

DYNAPAC



Paver Finisher

Operating Instructions

(GB)

04 - 0601

876.....
678.....

F 7 W

F 8 W / F 8-4 W

900 98 04 11

A Correct use and application



The “Guidelines for the Correct Use and Application of Paver Finishers” compiled 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.

The paver finisher must be used, operated and maintained according to the instructions given in the present operating instructions. 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 observance 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 paver finisher 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.

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B Vehicle description

1 Application

The DYNAPAC F 7 W / F 8 W / F 8-4 W is a paver finisher running on rubber tires thais used for laying bituminous mixed material, roll-down or lean-mixed concrete, track-laying ballast and unbound mineral aggregates for foundations for paving.



2 Description of assemblies and functions



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Item		Designation
1	●	Auger
2	●	Screed
3	●	Operator's platform
4	●	Paving thickness indicator
5	●	Compartment for tool box, left/right
6	●	Control box for screed heating
7	●	Operating panel (can be moved to either side)
8	○	Protective roof
9	●	Material compartment (hopper)
10	●	Truck push rollers
11	●	Tube for sensor rod (direction indicator) and holder for levelling shoe
12	●	Tandem front axle
13	●	Axle with front-wheel drive (F 8-4 W)
14	●	Traction roller
15	●	Traction arm rail
16	●	Leveling cylinder for paving thickness
17	●	Arm
18	●	Rear axle

● = Standard equipment

○ = Optional equipment

2.1 Vehicle

Construction

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

The large drive wheels (18) and the tandem front axle compensate uneven areas on the ground; the suspension of the attached screed (2) additionally helps to attain a high paving precision.

The continuously adjustable hydrostatic traction drive (18) allows the speed of the paver finisher to be matched to all work conditions.

Operation of the paver finisher is facilitated by the automatic material handling system, the separate traction drive (18) and the clearly structured operating and control elements (7).

The following extra equipment (○) is available:

- Automatic levelling/slope control system
- Ultrasonic sensors for material transport by the auger (controller)
- Electrical speed regulation
- Additional cut-off shoe
- Larger working widths
- Protective roof

Further equipment and upgrade options on request.

Engine: The paver finisher is equipped with a water-cooled 4-cylinder Deutz diesel engine. For further information please refer to the operating instructions for the motor.

Chassis: The front axle is a tandem swing axle. Due to the fact that the wheels are mounted on pivot arms of different lengths, the second front wheel (at the shorter pivot arm) bears a higher load.

This solution provides increased steering and load-bearing capabilities, especially on soft grounds. The tires are solid rubber tires at the front axle and large, tubeless pneumatic tires at the rear axle (water filling - ○).

When equipped with an additional front wheel drive (F 8-4 W), the second front axle can be used as a second drive axle.

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

Traction drive: The continuously adjustable traction drive pump is connected to the traction motors by means of high pressure hydraulic hoses. The oil motor drives the rear wheels via a two-step switch gear and roller chains. The switch gear has an integrated differential gear and a differential gear lock.

Steering system/operator's platform: The fully hydraulic Danfoss-Orbitrol steering system ensures easy maneuverability.

The operating panel can be secured in a position at the left-hand or the right-hand side of the paver finisher by means of a latch accessible from above.

Push roller cross bar: The push rollers for material trucks are fastened to a cross bar that is pivoted at its center.

This cross bar allows to compensate for different distances to the rear wheels of material trucks. The paver finisher thus deviates less from its course and paving in curves is made easier.

Material compartment (hopper): The hopper inlet is equipped with a conveyor system that empties the hopper and transfers the material to the auger.

The hopper can hold ca. 8.0 tons of material.

To facilitate emptying and to improve material transport, each of the lateral covers of the hopper can be hydraulically moved (○).

Material transfer: The paver finisher is equipped with two conveyors driven separately that transfer the material from the hopper to the augers.

By scanning the filling height during the paving procedure, the transfer amount or speed is regulated fully automatically.

Augers: The augers are driven and actuated independently from the conveyors. The left-hand and the right hand half of the auger can be controlled separately. The drive system is fully hydraulic.

The conveying direction can be changed towards the center or towards the outside. This ensures that there is always a sufficient supply with material even if an excessive amount of material is required at one side. The auger speed is continuously controlled by sensors that monitor the material flow.

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

The basic configuration allows the height to be adjusted by attaching chains to the side arms and by actuating the hydraulic screed lifting device.

When using ratchets for height adjustment (○), 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 control panel by means of hydraulic cylinders (○).

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

Levelling/slope control system: The slope control system (○) 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 arms 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 arm (traction roller), the paving height 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. For further information, please refer to the operating instructions for "Leveling Systems".

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 arms 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 of screed marks caused by a stopped screed. When the paver finisher stops (during a truck change), the control valves set to the floating position are shut and locked, thus preventing the screed from sinking during the stop.

The screed relieving device puts a higher load on the chassis, thus increasing the traction.

Activating the screed charging device can improve the compacting result under certain conditions.

Control box for the screed heating system: Operation and monitoring of the screed heating system occurs via the control box on the paver finisher.

3 Safety devices

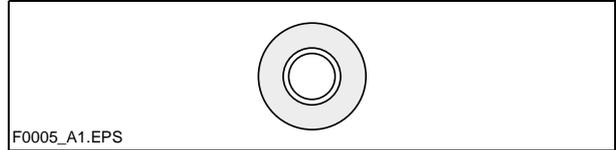
Safe operation is only possible when all operating and control elements are functioning correctly and when all safety devices are in position.



Check the function of these devices at regular intervals (see chapter D, section “Check list for the machine operator”).

3.1 Emergency stop button

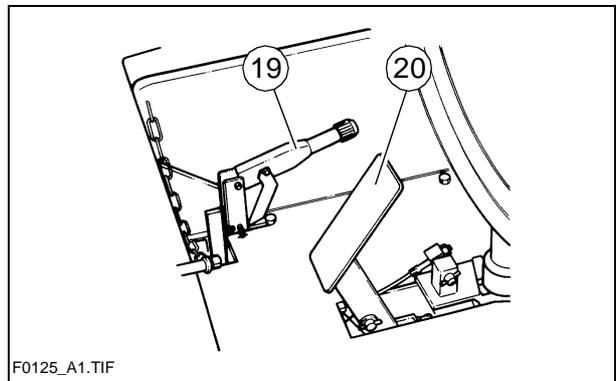
- On the operating panel
- On the two remote control units (○)



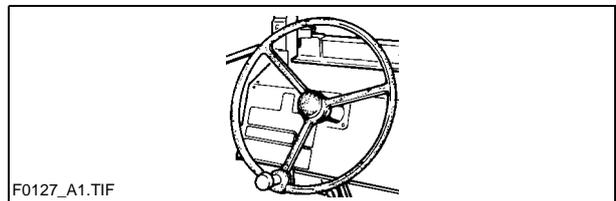
Pressing the emergency stop button switches the engine, the drives and the steering system off. Corrective measures that might be necessary (anti-collision maneuvers, lifting the screed, etc.) are not possible in this case! Danger!

3.2 Parking brake (“hand brake”) (19)

3.3 Service brake (“foot brake”) (20)

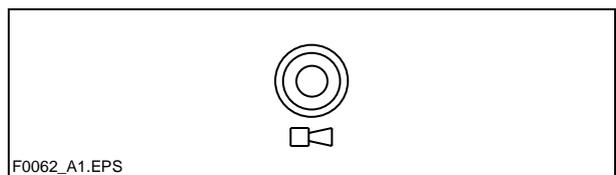


3.4 Steering system

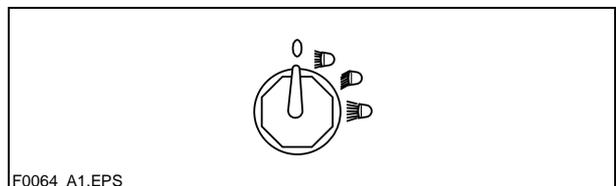


3.5 Horn

- On the operating panel
- On the two remote control units (○)

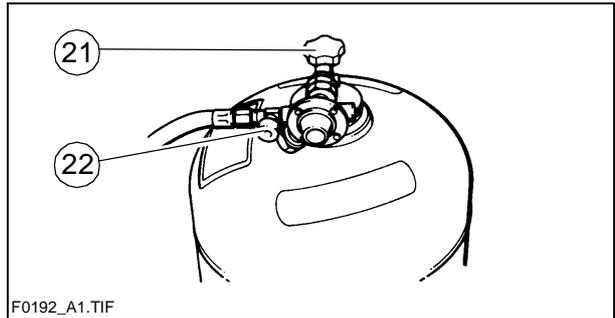


3.6 Ignition key / lights



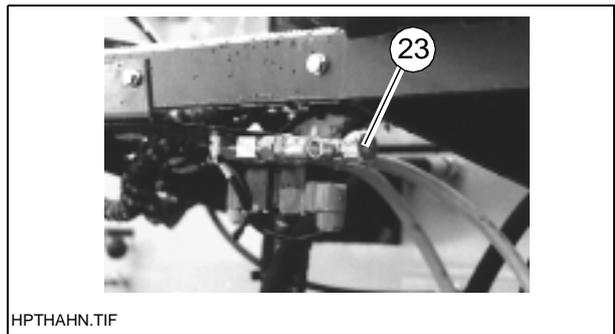
3.7 Safety devices on the gas heater system

- Bottle valves (21)
- Hose rupture protection (22)



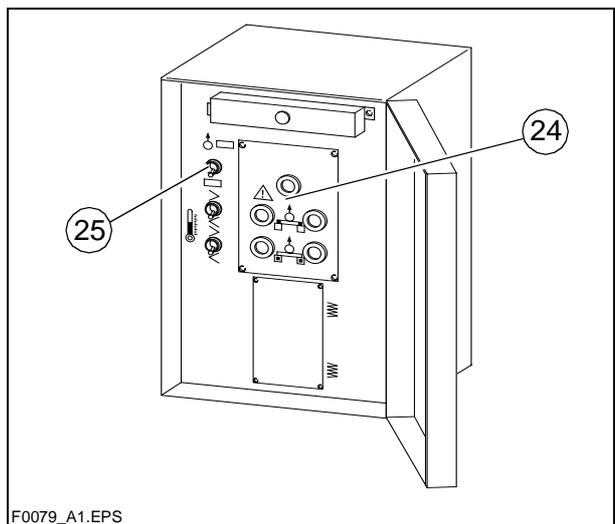
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- Main shut-off valve (23)



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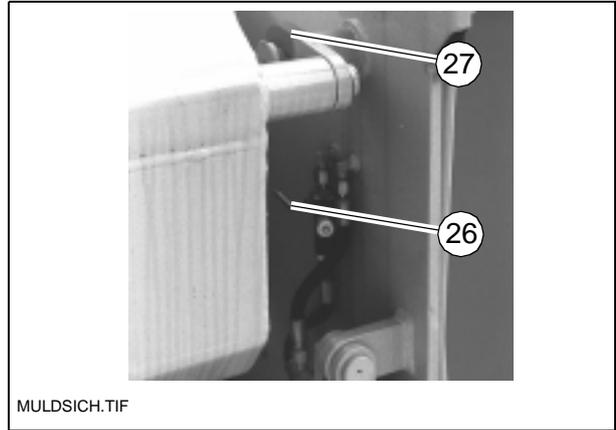
- Indicator lamps (24) on the control box
- On/Off switch in the control box (25).



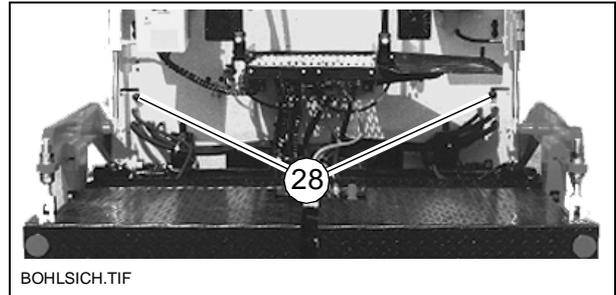
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3.8 Main switch (26)

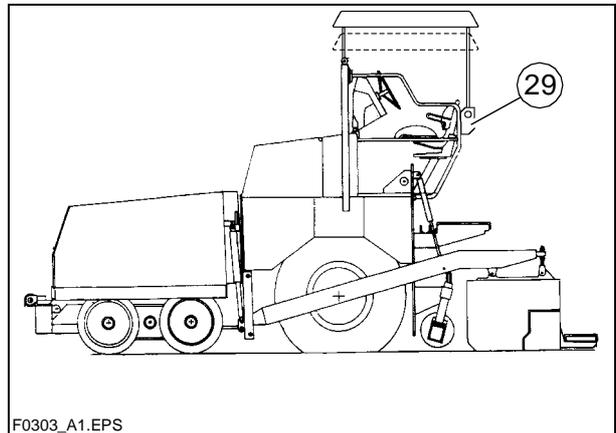
3.9 Hopper transport safeguards (27)



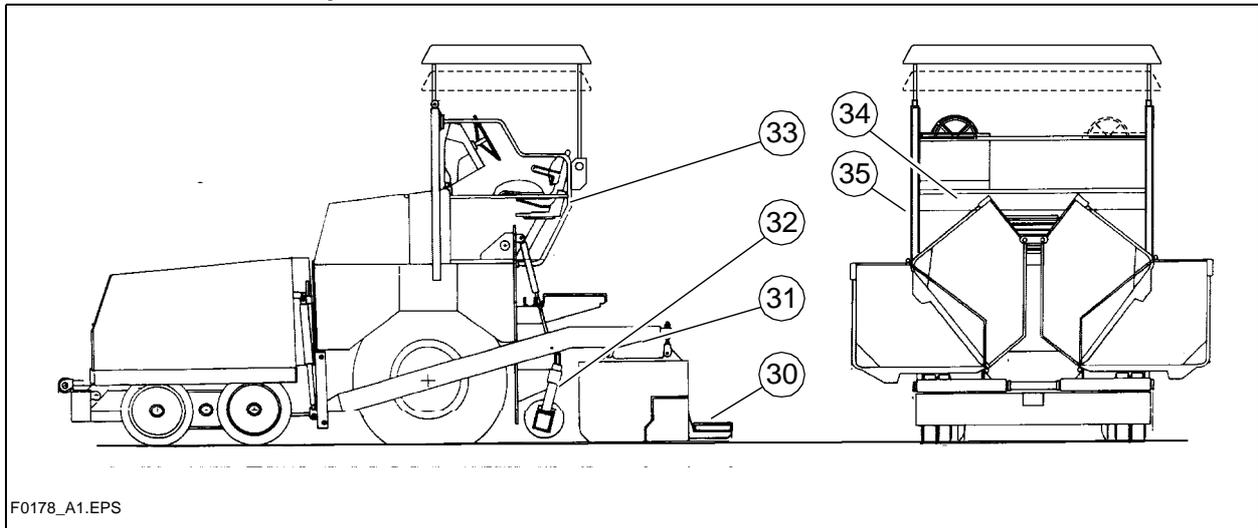
3.10 Screed transport safeguards (28)



3.11 Latch for protective roof (29)



3.12 Additional safety devices



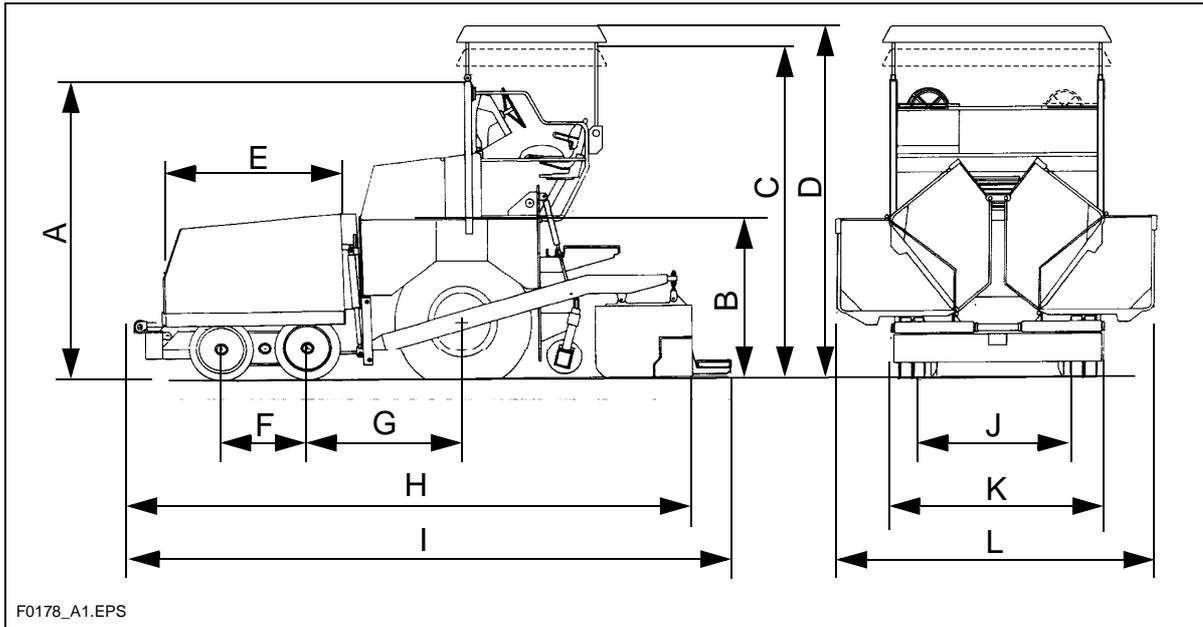
Item	Designation
30	Walkway
31	Screed coverings
32	Auger coverings
33	Screed hazard flasher
34	Engine hoods
35	Lateral covers

3.13 Miscellaneous equipment

- Wheel chocks
- Warning triangle
- First aid box

4 Technical data, standard configuration

4.1 Dimensions



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	Designation	Standard	
A	Min. transportation height without roof	2600	mm
B	Operator's platform height	1520	mm
C	Transportation height with roof swung down	3035	mm
D	Overall height with roof	3335	mm
E	Hopper length	1600	mm
F	Axle spacing, front	775	mm
G	Axle spacing, rear	1400	mm
H	Length without screed walkway with VB 450 T/TV screed (F8W) Length without screed walkway with VB 450 V screed (F7W)	5100	mm
I	Max. length with VB 450 T/TV screed Max. length with VB 450 T/TV screed	5275	mm
J	Track width	1490	mm
K	Overall/transportation width	2000	mm
L	Max. width with open hopper	2940	mm
	Turning radius	ca. 11	m



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

4.2 Weights (F8W)

Designation	F 8 W	F 8-4 W	
Paver finisher without screed	ca. 8.2	ca. 8.5	t
Paver finisher with VB 450 T/TV screed (incl. side shields)	ca. 10.2	ca. 10.5	t
With extensions for max. working width: additionally max.	ca. 0.9		t
With filled hopper: additionally max.	ca. 8.0		t
Permitted overall weight for transportation (w/o load)	ca. 11.0		t
Max. axle load, front	ca. 2.5		t
Max. axle load, rear	ca. 9.0		t



For the weights of the installed screed and the screed attachments, see the operating instructions for the screed in question.

4.3 Weights (F7W)

Designation	F 7W	
Paver finisher without screed	ca. 8.2	t
Paver finisher with VB 450 V screed (incl. side shields)	ca.	t
With extensions for max. working width: additionally max.	ca. 0.9	t
With filled hopper: additionally max.	ca. 8.0	t
Permitted overall weight for transportation (w/o load)	ca. 11.0	t
Max. axle load, front	ca. 2.5	t
Max. axle load, rear	ca. 9.0	t



For the weights of the installed screed and the screed attachments, see the operating instructions for the screed in question.

4.4 Performance data (F 8 W)

Basic width = min. paving width (without cut-off shoes)	2.00	m
Working widths		
- minimum paving width (with cut-off shoe)	1.50	
- continuously adjustable up to (for hydraulically adjustable screeds)	3.75	m
- Maximum paving widths (with attachments)	5.00	
Transport speed	0 - 20	km/h
Working speed	0 - 35	m/min
Paving height	0 - 270	mm
Max. grain size	40	mm
Theoretical paving performance	350	t/h

4.5 Performance data (F 7 W)

Basic width = min. paving width (without cut-off shoes)	2,00	m
Working widths		
- minimum paving width (with cut-off shoe)	1,50	
- continuously adjustable up to (for hydraulically adjustable screeds)	3,50	m
- Maximum paving widths (with attachments)	4,50	
Transport speed	0 - 20	km/h
Working speed	0 - 35	m/min
Paving height	0 - 270	mm
Max. grain size	40	mm
Theoretical paving performance	350	t/h

4.6 Traction drive/chassis

Drive	Hydrostatic drive with pump and motor, continuously adjustable
Transmission	Via two-step switch gear with differential compensation, differential lock and 2 roller chains
Speed	(see above)
Drive wheels	2 x 14.00 R-20 (pneumatic tires) (water filling ○)
Steered wheels	4 x 560 / 200 - 390 (solid rubber tires)
Front wheel drive F 8-4 W (○)	2 wheel hub oil motors, to be switched on as desired, variable performance, anti-slip control (○)
Brakes	Traction drive brake, 2 hydraulic disc brakes, 1 mechanical parking brake

4.7 Engine

Make/type	Deutz BF4M 1012
Model	4-cylinder diesel engine (water-cooled)
Performance	54 kW / 74 PS (at 2300 rpm)
Volume of fuel tank	See chapter F, "Maintenance"

4.8 Hydraulic system

Pressure generation	Hydraulic pumps via distribution gear (directly flanged to the engine)
Pressure distribution	Hydraulic circuits for: <ul style="list-style-type: none"> - Traction drive - Material conveying and distribution - Screed lifting drives for tamper(○) / vibration (○) - Cylinder actuators for steering, hopper, levelling, screed lifting, extending/retracting screed parts, auger lift (○)
Hydraulic oil reservoir - volume	See chapter F, "Maintenance"

4.9 Material compartment (hopper)

Volume	ca. 3.7 m ³ = ca. 8.0 t
Minimum inlet height, center	450 mm
Minimum inlet height, outside	600 mm

4.10 Material conveying

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

4.11 Material distribution

Augers	Left and right auger separately controllable
Drive	Hydrostatic external drive, continuously controllable; auger sections can be switched to opposite directions of rotation, independent from the conveyor
Conveying volume controller	Fully automatic via configurable switching points
Auger height adjustment	<ul style="list-style-type: none"> - mechanically via chain - mechanically (○) - hydraulically (○)
Auger extension	With attachments (see auger extension chart in the operating instructions for the screed)

4.12 Screed lifting device

Special functions	<p>At standstill:</p> <ul style="list-style-type: none"> - Screed stop <p>During paving:</p> <ul style="list-style-type: none"> - Screed charging - Screed relieving (max. pressure 50 bar)
Levelling system	Mechanical grade control, optional systems with and without slope control

4.13 Electrical system

On-board voltage	24 V
Batteries	2 x 12 V, 88 Ah
Fuses	See chapter F, section 5 "Electric fuses"

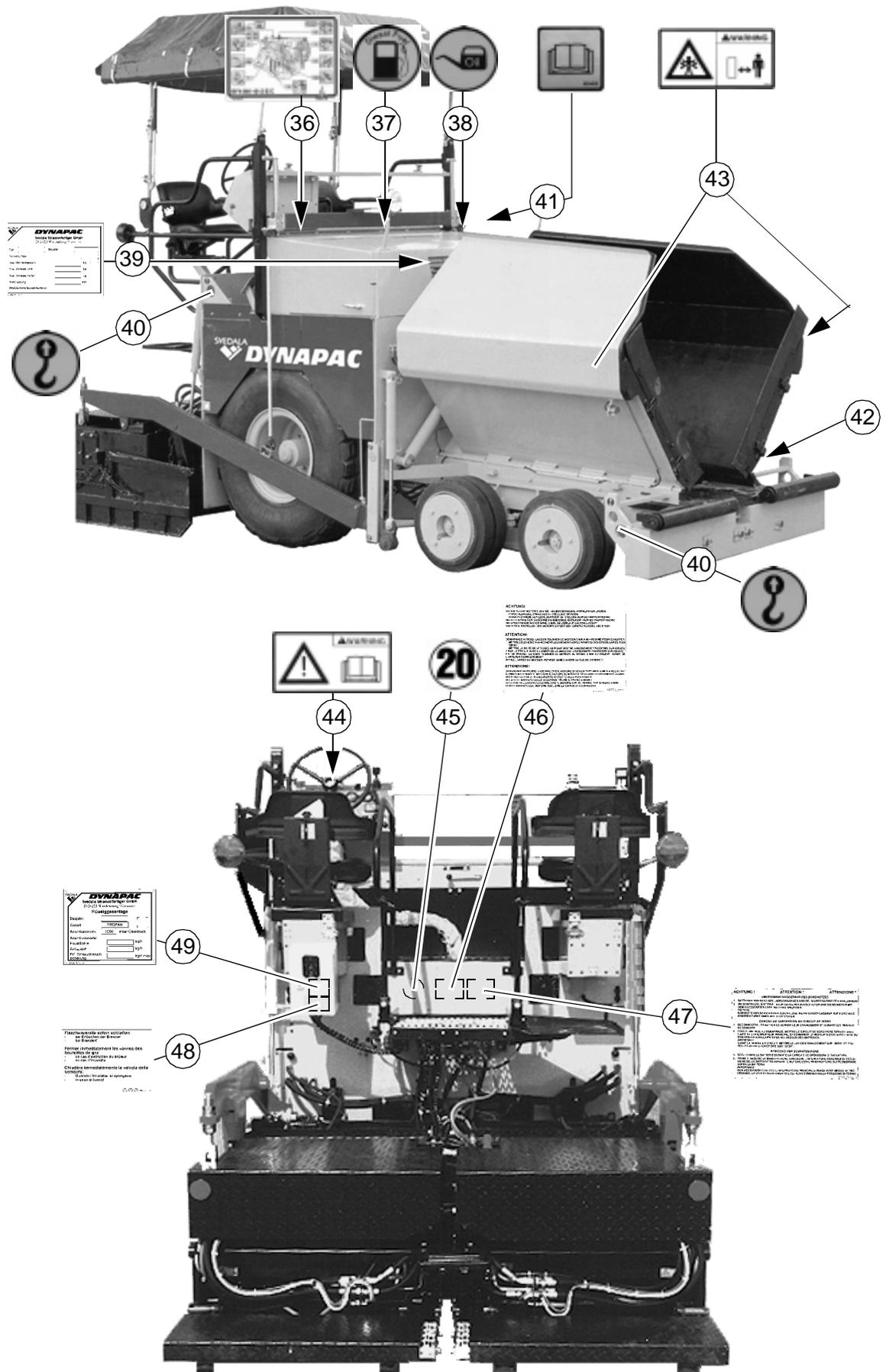
4.14 Gas heating system for the screed

Fuel (liquefied gas)	Propane gas
Gas bottles:	1
Filling volume per bottle	70 l
Gross weight per bottle	33 kg
Operating pressure (behind pressure reducer)	ca. 1.5 bar
Additional data	See operating instructions for the screed



For the filling volumes of lubricating and operating agents, see chapter F, "Maintenance".

5 Location of instruction labels and identification plates



Item	Designation
36	Label "Overview of operating materials for engine" *
37	Label "Filler neck for diesel fuel" *
38	Label "Filler neck for engine oil" *
39	Paver finisher identification label
40	Label "Securing/lashing points for crane transportation" **
41	Label "Operating instructions"
42	Punched vehicle identification No.
43	Warning label "Danger of squeezing!" **
44	Warning label "Heed the operating instructions!" ***
45	Label "Max. permissible speed: 20 km/h" for self-propelled operation
46	Label "Notes on engine operation"
47	Label "Danger! High voltage!"
48	Label "Close valves of bottles immediately"
49	Identification label for liquefied gas system

* Labels are located beneath the engine hood

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

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

5.1 Identification label for the paver finisher (39)

The image shows a rectangular identification label for a Dynapac paver finisher. The label features the Dynapac logo and the company name 'Metso Dynapac GmbH' with the address 'D-26203 Wardenburg · Germany'. Below this, there are several fields for technical specifications, each with a corresponding circled number (50-57) pointing to it. The fields are: 'Typ' (50), 'Baujahr' (51), 'Seriennummer' (52), 'Max. Betriebsgewicht' (53) in kg, 'Max. Achslast vorn' (54) in kg, 'Max. Achslast hinten' (55) in kg, 'Motorleistung' (56) in kW, and 'Produkt Identifikation Nummer' (57). At the bottom left of the label, the text 'D 990 00 03 01' is visible. The file name 'Fertiger2.tif' is printed at the bottom left of the entire image area.

Item	Designation
50	Paver finisher type (e.g. F 8-4 W)
51	Year of manufacture
52	Serial number of the paver finisher series
53	Max. permissible operating weight, incl. all attachments, in kg
54	Max. permissible load on the front axle, in kg
55	Max. permissible load on the rear axle, in kg
56	Rated performance in kW
57	Product identification number (PIN)



The punched vehicle identification number on the paver finisher must match the product identification number (57).

5.2 Identification label for the liquefied gas system (49)

DYNAPAC
Metso Dynapac GmbH
 D-26203 Wardenburg · Germany

Flüssiggasanlage

Baujahr:

Gasart:

Anschlussdruck: mbar Überdruck

Anschlusswerte:

Hauptbohle: kg/h

Anbauteil: kg/h

Erf. Schlauchbruchsicherung: kg/h max

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Item	Designation
58	Year of manufacture
59	Type of gas to be used
60	Rated pressure, in mbar
61	Average gas consumption of the installed screed, in kg/h
62	Average gas consumption of the screed attachments, in kg/h
63	Maximum permissible mass flow of the installed hose rupture protection

6 EN standards

6.1 Continuous sound level



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 ??? dB (A). If no ear protection devices are used, hearing can be impaired.

The noise emission level of the finisher has been measured under free-field conditions according to prEN 500-6, dated March, 1997, and ISO 4872.

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

Sound pressure level at the machine

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

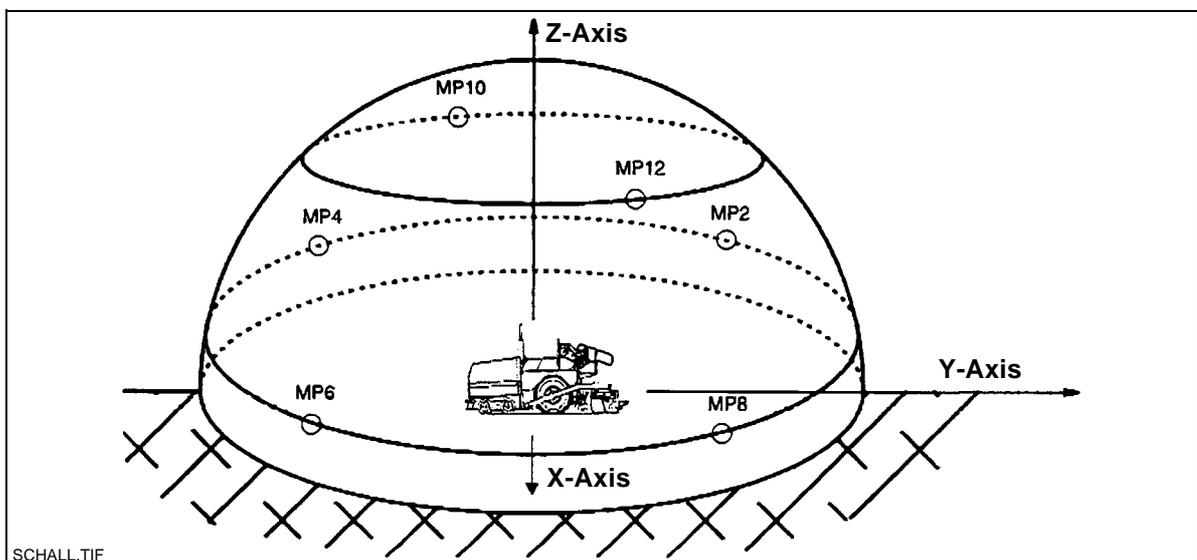
6.2 Operating conditions during measurement

The diesel engine was running at maximum speed. The screed was arrested in the transportation position. Coveyors, augers, tampers and vibration were running at least at 50 % of the maximum speed.

6.3 Measuring point configuration

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

	Measuring points 2, 4, 6, 8			Measuring points 10, 12		
Coordinates	X	Y	Z	X	Y	Z
	$\pm 11,2$	$\pm 11,2$	1,5	- 4,32	+10,4	11,36
				+4,32	-10,4	11,36



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6.4 Vibration acting on the entire body

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

6.5 Vibrations acting on hands and arms

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

6.6 Electromagnetic compatibility (EMC)

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

- interference emission according to DIN EN 50081-1/03.93:
 - < 40 dB $\mu\text{V/m}$ for frequencies of 30 MHz - 230 MHz measured at a distance of 3 m
 - < 47 db $\mu\text{V/m}$ for frequencies of 20 MHz - 1 GHz measured at a distance of 3 m
- interference immunity against electrostatic discharge according to DIN EN 61000-4-2/03.96 (ESD):
 - The paver finisher did not show any discernible reactions to contact discharges of $\pm 4 \text{ KV}$ and to air discharges of $\pm 8 \text{ KV}$.
 - The modifications according to test criterion "A" are being met, i.e. the paver finisher continues to work without malfunction during the test.



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

C Transportation

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 leveling device, auger limit switches, aprons, etc.). When transporting under a special permit, secure these parts!

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

Check that the clamping device for the auger frame is fastened and that the telescopic tube cannot slide out (see chapter E, section 2).

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. Disconnect the gas bottles from the gas system and protect them with their caps. Use a separate vehicle to transport them.

When loading via ramps, the paver finisher may slip aside, tilt or topple over.



Drive carefully! Keep the danger area free of persons!

Additional stipulations for transportation on public roads:



In Germany, wheeled pavers may only be driven over short distances 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 accessories 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.

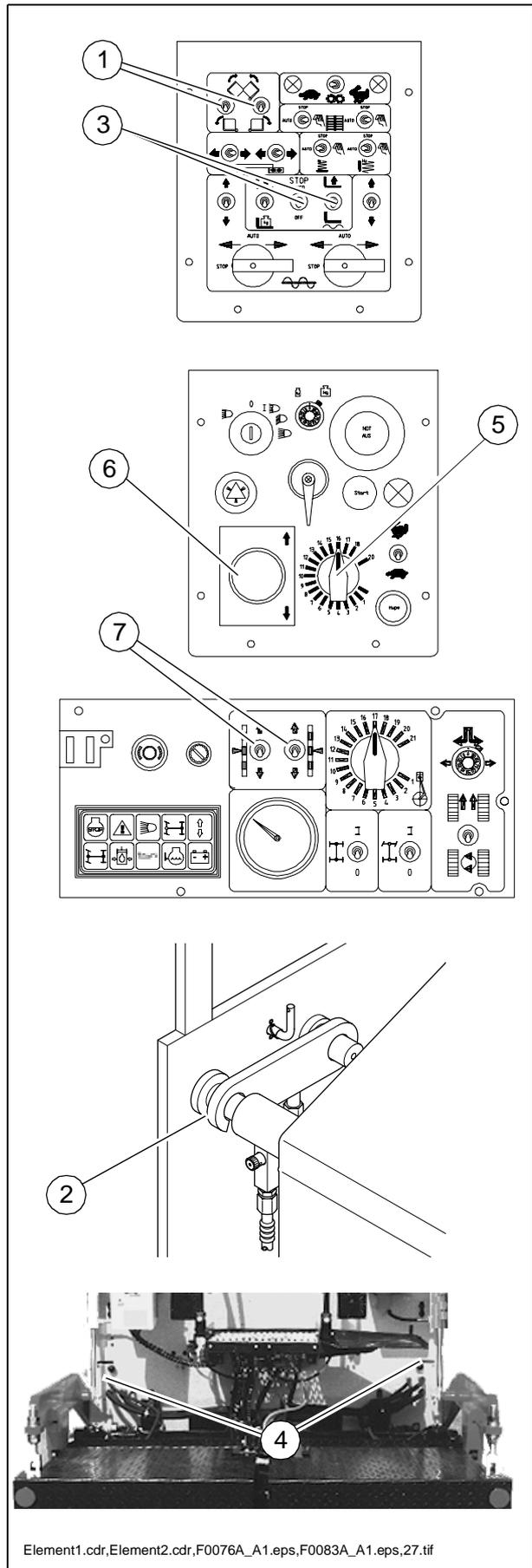
2 Transportation on low-bed trailers



Reduce the paver finisher and the screed to their basic widths; also remove any attached side plates. To prevent damages to the screed, the inclination of the ramp to be used must not exceed 11° (19 %).

2.1 Preparations

- Prepare the paver finisher for operation (see chapter D).
- Use switch (1) to close the hopper lids. Engage both hopper transport safeguards (2).
- Use switch (3) to lift the screed. Engage the screed transport safeguard (4).
- To extend the leveling cylinders:
 - Turn the preselector (5) to "zero". Move the drive lever (6) forward. Push the switches (7) downward until the leveling cylinders are completely extended.
 - Set the drive lever (6) to the center position.
- Retract the screed parts until the screed matches the basic width of the paver finisher.
- Remove all protruding or loose parts from the paver finisher and the screed (see also the "operating instructions for the screed"). Store these parts in a safe place.
- Remove the gas bottles for the screed heating system:
 - Close the main shut-off valve and the bottle valves .
 - Unscrew the valves on the bottles and remove the gas bottles from the paver finisher.
 - Transport the gas bottles on a second vehicle; heed all pertaining safety regulations.

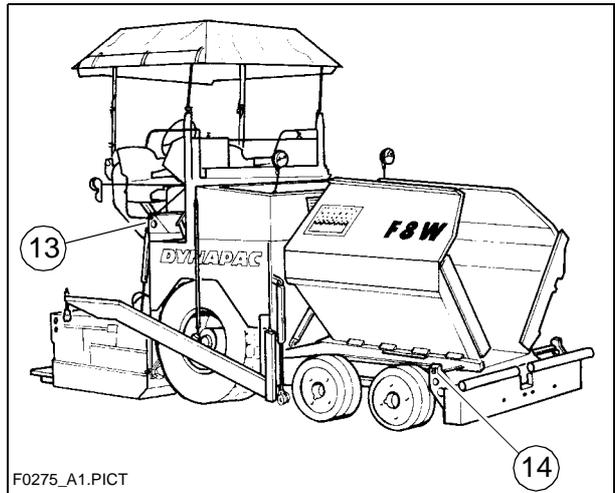
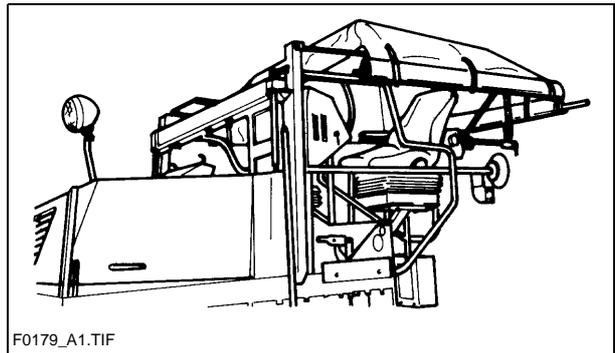
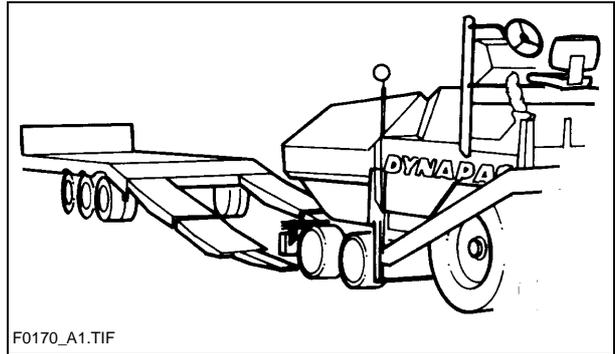


2.2 Driving onto the low-bed trailer



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.
- If necessary, swing down the protective roof:
 - Take out the bolts and pull the roof to the rear by gripping it in the middle. When it is in the lower position, secure it with the bolts.
 - Take the protective roof tarpaulin off when covering longer distances.
- Secure the paver finisher to the low-bed trailer:
 - Use only appropriate, approved attachment devices.
 - Use the four securing points provided (13, 14).
 - Wait until the exhaust extension tube has cooled down; then remove it and store it.



2.3 After transportation

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

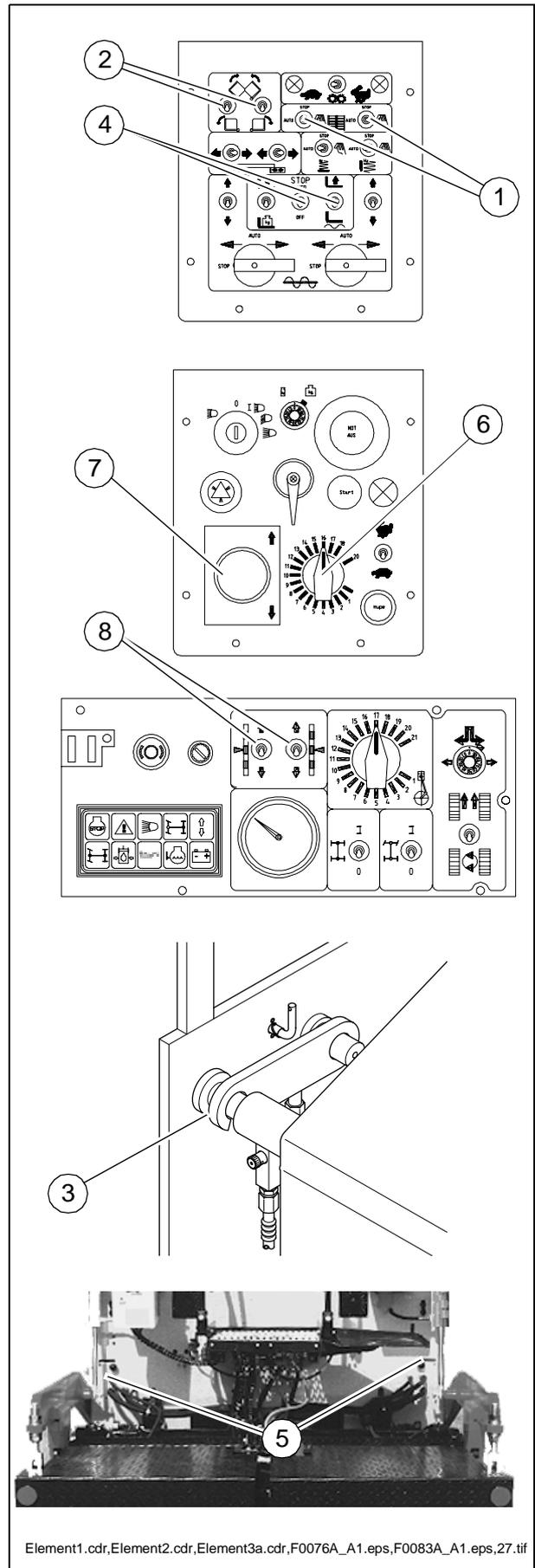
3 Transportation on public roads



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

3.1 Preparations

- Set switch (1) to "Stop" to switch off the conveyor drive.
- Use switch (2) to close the hopper lids. Engage both hopper transport safeguards (3).
- Use switch (4) to lift the screed. Engage the screed transport safeguards (5).
- To extend the leveling cylinders:
 - Turn the preselector (6) to "zero". Swivel the drive lever (7) forward. Push the switches (8) downward until the leveling cylinders are completely extended.
 - Set the drive lever (7) to the center position.
- Retract the screed parts until the screed matches the basic width of the paver finisher.
- Remove all protruding or loose parts from the paver finisher and the screed (see also the "operating instructions for the screed"). Store these parts in a safe place.
- Remove the gas bottles for the screed heating system:
 - Close the main shut-off valve and the bottle valves.
 - Unscrew the valves on the bottles and remove the gas bottles from the paver finisher.
 - Transport the gas bottles on a second vehicle; heed all pertaining safety regulations.



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3.2 Driving on public roads

- Turn the preselector (1) to maximum.
- Use the drive lever (2) to regulate the speed.

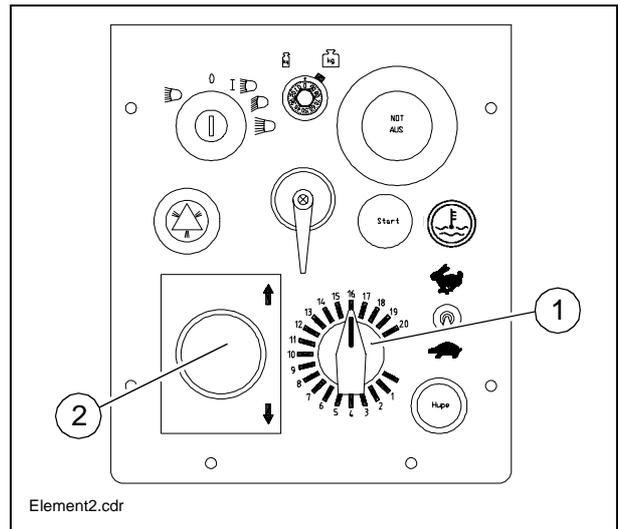


Danger of accidents!

- Do not drive the paver finisher with the differential lock engaged.
- Observe the steering wheel angle in narrow curves. 2.5 – 3 revolutions of the steering wheel are required.
- Press the emergency stop button when a dangerous situation arises!



Pressing the emergency stop button causes the paver finisher to be strongly braked. The engine is switched off and the steering wheel becomes very hard to turn. This can cause accidents!



4 Loading by crane



Use only lifting gear that can bear the load.
(For the weights and dimensions, see chapter B, sections 4.1 and 4.2)

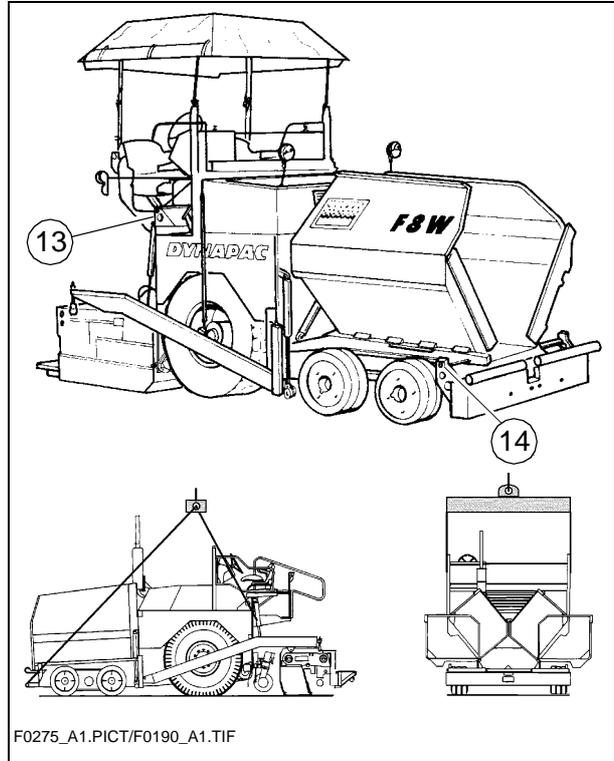


Four lifting eyes (13, 14) are provided for loading the vehicle with a crane.

- Park the paver finisher and render it safe.
- Engage the transport safeguards.
- Remove any attachments and accessories 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 heating system.
- Attach the lifting gear to the four lifting eyes (13, 14).



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



5 Towing



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



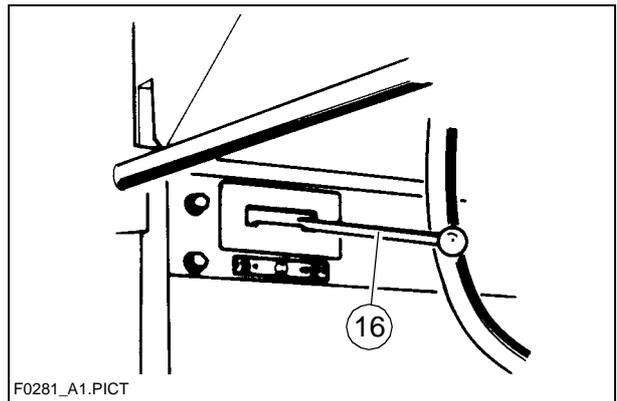
The towing vehicle must be capable of securing the paver finisher, even on slopes. Use only approved tow bars!

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

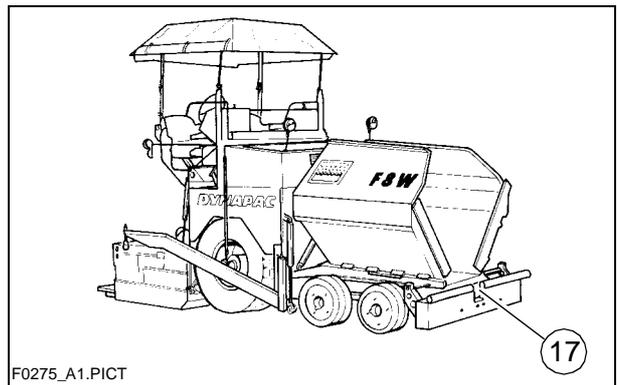


Now carefully and slowly tow the paver finisher out of the construction area.

Use the lever (16) to set the two-gear transmission to neutral ("0").

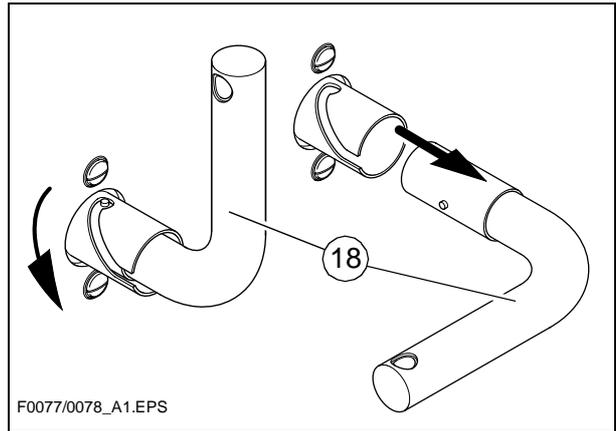


- Attach the tow bar to the coupling (17) located in the bumper.
- Carefully and slowly tow the paver finisher out of the construction site or the danger area (use the shortest possible distance).

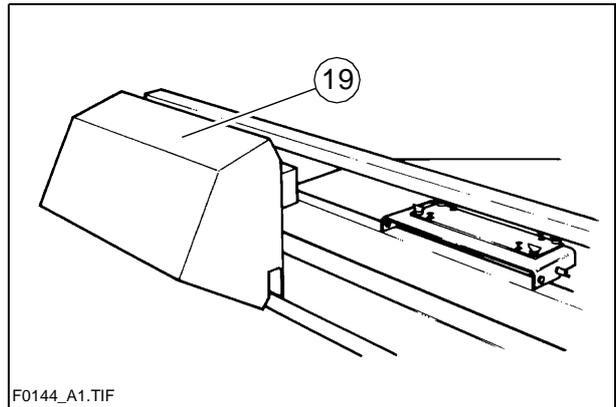


6 Safely parking the vehicle

When the paver finisher is parked at a location accessible to the public, it must be secured in such a way that unauthorized persons or playing children cannot damage the vehicle. Pull off the ignition key and the main switch (18) and take it with you – do not hide them somewhere on the machine.



- Protect the operating panel with the dust cover (19) and lock it.
- Store loose parts and accessories in a safe place.



D Operation

1 Safety regulations



Starting the engine, the traction 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!

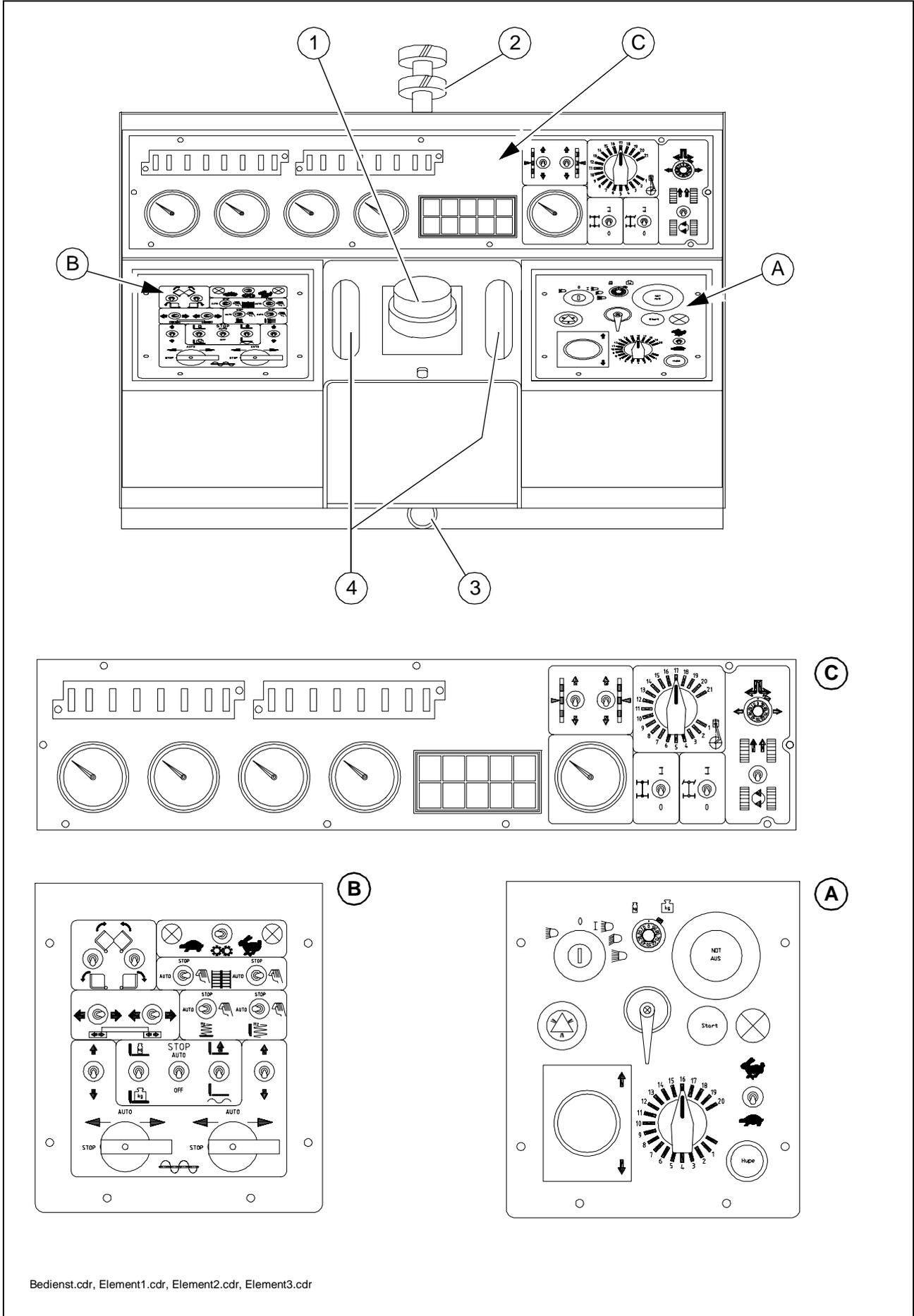
- Always make sure during operation that no-one is endangered by the machine!
- Ensure that all protective covers and hoods are fitted and secured accordingly!
- When damages are detected, eliminate them immediately! Operation must not be continued when the machine is defective!
- Do not let any persons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



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

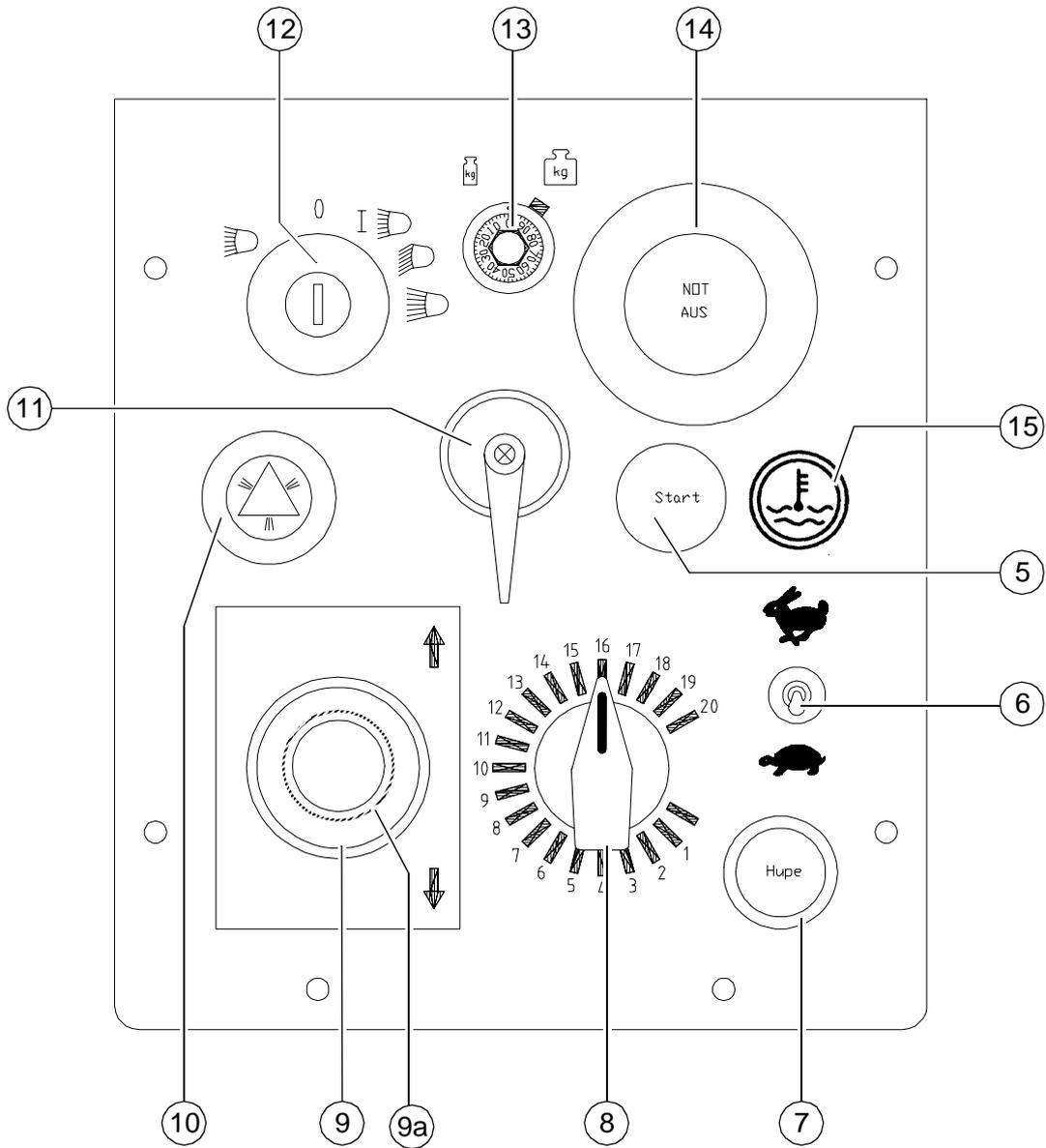
2 Controls

2.1 Operating panel



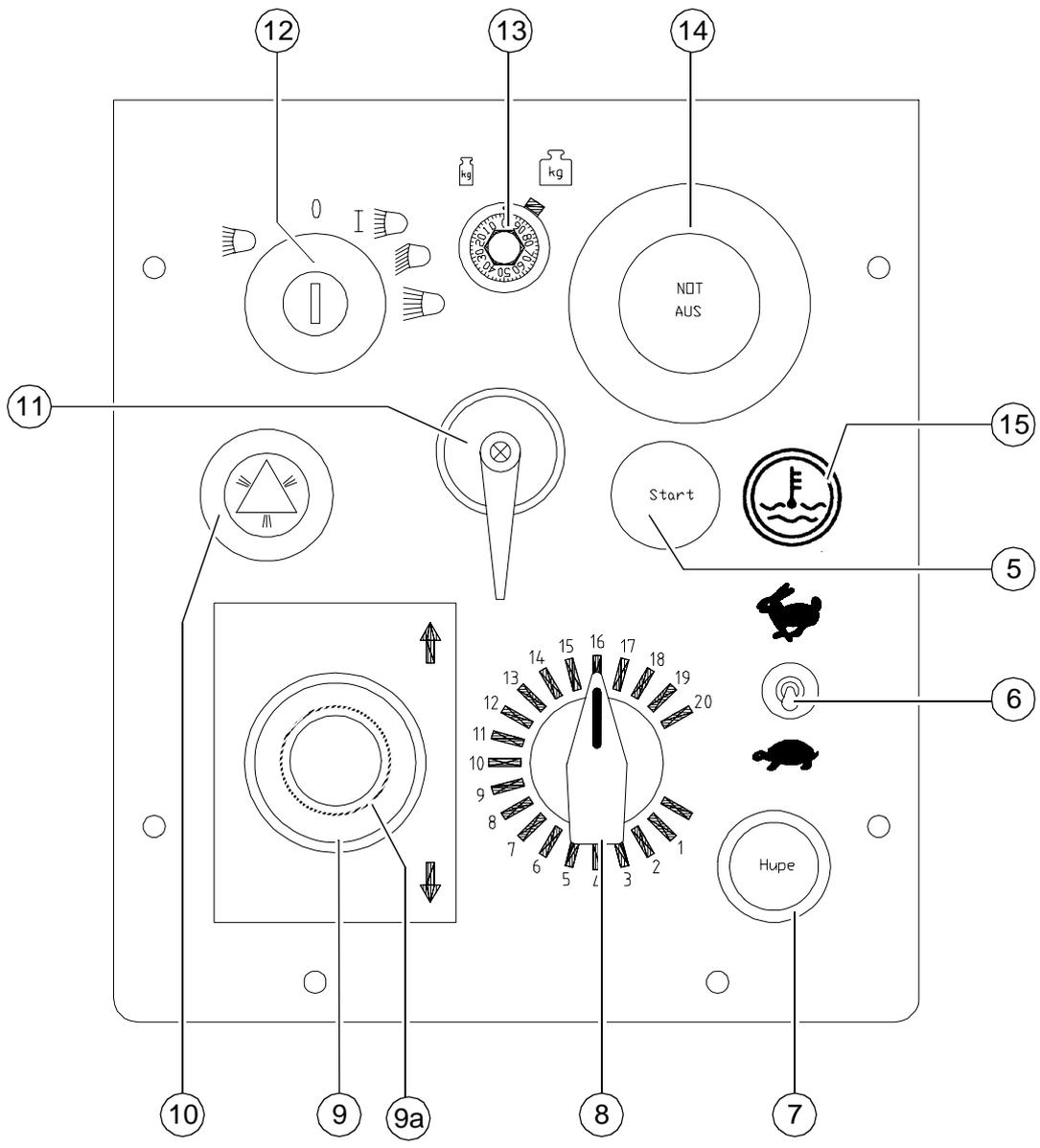
Pos.	Designation	Brief description
1	Steering wheel	<p>The steering wheel movement is transferred hydraulically to the front wheels.</p> <p> Heed the special steering ratio when transporting the machine through narrow curves (ca. 3 turns for a full steering deflection). Danger!</p>
2	Latch for operating panel	<p>For securing the movable operating panel against inadvertent movement.</p> <p>- Turn the knurled screw at the desired location into the designated notch and secure with the knurled nut.</p> <p> When not secured, the operating panel can move. Danger of accidents during transportation!</p>
3	Latch for operating panel	<p>In the case of seats that can be swung out beyond the machine contour (option), the operating panel can also be moved beyond the basic width of the paver finisher. Pull out the latch and move the operating panel; let the latch engage again.</p> <p> An unlatched operating panel can slide out of position. Danger during transportation!</p>
4	Lighting	Lights up instrument panel A/B when the parking light is switched on

A



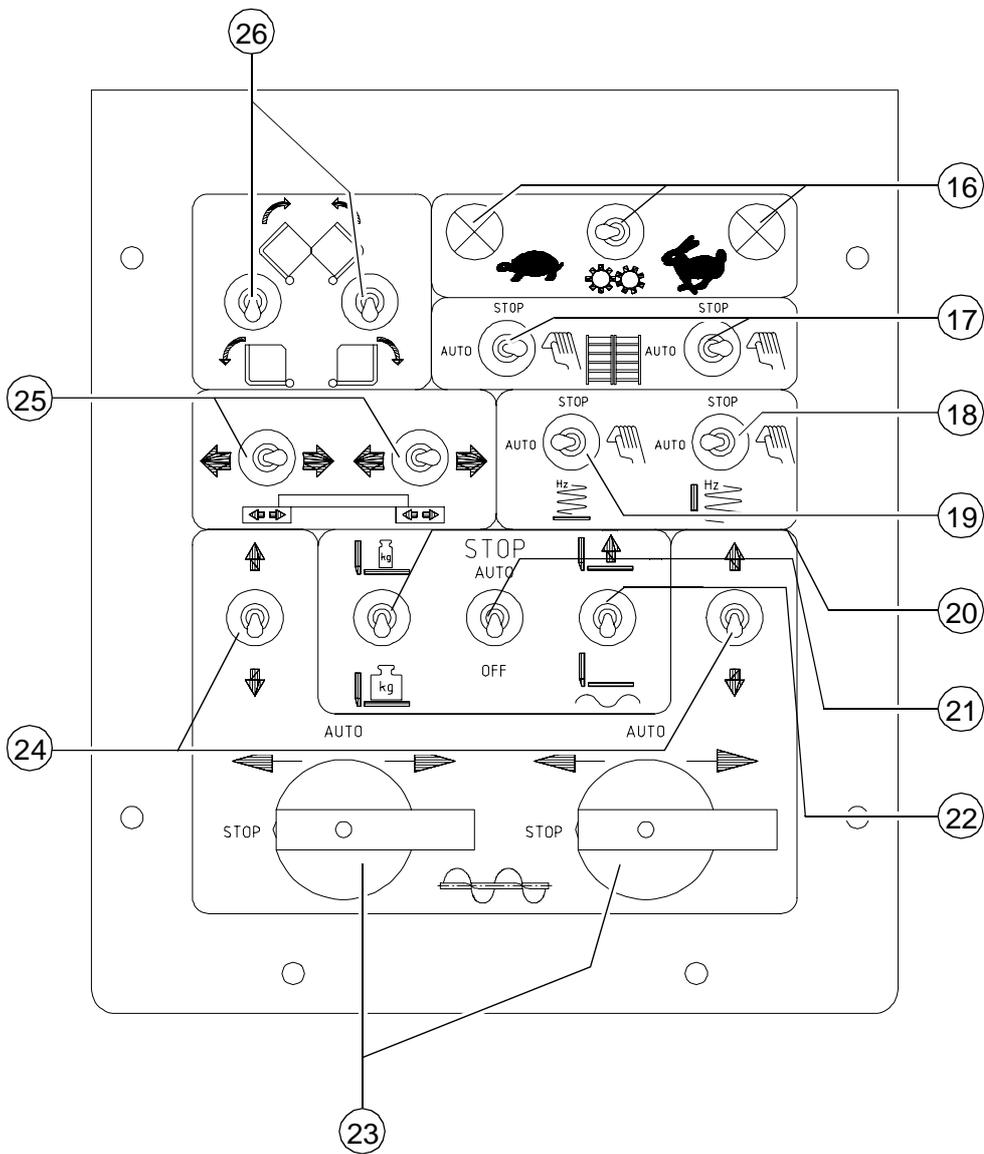
Item	Designation	Brief description
5	Starter	Starting is only possible when the driver lever is in the neutral position. All emergency stop buttons (on the operating panel and the remote controls) must be pulled out.
6	not used	
7	Horn	Press in the case of emergencies and to indicate when the machine starts to move!
8	Preselector, traction drive	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).
9	Drive lever (forward - reverse)	For switching on the paver finisher functions and for continuously regulating the traction speed – forward or reverse. Zero position: starting is possible; engine at idling speed; no traction; protection against inadvertent start. To move the lever, pull up the ring (9 a). Depending on the position of the drive lever, the following functions can be activated: <ul style="list-style-type: none"> - 1st position: Engine to preselected speed (see engine speed adjuster). - 2nd position: Conveyor and auger on. - 3rd position: Screed motion (tamper/vibration) on; traction drive on; increase speed until the stop is reached. Use the preselector to set the maximum speed.
10	Hazard flasher	Switch on as a protective measure on roads.
11	Drive direction indicator	Actuate when changing the drive direction on roads.

A



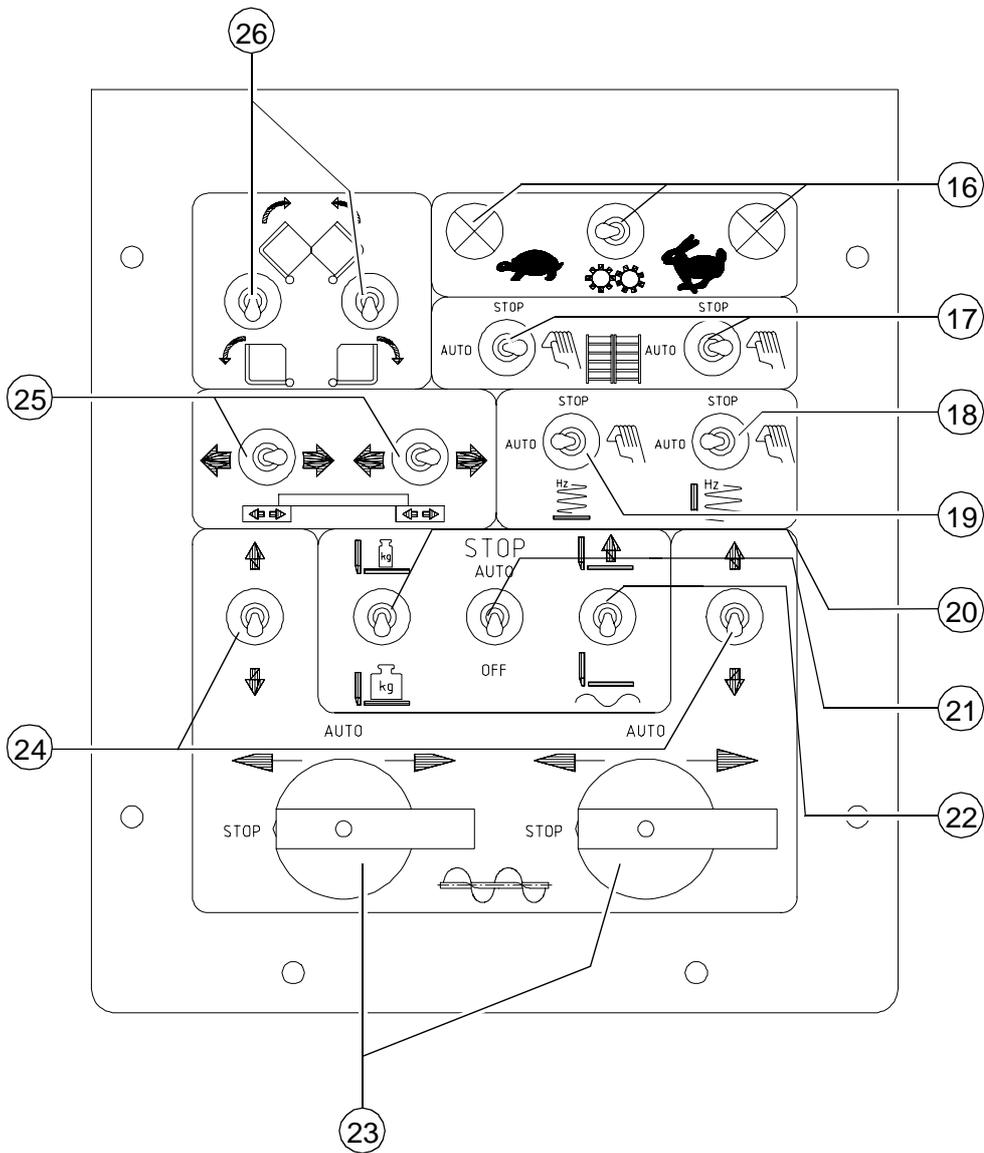
Item	Designation	Brief description
12	Ignition lock and illumination switch	<p>Key inserted: ignition on. Key removed: ignition and engine off. Key positions: 0 Lights off 1 Parking/rear lights, instrument panel illumination, working lights (if applicable) 2 Low beam 3 High beam</p> <p> To overcome the lock between positions 1 and 2, press in the key.</p>
13	Potentiometer for screed charging / relieving (○)	<p>Used to set the pressure for screed charging / relieving:</p> <ul style="list-style-type: none"> - Switch (screed charging / relieving) in position A: Pressure for screed relieving - Switch (screed charging / relieving) in position B: Pressure for screed charging <p>Indicated by manometer</p>
14	Emergency stop button	<p>Press in an emergency (danger to persons, possible collision etc.)!</p> <ul style="list-style-type: none"> - Pressing the emergency stop button switches off the engine, the drives and the steering system. Making way, lifting the screed or other actions are then no longer possible! Danger! - The emergency stop button does not shut off the gas heater system. Close the main shut-off valve and the valves on the bottles by hand! - In the case of electrical malfunctions, the engine must be turned off manually at the leverage of the injection pump. To restart the engine, the button must be pulled out again.
15	Engine temperature indicator (red) (○)	<p>Lights up when the engine temperature is too high.</p> <p> The engine performance will be throttled down automatically (still possible to process the paver finisher). Stop the paver finisher (drive lever to the center position), let the engine cool down while idling. Determine the cause and correct it if necessary (see the section "Malfunctions"). After cooling down to normal temperature, the engine will run with full performance again.</p>

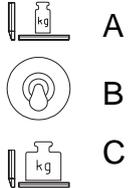
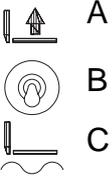
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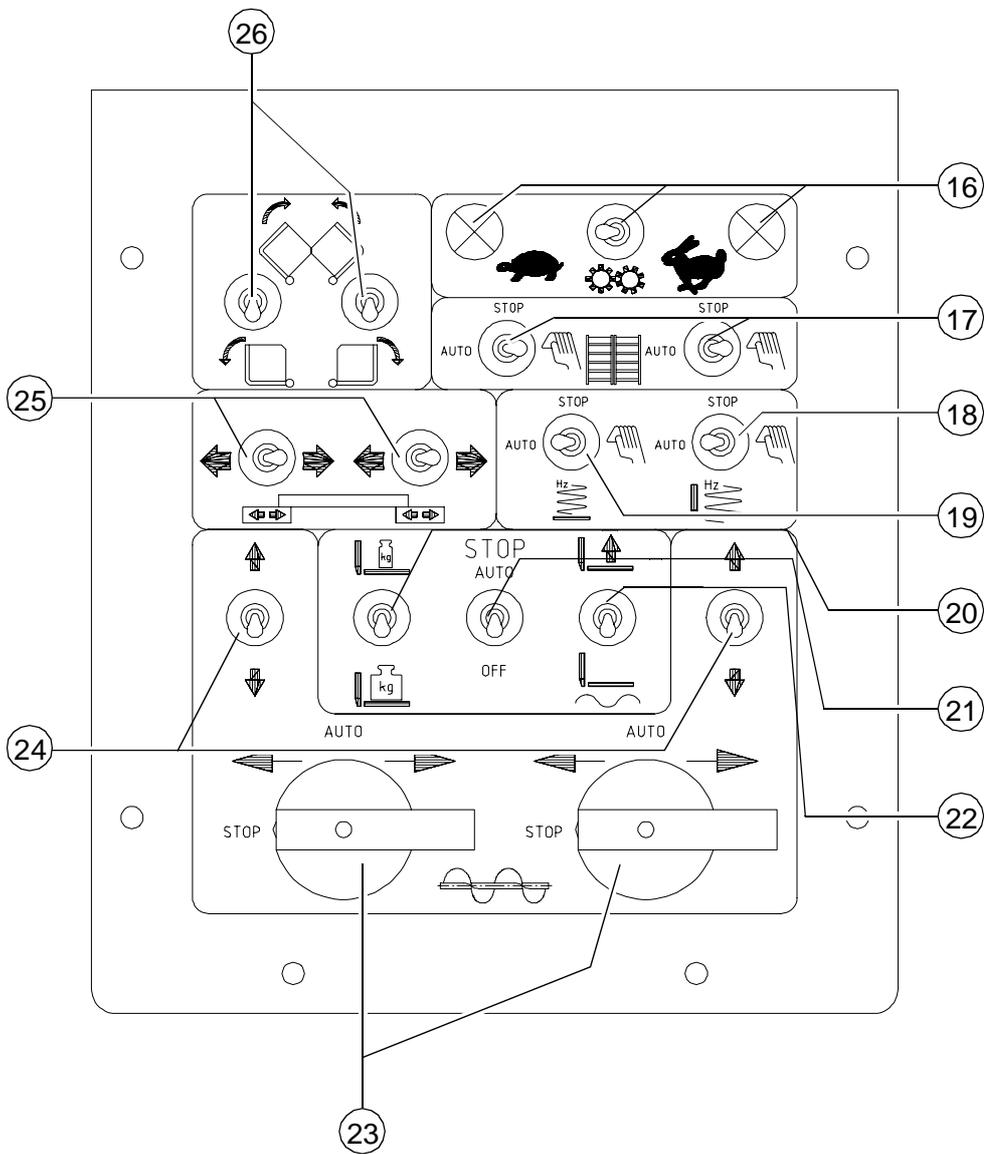
Item	Designation	Brief description
16	Electrical transmission shifting (○)	This shifts the transmission.
17	Conveyor, left/right	<p>auto: switched on with drive lever and continuously controlled by the material limit switch</p> <p>stop: Off</p> <p>manual: permanently switched on (with full feed capacity, without material control)</p> <p>- To automatically operate the conveyor via the remote control (○), both switches must be set to "auto".</p>
18	Tamper (screed-specific)	<p>auto: switched on with drive lever switched off when at a standstill</p> <p>stop: completely switched off</p> <p>manual: permanently switched on</p> <p>As a rule, "auto" is used for paving.</p> <p> When the switch is set to "manual" during paving, it must be set to "stop" when at a standstill. Otherwise, excessive compacting occurs!</p> <p> Speed control (see the section "Speed regulator, tamper").</p>
19	Vibration (screed-specific)	<p>Operation and application: see switch (Tamper).</p> <p>Speed control (see the section "Speed regulator, vibration").</p>

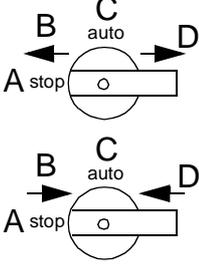
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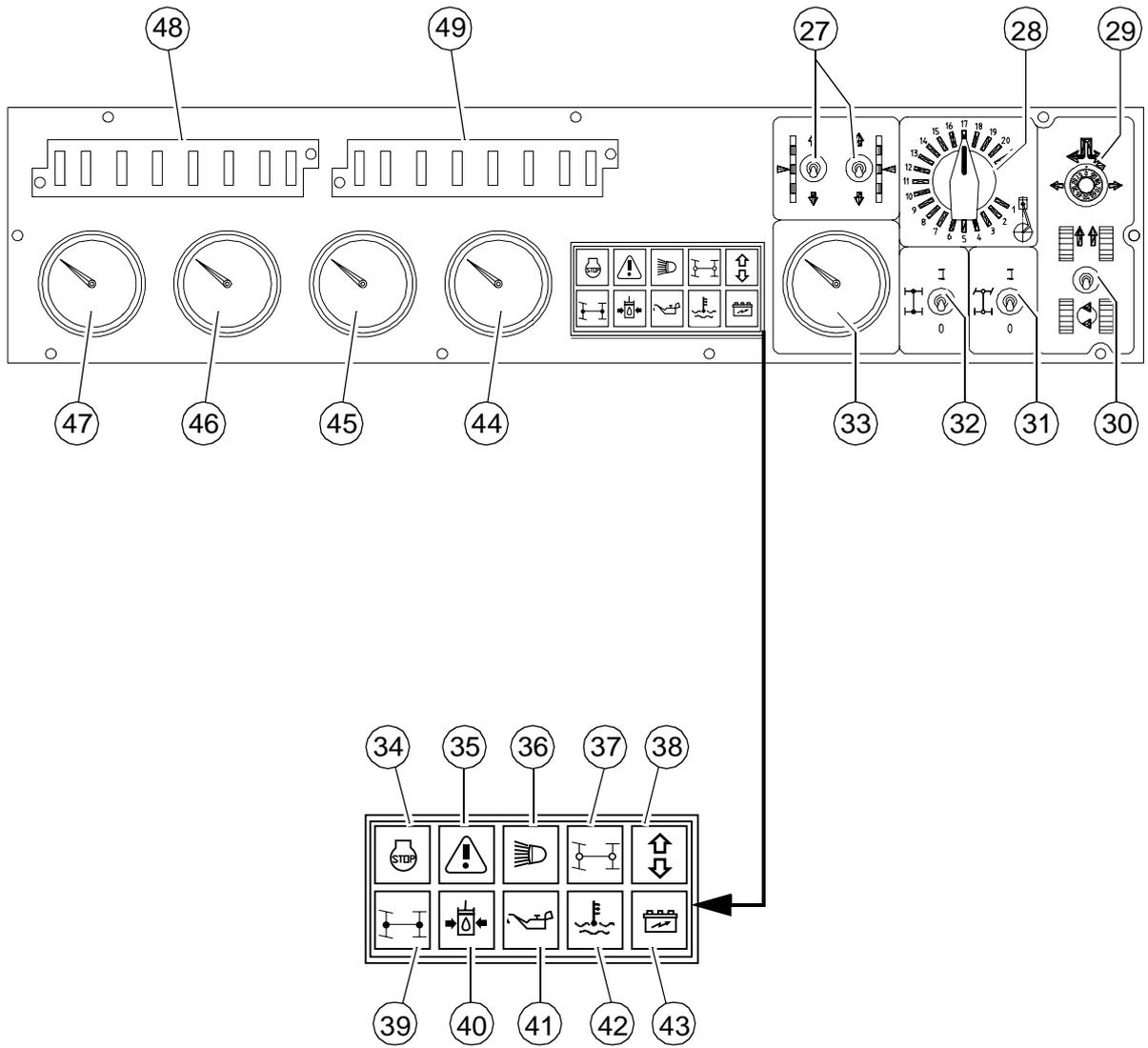
Item	Designation	Brief description
20	<p>Bohlenbe- -entlastung</p>  <p>A B C</p>	<p>For charging/relieving the screed to influence traction and the compacting ratio. A: Relief (screed 'lighter') B: No function C: Charge (screed 'heavier')</p> <ul style="list-style-type: none"> - Pressure regulating valve (82) must be used to set the charging/relieving factor. - For "screed stop with pretensioning", position A must be selected (see switch (21)). <p> Refer to section 3.8 for using the screed charging/relieving device.</p>
21	<p>Bohlenstop</p>  <p>A B C</p>	<p>"Screed stop" is used to lock the screed hydraulics to keep the screed from sinking into the material when the paver finisher is at a standstill (intermediate stop). A: automatic when the drive lever (9) is in the center position - Position C is used for setting up the paver finisher, position A for paving. B: permanently switched on C: switched off</p> <p> Position B is not sufficient for securing the screed during transportation or servicing! Insert the mechanical screed transport safeguard (90)!</p> <ul style="list-style-type: none"> - Using the screed charging/relieving device (20), a "screed stop with pretensioning" can be set. <p> Refer to section 3.8 for using the screed stop.</p>
22	<p>Bohlenstellung</p>  <p>A B C</p>	<p>A: Lift screed B: Hold screed (position for inserting the screed transport safeguard (90)) C: Lower screed and assume the "floating position"</p> <p> During paving, the screed must always be in the floating position. This also applies to intermediate stops and truck changes when the automatic screed stop (21) is used.</p>

B



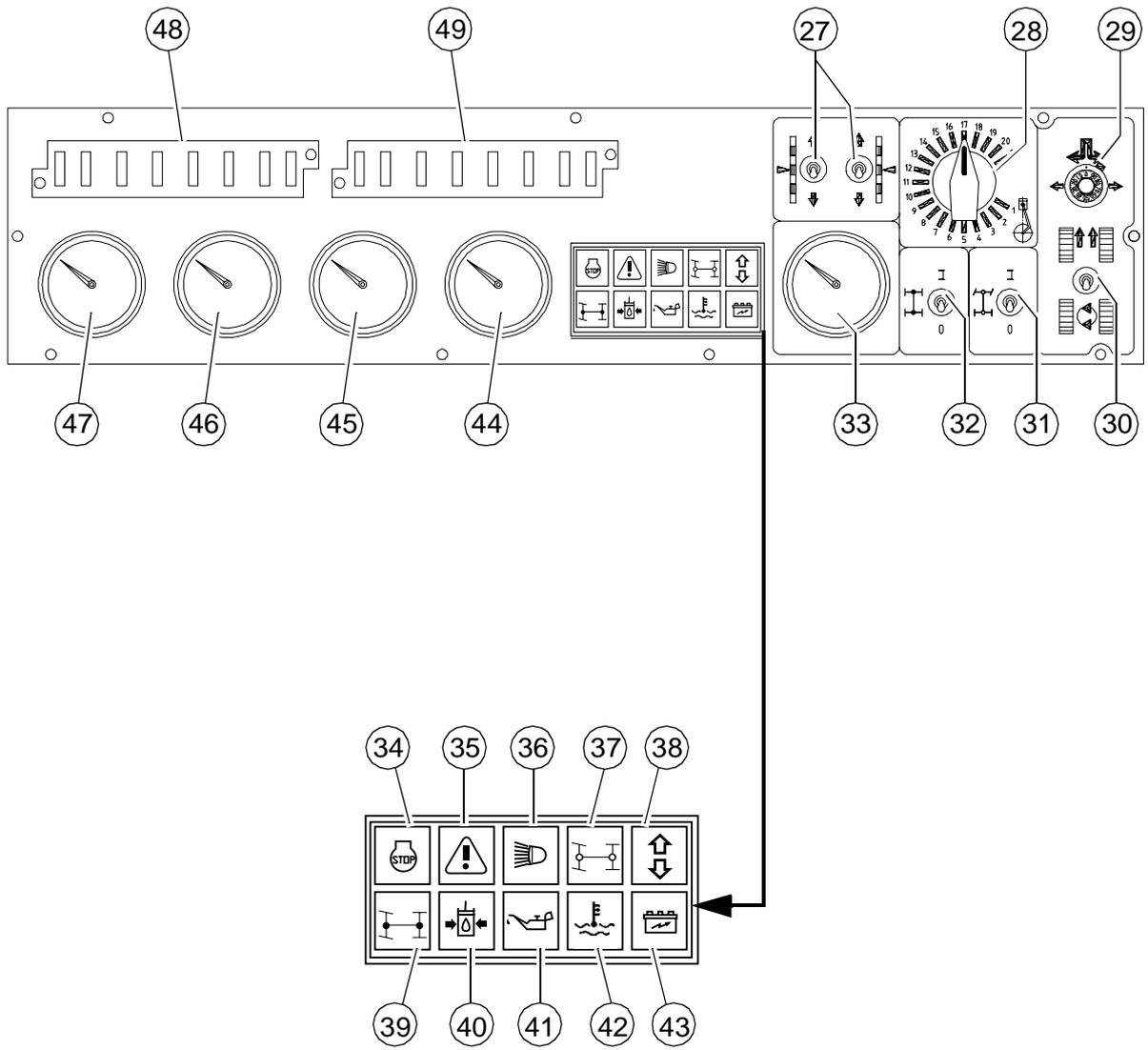
Item	Designation	Brief description
23	Auger left/right 	<p>A stop: Off B manual: feeding outwards C auto: switched on with driver lever and Material limit switch on the auger continuously controlled D manual: feeding inwards</p> <p> In positions (B) and (D), the auger half is running permanently (with full feed capacity, without automatic material control).</p> <p>To automatically operate the auger via the mechanical limit switch or the ultrasonic sensor (○), both switches must be set to "auto".</p>
24	Adjustment of the auger beam left/right (○)	<p>For changing the height of the auger in the case of a hydraulically adjustable auger frame.</p> <ul style="list-style-type: none"> - The height can be read on the scales to the left and the right of the auger frame support. <p>Rule of thumb: paving thickness plus 5 cm (2 inches) equals the auger frame height.</p> <p> Actuate both switches at the same time as otherwise the auger frame is jammed!</p>
25	Extend/retract screed parts (○)	<p>In the case of variable screeds, the extendable parts can be hydraulically extended/retracted with this switch.</p> <p> In EU countries, this is only allowed with switch on the remote control.</p>
26	Open/close hopper	<p>Top: Close hopper halves Center: No function Bottom: Open hopper halves</p> <p>Separate actuation (○): Is required when paving in spaces where there is only limited space at one side or when obstacles obstruct unloading of the truck.</p>

C



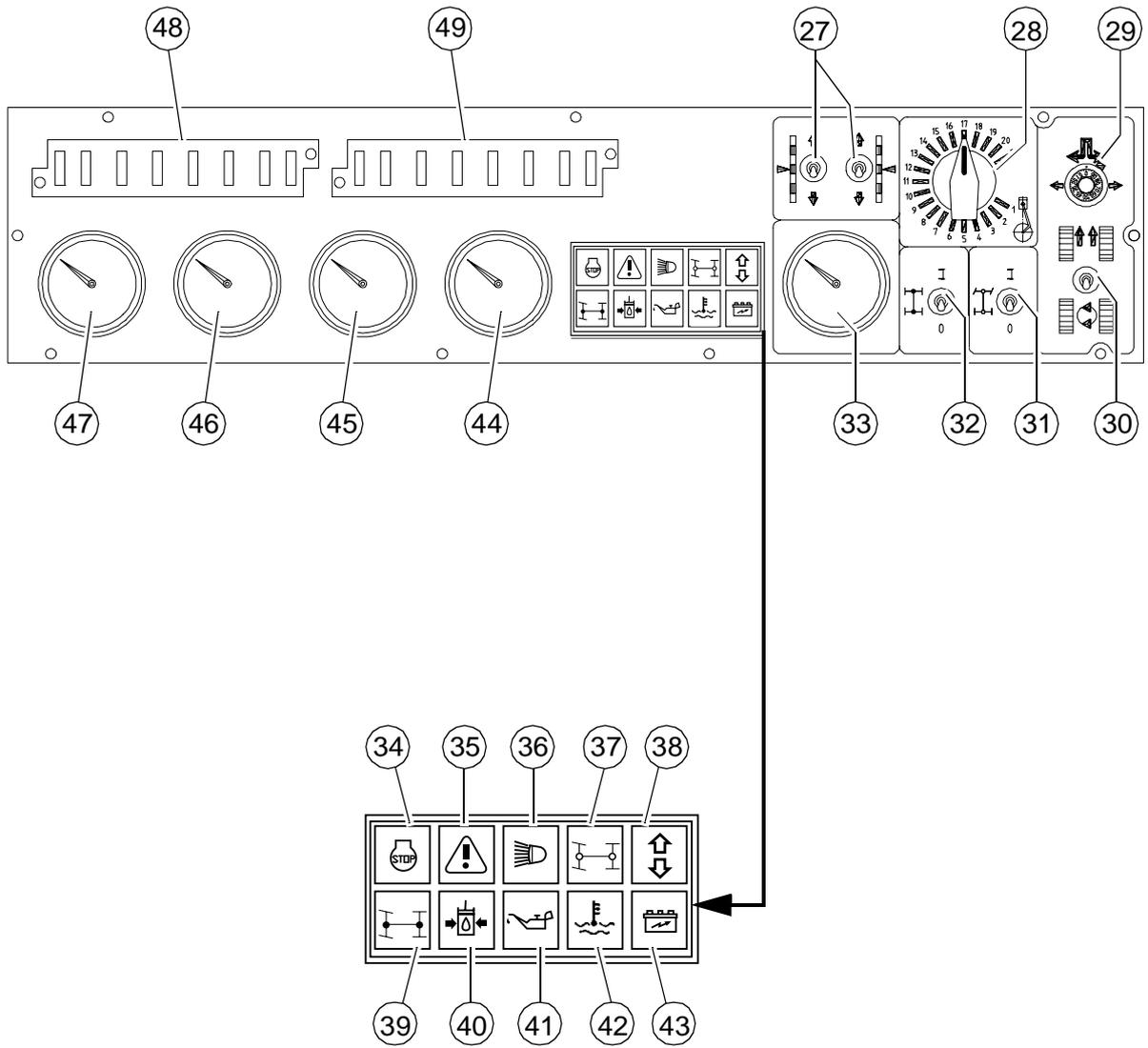
Item	Designation	Brief description
27	Leveling cylinder left/right	For manually actuating the leveling cylinders when automatic leveling is switched off. Switch on the remote control must be set to "manual."
28	Engine speed adjuster (○)	For continuous adjustment of the engine speed (when drive lever is at the stop). Min. position: idling speed Max. position: rated speed  For paving, select the rated speed; reduce the speed for transportation.  The automatic speed control keeps the set speed constant even under a load.
29	not used	
30	not used	
31	Front wheel drive On/Off (○)	When in the upper position, the additional front wheel drive is switched on.  Use the front wheel drive only during paving, never during transportation. Increased wear!  Refer to the valve and the manometer for setting the operating pressure.

C



Item	Designation	Brief description
32	Electrical differential lock (○)	<p>For switching the differential lock on and off.</p> <ul style="list-style-type: none"> - Switching on: switch down; indicator lamp (differential lock) lights up when the lock engages. - Switching off: switch up; drive until the indicator lamp goes out. <p>Important: For application and possible dangers, refer to indicator lamp (differential lock).</p>
33	Temperature indicator for hydraulic oil	<p>Normal display up to 85 °C = 185 °F.</p> <p> Stop the paver finisher when higher temperatures are encountered (drive lever to the center position), let the engine cool down while idling. Determine the cause and correct it if necessary.</p>
34	Engine stop	<p>Lights up when the engine cannot be started (e.g. because the emergency stop button has been pressed).</p> <p> In this case, see the section "Malfunctions".</p>
35	Error message (○)	Is lit when an error has occurred in the electronics.
36	High beam indicator (blue)	<p>Lights up when the high beam is switched on (on the ignition key).</p> <p> Avoid blinding the oncoming traffic!</p>
37	Front-wheel drive (○)	Is lit when the front wheel drive is activated.
38	Traction indicator (yellow)	<p>Lights up when the drive lever in the drive position.</p> <ul style="list-style-type: none"> - The engine cannot be started.
39	Indicator lamp differential lock	<p>Lights up when the differential lock is switched on.</p> <p> Use the differential lock in the case of traction problems (loose ground). It can be switched on and off during driving.</p> <p> Do not negotiate any curves with the differential lock switched on and the screed lifted out. The differential could be damaged.</p> <p> Do not use the differential lock during transportation. Danger due to restricted maneuverability!</p>

C

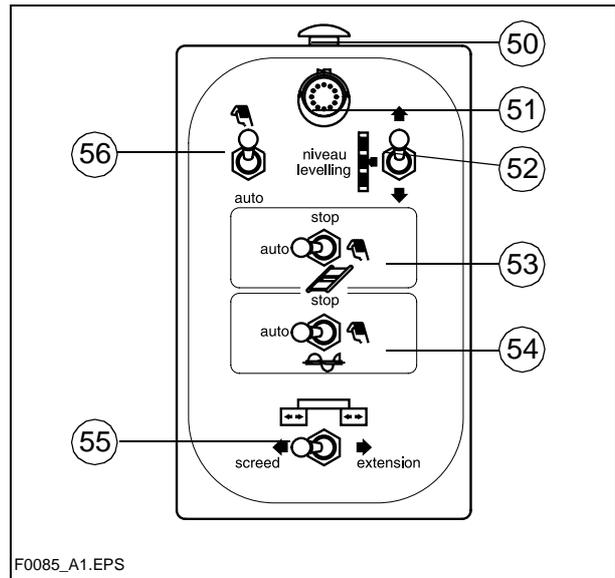


Pos.	Designation	Brief description
40	Oil pressure indicator for the hydraulic traction drive (red)	<p>Must go out right after the engine has been started. Observe warm running. The hydraulic oil is possibly too cold and stiff.</p> <p> Do not switch on the traction drive when the lamp does not go out (see the section "Malfunctions").</p> <p> The lamp goes out when the pressure drops below 2.8 bar = 40 psi.</p>
41	Oil pressure indicator lamp for the diesel engine (green)	<p>Must go out right after the engine has been started.</p> <p> Switch the engine off immediately if the lamp does not go out (see the section "Malfunctions") For further possible malfunctions, see the operating instructions for the engine.</p>
42	Engine temperature indicator (red)	<p>Lights up when the engine temperature is too high.</p> <p> The engine performance will be throttled down automatically (still possible to process the paver finisher). Stop the paver finisher (drive lever to the center position), let the engine cool down while idling. Determine the cause and correct it if necessary (see the section "Malfunctions").</p> <p>After cooling down to normal temperature, the engine will run with full performance again.</p>
43	Battery charge indicator (red)	<p>Must go out after starting when the engine revs up.</p> <p>- Switch off the engine.</p>
44	Operating hours counter	<p>Operating hours are only recorded while the engine is running.</p> <p>Heed the maintenance intervals (see chapter F).</p>
45	Fuel gauge	<p>Always heed the fuel gauge.</p> <p> Do not completely empty the diesel tank! Otherwise, the entire fuel system must be ventilated.</p>
46	Engine	<p>Green area: normal temperature.</p> <p> Stop the paver finisher (drive lever to the center position) when the needle is near or in the red area and let the engine cool down while idling. Determine the cause and correct it if necessary (see the section "Malfunctions").</p>
47	rpm meter (○)	<p>Indicates the engine speed in rpm.</p> <p> Use the engine speed adjuster to change the engine speed.</p>
48	Fuse box I	<p> For the fuse assignment, see chapter F.</p>
49	Fuse box II	<p> For the fuse assignment, see chapter F.</p>

2.2 Remote control ●

Two remote control units – to the left and to the right of the screed – allow the functions of the respective side of the paver finisher to be controlled.

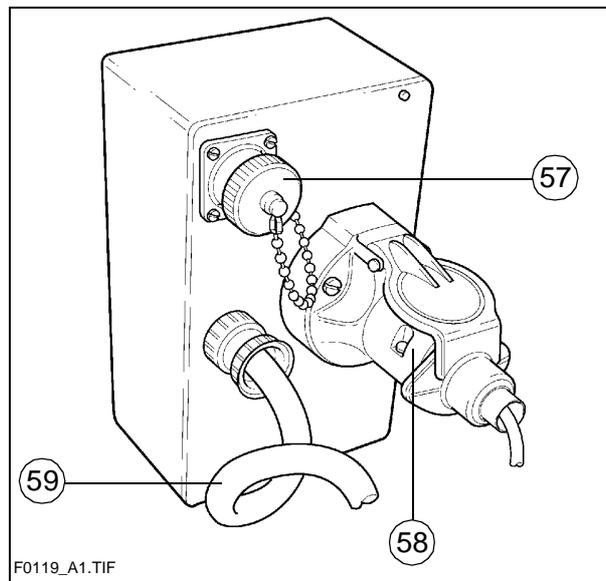
- The housing is fixed to the side panel of the screed.



Operating elements

Item	Designation	Brief description
50	Emergency stop button (○)	Function and application as with the emergency stop button (14) on the operating panel. Important for dangerous situations when the driver's "sight" is restricted.
51	Horn (○)	Function as for push-button (7) on the operating panel.
52	Leveling cylinder	Function and application as for switch (27) on the operating panel. - Switch (56) must be set to "manual".
53	Conveyor (○)	Function and application as for switch (17) on the operating panel. - The switches must be set to "auto".
54	Auger	Function and application as for switch (23) on the operating panel. - The switches must be set to "auto".
55	Extend/retract screed parts	Used to hydraulically extend or retract the extendable parts of the variable screed.
56	Automatic leveling system	manual: Height adjustment possible with switch (52) (or switch (27) on the operating panel) auto: Automatic height adjustment by means of the grade control unit

Rear



Item	Designation	Brief description
57	Socket for automatic leveling unit	Connect the cable for the grade control unit here.
58	Socket for auger limit switch	Connect the cable for the material limit switch here.
59	Cable for the remote control	Connect the plug to the screed (see operating instructions for the screed).

2.3 Operating elements on the paver finisher

Engine speed adjuster (64)

Use this adjuster to set the desired engine speed.

Coarse adjustment:

- Press button **A** and pull out or push in the engine speed adjuster.

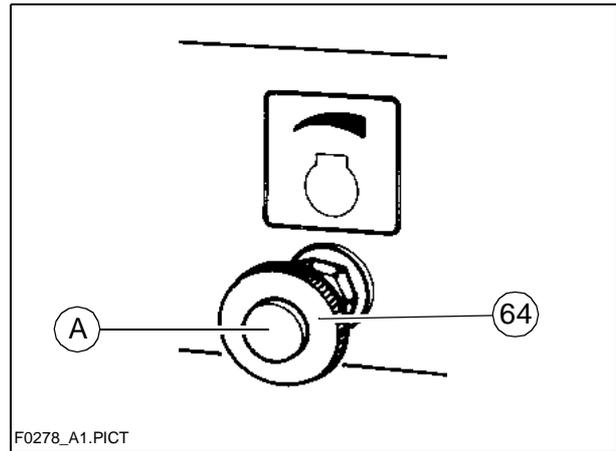
Fine adjustment:

- Turn the engine speed adjuster.

Under normal circumstances, the speed should be set to maximum during paving and should be reduced for transportation!



The automatic speed control keeps the set speed constant even under a load.

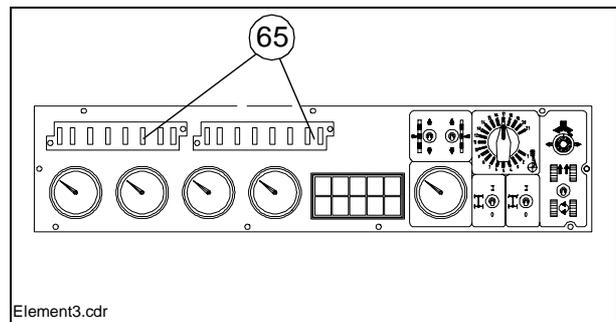


Fuse box (65)

Two fuse strips containing blade-type fuses are located laterally on the operating panel.



For the fuse assignment, see chapter F.



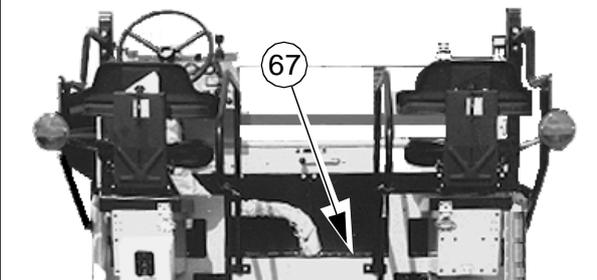
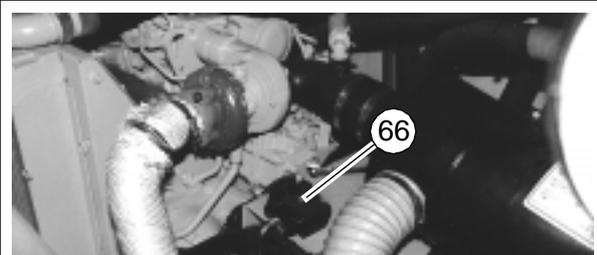
Main fuses (66, 67)

On the left-hand side below the engine hood, there is a fuse box (66) containing two high-current fuses.

There is another fuse box (67) beneath the right-hand bottom flap of the driver's platform.



For the assignment of the main fuses, see chapter F.



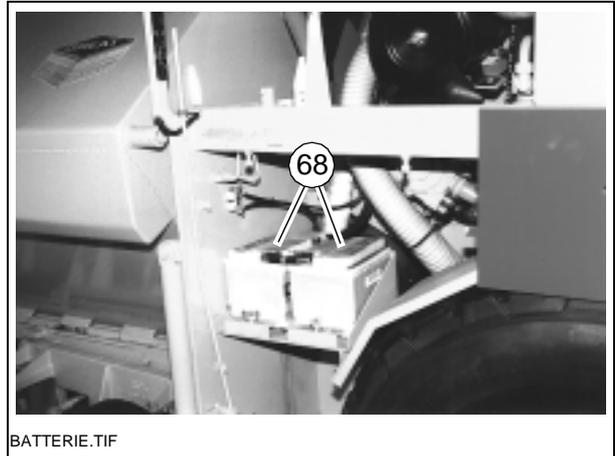
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Batteries (68)

The batteries of the 24 V system are located beneath the covering on the left-hand side.



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



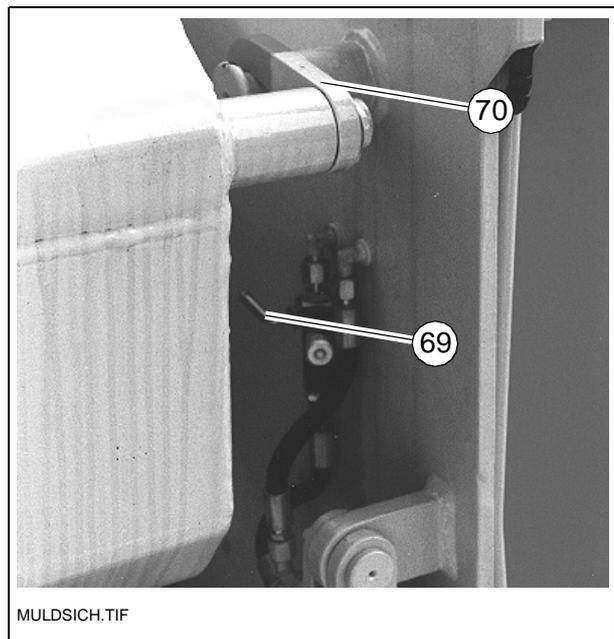
Battery main switch (69)

The main switch interrupting the circuit between the battery and the main fuse (66) is located on the right-hand side – between the front wall and the hopper.

- For switching off, turn the key pin (69) 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!



Transport safeguards for the hopper (70)

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



Do not enter the hopper while the engine is running! Danger of being caught by the conveyor!

Without transport safeguards inserted, the hopper halves will slowly open; danger during transportation!

Mechanical adjuster for the conveyor limit switches (depending on the configuration) (73)

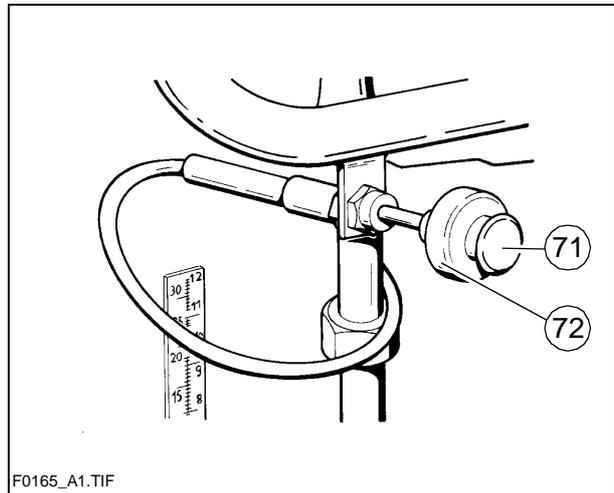
Used to define the switching point of the material limit switches (74) in the tunnel (see below), thus defining the conveyor performance.

Coarse adjustment:

- Push in button (71) and pull out or push in the bowden cable.

Fine adjustment:

- Turn button (72).

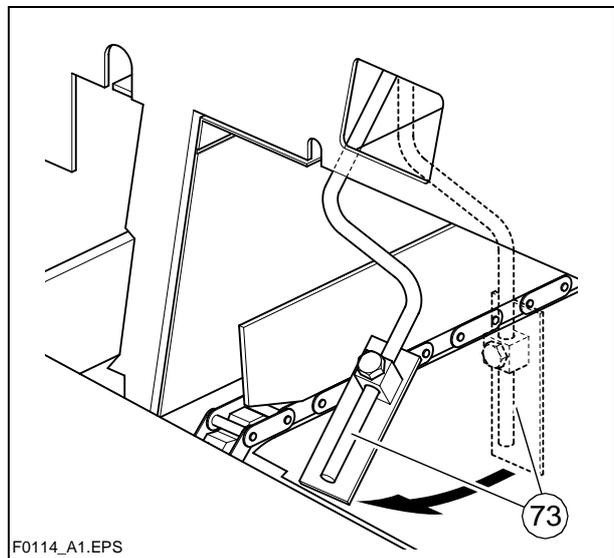


Adjustment of the limit switches:

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).



Auger limit switches (left and right)



The limit switch controls the material flow at the respective auger half.

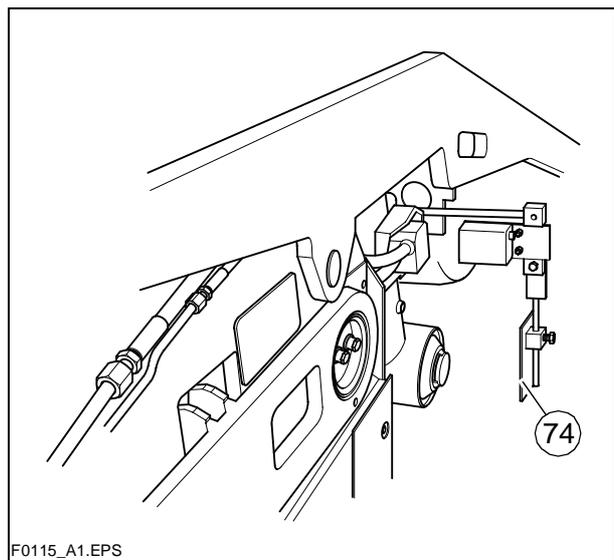
Electrical limit switch (74)

The electrical limit switch can be mounted to the auger support tube or to the side plate.

The cables must be connected to socket (78) or the remote control units located at the sides of the screed (socket (62)).



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



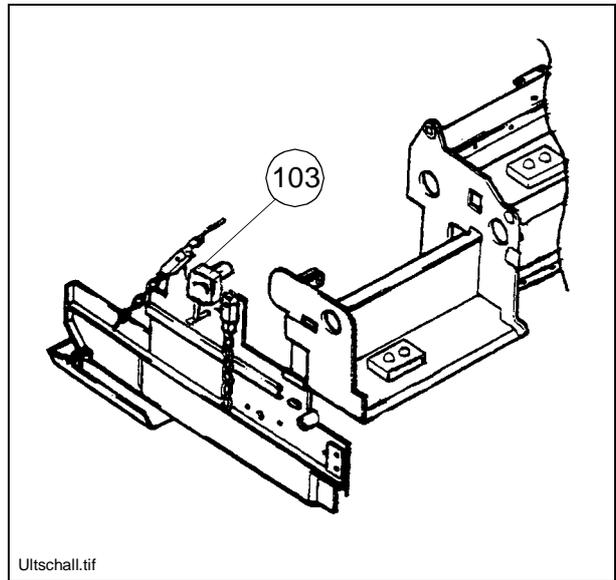
Ultrasonic limit switch (103)

The ultrasonic sensor is mounted by means of an appropriate leverage to the side plate.

The cables must be connected to socket (78) or the remote control units located at the sides of the screed (socket (62)).



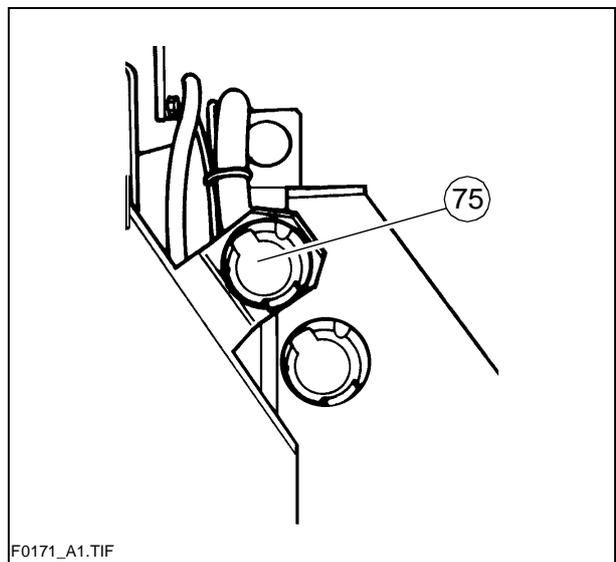
We recommend to adjust the limit switch positions while the material is distributed.



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Sockets for the large remote control units (left and right) (75)

Connect the cable of each large remote control unit to socket (75).



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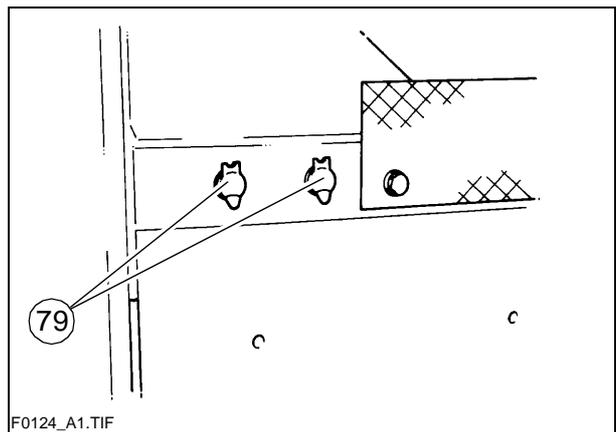
Sockets for working lights (left and right) (79)

Connect the working lights (24 V) here.

- Power is present when the main switch (69) is switched on.



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



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Speed control for the tamper (screed-specific) (80)

Used to set the desired speed (frequency) of the screed movement.

Adjustment range:
3 turns=30 scale divisions
=0...max. frequency



For the tamper frequency, see the section "Technical data" in the operating instructions for the screed.

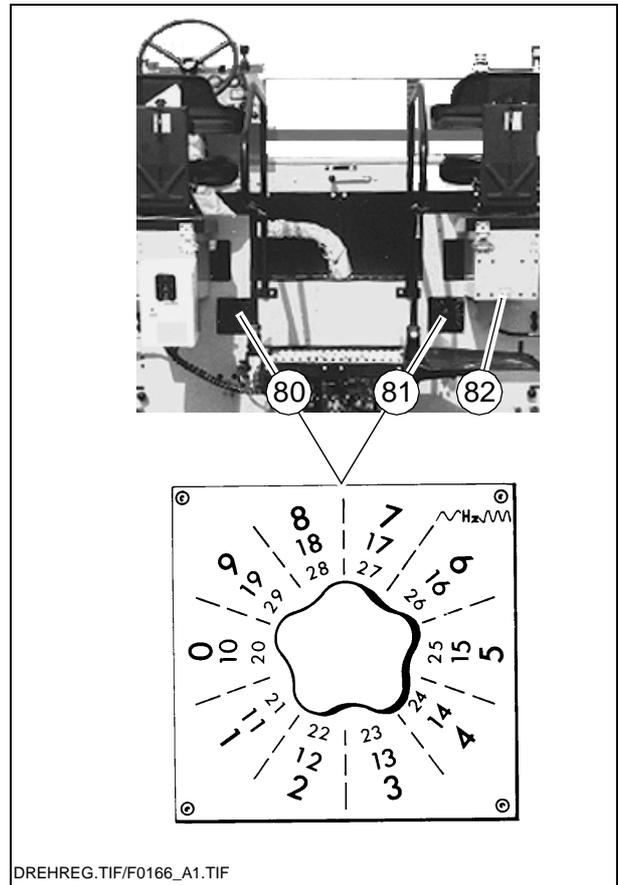
Speed regulation for vibration (screed-specific) (81)

Operation as for the speed regulation for the tamper (80).

Adjustment range:
3 turns=30 scale divisions
=0...max. frequency



For the vibration frequency, see the section "Technical data" in the operating instructions for the screed.



Speed / RPM display (104)

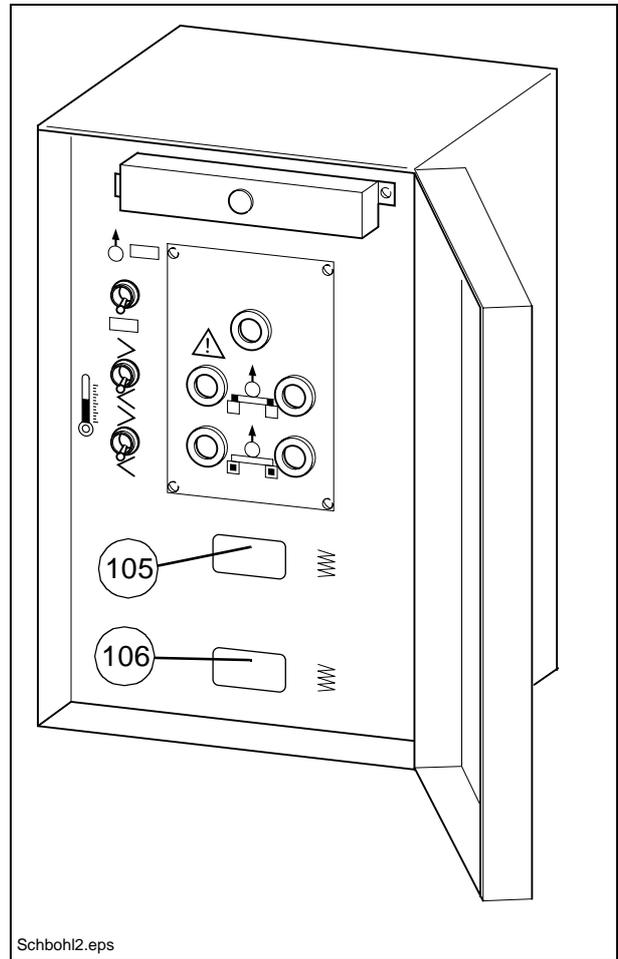
The speed / RPM display, which is available as an option, can be used to optimally adjust the tamper and vibration speeds to different paving situations.

When the heater is switched on, the current speed is automatically displayed (range 0 to maximum).

During paving, the speeds can be easily checked and, if necessary, readjusted.

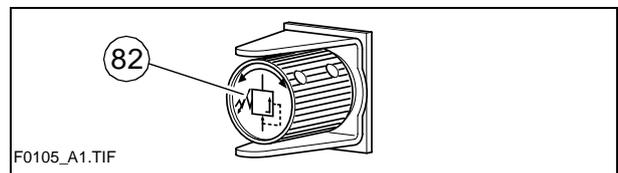
The upper display (105) shows the current tamper speed.

The lower display (106) shows the current vibration speed.



Pressure control valve for screed charging/relieving (82)

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



- Activation: see “screed charging/relieving device” (37).
- Pressure display: see manometer (83).



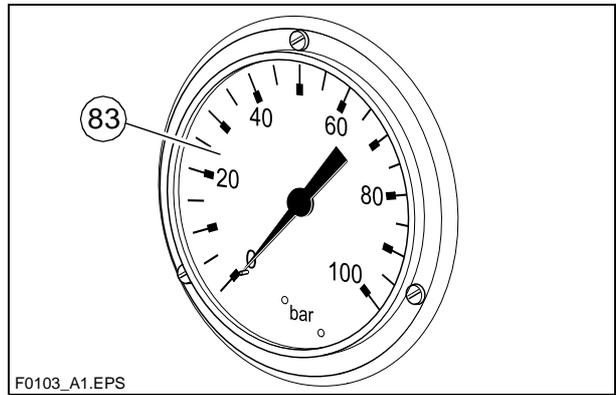
Application: see the section 3.8

Manometer for screed charging/relieving and screed stop with pretensioning (83)

Displays the pressure for the screed charging/relieving device when the drive lever (1) is set to position 3. Adjust the pressure using valve (82).



Application: see the section 3.8.



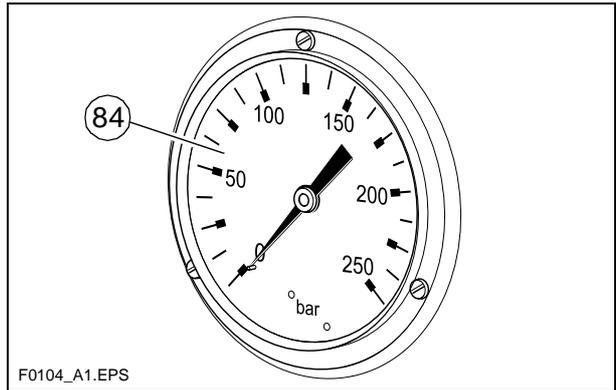
Manometer for front wheel drive (84) ○

Displays the operating pressure for the additional front wheel drive.

Pressure adjustment with valve (85)

Recommended: ca. 110 - 140 bar

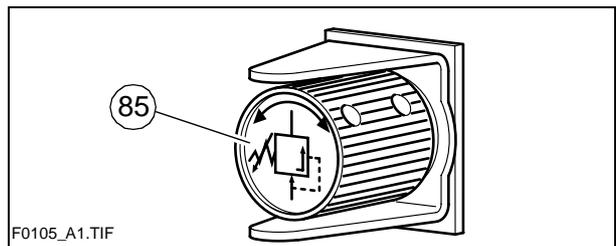
Maximum value: ca. 200 bar



Pressure regulating valve for front wheel drive (85) ○

Used to set the operating pressure for the additional front wheel drive.

- Use switch (9) to switch on the front wheel drive.
- For the pressure indication, see manometer (84).

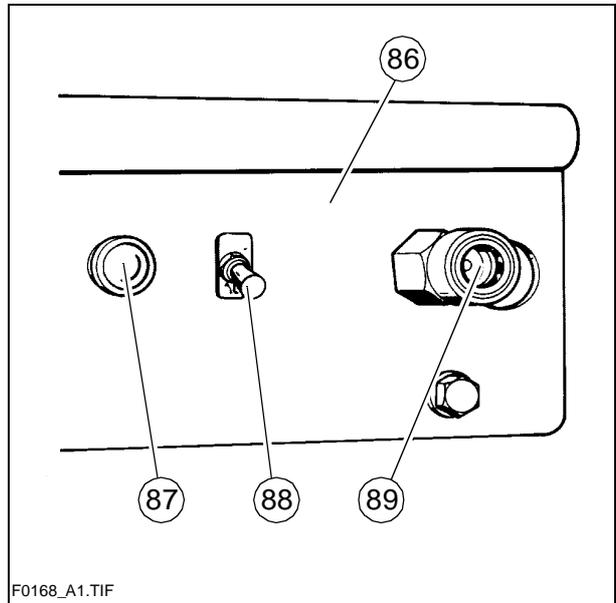


Set the pressure while the paver finisher moves in such a way that the front wheels do not slip.

Separator fluid spraying system (86) ○

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

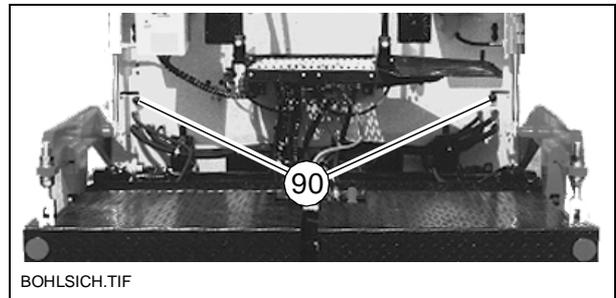
- The indicator lamp (87) lights up when the emulsion pump is running
- On/off switch (88) for the emulsion pump
- Quick-release coupling (89) for hose connection



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

Mechanical screed transport safeguard (to the left and the right beneath the driver's seat) (90)

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

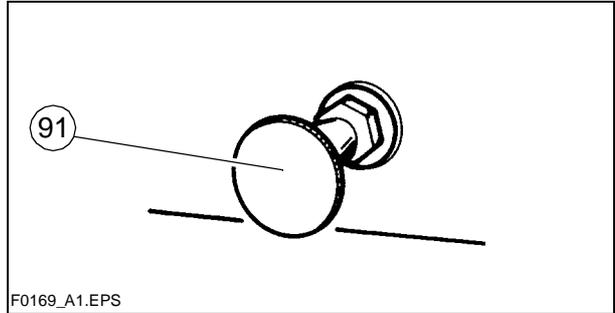


Transportation with an unsecured screed bears the danger of accidents!

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

Seat lock (behind the driver's seat) (91)

Telescoping seats (option) can be extended beyond the basic width of the paver finisher. They must be locked (also refer to "Latch for operating panel" (8)).



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

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



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

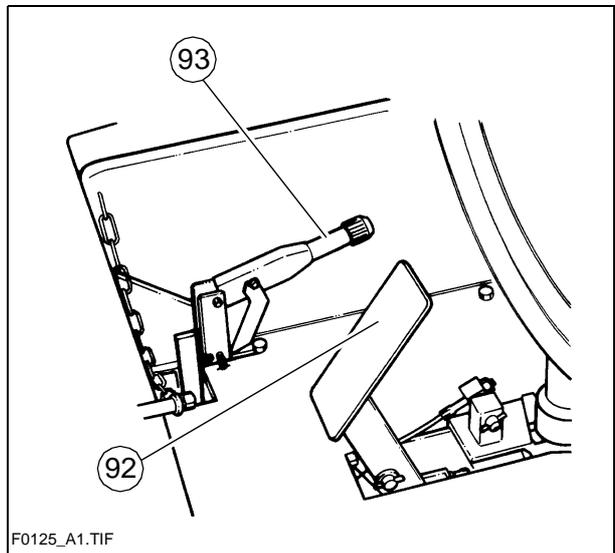
Service brake ("foot brake") (92)

There is a brake pedal in front of each of the driver's seats to the left and to the right.

The service brake acts on two disc brakes on the main drive axle.



When the brake is actuated, the speed of the traction drive is automatically reduced (regardless of the drive lever position (1)).



Parking brake ("hand brake") (93)

The brake lever is located to the left of the driver's seat (option: on both sides). The parking brake acts mechanically on one of the disc brakes on the main drive axle.



Always apply the brake whenever parking the paver finisher!

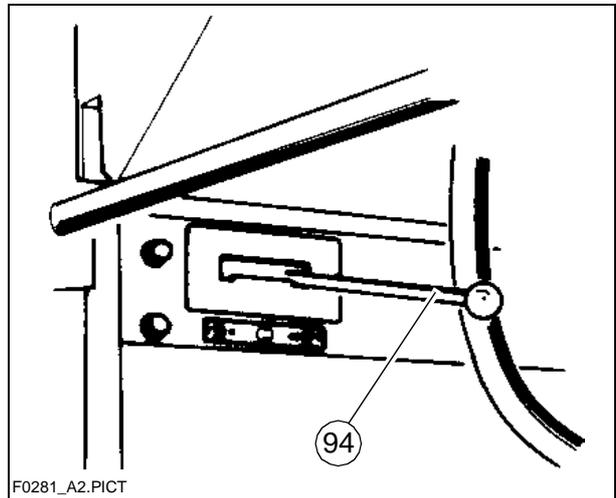
Switch lever for two-speed transmission (94)

The switch lever has two positions:

- ◀ = Paving
- 0 = Neutral
- ◀◀ = Transportation



Apply the parking brake (93) before changing the lever position. Only change the lever position when the paver finisher is at a standstill!



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- Slightly move the drive lever (1) if the desired speed cannot be selected.



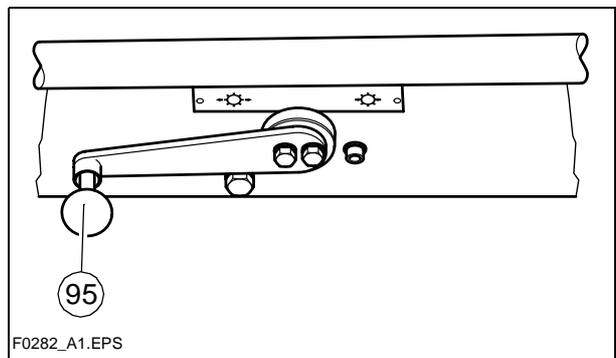
Set the lever to the neutral position when towing the paver finisher (e.g. when the diesel engine has failed). Otherwise, the transmission might be damaged.

Switch lever for the differential lock (95)

Used to switch the differential lock on and off (also see switch (29)).

Switching on:

- Lever to the right; the indicator lamp (15) lights up when the lock has engaged.



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Switching off:

- Lever to the left; drive until the indicator lamp (15) goes out.



Application and dangers: see indicator lamp (15).

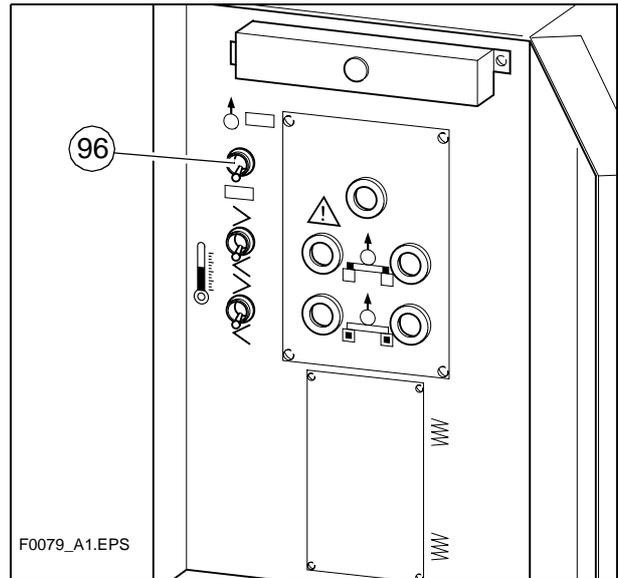
2.4 Switch box for the gas heater system

Switch

On/Off switch (96)

Up: Heater switched off.

Down: Heater switched on.



Indicator lamps

Heater indicator (97)

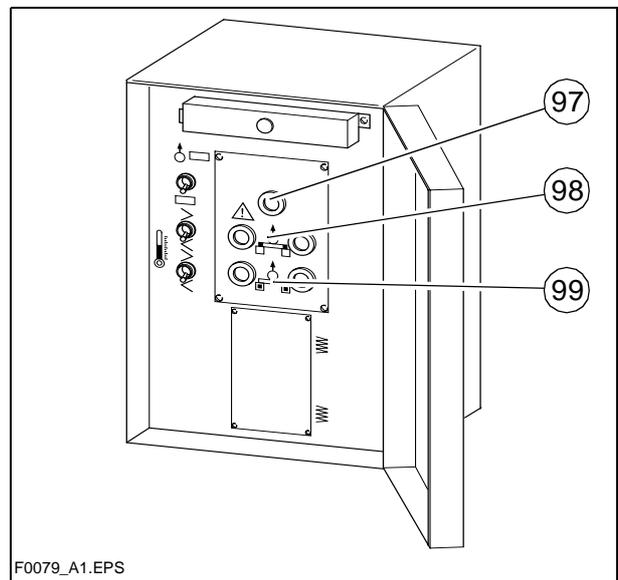
Indicates whether or not the heater system is switched on.

Heating of the basic screed (98)

Indicates whether or not the heater of the basic screed is switched on.

Heating of the extendable parts (99)

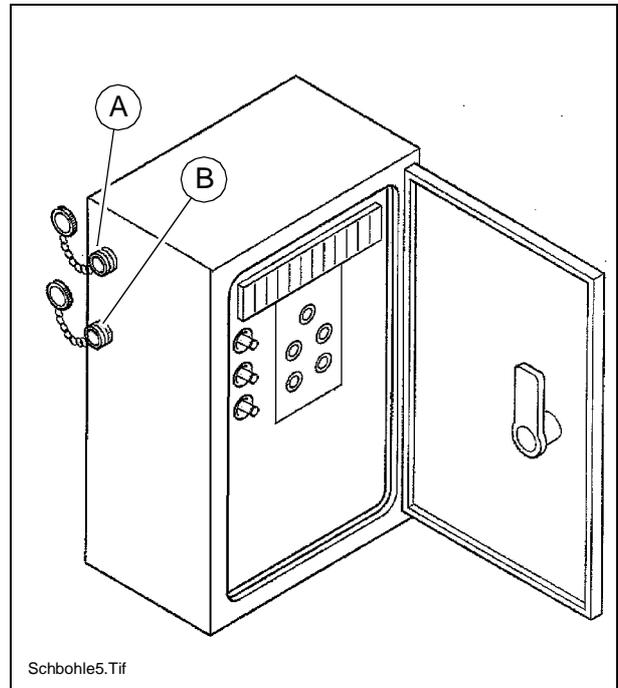
Indicates whether or not the heater of the extendable parts is switched on.



For the operation of the gas heater system, see the section 3.3.

Sockets (○)

- **Socket for automatic leveling/slope, left (96):** For connection of the slope control(○) or the grade control system(○) when the left-hand side (leveling cylinders on the traction point) is to be controlled by the controller.
- **Socket for automatic leveling/slope, right (97):** For connection of the slope control(○) or the grade control system(○) when the right-hand side (leveling cylinders on the traction point) is to be controlled by the controller.



3 Operation

3.1 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 extendable parts
- Diesel fuel
- Engine oil and hydraulic oil, lubricants
- Separating agents (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 and leveling rail, 4 m long
- Leveling 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.
- Open the bottle valves, the shut-off valves on the dual branch piping and the main shut-off valve of the gas heater for the screed.
- Perform the check according to the "Checklist for the machine operator" given below.

Checklist for the machine operator

Check!	How?
Emergency stop button - on the operating panel - on both remote control units ○	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 running.
Horn - on the operating panel - on both remote control units ○	Briefly press the horn button. The horn must sound.
Lights	Switch on with the ignition key, walk around the paver finisher to check and switch off again.
Hazard warning lights of the screed (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 of dual branch piping - Main shut-off valve - Connections - Indicator lamps of the switch box	Check: - Secure seat - Cleanliness and tightness - Working pressure 1.5 bar - Function - Function - Function - Tightness - All lamps must light up when the system is switched on

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

3.2 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 (such as monthly or yearly maintenance) must be performed.

- Check the safety devices and protective devices.

“Normal” starting

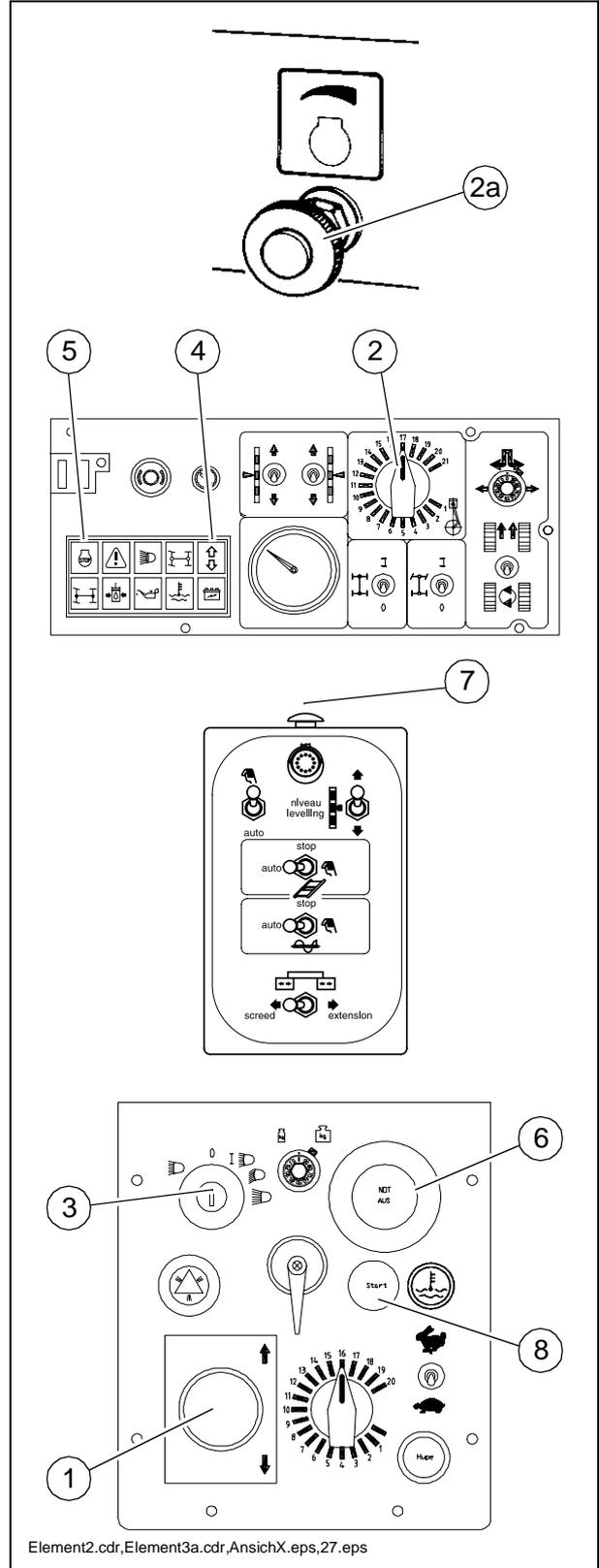
Set the drive lever (1) to the center position and the speed adjuster (2)/(2a to minimum

- Insert the ignition key (3) in position “0”. The lights should be switched off during starting to reduce the current drain on the battery.



Starting is not possible when the traction indicator (4) lights up (drive lever not in the center position) or when the engine stop indicator (5) is active (emergency stop button (6) or (7) on the remote control unit (○) has been pressed, switch for the auger or conveyor is switched on).

- Press the starter button (8) 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/60 A).



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

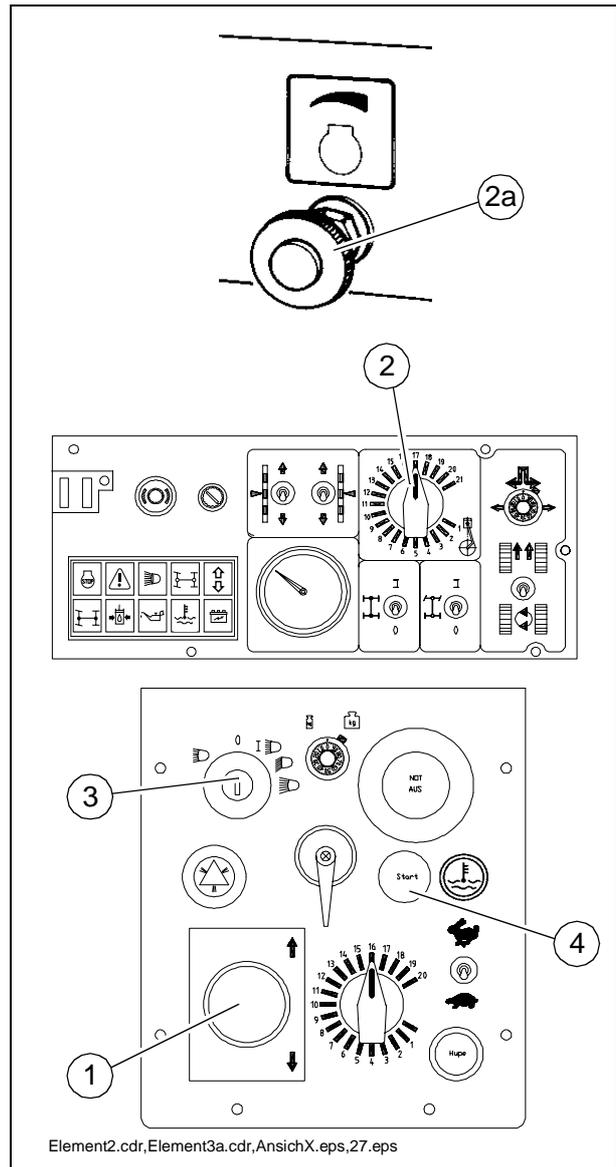
To externally start the engine:

- Set the drive lever (1) to the center position and the speed adjuster (2)/ (2a) to minimum.
- Insert the ignition key (3) in position "0" to switch on the ignition.
- Use appropriate cables to connect the external power source.



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

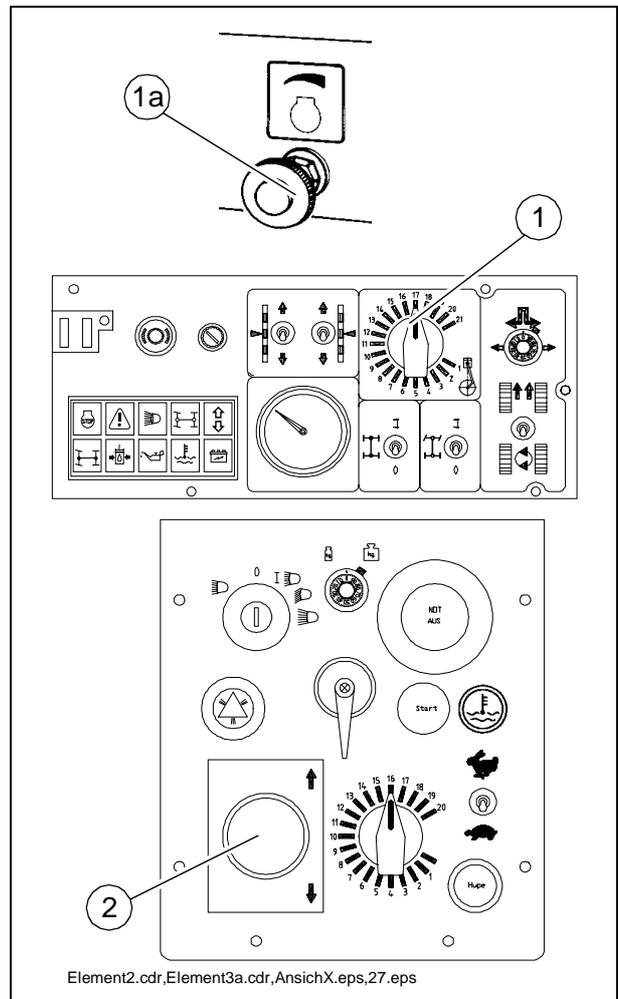
- Press the starter button (4) to start the engine. Do not let the starter run permanently for more than 20 seconds; allow for a break of 1 minute after every attempt!



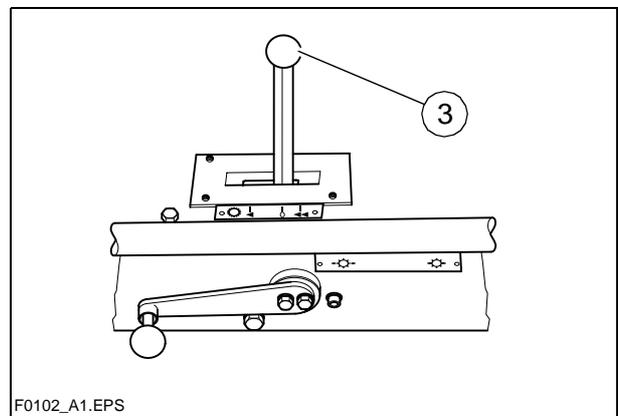
After starting

To increase the engine speed:

- Set up engine speed adjuster (1)/(1a) to medium speed.
- Set the drive lever (2) to position 1 (slightly off the center position).



Let the paver finisher warm up for ca. 5 minutes if the engine is cold. For this purpose, set the switching lever of the two-speed transmission (3) to neutral.

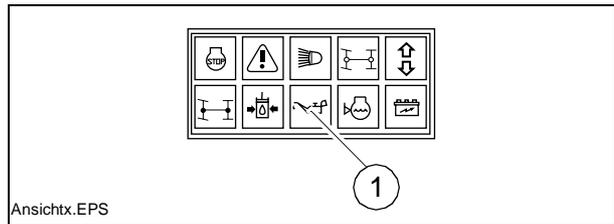


Indicator lamps

The following indicator lamps must be observed under all circumstances:

Oil pressure indicator lamp for the diesel engine (1)

- Must go out right after the engine has been started.

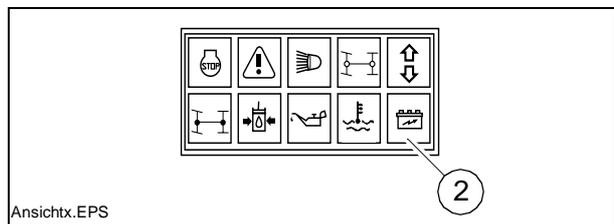


Pull out the ignition key immediately to switch off the engine if the lamp does not go out or lights up during operation. Check the engine oil level.

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

Battery charge indicator (2)

Must go out when the engine revs up after the start.



Briefly rev up the engine when the lamp does not go out or lights up during operation.

Switch off the engine and determine the cause for the malfunction if the lamp does not go out.

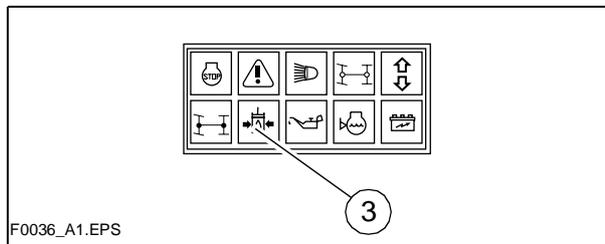
For further possible malfunctions, refer to the section "Malfunctions".

Oil pressure indicator lamp for the traction drive (3)

- 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.



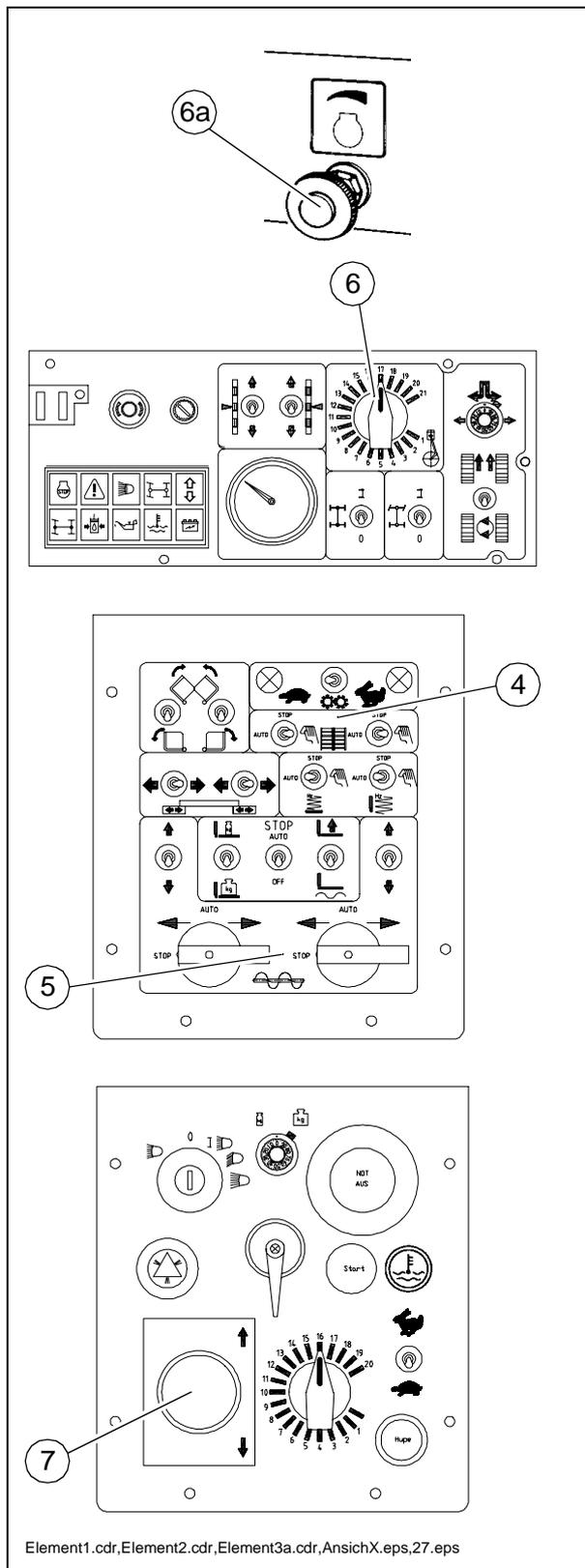
When the hydraulic oil is cold:

- Set the conveyor switch (4) to "manual" and the auger switch (5) to "manual" (arrow).
- Set the speed adjuster (6)/(6a) to medium speed and tilt the drive lever (7) until conveyor and the auger start operating.
- Let the hydraulics warm up until the indicator lamp goes out.



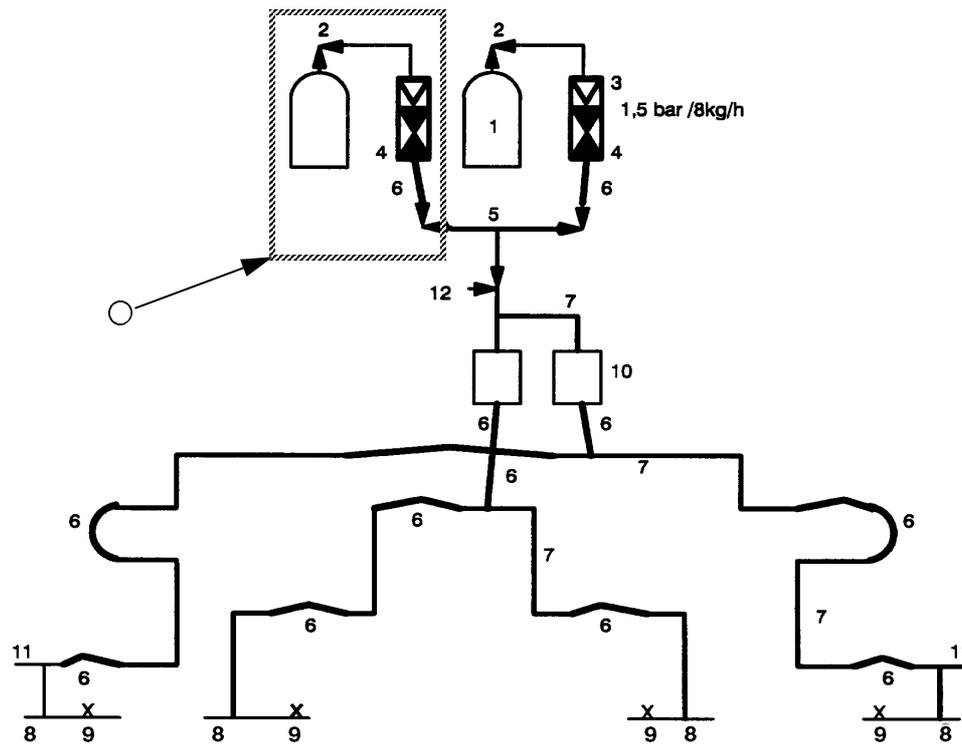
The lamp goes out when the pressure drops below 2.8 bar = 40 psi.

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



3.3 Gas heater system

Schematic diagram of the gas supply system

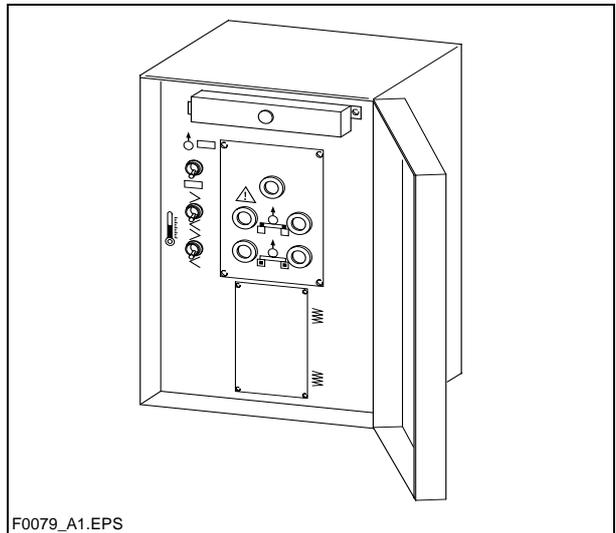


Item	Designation
1	Gas bottles
2	Bottle valves
3	Pressure reducer
4	Hose break safety devices
5	Dual branch piping with shut-off valves
6	Hoses
7	Pipes
8	Burner
9	Ignition burner
10	Solenoid valves
11	Hose couplings
12	Main shut-off valve

General notes on the gas heater system

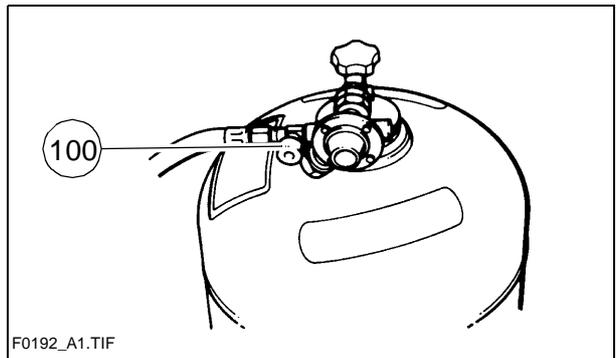
The heater of the screed burns propane gas (liquefied gas). The two gas bottles are located on the paver finisher.

The heater is equipped with an electronic ignition system and a temperature monitoring system. The switch box is on the finisher.



Heed the following points before commissioning the heater system:

- The gas bottles must always be on the space provided for this purpose on the finisher. The bottles must be secured using the supplied strap retainers. The bottles must be fixed in position so that they cannot turn around their longitudinal axis even while the finisher is in operation.
- The liquefied gas system must not be operated without the hose break safety device (100). It is also absolutely necessary that the pressure reducing valve is installed before the system is put into operation.
- Check all gas hoses for external damage before using them. If any defect is found, immediately replace the hose in question by a new one.



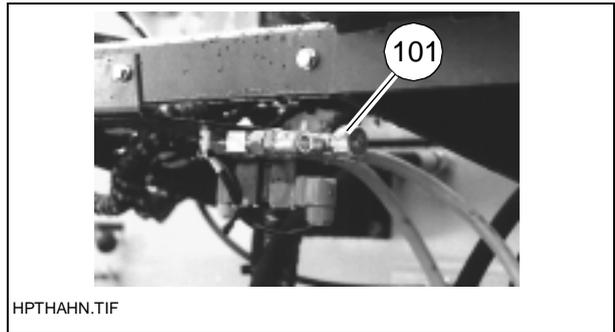
There is a danger of fire and explosions when handling gas bottles and working on the gas heater.

Do not smoke! Do not use open fires!

Connecting gas bottles and performing a leak test

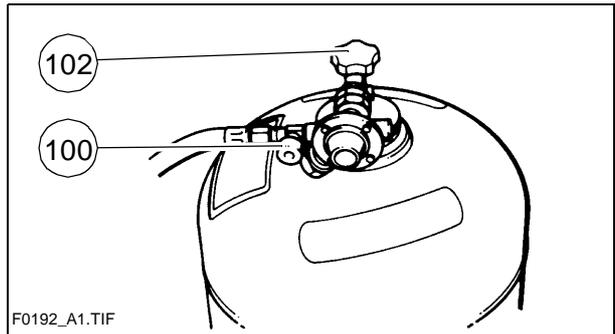


The gas pipe system of the main screed and the extendable parts is permanently installed. For the procedure required to connect any extendable parts to the gas supply, refer to the operating instructions for the screed.



To connect the gas bottles:

- Remove the protective cap from the bottle valve and keep it in a clean place.
- Check that the main shut-off valve (101) is closed.
- Check that the bottle valve (102) is properly closed.
Install the gas hose with the pressure reducer and the hose break safety device (100) to the bottle.



Note:

The gas connections always have left-handed threads!

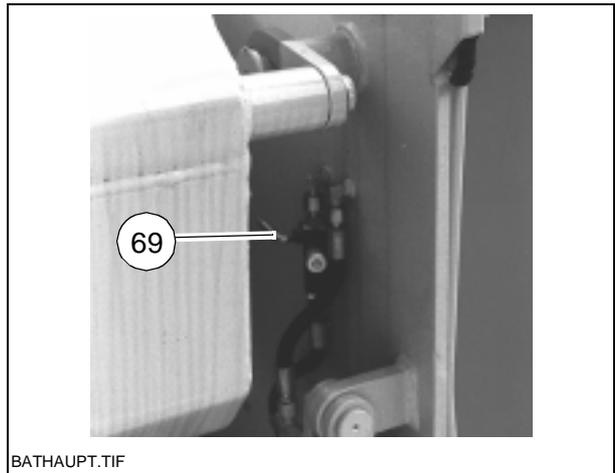


Make sure the gas pipe system has no leaks.

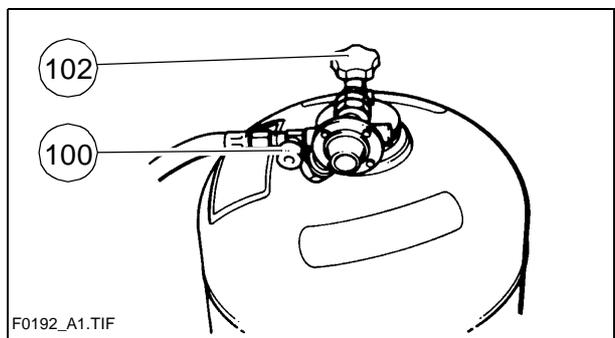
Putting the heater in operation and checking the heater

The gas heater is operated with one bottle.

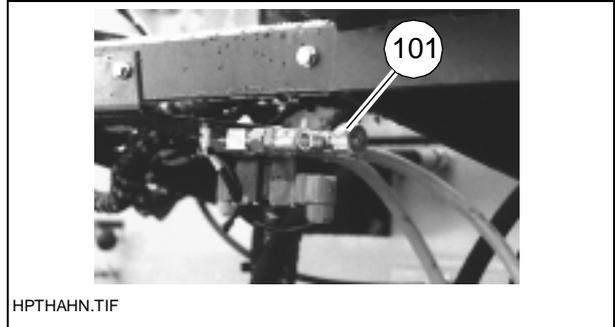
- Check that the battery's main switch (69) is switched on.



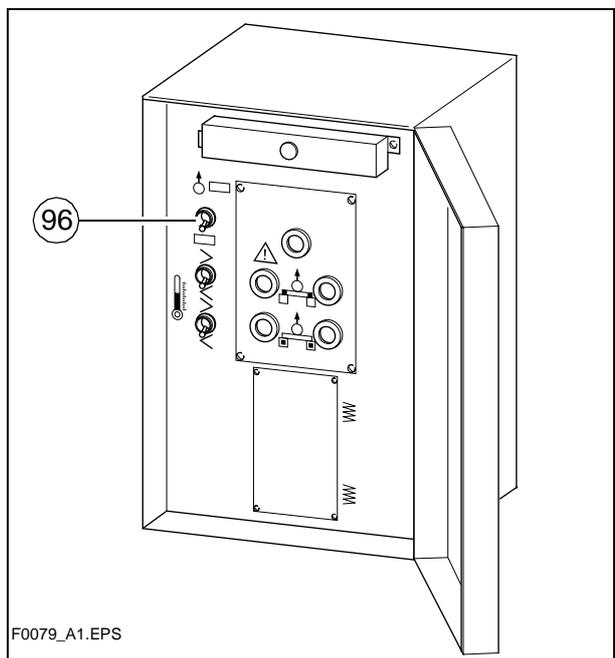
- Open the bottle valve (102).
Unlock the safety valve by pressing the hose break safety device (100).



- Open the main shut-off valve (101).



- Switch on the On/Off switch (96) in the switch box (top position). This
 - opens the electromagnetic non-return valves for the gas supply to the pipe burners;
 - activates the electronic ignition system, causing the gas to be automatically ignited by the spark plugs.



After the heater has been switched on, the following lamps must be lit on the switch box:

- Lamp (97) "Heater is on"
- During the preheating phase, the following lamps must also be lit:
- Lamp (98) "Ignition - main screed" (left-hand and right-hand side)
- Lamp (99) "Ignition - extendable parts/extendable parts" (left-hand and right-hand side)

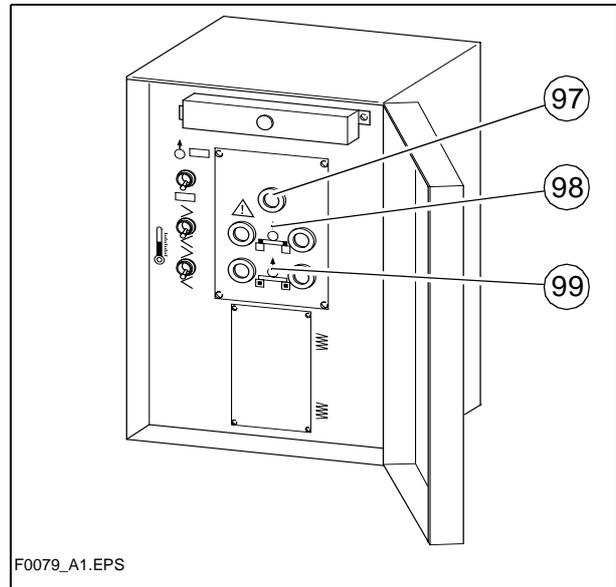


The heater is automatically switched on and off by temperature sensors to ensure an optimum, constant temperature of the screed parts.

When the temperature is reached, the pertaining control lamp goes out.



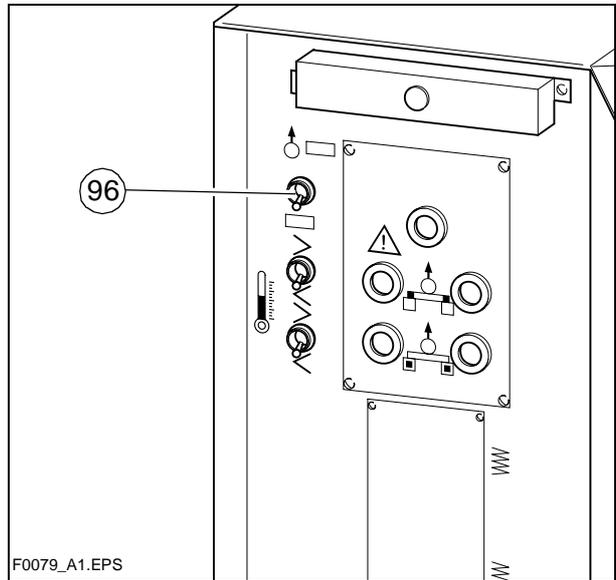
The control lamps are important for troublefree operation of the ignition system. Therefore, defective lamps should be immediately replaced!



Switching off the heater

After work has been completed, or when the heater is no longer required:

- Switch off the On/Off switch (96) in the switch box (position 0 (center position)).

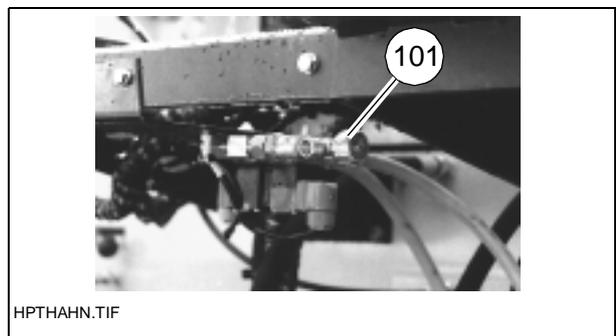


- Close the main shut-off valve (101) and the bottle valve (102).



If these valves are not closed, there is a danger of fire and explosions as gas can escape!

Always close the valves during breaks and after work has been completed!



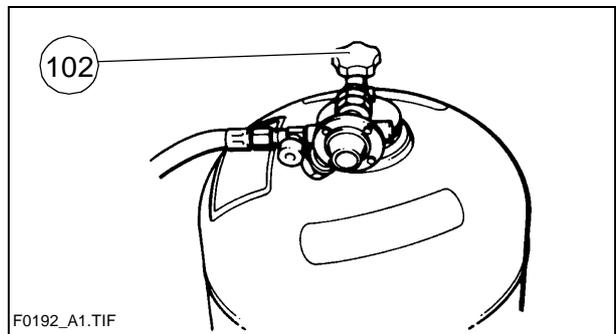
3.4 Exchanging the gas bottles

- Check that the main shut-off valve (101) is closed.
- Unscrew the gas hoses.
- Screw the protective caps for the bottle valves onto the gas bottles.



Gas bottles that are full or not completely emptied are under pressure.

Therefore, make sure that the bottles are protected from heavy blows or shocks (particularly in the area of the valves or at the valves themselves) as long as the protective caps are not in place!



- Connect new gas bottles (see the section "Connecting gas bottles and performing a leak test").

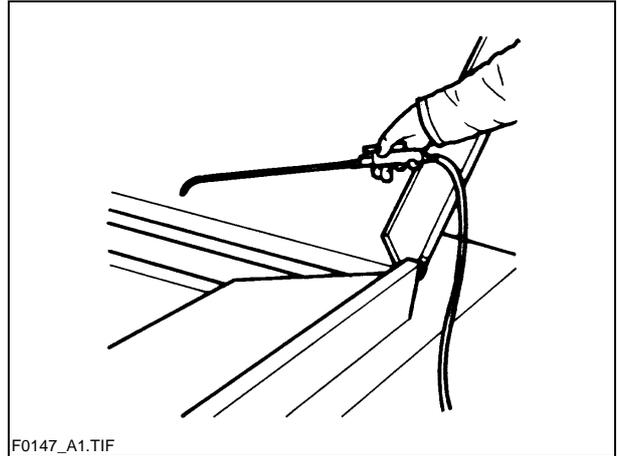
3.5 Preparations for paving

Separating agent

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



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



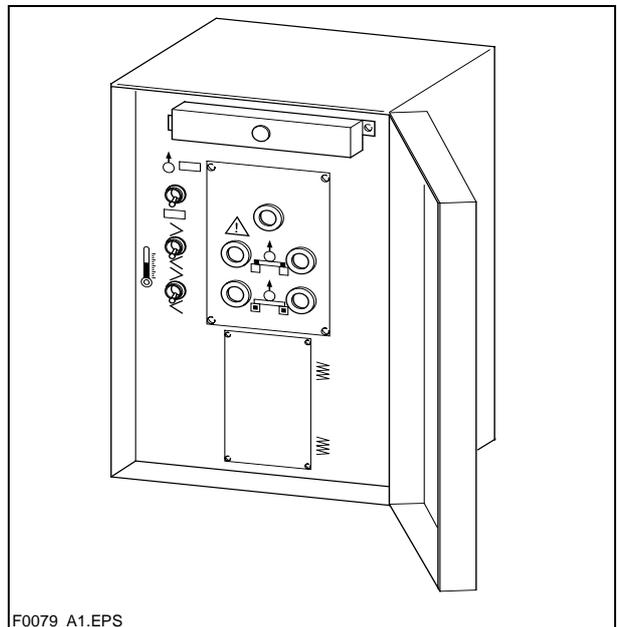
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Screed heater

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



see the section 3.3 on how to operate the heater.

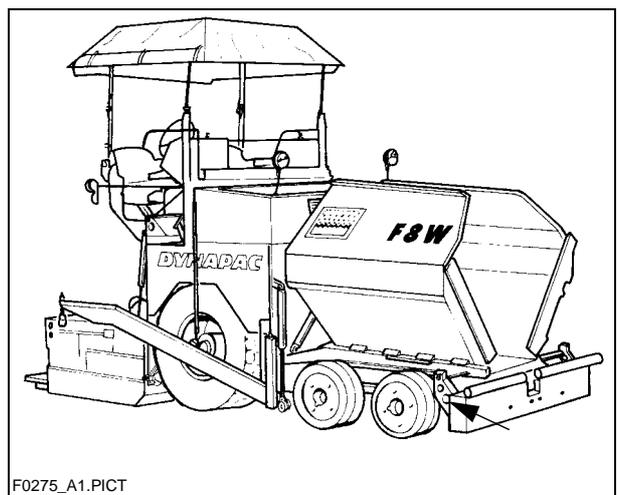


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Direction marks

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

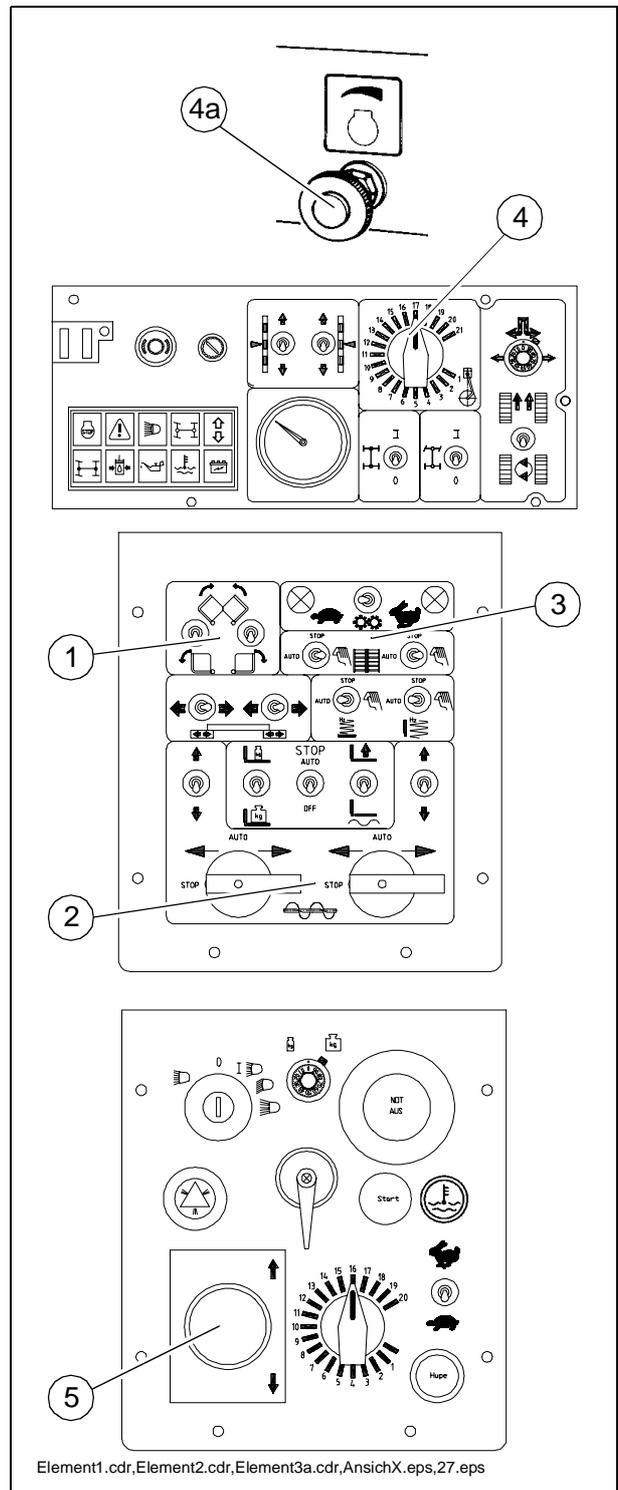
- Slide the operating panel to the desired side and secure it.
- Pull the direction indicator out of the bumper (arrow) and adjust it accordingly.



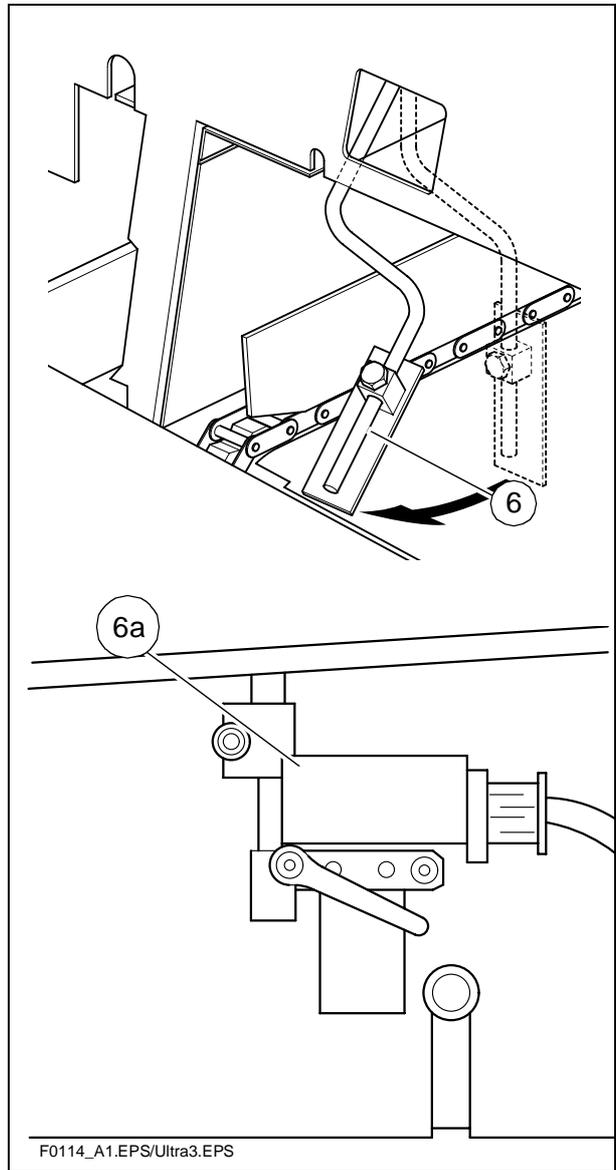
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Loading/distributing material

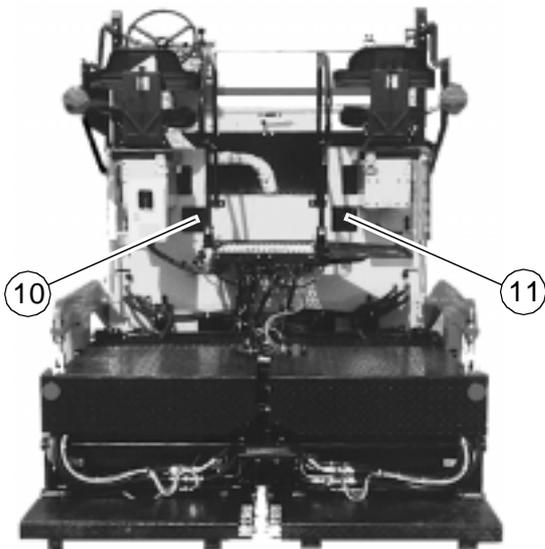
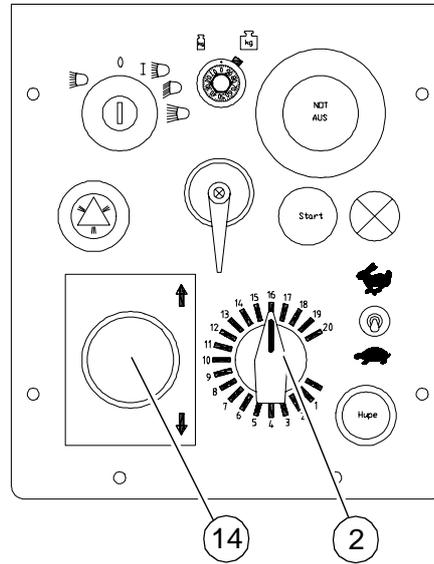
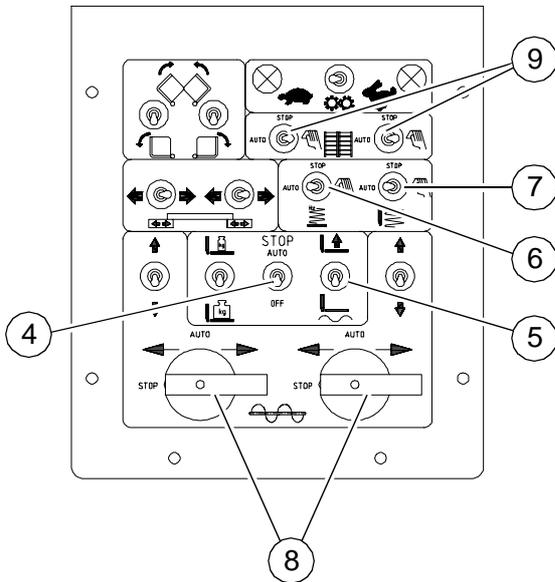
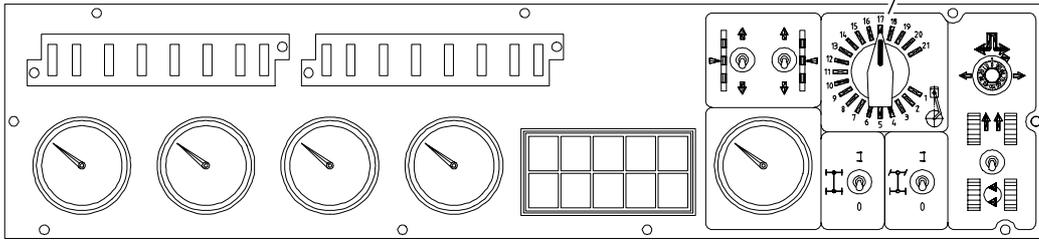
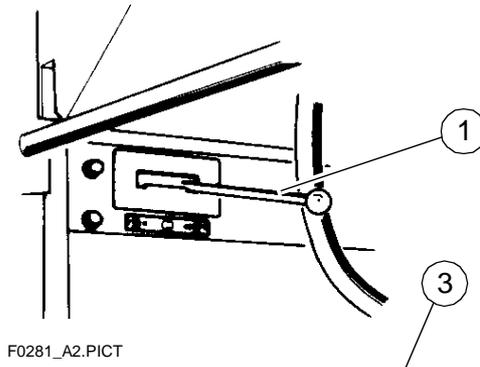
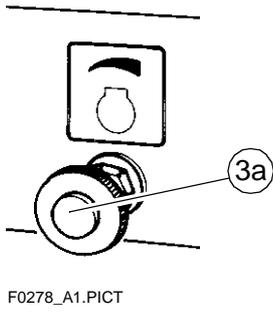
- Use switch (1) to open the hopper. Instruct the truck driver to dump the material.
- Set the switches for the auger (2) and the conveyor (3) to "auto".
- Set the switches for the auger and the conveyor on the remote controls (if applicable) to "auto".
- Set the engine speed controller (4)/(4a) to marking "10". Push the drive lever (5) into the second position (ca. half the maximum engine speed)



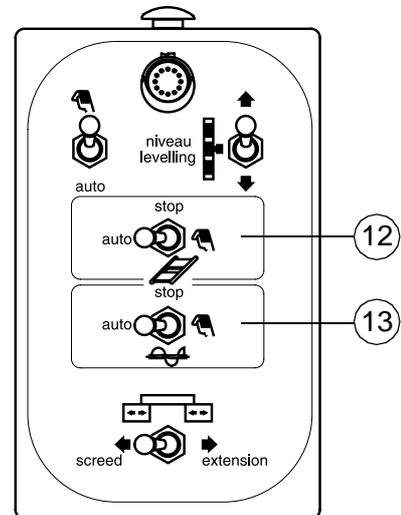
- Switch the conveyors on.
The limit switches for the conveyors (73) must switch off when the material has reached the area beneath the auger crossbeam.
- Check that the material is conveyed properly.
Manually switch on or off the conveyor if the material is not conveyed properly until a sufficient amount of material lies in front of the screed.



3.6 Starting for paving



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

Item	Switch	Position
1	Transportation/working gear	Working gear (◀)
2	Traction drive preselector	Mark 6 - 7
3/3a	Engine speed ○	Maximum
4	Screed stop	auto
5	Screed position	Floating position
6	Vibration	auto
7	Tamper	auto
8	Auger left/right	auto
9	Conveyor left/right	auto
10	Speed regulator, tamper	ca. mark 10
11	Speed control, vibration	ca. mark 10
12	Conveyor (○)	auto
13	Auger	auto

- Push the drive lever (14) all the way to the front and start driving.
- Observe the distribution of the material and adjust the limit switches if necessary.
- Set the compacting elements (tamper and/or vibration) according to the required compaction ratio.
- Let the paving master check the layer thickness after 5–6 meters and correct if necessary.

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

3.7 Checks during paving

The following points must be constantly observed during paving:

Paver function

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



See the section “Malfunctions” when paver functions fail.

Quality of the layer

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



See the section “Malfunctions” when the paving quality is poor.

3.8 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 and without pretensioning with the paver finisher halted,
- Screed charging or relieving with the paver finisher driving.



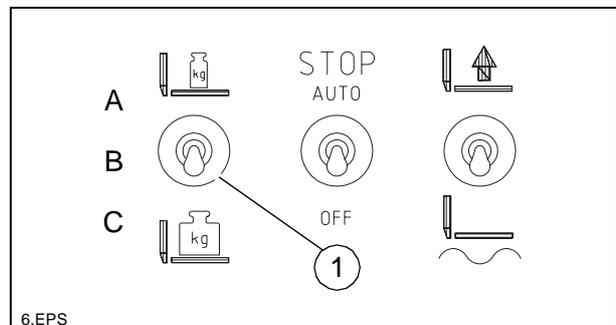
Relieving reduces the screed weight and increases the traction force. Charging increases the screed weight, reduces the traction force, but increases the compaction ratio. (To be used with light-weight screeds in exceptional cases.)

Screed charging/relieving

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

Switch (1) has the following positions:

- A:** Relieving (screed 'lighter')
- B:** No function
- C:** Charging (screed 'heavier')



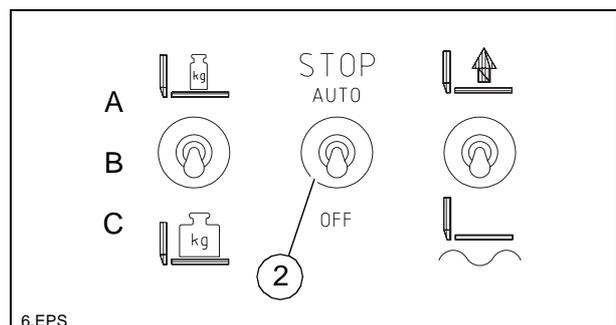
Switch positions "Screed charging/relieving" are only effective when the paver finisher moves. When the paver finisher stops, "screed stop" is automatically selected.

Screed stop

The "screed stop" function is used to block the screed hydraulics to prevent the screed from lowering when the paver finisher stops during paving.

Switch (2) has the following positions:

- A:** Automatic screed stop when the drive lever is in the center position
- B:** Screed stop always switched on
- C:** Off



Use position (C) for setting up the paver finisher and position (A) for paving.



Position (B) is not sufficient as a safeguard during transport or maintenance work! In such a case, the screed transport safeguard must be inserted.

Screed stop with pretensioning

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

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

A pressure greater than 10-15 bar neutralizes 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.

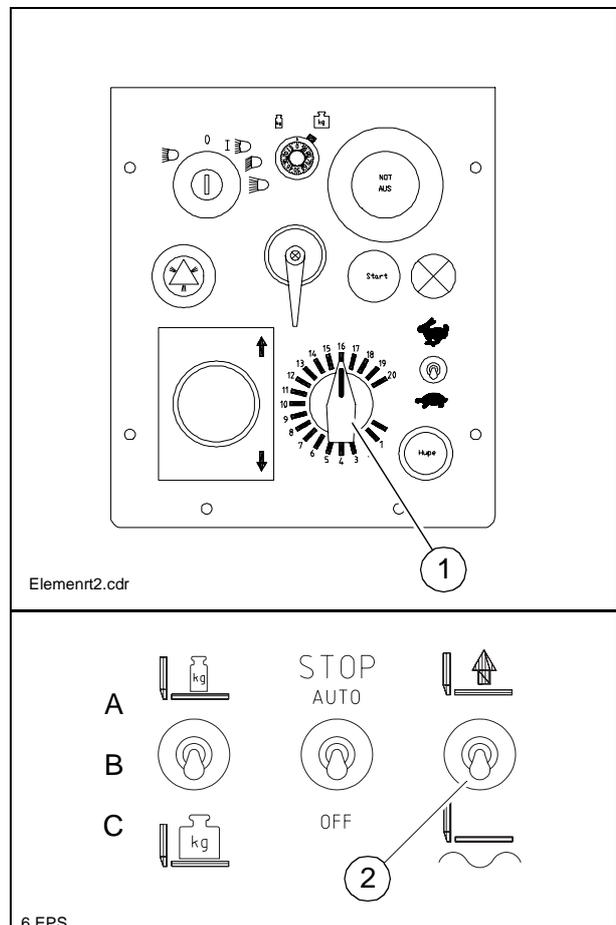


Do not use the "screed stop with pretensioning" function while paving with the "screed stop" function.

Adjusting the pressure

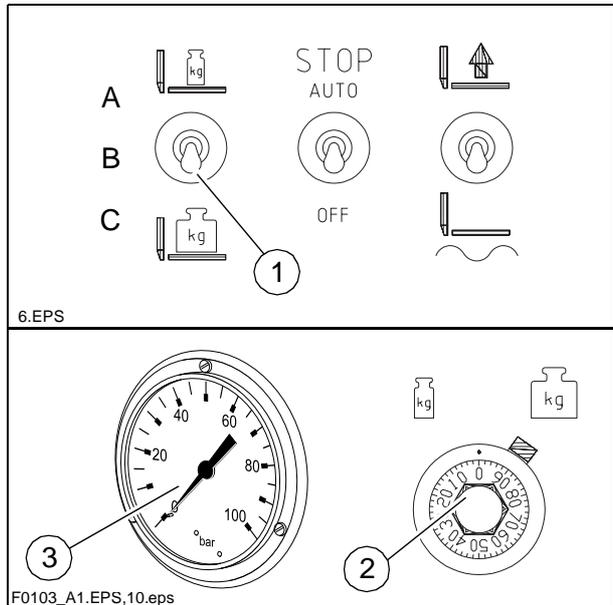
Pressure adjustments can only be made while the diesel engine is running. Therefore:

- Start the diesel engine and set the traction controller (1) to zero.
- Set switch (2) to "Floating position".



Adjusting the pressure for screed charging/relieving

- Set the drive lever to the third catch from the center position.
- Set switch (1) to position (A) (relieving) or (C) (charging).
- Use control valve (2) (on the rear panel of the paver finisher) to adjust the pressure and read it from the manometer (3).
(Basic setting: 20 bar)



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

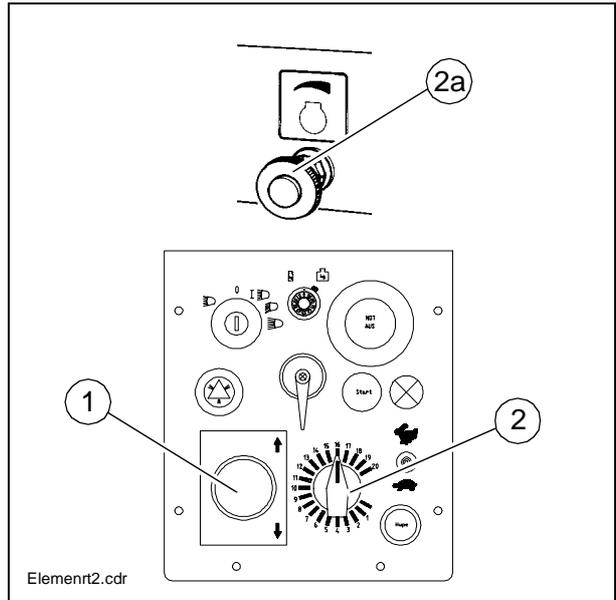


The pressure can also be set or corrected during paving.
(max. 50 bar)

3.9 Interrupting/terminating operation

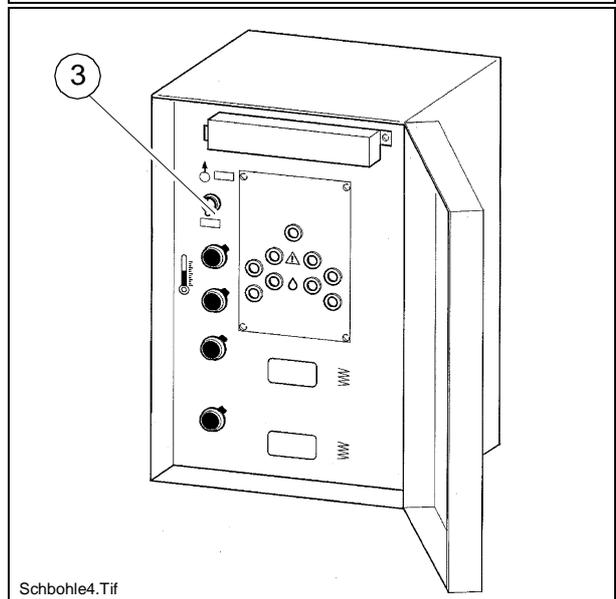
During breaks (e.g. delays caused by material trucks)

- 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 (1) to the center position.

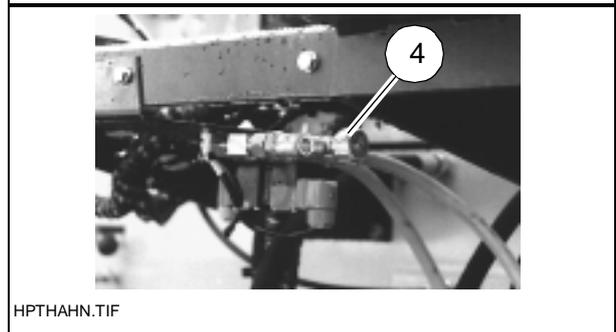


During longer breaks
(e.g. lunch break)

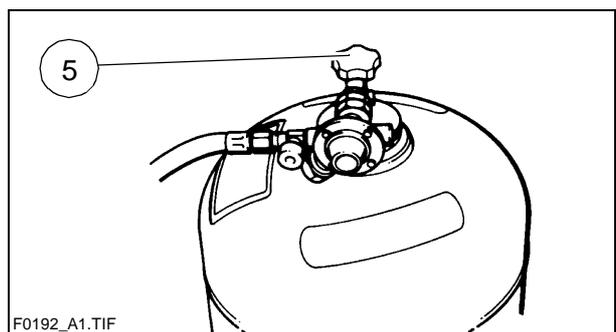
- Set the drive lever (1) to the center position and the speed adjuster (2)/(2a) to minimum.
- Switch off the ignition.
- Switch the screed heater off with the ON/OFF switch (3) (position 0 (center position)).



- Close the main shut-off valve (4) and the bottle valve (5).

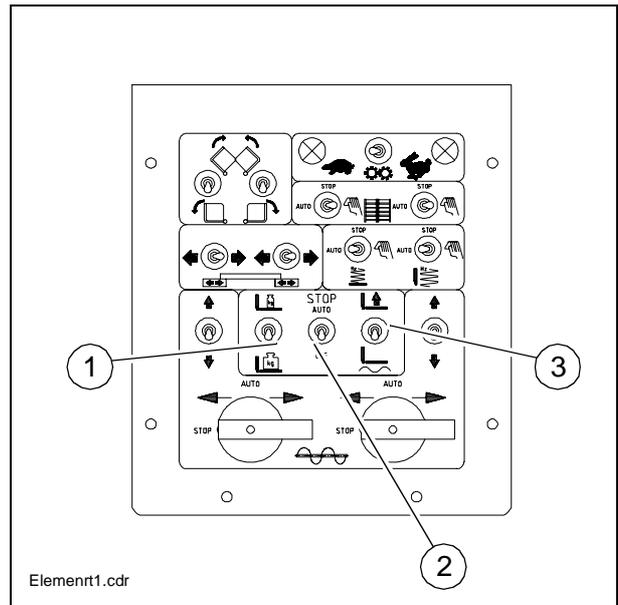


The screed must be heated up to the correct paving temperature before paving may be restarted.

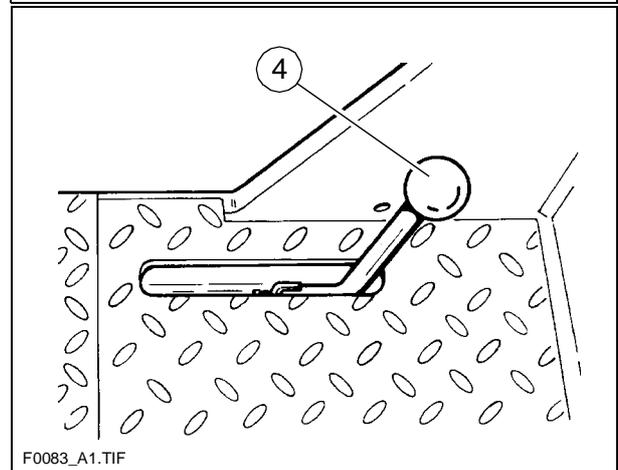


When work is finished

- Run the paver finisher empty and stop it.
- Lift the screed: set switch (1) to the center position, switch (2) to the top position and switch (3) to "lifting".
- Retract the screed parts to the basic screed width and lift the auger. Where applicable, completely extend the leveling cylinders.

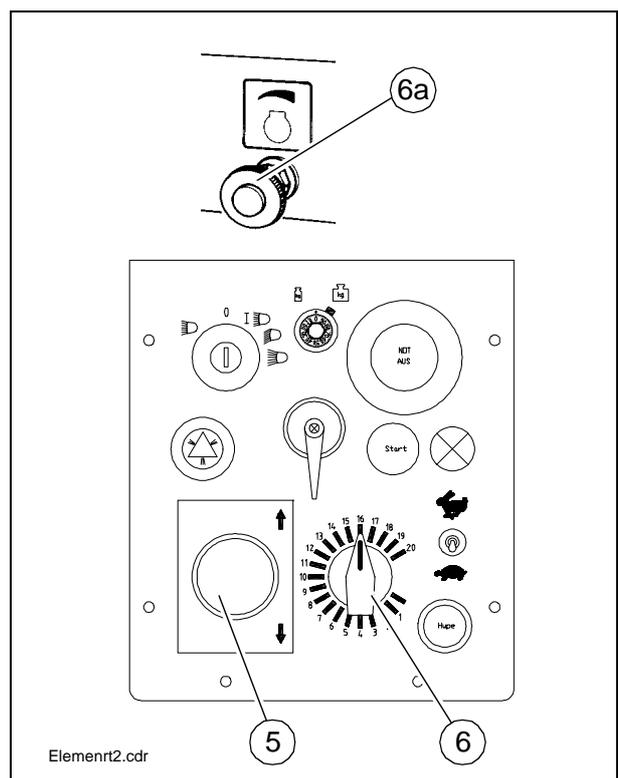


- Insert the mechanic screed transport safeguard (4).
- While operating the tampers at a low speed, let any material residues drop out.

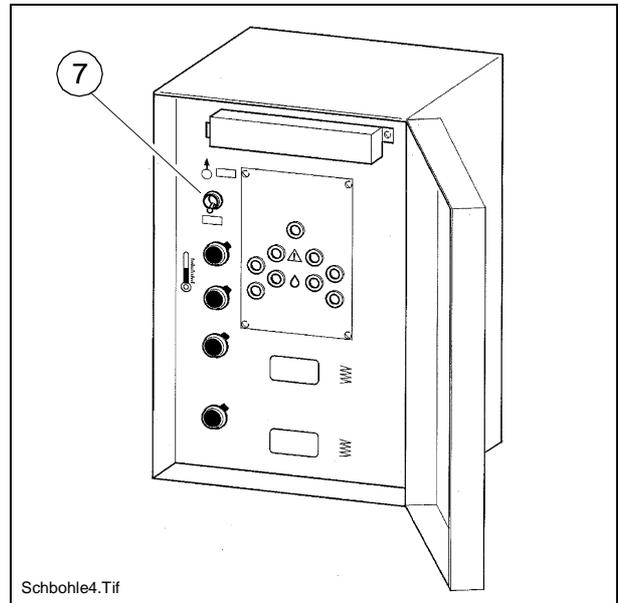


Set the drive lever (5) to the center position and the speed adjuster (6) or (6a) to minimum.

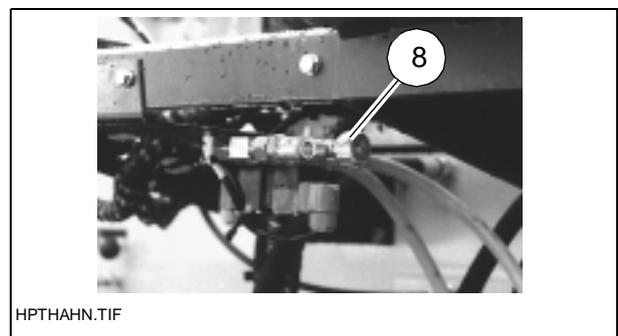
- Switch off the ignition.



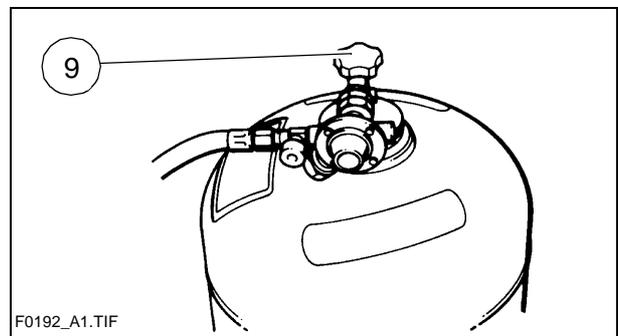
- Switch the screed heater off with the ON/OFF switch (7) (position 0 (center position)).



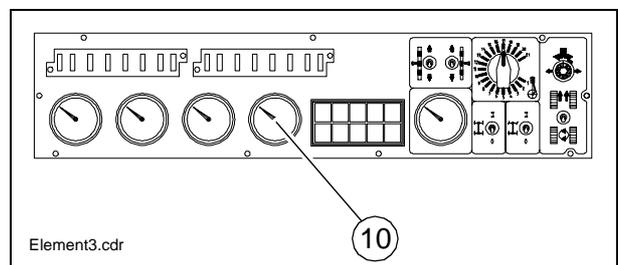
- Close the main shut-off valve (8) and the bottle valve (9).
- Remove the leveling units and stow them away in the boxes; close all flaps.



- 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.



- Check the operating hour meter (10) 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.



4 Malfunctions

4.1 Problems during paving

Problem	Cause
Wavy surface ("short waves")	<ul style="list-style-type: none"> - change in the material temperature, demixing - wrong material composition - incorrect operation of the roller - incorrectly prepared foundation - long standstill times between loads - grade control reference line is not suitable - grade control jumps to the reference line - grade control toggles between up and down (inertia setting is too high) - bottom plates of the screed are loose - bottom plates of the screed are warped or not uniformly worn - screed does not work in the floating position - too much play in the mechanical screed link/suspension - finisher speed is too high - augers are overloaded - changing material pressure against the screed
Wavy surface ("long waves")	<ul style="list-style-type: none"> - 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)	<ul style="list-style-type: none"> - material temperature is too low - change in the material temperature - moisture on the foundation - demixing - wrong material composition - wrong layer height for the maximum grain size - cold screed - bottom plates of the screed are worn or warped - finisher speed is too high

Problem	Cause
Cracks in the layer (center strip)	<ul style="list-style-type: none"> - temperature of the material - cold screed - bottom plates are worn or warped - wrong crowning
Cracks in the layer (outer strip)	<ul style="list-style-type: none"> - temperature of the material - screed extendable parts are incorrectly installed - limit switch is not correctly set - cold screed - bottom plates are worn or warped - paver finisher speed is too high
Layer composition is not uniform	<ul style="list-style-type: none"> - temperature of the material - 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 - finisher speed is too high - auger is overloaded - changing material pressure against the screed
Marks in the surface	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 float position - too much play in the mechanical screed link - finisher speed is too high

4.2 Malfunctions on the paver finisher or screed

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

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

Malfunction	Cause	Remedy
Traction does not work	Traction drive fuse defective	Replace (Fuse holder on the operating panel)
	Power supply interrupted	Check potentiometer, cables, connectors; replace if necessary
	Traction 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)
	Defective power supply cables (cables broken or short-circuited)	Check potentiometer, cables, connectors; replace if necessary

4.3 Malfunctions on the gas heater system



Refer also the electrical wiring diagram of the gas heater system in the spare parts catalogue.

Malfunction	Cause	Remedy
Control lamps are not lit after the heater system has been switched on	Battery voltage is too low	Check the battery voltage
	Mains switch is switched off	Switch on the main switch
	25 A main fuse or 5 A fuses are defective	Check and, if necessary, replace the fuses
	Power supply is interrupted	Check the plugged connection and the cable
No ignition spark at the spark plugs	2 A fuses are defective	Check and, if necessary, replace the fuses
	Ignition box(es) are blown	Check and, if necessary, replace the ignition boxes
	Power supply is interrupted	Check the plugged connections and the cables
	Spark plug cable is broken	Check and, if necessary, replace the spark plug cables
	Bonding is interrupted at the spark plug holder	Check and, if necessary, replace the bonding
	Ignition coils are defective	Check and, if necessary, replace the ignition coils
	Spark plug is defective	Check and, if necessary, replace the spark plugs

Malfunction	Cause	Remedy
Spark plugs provide ignition, but no heating flame at the burner pipes	No propane supply	Check the propane bottle valves
		Check and, if necessary, replace the safety valve / pressure reducer
		Open the closing valves or the main shut-off valve
		Check the relays of the solenoid valves and the solenoid valves; if necessary, replace
		Check and, if necessary, replace the temperature sensor
		Check and, if necessary, replace the hose connections
		Check and clean the filters and nozzles of the injectors; if necessary, replace them
		Check the gas/air mixture setting at the injectors; if necessary, readjust the setting

E Set-up and modification

1 Special notes on safety



Danger to personnel by inadvertent starting of the engine, the traction drive, the conveyor, the auger, the screed or the lifting units.

Unless specified otherwise, 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 center position and set the preselector to zero; if applicable, remove the drive traction fuse from the operating panel; pull out the ignition key and the battery main switch.
- Protect raised machine parts (such as 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 can spurt out at a high pressure.

Switch off the engine and de-pressurize the hydraulic system! Protect your eyes!

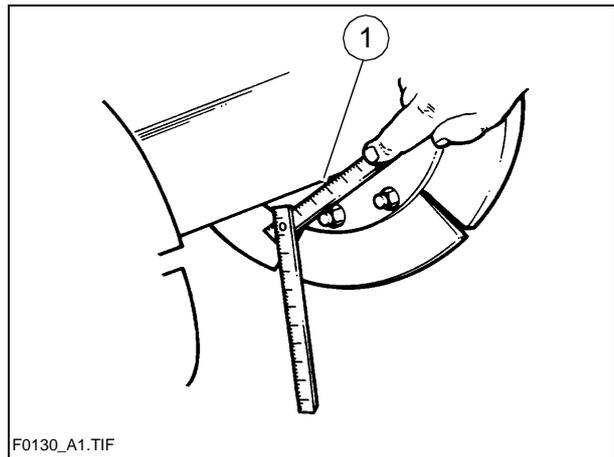
- Make sure to reattach all safety devices before commissioning the machine again.
- The walking platform must always reach over the entire width of the screed.
The hinged walkway (option for all variable screeds) may only be swung up under the following circumstances:
- When paving next to a wall or a similar obstacle.
- During transportation on a low-bed trailer.

2 Auger

2.1 Height adjustment

Depending on the material, the height of the auger (1) – measured from its lower edge – should be at least 50 mm (2 inches) above the height of the material layer.

Example: Layer height 10 cm
Adjustment: 15 cm from the ground

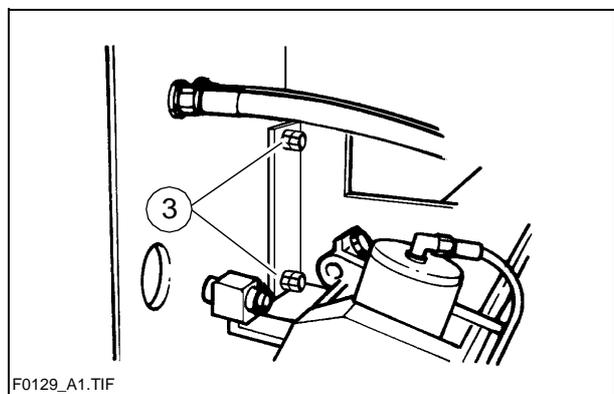
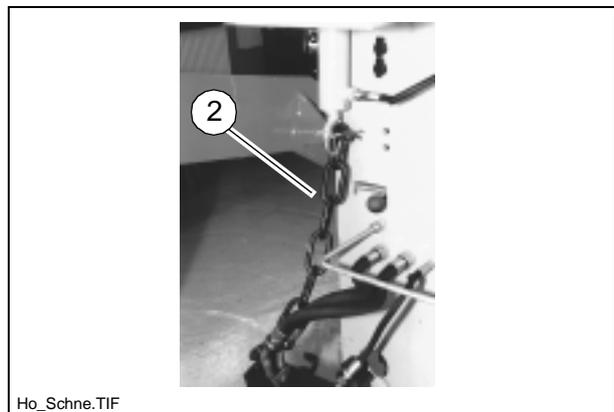


An incorrect height adjustment can result in the following problems:

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

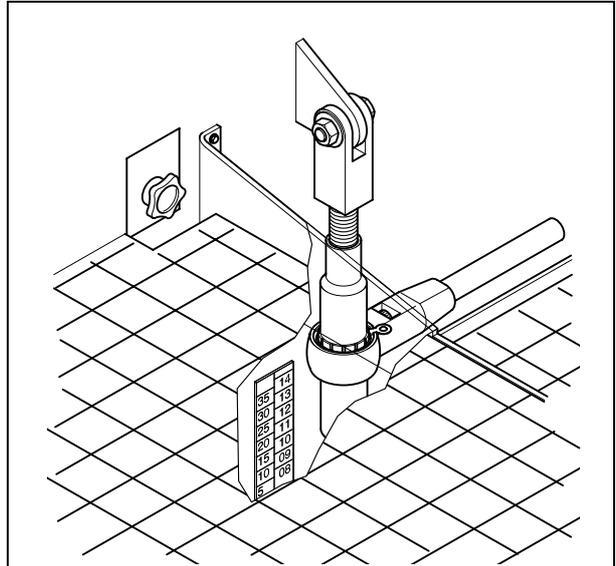
2.2 Auger crossbeam installed in a fixed position

- Lower the screed onto a suitable support (e.g. squared timbers).
- Completely extend both leveling cylinders.
- Hook lifting chains (2) for lifting the auger crossbeam into the hooks of the crossbeams.
- Loosen the fixing screws (3) of the auger crossbeam.
- Retract the leveling cylinders until the auger crossbeam has reached the desired height.
- Tighten the fixing screws (3) of the auger crossbeam.



2.3 Mechanical adjustment with ratchet ○

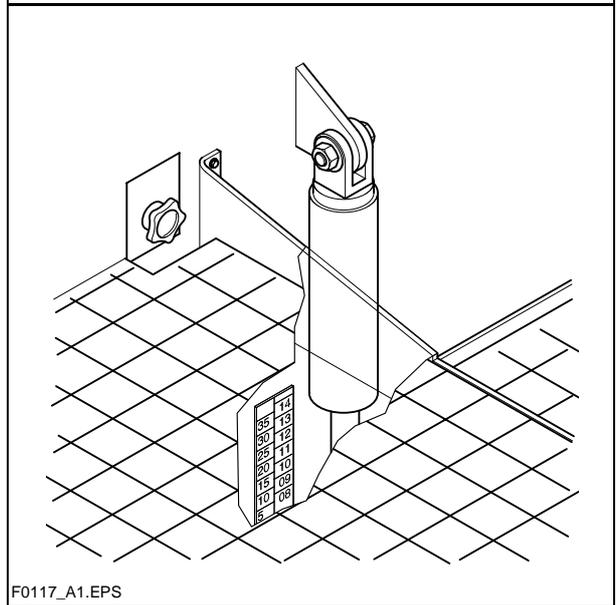
- Set the ratchet direction lever to clockwise or anticlockwise direction. Turning anticlockwise lowers the auger, turning clockwise lifts the auger.
- Set the desired height by alternatingly adjusting the right-hand and the left-hand side.
- The current height can be read from the scale in cm or inches (cm = left-hand column, inches = right-hand column).



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2.4 Hydraulic adjustment ○

- Determine the currently set height of the auger crossbeam (left and right) by means of the scale.
- Push or pull the switches (4) on the operating panel to retract or extend the hydraulic cylinders.

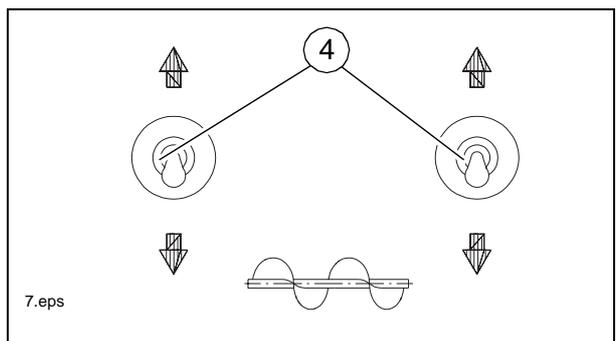


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Actuate both switches simultaneously to avoid warping of the auger crossbeam.

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



2.5 Auger extension

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



Auger and screed extension must match.

See the operating instructions of the appropriate screed, chapter “Set-up and modification”, especially:

- Screed extension chart,
- Auger extension chart.

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

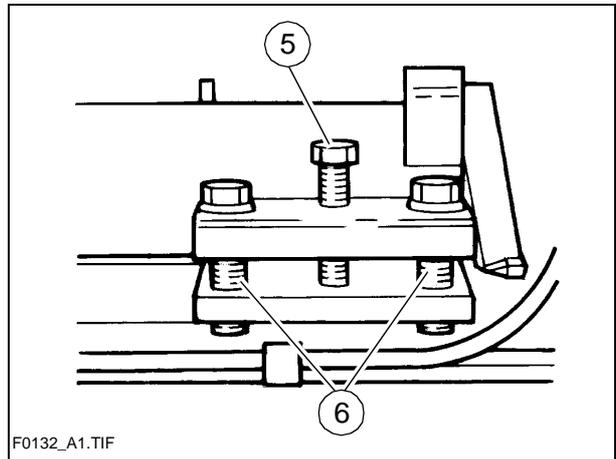
For widths of more than 3.00 m, the auger should be fitted with extension parts on both sides to improve material distribution and to reduce the wear.



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

2.6 Mounting extension parts

- Loosen the clamping screws (6) on the support tube. Then turn in the center expanding screw (5) to expand the clamping joint.

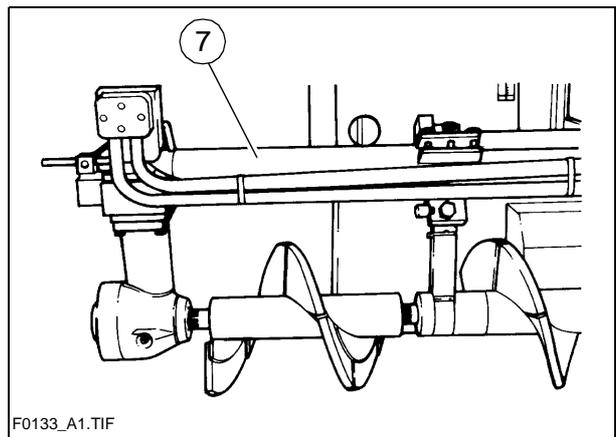


- Pull the telescopic tube out of the support tube (7).
- Mount the required extension parts.



Observe the guide groove of the spline! Make sure that the shaft end is clean!

- Slide in the telescopic tube. When doing so, make sure that the drive of the auger gear is slid all the way over the shaft end of the auger extension part and that the threads of the augers match.



- Remove the expansion screw (5). Then tighten the clamping screws (6). Finally tighten the expansion screw by hand.



Before the clamping screws (6) can be tightened again, the expansion screw (5) must be sufficiently turned back! Otherwise, the telescopic tube cannot be safely clamped and the splined shaft ends break.



When clamped insufficiently, the telescopic tube can slide out of the support tube. Danger of accidents during transportation!

2.7 Installing tunnel plates on the extendable auger ○

To ensure an optimum material flow – especially in the case of large paving widths – so-called tunnel plates (8) must be installed.

They are located directly in front of the auger distributor and – in conjunction with the auger – are an ideal system for conveying the material.

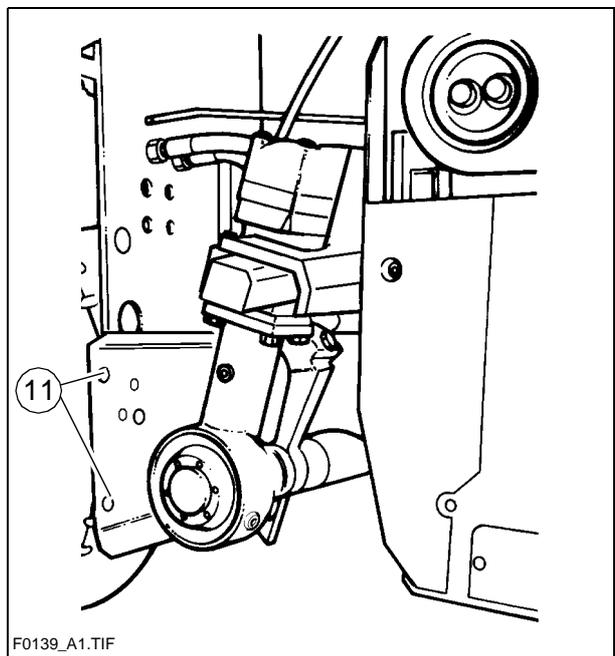
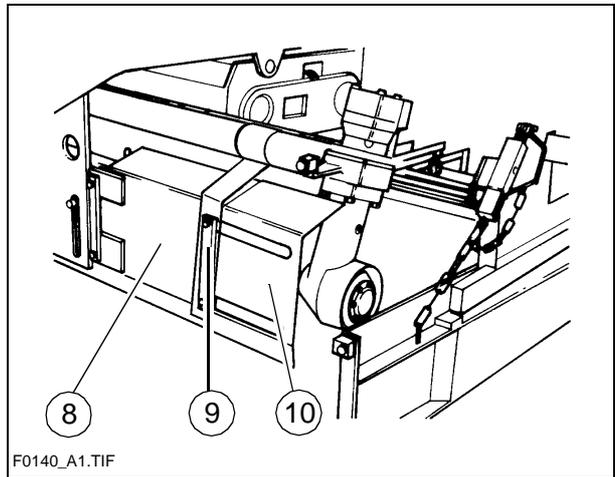
When operating with widths of more than 3.90 m, two or more combined tunnel plates (10) must be used. In this case, additional stabilizing supports (9) must be attached to the telescopic tube.

The tunnel plates must be directly screwed to the receptacles provided for this purpose (11); they are located on the auger frame sides and can thus be adjusted in height.

Refer to the auger extension chart to determine which parts of the conveyor system are required for the desired paving width.



The auger extension chart is contained in the operating instructions for the respective screed.



3 Screed



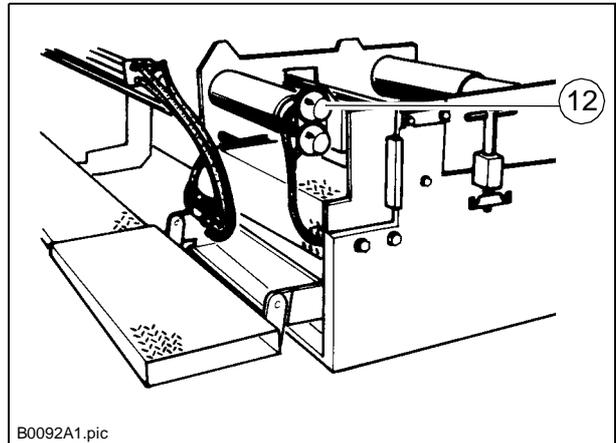
The operating instructions for the screed cover all work required for mounting, setting up and extending the screed.

4 Electrical connections

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

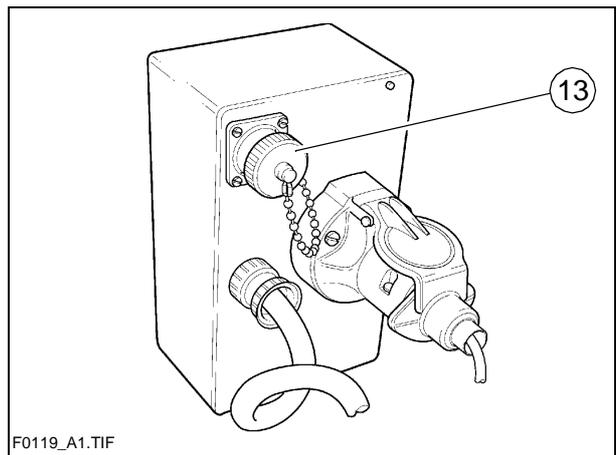
4.1 Remote controls

- to socket (12) (on the screed).



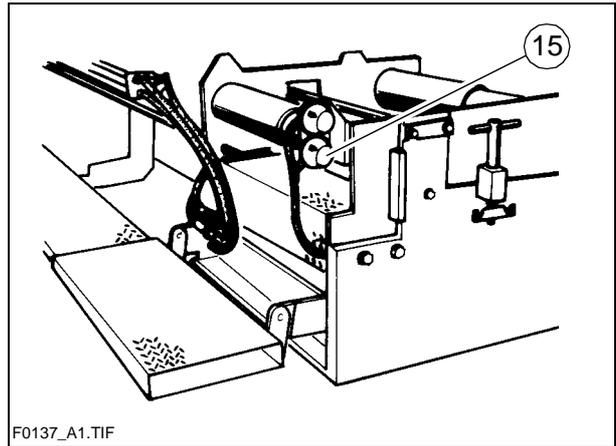
4.2 Grade control

- to socket (13)
(on the remote control unit) ○.

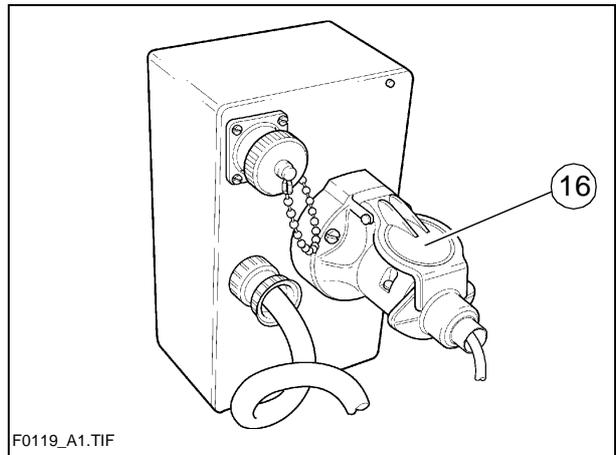


4.3 Auger limit switches

- to socket (15) (on the screed).

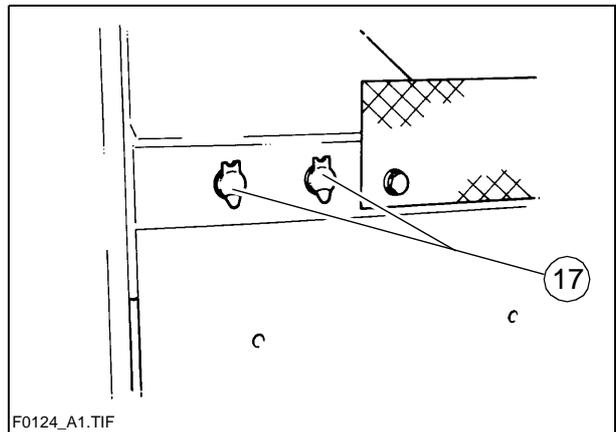


- to socket (16)
(on the remote control unit) ○.



4.4 Working lights

- to sockets (17) (on the paver finisher).



F 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 traction drive fuse from the operating panel.
- 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.

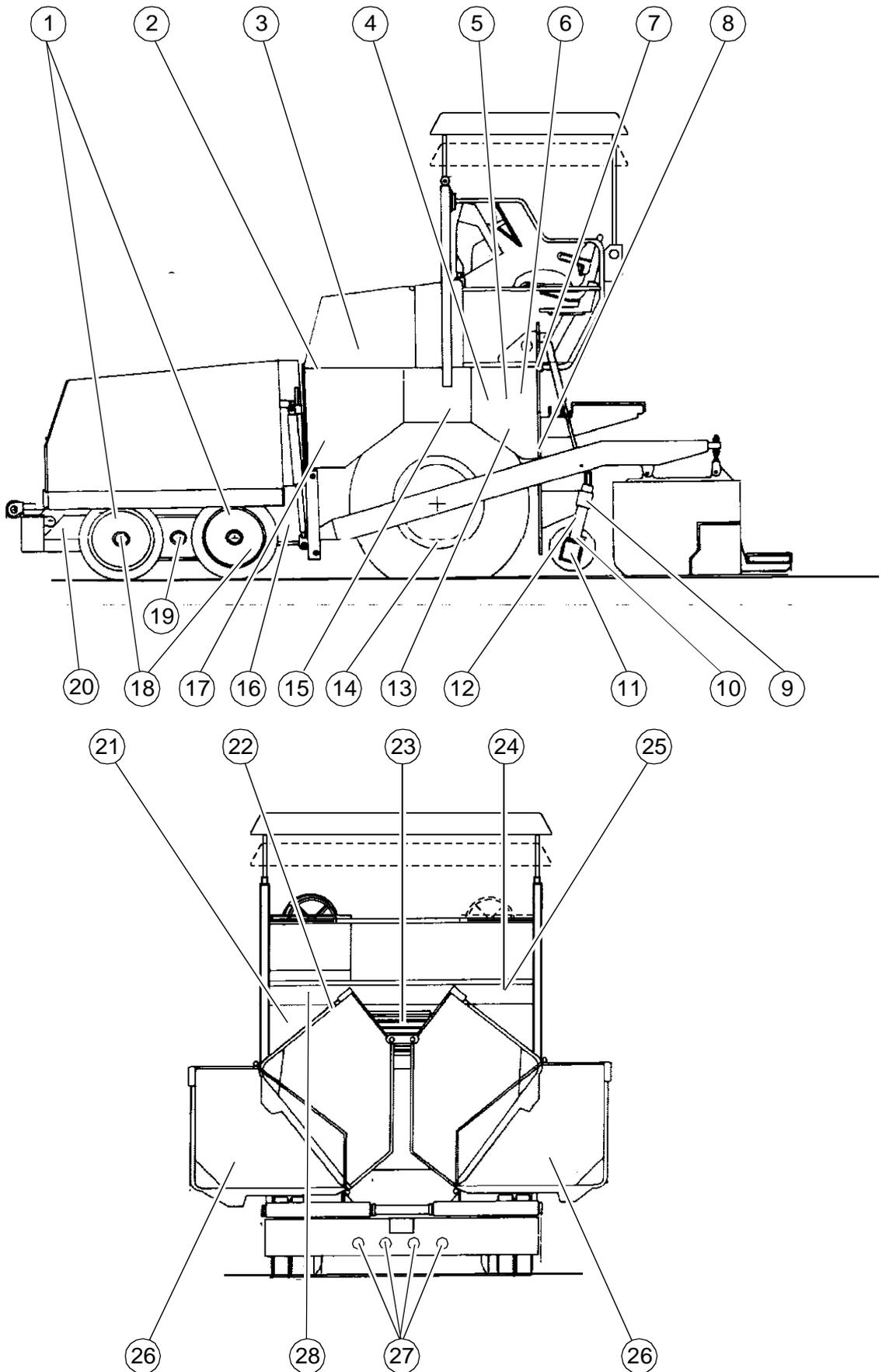
Spare parts: Use only approved parts and install them according to the specifications! If in doubt, contact the manufacturer!

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.

2 Maintenance intervals



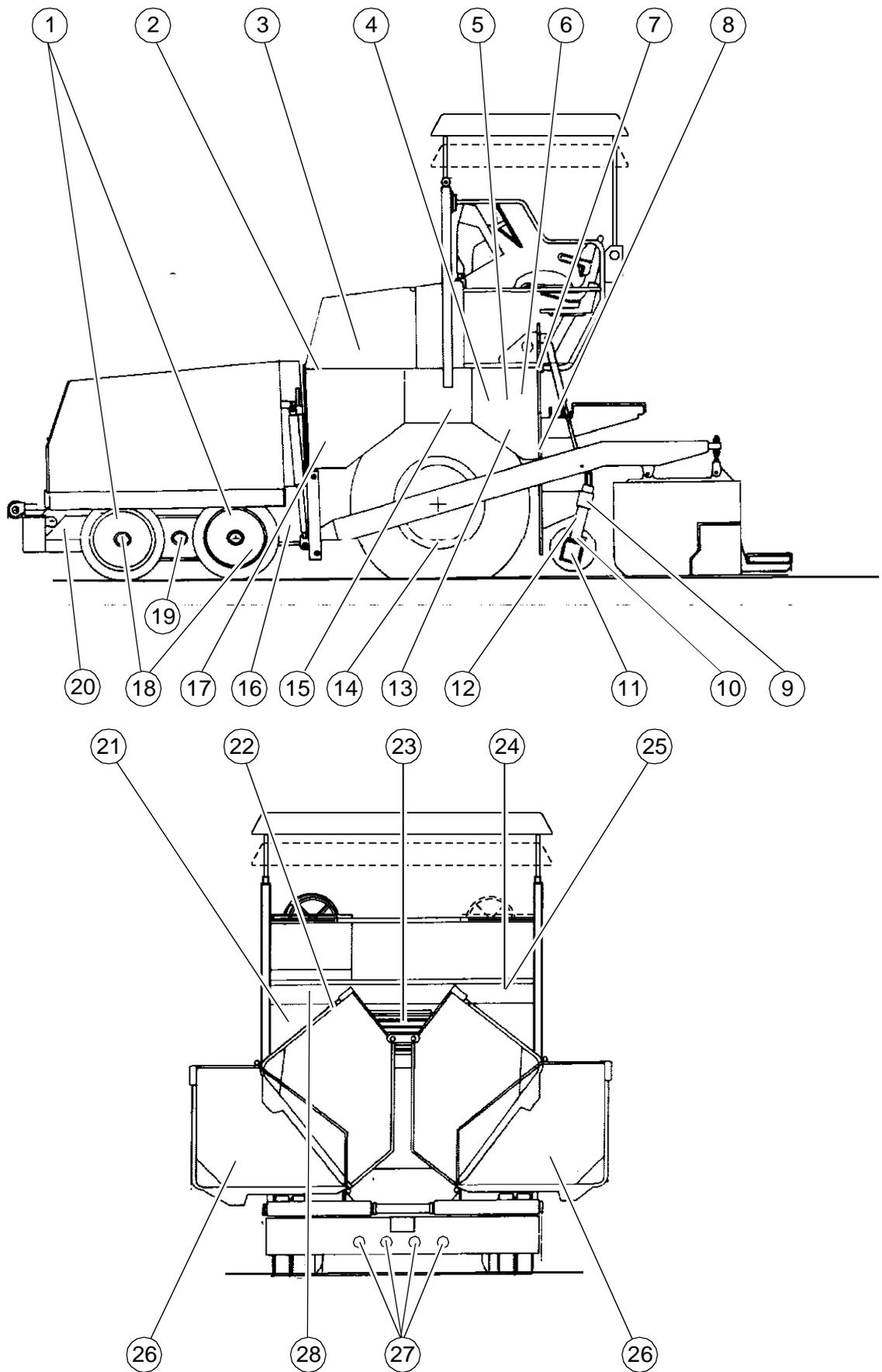
2.1 Daily (or every 10 operating hours)

Item	Maintenance point	Number	Lubrication	Check	Oil change	Agent	Amount
4	Chain tension, drive	2		x			
6	High pressure hydraulic filter	5		x			
7	Conveyor bearing	2	x			Grease	5 strokes
8	Chain tension, conveyor drive	2		x			
9	Auger, outer bearing *)	2	x			Grease	5 strokes
13	Hydraulic oil reservoir, filling level	1		x	x	Hydraulic oil	see "Filling volumes"
15	Chain tension - conveyor	2		x			
17	Diesel engine - oil level	2		x		Engine oil	
20	Conveyor deflection roller	2	x			Grease	5 strokes
21	V-belt tension	3		x			
22	Filling level, fuel tank	1		x		Gasoil	see "Filling volumes"
General security check: see section 3.1.							
Security check							



Check the oil level twice a day during the run-in period of the diesel engine!
When work has been performed on the hydraulic system: check all filters after 20 operating hours and replace them where applicable!

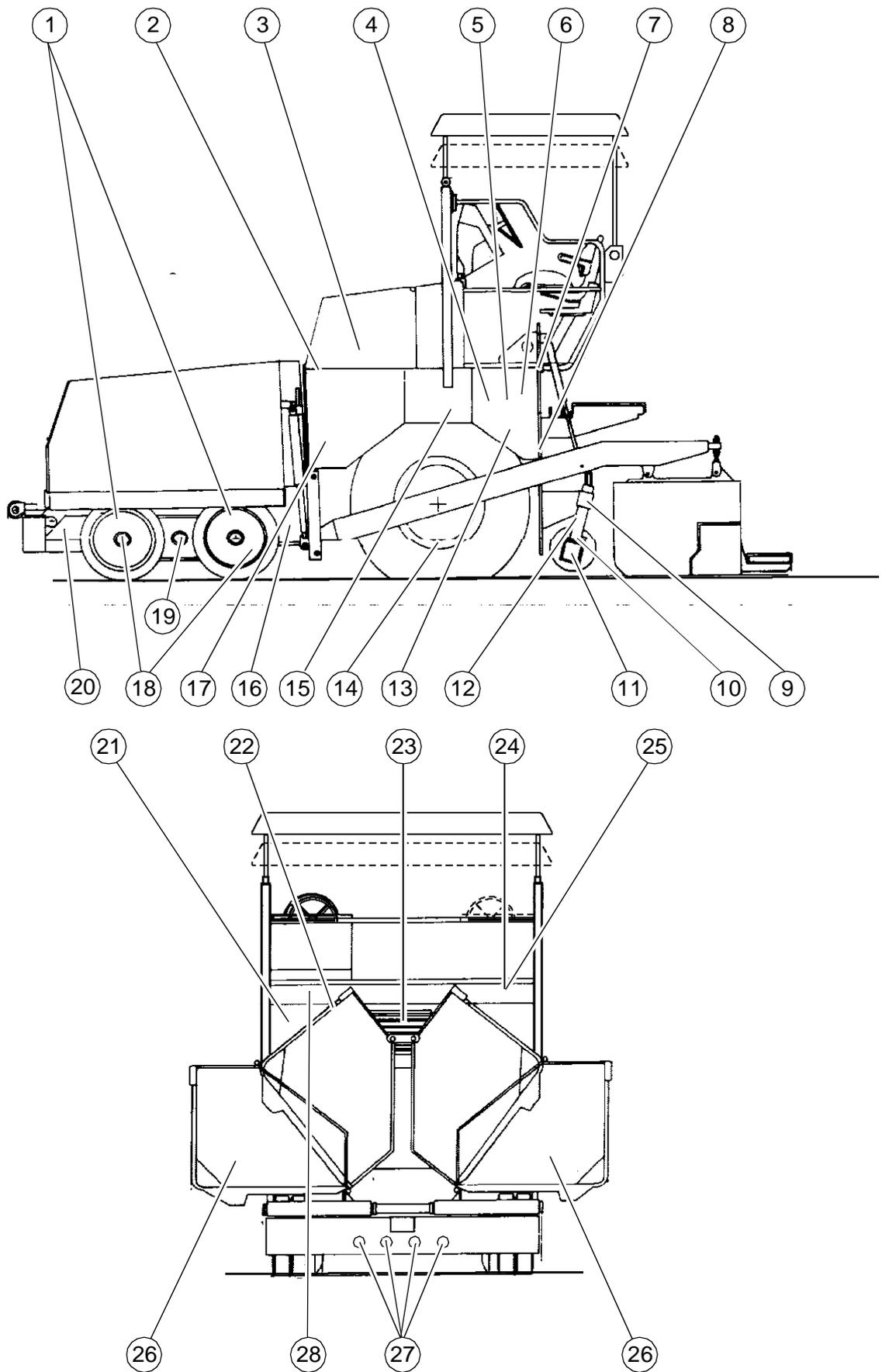
*) only for extendable auger



2.2 Weekly (or every 50 operating hours)

Item	Maintenance point	Number	Lubrication	Check	Oil change	Agent	Amount
1	King pin	4	x			Grease	5 strokes
2	Batteries: – Acid level – Terminals and cables	2		x		Distilled water	
3	Air filter	1		x	x		
5	Conveyor drive bearings	2	x			Grease	5 strokes
11	Auger, bevel gear	2		x	x	Transmission oil 90	see "Filling volumes"
13	Conveyor drive chain tensioning device	2	x			Grease	5 strokes
14	Drive wheels - air pressure *	2		x			
15	Drive axle	1		x	x	Transmission oil 90	see "Filling volumes"
16	Steering system	1	x			Grease	5 strokes
18	Wheel bearings F 7 W / F 8 W: F 8-4 W:	4 2	x x			Grease	5 strokes
19	Floating axle	2	x			Grease	5 strokes
26 ○	Steel hopper flaps	2	x			Grease	2 strokes
28	Water cooler – water level	1		x		Cooling fluid	

*) The tyre pressure required is stamped on the individual rims and marked with a colour code.



2.3 Every 250 operating hours

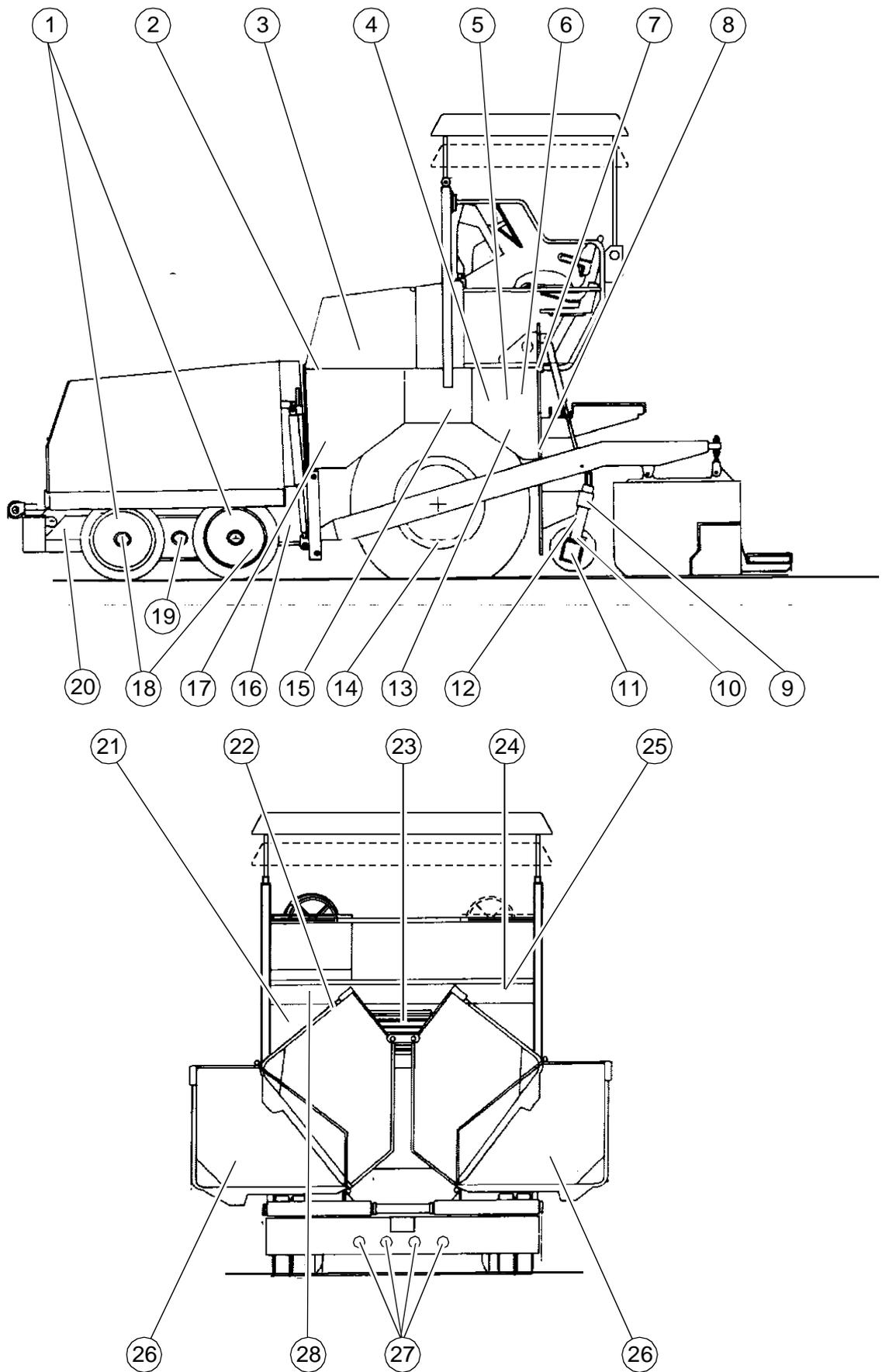
Item	Maintenance point	Number	Lubrication	Check	Oil change	Agent	Amount
10 ○	Auger, center bearing **)	1	x			Grease	5 strokes
17	Diesel engine: – Oil change – Filter change	1		x	x	Engine oil	see “Filling volumes”
	Engine suspensions			x			

**) only for extendable auger

2.4 Yearly (or every 1000 operating hours)

Item	Maintenance point	Number	Lubrication	Check	Oil change	Agent	Amount
11	Auger; bevel gear	2		x	x	Transmission oil 90	see “Filling volumes”
12 ○	Auger; gear neck bearing *)	2	x			Grease	5 strokes
15	Drive axle	1		x	x	Transmission oil 90	see “Filling volumes”
23	Fuel filter	1		x			
28	Water cooler – anti-freeze agent	1		x		Cooling fluid	
	Diesel engine: – Valve clearance – Heater plugs			x x			
	Have a specialist check the screed and the gas heater system			x			

*) only for extendable auger

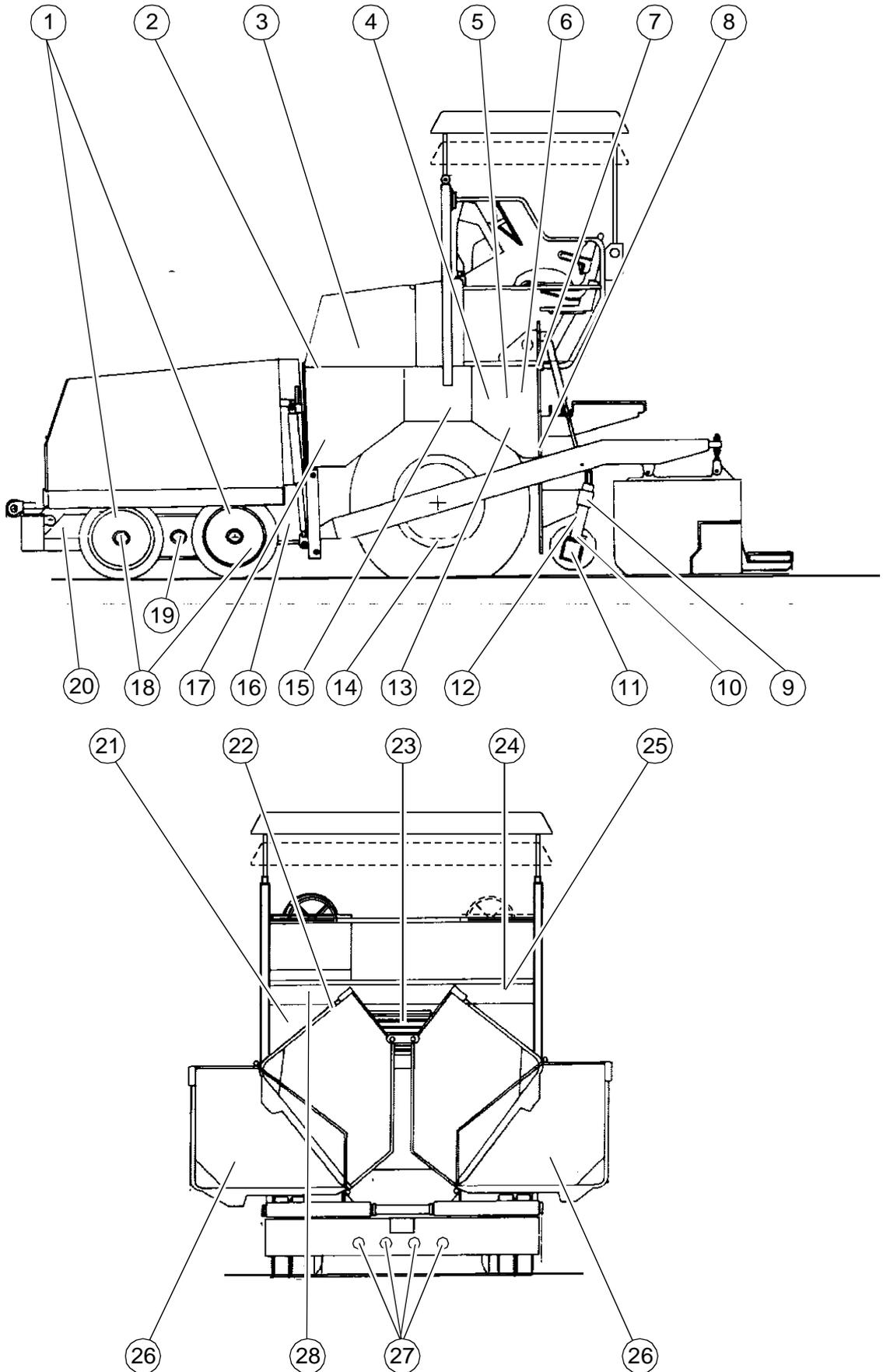


2.5 Every 2 years (or every 2000 operating hours)

Item	Maintenance point	Number	Lubrication	Check	Oil change	Agent	Amount
22	Fuel tank and system	1		x			
24	Suction/return hydraulic filter *	2		x			
25	Hydraulic oil reservoir - entire filling	1		x	x	Hydraulic oil	see "Filling volumes"
28	Water cooler and entire cooling system	1		x		Cooling fluid	see "Filling volumes"

*) Only use filters with a mesh size of $10 \mu = 0.01 \text{ mm}$!

3 Points for checking, lubricating and draining of oil

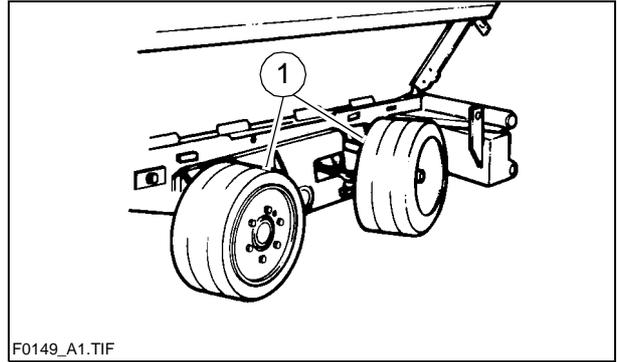


The points for checking, lubricating and draining of oil are described in detail below. The item numbers given in the headers refer to the illustration above.

3.1 Check points

King pins (1)

Each of the four king pins is equipped with one grease nipple.

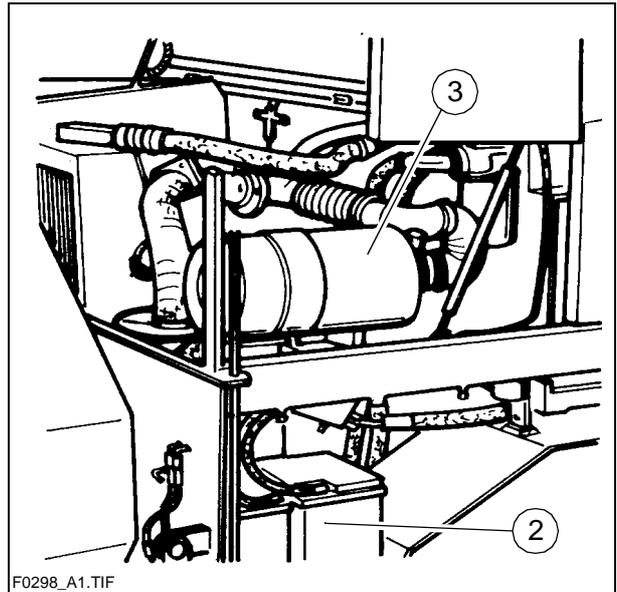


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Batteries (2)

When supplied, the batteries are filled with the correct amount of acid. The acid level should reach the upper mark. If this is not the case, use only distilled water for topping up!

The poles must be free of oxide. Protect them with special pole grease.



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Air filter (dry air filter) (3)



The maintenance of the air filter is described in the operating instructions for the engine.

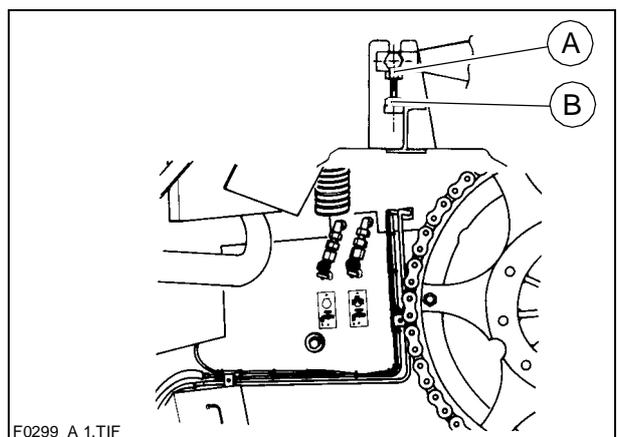
Chain tension, drive (4)



It must be possible to push the drive chains inwards by ca. 3 cm. If this is not the case, the chains and chain sprockets can be damaged.

To adjust the chain tension:

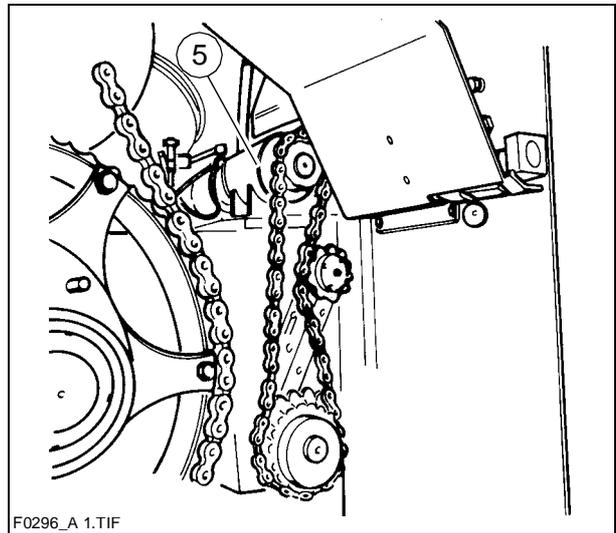
Loosen counter nut **B**, turn clamping screw **A** counterclockwise and tighten counter nut **B** again.



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Conveyor drive bearings (5)

The conveyor drive is located beneath the left-hand and the right-hand side flap (at the paver finisher rear). Each of the drive bearings is equipped with one grease nipple.



High pressure hydraulic filter (6)

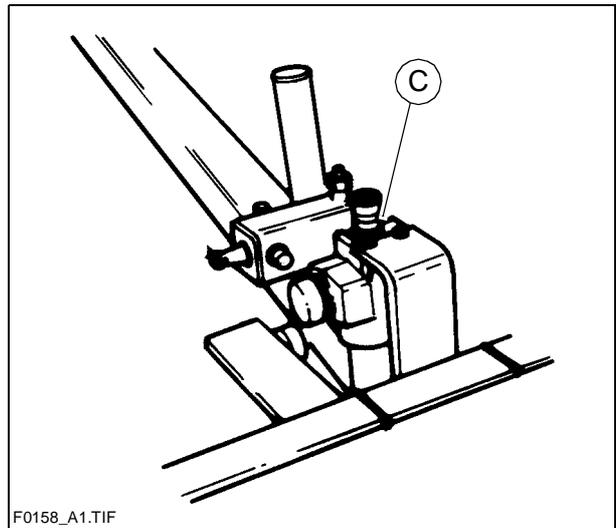


All filters of the hydraulic system must be checked and replaced where necessary 20 operating hours after repairs have been made!

Replace filter cartridges when maintenance indicator **C** turns red.

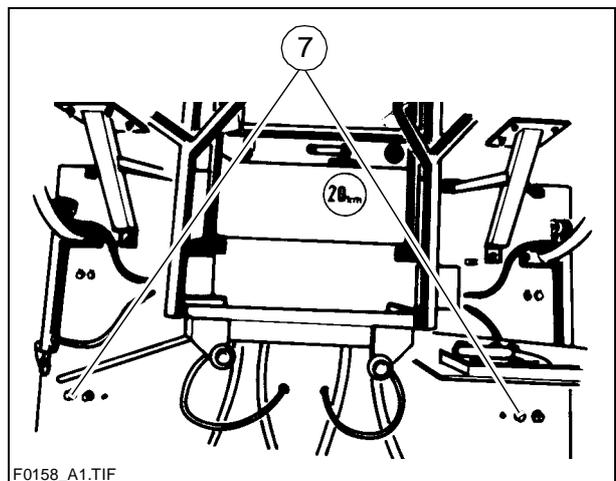
Drain the soiled oil that leaks out after unscrewing the filter cap into a used oil container.

Take out the filter cartridge and have it disposed of by specialists (danger of environmental pollution!). Wash out the housing, replace the O-rings and apply a thin layer of oil to them. Mount the filter housing with the filter cartridge again and tighten it properly. The red indicator **C** will then be automatically reset.



Conveyor bearing (7)

Grease nipples are located to the left and to the right of the paver finisher rear. From these nipples, lubrication lines lead to the bearings. Lubricating these bearings is thus facilitated.



Chain tension, conveyor drive (8)

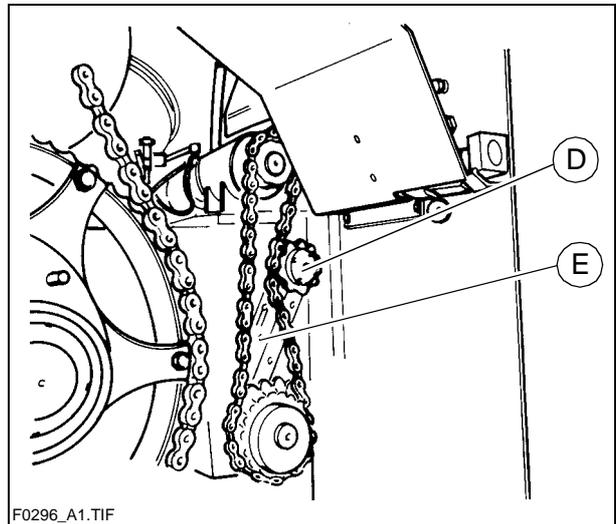
The conveyor drive is located beneath the left-hand and the right-hand side flap (at the paver finisher rear).



It must be possible to push the drive chains inwards by ca. 3 – 4 cm.

To adjust the chain tension:

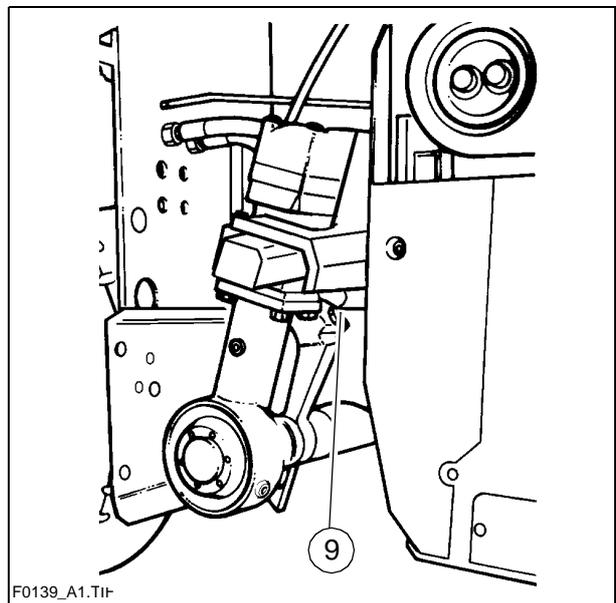
Loosen screw **E**, displace sprocket wheel **D** in its guide and tighten screw **E** again.



Outer auger bearing (9)

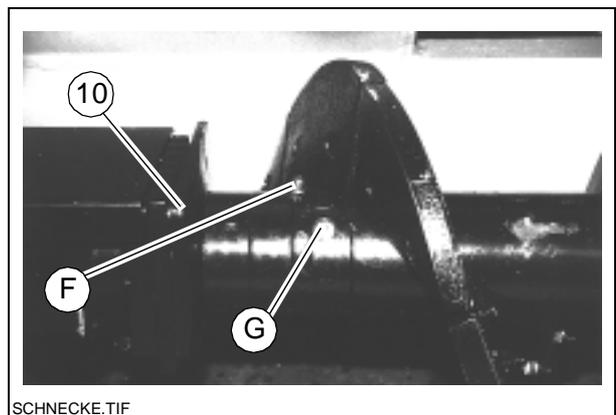
The grease nipples are located on each side at the top of the outer auger bearings.

These nipples must be lubricated each time work is finished to force out any bitumen residues that might have entered and to supply the bearings with a fresh filling of grease.



Center auger bearing (10)

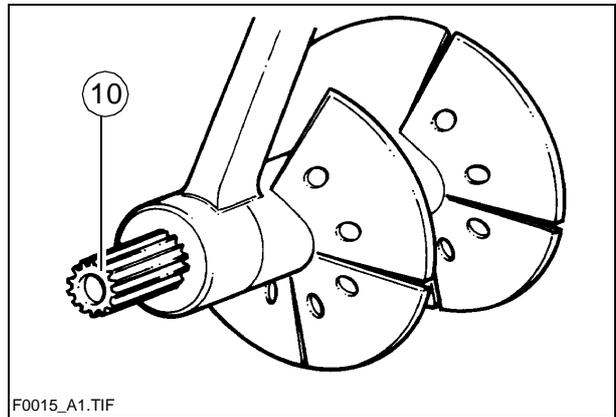
- Remove the hex screw (F) and screw in the grease nipple (G).
- Lubricate.
- Make sure to securely screw in the screw again.



Center auger bearing (10) (extendable auger) ○

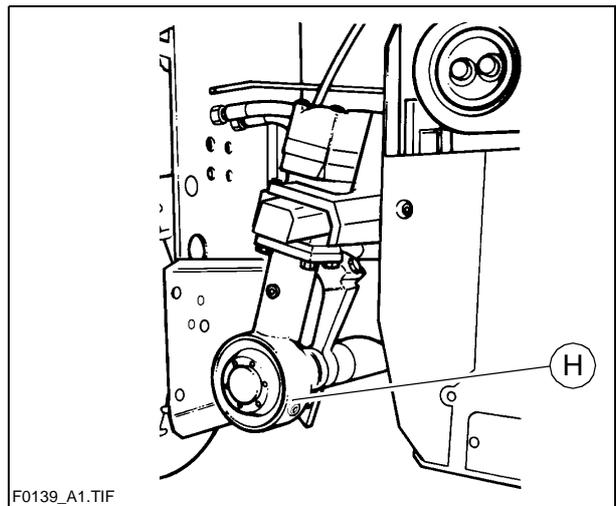
The center bearing must be lubricated on the **left-hand** side of the auger. To do so, the bevel gear unit must be pulled off.

The center bearing must be lubricated when in a warm state to force out any bitumen residues.



Auger, bevel gear unit (left/right) (11) ○

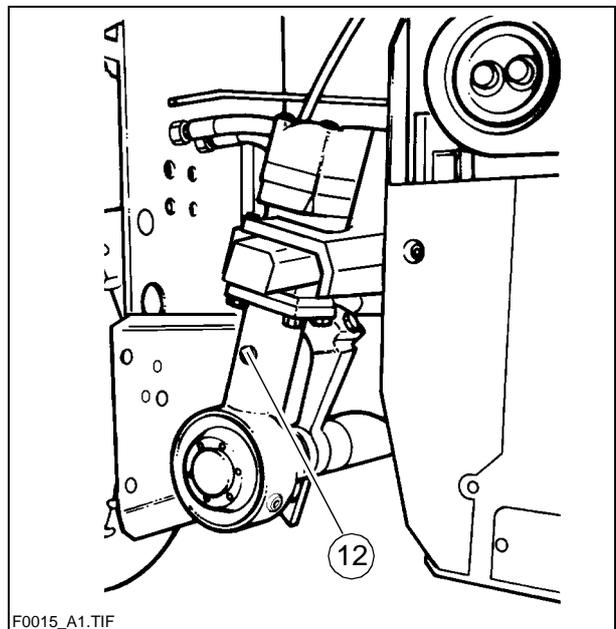
The gear unit has two filler plugs. The lateral screw plug **H** is used for checking the oil level and for topping up oil. Clean the vicinity of the screw plug before unscrewing it. The oil level is correct when a small amount of oil leaks out of the lateral opening.



Auger, gear neck bearing (12) ○

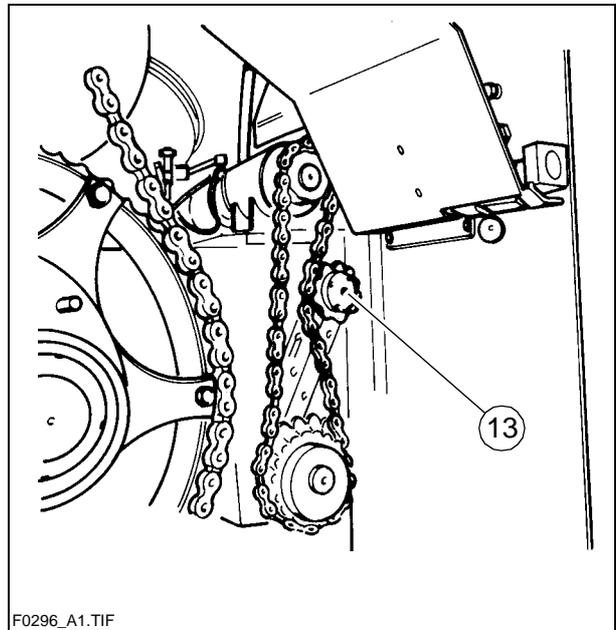
The socket head cap screw plug on the gear neck is for protection only. When the screw located underneath has been removed, a 10x1 grease nipple must be mounted. Using a grease gun, inject 10 strokes into it.

Remove the grease nipple and screw both screws back in. The gear bearing is sealed at the underside and is exclusively lubricated with grease.



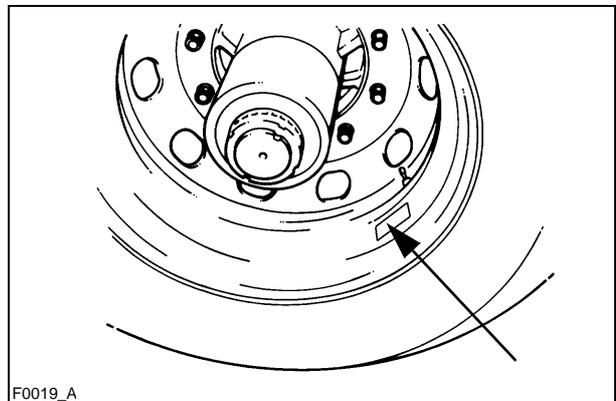
Conveyor drive chain tensioner (13)

The right-hand and the left-hand drive chain tensioner have one grease nipple each.



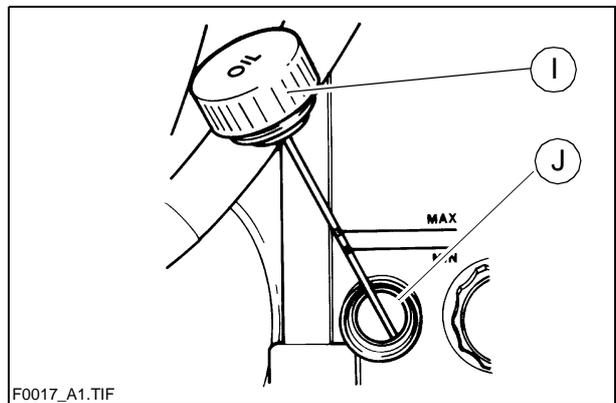
Drive wheel air pressure (14)

The required air pressure for the drive wheels is stamped on each rim and highlighted with paint.



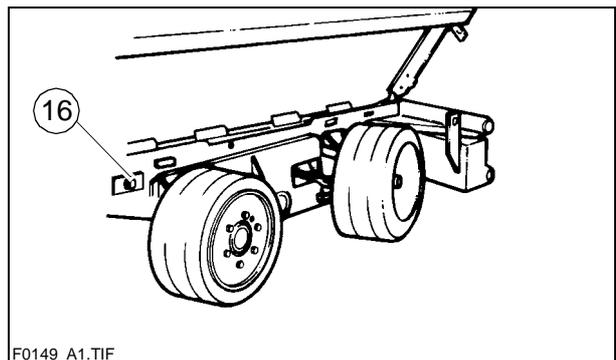
Drive axle (15)

The drive axle is equipped with a dipstick I. The oil level must reach the upper mark. The dipstick opening J is also used for topping up oil.



Steering system (16)

The grease nipple is located on the **right-hand** side panel and supplies the entire steering leverage with grease via a lubrication line.

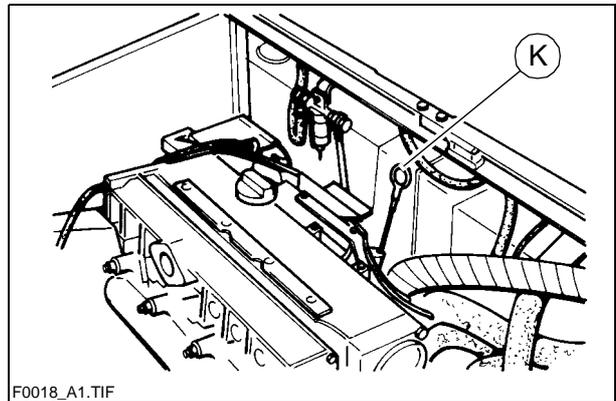


Diesel engine (17)

Check the engine oil level with dipstick **K** every time before work is started. Only check the oil level when the engine is in a horizontal position!



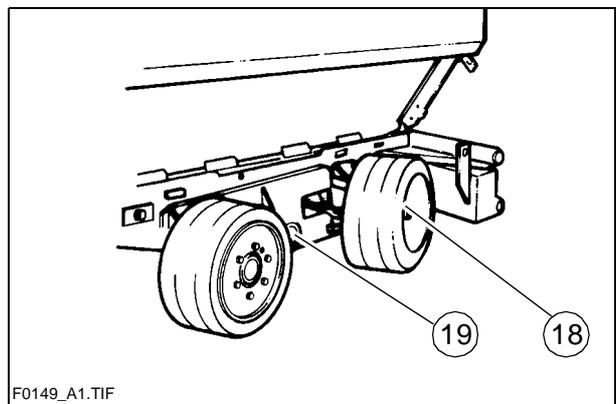
Too high an oil level destroys the seals in the engine while too low an oil level causes the engine to be overheated and destroyed.



Refer to the operating instructions for the engine for the oil and filter change, fuel system ventilation and the adjustment of the valve play.

Wheel bearings (18)

Each of the wheels is equipped with a grease nipple on the wheel hub. In the case of front-wheel driven paver finishers, the drive wheels have no grease nipples.

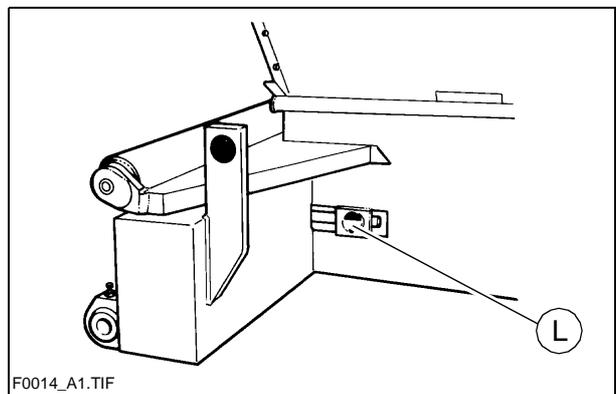


Floating axle (19)

The grease nipples are located to the left and to the right of the center bearing of the floating axle.

Conveyor deflection rollers (20)

The deflection rollers for the conveyor are lubricated with grease nipples **L** located behind the cross beam. The center bearings are lubricated via the outer grease nipples.

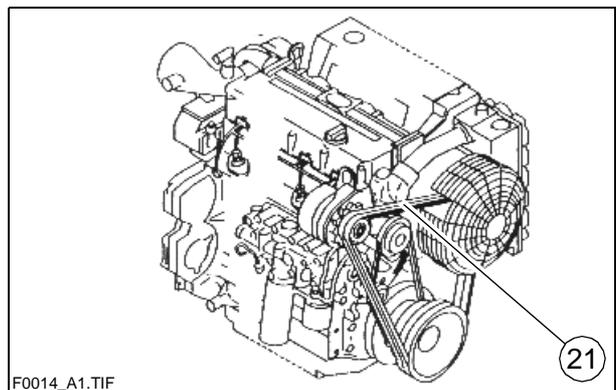


V-belts (21)

When checking the V-belts, it must be possible to push them inwards by max. 1–1.5 cm.

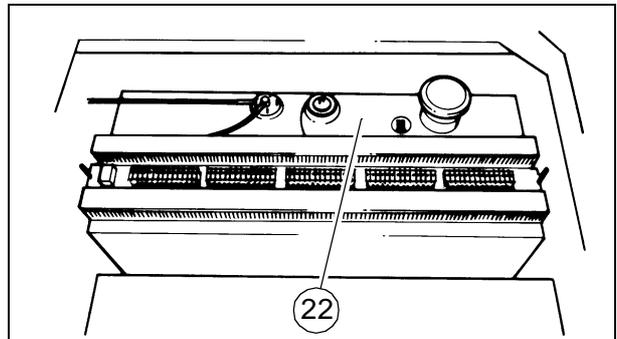
If this is not the case, tighten the V-belt (see the Motor-Betriebsanleitung).

If one of the belts breaks, the engine is shut down by the speed adjuster or switched to idling speed.



Fuel tank (22)

We recommend to always top up the fuel tank before starting work to prevent the tank from “running dry” which would make it necessary to ventilate the entire fuel system.

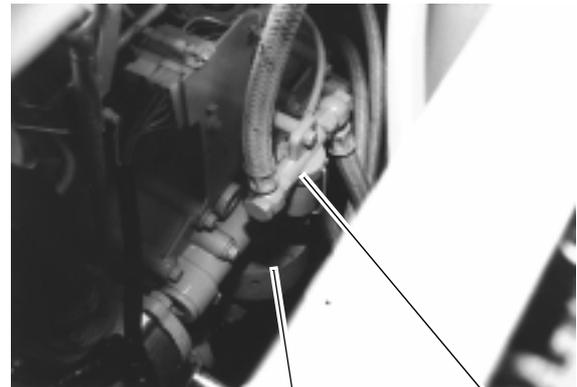


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Fuel filter (23)

The system comprises a prefilter and a main filter. Prefilter **M** is located in front of the hydraulic reservoir.

To clean the prefilter:
Take off the housing, clean the filter cartridge and reassemble the unit.

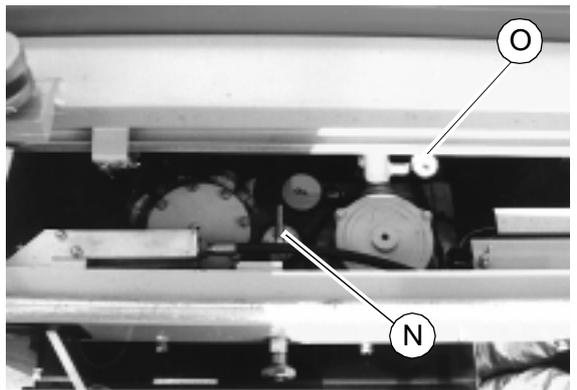


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Suction/return flow hydraulic filter (24)

The filters must be replaced when service indicators **N** or **O** turn red. Always replace filters when exchanging the hydraulic oil.

Unscrew the lid of the filter housing on the hydraulic oil reservoir and replace the filter cartridge.



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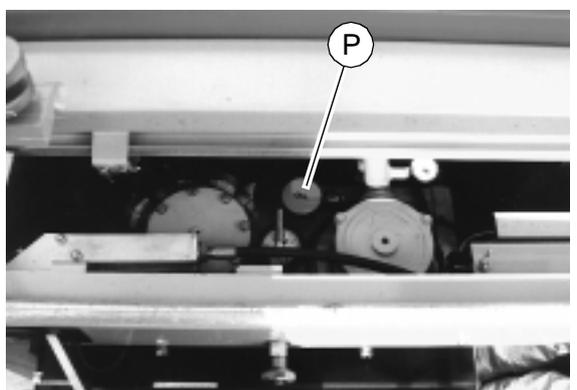


Never clean and reuse old filters! Always use a new filter cartridge.

Hydraulic oil reservoir (25)

Use dipstick **P** to check the oil level. With retracted cylinders, the oil level must reach the upper mark.

Regularly clean the oil reservoir ventilation and the oil cooler surfaces (see also the Motor-Betriebsanleitung).



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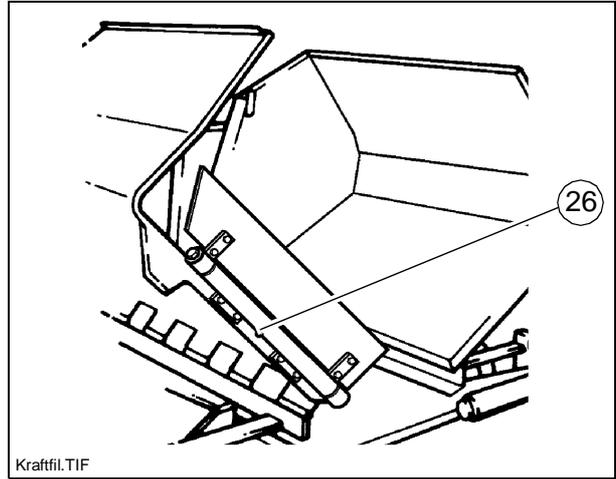
Use recommended hydraulic oils only (see the section “Recommended hydraulic oils”).



Service the main filter according to the Motor-Betriebsanleitung.

Steel hopper flaps (26) ○

Each of the spring-loaded steel hopper flaps is equipped with a grease nipple in its center.

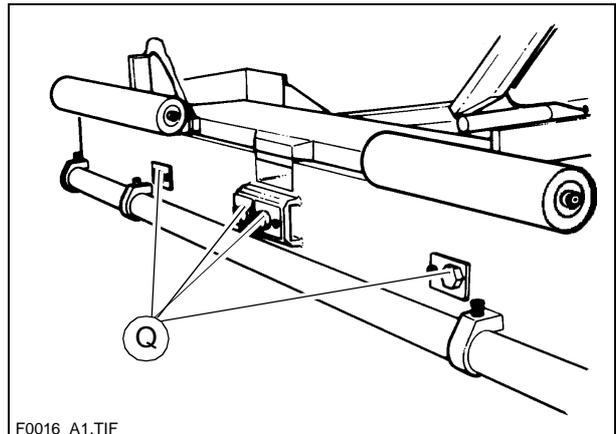


Chain tension, conveyor (27)

Adjusting screws **Q** are located at the front of the crossbeam.

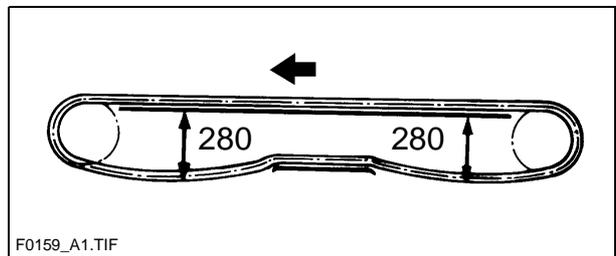
The chains should not be too tight or too slack. Too tight a chain can cause the chain to be stopped or to break when material falls into the space between the chain and the sprocket wheel.

Too slack a chain can be caught at protruding objects and can thus be destroyed.



For the daily visual check, peer horizontally below the bumper. The chain must not hang below the bottom edge of the bumper.

When the chain must be adjusted, measure the distance between the lower edge of the bottom plate and the bottom edge of the chain when the chain is not under a load (see the illustration).

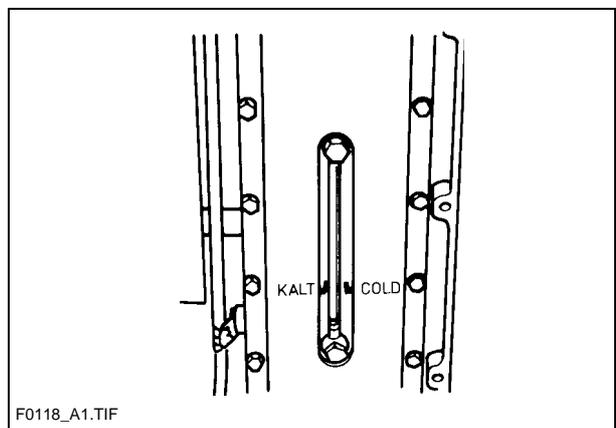


Water cooler (28)

The cooling water level must be checked when the system is cold. The level should then be at the (COLD) mark. Make sure that the cooling water contains a sufficient amount of anti-freeze/ corrosion protection agents (-25° C).



When hot, the system is under pressure. Danger of scalding when the system is opened!



General visual checks

The daily routine should comprise a visual inspection around the entire paver finisher. The following items must be checked:

- Are components or controls damaged?
- Are there leaks on the engine, the hydraulics, the gear box, etc.?
- Are all fastening points (conveyor, auger, screed, etc.) in order?



Immediately take actions to correct any detected malfunction to avoid damages, dangers and environmental hazards!

Checks by a specialist



The paver finisher, the screed and the gas heater system must be checked by a specialist for their safe state

- when required (according to the operating conditions and the nature of application),
- but at least once a year.

3.2 Oil drain points



Collect all used oil and have it disposed of properly! Possible environmental hazard!

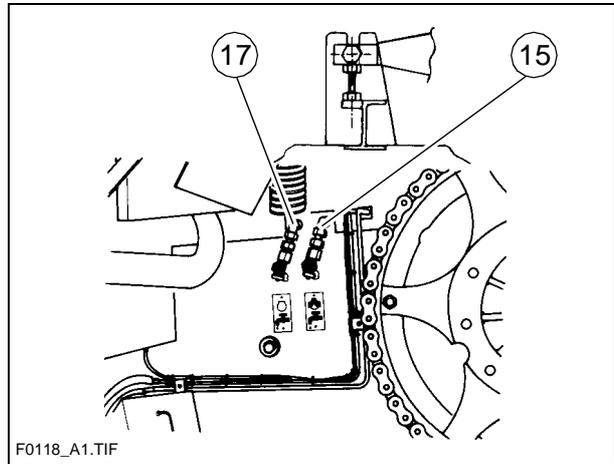


For the filling volumes, see "Filling volumes".

Diesel engine (17)

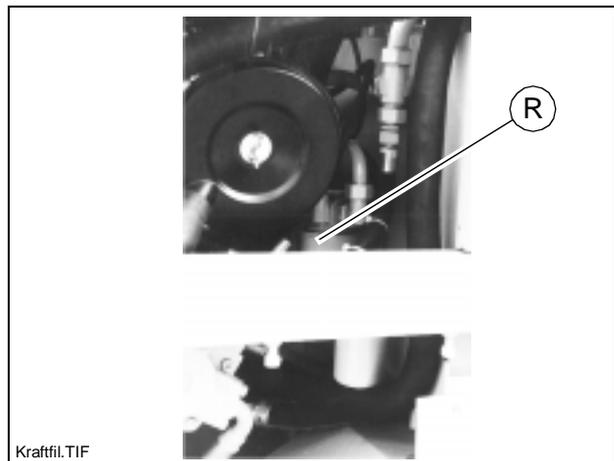
Draining the engine oil:

- Unscrew the protective cap.
- Attach the hose supplied with the accessories. Route the hose end into a used oil container.
- Open the shut-off valve with a wrench and completely drain the oil.



Replacing the engine oil filter:

- Filter **R** is located on the left-hand side near the hydraulic oil reservoir. It can be accessed after opening the engine hood.



Drive axle (15)

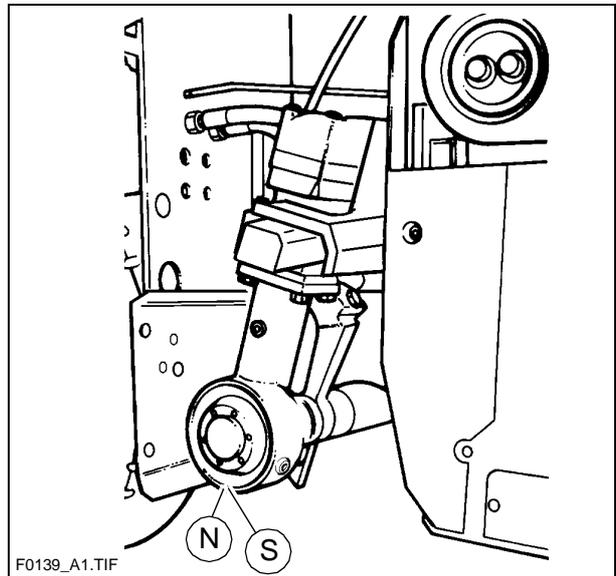
- Drain the gear oil in the same manner as the engine oil (see above).

Auger, bevel gear (11) ○

To drain the oil, unscrew the lower screw **S**.

When returning the screw make sure to use a new seal.

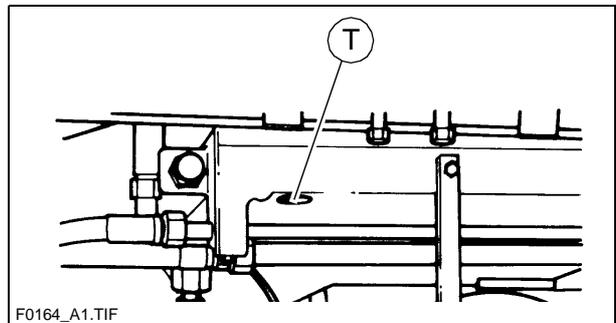
Make sure to clean the screw and the vicinity of the drain bore!



Hydraulic oil reservoir (25)

To drain the hydraulic oil, unscrew drain plug **T** and collect the oil in a suitable container using a spout.

When returning the screw, make sure to use a new seal.



4 Lubricating agents and operating substances

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

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



Heed the filling volumes (see the section “Filling volumes”).



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

	BP	Esso	Fina	Mobil	Renault	Shell	Wisura
Grease	BP Multi-purpose grease L2	ESSO Multi-purpose grease	FINA Marson L2	Mobilux 2 Mobiplex 47	Multi-purpose grease	SHELL Alvania Grease EP (LF) 2	Retinax A
Engine oil	See the operating instructions for the engine. Shell Rimula 10W40 has been filled in at the factory.						
Hydraulic oil	See section 4.1 Shell Tellus Oil 46 has been filled in at the factory.						
Gear oil 90	BP Multi EP SAE 90	ESSO GP 90	FINA Ponionic N SAE 90	MOBIL GX 90	Tranself EP 90	SHELL Spirax EP 90 Hypoit GL 4	
Gear oil 220	BP Energol GR-XP 220	ESSO Spartan EP 220	FINA Giran L 220	MOBIL Mobilgear 630 Mobilgear SHC 220	Chevron NL Gear Compound 220	SHELL Omala 220	Optimol Optigear 220
	Optimol Optigear 220 has been filled in at the factory.						
Dist. water							
Diesel fuel							
Brake fluid	BP Blue original brake fluid	ATE Disc brake fluid	FINA Trelup HD 3	ELF			
Cooling liquid	Cooling liquid (anti-freeze and corrosion protection)						

4.1 Hydraulic oils

Preferred hydraulic oils:

a) Synthetic hydraulic liquids based on ester, HEES

Manufacturer	ISO category of viscosity VG 46
Shell	Naturelle HF-E46
Panolin	HLP SYNTH 46
Esso	HE 46

b) Mineral oils

Manufacturer	ISO category of viscosity VG 46
Shell	Tellus Oil 46



When changing over from mineral oil to biodegradable oils, please contact the advice service of our company!



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

4.2 Filling volumes

	Substance	Volume	
Fuel tank	Diesel fuel	80	liters
		21.2	US gallons
		17.6	British gallons
Hydraulic oil reservoir	Hydraulic oil	80	liters
		21.2	US gallons
		17.6	British gallons
Diesel engine (with oil filter change)	Engine oil	See the operating instructions for the engine.	
Cooling system	Cooling fluid	See the operating instructions for the engine.	
Drive axle (differential)	Gear oil 90	11.5	liters
		3.04	US gallons
		2.53	British gallons
Auger bevel gear (each side)	Gear oil 90	0.6	liters
		0.16	US gallons
		0.13	British gallons
Brake fluid container	Brake fluid		
Batteries	Distilled water		



For the different types of operating agents, see “Lubricating agents and operating substances”, page F23.

5 Electric fuses

5.1 Main fuses

1.	Above the batteries: - Electrical system of the paver finisher - Screed heater system, working lights	50 A 25 A
2.	Below the stepping plate of the operator stand: - (free) - Screed heater system	25 A

5.2 Fuses on the main terminal strip (above the fuel tank)

1.	Emulsion spraying system (○)	3 A
2.	(free)	-
3.	Anti-skid controller (○)	7.5 A
4.	(free)	-
5.	(spare)	(3 A)

5.3 Fuses in the gas heater switch box

1.	Power supply	5 A
2. – 5.	Ignition (4x)	2 A (4x)

5.4 Fuses on the operating panel

No.	Fuse strip II	A	No.	Fuse strip I	A
1.	Hazard flasher (terminal 30)	5	1.	Horn; automatic drive controller; switch-on interlock; emergency stop button; engine speed adjuster (○)	5
2.	Hazard flasher (terminal 15)	3	2.	Control lamps; torn V-belt; indicators	3
3.	Brake light; screed hazard flasher	3	3.	Leveling system (grade control/slope control)	5
4.	High beam	7.5	4.	Conveyor / auger, right	7.5
5.	Low beam, right	3	5.	Conveyor / auger, left	7.5
6.	Low beam, left	3	6.	Tamper / vibration	3
7.	Parking light, right	3	7.	Hopper and screed hydraulics; remote control	7.5
8.	Parking light, left; instrument illumination	3	8.	Diesel engine stop solenoid	7.5