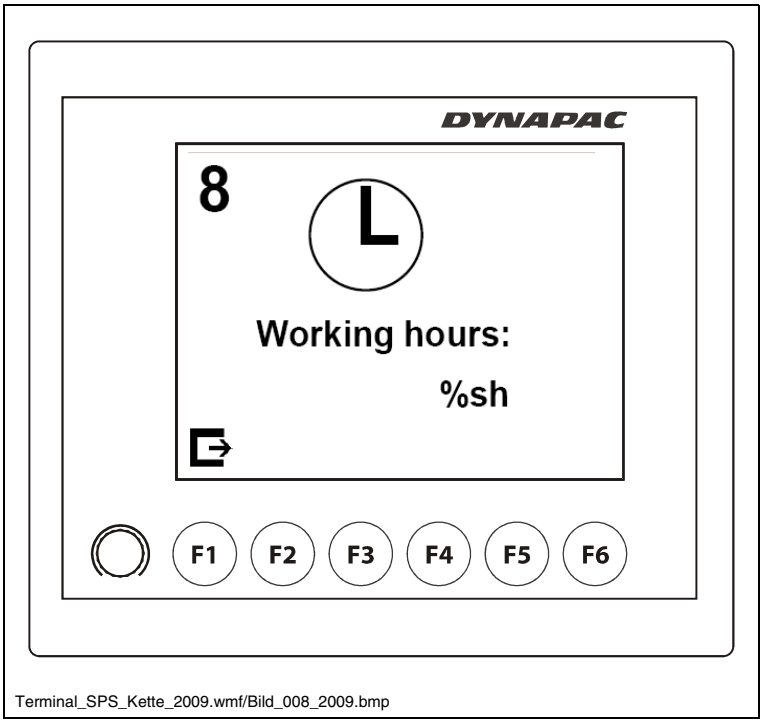
- Run the paver finisher empty and stop it.
- Lift the screed by using switch (62).
- Retract the screed parts to the basic screed width and lift the auger. Where applicable, completely extend the levelling cylinders.

☞ The screed is hydraulically secured in the raised position.

- While operating the tampers at a low speed, let any material residues drop out.

- Set the drive lever (13) to the centre position and the speed adjuster (15) to minimum.
- Switch off the ignition (11).
- Switch the screed heater system off.
- 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.

- 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_2009.wmf/Bild_008_2009.bmp

2 Malfunctions

2.1 Problems during paving

Problem	Reason
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 is not operated 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 maximum grain size - cold screed - bottom plates of the screed are worn or warped - paver finisher speed is too high
Cracks in the layer (centre strip)	- material temperature - cold screed - bottom plates are worn or warped - wrong crowning

Problem	Reason
Cracks in the layer (outer strip)	- material temperature - 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	- material temperature - change in the material temperature - moisture on the foundation - demixing - wrong material composition - incorrectly prepared foundation - wrong layer height for 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 is not operated 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 finisher while aligning to the 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	- material temperature - change in the material temperature - wrong layer height for maximum grain size - incorrect installation of the grade control - vibration is too slow - screed is not operated 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 scree

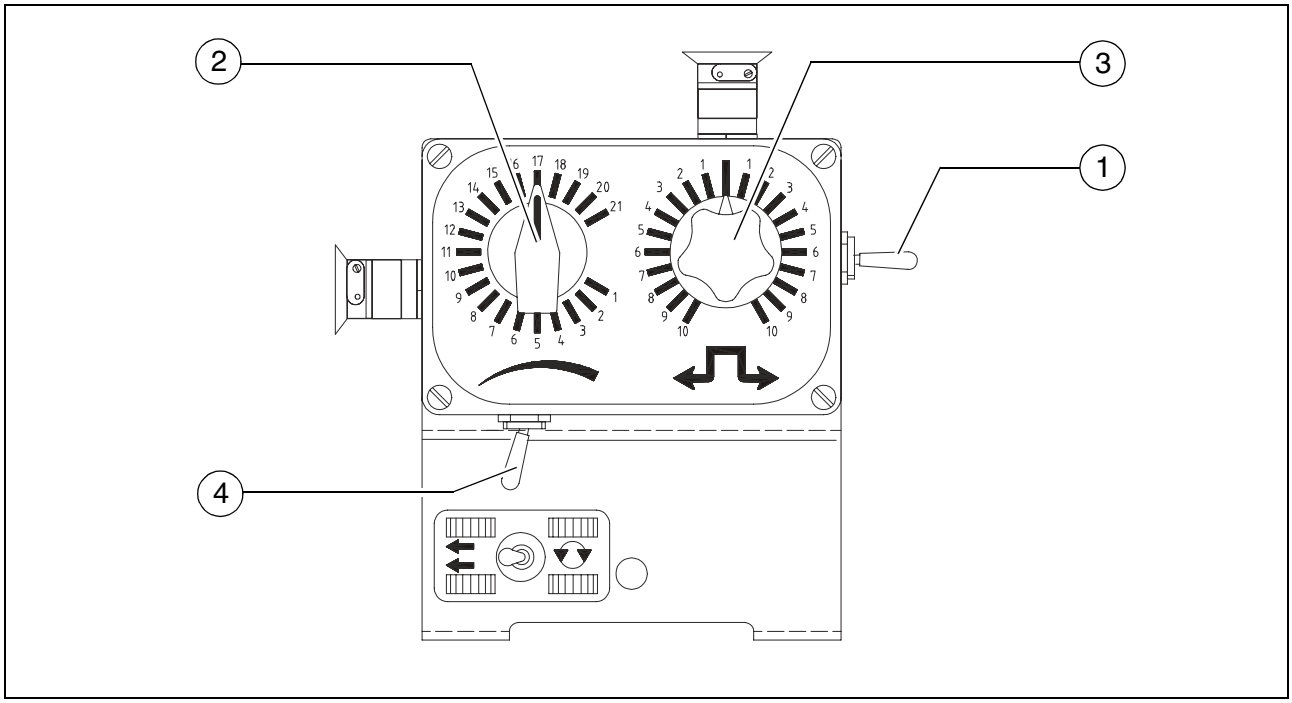
Malfunction	Reason	Remedy
At the diesel engine	Diverse	See operating instructions for the engine
Diesel engine does not start	Batteries empty	See „External starting“ (start assistance)
	Diverse	see „Towing“
Tamper or vibration is not functioning	Tamper is obstructed by cold bitumen	Properly heat the 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 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	Reason	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 centre position
	Power supply 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 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	Reason	Remedy
Traction does not work	Traction drive fuse defective	Replace (Fuse strip on the operating panel)
	Power supply 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 to the operating panel.
To connect the plugs follow the wiring diagram on the next page.



Following functions are located in the control unit:

Item	Designation
1	Switch for preselection of the zero position and forward reverse movement
2	Adjustment knob for speed control (Replace speed preselector)
3	Steering knob
4	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.

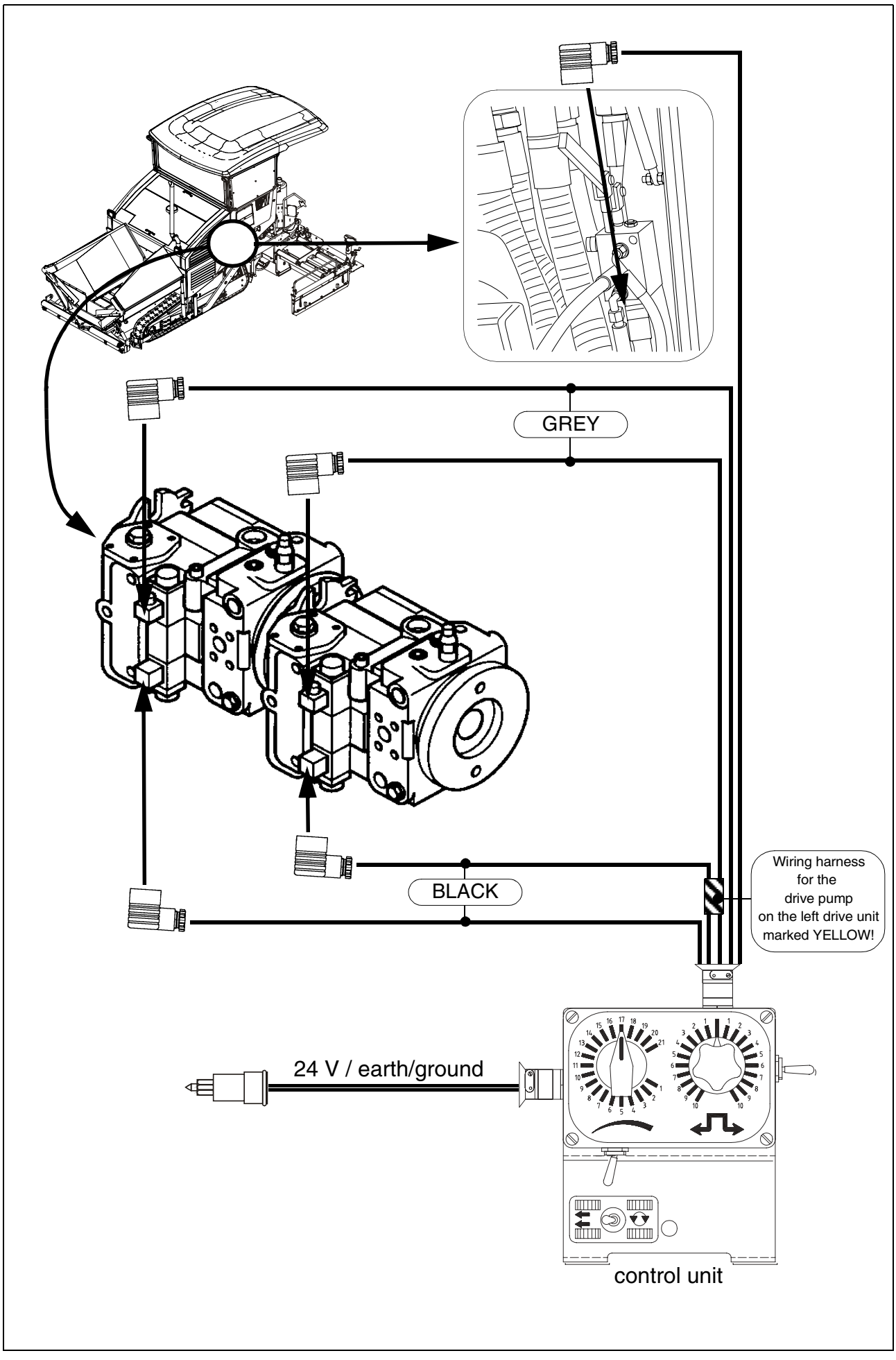
Driving off for laying

- Preselect the speed with turning knob (2)
- Push switch (1) in laying direction
- Engage drive lever like under normal conditions
- All other functions (3, 4) have to be in the position described in the instruction manual

Transport

- Adjust turning knob (2) to a low speed
- Push switch (1) 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 (2)
- All other functions have to be in the position described in the instruction manual.

Whenever the engine is started, switch (1) must be in neutral position because the machine would otherwise set off immediately! Danger of accidents!


GREY
BLACK
Wiring harness
for the
drive pump
on the left drive unit
marked YELLOW!
24 V / earth/ground
control unit

E 04 Set-up and modification

1 Special notes on safety

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

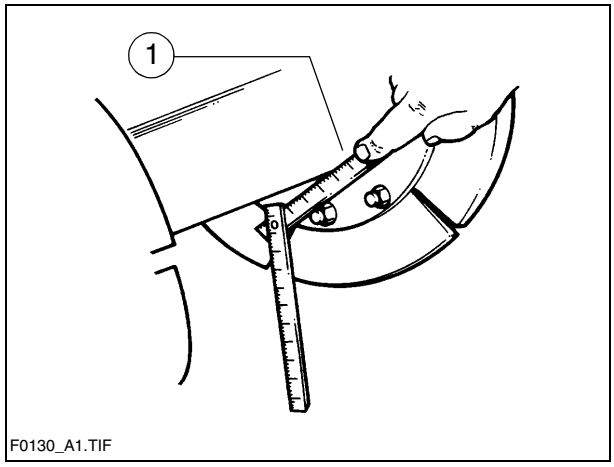
- To protect the paver finisher against inadvertent starting:
  Set the drive lever to the centre position and set the preselector to zero; if applicable, remove the travel drive fuse from the operating panel; pull out the ignition key and the main battery switch.
- Protect raised machine parts (e.g.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

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!

- Mount all protective devices before re-commissioning the paver finisher.
- The walkway must always reach over the entire working 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



Depending on the mix of materials, the set height of the distribution auger (1) – measured from its bottom edge – should lie above the material layer height.

Grain sizes up to 16 mm

Example:
Paving thickness 10 cm
Min. height setting 15 cm
from the ground

Grain sizes > 16 mm

Example:
Paving thickness 10 cm
Min. height setting 18 cm
from the ground

☞ An incorrect height setting 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 working 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 by the screed (wavy surface).
  In addition, increased auger segment wear occurs.

2.2 Mechanical adjustment with ratchet (○)

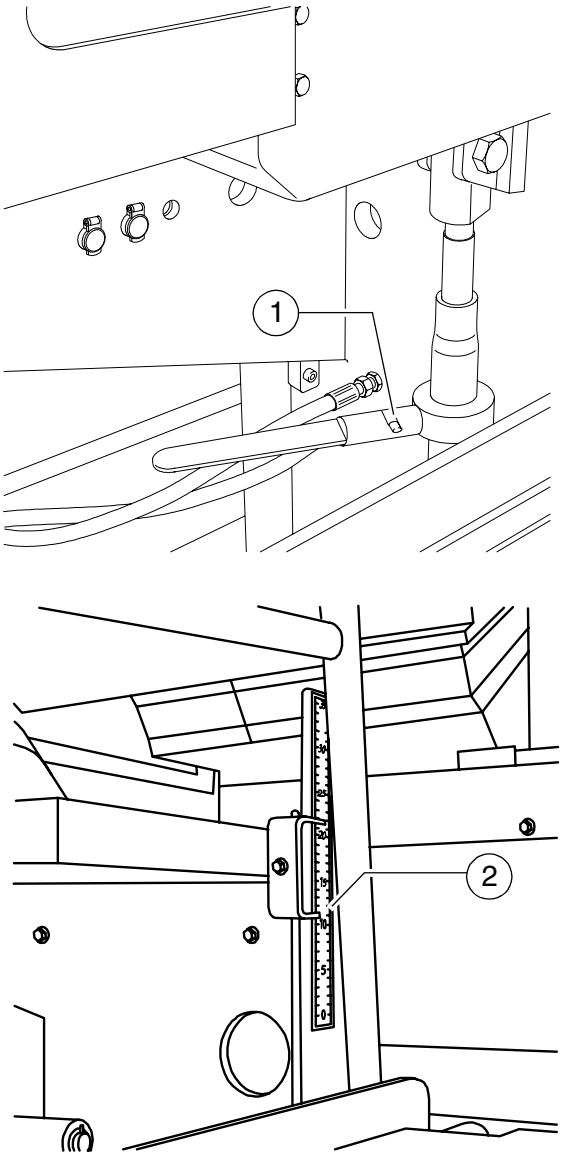
- Set the ratchet direction lever (1) to the clockwise or anti-clockwise direction. Turning anti-clockwise lowers the auger, turning clockwise raises the auger.
- Set the desired height by alternatingly adjusting the right-hand and the left-hand side.
- The current height can be read at the scale (2).

2.3 Hydraulic adjustment (○)

- Determine the currently set height of the auger crossbeam - left and right on the scale (2).

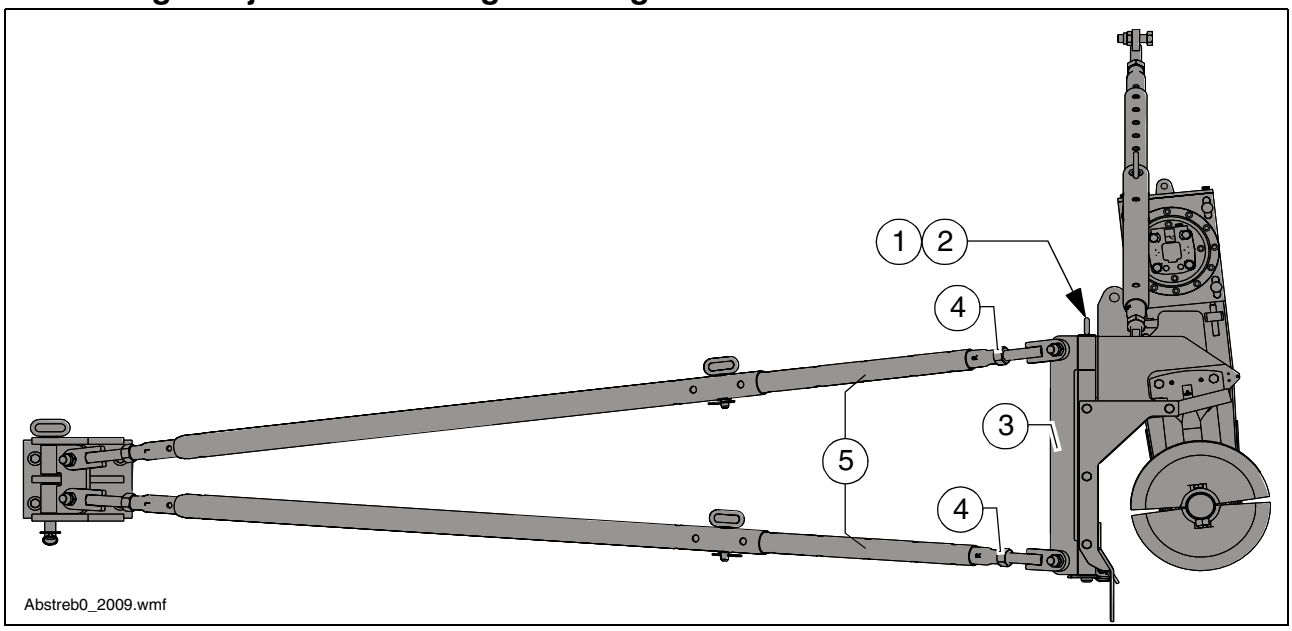
⚠ Actuate both of the corresponding function buttons on the operating panel evenly to prevent the auger crossbeam from jamming.

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



Ratsche_2009.wmf / Schnskal.wmf

2.4 Height adjustment for large working widths / with brace



Auger height adjustment for large working widths can be carried out with a hinged brace:

⚠ Only adjust the height of the auger with the slewing bracket retaining pins removed!

- Remove the slewing bracket (3) split pin (1) and retaining pin (2) on both sides of the vehicle.
- Push the slewing brackets with braces from the attaching point on the material shaft.
- Carry out height adjustment.
- Push the slewing brackets with braces onto the attaching point on the material shaft.
- Install the split pin (1) and retaining pin (2) again.

☞ If the retaining pins (2) cannot be inserted in the new position, the braces must be extended or shortened by rotating the adjustment rods until a continuous bore enables the retaining pin (2) to be inserted.

- Loosen lock nuts (4).

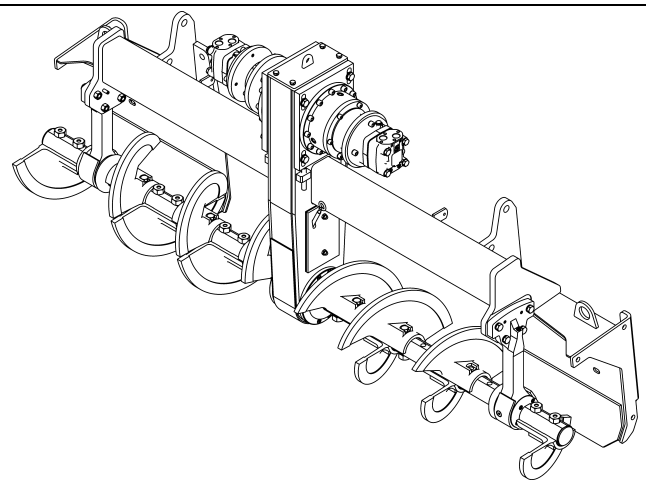
☞ The adjustment rods (5) are each equipped with a bore. A suitable drift can be used to adjust the length of the adjustment rod here.

- Extend or shorten the braces by rotating the adjustment rods (5) until the retaining pins can be inserted.
- Retighten the lock nuts (4).
- Install the split pin (1) and retaining pin (2).

⚠ Each time the height is adjusted, the auger must be realigned via the braces!

☞ See section „Aligning the auger“!

3 Auger extension



Auger_DEM.bmp

Depending on the type of screed, the most diversified working widths can be reached.

☞ Auger and screed extension must match.
Refer to the appropriate chapter „Set-up and modification“ in the Operating instructions for the screed:
– screed extension chart

To attain the desired working width, the respective screed extensions, side plates, augers, tunnel plates or cut-off shoes must be mounted.

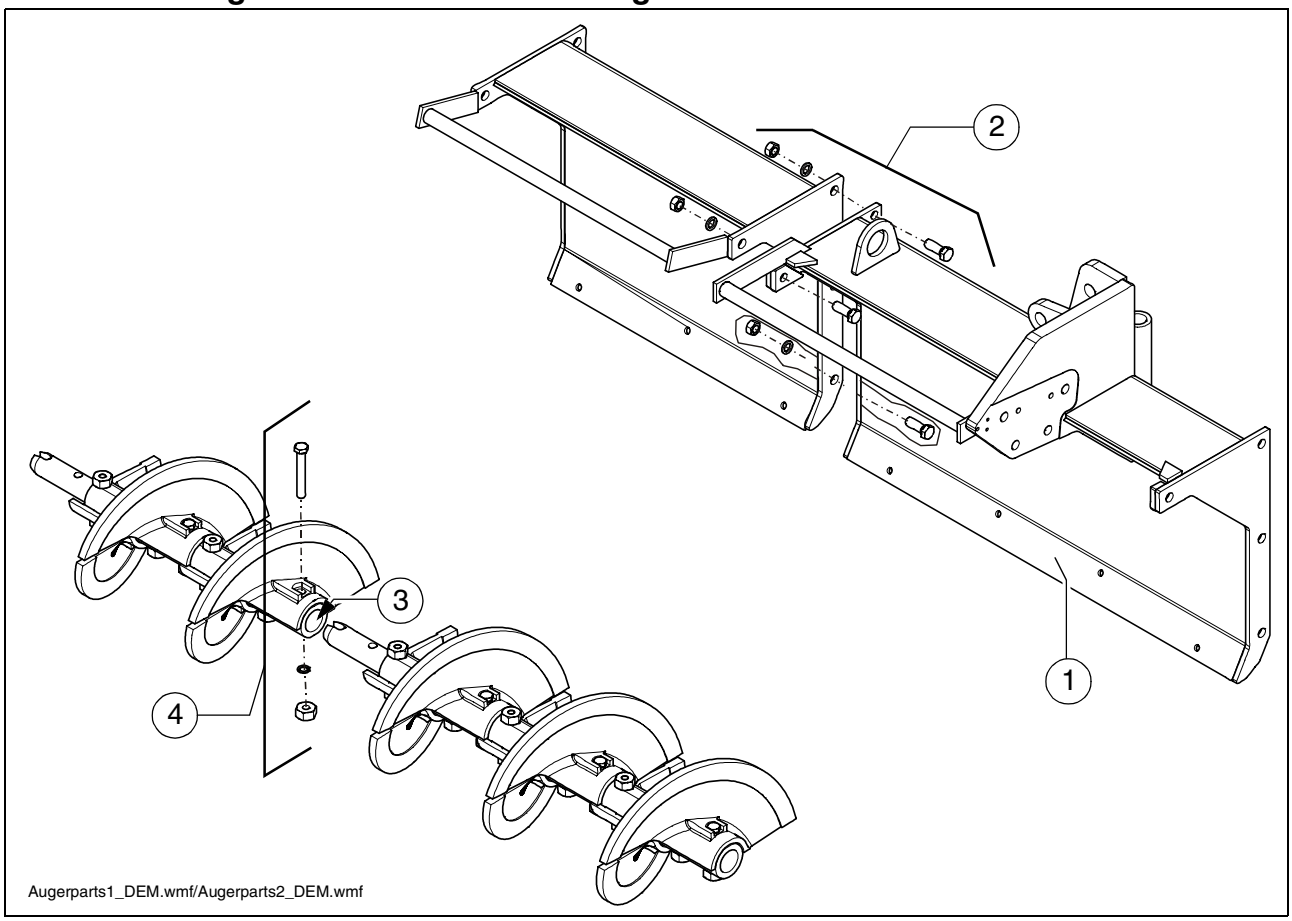
For working widths of more than 3.00 m, the auger should be fitted with extension parts on both sides to improve material distribution and to reduce the wear.

STOP The diesel engine must be switched off whenever work is performed on the auger. Danger of injuries!

☞ If the operating conditions on the construction site permit an auger extension to be fitted, or render this necessary, always additionally fit the outer auger bearings.
For auger width extensions with an outer auger bearing on the basic unit, fit the shorter auger blade to the bearing. Otherwise, destruction between the auger blade and bearing may occur.

3.1 Mounting extension parts

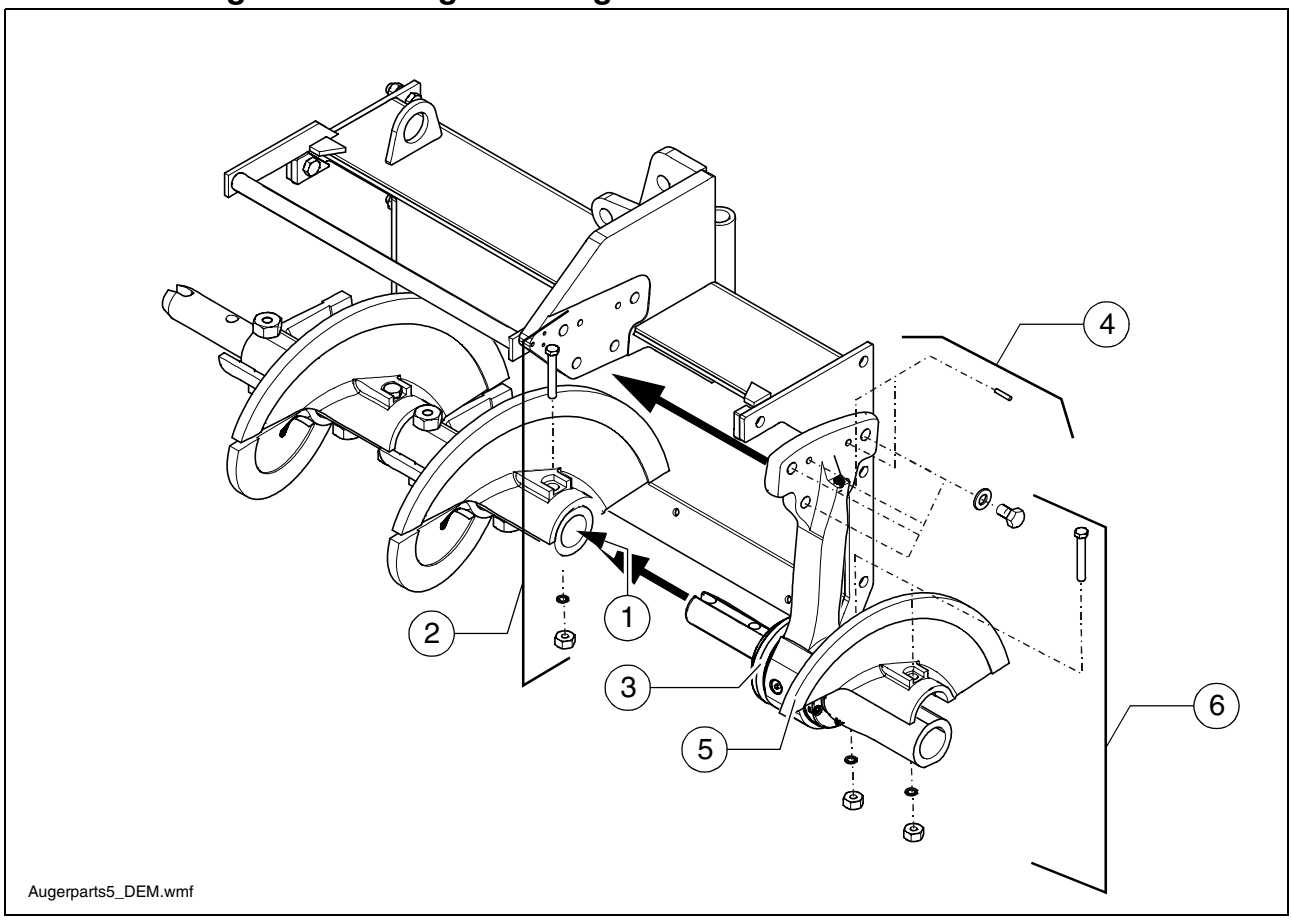
Mounting the material shaft and auger extension



- Secure the additional material shaft (1) to the basic unit or the adjacent material shaft with the relevant assembly parts (2) (bolts, washers, nuts).
- Remove plug (3).
- Remove the assembly parts (4) of the adjacent auger blade; insert the auger shaft extension into the auger shaft.
- Reinstall the previously removed assembly parts (4) and simultaneously tighten the auger shaft bolts.
- Insert the plug (3) at the end of the auger.

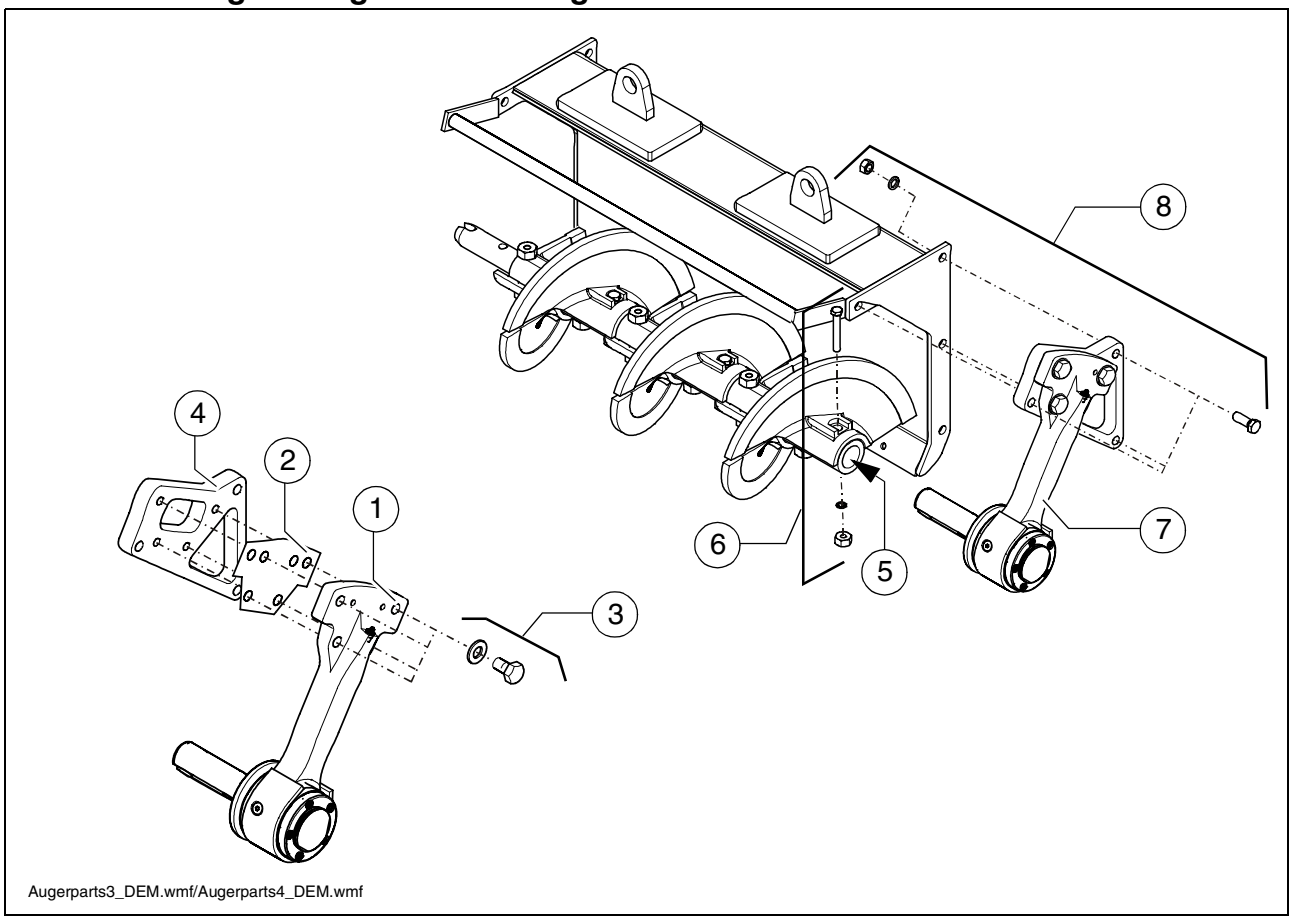
☞ Depending on the operating width, the outer auger bearing and/or auger end bearing must be installed:

Mounting the outer auger bearing



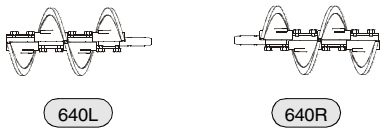
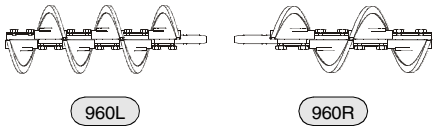
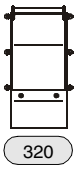
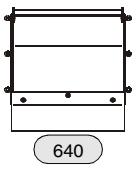
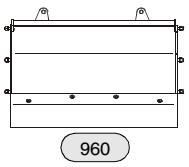
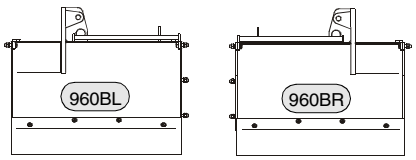
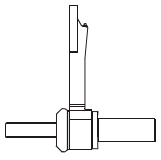
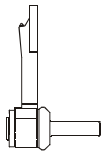
- Remove plug (1).
- Remove the assembly parts (2) of the adjacent auger blade; insert the outer auger bearing (3) into the auger extension.
- Secure the outer auger bearing to the brace shaft with the relevant assembly parts (4) (bolts, washers, pins).
- Reinstall the previously removed assembly parts (2) and simultaneously tighten the auger shaft and bearing shaft bolts.
- Mount the auger half (5) on the outer side of the bearing with the relevant assembly parts (6) (bolts, washers, nuts).
- Insert the plug (1) at the end of the auger.

Mounting the auger end bearing

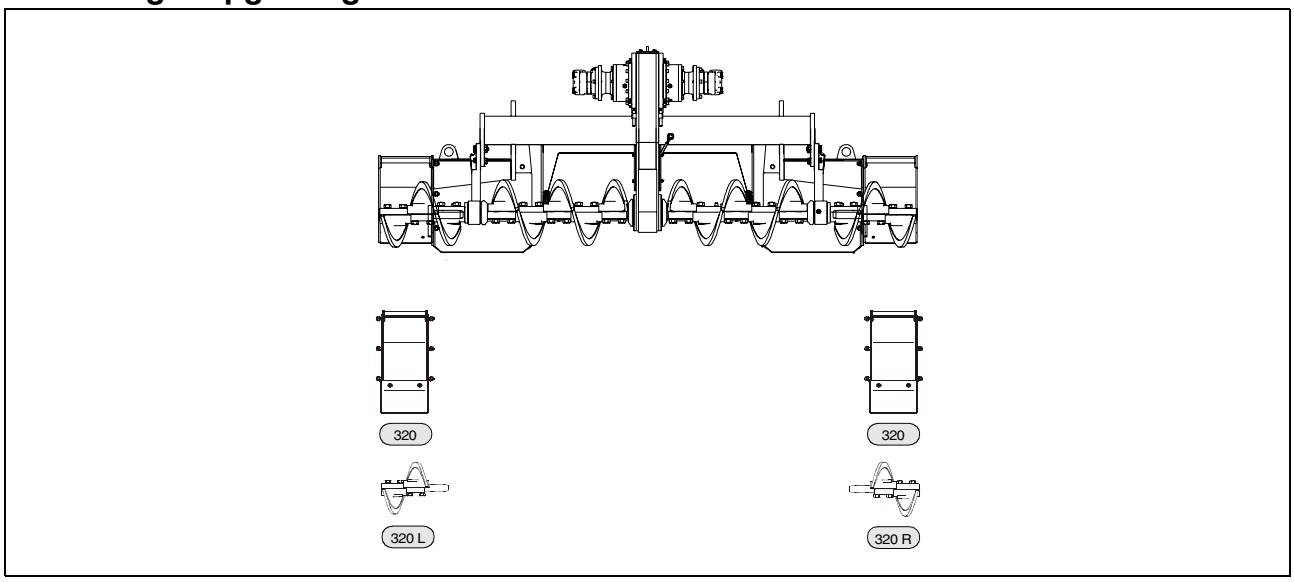


- The auger end bearing must first be pre-assembled:
  - Mount the auger end bearing (1) together with the fitted plate (2) on the intermediate plate (4) with the relevant assembly parts (3) (bolt, washer).
- Remove plug (5).
- Remove the assembly parts (6) of the adjacent auger blade; insert the auger end bearing (7) into the auger extension.
- Secure the auger end bearing to the material shaft with the relevant assembly parts (8) (bolts, washers, nuts).
- Reinstall the previously removed assembly parts (6) of the auger blade and simultaneously tighten the auger shaft and bearing shaft bolts.
- Insert the plug (5) at the end of the auger.

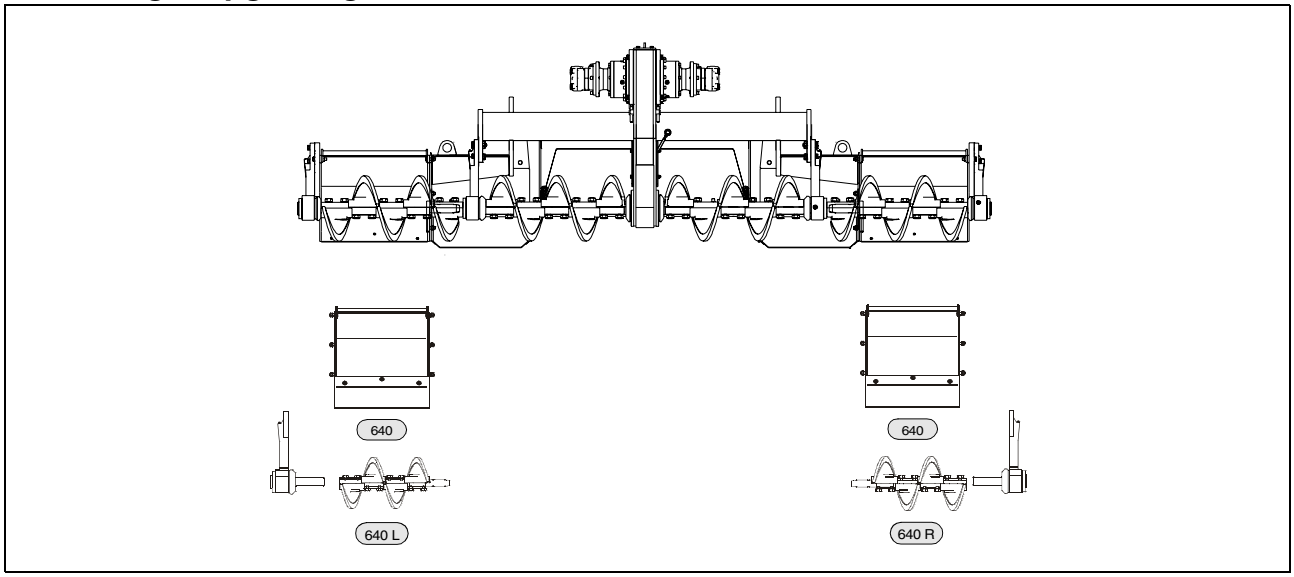
3.2 Auger extension chart

Symbol		Meaning
	- (160L)	- Auger blade 160 mm left
	- (160R)	- Auger blade 160 mm right
	- (320L)	- Auger extension part 320 mm left
	- (320R)	- Auger extension part 320 mm right
	- (640L)	- Auger extension part 640 mm right
	- (640R)	- Auger extension part 640 mm right
	- (960L)	- Auger extension part 960 mm left
	- (960R)	- Auger extension part 960 mm right
	- (320)	- Material shaft 320 mm
	- (640)	- Material shaft 640 mm
	- (960)	- Material shaft 960 mm
	- (960BL)	- Material shaft 960 mm with brace left
	- (960BR)	- Material shaft 960 mm with brace right
		Outer auger bearing
		Auger end bearing

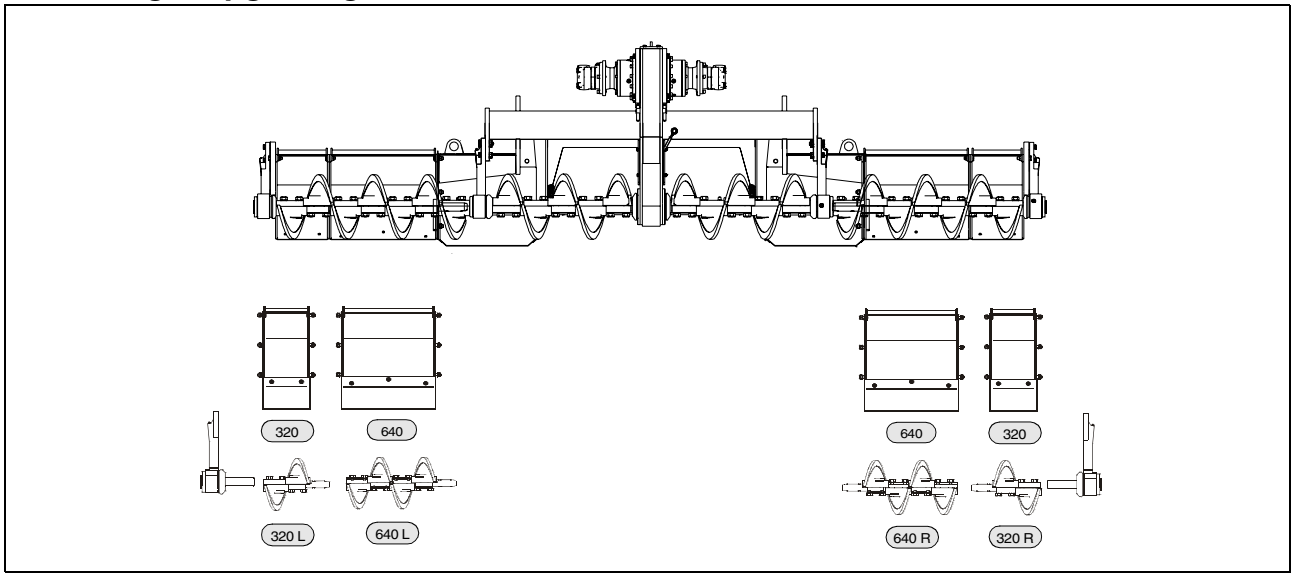
Auger upgrading as of 3.14 m



Auger upgrading as of 3.78 m



Auger upgrading as of 4.42 m



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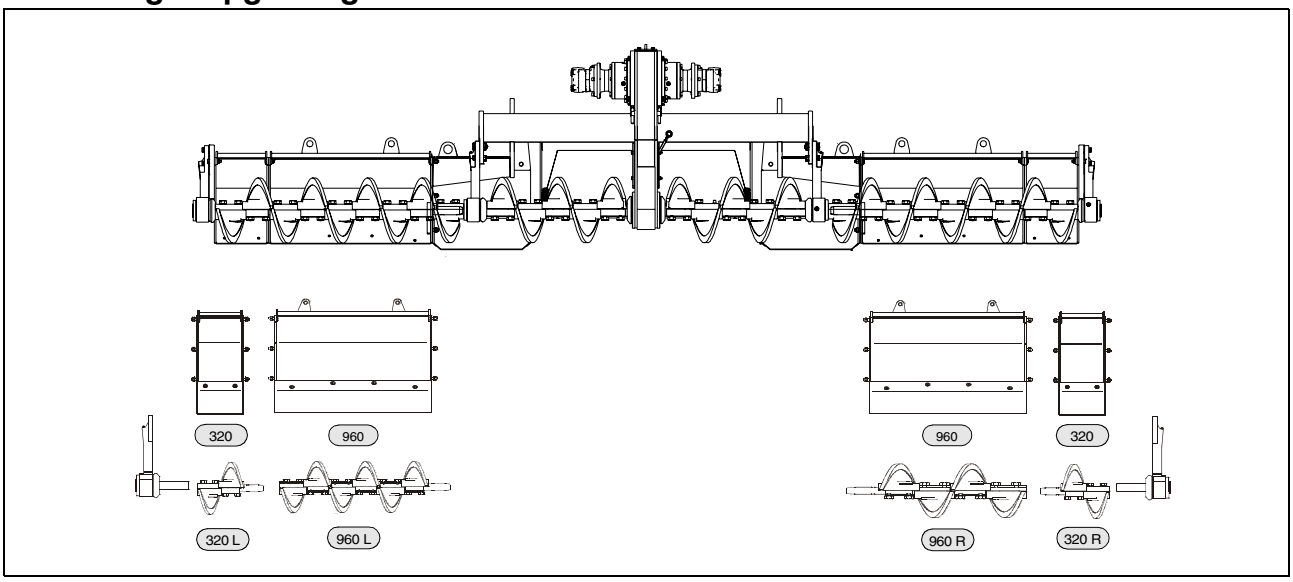
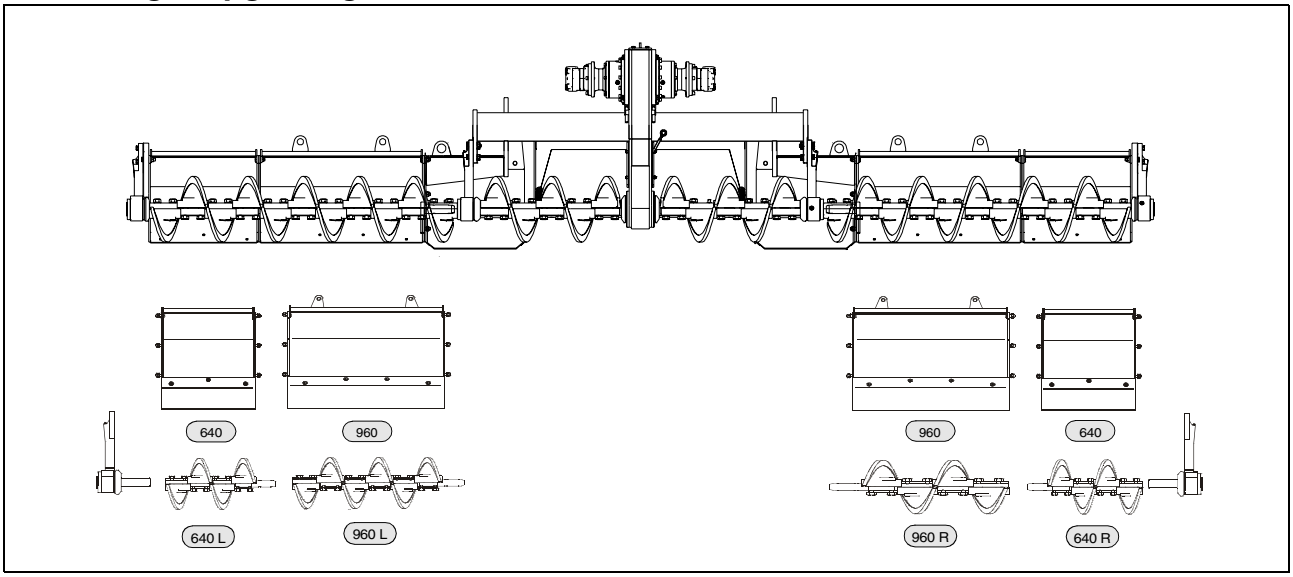
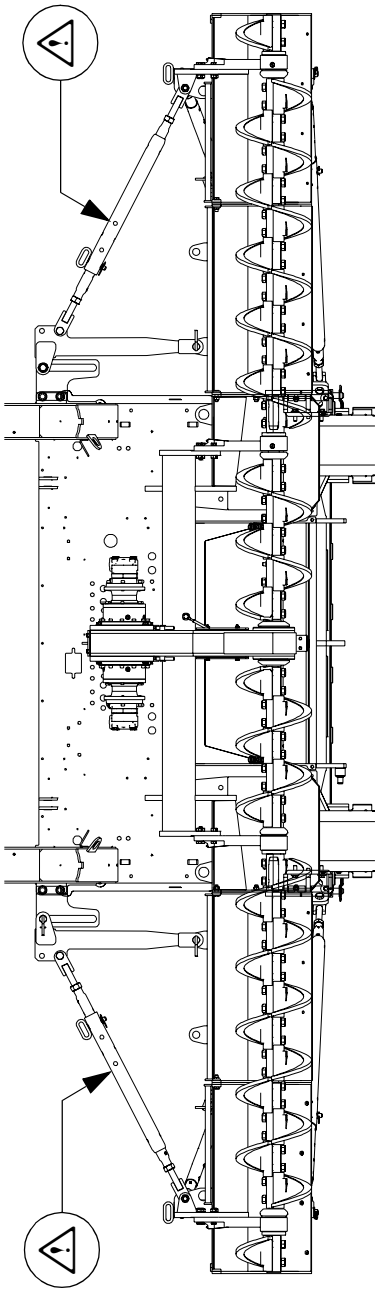
Auger upgrading as of 5.06 m

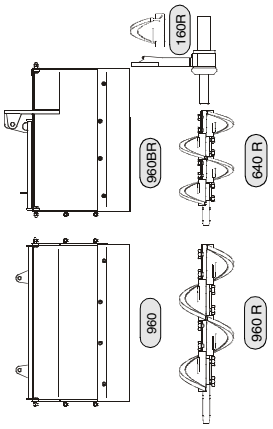


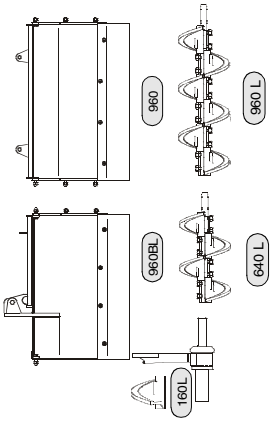
Auger upgrading as of 5.70 m



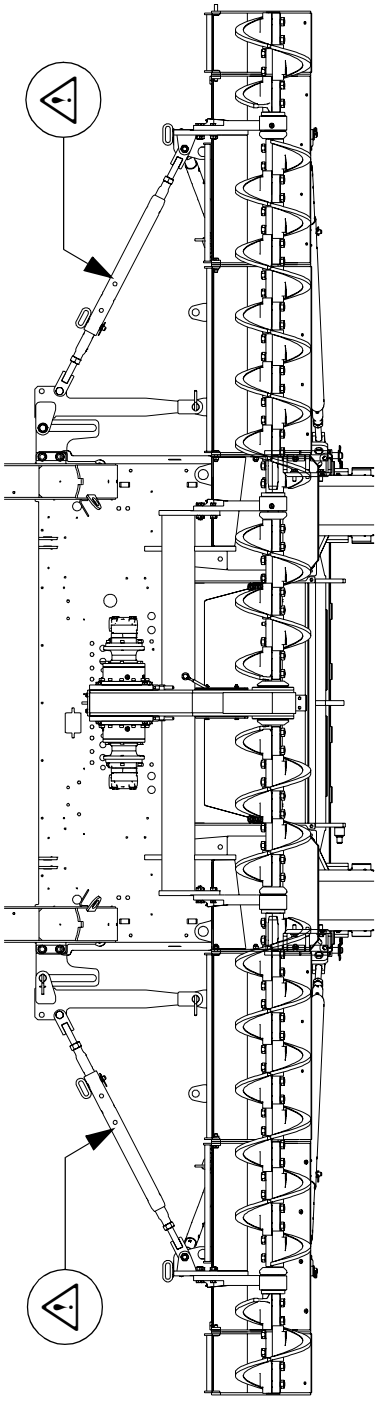
Auger upgrading as of 6.34 m

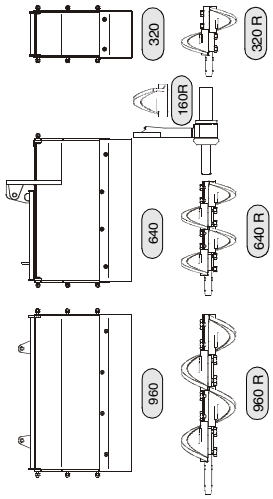


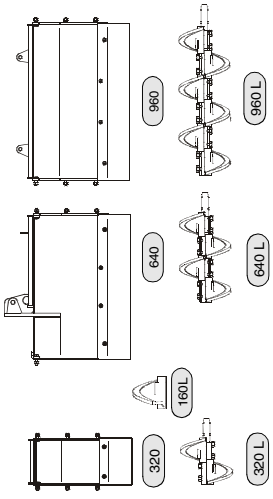




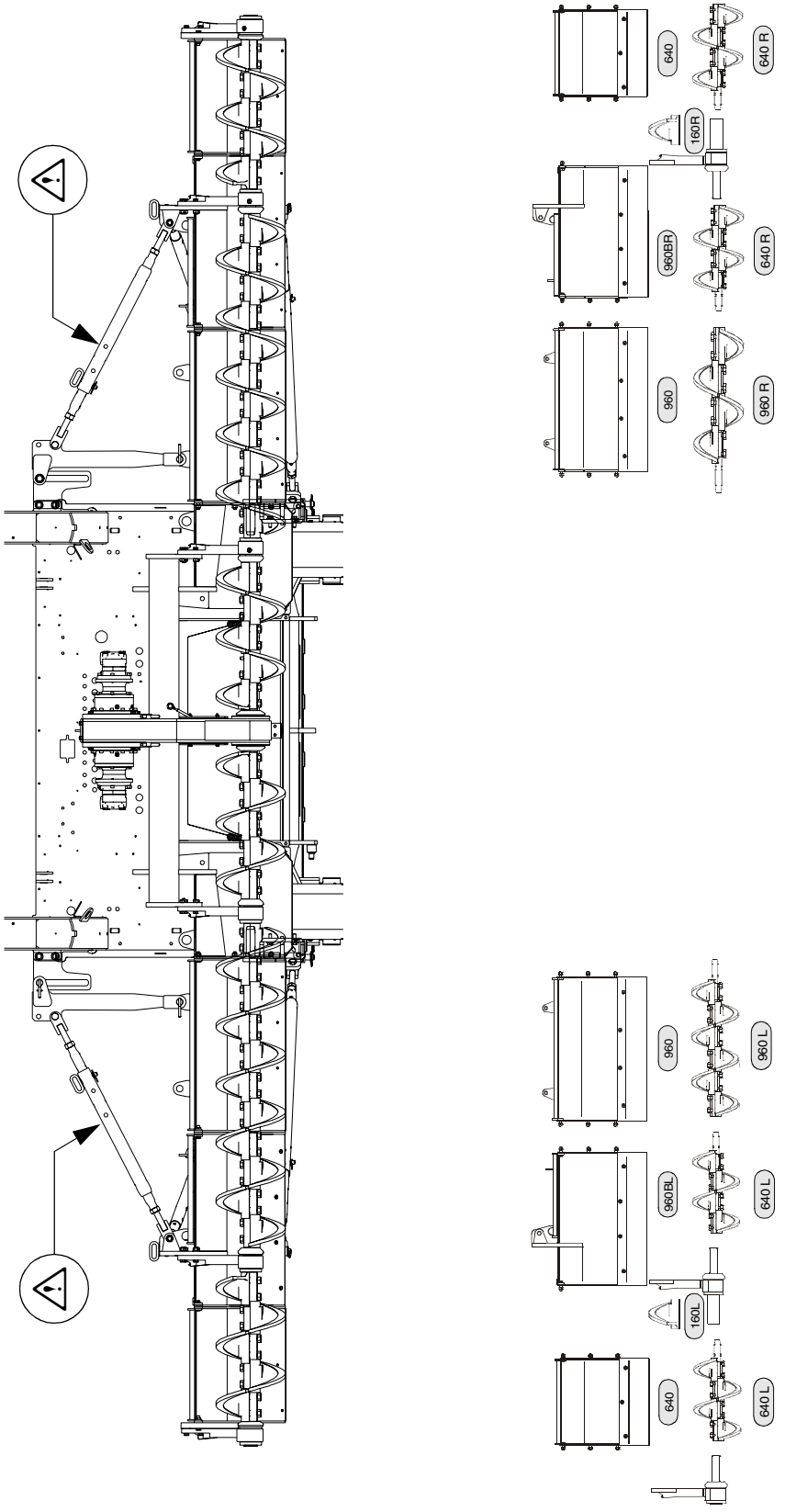
Auger upgrading as of 6.98 m







Auger upgrading as of 7.62 m



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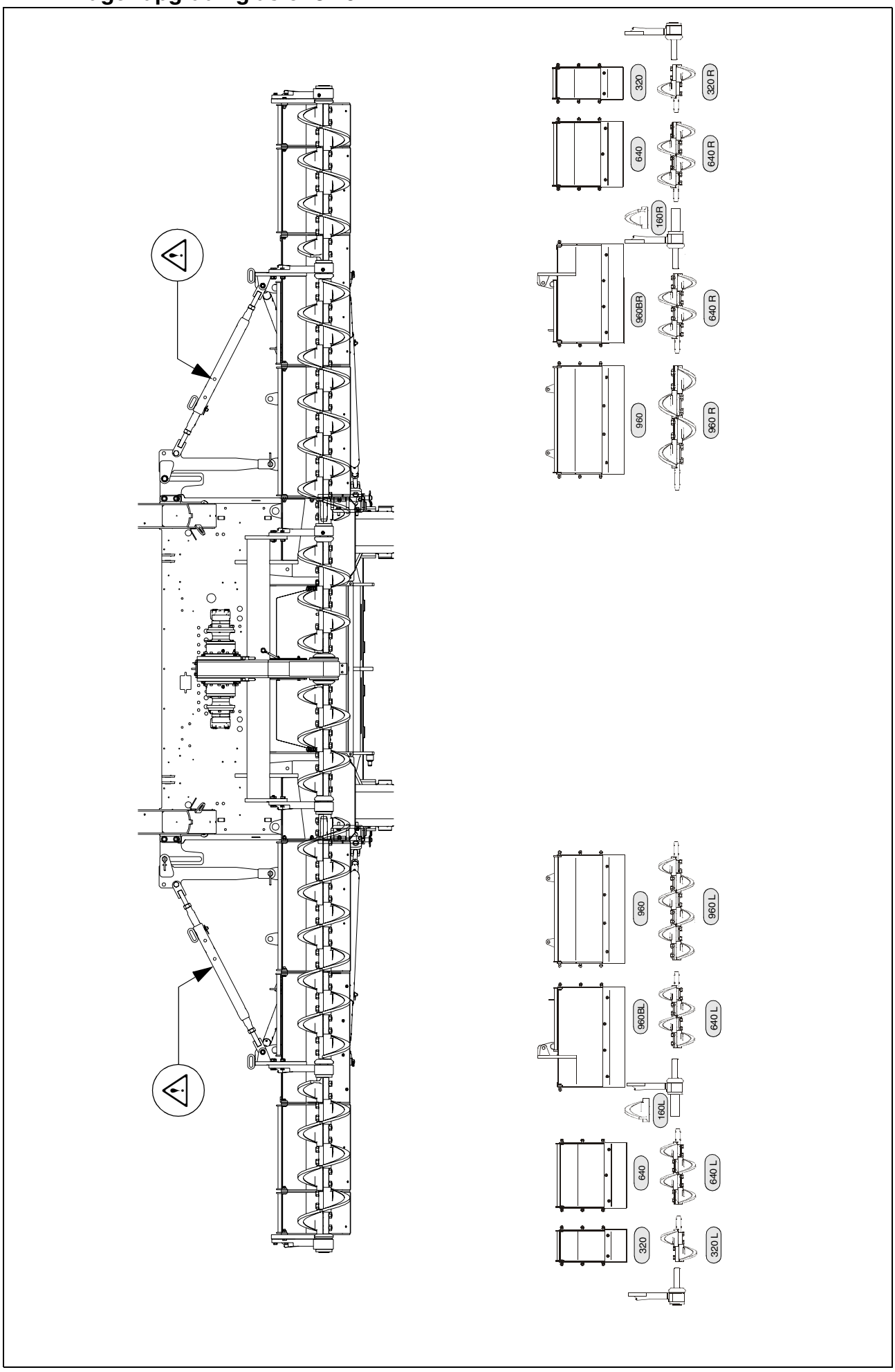
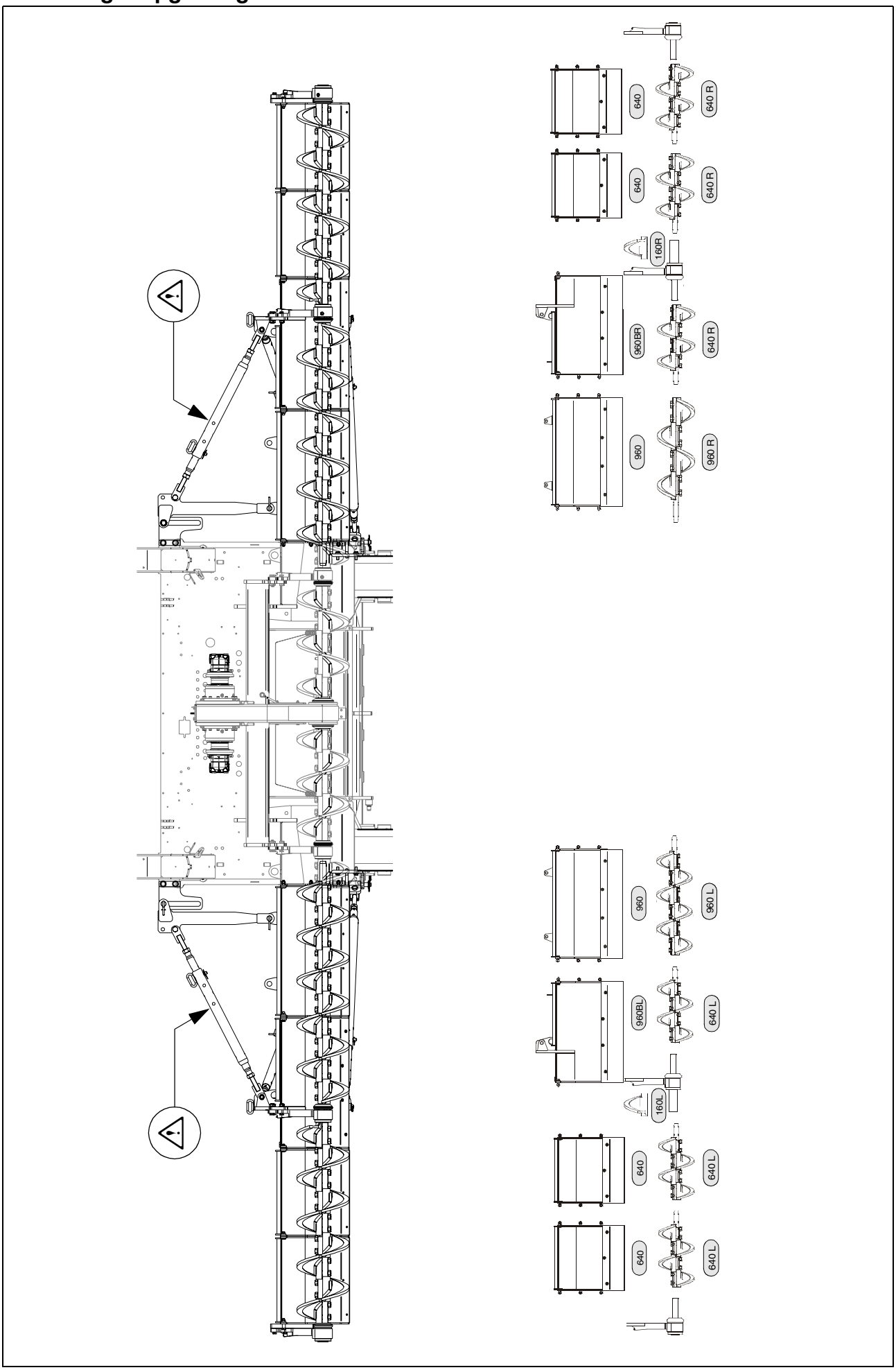
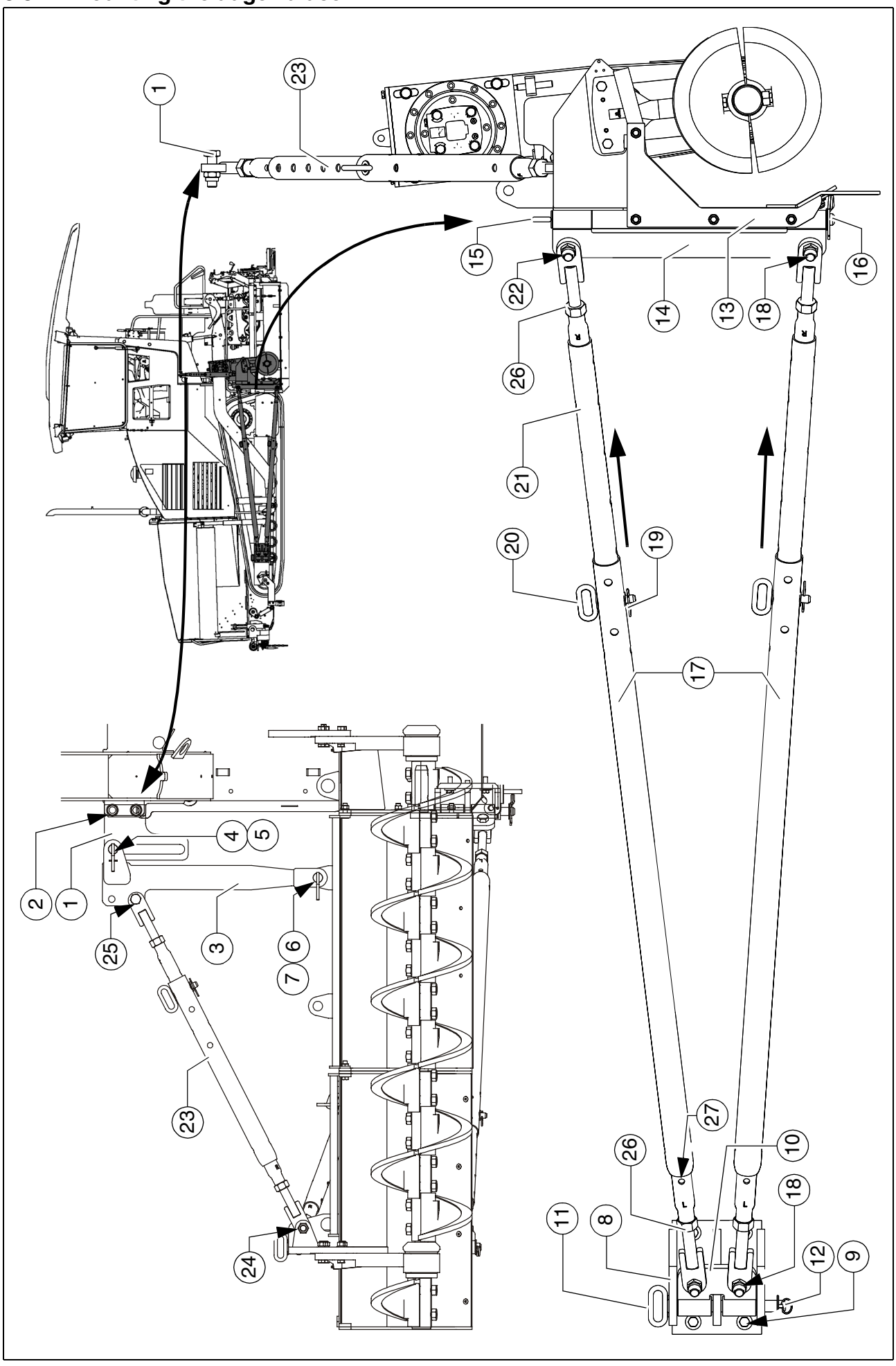
Auger upgrading as of 8.26 m



Auger upgrading as of 8.90 m



3.3 Mounting the auger brace



☞ Before mounting the auger brace, the required auger height should already have been set on the basic auger!
Note the section „Height adjustment for large operating widths / with brace“!

- Mount the left/right guide plates (1) on the vehicle frame shackles with the relevant assembly parts (2).

☞ The guide plates must be mounted on the front side of the shackles.

- Slide the support shackle (3) over the guide plate and secure in the groove with a pin (4) and split pin (5).
- Slide the lower support shackle (3) over the attaching point of the material shaft and secure with a pin (6) and split pin (7).
- Mount the brace bracket (8) on the drive unit with the assembly parts (9).

☞ The inclination on the bracket must point in the direction of travel!

- Insert the fulcrum bracket (10) into the brace bracket (8) and secure with the retaining pin (11).
- Secure the retaining pin (11) with a split pin (12).

☞ The first brace set must be set in the rear bore. If the operating width necessitates a second brace, the front bore must be used!

- Mount the slewing bracket (14) at the brace shaft (13) with retaining pins (15).
- Secure the retaining pins (15) with a split pin (16).
- Mount the braces (17) on the fulcrum bracket (10) with the assembly parts (18).

☞ The braces must be mounted on the outer side of the fulcrum bracket (10)!

- Remove the spring cotter pin (19) and retaining pin (20), pull out the adjustment rod (21) until the brace can be mounted on the slewing bracket (14) together with the corresponding assembly parts (22).
- Secure the adjustment rod (21) in an appropriate bore with a retaining pin (20) and spring cotter pin (19).

- Mount the vertical brace (23) in the same way.
  - In this case, secure the vertical brace at the outer auger bearing (24) and the lower support bore (25).

☞ At the support (3) mounting point, the brace must be secured at the rear side in each case!

3.4 Aligning the auger

- Loosen lock nuts (26).

☞ Note the left-hand thread (L) and right-hand thread (R) mark on the brace!

- Extend or shorten the braces (17) by rotating both adjustment rods (21) until all mounted material shafts align with the auger.

☞ The adjustment rod (21) is equipped with a bore (27) on the left and right. A suitable drift can be used to adjust the length of the adjustment rod here. The rotational direction for extending or shortening the adjustment rod is determined by the left-hand thread (L) or right-hand thread (R).

☞ A cord, which aligns with the screed or the rear wall of the vehicle, can be tensioned e.g. to provide assistance during alignment!

- Extend the upper and lower adjustment rods until the material shafts are aligned vertically.

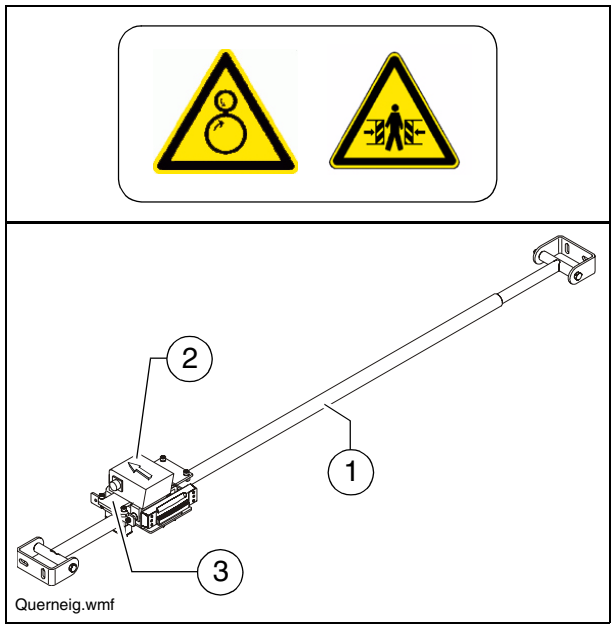
- Retighten the lock nuts (26).
- Align the auger height in the same way by adjusting the vertical brace (23).

☞ Check the horizontal alignment with a spirit level!

4 Levelling

4.1 Slope controller

⚠ During operation, no work may be carried out on the slope control linkage or the slope controller!



- Mount the slope control linkage (1) in the intended position between the two crossbeams.
- Mount the slope controller (2) on the slope control linkage's retaining plate (3).

☞ Four securing holes are provided for mounting on the sensor's retaining plate.

☞ The digital slope controller must be mounted in such a way that the marking arrow on the housing points in the direction of travel.

☞ The analogue slope controller must be mounted in such a way that the displays for the operator visibly point backwards.

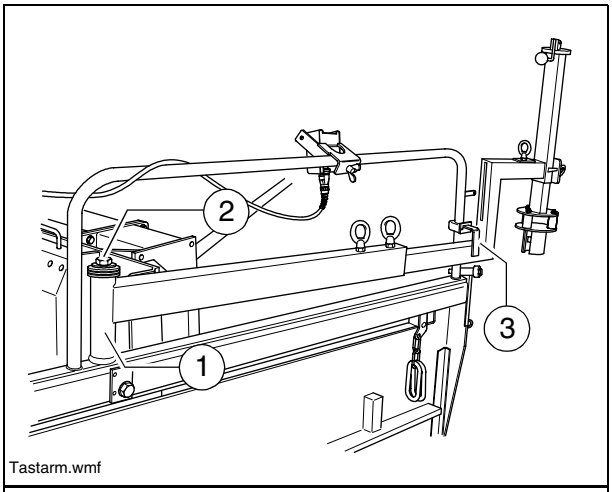
- Connect the left or right connection cable to the intended handset or vehicle socket.

☞ Exhaustive operating instructions can be found in the documentation for the corresponding levelling system.

4.2 Mounting the sensor arm

- Position the sensor arm mounting (1) on the corresponding journal of the screed side board.
- Tighten the pin (2) so that the sensor arm is just still able to swivel.

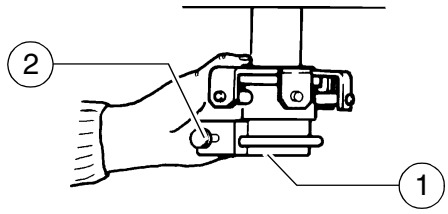
☞ The sensor arm can be secured on the side board with the lock (3).



Tastarm.wmf

4.3 Mounting the grade control system

Insert the grade control system into the clamp bracket (1) and secure with the clamping bolt (2) to prevent rotation.



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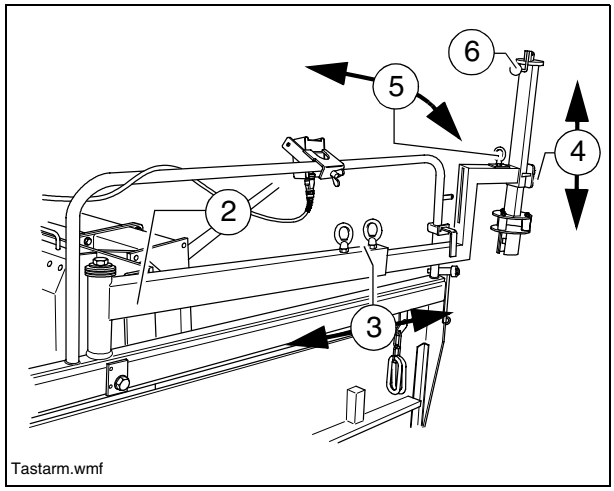
4.4 Setting up the sensor arm



Tastarm.wmf

Before starting paving, the sensor arm must be set, with the grade control system, to its reference (cable, kerb, etc.).

☞ Sensing should be carried out in the area of the auger.

- Swivel the sensor arm (2) over the reference.
- Use the following options to adjust the sensor arm precisely:
  - After loosening the clamping bolts (3), the sensor arm length can be set up.
  - The sensing height can be set by loosening the clamping bolts (4).
  - Adjustment of the lateral sensing angle is possible at the lock (5).
  - Height adjustment for analogue grade sensors is carried out by means of a crank (6). To lock it, the crank is inserted into one of the available notches following the adjustment work.

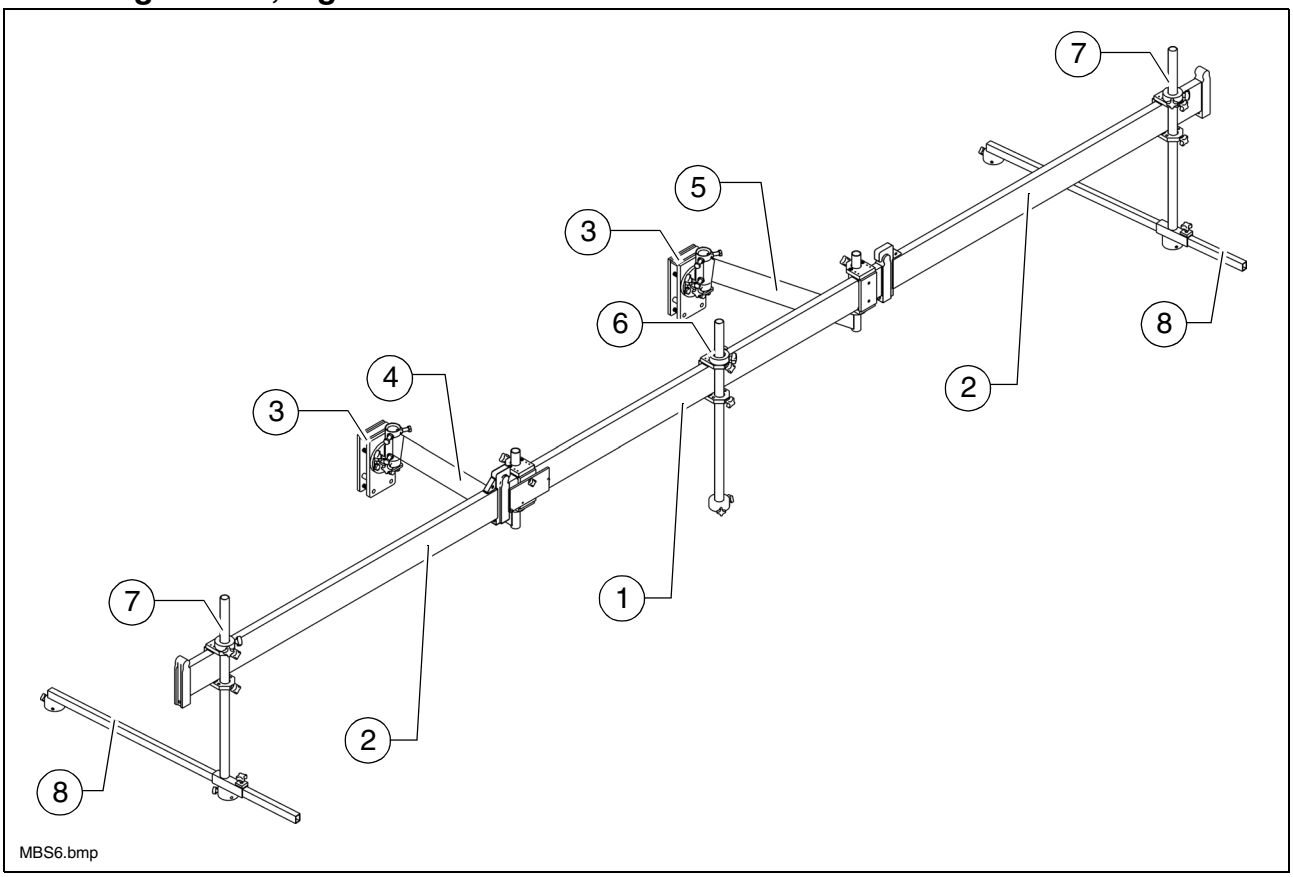
☞ All assembly parts and clamping points must be tightened properly to ensure safe and precise sensor arm operation!

- Connect the left or right grade control system connection cable to the intended handset or vehicle socket.

☞ If the vehicle is to be operated with automatic grade sensing on both sides, the above described adjustment process must be repeated on the second side.

☞ Exhaustive operating instructions can be found in the documentation for the corresponding levelling system.

4.5 Big ski 9 m, big ski 13 m



The big ski is used for contactless sensing over a particularly large reference length.

☞ A total max. ski length of approx. 9.30 m can be achieved with the combination of 1 centre element and 2 module elements together with the sensor arm extensions. A total max. ski length of approx. 13.50 m can be achieved with the combination of 1 centre element and 4 module elements together with the sensor arm extensions.

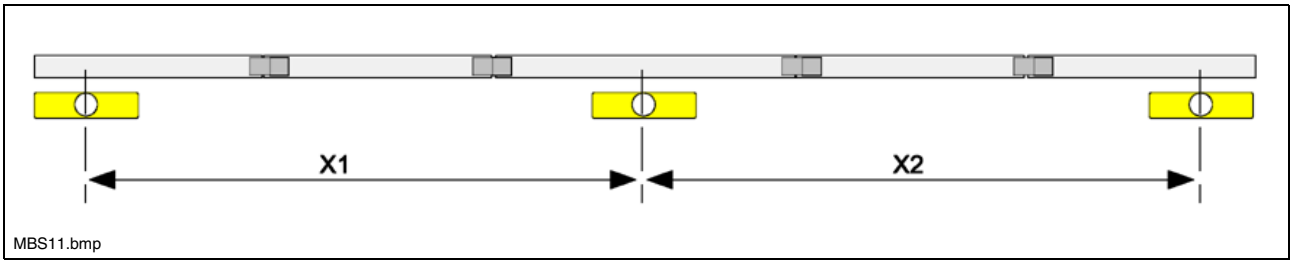
☞ The big ski enables the alignment of the individual sensors at the front and rear to be shifted over the reference. The sonic ski can actually be positioned in front of and behind the vehicle in order to guarantee safe reference sensing even on cornering.

☞ Before starting paving, the big ski must be set, with the grade control system mounted, to its reference (cable, kerb, etc.).

The big ski essentially consists of the following components:

- Centre element (1)
- Extension modules (2)
- Crossbeam bracket (3)
- Front swivel arm (4)
- Rear swivel arm (5)
- Sensor bracket (6)
- Sensor bracket, extendable (7)
- Arm extension (8)

☞ Assembly of the short version is described in the following, as the longer variant is achieved simply by adding further module elements.



The distances between the sensors are ideally identical (X1 = X2).

☞ The centre sensor is mounted in the usual individual sensor position so that, if necessary, work can be carried out with just one sensor by switching over on the MOBA-matic (e.g. at the start of paving, road junctions, etc…)

☞ Depending on application, the mechanism can be mounted at the side next to the screed or also above the screed. This is dependent on the paving width required in each case.

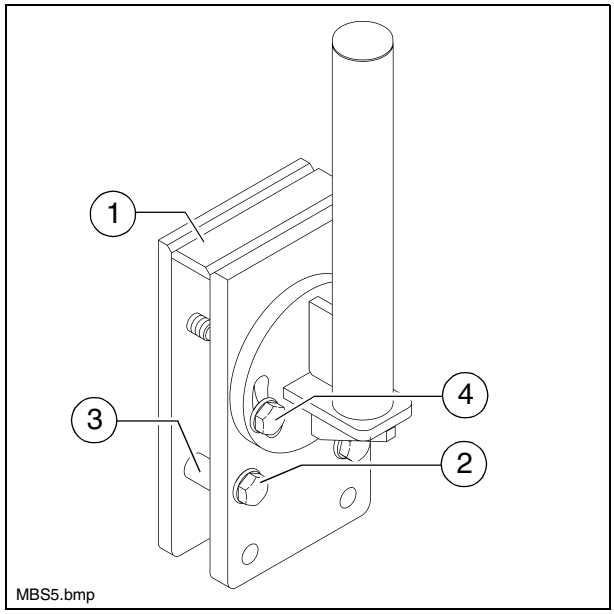
☞ The procedure for mounting the big ski is the same in both cases.

☞ So that the big ski can be operated as parallel to the ground as possible during paving, it must be attached according to the subsequent paving conditions. To do this, the screed should be lowered to the desired course thickness and the traction point should be set appropriately.

⚠ When mounting the two crossbeam brackets, it is vital to ensure that these do not hamper the free movement of either the crossbeam or the screed construction! Clearance must be guaranteed throughout the entire working range!

Mounting the big ski bracket on the crossbeam

☞ The entire big ski construction is mounted laterally on the crossbeams. To do so, the two crossbeam brackets must first be mounted. The crossbeam bracket design differs slightly depending on the paver finisher which is used.
During assembly, it is possible either to bolt the bracket directly at the existing bores or, as described in the following, to secure it to the crossbeam using clamping plates.



☞ The front bracket is mounted directly behind the traction point; the rear bracket is mounted at approximately the height of the auger.

- Place both brackets (1) over the crossbeam at the corresponding point and mount with bolts (2) and sleeves (3).

☞ For different crossbeam thicknesses, use the mounting's corresponding bores.

- The mounting tube is aligned via the two bolts (4).

☞ Align the bracket vertically.

Mounting the swivel arms

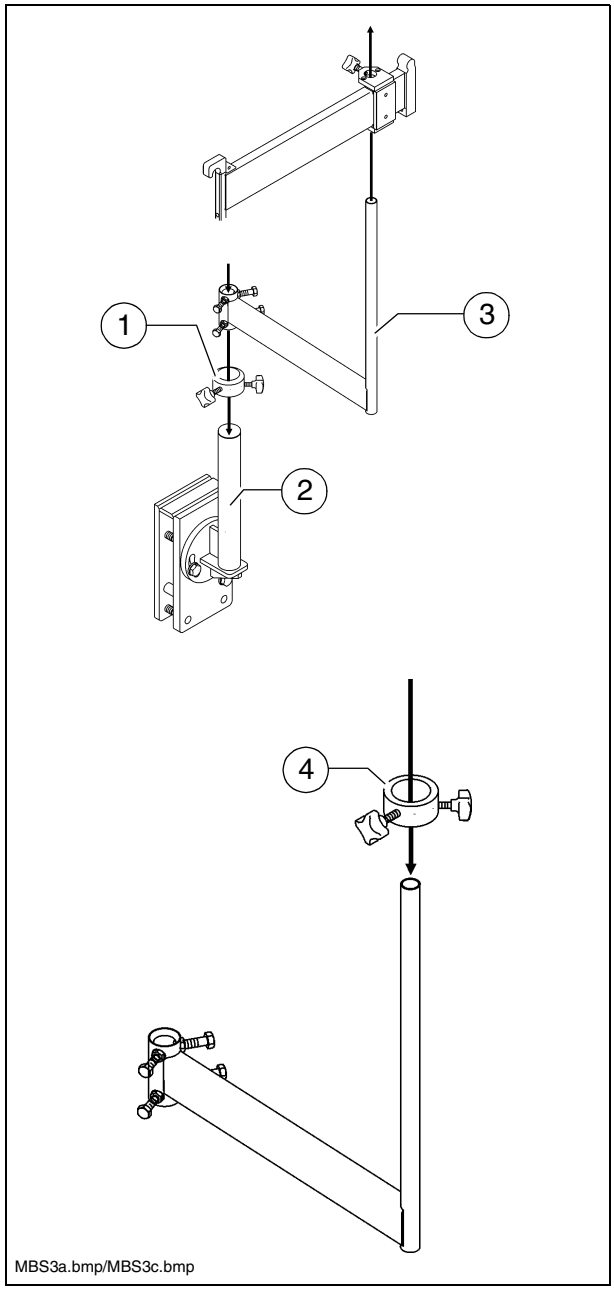
- Slide a fixing ring (1) over the tube of the big ski bracket (2).

☞ The fixing ring's 45° chamfer must point upwards.

- Then slide the two swivel arms (3) onto the tube of the big ski bracket.

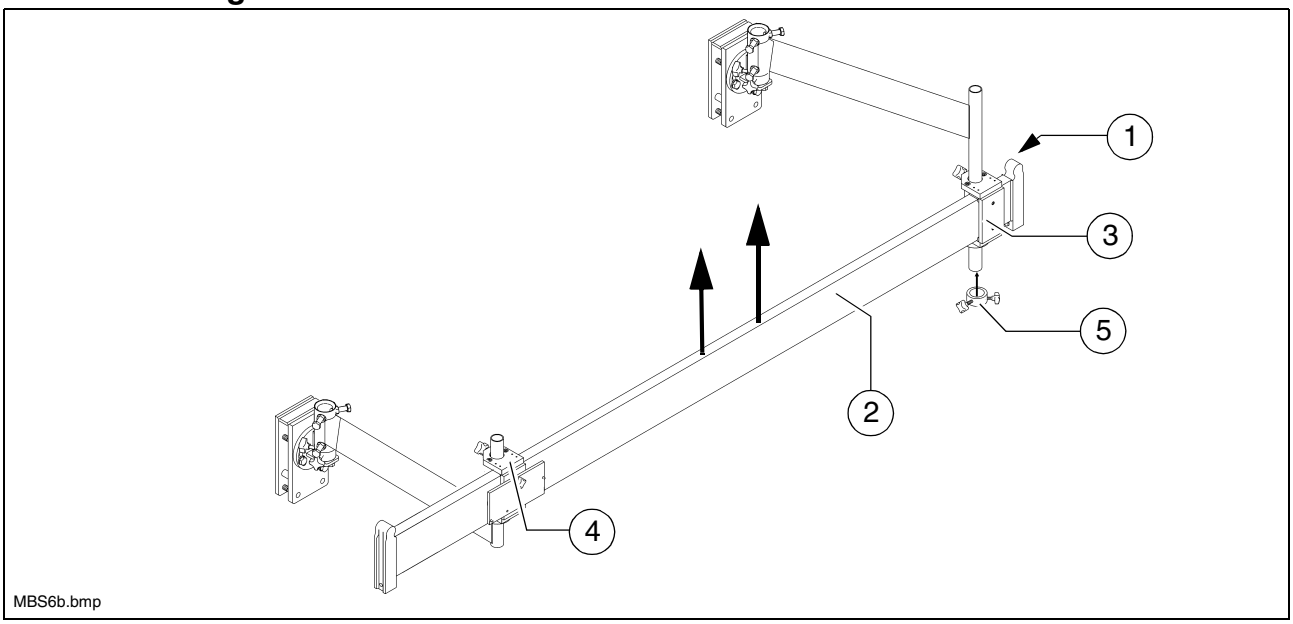
☞ The rear swivel arm is positioned, rotated by 180°, on the big ski bracket.

- Slide a fixing ring (4) (flat version) onto the front swivel arm and secure with the relevant star handle bolt.



MBS3a.bmp/MBS3c.bmp

Mounting the centre element



☞ During assembly, it must be ensured that the round lug (1) for attaching the subsequent modules points upwards.

☞ The centre element (2) is already fitted in the factory with 2 pre-assembled sliding parts (3) / (4), which are pushed over the two round mounting journals of the swivel arms.

- First slide the rear sliding part (3) onto the rear swivel arm from below. Then raise the centre element, together with the rear swivel arm, until the front sliding part (4) can be pushed onto the front swivel arm from above.
- Then secure the rear sliding part with a fixing ring (5) and the relevant star handle bolt.

☞ Once the first part of the beam has been assembled, it is initially aligned:

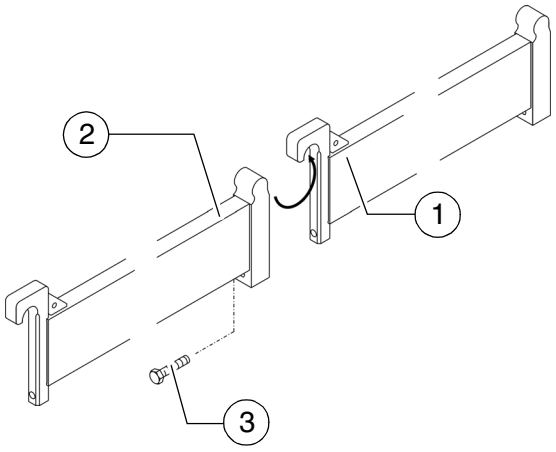
- The centre element is now aligned horizontally using the fixing rings on the swivel arms, and also with the fixing rings on the big ski brackets if necessary.
- Next, the centre element is aligned by rotating the swivel arms parallel to the paver finisher.
- Finally tighten all securing bolts.

Extending the big ski

☞ The big ski can be extended to both the 9 m and 13 m versions.

☞ Structure of the 9 m version: One extension part at the front/rear each.
Structure of the 13 m version:
Two extension parts at the front/rear each.

- Place the extension module (1) onto the centre element (2) and secure with a bolt (3).



MBS1.bmp

Mounting the sensor bracket

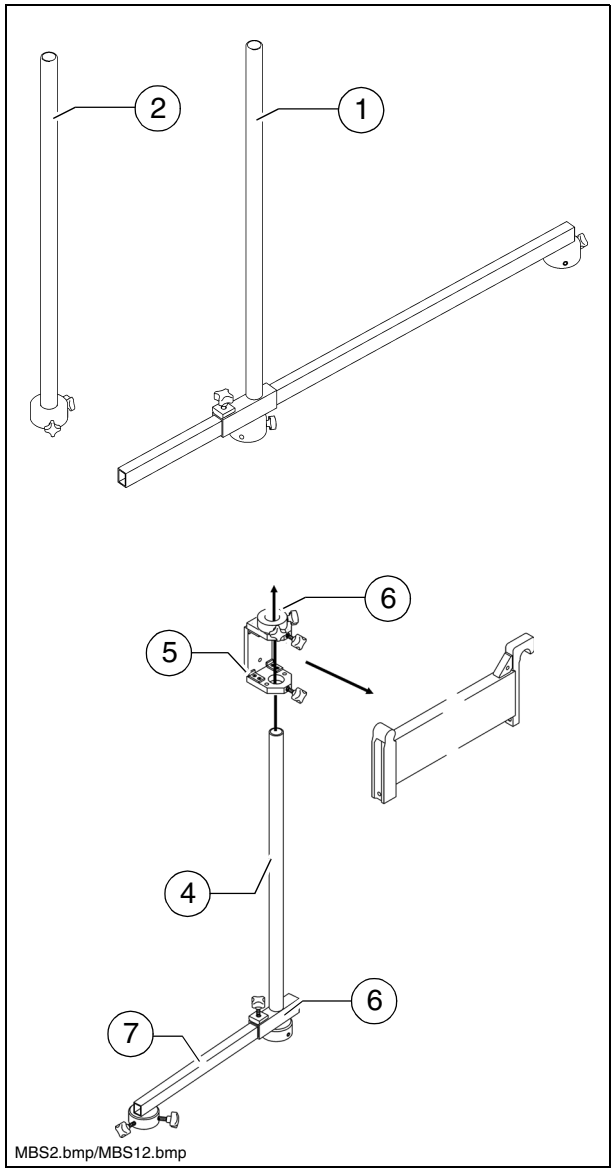
☞ A sensing system with 3 sensors is provided over the entire length of the big ski. One sensor each on the centre element, and the front and rear end elements.

☞ The centre sensor should be mounted on the ski in precisely the location in which it would be found during normal operation (approx. the height of the auger).
The two other sensors should be mounted the same distance away from it.

☞ Extendable sensor brackets (1) are mounted in the two outer positions; the normal sensor bracket (2) is mounted in the centre.

- Place the sliding bracket (3) over the corresponding big ski element from the inner side.
- Insert the sensor bracket (4) into the sliding bracket (5) from below and secure with the relevant star handle bolts.
- Place the clamping ring (6) onto the sensor bracket tube and secure with the relevant star handle bolt.

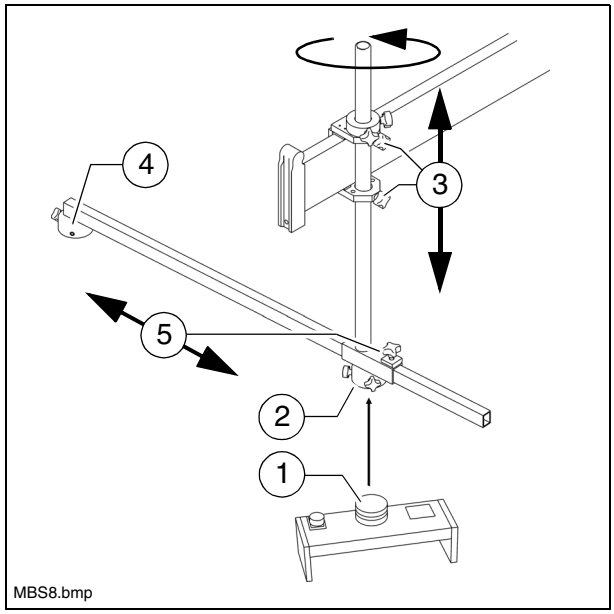
- In the case of the extendable sensor brackets, slide in the arm extension (7) and secure in position with the relevant star handle bolt.



MBS2.bmp/MBS12.bmp

Mounting and aligning the sensors

- Insert the sensor mounting (1) into the bracket (2).
- Align the sensor and secure with the relevant star handle bolts.
  - The sensing height can be adjusted by loosening the star handle bolts (3).



☞ At the two outer sensor brackets, the sensor can also be mounted on the swivelling sensor extension arm (4).
This therefore enables the two outer sensors to be swivelled during paving for diverse requirements, e.g. cornering.

  - By loosening the star handle bolts (5), the length of the extension arm can be adjusted.
  - The sensor bracket with extension arm can be swivelled by loosening the star handle bolts (3).

☞ If a sensor extension arm is swivelled to the side, it must be ensured that the attached sensor is subsequently aligned in the direction of travel.

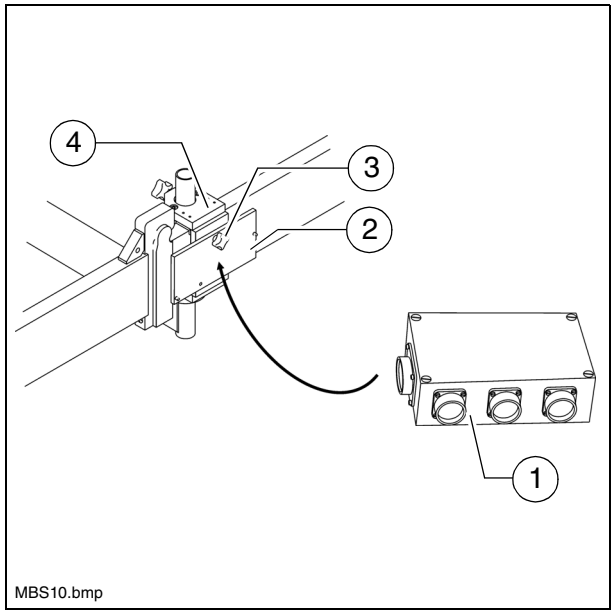
☞ All assembly parts must be mounted and tightened properly to ensure safe and precise operation of the big ski!

Mounting the distributor box

☞ The distributor box should be mounted in such a way that simple wiring to the controller and the sensors is possible.

⚠ The connections for the sensors should always point down to prevent water from entering the distributor box. Inlets which are not required must be sealed with dust caps.

- Allen head bolts are used to initially mount the distributor box (1) on the mounting plate (2).



☞ The input connector always points in the direction of travel.

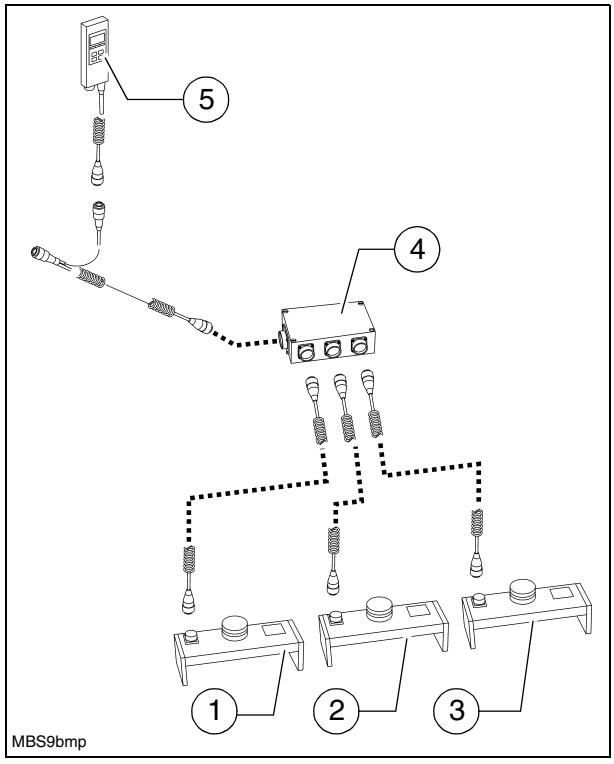
- Then mount the mounting plate on one of the two sliding brackets (4) on the centre element using a star handle bolt (3).

⚠ Mounting the big ski on the right-hand side of the vehicle:
To meet the requirement that the input connector always points in the direction of travel, the sliding bracket, on which the distributor box is to be mounted, must be pushed onto the big ski from the inside to the outside here.

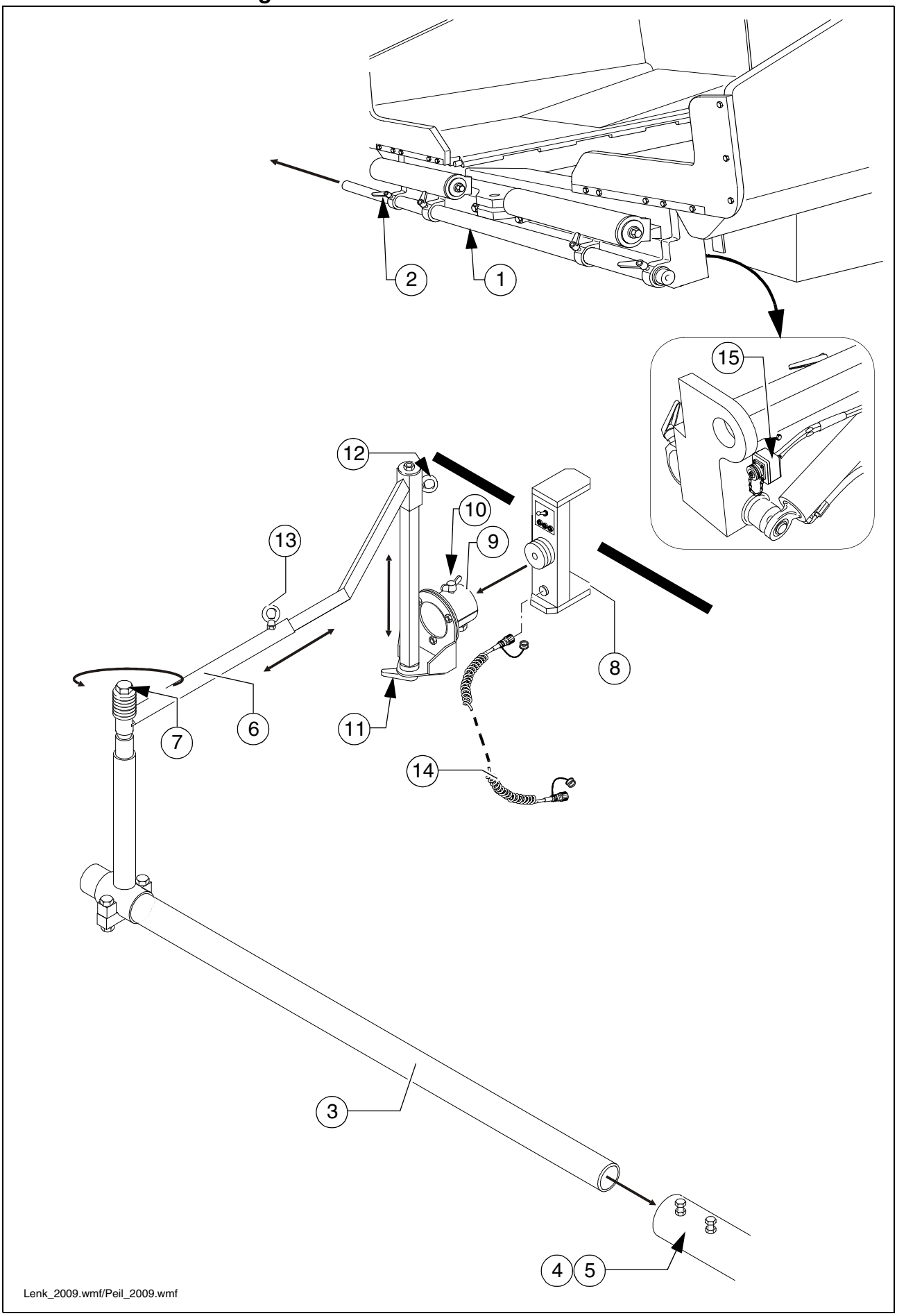
Connection diagram

☞ The three sensors are connected to the distributor box and the distributor to the manual unit according to the following scheme.

- Sensors
  - Front (1)
  - Centre (2)
  - Rear (3)
- Distributor box (4)
- Manual unit (5)



5 Automatic steering unit



5.1 Mounting the automatic steering unit on the paver finisher

⚠ During operation, no work may be carried out on the automatic steering unit!

☞ Depending on the desired sensing side on the vehicle, the sensor rod tube may have to be removed and re-inserted on the other side of the vehicle!

- Pull the sensor rod tube (1) at the front of the vehicle out to the desired length and secure with the clamping levers (2).
- Insert the automatic steering unit tube (3) into the sensor rod tube (1) and secure with bolts (4) and lock nuts (5).
- Swivel the extension arm (6) to the desired angle and secure by tightening the bolt (7).

Mounting and aligning the sensor

- Insert the sensor mounting (8) into the bracket (9) and secure with a wing nut (10).
- Align the angle between the sensor and reference and secure with the relevant star handle bolt (11).

☞ The sensor and reference must be at right angles to each other!

- The sensing height can be set by loosening the fixing screw (12).

☞ The reference should run centrally along the sensor.

- The sensor's distance from the reference can be set by loosening the fixing screw (13).

☞ The distance between the sensor and reference (cable) should be 350 mm.

☞ All assembly parts must be mounted and tightened properly to ensure safe and precise operation of the automatic steering unit!

Connecting the sensor

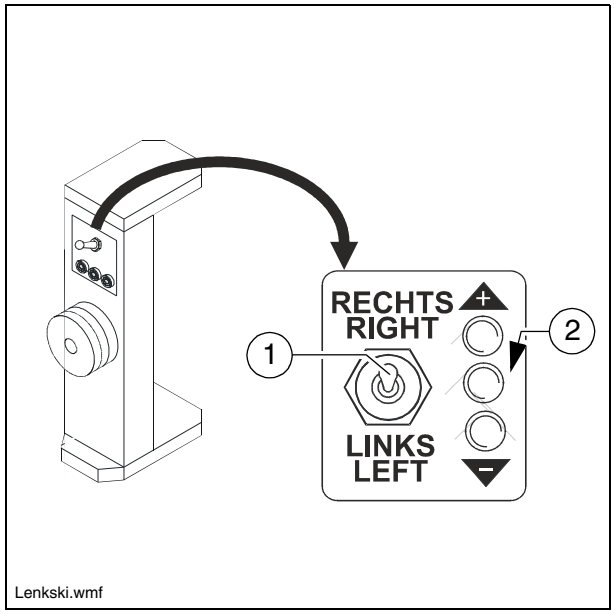
☞ A sensor for connecting the sensing system to the vehicle's control system is located on the left and right sides of the vehicle on the inner side of the bumper.

- Connect the relevant connection cable (14) to the socket (15) and sensor (8).

⚠ Route the connection cable so that it cannot be damaged during operation.

⚠ Secure unused sockets with the relevant protective caps.

Automatic steering unit operating instructions



- When the automatic steering unit is activated, the steering potentiometer is deactivated. Steering is carried out automatically via ski cable sensing.
- Activate the function on the operating panel as necessary.
- The automatic steering unit can be overridden by actuating the steering potentiometer.

- The switch (1) is used to set the sensing side:
  - Right: Automatic steering unit on the right side of the vehicle.
  - Left: Automatic steering unit on the left side of the vehicle.

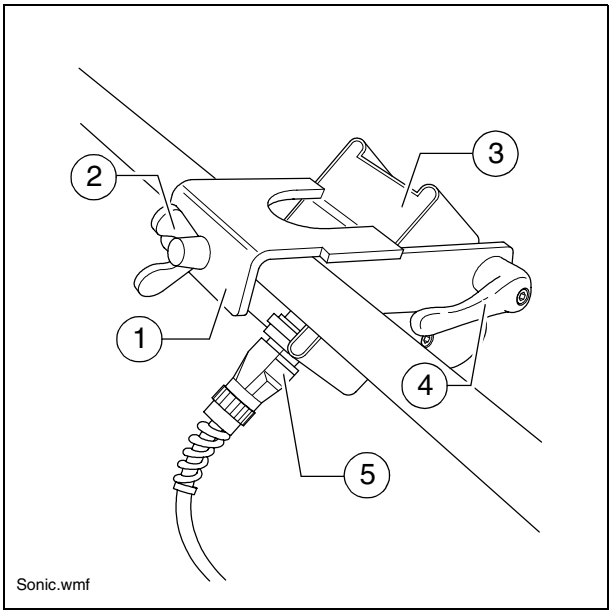
- The LEDs (2) indicate the distance from the reference.
  - LED + / - : Distance from the reference too high / too low.
  - Centre LED: Distance correct.

6 Limit switch

6.1 Mounting the auger limit switch

The auger's ultrasonic limit switch is mounted on both sides on the side board's handrail.

- Place the sensor bracket (1) onto the handrail, align it and tighten with a wing bolt (2).
- Align the sensor (3) and secure with a clamping lever (4).
- Connect the left or right sensor's connection cable (5) to the intended remote control socket.



7 Screed

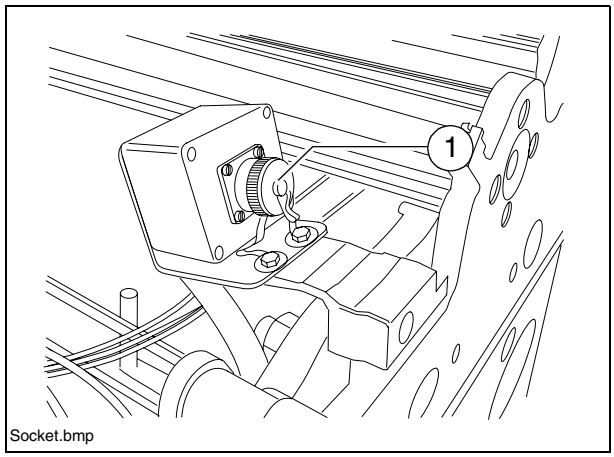
The Operating instructions for the screed cover all work required for mounting, setting up and extending the screed.

8 Electrical connections

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

8.1 Connect remote controls

to socket (1) (on the screed).



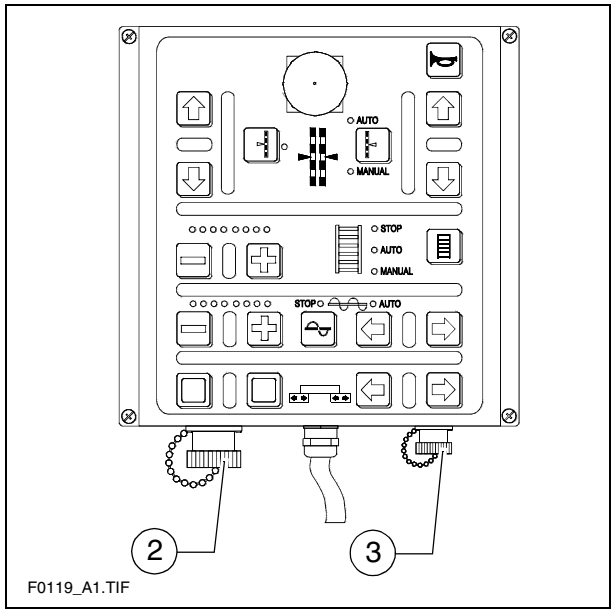
Socket.bmp

8.2 Connect grade control

to socket (2) (on the remote control unit)

8.3 Connect auger limit switches

to socket (3) (on the remote control unit)



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F 1.0 Maintenance

1 Notes regarding safety

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 ignition key and the battery main switch.

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

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

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

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.

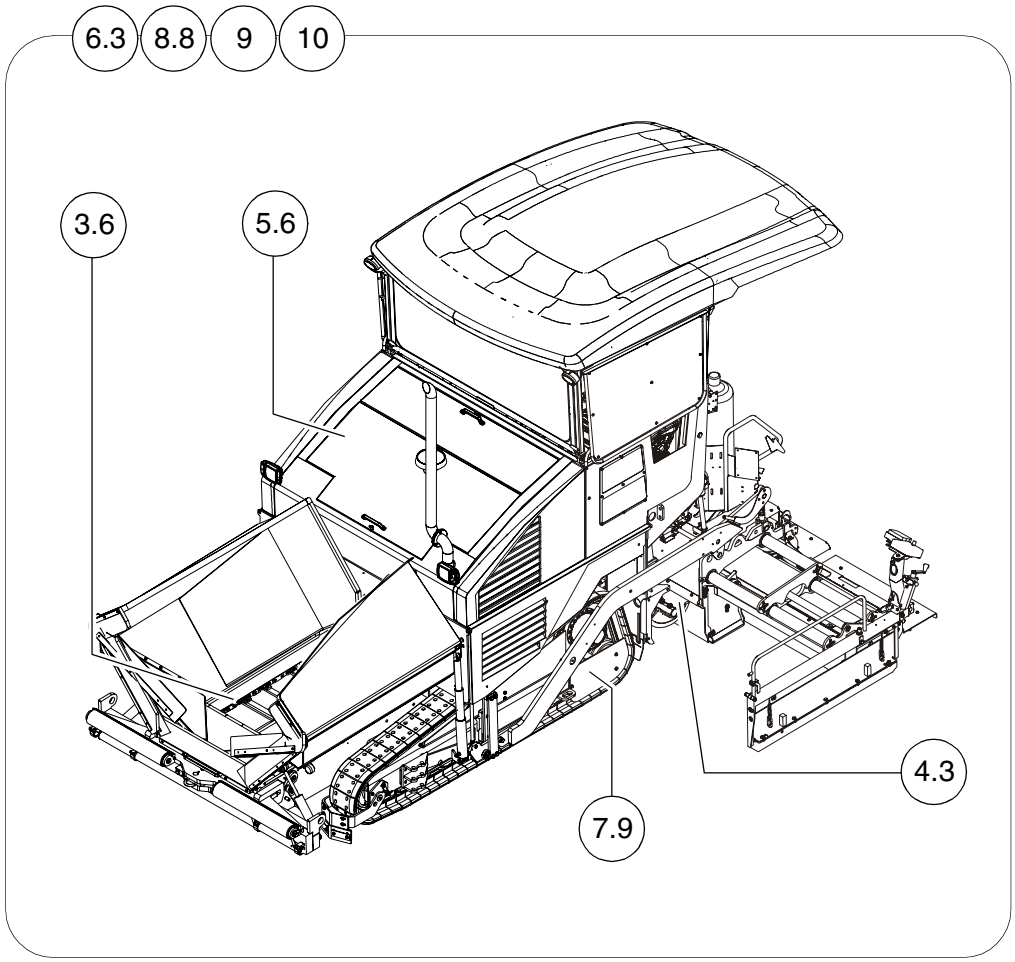
Working in closed environments: Exhaust fumes must be led into the open. Propane gas bottles must not be stored in closed rooms.

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.

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

F 2.14 Maintenance review

1 Maintenance review



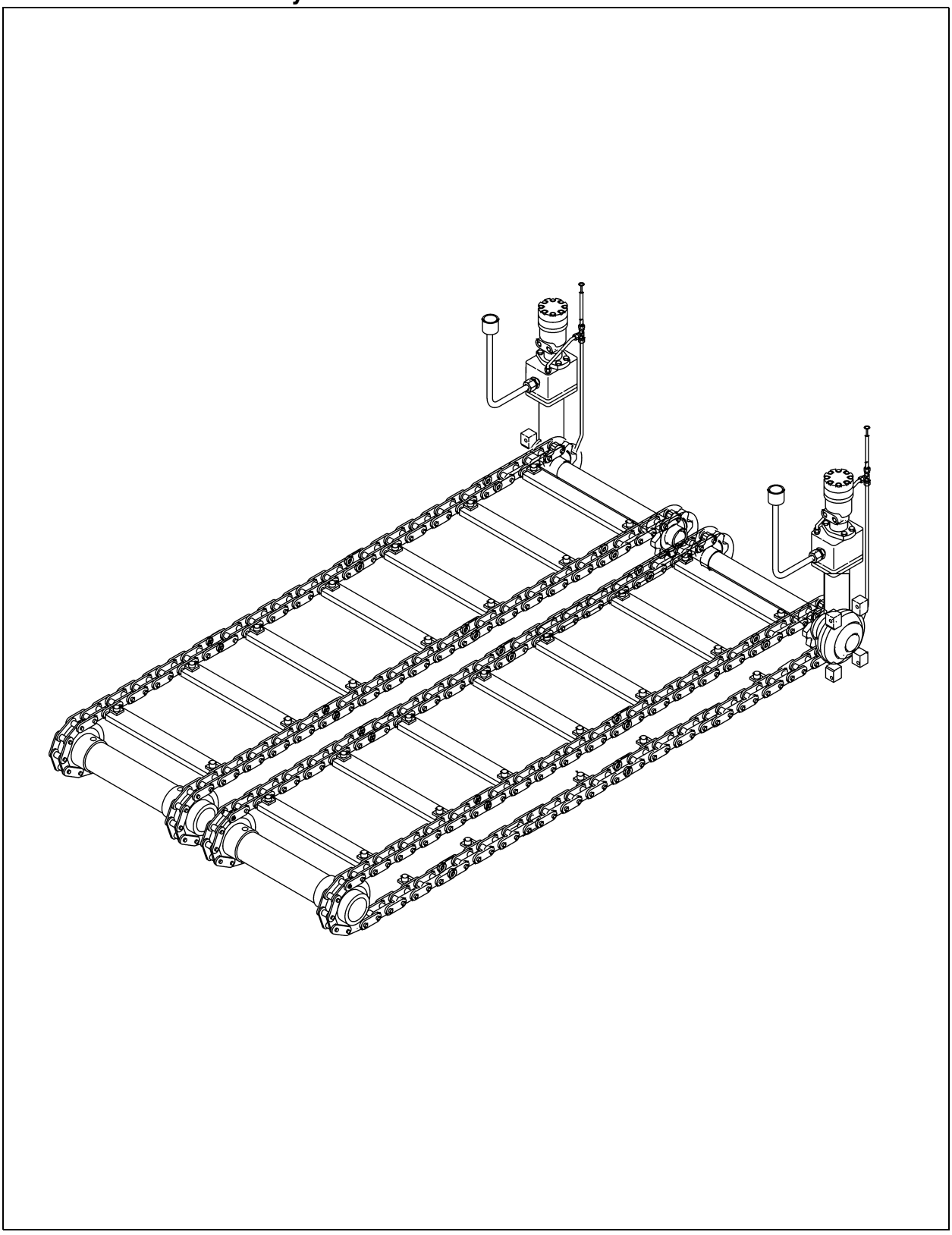
Assembly	Chapter	Maintenance required after the following service hours									
		10	50	100	250	500	1000 / annually	2000 / every 2 years	5000	20000	If necessary
Conveyor	F3.6	■	■	■			■				■
Auger	F4.3	■		■	■		■				■
Engine	F5.6	■			■	■	■	■			■
Hydraulics	F6.3	■	■			■	■	■			■
Drive units	F7.9	■			■		■				■
Electronics	F8.8	■		■	■		■		■	■	■
Lubrication points	F9	■	■					■			■
Checking/stopping	F10	■					■				■

Maintenance required	■

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

F 3.6 Maintenance - Conveyor

1 Maintenance - Conveyor



1.1 Maintenance intervals

Item	Interval								Maintenance point	Note
	10	50	100	250	500	1000 / annually	2000 / every 2 years	If necessary		
1	■								- Conveyor chain - Check tightness	
								■	- Conveyor chain - Adjust tightness	
			■						- Conveyor chain - Check chain	
								■	- Conveyor chain - Replace chain	
2		■							- Conveyor gear Check oil level	
								■	- Conveyor gear Top up oil	
						■			- Conveyor gear Change oil	
3						■			- Check conveyor deflectors, conveyor plates	
								■	- Replace conveyor deflectors, conveyor plates	

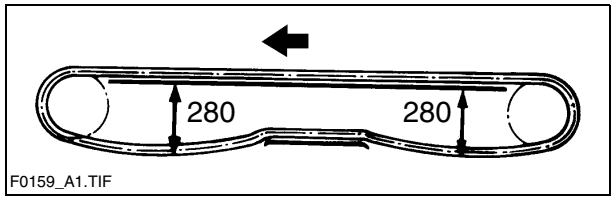
Maintenance	■
Maintenance during the running-in period	▼

1.2 Points of maintenance

Chain tension, conveyor (1)

Check chain tension:

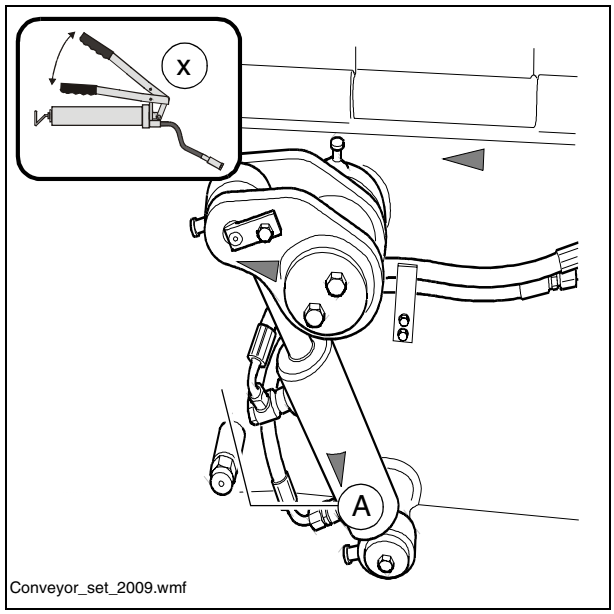
For the daily visual check, peer horizontally below the bumper. The chain must not hang below the bottom edge of the bumper.
Should readjustment be necessary, measure the slack in unladen condition from the lower edge of the bottom plate to the lower edge of the chain (see figure).



⚠ The conveyor chains should not be too tight or too slack. An excessively taut chain can cause the chain to be stopped or to break when material falls into the space between the chain and the sprocket.
An excessively slack chain may catch on protruding objects and be destroyed.

Adjustment of chain tension:

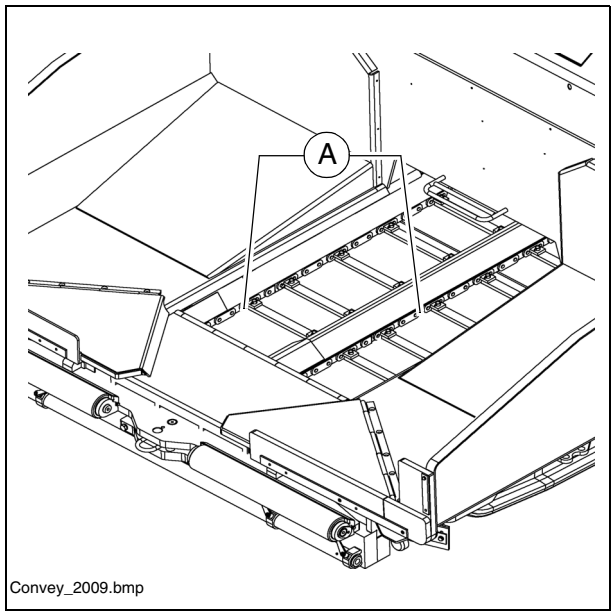
☞ The chain tension can be adjusted with grease press. The filling connections (A) are located behind the bumper on the left and right sides.



Check / replace chain:

☞ At the latest, the conveyor chains (A) must be replaced when their elongation has progressed so far that they can no longer be re-tensioned.

⚠ Chain links must not be removed to shorten the chain!
Incorrectly dividing the chains would lead to the destruction of the drive wheels!



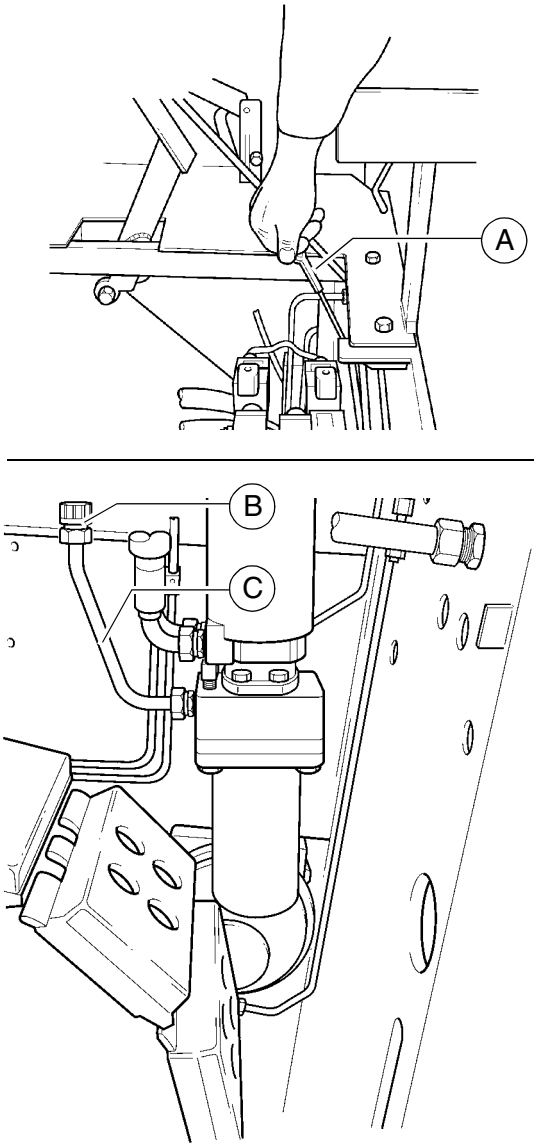
⚠ If components have to be replaced as a result of wear, the following components should always be replaced in sets:

- Conveyor chain
- Conveyor deflectors
- Conveyor plates
- Conveyor chain reversing rollers
- Conveyor gear drive wheels

☞ Your Dynapac customer service will be happy to provide support during maintenance, repair and the replacement of wearing parts!

Conveyor gears (left/right) (2)

The conveyor gears are located under the footplate of the operator's platform.
Checking the oil level: Only before starting work. The oil level must reach the upper notch of the dipstick (A).
Filling in oil: After removing screw cap (B) through the oil filler neck (C).



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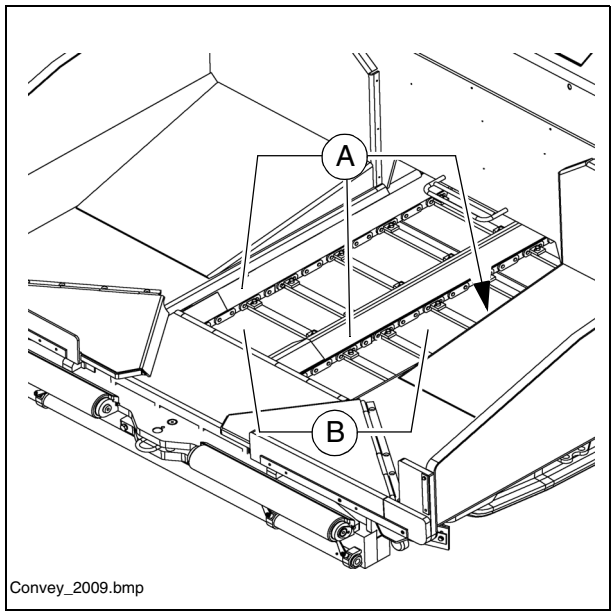
Conveyor deflectors / conveyor plates (3)

☞ At the latest, the conveyor deflectors (A) must be replaced when their lower edges are worn or reveal holes.

⚠ The conveyor chain is not offered protection by worn conveyor deflectors!

- Remove conveyor deflector bolts.
- Remove the conveyor deflectors from the material tunnel.
- Install new conveyor deflectors with new bolts.



Convey_2009.bmp

☞ At the latest, the conveyor plates (B) must be replaced when the wear limit of 5 mm in the rear area beneath the chain has been reached.

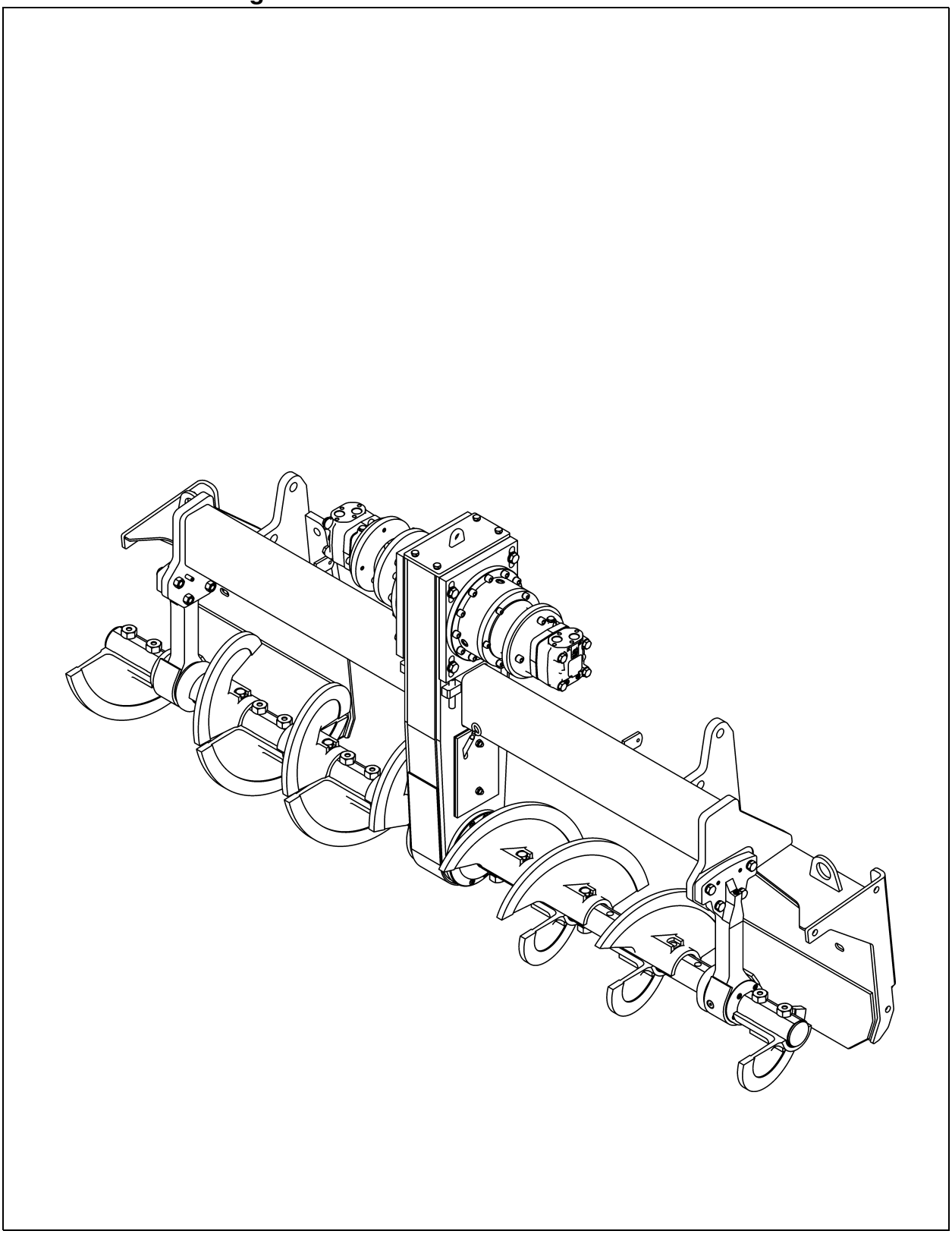
⚠ If components have to be replaced as a result of wear, the following components should always be replaced in sets:

- Conveyor chain
- Conveyor deflectors
- Conveyor plates
- Conveyor chain reversing rollers
- Conveyor gear drive wheels

☞ Your Dynapac customer service will be happy to provide support during maintenance, repair and the replacement of wearing parts!

F 4.3 Maintenance - Auger

1 Maintenance - Auger



1.1 Maintenance intervals

Item	Interval								Maintenance point	Note
	10	50	100	250	500	1000 / annually	2000 / every 2 years	If necessary		
1	■								- Outer auger bearing - Lubricate	
2			■						- Auger planetary gear - Check oil level	
								■	- Auger planetary gear - Top up oil	
						■			- Auger planetary gear - Change oil	
3			■						- Auger drive chains - Check tension	
								■	- Auger drive chains - Adjust tension	
4				■					- Auger box - Check oil level	
								■	- Auger box - Top up oil	
						■			- Auger box - Change oil	
5			■						- Auger blade - Check wear	
								■	- Auger blade - Replace auger blade	

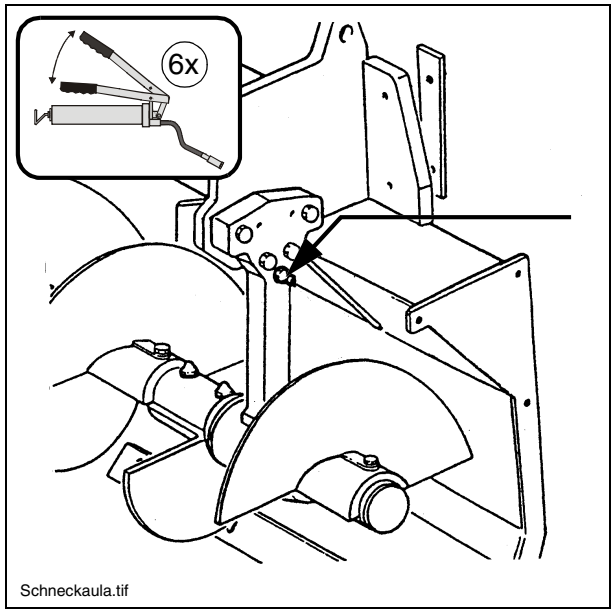
Maintenance	■
Maintenance during running-in period	▼

1.2 Points of maintenance

Outer auger bearing (1)

The grease nipples are located on each side at the top of the outer auger bearings.

These nipples must be lubricated at the end of work to force out any bitumen residues which may have entered and to supply the bearings with fresh grease when warm.

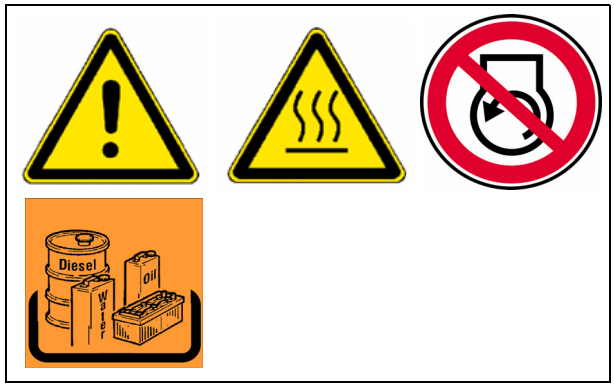


Schneckaula.tif

☞ If the auger is extended, the outer rings should be loosened slightly when initially greasing the outer bearing points in order to improve ventilation on greasing. The outer rings must be properly secured again after greasing.

☞ New bearings must be filled with 60 strokes of grease using a grease gun.

Auger planetary gear (2)

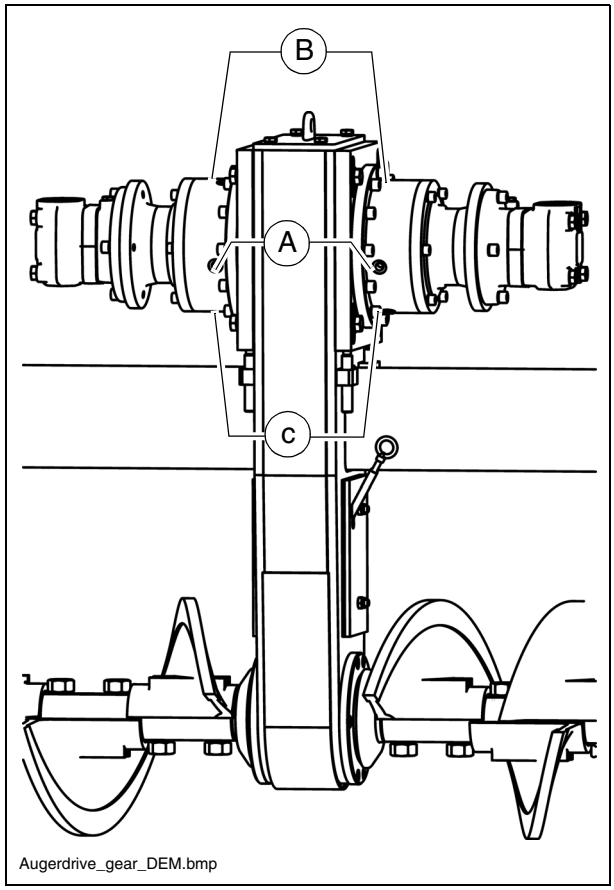


- To **check oil level**, unscrew and remove the inspection screw (A).

☞ 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.

To **top up** oil:

- Unscrew inspection screw (A) and filler screw (B).
- Fill in the specified oil into the filler bore at (B) until the oil level has reached the lower edge of the inspection bore (A).
- Screw the filler (B) and inspection screws (A) back in.



Augerdrive_gear_DEM.bmp

To **change** oil:

☞ The oil should be changed when at operating temperature.

- Unscrew the filler screw (B) and drain plug (C).
- Drain the oil.
- Screw the drain plug (C) back in.
- Unscrew the inspection screw (A).
- Fill the specified oil into the filler bore at (B) until the oil level has reached the lower edge of the inspection bore (A).
- Screw the filler (B) and inspection screws (A) back in.

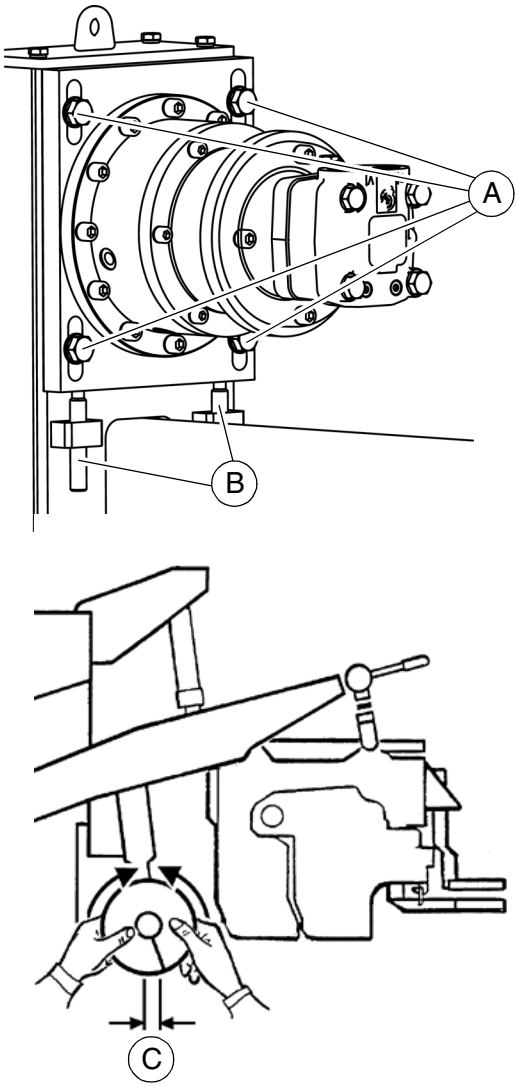
Auger drive chains (3)

To **check the chain tension**:

- Manually turn both augers to the right and left. In this case, movement clearance (C) at the augers' outer circumference should be 13-15 mm.

To **re-tension** the chains

- Release the mounting screws (A).
- Set the chain tension correctly using the threaded pins (B):
  - Tighten the threaded pins to 20 Nm using a torque wrench.
  - Subsequently loosen the threaded pins again by one full revolution.
- Retighten the bolts (A).

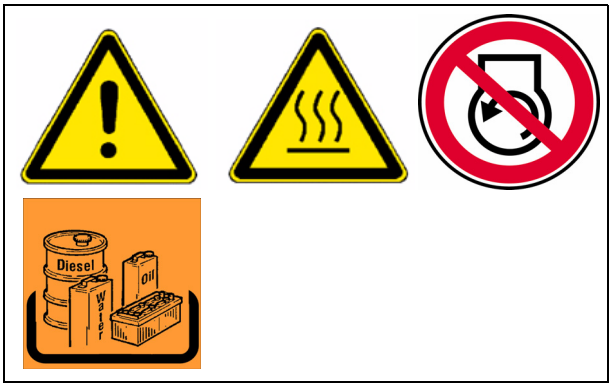


Augerdrive_chain_DEM.bmp/Schnecksp.tif

Auger box (4)

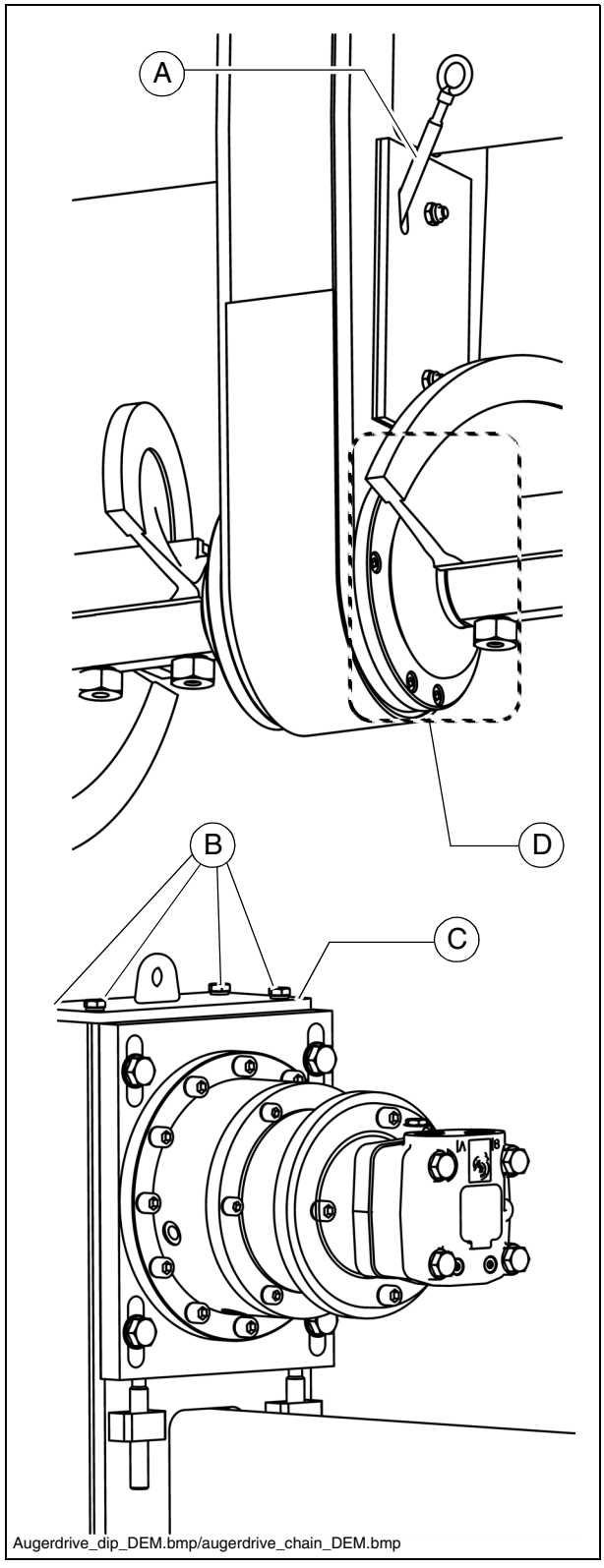
Check oil level

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



To **top up** oil:

- Unscrew screws (B) from the top cover of the auger box.
- Take off the cover (C).
- Fill up oil to the correct level.
- Reinstall the cover.
- Use the dipstick to check the fill level again.



Augerdrive_dip_DEM.bmp/augerdrive_chain_DEM.bmp

Change oil

☞ The oil should be changed when at operating temperature.

- Place a suitable collecting container under the auger box.
- Loosen bolts (D) from the circumference of the worm shaft flange.

☞ The oil runs out between the flange and auger box.

- Drain out all oil.
- Correctly retighten flange bolts (D) diagonally.
- Pour the specified oil in through the open top cover (C) of the auger box until the oil level has reached the correct level on the dipstick (A).
- Correctly reinstall the cover (C) and screws (B).

Auger blade (5)

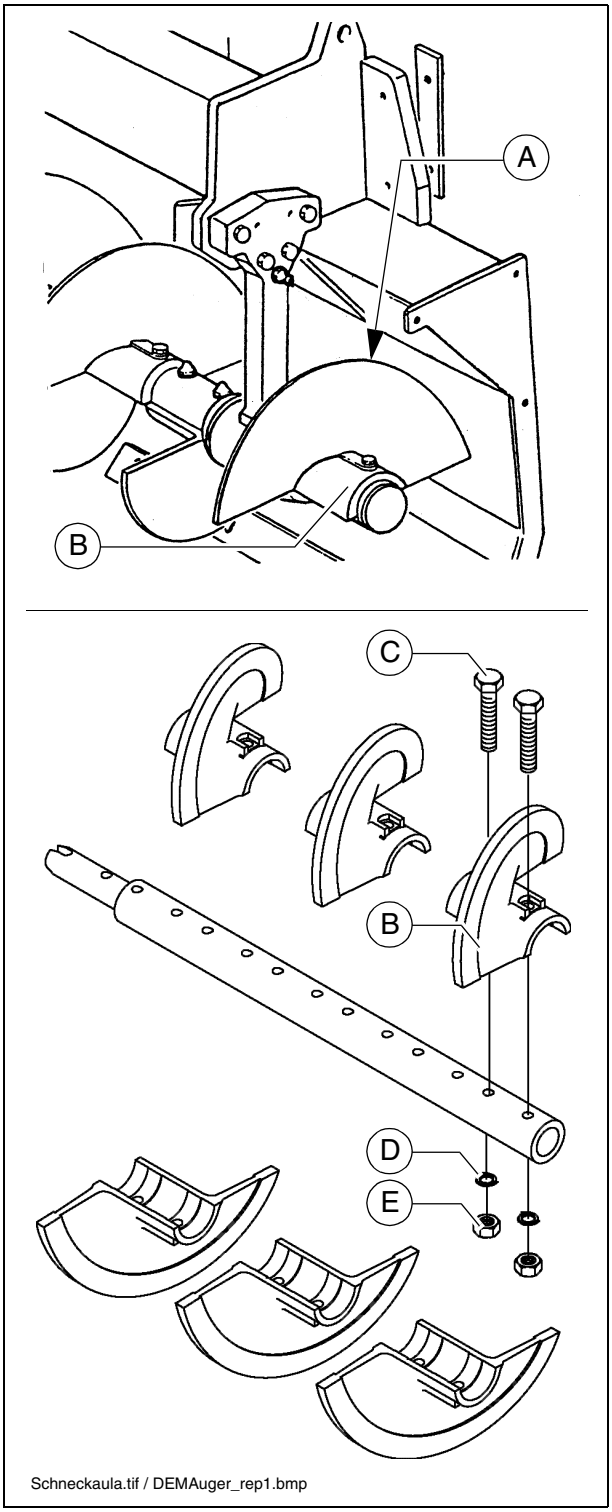
If the surface of the auger blade (A) becomes sharp-edged, the diameter of the auger is reduced and the blades (B) have to be replaced.

- Remove the bolts (C), washers (D), nuts (E) and auger blade (B).

Risk of injury due to sharp-edged parts!

Auger blades must be installed play-free; the contact surfaces must be dirt-free!

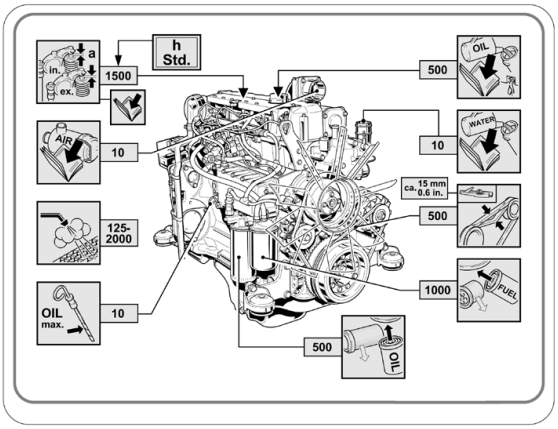
- Install the new auger blade (B); replace the bolts (C), washers (D) and nuts (E) if necessary.

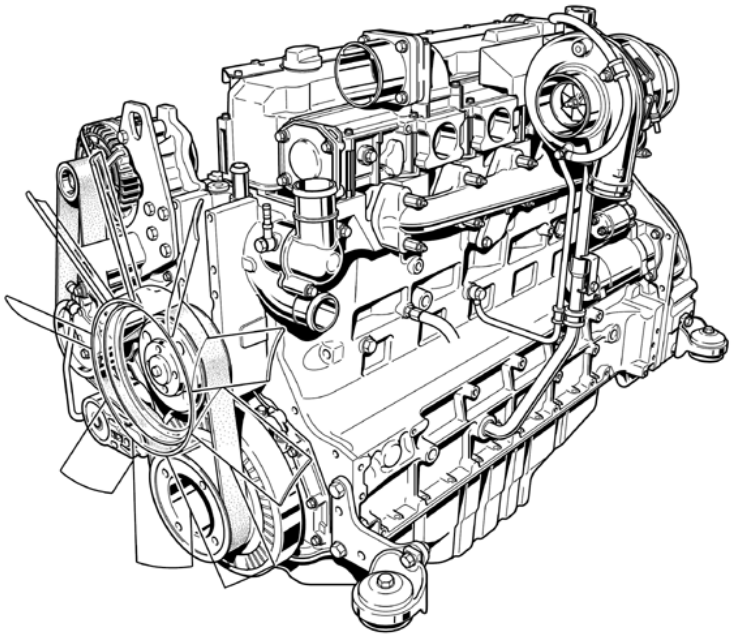


Schneckaula.tif / DEMAuger_rep1.bmp

F 5.6 Maintenance - Engine

1 Maintenance - Engine





⚠ In addition to these maintenance instructions, the maintenance instructions issued by the engine manufacturer must be adhered to under all circumstances. All maintenance work and service intervals itemised here are binding in nature.

1.1 Maintenance intervals

Item	Interval								Maintenance point	Note
	10	50	100	250	500 / annually	1000 / annually	2000 / every 2 years	If necessary		
1	■								- Fuel tank Check filling level	
								■	- Fuel tank Refill with fuel	
							■		- Fuel tank Clean the tank and system	
2	■								- Engine lube-oil system Check oil level	
								■	- Engine lube-oil system Top up oil	
					■				- Engine lube-oil system Change oil	
					■				- Engine lube-oil system Change oil filter	
3	■								- Engine fuel system Fuel filter (drain the water separator)	
						■			- Engine fuel system Replace fuel pre-filter	
						■			- Engine fuel system Replace fuel filter	
								■	- Engine fuel system Bleed fuel system	

Maintenance	■
Maintenance during the running-in period	▼

Item	Interval								Maintenance point	Note
	10	50	100	250	500 / annually	1000 / annually	2000 / every 2 years	If necessary		
4	■								- Engine air filter Check air filter	
	■								- Engine air filter Dust collector Emptying	
						■		■	- Engine air filter Air filter cartridge Clean / replace	
5	■								- Engine cooling system Check radiator fins	
								■	- Engine cooling system Clean radiator fins	
	■								- Engine cooling system Check level of the coolant	
								■	- Engine cooling system Top up coolant	
							■		- Engine cooling system Change coolant	
					■				- Engine cooling system Check coolant (additive concentration)	
6					■				- Engine drive belt Check drive belt	
								■	- Engine drive belt Re-tighten drive belt	
								■	- Engine drive belt Replace drive belt	

Maintenance	■
Maintenance during the running-in period	▼

Engine fuel tank (1)

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

☞ Fill the fuel tank each time before starting work so that the fuel system cannot „run dry“ and time-consuming venting (bleeding) can therefore be avoided.

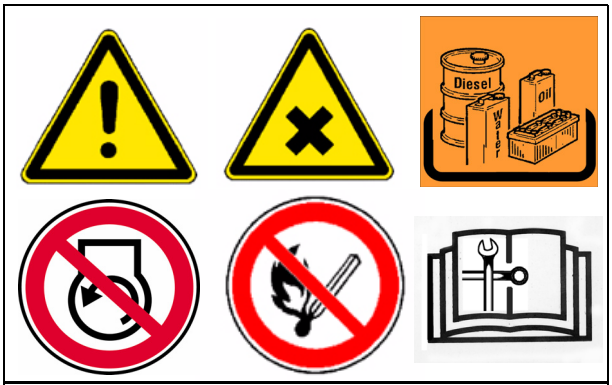
For **filling in** the fuel:

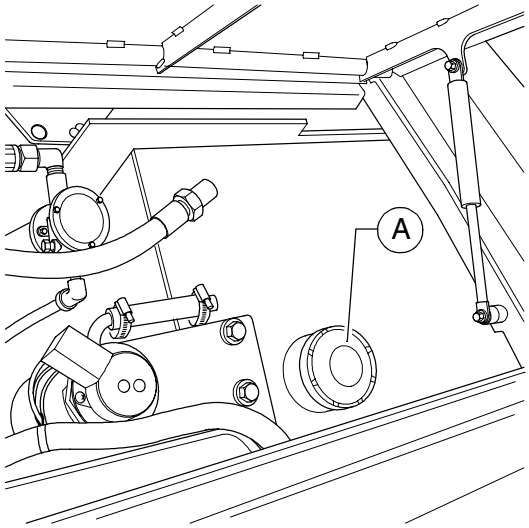
- Unscrew cap (A) (under the tank cover).
- Fill in fuel through the filling port until the required fill lever is achieved.
- Replace the cap (A).

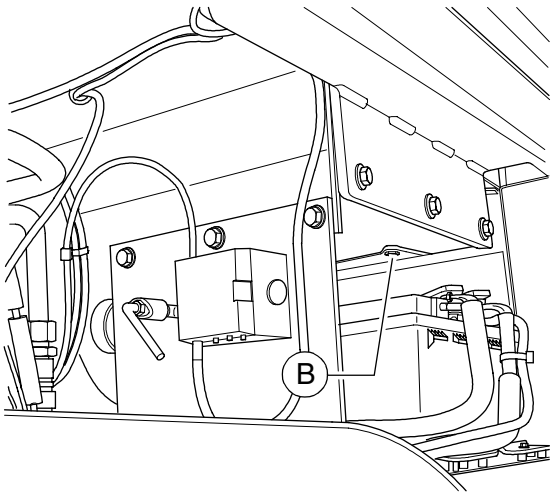
Clean the tank and system:

- Unscrew the drain plug (B) at the bottom of the tank and drain into a collection pan about 1 l fuel.
- When returning the screw, make sure to use a new seal.

⚠ If necessary, the batteries must be covered or removed!

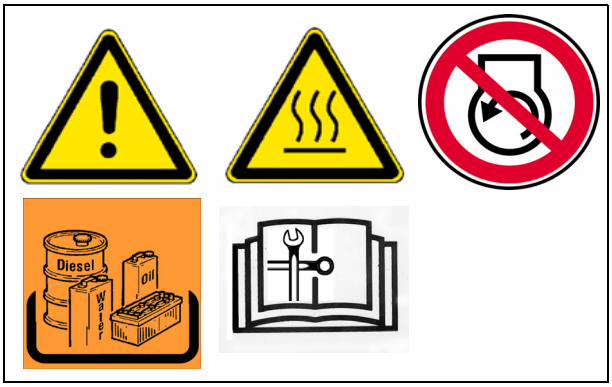






KTank_2009.wmf/Batterie_2009.wmf

Engine lube-oil system (2)



Check oil level

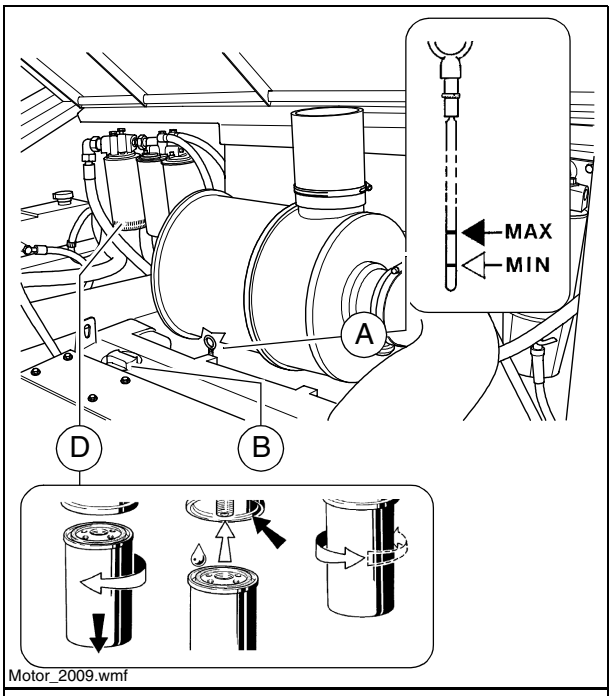
☞ In case of correct oil level, the oil is between the two notches of the dipstick (A).

☞ Check the oil level when the paver finisher is in a horizontal position!

⚠ Too much oil in engine damages gaskets; too little oil results in overheating and engine destruction.

For **filling in** the oil:

- Remove cap (B).
- Fill up oil to correct level.
- Return cap (B).
- Use dipstick to check level again.

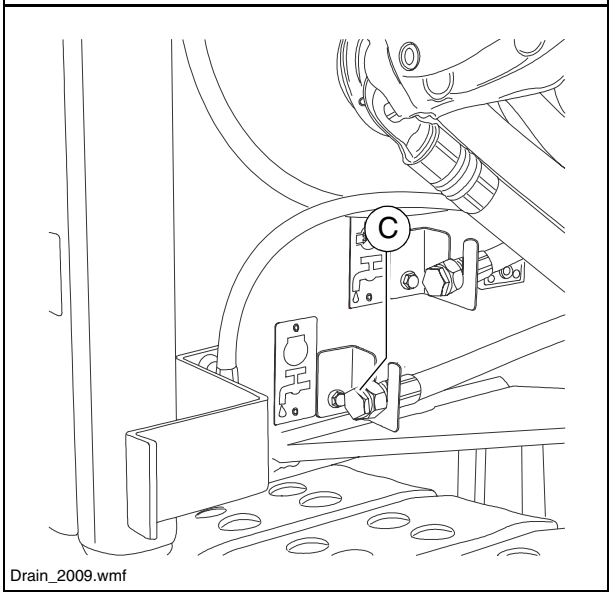


Motor_2009.wmf

Oil change:

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

- Place the end of the oil drain port hose (C) in the collection container.
- Remove the screw cap with a wrench and allow the oil to drain completely.
- Replace the screw cap and tighten properly.
- Fill in the specified quality of oil through the filling port (B) on the engine until the oil level rises to the correct mark on the dipstick (A).



Drain_2009.wmf

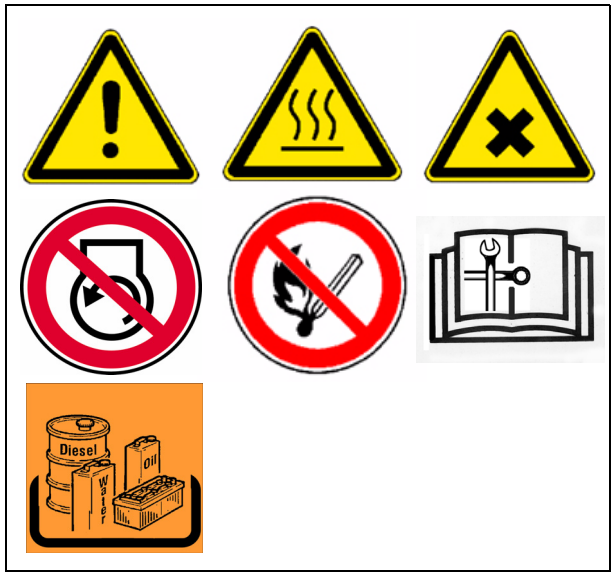
Changing the oil filter:

☞ The new filter is inserted during an oil change once the used oil has been drained out.

- Unscrew the filter (D) and clean its contact surface.
- Apply light coating of oil to the gasket on the new filter and fill filter with oil before installing it.
- Tighten filter by hand.

☞ After installing the oil filter, attention must be paid to the oil pressure display and good sealing during the test run. Check oil level again.

Engine fuel system (3)



☞ The fuel filter system consists of three filters:

- Prefilter (A) with water separator
- Two main filters (B)

☞ Depending on the machine, the prefilter is in the engine compartment or under the tank lid!

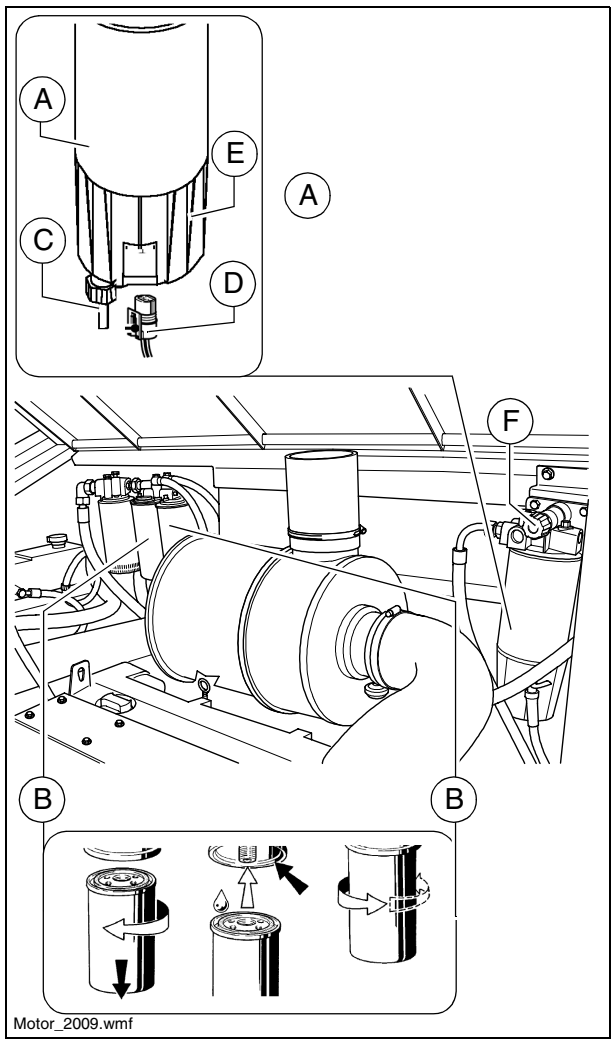
Prefilter - draining of water

☞ Drain the collecting vessel at regular intervals, or in response to an error message from the engine control unit.

- Drain off surplus water at cock (C) and collect in a container, then close the cock again.

Changing the prefilter:

- Drain off surplus water at cock (C) and collect in a container, then close the cock again.
- Pull down the connection of the water detector (D).
- Use a filter wrench or filter belt to loosen the filter cartridge (A) and tank and unscrew
- Unscrew the tank (E) from the filter cartridge and clean if necessary.
- Clean sealing surface of filter bracket.
- Oil collector seal slightly and screw hand-tight under the new filter cartridge
- Oil filter cartridge gasket slightly and screw hand-tight under the bracket.
- Replace the connection of the water detector (D).



Replacing the main filter:

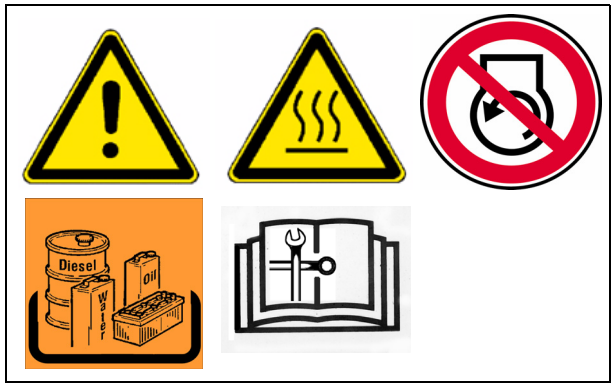
- Unscrew the filter (B) and clean its contact surface.
- Apply light coating of oil to new filter gasket
- Tighten filter by hand.

☞ After fitting the filter, ensure good sealing action during the test run.

Venting the filter:

- Release the manual fuel pump's (F) bayonet lock by pressing and simultaneously turning counter-clockwise.
- The pump plunger is now pressed out via the spring.
- Pump until a very high resistance is perceptible and pumping can only be carried out very slowly.
- Now continue pumping a few more times. (The return line must be filled).
- Start the engine and operate for approx. 5 minutes at idle speed or low load.
- Check the prefilter for leaks whilst doing this.
- Lock the manual fuel pump's (F) bayonet lock by pressing and simultaneously turning clockwise.

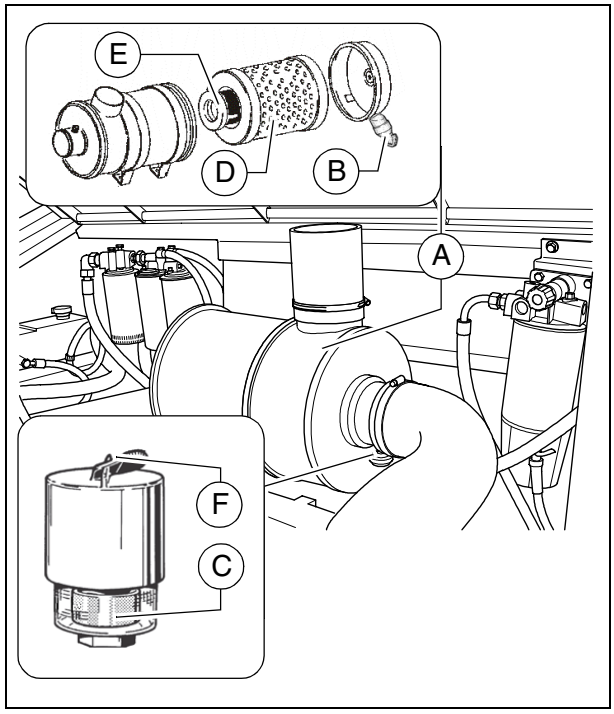
Engine air filter (4)



Empty dust collector

- Empty the dust removal valve (B) on the air cleaner housing (A) by pressing the discharge port in the direction of the arrow.
- Remove any dust deflectors by pressing together the upper valve section.

☞ Clean outfeed slot occasionally.



Motor_2009.wmf

Cleaning / replacing the air filter cartridge

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

☞ Filter maintenance becomes necessary if:

- The maintenance indicator (O) red servicing field (C) is fully visible when the engine is stopped.
- Engine electronics service indicator
- ?Open the air filter lid.
- Pull out the filter cartridge (D) and the safety cartridge (E).

☞ Clean the filter cartridge (D) and replace after one year at the latest.

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

☞ Do not damage cartridge when doing so.

- 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.

☞ Replace the safety cartridge (E) after the filter has been serviced 5 times, but after 2 years at the latest (never clean it!).

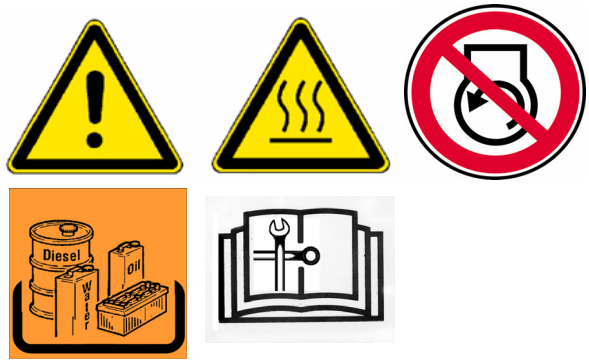
After completing the maintenance work:

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

Engine cooling system (5)

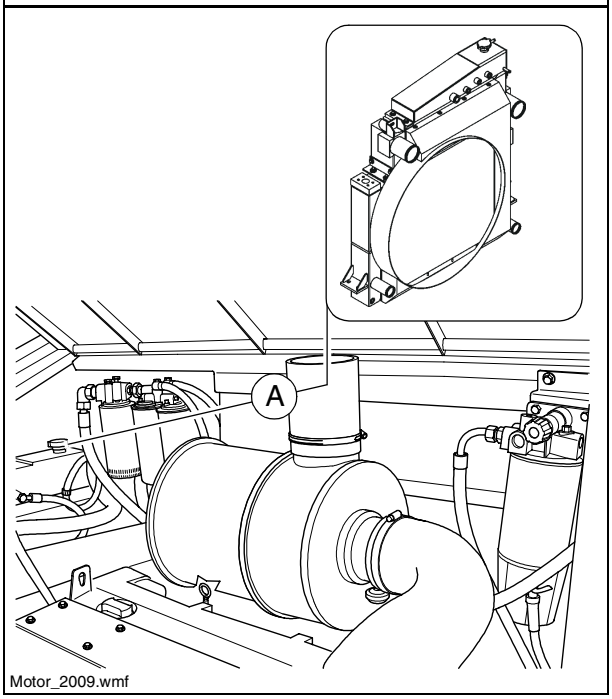
Checking / topping up coolant

The cooling water level must be checked when the system is cold. Make sure that the anti-freeze and anti-corrosive liquid us sufficient (-25 °C).



When hot, the system is under pressure. When it is opened, there is danger of scalding!

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



Change coolant

Observe engine operating instructions!

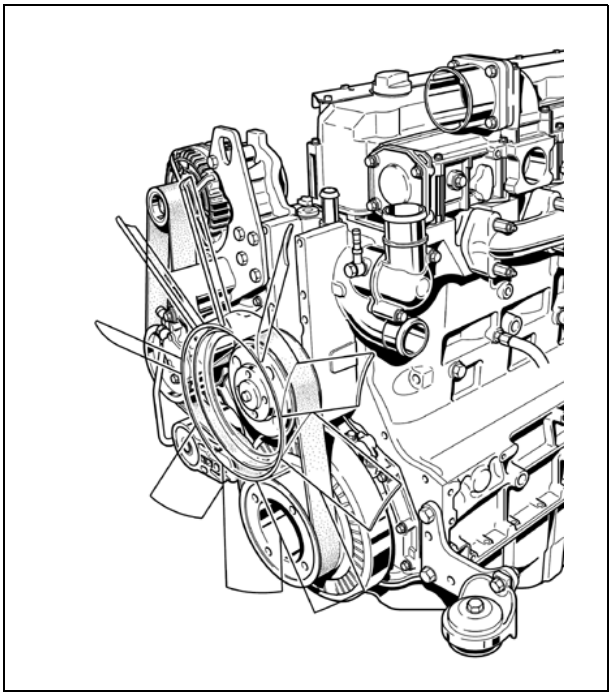
Checking and cleaning the radiator fins

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

Engine drive belt (6)

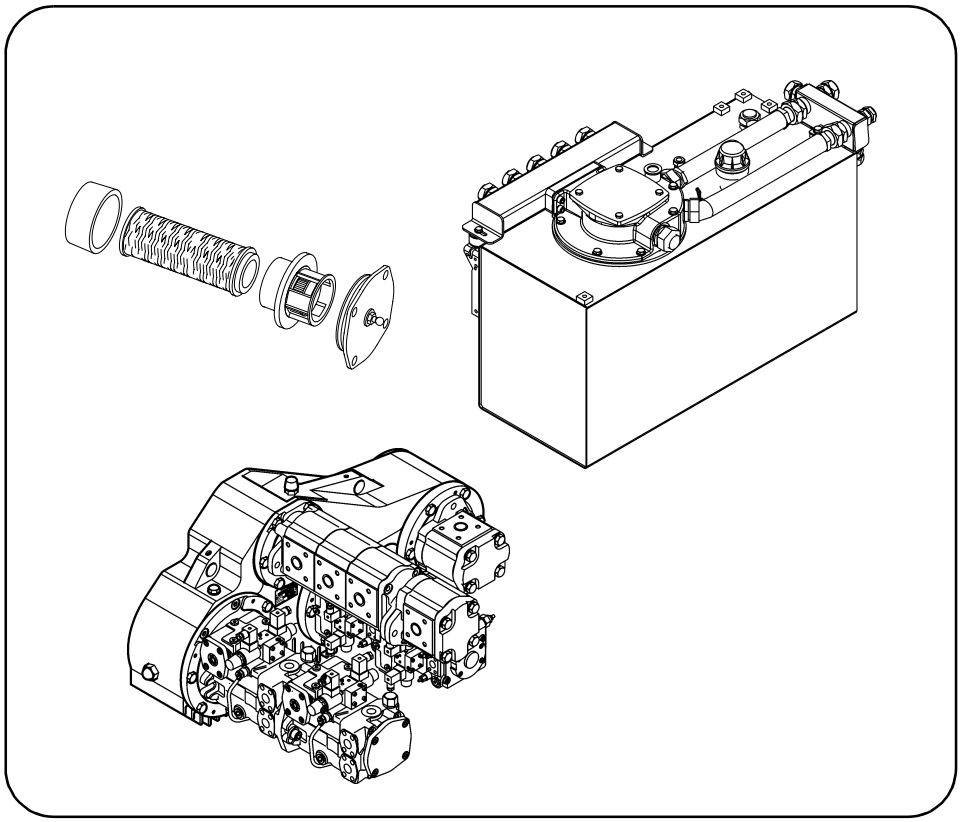
Check / replace the drive belt

Observe engine's operating instructions!



F 6.3 Maintenance - Hydraulic system

1 Maintenance - Hydraulic system



1.1 Maintenance intervals

Item	Interval								Maintenance point	Note
	10	50	100	250	500	1000 / annually	2000 / every 2 years	If necessary		
1	■								- Hydraulic oil tank - Check fill level	
								■	- Hydraulic oil tank - Top up with oil	
							■		- Hydraulic oil tank - Change oil and clean	
2	■								- Hydraulic oil tank - Check maintenance indicator	
						■		■	- Hydraulic oil tank - Intake / return hydraulic filter; change, vent	
3	■								- High pressure filter - Check maintenance indicator	
								■	- High pressure filter - Replace filter element	
4		■							- Pump distribution gear - Check oil level	
								■	- Pump distribution gear - Top up oil	
						■			- Pump distribution gear - Change oil	
5					■				- Hydraulic hoses - Visual inspection	
							■	■	- Hydraulic hoses - Replace hoses	
6					■			■	- Auxiliary flow filter- Replace filter element	(○)

Maintenance	■
Maintenance during the running-in period	▼

1.2 Points of maintenance

Hydraulic oil tank (1)

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

☞ With retracted cylinders, the oil level must reach 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).
- Screw cap (B) on again.

☞ Regularly remove dust and pollution from the vent port of the oil tank. Clean the surfaces of the oil cooler.

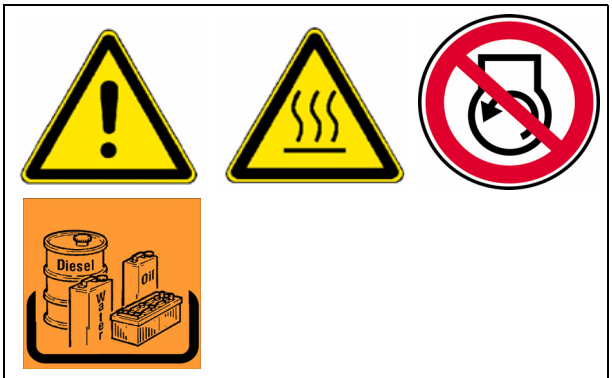
⚠ Use only the recommended hydraulic oils - see section „Recommended hydraulic oils“.

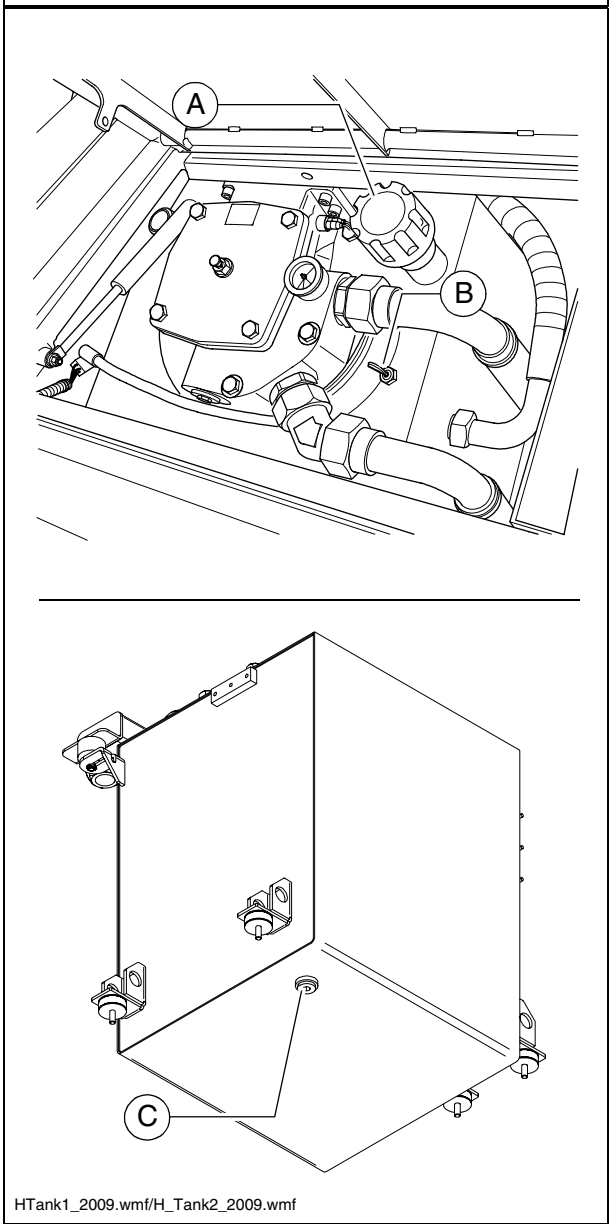
To **change** oil:

- To drain the hydraulic oil unscrew the drain plug (C) at the bottom of the tank.
- Collect the oil in a container using a funnel.
- After draining, reinstall the screw using a new seal.

☞ The oil should be changed when at operating temperature.

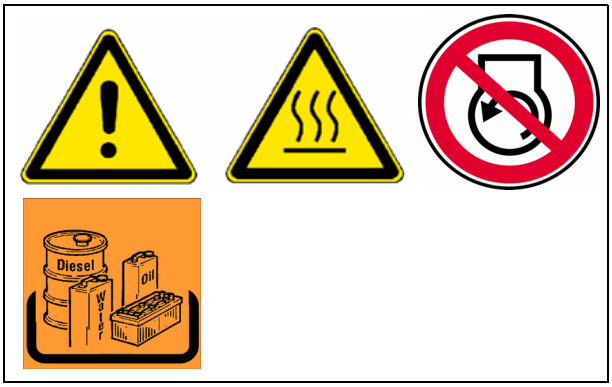
⚠ When changing the hydraulic oil also change the filter.





HTank1_2009.wmf/H_Tank2_2009.wmf

Suction/return flow hydraulic filter (2)

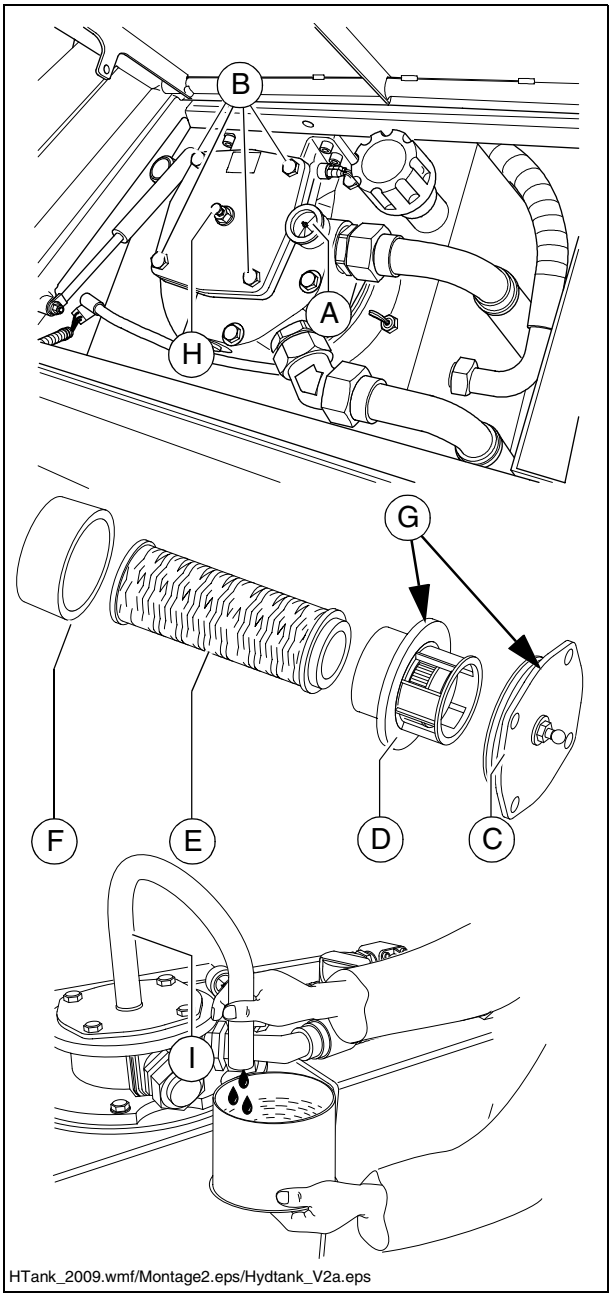


Carry out **filter replacement** according to the interval or when the **maintenance indicator** (A) reaches the red mark at a hydraulic oil temperature of more than 80°C.

☞ The hydraulic oil temperature is read off on the hydraulic oil temperature indicator (O) on the operator's platform.

⚠ When changing the hydraulic oil also change the filter.

- Remove cover securing screws (B) and lift off cover.
- Disassemble the removed unit into:
  - Cover (C)
  - Separating plate (D)
  - Filter (E)
  - Dirt trap (F)
- Clean the filter housing, cover, separating plate and dirt trap.
- Check the O-rings (G), replace if necessary.
- Coat the sealing surfaces and O-rings with clean operating fluid.



HTank_2009.wmf/Montage2.eps/Hydtank_V2a.eps

Bleeding the filter

- Fill the opened filter housing with hydraulic oil up to approx. 2 cm below the top edge.
- If the oil level drops, replenish oil again.

☞ Slow oil level reduction of approx. 1 cm / min. is normal!

- If the oil level remains stable, slowly insert the assembled unit with new filter element into the housing and tighten the cover securing screws (B).
- Open the bleed screw (H).
- Place a transparent hose (I) onto the bleed screw, ending in a suitable container.
- Start the up drive motor at idle speed.
- Close the bleed screw (H) as soon as the oil forced through the hose is clear and therefore free of air bubbles.

☞ The process from assembling the filter cover to starting the drive engine should take place in less than 3 minutes, as the oil level in the filter housing otherwise falls too far.

⚠ Ensure seal integrity is good after changing the filter.

High-pressure filter (3)

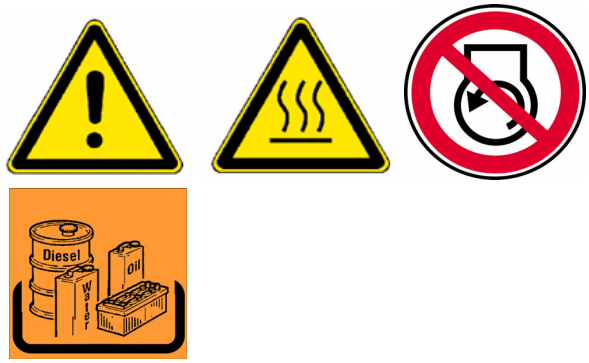
The filter elements must be replaced when the maintenance indicator (A) turns red.

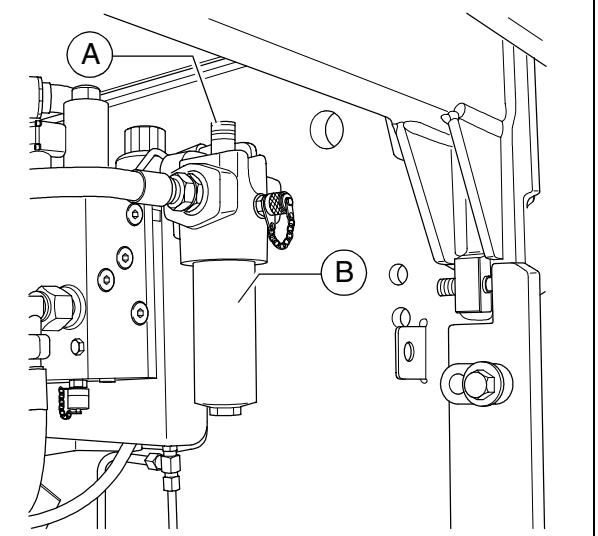
- Unscrew filter housing (B).
- Remove the filter cartridge.
- Clean the filter housing.

- 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 trial operation and check the tightness of the filter.

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

☞ After replacing the filter element, the red mark in the maintenance indicator (A) automatically reverts to green.





HDD_2009.wmf

Pump distribution gear (4)

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

☞ The oil level must be up to the centre of the viewing glass.

For **filling in** the oil:

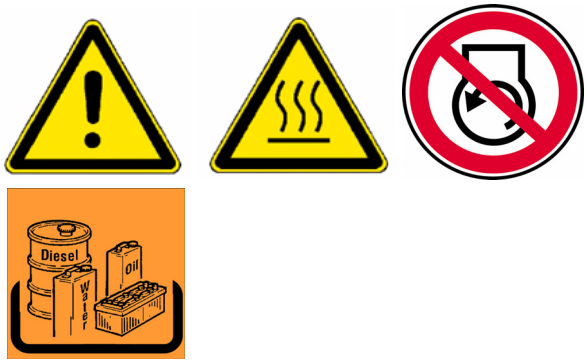
- Unscrew the filler screw (B).
- Fill in oil through the filling port until the required filling level is achieved on the viewing glass (A).
- Screw in the filler screw (B) again.

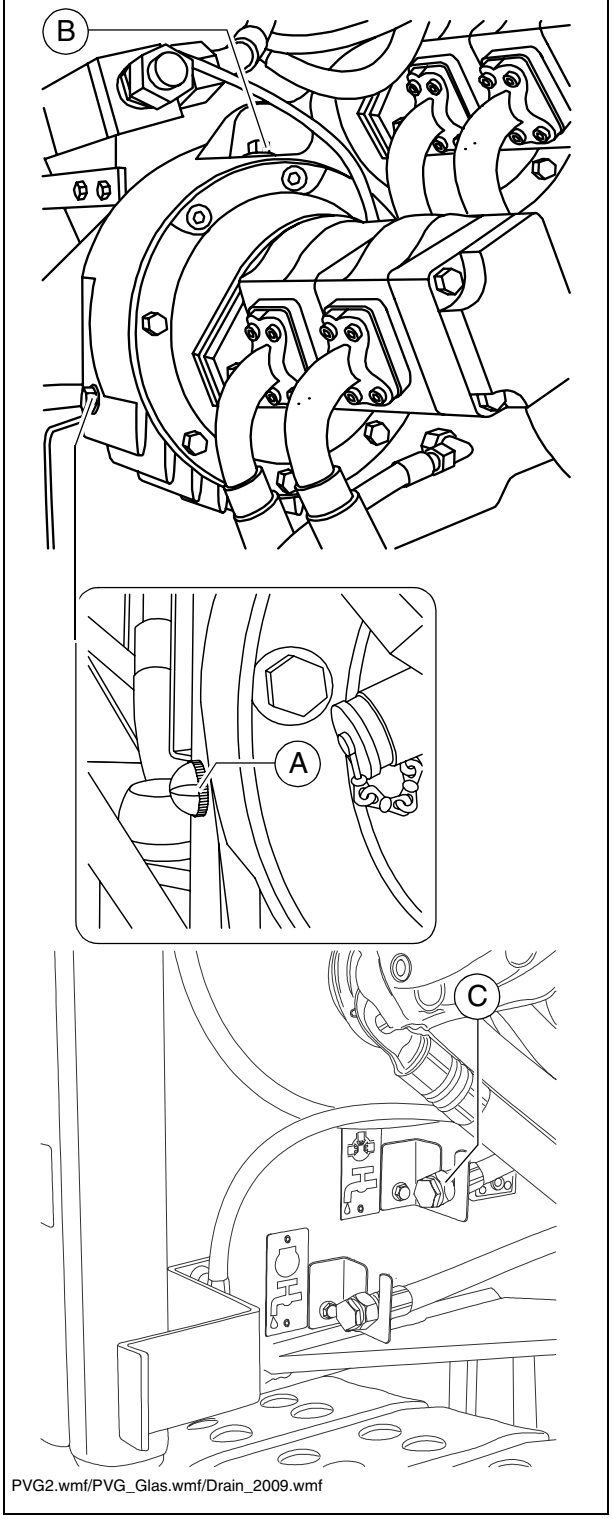
⚠ Make sure to clean the screw and the vicinity of the drain bore!

Oil change:

Change the oil when the engine is at operating temperature.

- Place the end of the oil drain port hose (C) in the collection container.
- Remove the screw cap with a wrench and allow the oil to drain completely.
- Replace the screw cap and tighten properly.
- Fill in the oil of specified quality through the filling port on the gearbox (B) until the oil level rises to the centre of the viewing glass (A).

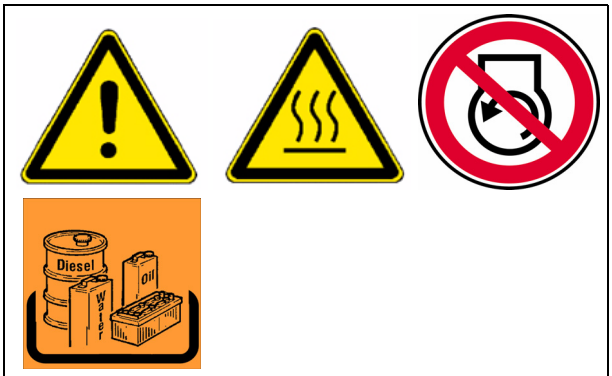




PVG2.wmf/PVG_Glas.wmf/Drain_2009.wmf

Hydraulic hoses (5)

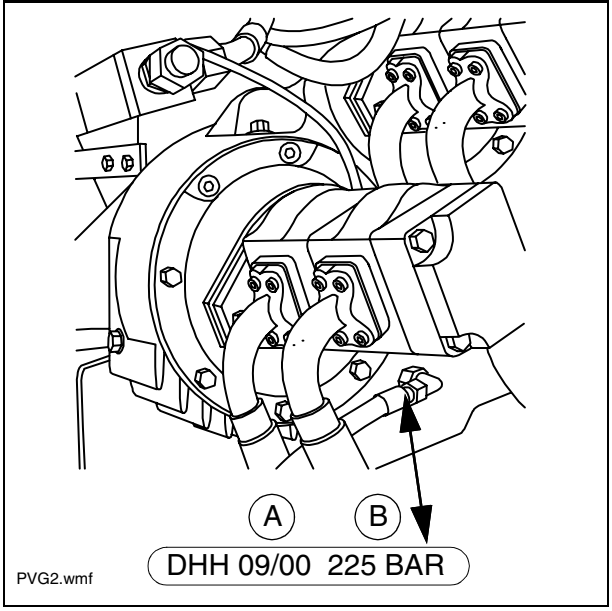
- Specifically check the condition of the hydraulic hoses.
- Immediately replace any damaged hoses.



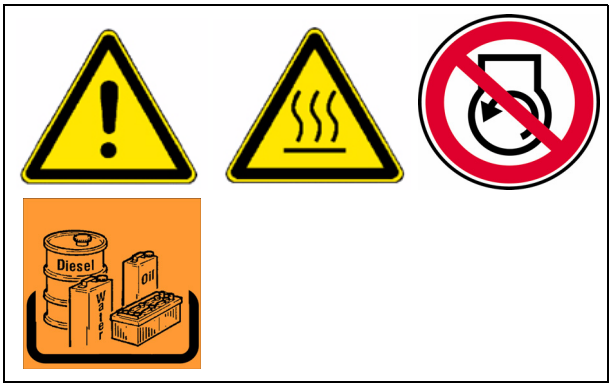
STOP Ageing hoses become porous and may burst! Danger of accidents!

A number stamped onto the threaded connection provides information about the date of manufacture (A) and the maximum pressure permitted for this hose (B).

Never install hoses on top of one another and always ensure that they are at the correct pressure.



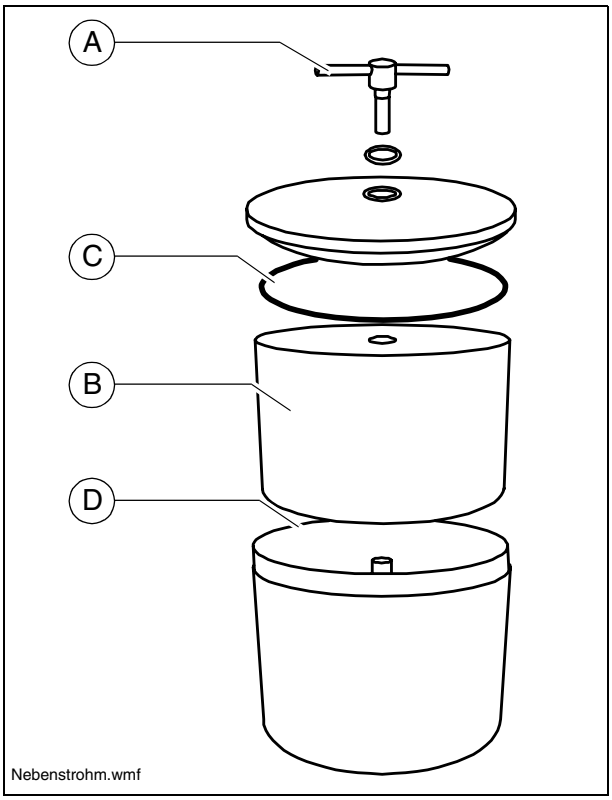
Auxiliary flow filter (6)



☞ The hydraulic oil change is omitted on use of an auxiliary flow filter!
The quality of the oil must be checked regularly.
The oil level must be topped up if necessary!

Replacing filter element:

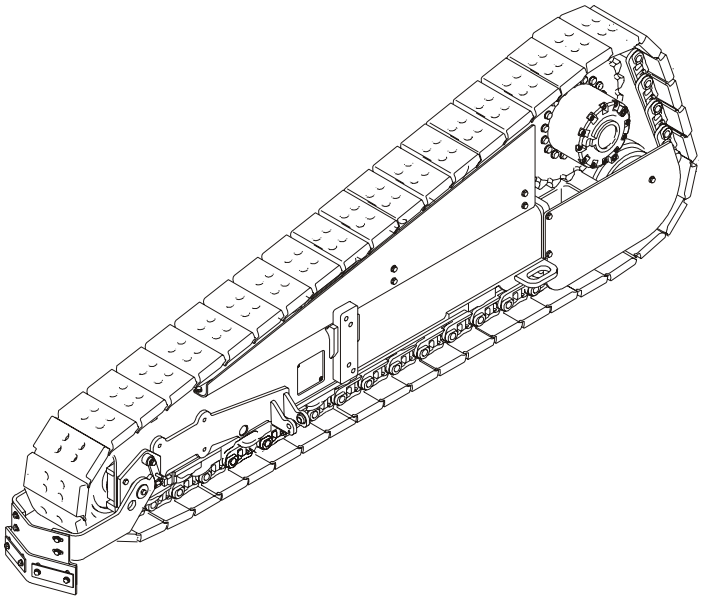
- Release the threaded cover connection (A) then open the non-return valve briefly to lower the oil level in the filter, then close the non-return valve again.
- Replace filter element (B) and sealing ring (C):
  - Turn filter element clockwise with the help of carrier straps and, at the same time, raise 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



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

F 7.9 Maintenance – Drive units

1 Maintenance – Drive units



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1.1 Maintenance intervals

Item	Interval								Maintenance point	Note
	10	50	100	250	500	1000 / annually	2000 / every 2 years	If necessary		
1	■								- Chain tension - Check	
								■	- Chain tension - Adjust	
								■	- Chains- Relieve	
2				■					- Bottom plates - Check wear	
								■	- Bottom plates - Replace	
3	■								- Rollers - Check for leaks	
				■					- Rollers - Check wear	
								■	- Rollers - Replace	
4			■						- Planetary gear - Check oil level	
								■	- Planetary gear - Top up oil	
						■			- Planetary gear - Change oil	

Maintenance	■
Maintenance during the running-in period	▼

Any work on the pretensioned spring element must only be carried out by trained, specialist personnel!

The spring elements must only be removed by a specialist workshop! The following applies to all spring elements in the event of a necessary repair: replace the complete unit only!

Repairing the spring elements involves significant safety measures and should only be carried out by a specialist workshop!

Your Dynapac customer service will be happy to provide support during maintenance, repair and the replacement of wearing parts!

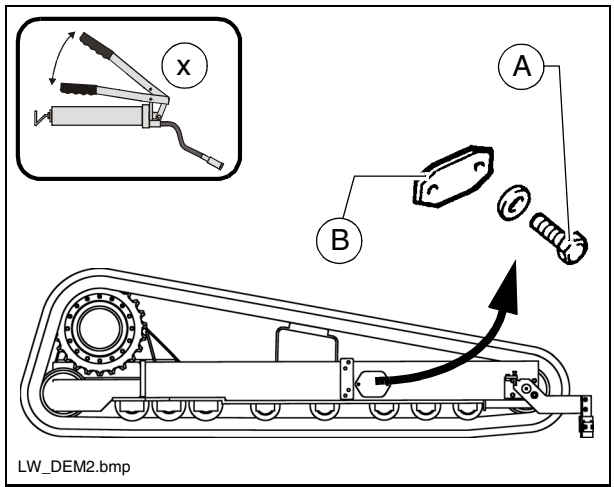
1.2 Points of maintenance

Chain tension (1)

⚠ 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.

⚠ 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.

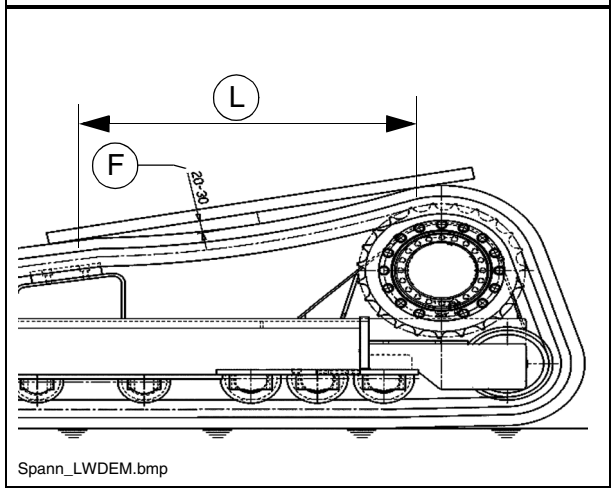
Checking / adjusting chain tension:



LW_DEM2.bmp

- The chain tension is adjusted with grease tensioners. The filling ports are located on the left and right in the track chassis.
- Unscrew the screws (A).
- Remove cap (B).
- Screw head section for flat nipple (toolbox) onto the grease gun.

☞ Over a length (L) of 1-1.5 m, slack (F) of 2-3 cm must be present. This applies in linear fashion if the free length (L) is less than or equal to 1-1.5 m (at least 4 track links).
The slack is determined using a measuring rule. This involves the dimension (F) being measured from the edge of the bottom plate to the measuring rule (at the centre point of the slack in the track).



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- Use the grease gun to press grease into the chain tensioning cylinder until the correct tension is set.

☞ On completion of the tensioning process, the grease gun is removed. Now the traction unit should be moved backwards and forwards approx. 1 complete turn of the drive wheel. Check the position of tracks on idler wheel and drive wheel.

☞ Repeat this procedure on both drive units!

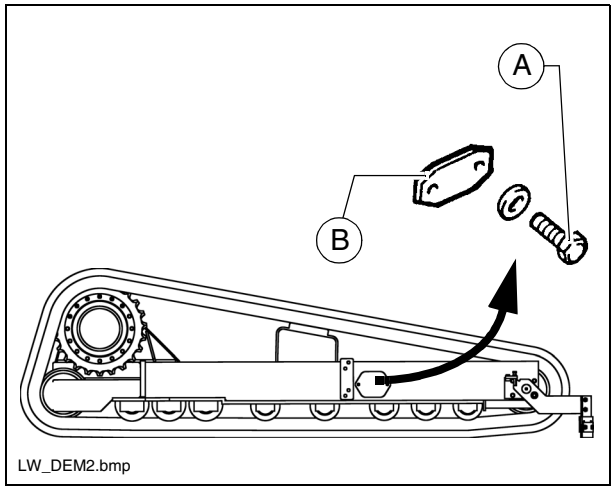
- Reinstall cover (B).

Tensioning the chain:

- Unscrew the lubricating nipple on the grease tensioner using a tool until the grease is able to emerge from the nipple's lateral hole.

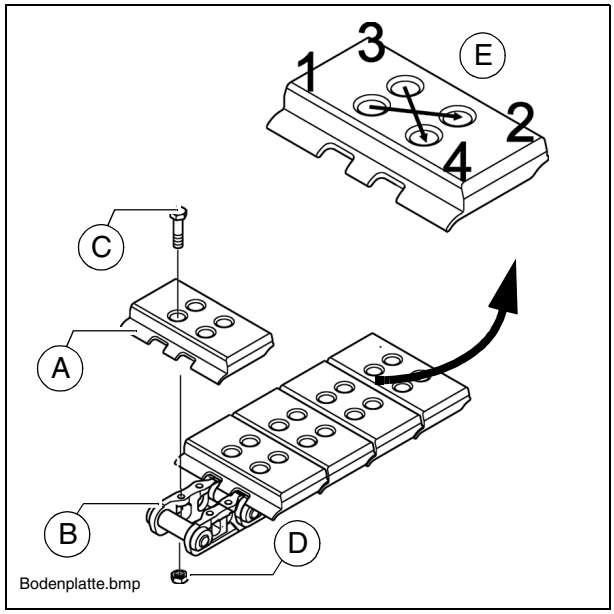
The grease in the tensioning element is under pressure. Carefully and slowly unscrew the filling valve, but not too far.

The idler wheel moves back independently or must be reset manually.



LW_DEM2.bmp

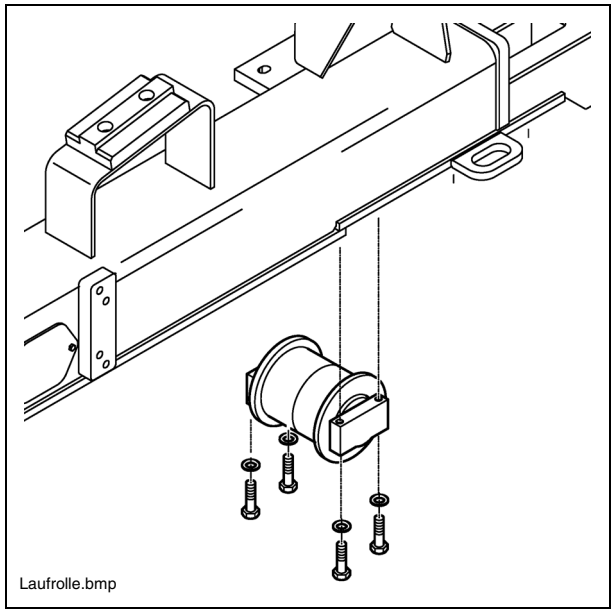
Bottom plates (2)



⚠ Always use new bolts and nuts when installing new bottom plates!

- After removing the worn bottom plates, the adhesions must be cleaned from the contact surfaces of the chain links and the nut seats.
- Place the bottom plate with the front edge (A) over the chain links' bolt eye (B).
- Lubricate the threads and the contact surfaces beneath the bolt heads with a thin film of oil or grease.
- Insert the bolts (C) into the holes and screw them into the nuts (D) a few turns.
- Tighten the bolts without applying significant torque.
- Tighten the bolts diagonally to the required torque (E).

Rollers (3)



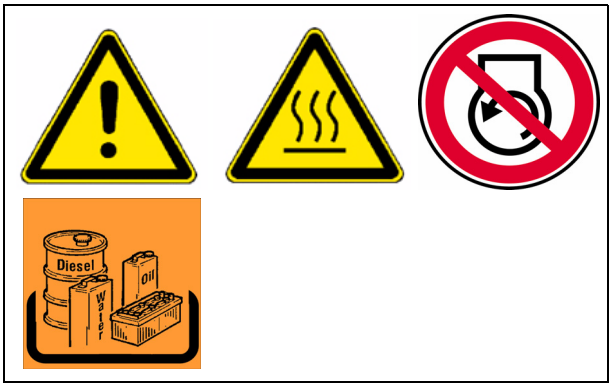
⚠ Rollers with damaged surfaces or which are leaking should be replaced immediately!

- Relieving the caterpillar chain:
- Raise the track chassis using suitable lifting equipment and remove adhering dirt.

STOP Observe the safety measures when raising and securing loads!

- Remove the defective roller.
- Install the new roller using new assembly parts.
- Lower the track chassis and tension the caterpillar track properly.

Planetary gear (4)

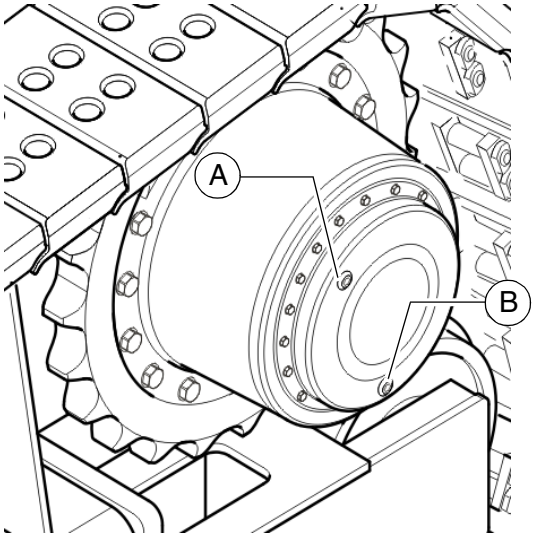


- For **oil level check** unscrew and remove the inspection bolt (A).

☞ 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 in the specified oil into the 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_OK.bmp

Oil change:

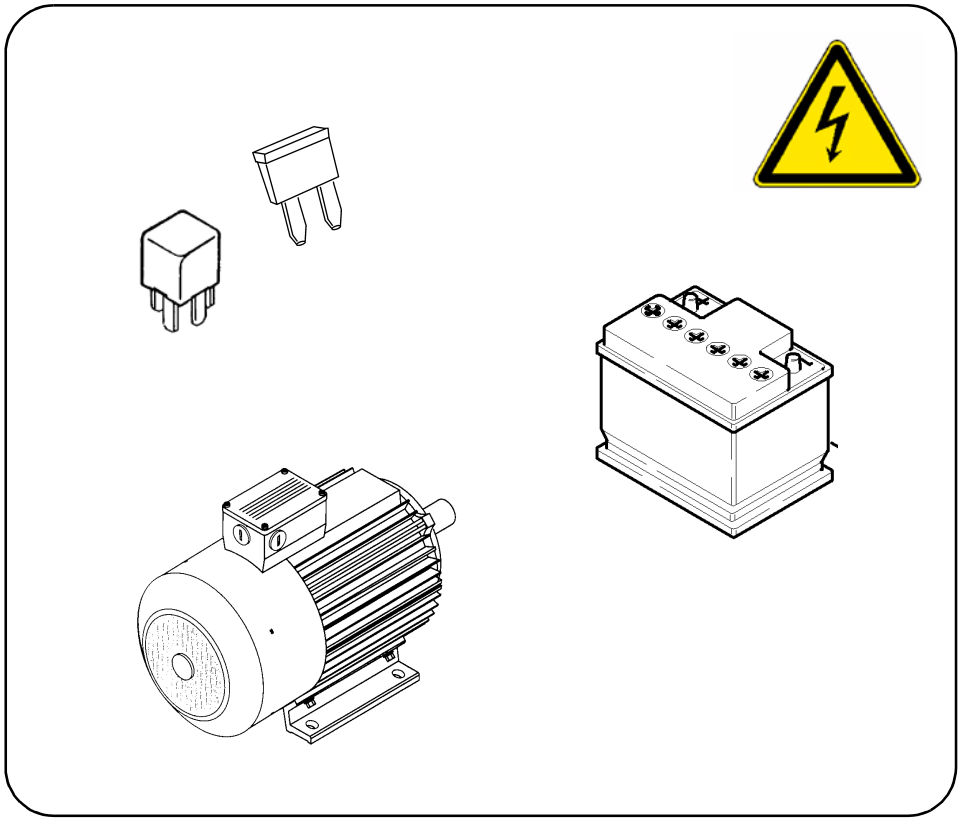
☞ The oil should be changed when at operating temperature.

⚠ 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 8.8 Maintenance - Electronic system

1 Maintenance - Electronic system



1.1 Maintenance intervals

Item	Interval								Maintenance point	Note
	10	50	100	250	500	1000 / annually	2000 / every 2 years	If necessary		
1			■						Filling level of battery electrolyte - check	
								■	Top up with distilled water	
				■					Apply grease to battery terminals	

Maintenance	■
Maintenance during the running-in period	▼

Item	Interval								Maintenance point	Note
	10	50	100	250	1000	5000	20000	If necessary		
2	■								- Alternator Electrical system insulation monitoring Check function	Also see screed operating instructions
				■					- Alternator Visual check for pollution or damage - Check the cooling air openings for pollution or clogging, clean if necessary.	(○)
						■			- Alternator Check the ball bearings „by listening“ and replace them if necessary.	(○)
							■	■	- Alternator Replace ball bearings	(○)
				■					- Alternator Check the drive belts for damage, replace if necessary	(○)
				■					- Alternator Drive belts - check tension, adjust if necessary.	(○)
					■				- Alternator Replace drive belts	(○)

Maintenance	■
Maintenance during the running-in period	▼

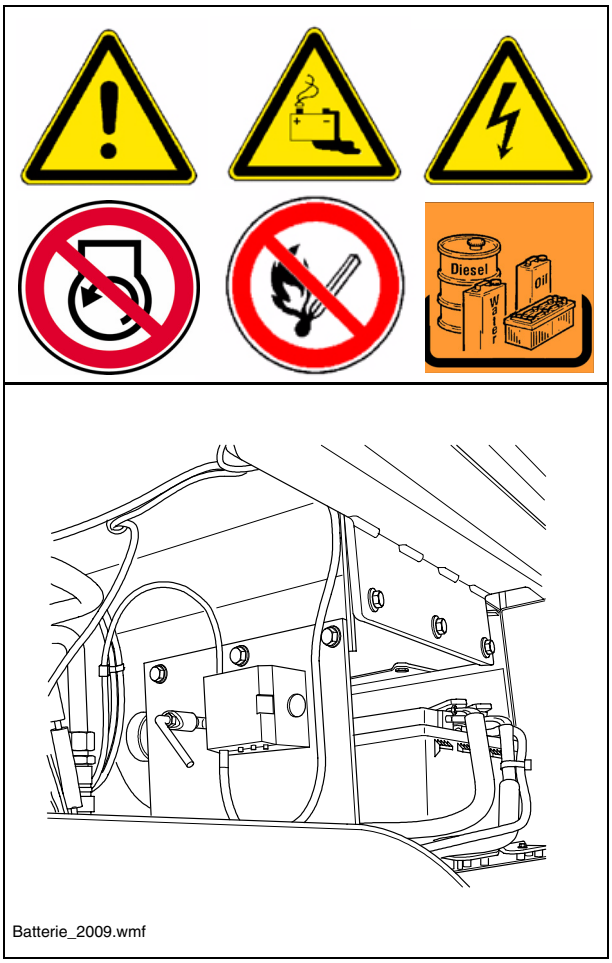
Item	Interval								Maintenance point	Note
	10	50	100	250	500	1000 / annually	2000 / every 2 years	If necessary		
3								■	Electric fuses	

Maintenance	■
Maintenance during the running-in period	▼

1.2 Points of maintenance

Batteries (1)

Maintenance of batteries



☞ The batteries are factory-filled with the correct quantity of acid. The fluid level should come up to the top mark. If required, top up the battery, but only use distilled water to do so!

⚠ The battery terminal clips must be free of corrosion (oxide) and protected with a special grade of terminal grease.

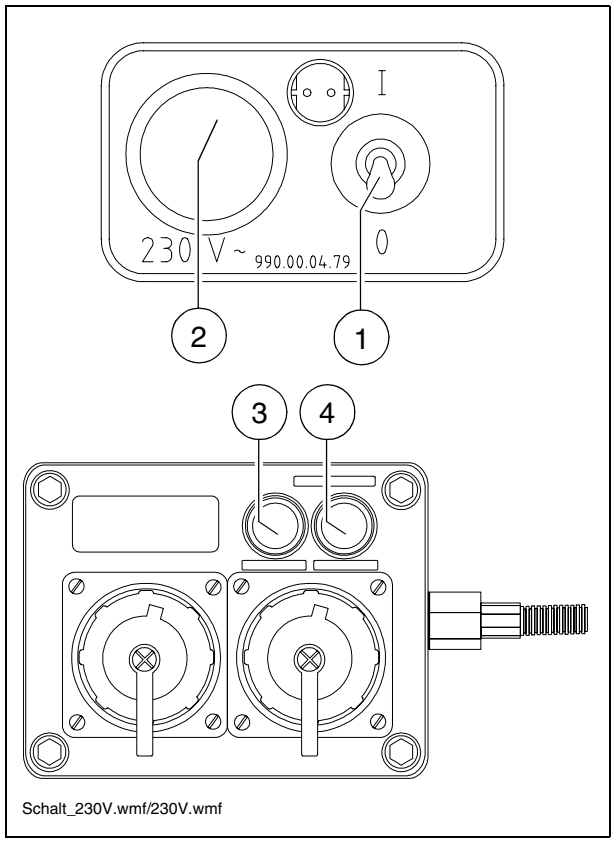
⚠ When removing the batteries, always first remove the negative terminal, ensuring that the battery terminals cannot be short circuited.

Alternator (2)

Electrical system insulation monitoring

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 test button (3) and the inscription „Insulation fault“ must light up.
- Press the clear button (4) and the insulation fault inscription goes off.



Schalt_230V.wmf/230V.wmf

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 the case of an insulation fault the sockets are automatically turned off.
Work with the electric system cannot proceed if the simulation does not indicate a failure.

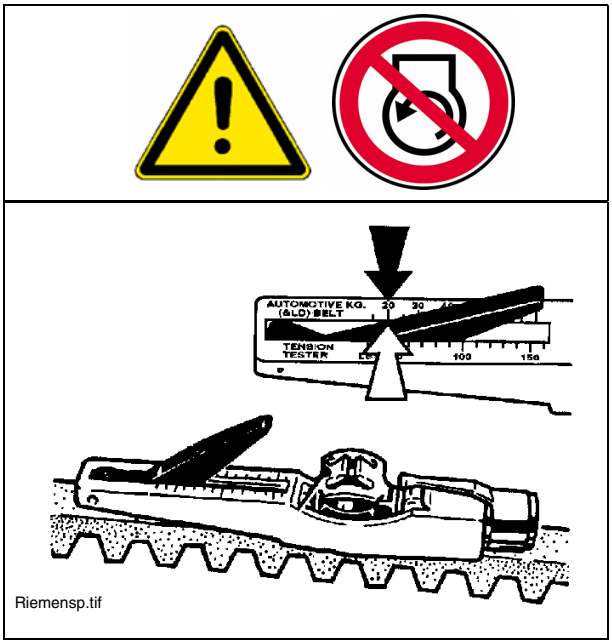
In the event of malfunctions, the electrical system must be checked and repaired by a specialist electrician. Work with these devices and the operating equipment can be resumed after this.

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

Check ball bearings / replace ball bearings

☞ 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 belt (V-belt)



Riemensp.tif

Checking belt tension

The tension of each belt must be inspected with a pretension checking instrument.

Specified tension:

- In case of initial assembly: 550 N
- After the run-in period / maintenance interval: 400 N

☞ Instructions for checking tightness in the pretention measuring instrument instructions.

☞ A pretention measuring instrument can be ordered under article No. 532.000.45!

Adjusting belt tension

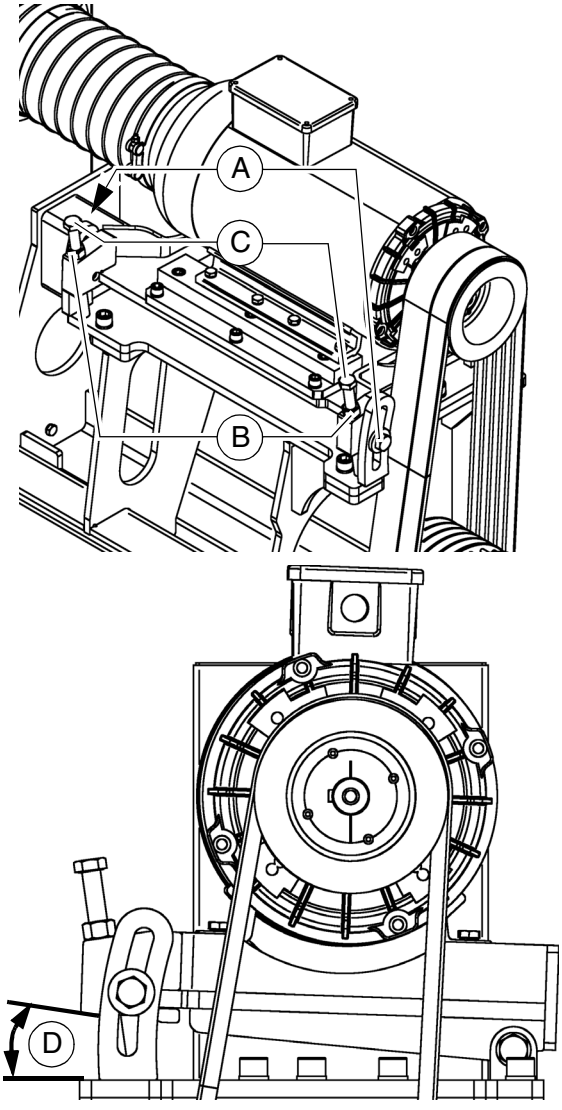
- Loosen the clamping bolts (A) on both sides of the guide.
- Loosen lock nuts (B) for the adjusting screws.
- Using the adjusting screws (C), raise or lower the alternator until the required belt tension is set.
- Tighten lock nuts (B) and clamping bolts (A) again.

⚠ During adjustment work, it must be ensured that the alternator bracket is raised evenly!
The distance (D) must be checked and must be equal on both sides of the bracket!

Replacing belt

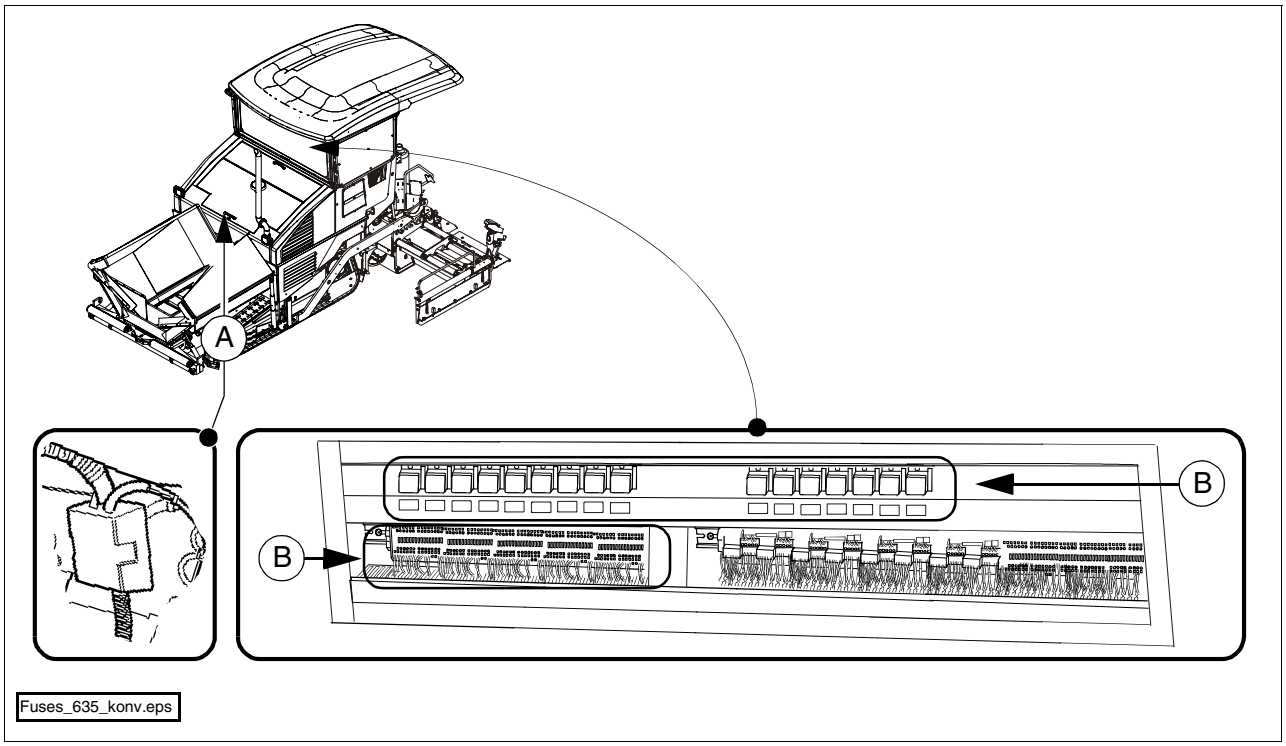
- Reduce the belt tension on the adjusting device so that the belt can be removed from the pulley.
- Mount the new belt and adjust tension again.

☞ Always replace the belts in sets.



Generator1_2009.bmp/Generator1_2009.bmp

Electric fuses / relays (3)

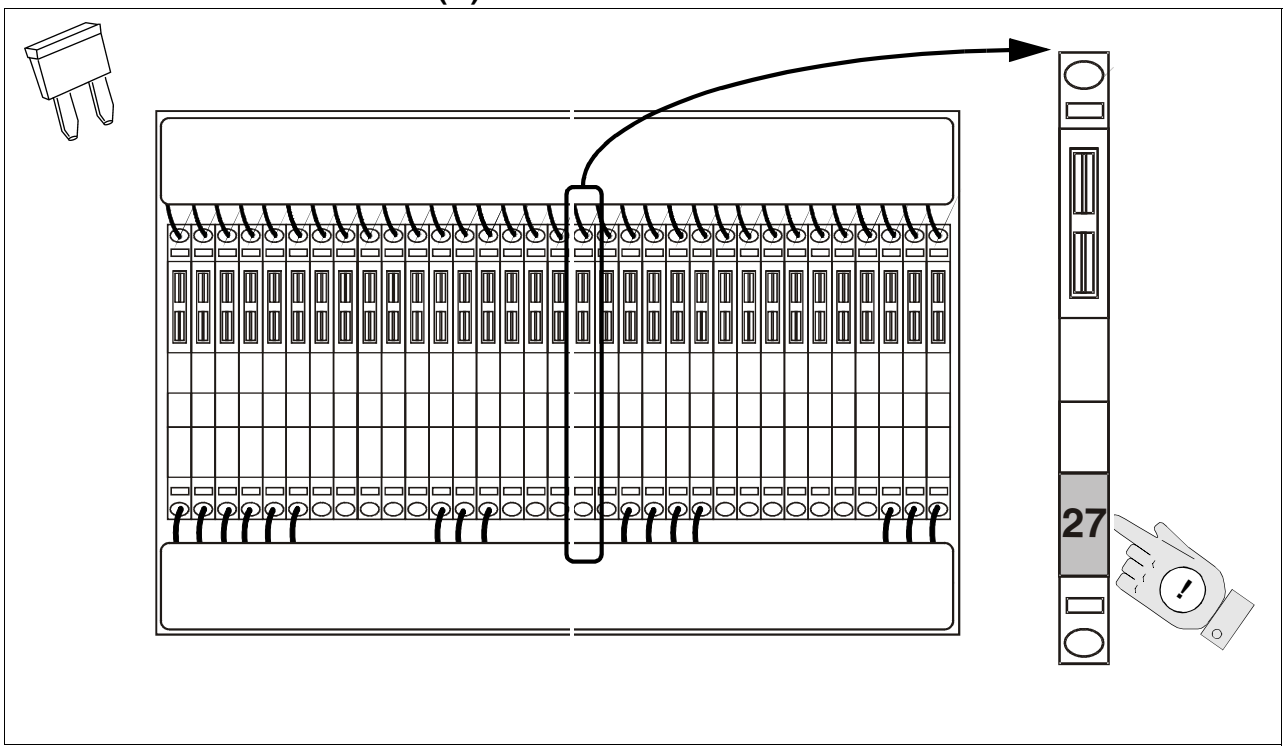


A	Main fuses
B	Fuses in terminal box
C	Relays in terminal box

Main fuses (A)

F		A
F1.1	Main fuse	50

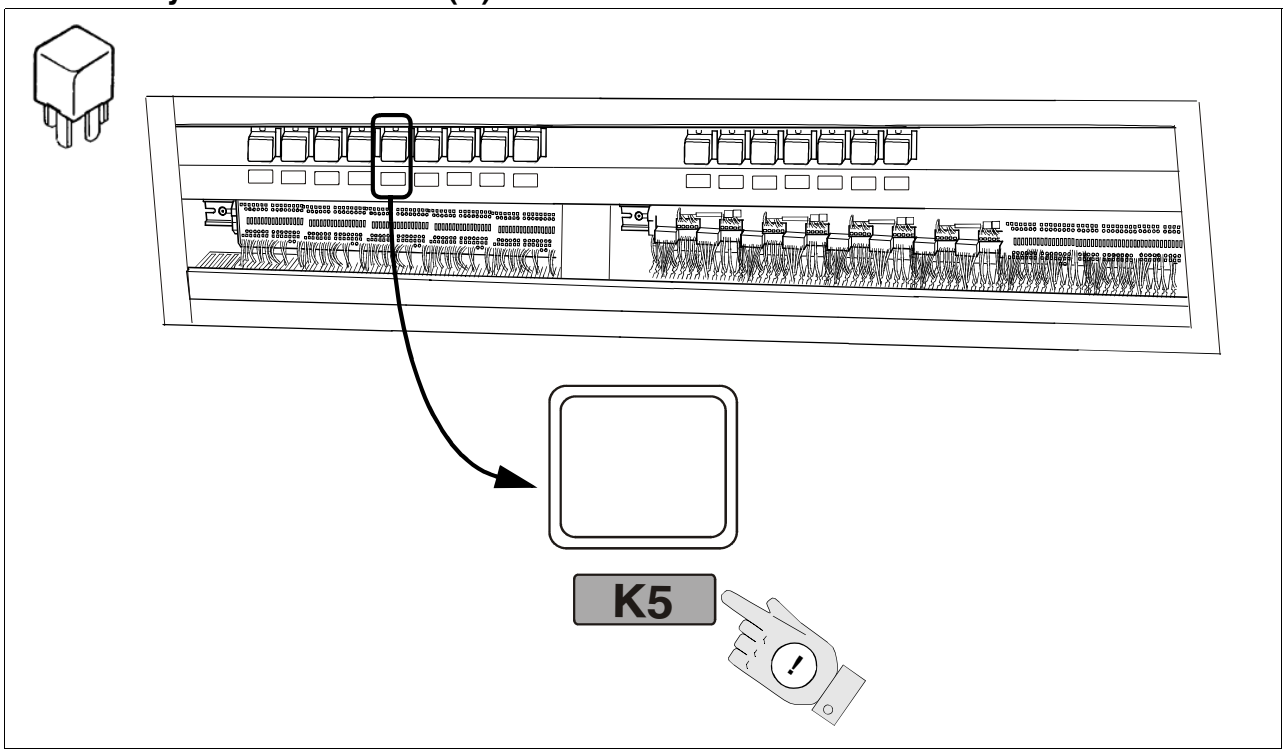
Fuses in terminal box (B)



F		A
F2	Display	2
F3	Fan control	5
F4	Engine start	10
F5	Emergency stop	7,5
F6	Terminal 15	7,5
F7	Main computer	7,5
F8	Main computer	5
F9	Engine control	25
F10	Travel drive computer	15
F11	Travel drive computer	1
F12	Display	2
F13	Keyboard	2
F14	Module A51	5
F15	Module A52	5
F16	Module A53	5
F17	Module A54	5
F18	Module A55	5
F19	Module A56	5
F20	Horn	5
F21	Front lighting	10
F22	Rear lighting	10
F23	Auger lighting	10
F24	24V socket on left	10
F25	24V socket on right	10

F.		A
F26	Travel drive computer interface	1
F27	Engine sensors	3
F28	Screed	5
F29	Screed	10
F30	Rotary beacon	5
F31	Seat heating	5
F32	Diesel fuelling system	5
F33	Windscreen wiper	5
F34	Reverse buzzer	3
F35	12-volt system	15
F36	Emulsion / diesel spraying system	5
F37	Engine diagnosis	3
F38	Electric heating	5

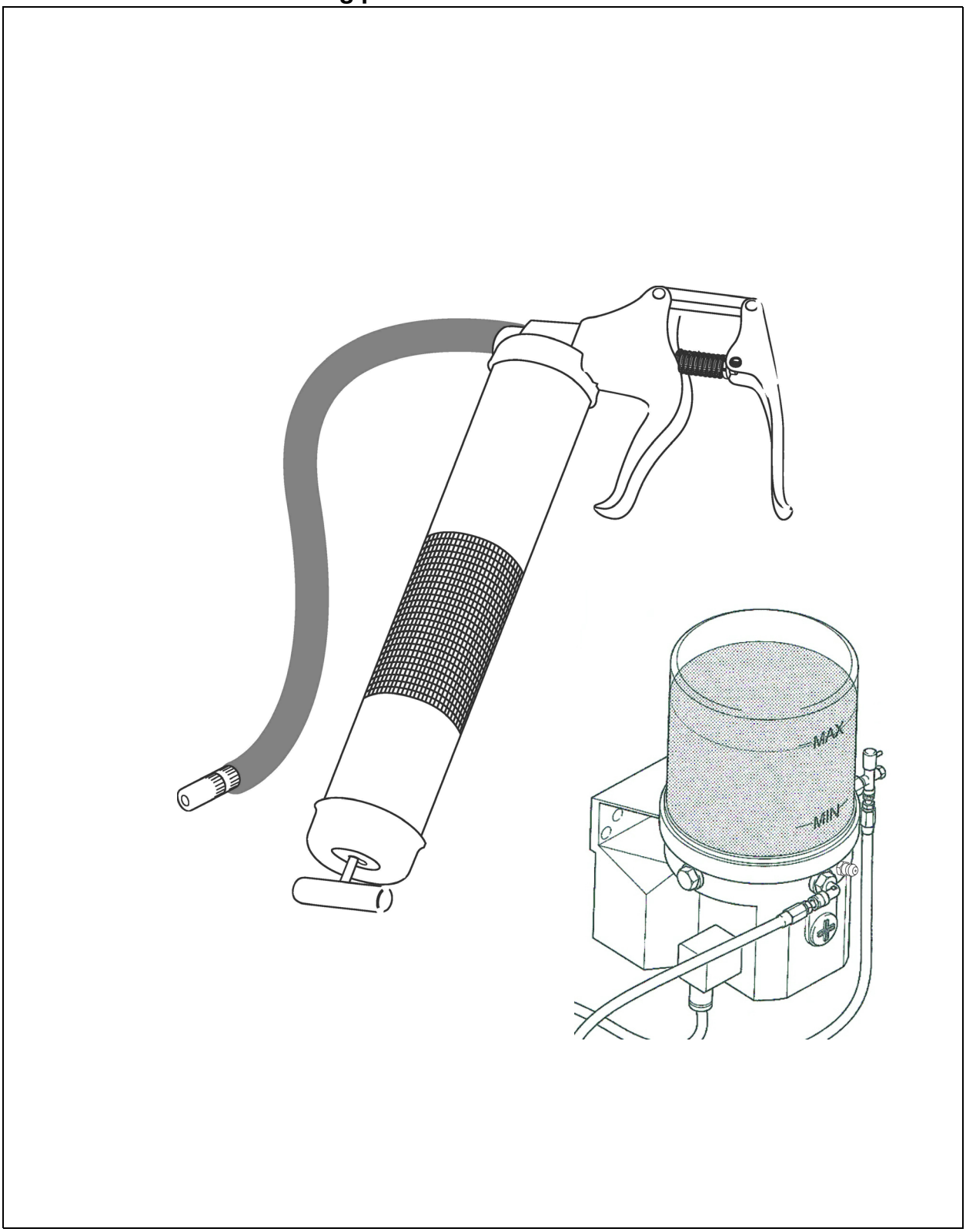
Relays in terminal box (C)



K	
1	Starter lock
2	Starting lock
3	Terminal 15 current supply
4	Engine control
5	Travel drive computer
6	Horn
7	Front lighting
8	Rear lighting
9	Auger lighting
10	Loader emergency stop
11	Rotary beacon
12	Seat heating
13	Diesel fuelling system
14	Windscreen wiper
15	Reverse buzzer

F 9.1 Maintenance - Lubricating points

1 Maintenance - Lubricating points



☞ The information on the lubricating points for the various assemblies is assigned to the specific maintenance descriptions and must be read there!

☞ Due to the use of a central lubrication system (○), the number of lubricating points may deviate from the description.

1.1 Maintenance intervals

Item	Interval								Maintenance point	Note
	10	50	100	250	500	1000 / annually	2000 / every 2 years	If necessary		
1	■								- Check lubricant tank fill level	(○)
								■	- Top up lubricant tank	(○)
							■		- Bleed central lubrication system	(○)
	■								- Check pressure limiting valve	(○)
								■	- Check flow of lubricant at the consumer	(○)
2		■							- Bearing points	

Maintenance	■
Maintenance during the running-in period	▼

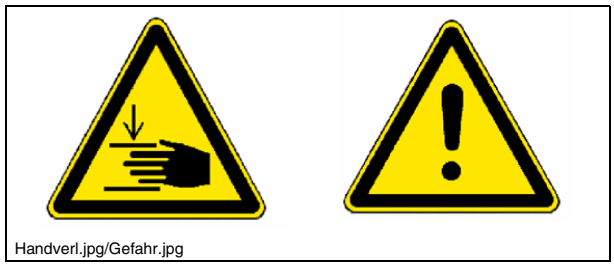
1.2 Points of maintenance

Central lubrication system (1)

Danger of injuries!

Do not reach into the tank when the pump is running!

The central lubrication system must only be operated with the safety valve installed!


Handverl.jpg/Gefahr.jpg

Do not undertake any work on the pressure relief valve during operation!

Risk of injury due to escaping lubricant, as the system operates at high pressures!

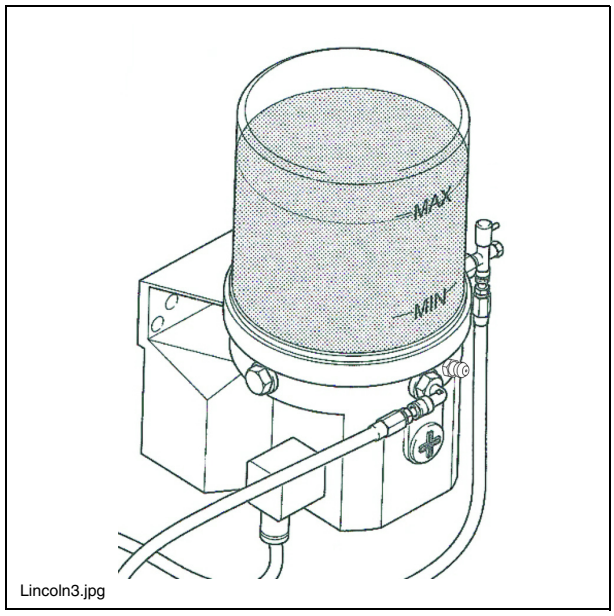
Ensure that the diesel engine cannot be started when working on the system!

Observe safety regulations for handling hydraulic systems!

Ensure maximum cleanliness when working on the central lubrication system!

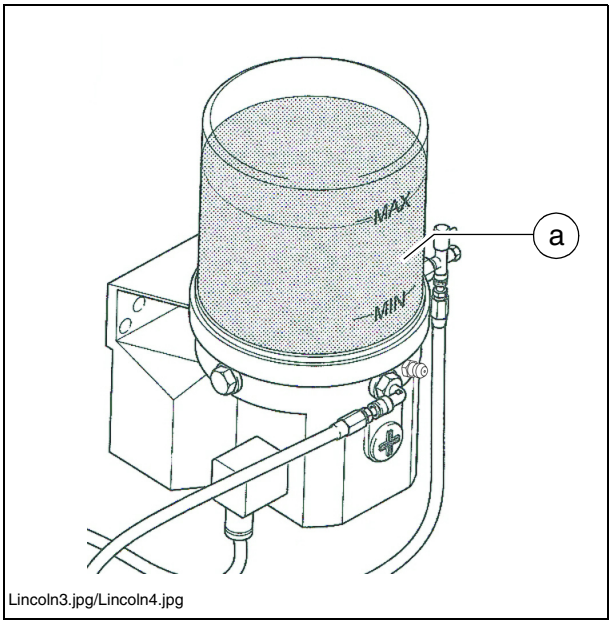
The following assemblies' lubricating points can be automatically supplied with grease by the central lubrication system:

- Conveyor
- Auger
- Steering, axles (wheeled pavers)



Lincoln3.jpg

Central lubrication system Check filling level

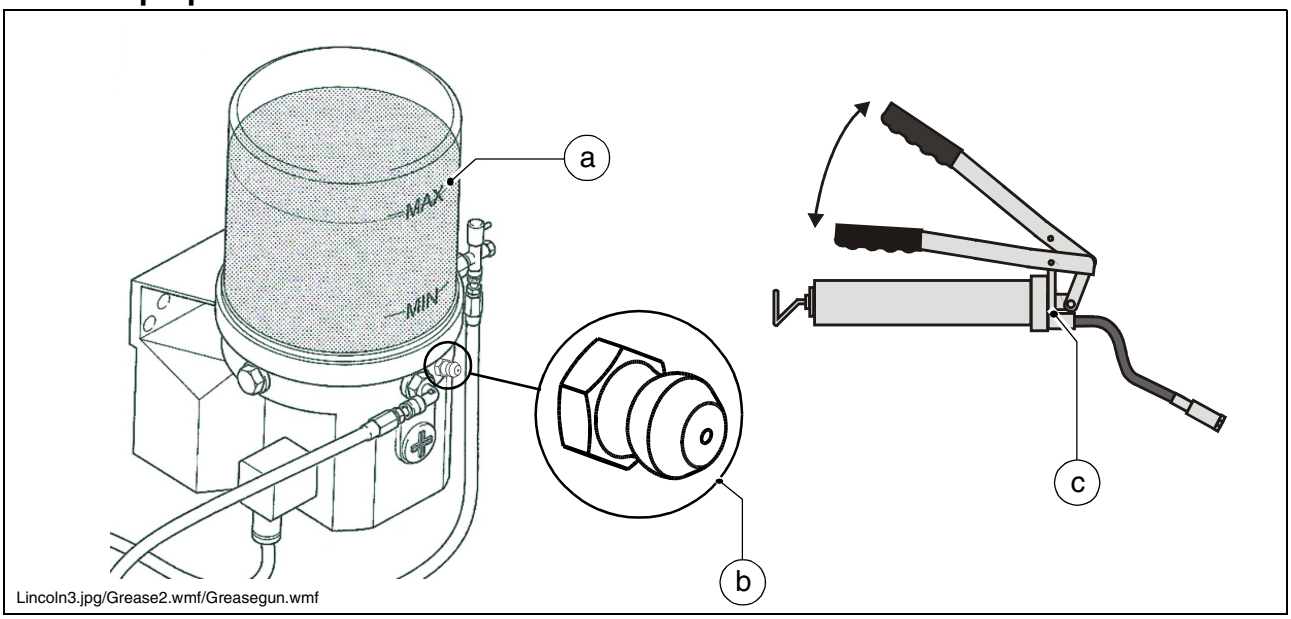


Lincoln3.jpg/Lincoln4.jpg

☞ The lubricant tank should always be filled sufficiently to ensure that the system
does not "run dry", that adequate lubricating point supply is ensured and that time-consuming bleeding does not become necessary.

- Always maintain a fill level above the "MIN" mark (a) on the tank.

Top up lubricant tank

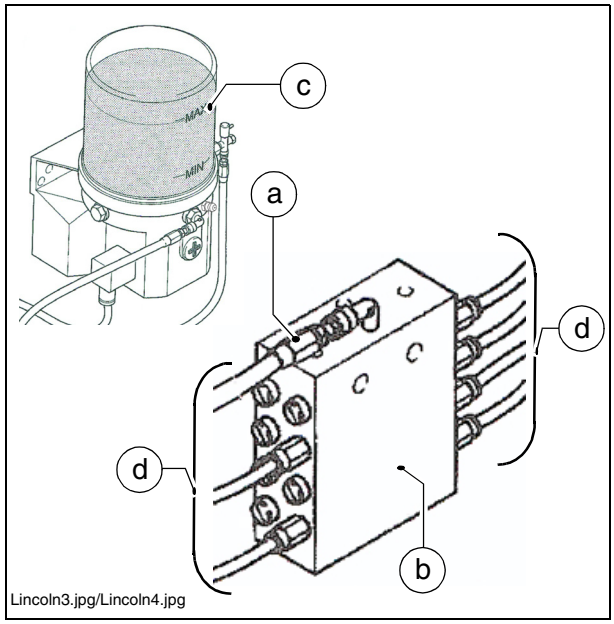


Lincoln3.jpg/Grease2.wmf/Greasegun.wmf

- A lubricating nipple (b) is located on the lubricant tank (a) for filling purposes.
- Connect the grease gun (c) enclosed on delivery to the filling nipple (b) and fill the lubricant tank (a) up to the MAX mark.

☞ When the lubricant tank is completely empty, the pump may have to run for up to 10 minutes until the full delivery rate is achieved after filling.

Bleed central lubrication system

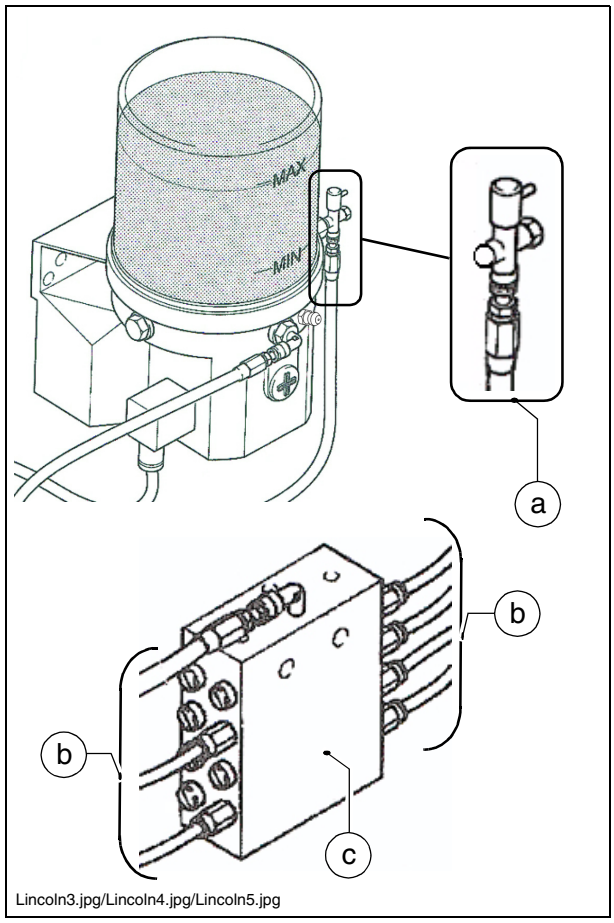


Lincoln3.jpg/Lincoln4.jpg

Bleeding the lubrication system is necessary if the central lubrication system has been operated with an empty lubricant tank.

- Release the main lubrication line (a) at the distributor (b).
- Start up the central lubrication system with the filled lubricant tank (c).
- Allow the pump to run until lubricant emerges from the previously released main line (a).
- Reconnect the main line (a) to the distributor.
- Release all distribution lines (d) from the distributor.
- Reconnect all distribution lines as soon as lubricant has emerged.
- Check all connections and lines for leaks.

Check pressure limiting valve



Lincoln3.jpg/Lincoln4.jpg/Lincoln5.jpg

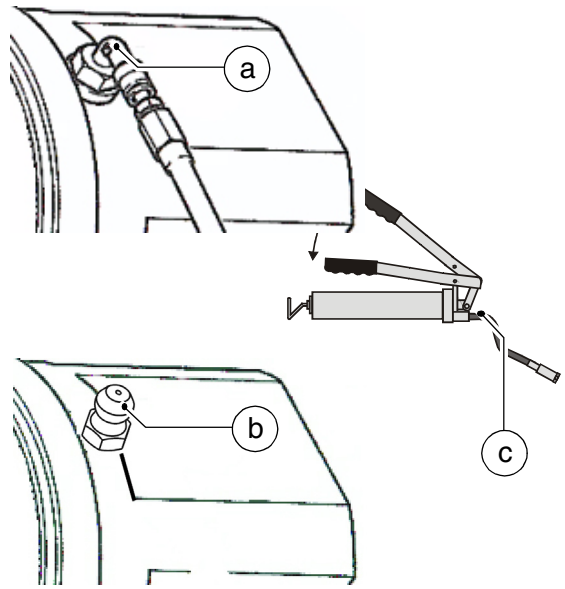
⚠ If lubricant emerges at the pressure limiting valve (a), this indicates a malfunction in the system.
The consumers are no longer adequately supplied with lubricant.

- Release all distribution lines (b) leading from the distributor (c) to the consumers in succession.
- If lubricant emerges from one of the released distribution lines (b) under pressure, search in this lubrication circuit for the cause of the blockage which has triggered the pressure limiting valve.
- After rectifying the malfunction and reconnecting all lines, again check the pressure limiting valve (a) for lubricant emergence.
- Check all connections and lines for leaks.

Check the flow of lubricant at the consumers

Each lubrication channel at the consumers must be checked as regards clearance.

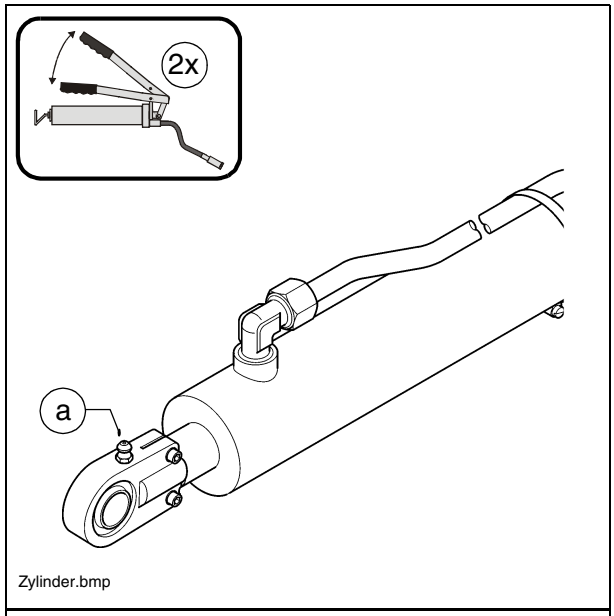
- Remove the lubrication line (a) and install a normal lubricating nipple (b).
- Connect the grease gun (c) enclosed on delivery to the lubricating nipple (b).
- Operate the grease gun until the lubricant visibly emerges.
- Rectify any faults in the flow of lubricant.
- Reinstall the lubrication lines.
- Check all connections and lines for leaks.



Lincoln6.jpg/Lincoln8.jpg/Greasegun.wmf

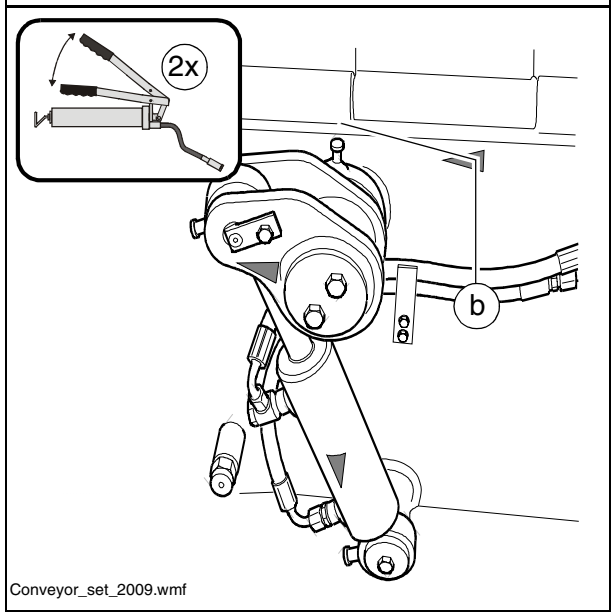
Bearing points (2)

☞ One lubricating nipple (a) is located at each hydraulic cylinder bearing point (top and bottom).



Zylinder.bmp

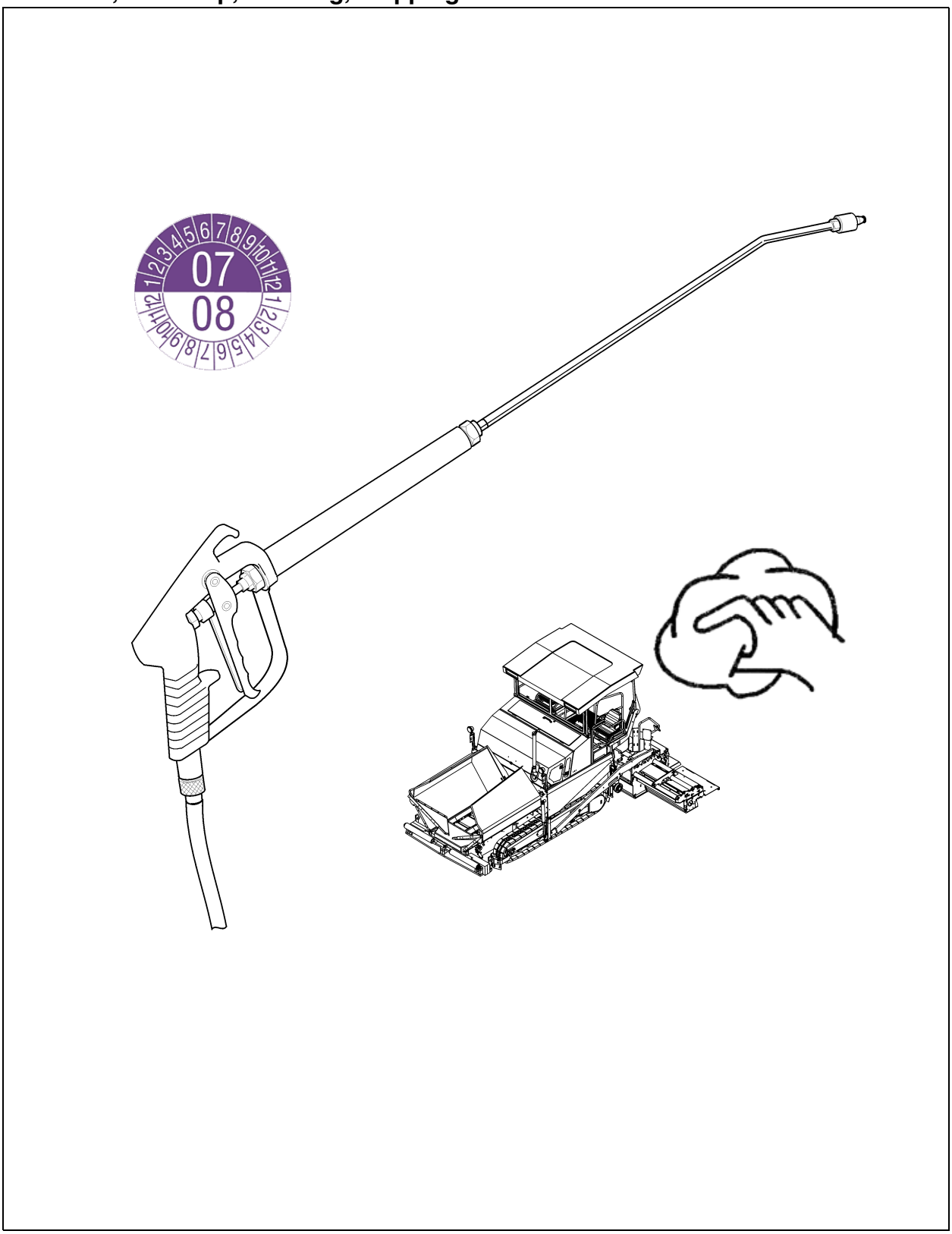
☞ A lubricating nipple (b) is located on both sides at the mounting of the hydraulic front hopper (○).



Conveyor_set_2009.wmf

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	■								- General observation	
2						■		■	- Checks by a specialist	
3								■	- Cleaning	
4								■	- Conservation of paver finisher	

Maintenance	■
Maintenance during run-in period	▼

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)?

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

3 Checks by a specialist

☞ 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 (○).

⚠ **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.

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

- Remove the residue of the material laid.

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

STOP 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.

⚠ 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 11.5 Lubricants and operating substances

1 Lubricants and operating substances

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

Only use containers which are clean on inside and outside for filling oil or fuel.

☞ Pay attention to the correct filling volumes (see the section „Capacities“).

⚠ Incorrect oil or lubricant levels increase the wear and cause the paver finisher to fail.

⚠ 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 Operating instructions for the engine. Shell Remula Super-FE 10 W 40 has been filled at the factory.						
Hydraulic oils	See (see section 1.1) Shell Tellus Oil T46 has been factory-filled.						
Transmission 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	
Transmission 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 filled in at the factory.						
Synthetic transmission oil 220						Shell Tivela 220	
	Shell Tivela 220 is filled in the factory.						
Dist. water							
Diesel fuel							
Brake oil, brake fluid	BP Blue original brake fluid	ATE Disc 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	Natural 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

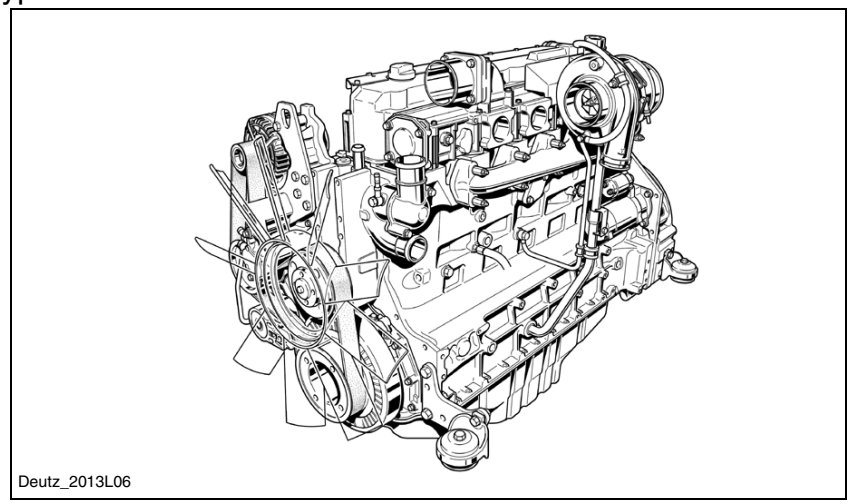
⚠ When changing from mineral oil pressurised fluids to biodegradable pressure fluids, please contact our factory advisory service!

☞ Only use containers which are clean on inside and outside for filling oil or fuel.

1.2 Capacities

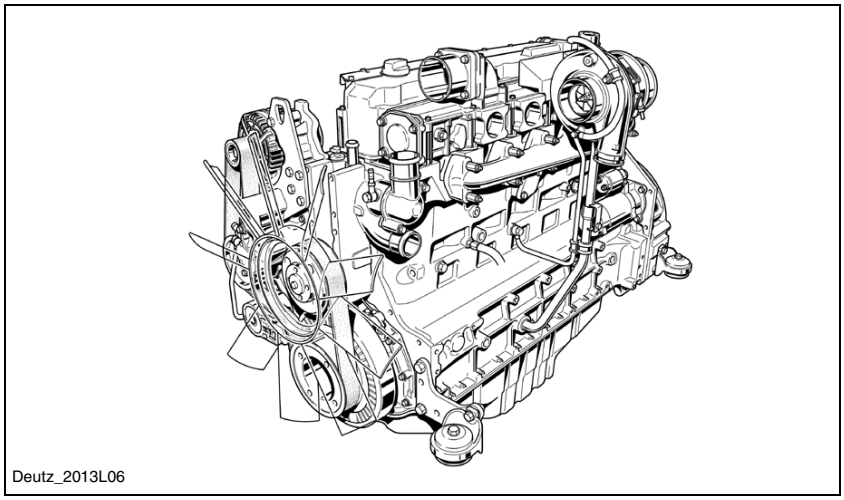
	Substance	Volume
Fuel tank	Diesel fuel	370 litres
Hydraulic oil reservoir	Hydraulic oils	190 litres
Pump distribution gear	Transmission oil 90	4.5 litres
Planetary gear - drive unit	Transmission oil 220 (synthetic)	2.5 litres
Conveyor gear (on each side)	Transmission oil 90	1.5 litres
Central lubrication system (option)	Grease	
Batteries	Distilled water	

Engine type Deutz TCD 2013 L06 2V



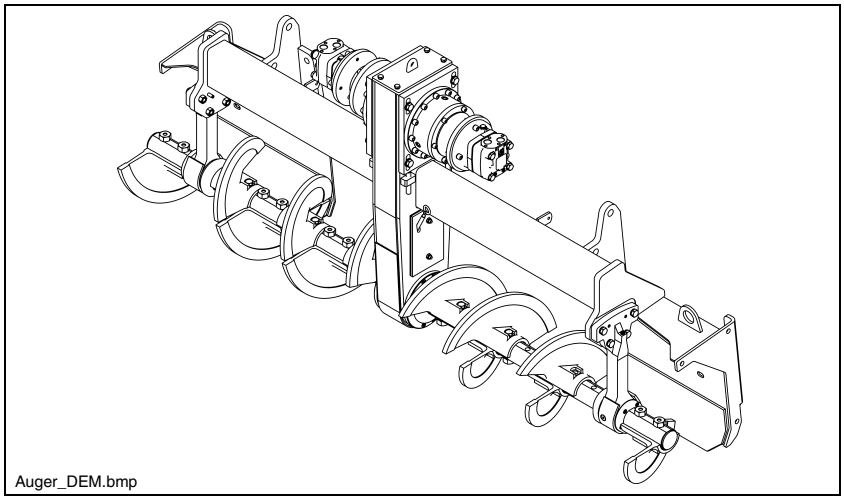
	Substance	Volume
Diesel engine (with oil filter change)	Engine oil 10W40	20.0 litres
Engine cooling system	Cooling liquid	20.0 litres

Engine type Deutz TCD 2012 L06 2V



	Substance	Volume
Diesel engine (with oil filter change)	Engine oil 10W40	21.5 litres
Engine cooling system	Cooling liquid	20.0 litres

Auger



	Substance	Volume	
Planetary gear - augers (on each side)	Transmission oil 90	0.5	litres
Auger box	Transmission oil 460	2.5	litres
Outer auger bearing (per bearing)**	Hot bearing grease	115	grammes

** for new installation

2 Notes on switching from mineral oil to synthetic oil / synthetic oil to mineral oil

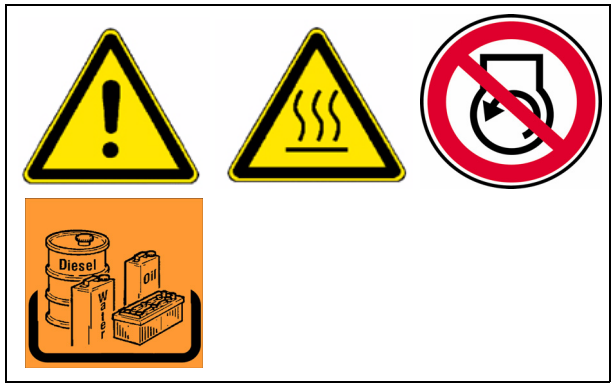
2.1 Drive unit planetary gear

⚠ Never mix synthetic oils with mineral oils!

- Always drain used oil completely.

☞ The oil should be changed when 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.



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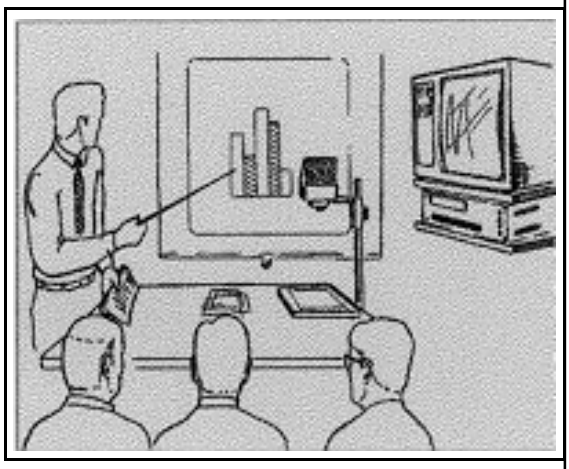
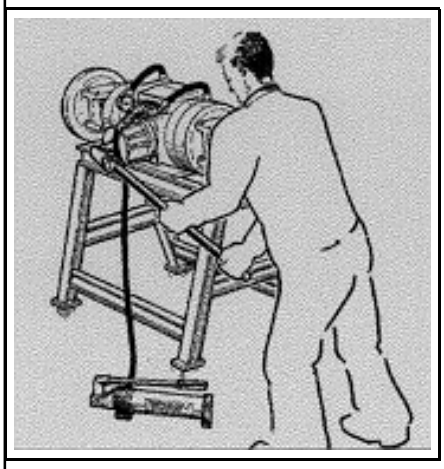
TRAINING/EDU-CATION

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



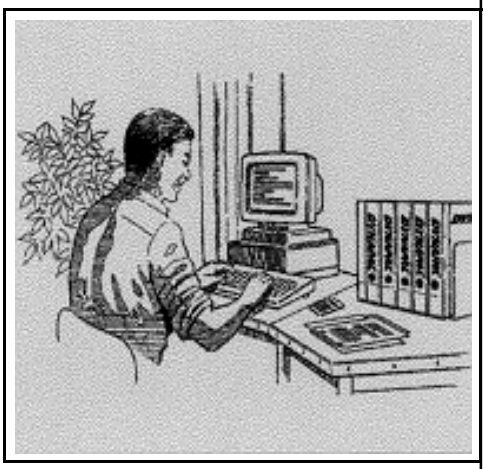


SERVICE

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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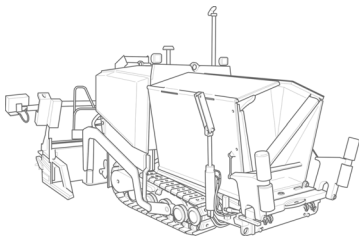

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