OPERATION & MAINTENANCE

Paver Finisher
F1000T T4f

Edit.2 April 2016 4812243646(A4);4812247168(A5)

EN Keep for later use in document compartment

Valid for:

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Table of contents

A Correct use and application

NOTICE

The “Guidelines for the Correct Use and Application of Paver” complied by Dynapac are included in the scope of delivery for the present machine.
The guidelines are part of the present operating instructions and must always be followed. Federal, state and local regulations are fully applicable.

The road construction machine described in these operating instructions is a paver that is suited for laying mixed materials, roll-down concrete or lean-mixed concrete, track-laying ballast and unbound mineral aggregates for paving foundations

This machine shall be used, operated and maintained for the purpose of the intended work as included in the operation manual. Any other use is regarded as improper use and can cause injury to persons or damage to the paver 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 is to be operated on inclines or where it is to be used for special purposes (i.e. construction of dumps, dams), it is absolutely necessary to contact the manufacturer.

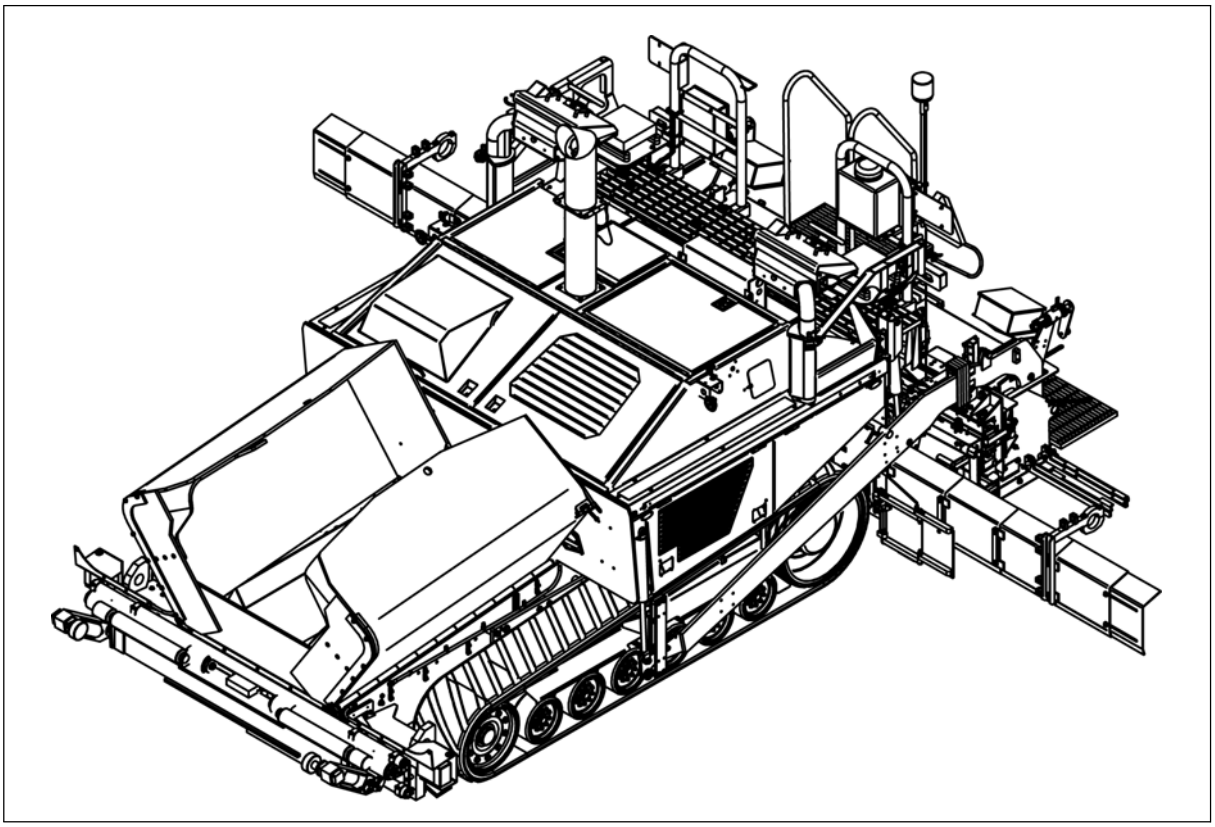
Duties of the user: A “user” within the meaning of the present operating instructions is defined as any natural or legal person who either uses the paver himself, or on whose behalf it is used. In special cases (i.e. leasing or renting), the user is considered the person who, in accordance with existing contractual agreements between the owner and the user of the paver, is charged with the observation of the operating duties.
The user must ensure that the paver 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 presentation regulations and other safety-related provisions as well as the operating, servicing and maintenance guidelines are observed. The user must also ensure that all persons operating the equipment have read and understood the present operating instructions.

Mounting attachments: The paver 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 supplement the functions of the paver is permitted only after written approval by the manufacturer has been obtained. If necessary, the approval of local authorities has to be obtained. Any approval obtained from local authorities does not , however, make the approval by the manufacturer unnecessary.

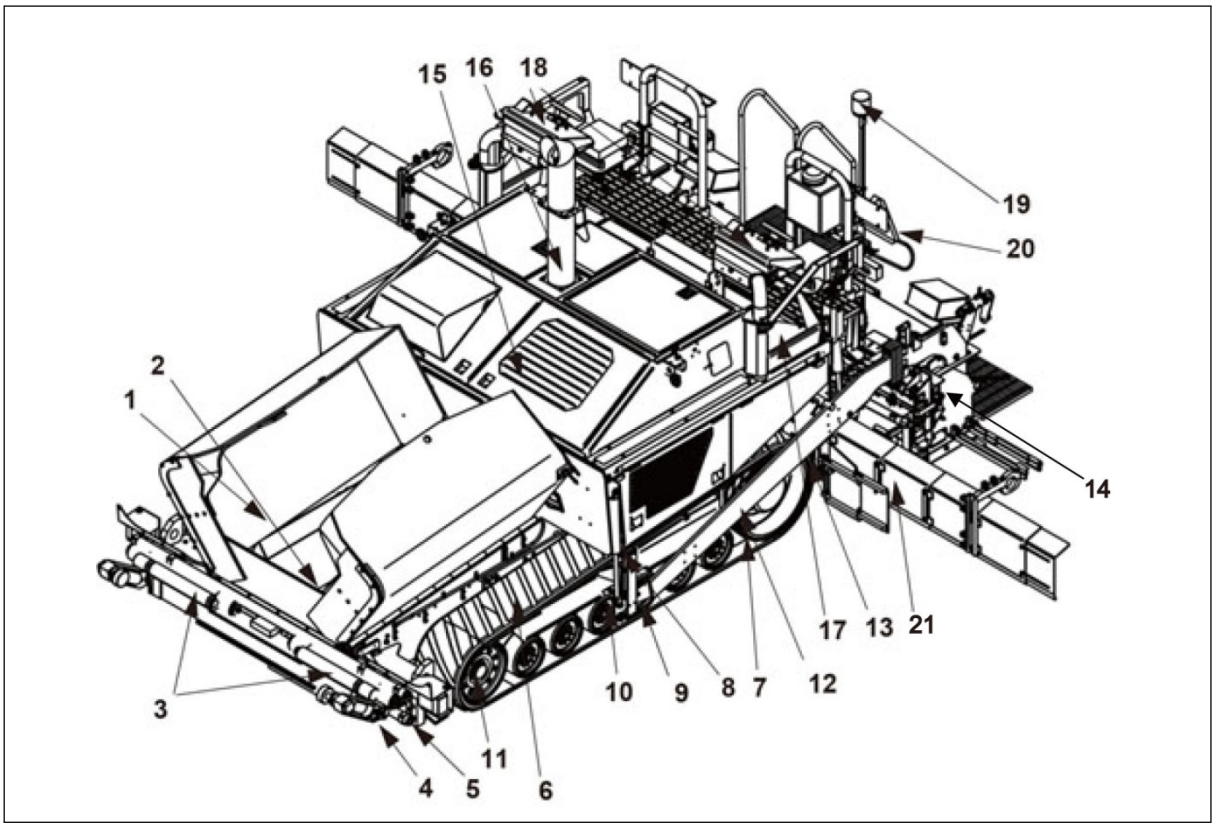
B Vehicle description

1. Application

The Dynapac F1000T is a rubber track paver that is used for laying bituminous mixed material, roll-down or lean-mixed concrete, track-laying ballast and unbound mineral aggregates for paving foundations.



2. Description of assemblies and functions



Item	Standard or Optional	Description
1	Standard	Material hopper
2	Standard	Conveyor
3	Standard	Truck push rollers
4	Optional	Truck hitch
5	Standard	Mounting tube for alignment indicator
6	Standard	Rubber track
7	Standard	Track drive wheel
8	Standard	Leveling cylinder (for paving thickness)
9	Standard	Leveling arm guide
10	Standard	Guide roller (Side arm tow point)
11	Standard	Idler
12	Standard	Screed side arm
13	Standard	Auger
14	Standard	Screed
15	Standard	Power pack enclosure
16	Standard	Engine exhaust & fume extraction
17	Standard	Operator’s platform
18	Standard	Operator’s panel
19	Standard	Warning beacon
20	Standard	Washer/sprayer
21	Optional	Tunnel Extensions

2.1 Vehicle

Construction (Please read and conform the red chapters)

The Dynapac F1000T is a rubber track propelled paver built with a welded steel frame on which the power pack, augers, conveyors, hopper and operator positions are mounted.

The track suspension compensates for uneven areas on the ground. The suspension of the attached screed helps to attain high paving precision. The machine is designed to move material via hydraulically driven conveyor chains and spread it with augers to allow the screed to spread the materials evenly. The adjustable hydrostatic drive system allows the speed of the paver to keep pace with other equipment in all work conditions.

The operation of the paver is largely facilitated by the easy to use operator controls. The operator can control the functions of the paver from either the left control panel or the right control panel.

Available options include:

Grade Control
- Control System
- Averaging Ski
- Non-Contacting Averaging Ski

Truck Hitch
Auger Extensions
Frame Extensions
Umbrella
Screed
- Berm
- Screed Corded Controls
- Screed Extensions

Further equipment and upgrade options on request

Engine: The paver is powered by a 6-cylinder, water cooled diesel engine with direct injection and a turbo charger. Electric starting and belt driven alternator battery charging is standard. The engine power / rpm is controlled by the engine speed control on either of the consoles. The engine is shut down either by removing the key “ON/OFF” switch or the emergency stop switch. For further details, see the technical data in the engine’s instruction manual.

Track: The two rubber tracks are driven indepently of each other. They are each direct drive requiring less maintenance and service than chain driven machines. Each track is adjusted automatically using hydraulic pressure. The rubber track allows the machine to attain a high transportation speed with excellent maneuverability and traction.

Hydraulic system: The diesel engine has the Pump Drive gear box attached to it. This drives the hydraulic pumps for all the main and auxiliary paver functions. The hydraulic system also drives the generator needed to heat materials to prevent the material from sticking to the screed plate. All power on the paver comes from hydraulics.

Track drive: The closed-loop track drive system includes two speed track drive motors that are connected to the drive pumps by means of high pressure hydraulic hoses. The hydraulic motors are mounted to the track drive wheels and mobilize the tracks. Track movement is controlled by directional control joysticks on the consoles.

Steering system/operator’s platform: The independent hydrostatic travel drives allow the paver to be turned on the spot. The electronic synchronization, controlled from the operating panel, ensures that the paver runs straight ahead. The operating panels can be secured in variable positions on both left and right console panels, by a locking mechanism.
Steering is accomplished merely by driving one track at a different speed than one other. If turning left, the track on the right hand side will move faster than the track on the left. If turning right, the track on the left hand side will move faster than the track on the right.

Push roller crossbar: The push rollers for material trucks are connected to a crossbar that pivots at its center. This crossbar allows for differences in distances to the rear wheels on a variety of material trucks. This permits the paver to deviate less from its course and makes paving curves 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 approximately 30,000 lbs. (13608 kg) and are raised hydraulically to empty onto the conveyor chains. To facilitate the emptying and to improve material transfer, each of the lateral covers of the hopper are hydraulically moved.

Conveyors (Material transfer): The paver is equipped with two conveyors driven separately with pressure from a single pump. The system consists of a single, pressure compensated, load sense style, variable displacement, open loop pump driving two fixed volume hydraulic motors. This pump supplies hydraulic power for both conveyors of the machine and provides power for the cylinders on the machine.
These conveyors transfer the material from the hopper to the augers. By using sensors to monitor the

filling height during the paving procedure, the transfer amount or speed regulation is completely automatic.

Augers: The augers are driven and controlled independently from the conveyors. The auger hydraulics consist of two high pressure, variable displacement, closed loop pumps driving two fixed volume motors. The left-hand and the right-hand half of the auger can be controlled separately.
The auger direction can be changed to direct material towards the center of the screed or towards the outside of the speed. There is always a sufficient supply of material even if an excessive amount of material is required at one side. The auger speed is controlled by sensors that monitor the material flow leaving the auger area.

Height adjustment and extension of augers: Height adjustment and extension of augers ensure an optimum variety of a wide range of paving thicknesses and widths.
Auger height is regulated at the operating panel and moved by means of hydraulic cylinders.
Auger segments of different lengths can be attached to easily adapt to the different paving widths.

Leveling/slope control system: The slope control system allows the paving thickness to be regulated at the 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 screed leveling arms are linked with a slope beam.

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

By adjusting the height of the screed leveling cylinders, the paving thickness of the material or the laying height of the screed can be controlled.
Activation 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.

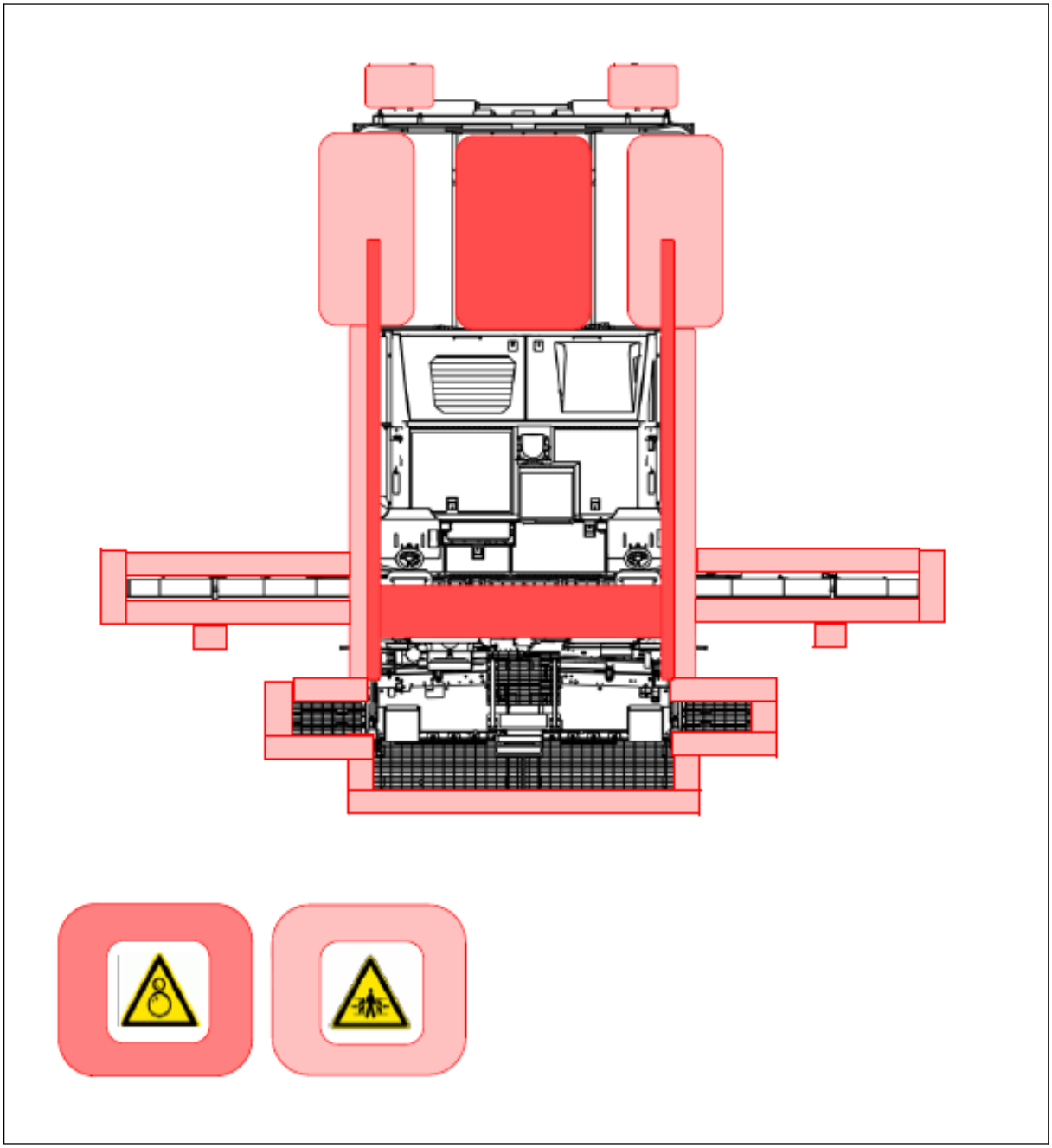
System lifting arms: The screed lifting arms used to lift the screed during transport. Lifting occurs electro-hydraulically on both sides by activating the hydraulic cylinders on the screed lifting arms which is controlled by means of toggle switches on the operating panel.

Truck hitch (Option): The truck hitch holds the transport vehicle, containing the paving material, in contact with the paver. The truck hitch mounts are located on the front of the hopper.

3. Danger zones

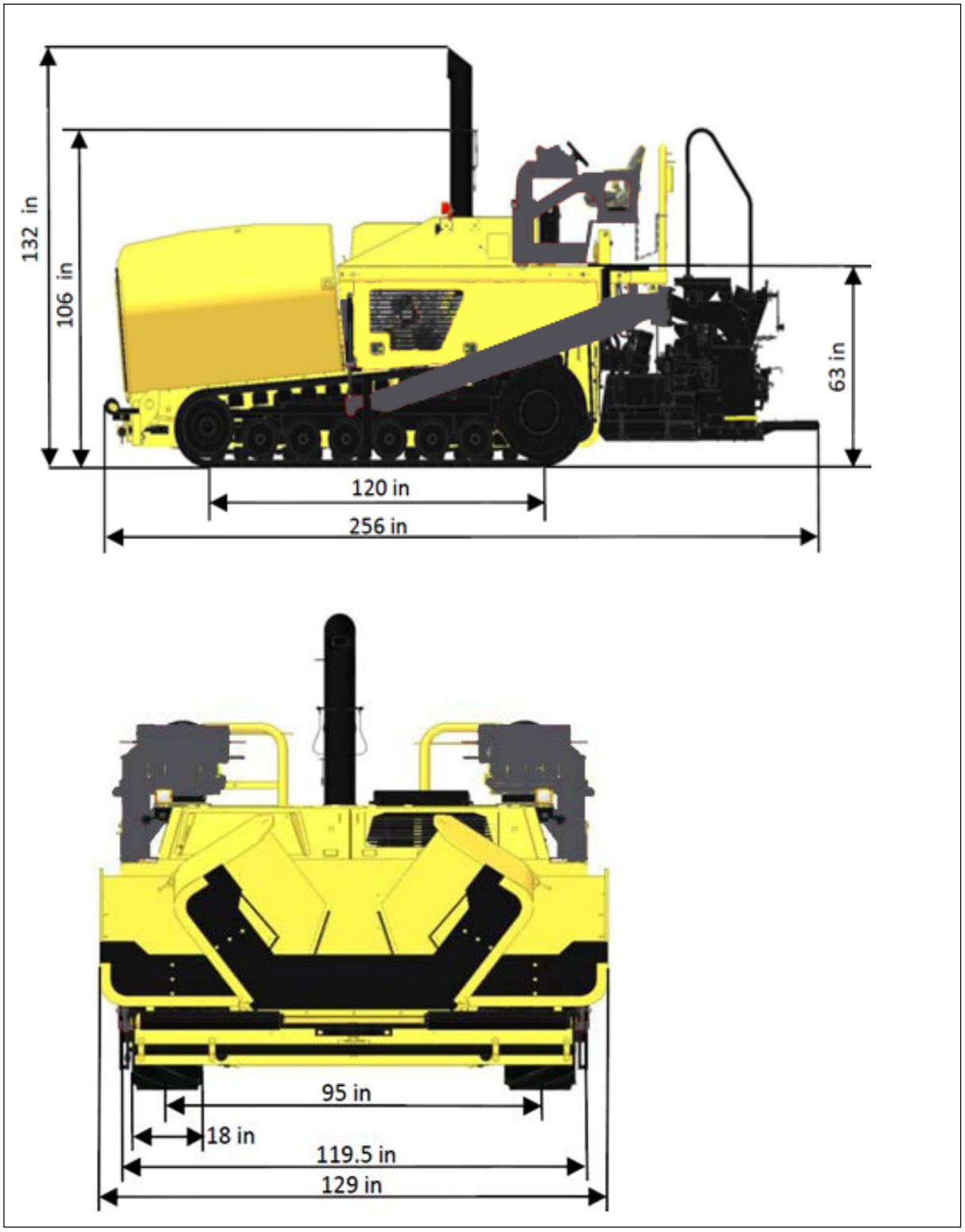
⚠ WARNING

In the working areas around the machine (marked in red), there may be a risk of drawing in or crushing during normal operation caused by rotating and conveying elements, or by components in motion.



4 Technical data, standard configuration

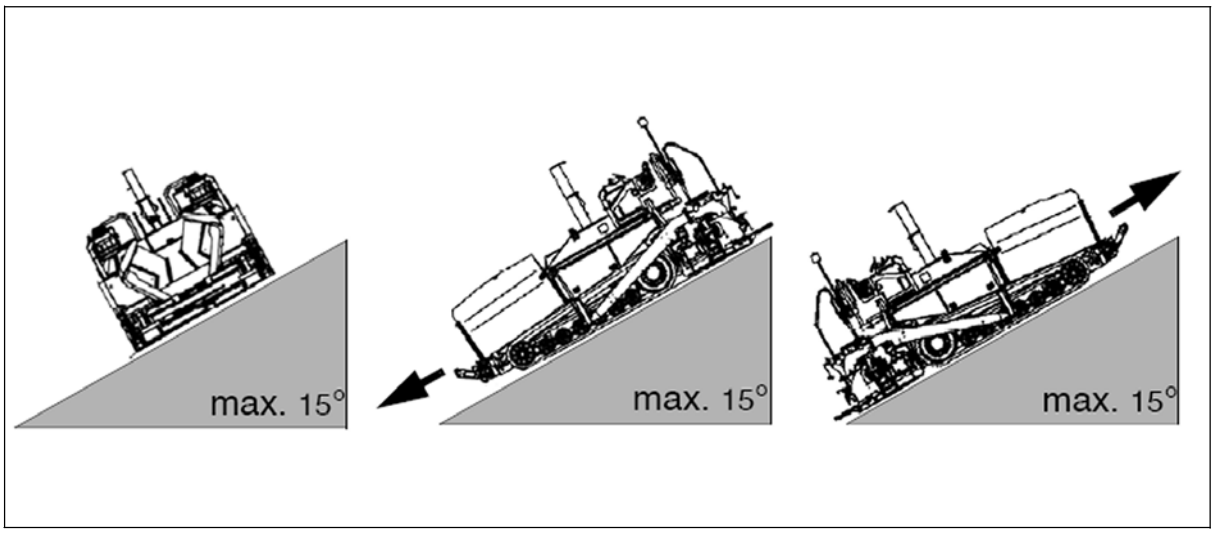
4.1 Dimensions



NOTICE

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

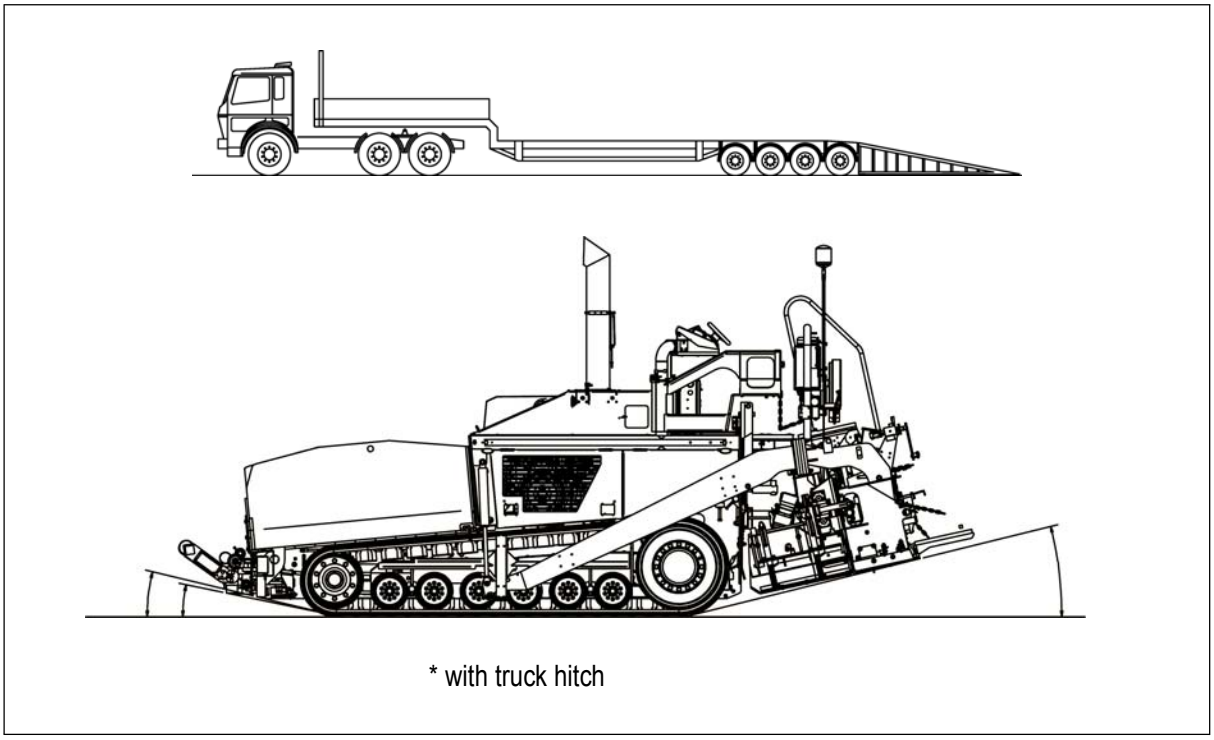
4.2 Allowed angle of rise and slope



NOTICE

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

4.3 Permissible approach angle



* with truck hitch

4.4 Weights, F1000T

Paver without screed	approx. 35,300 lbs. (16012 kg)
Paver with screed: - Carlsson EZ IV 1019 (7000 lbs) - Carlsson EZ III 10 (6000 lbs) - Carlsson EZR 10 (8250 lbs)	 approx. 42300 lbs. (19187 kg) approx. 41300 lbs. (18598 kg) approx. 43550 lbs. (19754 kg)
With filled hopper, include an additional maximum of:	approx. 30000 lbs. (13608 kg)

4.5 Performance data

Screed used	Basic width	Minimum paving width	Continuously hydraulically adjustable up to	Maximum working widths (with extension parts)	
Carlson EZ IV 1019	10 3.05	10 3.05	19 5.79	25 7.62	ft m
Carlson EZ III 10	10 3.05	10 3.05	17 5.18	24 7.3	ft m
Carslon EZR 10	10 3.05	10 3.05	19.5 5.94	26 7.92	ft m

Maximum transport speed (travel)	10 16.9	mph km/hr
Operating speed (Paving, 1800 rpm)	0 - 110 0 – 33.5	fpm m/min
Maximum paving speed	240 73.2	fpm m/min
Paving thickness	12 30.5	in cm
Theoretical paving performance	1600	t/h

4.6 Engine

Make/type	Cummins QSB-6.7 Tier IV Final
Version	6-cylinder diesel engine (water-cooled)
Performance	222 hp @ 1800rpm 225 hp @ 2000rpm
Fuel tank capacity	2 tanks, 49 Gal (185 lt) each.

4.7 Hydraulic system

Hydraulic pressure supply source	Hydraulic pumps via distribution gear (directly flanged to the engine)
Pressure distribution	Hydraulic circuits for: - Propel system - Auger drive system - Works system (conveyor, hydraulic cylinders) - Generator system - Vibration system
Hydraulic oil tank capacity	50 Gal (189 lt)
Hydraulic oil filling volume	80 Gal (303 lt)

4.8 Material compartment (hopper)

Volume	approx. 235ft^3 (6.65m^3)
Dumping height, center / outside	16 in (406mm) / 27 in (686m^3)

4.9 Electrical system

On-board voltage	24 VDC
Batteries	2 x 12 V, 32F 1050, RC 195
Alternator	24V, 70A
Generator	110/220, 34kw, 60Hz

4.10 Operator stations

Control consoles	Dual swing out operation stations

4.11 Conveyors

Conveyor type	Dual independent slat conveyor
Conveyor control	Proportional speed control, both side driven independently

4.12 Auger

Auger control	Dual independent proportional augers

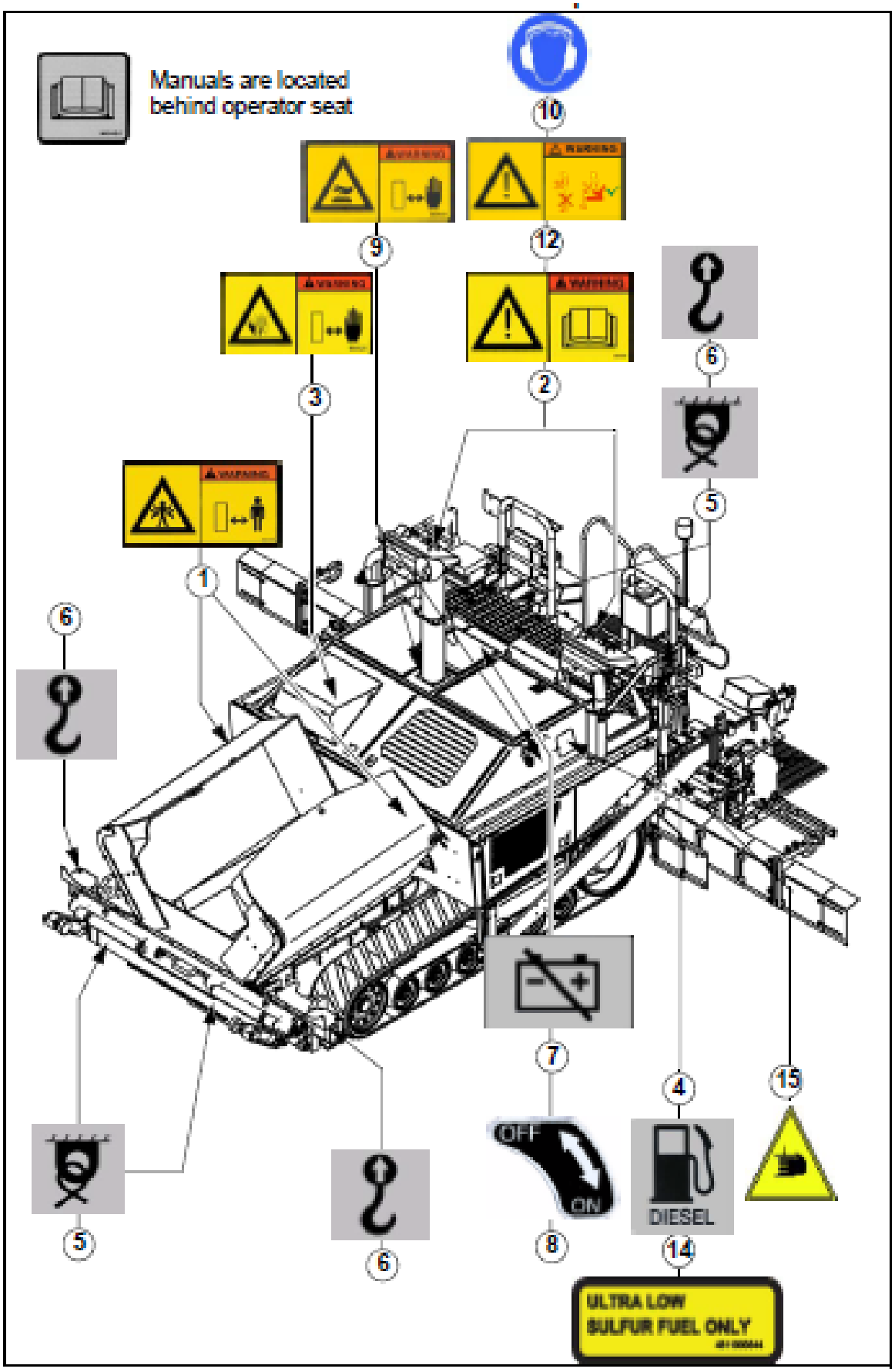
4.13 Permissible temperature ranges

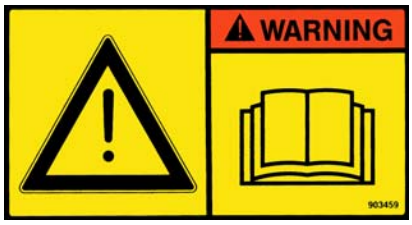
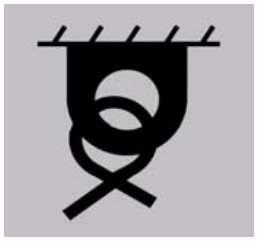
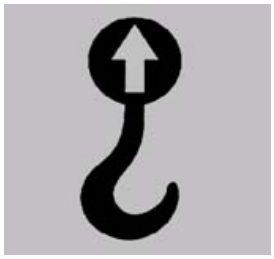
Maximum Ambient Operating Temperature	+120°F (+48.9°C)

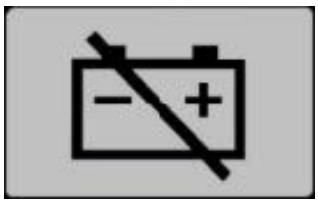
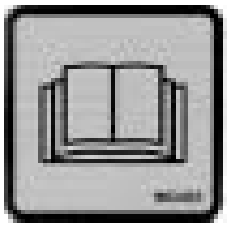
NOTICE

For the capacities for the various lubricants and operating substances, see chapter F.

5 Location of instruction labels and identification plates

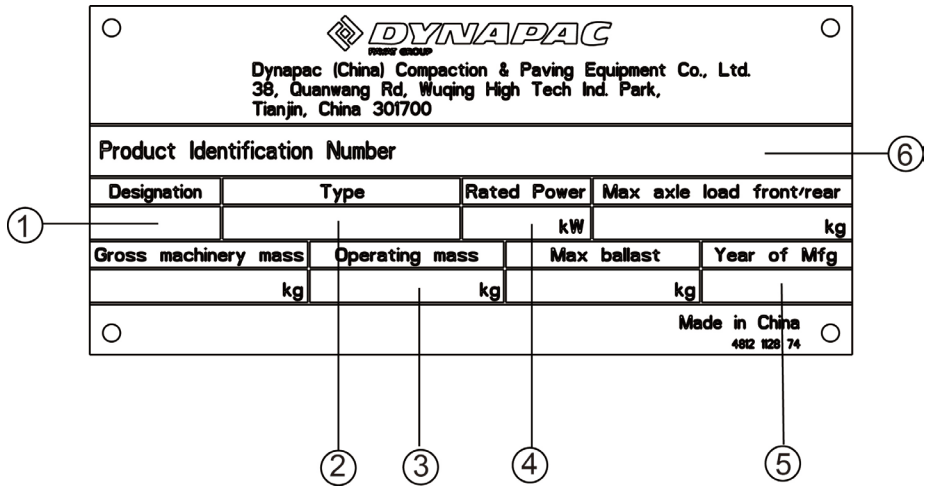


Item	Decal	Description
1		Warning! Crush area! Keep a safe distance when machine is running or moving. Do not work in this area when the machine turns or machine parts move! Crushing can cause severe injury or death!
2		Warning! Do not work on this machine unless you have read and fully understand the warnings and instructions in the Operation/Maintenance and Safety Manual! Failure to follow the instructions or heed the warnings could result in injury or death. Contact your Dynapac dealer for replacement of manuals. Proper care is your personal responsibility!
3		Warning! Keep a safe distance from rotating fans! Do not work around or on the fan when fan is in operation! Rotating fan blades can cause severe injury or death!
4		Filler neck for diesel fuel! (Located on both sides of machine)
5		Tie-down points on machine! (Located on both sides and front and back of the machine)
6		Lifting point on machine! (Located on both sides and front and back of the machine)

Item	Decal	Description
7		Main battery switch location! NOTE: Follow instructions for using battery main switch!
8		ON/OFF positions for battery main switch. ON - battery connected OFF - battery disconnected
9		Warning! Hot parts or components can cause burns! Keep a safe distance! Hot surface can cause burns or personal injury. Do not come into contact with hot parts or components. Wear protective clothing or protective equipment!
10		Wear ear protection when using the machine! Hearing damage could result from high noise level when ear protection is not used!
12		Warning! Do not drive the machine while standing! Severe injury or death from an unseated position could occur! Always use seat and seatbelt when driving machine in transport gear!
13		Location of machine manuals on the machine.

Item	Decal	Description
14		Ultra-low sulfur diesel only.
15		Warning! Crush area! Keep a safe distance when machine is running or moving. Do not work in this area when the machine turns or machine parts move! Crushing can cause severe injury or death!

5.1 Identification plate for the paver finisher



Item	Designation
1	Paver
2	Paver type
3	Mass of the base machine with all standard equipment kg
4	Paver rated power kW
5	Year of manufacturing
6	Product identification number (PIN)

NOTICE

The stamped vehicle identification number on the paver must match the product identification number.

6 EN standards

6.1 Continuous sound pressure level on the F1000T Track Paver, Cummins QSB 6.7 Tier IV Final Engine.

NOTICE

The operator always must use ear protection. The noise level at the operator's ear varies depending on the materials used for paving and may even rise above 85 dB(A).
If no ear protection devices are used, hearing can be impaired.
The noise emission level of the paver was measured under free-field conditions ac- cording to the 2000/14/EC, and ISO 3744.

Sound pressure level at the operator's position (at the height of the head):

	LH Console	RH Console
L_{AF} =	83.9 dB(A)	83 dB(A)

Sound capacity level: L_{WA} = 102 dB(A)

Sound pressure level at the machine

Measuring point	2	4	6	8	10	12
Sound pressure level L_{AFeq} (dB(A))	66.7	69	68.9	68.6	68.7	68.9

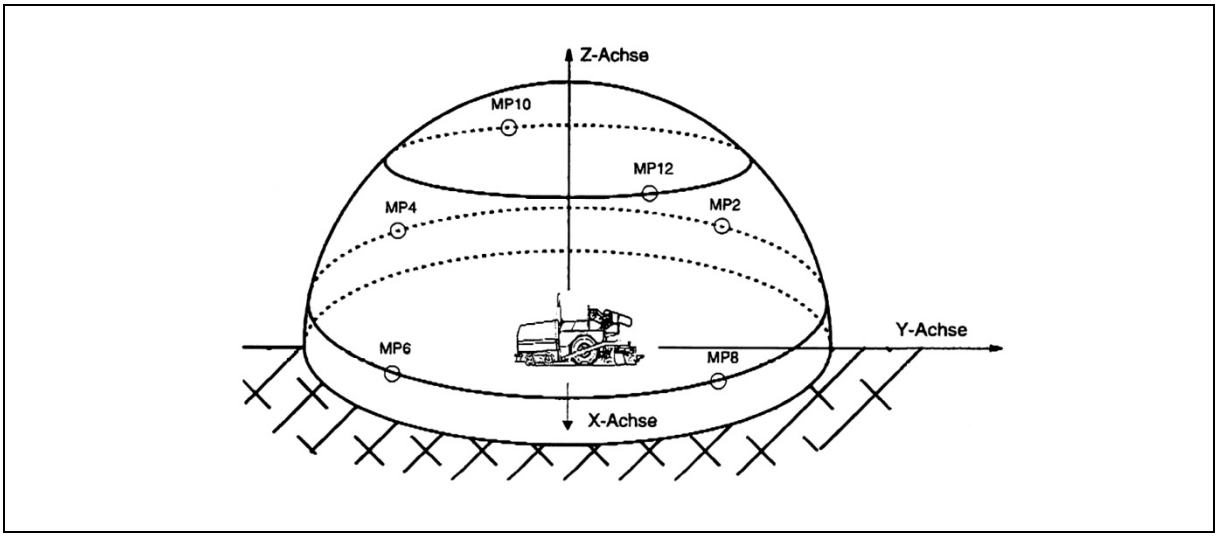
6.2 Operating conditions during measurement

The diesel engine was running at 2000 rpm. The screed was in working position, lowered to a rubber mat. Vibration unit was operated at min. 50%, while the augers were operated at a minimum of 100% and the conveyors were operated at a minimum of 100% of their maximum speed.

6.3 Measuring point configuration

Hemispherical measuring surface with a radius of 52.5 ft. (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**		
Co-ordinates	X	Y	Z	X	Y	Z
	±0.7	±0.7	1.5	- 0.27 +0.27	+0.65 -0.65	11.36 11.36



C Transport

1 Safety regulation for transportation

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

Close the hopper lids and engage the hopper transport safeguards. Lift the screed and engage the screed transport safeguards. Convert the protective roof (if equipped) and engage the latch.

⚠ WARNING

Check that the clamping device for the auger crossbeam is fastened and that the telescopic tube cannot slide out (see chapter E, section 1.5).

⚠ WARNING

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

⚠ DANGER

When loading using ramps, there is a risk that the machine will slip, tilt or overturn.
Drive carefully! Keep people away from the danger area!

Additional stipulations for transportation on public roads:

⚠ WARNING

Depending on local regulations, tracked propelled paver must not be driven as self-propelling vehicles on public roads.
Note the different state and local regulations.

⚠ WARNING

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

⚠ WARNING

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.

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

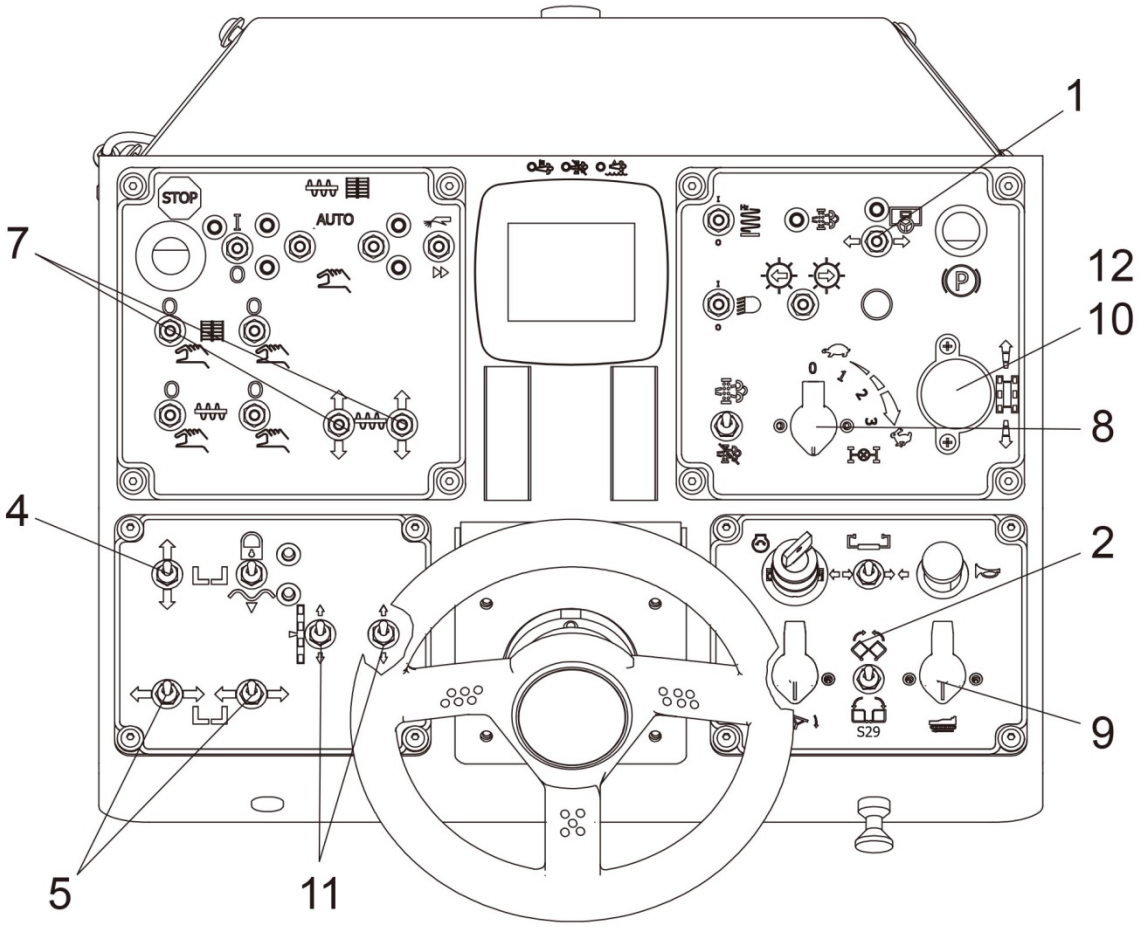
Attachment and loading equipment must meet the federal, state and local safety regulations!

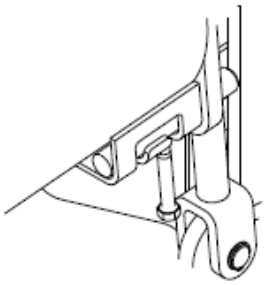
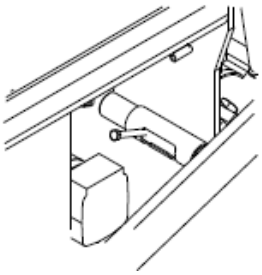
⚠ WARNING

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

2.1 Preparations

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

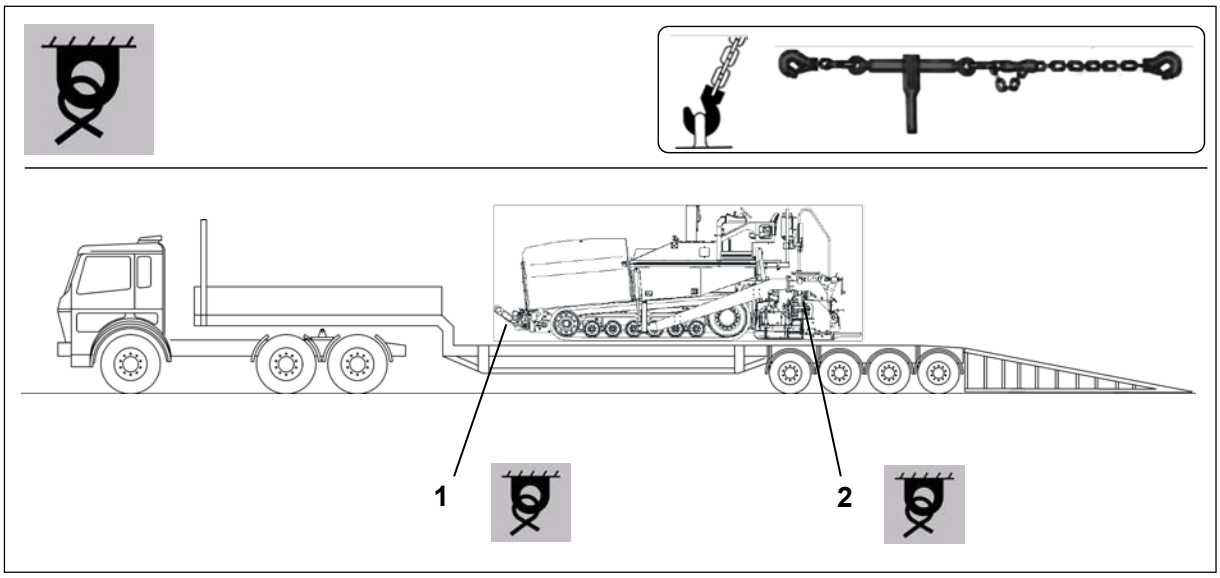

STOP
AUTO
S29
1
12
10
8
7
4
2
9
5
11

Step	Operation	
1	- Select the master console.	
2	- Close the hopper lids.	
3	- Engage both hopper transport safeguards.	
4	- Lift the screed.	
5	- Retract the screed to the basic width of the paver.	
6	- Engage both screed transport safeguards.	
7	- Lift the auger.	
8	- Turn the ranage shift selector to zero.	
9	- Turn the travel speed preselecting regulator to zero.	
10	- Move the drive lever forward.	
11	- Extend leveling cylinders completely.	
12	- Set the drive lever to the center position	

2.2 Driving onto the low-bed trailer

⚠ DANGER

Make sure that there are no person 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.
- Turn the switch off.
- Attach and secure the protective hood to protect the operating panel.

2.3 Secure the paver to the low-bed trailer

- Use only proper and permitted load fastening devices.
- Use the four tie-down points provided (1, 2). These points have a tie-down limit of 10,000 lbs. (3545.9 kg) each.
- Wait until the exhaust extension pipe has cooled down; then swing and secure it.

2.4 After transportation

- Remove the chains, hooks and all other transport tie-down tools.
- Swing the exhaust extension pipe up and secure it.
- Lift the screed to the transport position
- Start the engine and drive from the trailer at a low speed.
- Park the paver in a secure spot, lower the screed and switch the engine off.
- Remove the key and cover the operating panel with protective hood, then secure it.

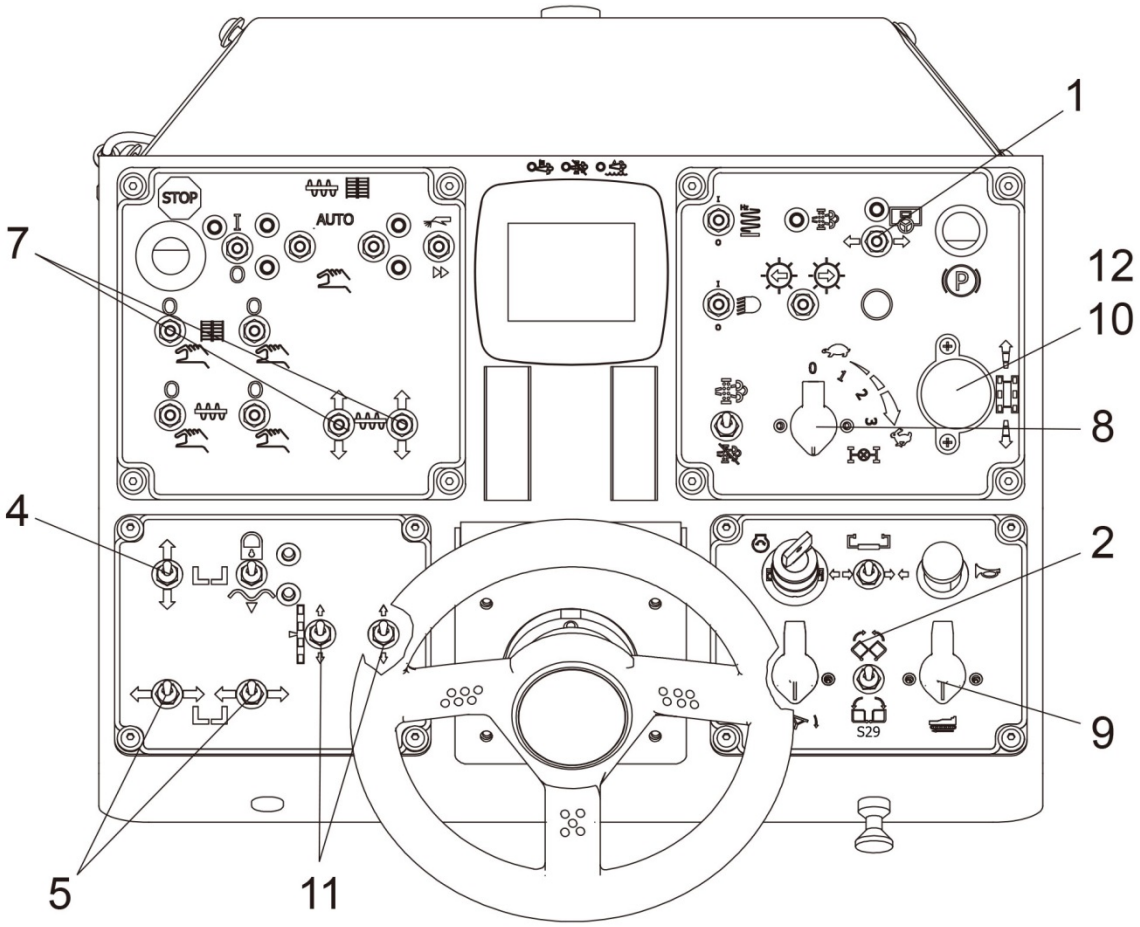
3 Transportation

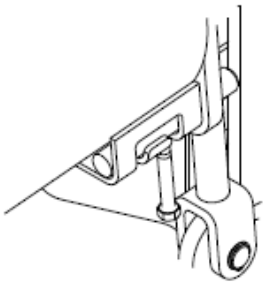
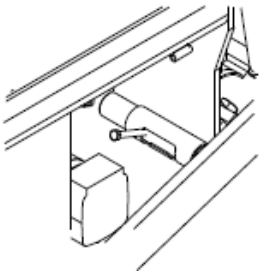
⚠ WARNING

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

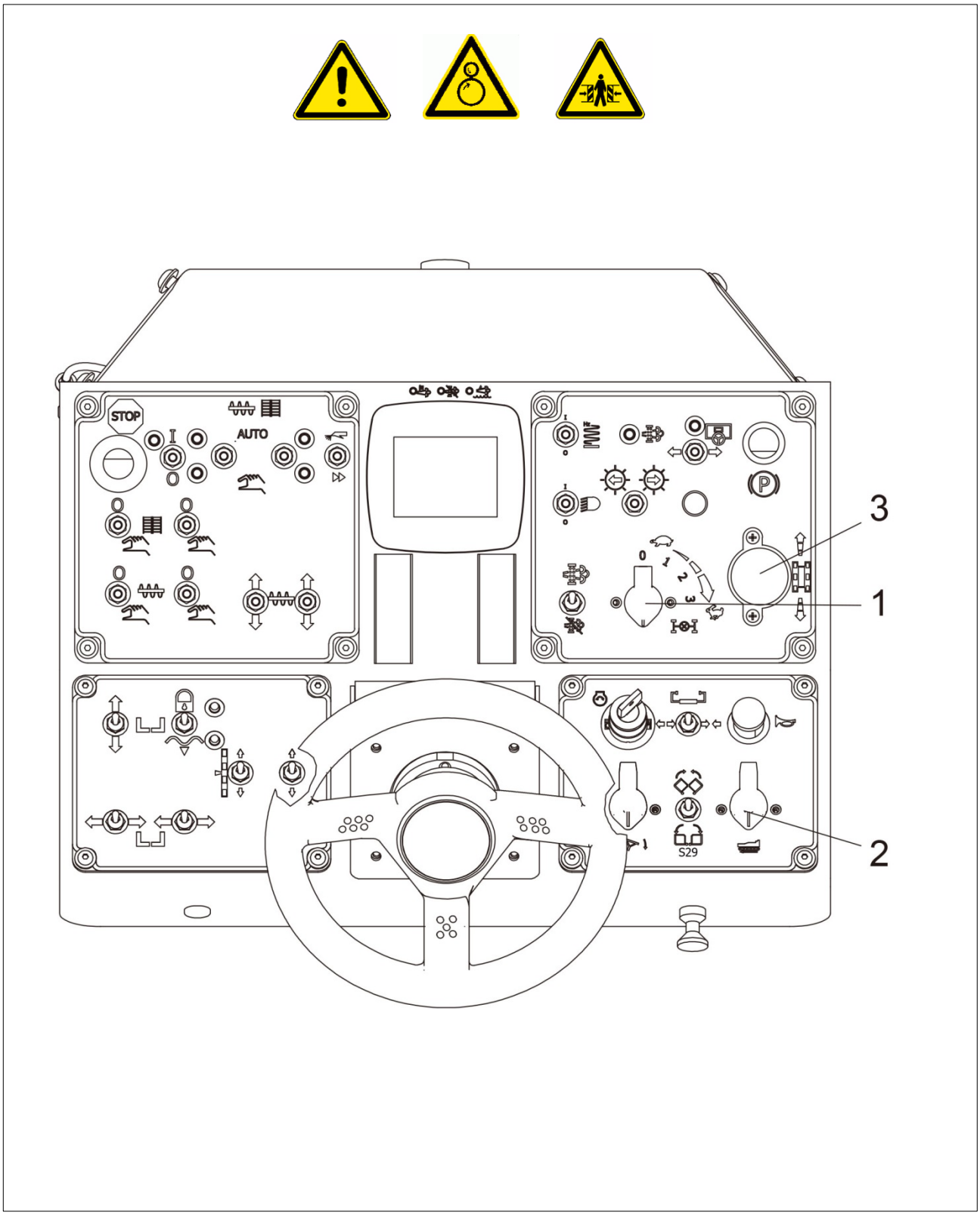
3.1 Preparations

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


STOP
AUTO
S29
1
12
10
8
7
4
2
9
5
11

Step	Operation	
1	- Select the master console.	
2	- Close the hopper lids.	
3	- Engage both hopper transport safeguards.	
4	- Lift the screed.	
5	- Retract the screed to the basic width of the paver.	
6	- Engage both screed transport safeguards.	
7	- Lift the auger.	
8	- Turn the ranage shift selector to zero.	
9	- Turn the travel speed preselecting regulator to zero.	
10	- Move the drive lever forward.	
11	- Extend leveling cylinders completely.	
12	- Set the drive lever to the center position	

3.2 Driving mode



Step	Operation	
1	- Turn the selector to position 3.	
2	- Turn the pre-selecting regulator to its maximum point.	
3	- Use the drive lever to regulate the speed.	

⚠ DANGER

Press the emergency stop button when an emergency situation arises!

4 Loading by crane

⚠ WARNING

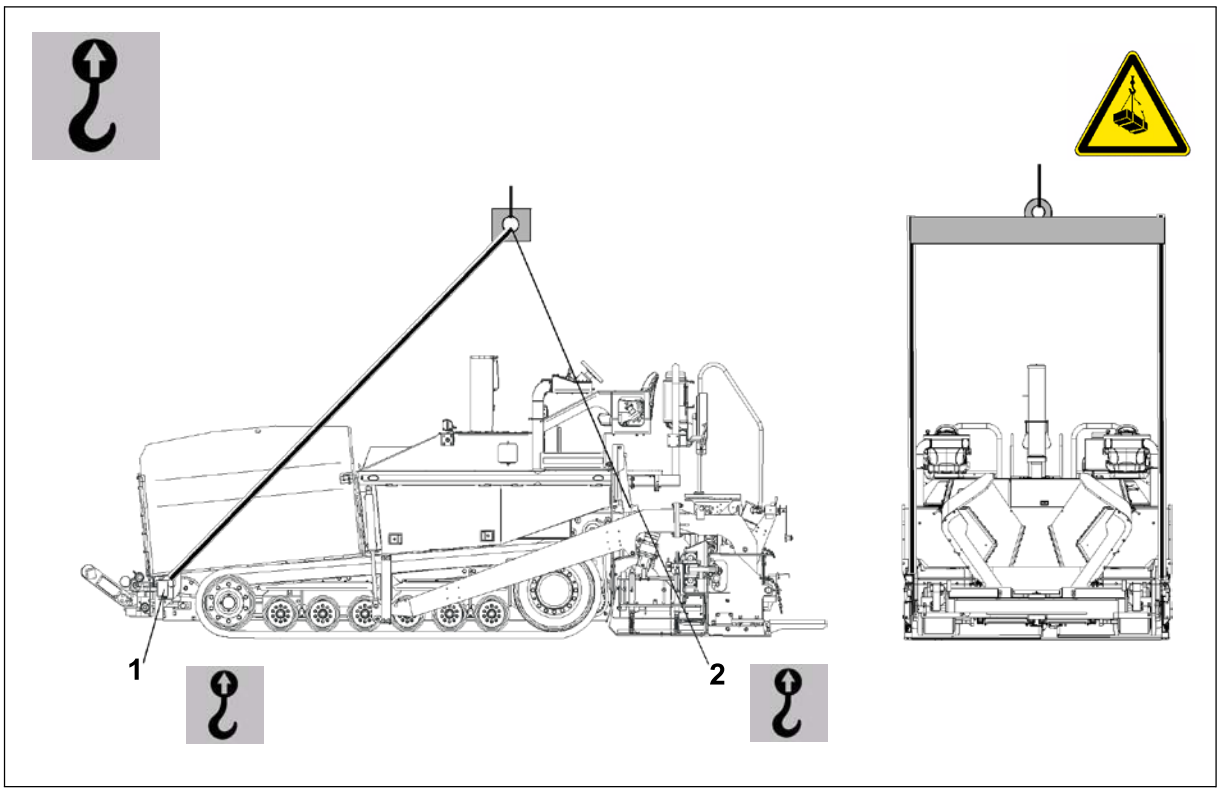
Use only lifting gear that can bear the load.
(See chapter B for weights and dimensions).

⚠ WARNING

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

⚠ WARNING

The vehicle's center of gravity is dependent on the mounted screed.



NOTICE

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

NOTICE

Depending on the type of screed used, the paver's center of gravity, with the screed mounted, is located in the area of the drive unit's rear reversing roller.

- Secure vehicle wherever it is parked.
- Engage the transport safeguards.
- Remove any attachments and extension parts from the paver and the screed until the basic width has been attained.
- Remove all protruding or loose parts of screed and machine.
- Attach lifting gear to the four attachment points (1,2).

⚠ WARNING

The max. permissible attachment point load is.
Attachment point (1): 20,000 lbs. (9071.9 kg) each for a total of 40,000 lbs. (18144 kg)
Attachment point (2): 20,000 lbs. (9071.9 kg) each for a total of 40,000 lbs. (18144 kg).

⚠ WARNING

Make sure that the paver is secured in a horizontal position during transport!

5 Towing

⚠ CAUTION

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

⚠ WARNING

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

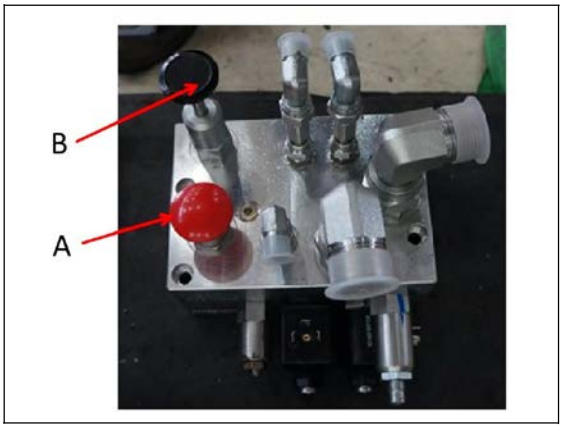
Use only approved tow bars!
If necessary, remove any attachments and accessories from the paver and the screed until the basic width has been attained.

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

⚠ WARNING

Do not release the track drive system brakes until the machine is sufficiently secured against accidental rolling or is already properly connected to the towing vehicle.

- Pull the Handle(A) and turn the handle 90 and release Handle(A) to the DOWN position.
- Pump the Handle(B) of the hand pump up and down until sufficient pressure has been built up for the track drive system brakes to release.



NOTICE

Now carefully and slowly tow the paver out of the construction area. The maximum towing speed is 2mph (3.2 kph).

⚠ WARNING

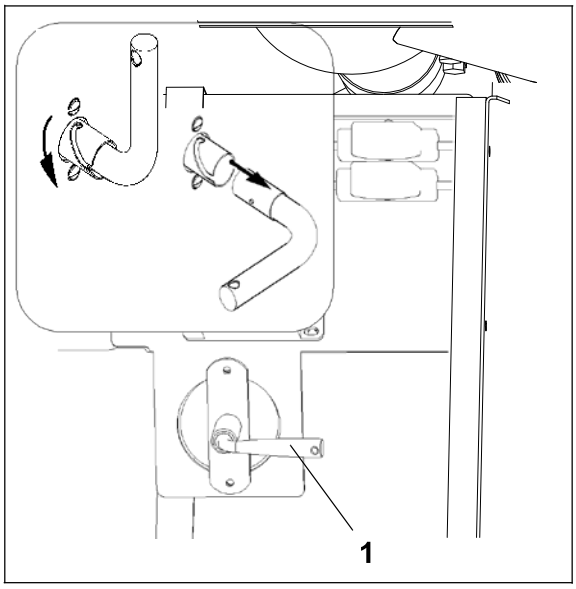
Always tow the machine the shortest distance to the means of transport or the next parking opportunity. After towing, return the Pump Pressure Lock and Release Handle (2) to the UP position. This will release pressure in the Hand Pump and will allow the braking system to engage. The track drive system brakes are now reactivated and the machine is secured against rolling

6 Safety parking the vehicle

⚠ WARNING

When the paver 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.

- Remove the ignition key and main switch (1) and take it with you – do not hide them somewhere on the machine.
- Protect the operating panel with the dust cover and lock it.
- Store parts and accessories in a safe place.



⚠ CAUTION

Do not turn the main switch off until 100 seconds after the ignition has been turned off!
The engine electronics require this length of time to back up data, and such device can prevent the engine's electronic control module (ECM) from sustaining damage and battery discharging.

D 1.0 Operation

1 Safety regulations

⚠ WARNING

Starting the engine, the traction drive, the conveyor, the auger, the screed or the lifting devices can cause severe injury or death.
Make sure, before starting any of these devices, that no-one is working on, in or beneath the paver or within its danger area!

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

⚠ DANGER

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

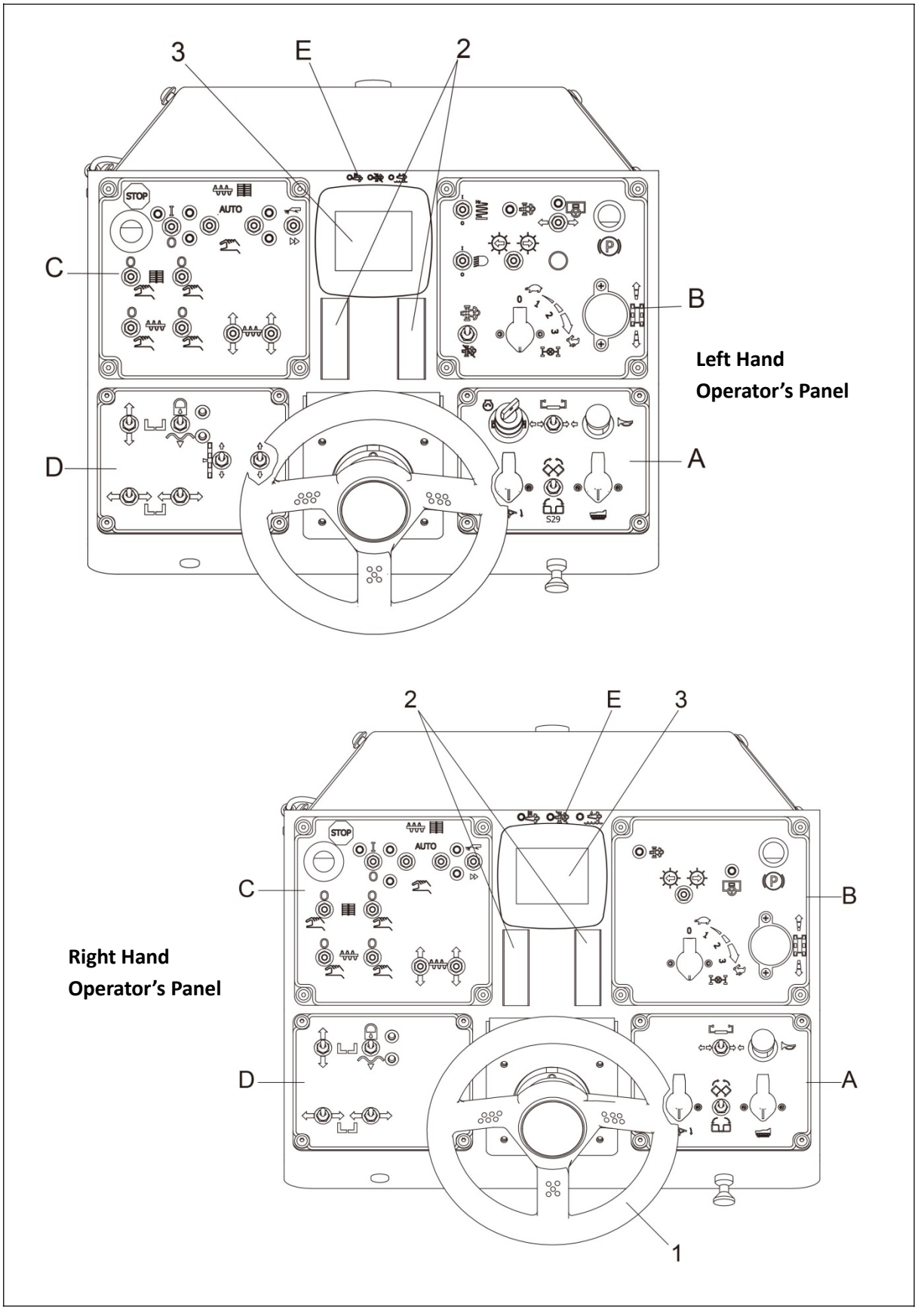
- Always make sure during operation that no-one is endangered by the machine!
- Ensure that all protective covers and hoods are fitted and secured accordingly!
- When damage is detected, eliminate it immediately! Operation must not be continued when the ma- chine is defective!
- Do not let any persons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

⚠ CAUTION

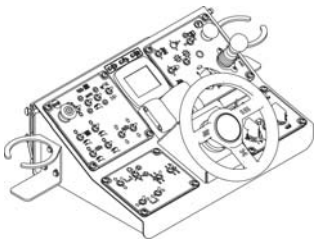
Always maintain control of the machine; never try to use it beyond its capabilities!

2 Controls

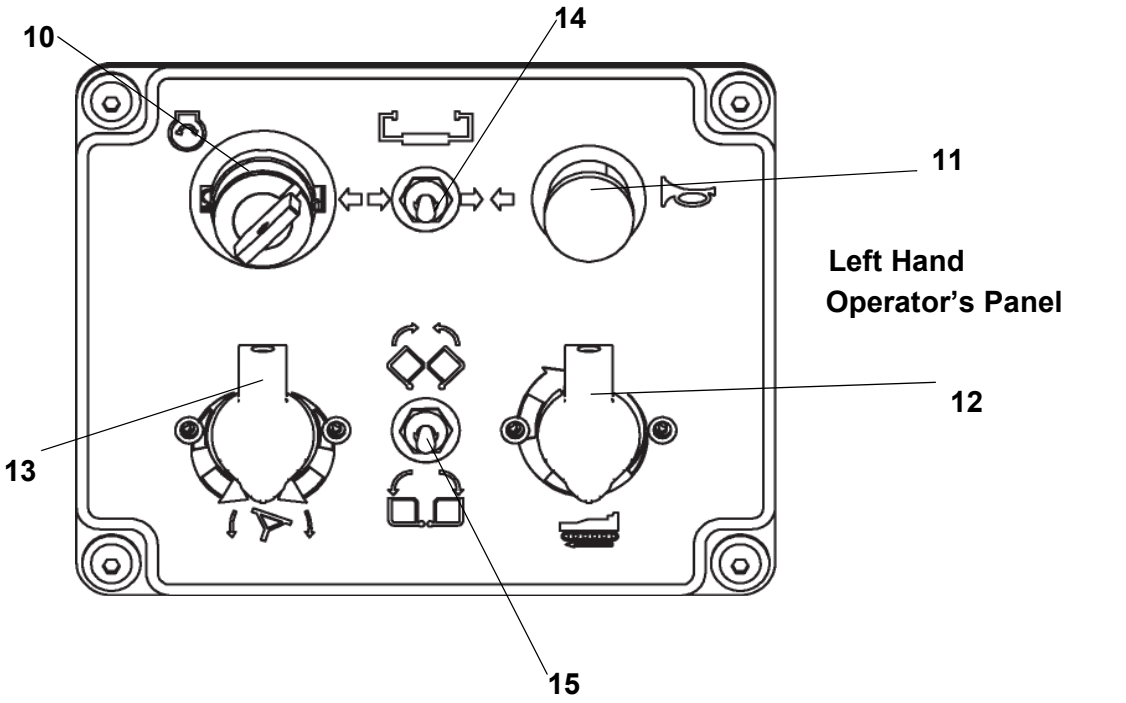
2.1 Operating panel



Item	Designation	Brief description
1	Steering wheel	- Steering is regulated by the speed of two drive units. NOTE: - Use the turn signals when turning! - For precise adjustment, see “straight-ahead travel trimming".
2	Console lights	Illuminates the instrument panels when the work lights are switched on.
3	EIC Engine Information Center	- Display for engine information, diagnostic information and configuration.



PANEL A


10
14
11
Left Hand
Operator's Panel
12
13
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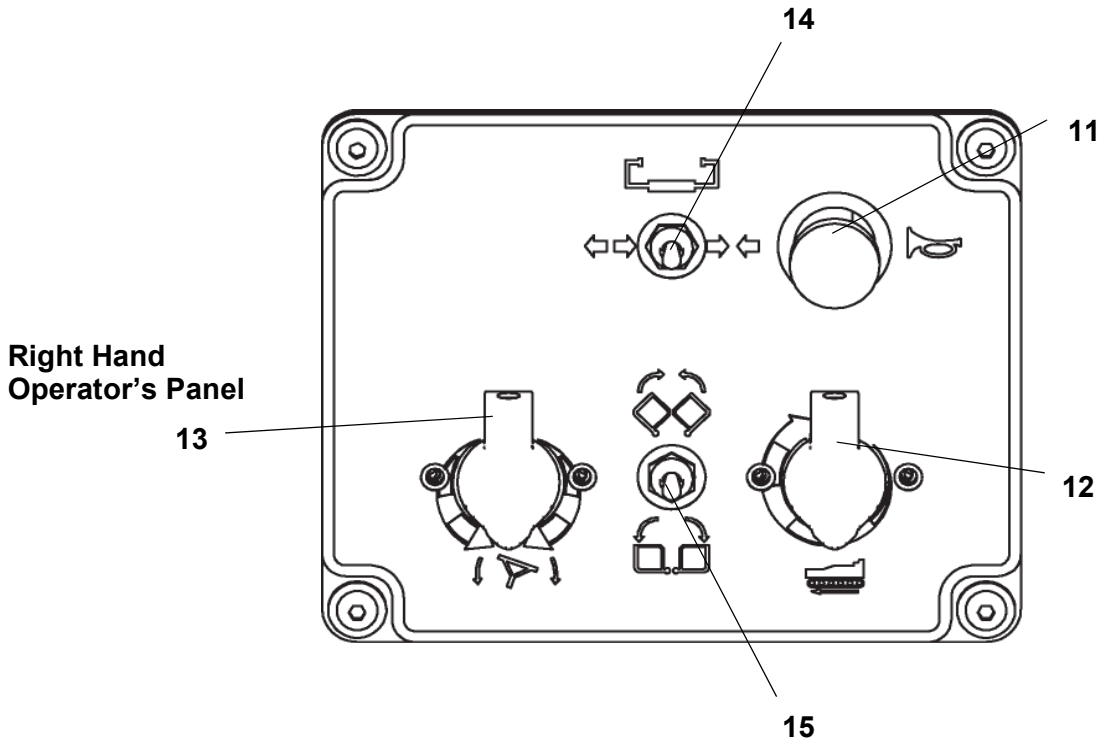
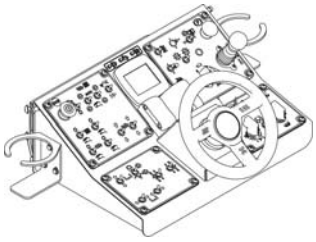
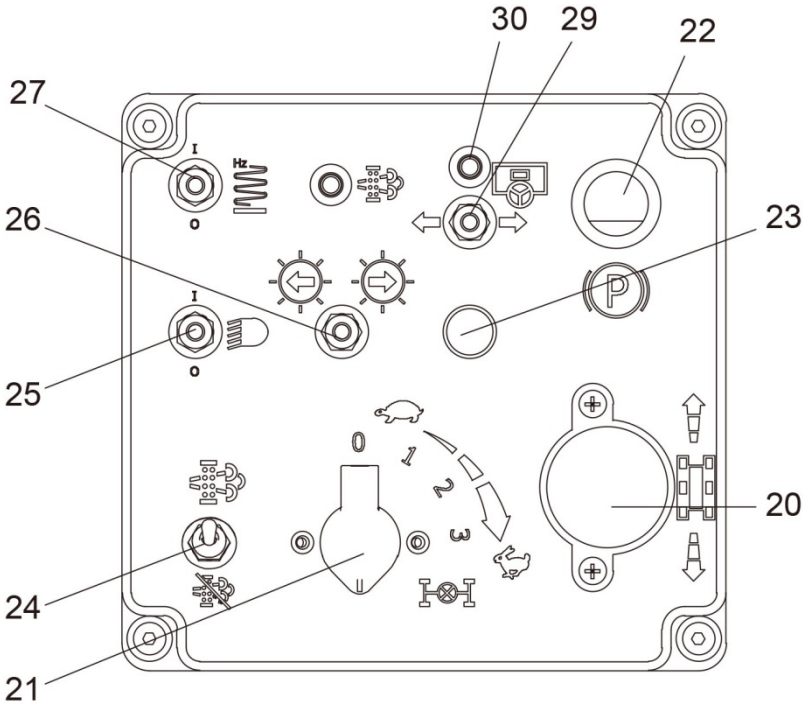

14
11
Right Hand
Operator's Panel
13
12
15

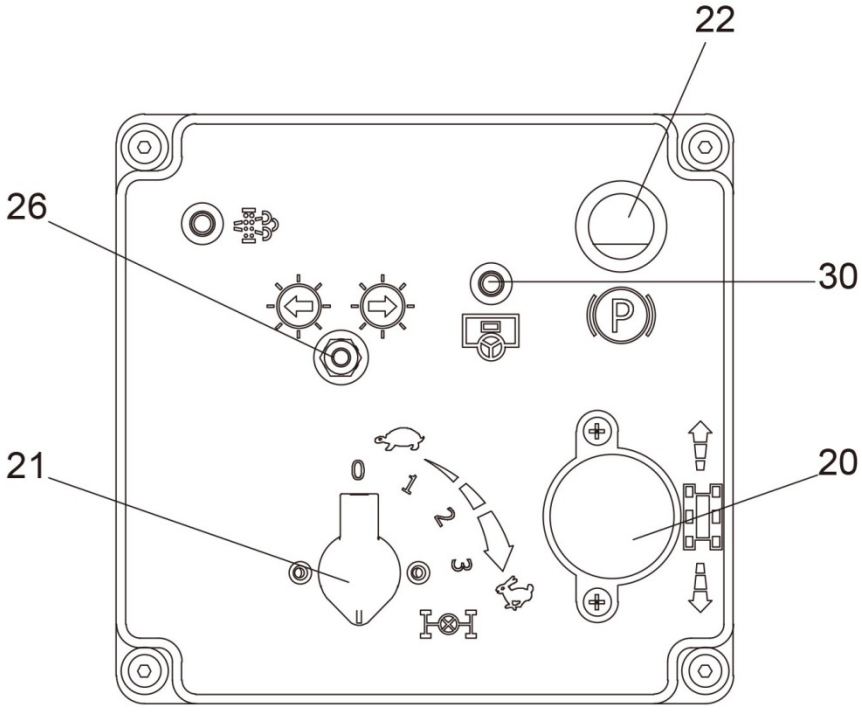
Item	Designation	Brief description
10	Ignition lock	Key position - 1: Ignition OFF - 2: Ignition ON - 3: Starting position NOTE: The key can only be removed in position 1.
11	Horn	Press in the case of emergencies and to indicate when the machine starts to move! NOTE: The horn can also be used to communicate acoustically with the truck driver for material loading!
12	Travel drive pre-selector	Setting the maximum speed that can be performed when the drive lever is at its stop. NOTE: The speed level is preset with the "Travel drive/engine pre-selector switch".
13	Straight-ahead travel trimming	This potentiometer has the following functions: - Steering the paver through a large curved radius: - Turn the potentiometer in the corresponding direction until the required steering angle is achieved. - Straight-ahead travel trimming in speed level 3: - Set the steering wheel to position "0", then adjust the potentiometer until the paver is traveling straight ahead. NOTE: Automatic straight-ahead travel trimming takes place in preset speed levels 1 and 2.
14	Truck hitch	Opening and closing the truck hitch device at the front of the paver. Toggle switch function: - Toggle the switch left: Open truck hitch. - Toggle the switch right: Close truck hitch. ⚠ DANGER Do move or tow the paver until all persons and equipment are out of the Danger Zone!
15	Open/close hopper	To open/close both halves of the hopper. Toggle switch function: - Toggle the switch forward (away from the operator): Close hoppers. - Toggle the switch back (toward the operator): Open hoppers. ⚠ DANGER Do not open or close the hopper until all persons and equipment are out of the Danger Zone!



PANEL B

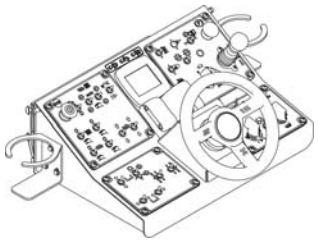


Left Hand Operator's Panel

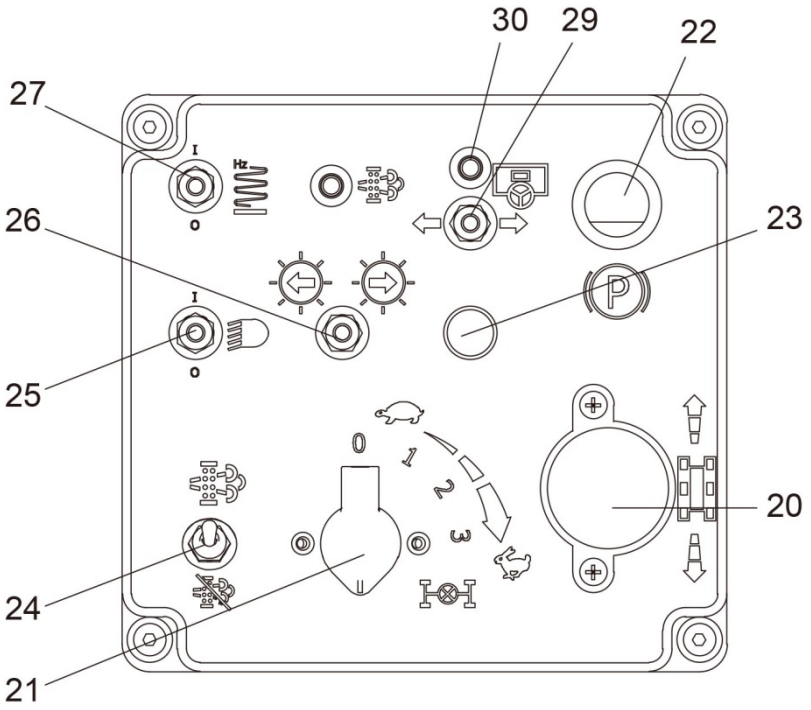


Right Hand Operator's Panel

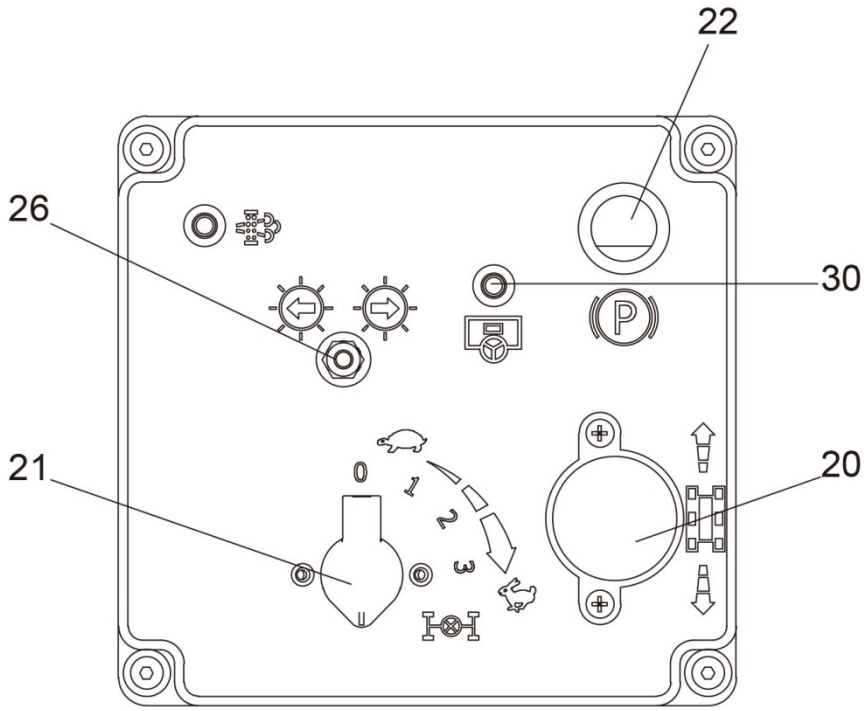
Item	Designation	Brief description
20	Drive lever (traction)	For switch on the paver functions and for regulating the road speed - forward or reverse. Zero position: starting is possible; engine at idle speed; no track drive; protected against inadvertent start. To move the lever, lift the ring (20a) to release it. Depending on the position of the drive lever, the following functions can be activated: - 1 st position: Engine runs at preselected speed (see "Travel drive/engine pre-selector switch") - 2 nd position: Conveyor and auger on. - 3 rd position: Travel drive (propel) on; increase speed by turning the speed control until it stops. **NOTICE** The maximum speed is set with the travel drive/engine pre-selector switch and with the travel drive pre-selector. **NOTICE** The floating position function is only active when the drive lever is moved from its central position! If the drive lever is moved to the central position, the paver automatically switches to screed stop (lock). **NOTICE** The auger conveyor clean mode only operates when the drive lever is in neutral position. The auger conveyor automatic function only operates when the drive lever is out of neutral position and in the forward position.
21	Pre-selector switch travel drive/engine fast/slow	To pre-select the desired speed level. - Switch setting 0: Preselected vehicle speed "0". - Switch setting 1: Vehicle speed - for paving with low operating speed. - Switch setting 2: Vehicle speed - for paving with higher operating speed. - Switch setting 3: Transport speed - for transportation.



PANEL B

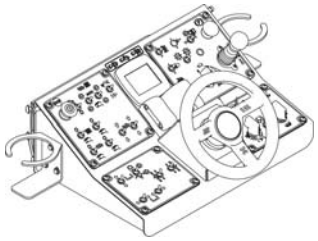


Left Hand Operator's Panel

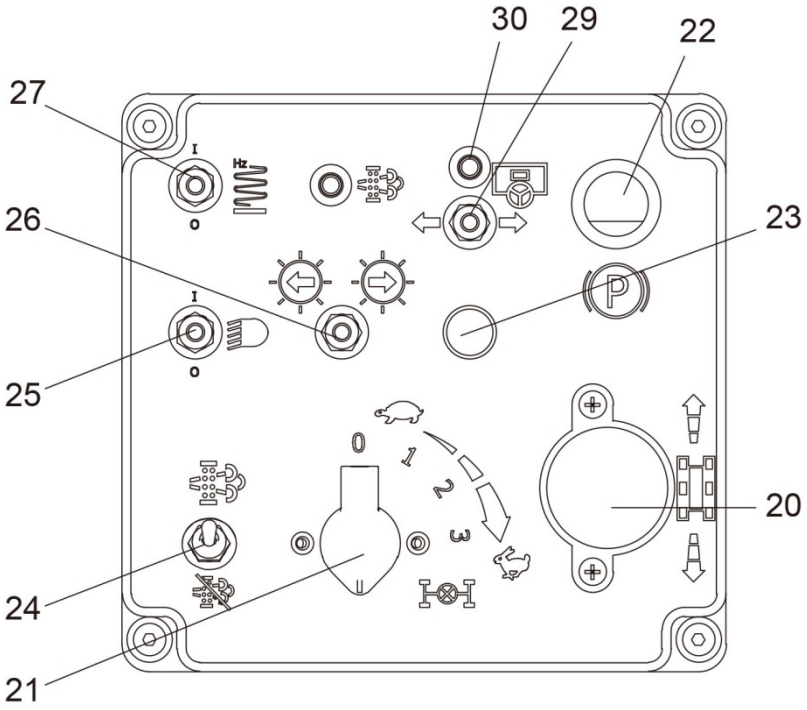


Right Hand Operator's Panel

Item	Designation	Brief description
22	Push button parking brake	Use the push button to activate the parking brake. The parking brake must be activated anytime the vehicle is stationary. - Parking brake activated - push button illuminated - Parking brake de-activated - push button not illuminated
23	not used	
24	Regeneration inhibit/manual regeneration	Switches the regeneration function on and off: Toggle switch function: - Toggle the switch up: Regeneration OFF. Neither manual or automatic regeneration of the diesel particulate filter will be allowed. **⚠ DANGER** This function should only be enabled if a combustible material is nearby. Regeneration is an extremely hot process and could easily ignite combustible materials. **⚠ CAUTION** The diesel particulate filter may require servicing with prolonged use of this function. - Toggle the switch down: Manual regeneration ON. Regeneration will be activated if the diesel particulate filter soot levels are high enough to allow regeneration. The diesel particulate filter LED located on Panel E will be lit, either static or blinking, throughout the regeneration process. Refer to Item 56 for more information regarding the LED function. **⚠ WARNING** Close attention to the diesel particulate filter LED located on Panel E is required to activate the switch as needed.
25	Working lights ON / OFF	Switches the working lights on and off: Toggle switch function: - Toggle the switch to setting 0: Working lights OFF. - Toggle the switch to setting 1: Working lights ON. **⚠ CAUTION** Avoid using hi-beam lights with on coming traffic. Hi-beam lights can cause temporary blindness to on coming drivers!
26	Turn signal indicator ("flasher")	The turn signal indicates the direction the paver is turning. Detent switch function: - Left switch position: Left-hand flasher. - Right switch position: Right-hand flasher.

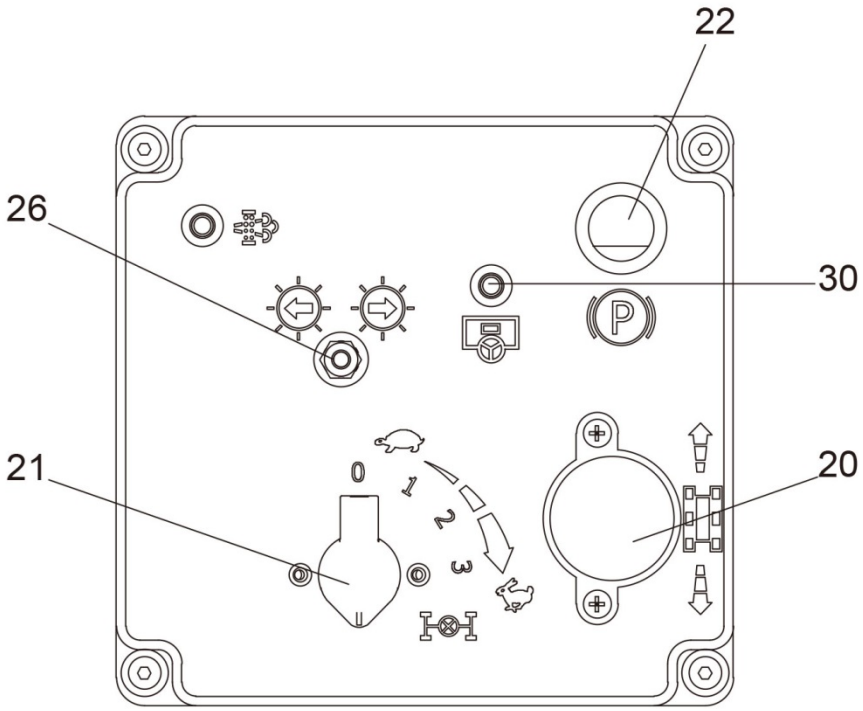


PANEL B

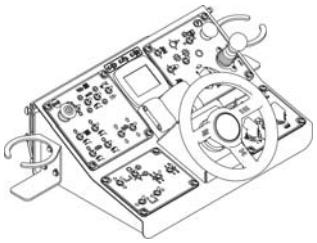


Left Hand Operator's Panel

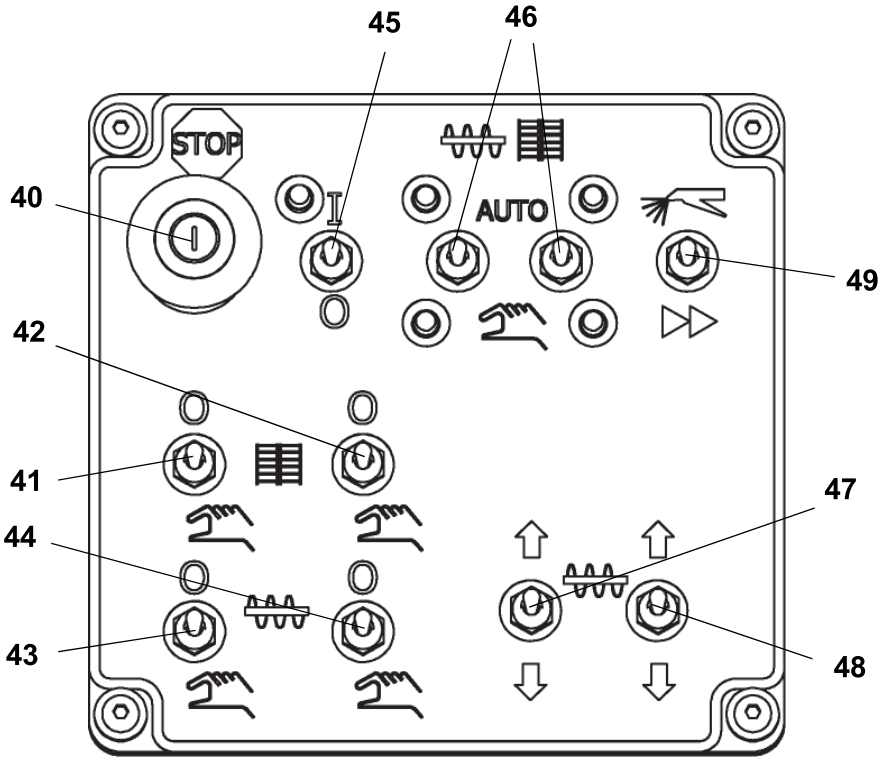
Right Hand Operator's Panel



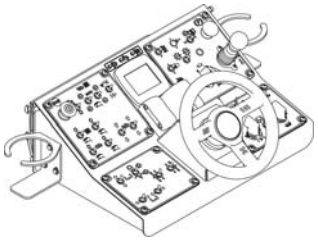
Item	Designation	Brief description
27	Vibration ON / OFF	Switches screed vibration on and off. Toggle function: - Toggle the switch to setting 0: Vibration OFF. - Toggle the switch to setting 1: Vibration ON. NOTE: Speed control (see "Operating instructions for screed")
28	Tamper ON / OFF	Switches the screed tamper function on and off. Toggle switch function: - Toggle the switch to setting 0: Tamper OFF. - Toggle the switch to setting 1: Tamper ON. NOTE: Speed control (see "Operating instructions for screed")
29 30	Selector switch left / right operating panel (19) + active panel LED (20)	To select the primary activated operating panel. Toggle switch function: **NOTICE** To avoid operator errors, only one operating panel - left or right - can be activated at any one time. - Toggle the switch left: Left operating panel active. - Toggle the switch right: Right operating panel active. **NOTICE** The active panel LED indicates whether the relevant operating panel is activated or deactivated by switch (19). - LED "ON": Operating panel active. - LED "OFF": Operating panel inactive. **NOTICE** The modification of mulfunction display pages is only possible from the active console.



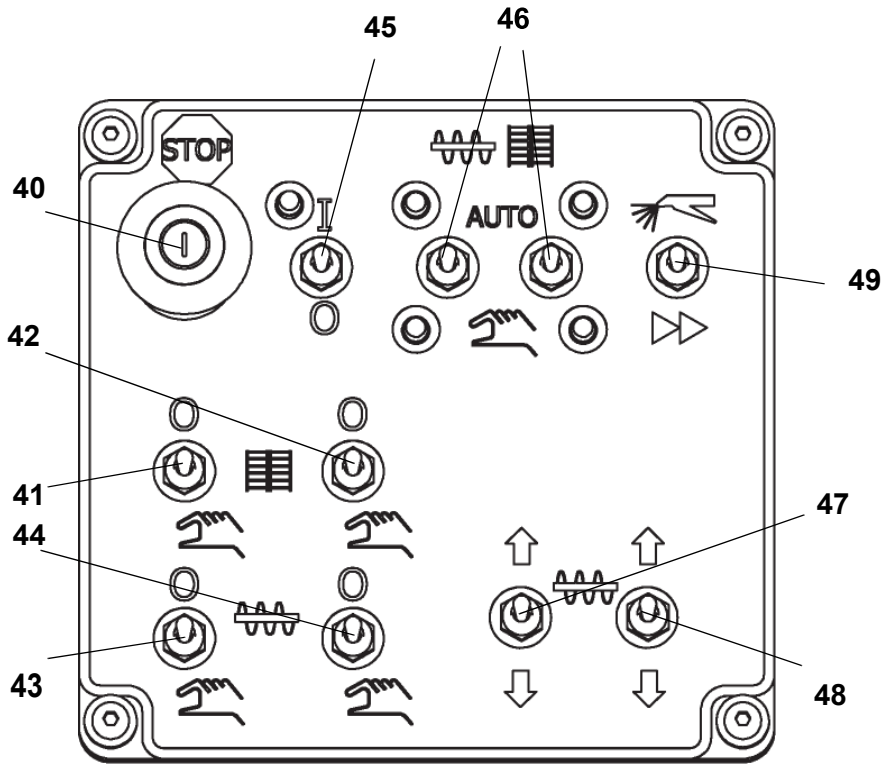
PANEL C



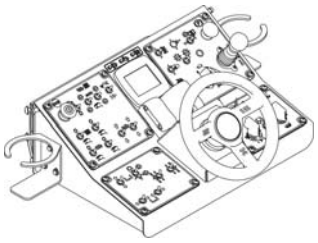
Item	Designation	Brief description
40	Emergency stop button	In case of an emergency (danger to persons, possible collision, etc.), press the Emergency stop button! - Pressing the Emergency stop button switches the engine, the drives and the steering system off. **⚠ WARNING** Paving, lifting the screed or other functions are no longer possible! Do not reset the Emergency stop button until the danger is no longer present! - To restart the engine, the button must be pulled out again.
41	Left conveyor OFF max. output	Overrides the conveyor function in automatic mode. Toggle switch function: - Toggle the switch forward (away from the operator): Conveyor OFF. - Toggle the switch back (toward the operator): Conveyor is at 100% feed capacity.
42	Right conveyor OFF max. output	Overrides the conveyor function in automatic mode. Toggle switch function: - Toggle the switch forward (away from the operator): Conveyor OFF. - Toggle the switch back (toward the operator): Conveyor is at 100% feed capacity.
43	Left auger OFF / max. output	Overrides the auger function in automatic mode. Toggle switch function: - Toggle the switch forward (away from the operator): Auger OFF. - Toggle the switch back (toward the operator): Auger is at 100% feed capacity.
44	Right auger OFF / max. output	Overrides the auger function in automatic mode. Toggle switch function: - Toggle the switch forward (away from the operator): Auger OFF. - Toggle the switch back (toward the operator): Auger is at 100% feed capacity.



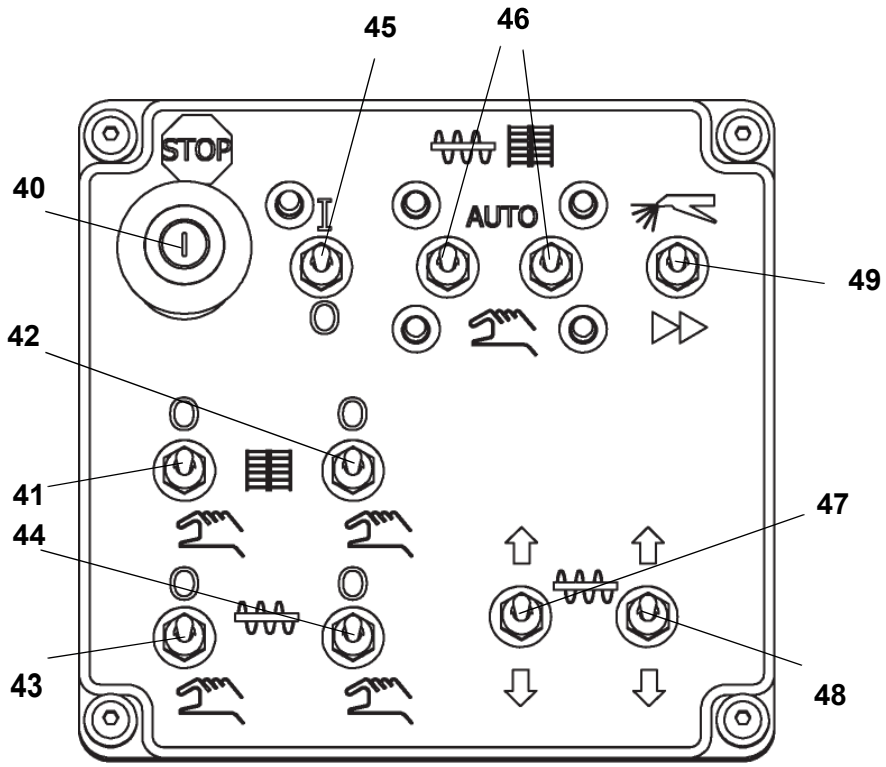
PANEL C



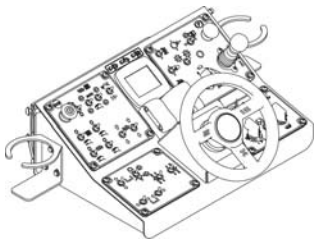
Item	Designation	Brief description
45	Conveyor + auger ON + activation LED / OFF	Toggle the conveyor and auger (automatic or manual mode) on and off. Toggle switch function: - Toggle the switch forward (away from the operator): Auger + conveyor are ready for operation (LED ON) - Toggle the switch back (forward the operator): Auger + conveyor OFF. **NOTICE** If the vehicle must be restarted, this function is automatically switched OFF.
46	Operating mode conveyor + auger AUTO + activation LED / MANUAL + activation LED	Toggle between AUTOMATIC and MANUAL operating modes for the conveyor + auger. The left switch operates the left auger and conveyor, while the right switch operates the right auger and conveyor. Toggle switch function: - Toggle the switch forward (away from the operator): Operating mode "AUTO" (LED ON) **NOTICE** The auger + conveyor are switched on by moving the drive (propel) lever from the center position and are controlled by the relevant material limit switches. - Toggle the switch back (toward the operator): Operating mode "MANUAL" (LED ON). **NOTICE** The auger + conveyor are permanently switched on (without material control through the relevant limit switches). **NOTICE** If the vehicle must be restarted, this function is automatically switched OFF.



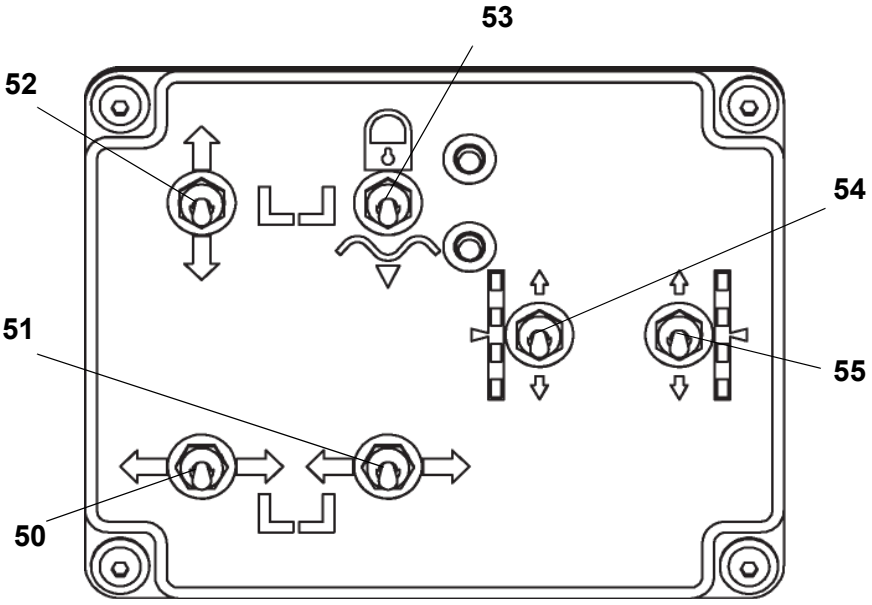
PANEL C

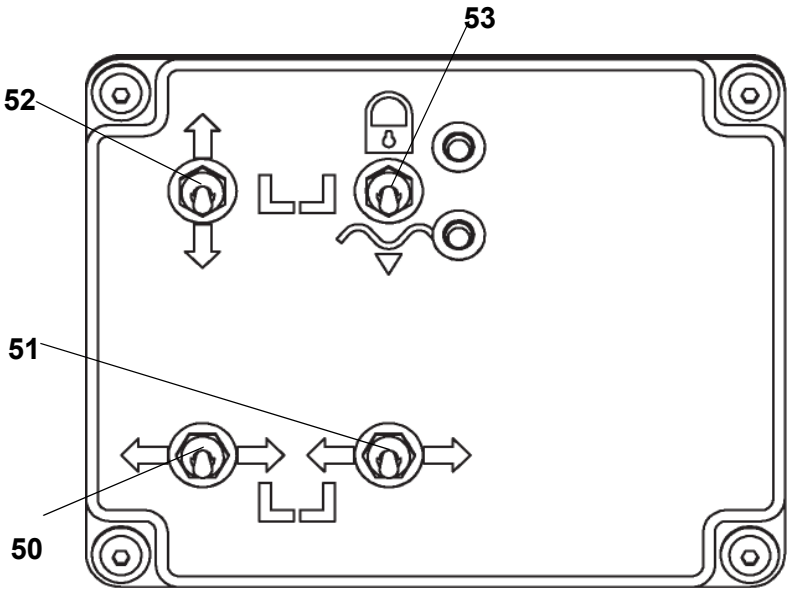


Item	Designation	Brief description
47	Raise / lower left auger	Hydraulically adjusts the height of the left auger. Toggle switch function: - Toggle the switch forward (away from the operator): Raise auger. - Toggle the switch back (forward the operator): Lower auger. **NOTICE** Toggle both switches (raise / lower left + right auger) at the same time to keep the auger crossbeam level! **⚠ DANGER** Do not raise or lower the auger until all equipment and persons are clear of the machine.
48	Raise / lower right auger	Hydraulically adjusts the height of the right auger. Toggle switch function: - Toggle the switch forward (away from the operator): Raise auger. - Toggle the switch back (forward the operator): Lower auger. **NOTICE** Toggle both switches (raise / lower left + right auger) at the same time to keep the auger crossbeam level! **⚠ DANGER** Do not raise or lower the auger until all equipment and persons are clear of the machine.
49	Auger / conveyor clean mode / one fill	Toggle between a slow cleaning mode and a fast fill speed for the auger and conveyor. Toggle switch function: - Toggle the switch forward (away from the operator): Slows the auger / conveyor speed for cleaning. - Toggle the switch back (toward the operator): Runs the auger and conveyor at full speed for a fast fill. **NOTICE** The clean mode only works when the paver is not paving. **⚠ DANGER** Before using the clean mode, ensure all equipment and personnel are clear of the paver.

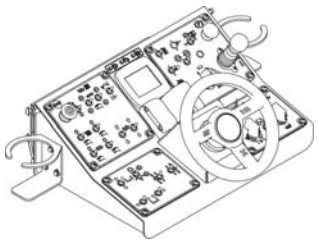


PANEL D

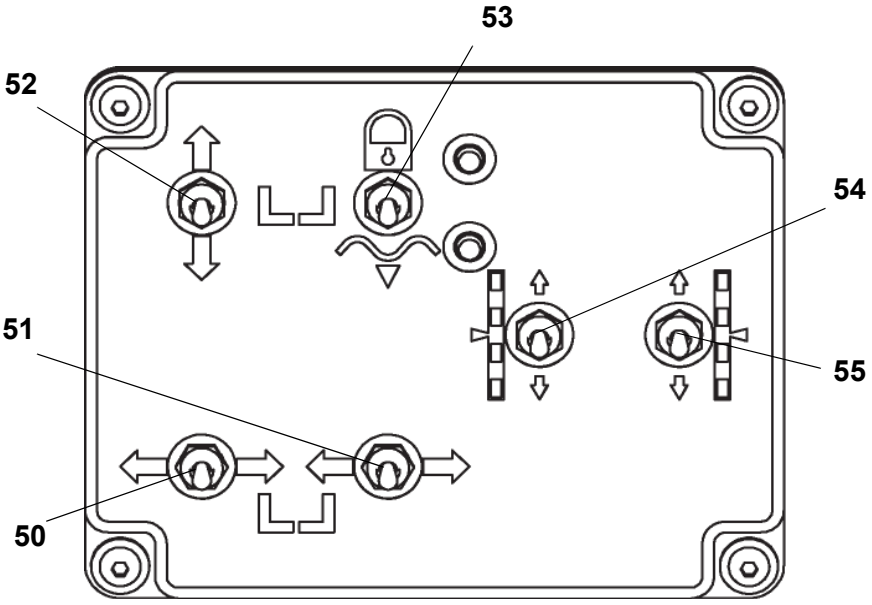


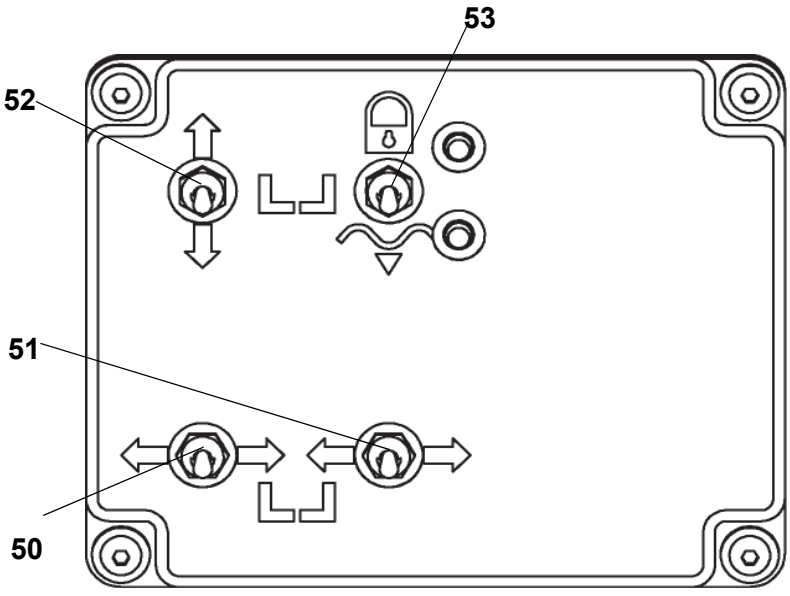


Item	Designation	Brief description
50	Extend / retract left screed extension	Hydraulically retracts and extends the left extendable part of the screed. Toggle switch function: - Toggle the switch left: Extend screed extension. - Toggle the switch right: Retract screed extension. **⚠ DANGER** Do not extend or retract the screed until all equipment and persons are clear of the machine.
51	Extend / retract right screed extension	Hydraulically retracts and extends the right extendable part of the screed. Toggle switch function: - Toggle the switch left: Retract screed extension. - Toggle the switch right: Extend screed extension. **⚠ DANGER** Do not extend or retract the screed until all equipment and persons are clear of the machine.
52	Raise / lower screed	Hydraulically raises and lowers the screed. Push button function: - Toggle the switch up: Raise screed. - Toggle the switch down: lower screed. **⚠ DANGER** Do not raise or lower the screed until all equipment and persons are clear of the machine.

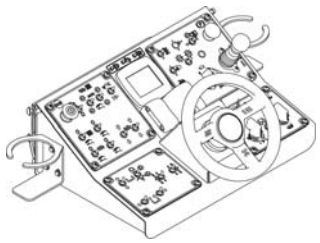


PANEL D

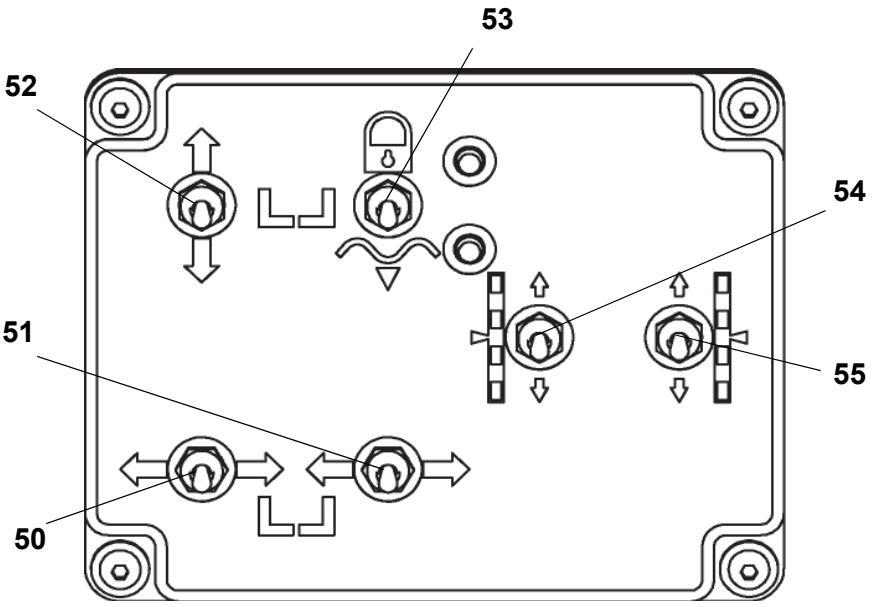


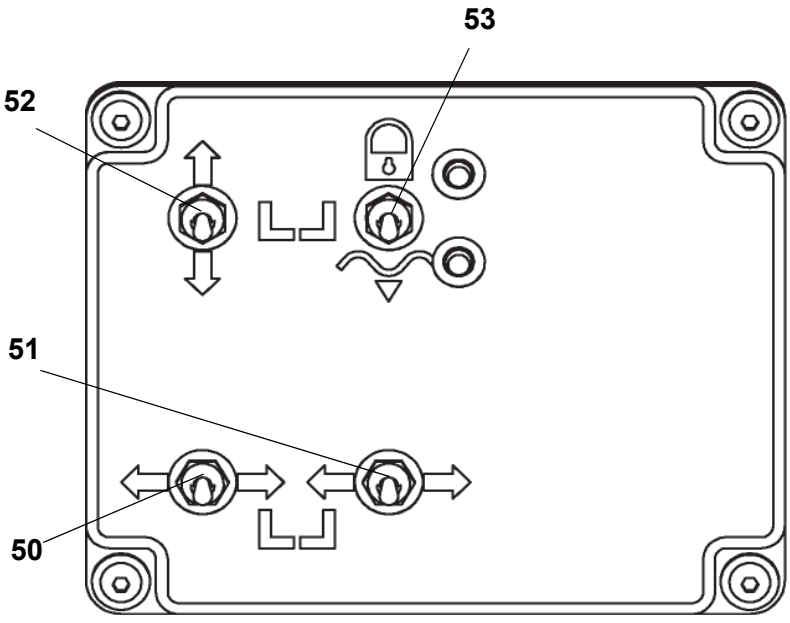


Item	Designation	Brief description
53	Screed floating position + activation LED / screed stop + activation LED	Switches between floating screed functions and screed stop. Toggle switch function: - Toggle the switch forward (away from the operator): Screed stop. - "Screed stop" is used to lock the screed hydraulics to prevent the screed from sinking into the paved material when the paver is stationary (intermediate stop). **⚠ WARNING** "Screed stop" is not sufficient as a safeguard during transport or maintenance work! Insert the mechanical screed transport safeguard! - Toggle the switch back (toward the operator): Lower the screed and switch to "floating position" - During paving, the screed must always be in its floating position. This also applies to intermediate stops and truck changes. **NOTICE** As soon as the floating position function has been activated and the screed is lowered, the screed lifting cylinder pressure is reduced. **NOTICE** The raise / lower screed function can be carried out while the screed is switched to the floating position. Following adjustment, the screed is automatically switched back to the floating position **NOTICE** The floating position function is only active when the drive lever is moved from its central position!. If the drive lever is moved to the central position, the paver automatically switches to screed stop (or locked position). The activation LED for screed stop is then activated.

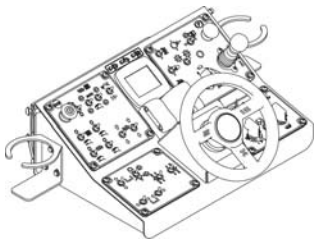


PANEL D

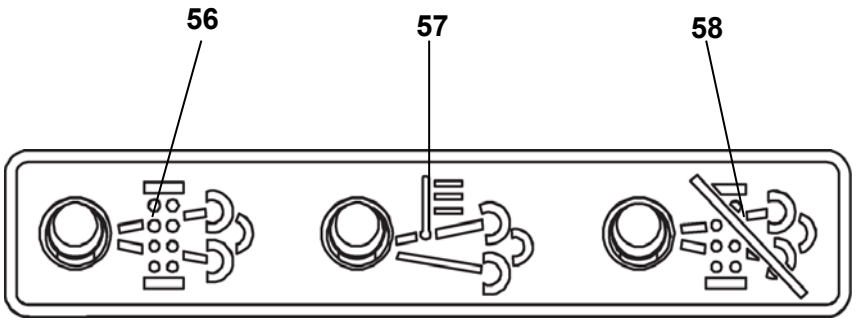


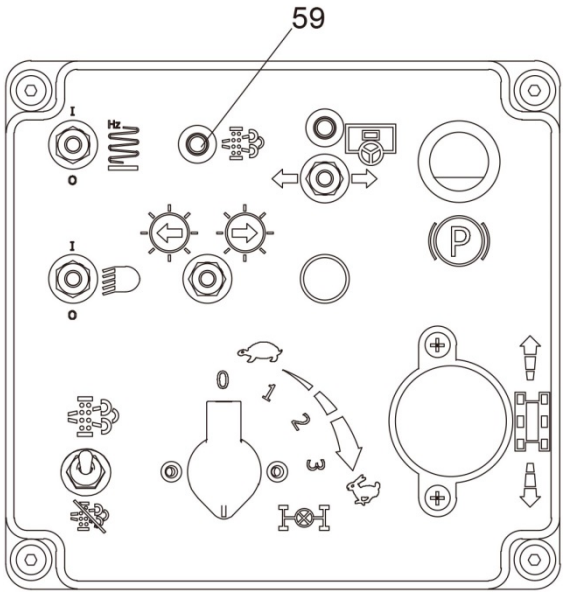


Item	Designation	Brief description
54	Left leveling cylinder	Manually extends and retracts the leveling cylinder when the vehicle is being operated without the automatic leveling system. Toggle switch function: - Toggle the switch forward (away from the screed): Retract or raise the leveling cylinder to raise the screed. - Toggle the switch back (toward the screed): Extend or lower the leveling cylinder to lower the screed. **⚠ DANGER** Do not raise or lower the leveling cylinder until all equipment and persons are clear of the machine.
55	Right leveling cylinder	Manually extends and retracts the leveling cylinder when the vehicle is being operated without the automatic leveling system. Toggle switch function: - Toggle the switch forward (away from the screed): Retract or raise the leveling cylinder to raise the screed. - Toggle the switch back (toward the screed): Extend or lower the leveling cylinder to lower the screed. **⚠ DANGER** Do not raise or lower the leveling cylinder until all equipment and persons are clear of the machine.

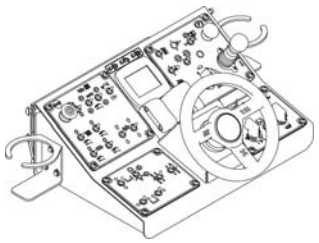


PANEL E





Item	Designation	Brief description
56	Active regeneration	Lit LED indicates that the diesel particulate filter is becoming filled and a regeneration is needed. The operator could either increase the engine speed and allow the engine to operate until an automatic regeneration is complete or the operator could initiate a manual regeneration. **⚠ WARNING** Regeneration is an extremely hot process. Care should be taken to avoid contact with potentially hot surfaces The following describes the alerts presented as the need for regeneration escalates: - A steady-on LED indicates that regeneration is needed. The regeneration inhibit switch should only be used if combustible materials are nearby **⚠ DANGER** The regeneration inhibit function should only be enabled if a combustible material is nearby. Regeneration is an extremely hot process and could easily ignite combustible materials. **⚠ CAUTION** The diesel particulate filter may require servicing with prolonged use of the regeneration inhibit function. - If regeneration isn't completed and the filter continues to fill, the LED will flash. A manual regeneration should be started soon if the engine speed is not increased. The regeneration inhibit switch should only be used if combustible materials are nearby. - If regeneration isn't completed after the LED begins flashing, the check engine warning will be present on the digital display. A manual regeneration must be started. - If regeneration isn't completed after the check engine warning is presented, the active regeneration lamp will turn off and the check-engine warning will remain. The filter can no longer regenerate and will need to be serviced. The active regeneration LED will turn off after successful regeneration. The LED will stay on if regeneration was unsuccessful. NOTE: Regeneration will take approximately 45 minutes.



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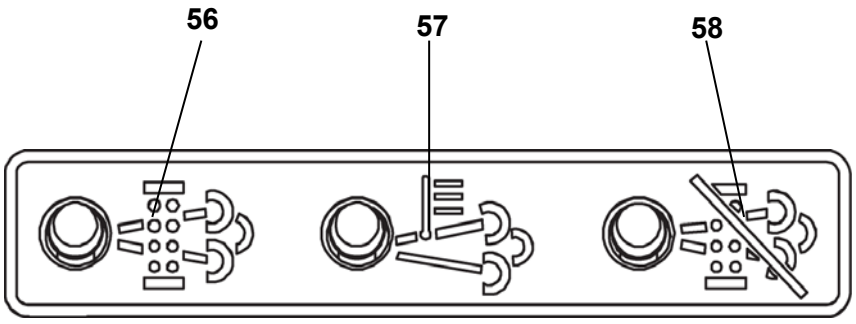
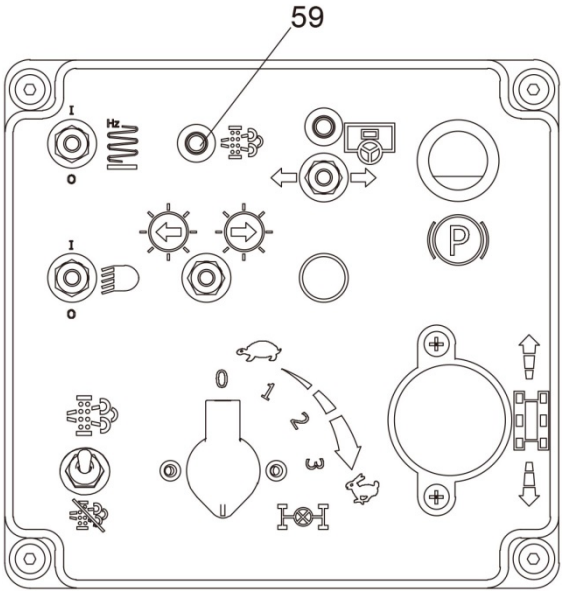
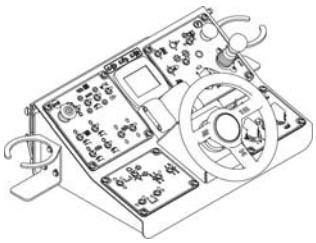




Item	Designation	Brief description
57	Regeneration system temperature	Lit LED indicates that the regeneration system temperature is elevated. During a manual regeneration, the LED turns on during automatic regeneration or when the filter temperature reaches 1247°F. The LED stays on during the regeneration and will then turn off when the temperature falls below 1157°F **⚠ WARNING** Regeneration is an extremely hot process. Care should be taken to avoid contact with potentially hot surfaces.
58	Regeneration inhibited	Lit LED indicates that the regeneration system is inhibited by the activation of the regeneration inhibit switch. Neither automatic nor manual regeneration can occur if this LED is lit. Refer to Item 24 for more information on regeneration inhibit. **⚠ DANGER** This function should only be enabled if a combustible material is nearby. Regeneration is an extremely hot process and could easily ignite combustible materials. **⚠ CAUTION** The diesel particulate filter may require servicing with prolonged use of this function.



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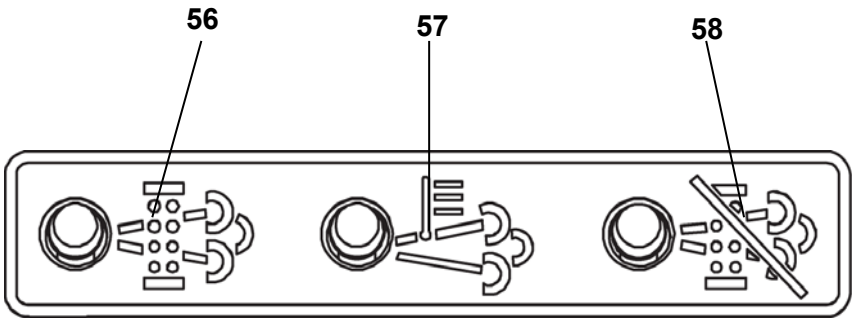
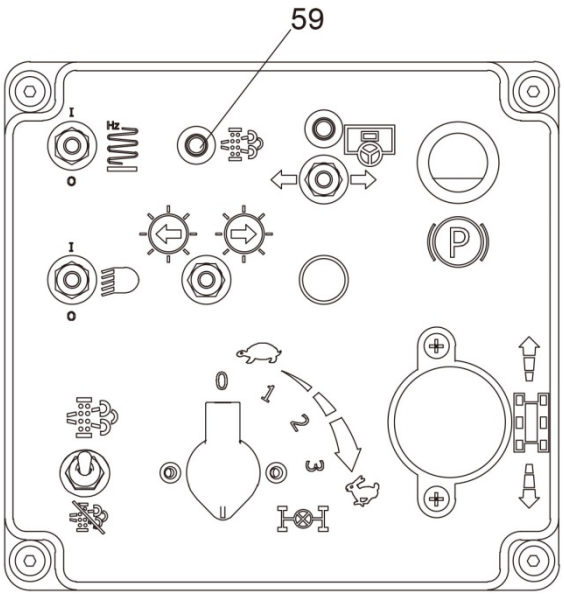
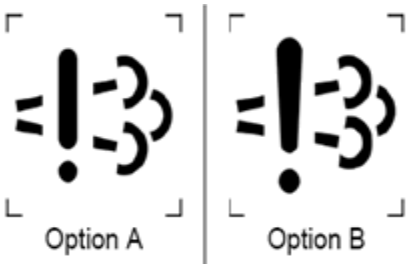
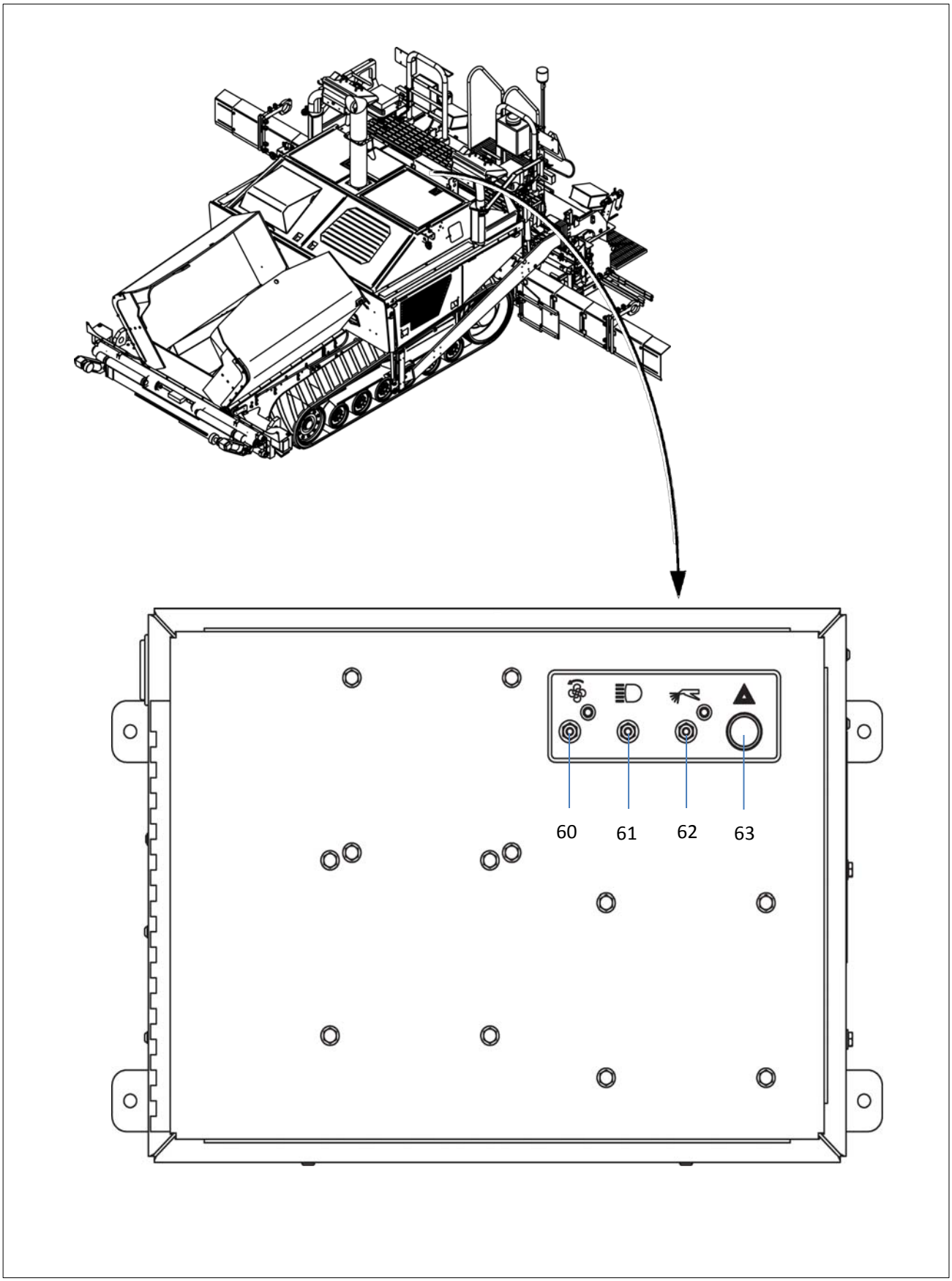




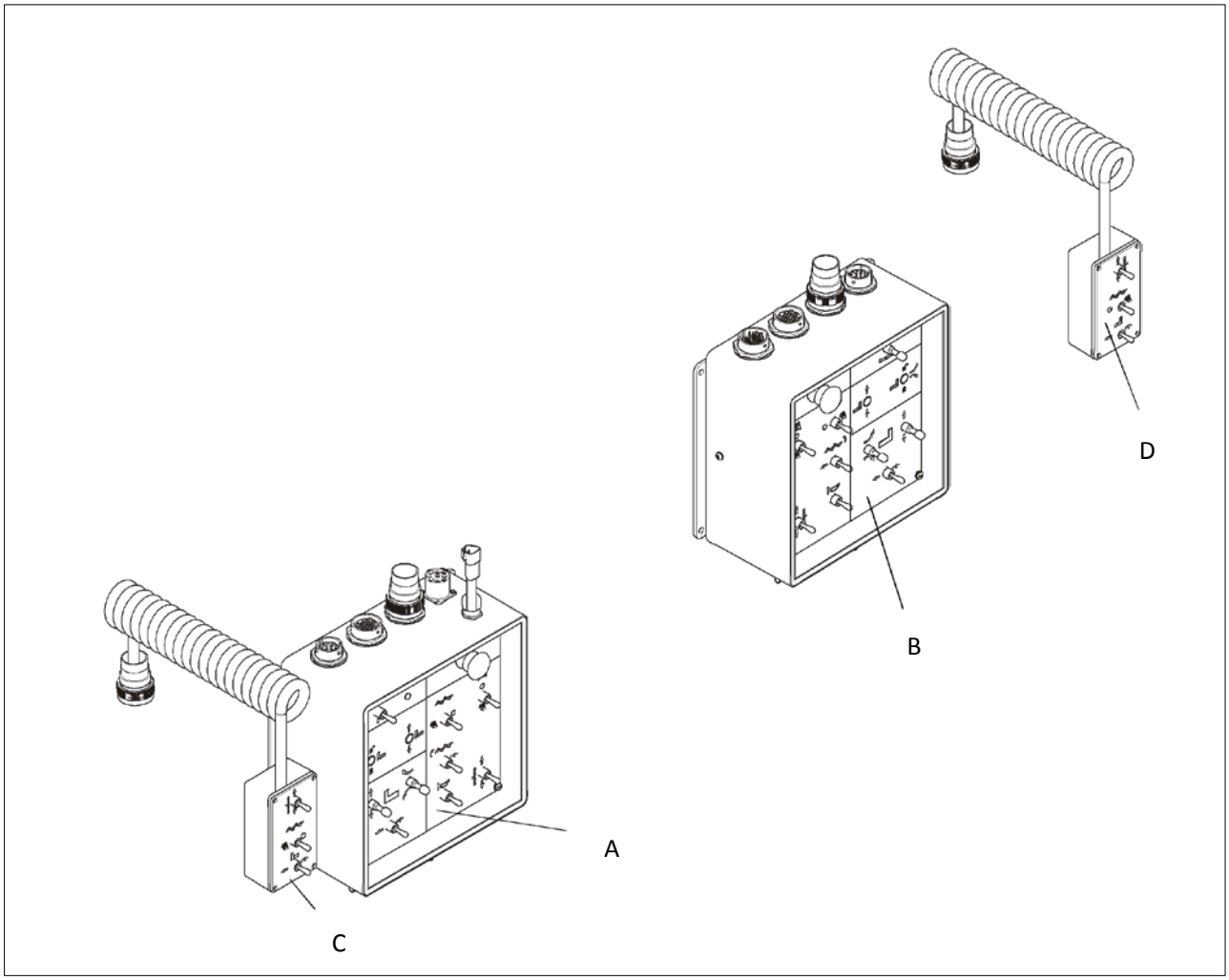
H53 (DEF Indicator)		
Symbol and title	**Symbol description**	**Additional information**
Diesel exhaust fluid (DEF) 	To identify the fluid used to reduce emissions from operation of the diesel engine by means of a selective catalytic reaction. To identify the fill point for diesel exhaust fulid for diesel exhaust fluid. To identify the container for diesel exhaust fluid. To identify the display that provides information about the quantity of diesel exhaust fluid in the tank.	Included in New Work Item Proposal for amendment of ISO 6405-1 by ISO/TC 127. Submitted for ISO 7000 registration. NOTE: The same symbol appears in the section "Symbol Used on Containers or Fill Points".
Engine emissions system, failure or malfunction 	To indicate that the engine emissions system has failed or falls outside of specified operating parameters.	Option A is ISO 7000-2596 as registered by TC 22/SC 13 for road vehicles. Option B is an application of ISO 7000-2596 using ISO 7000-1603B as the "failure" exclamation mark.

3 Auxiliary functions



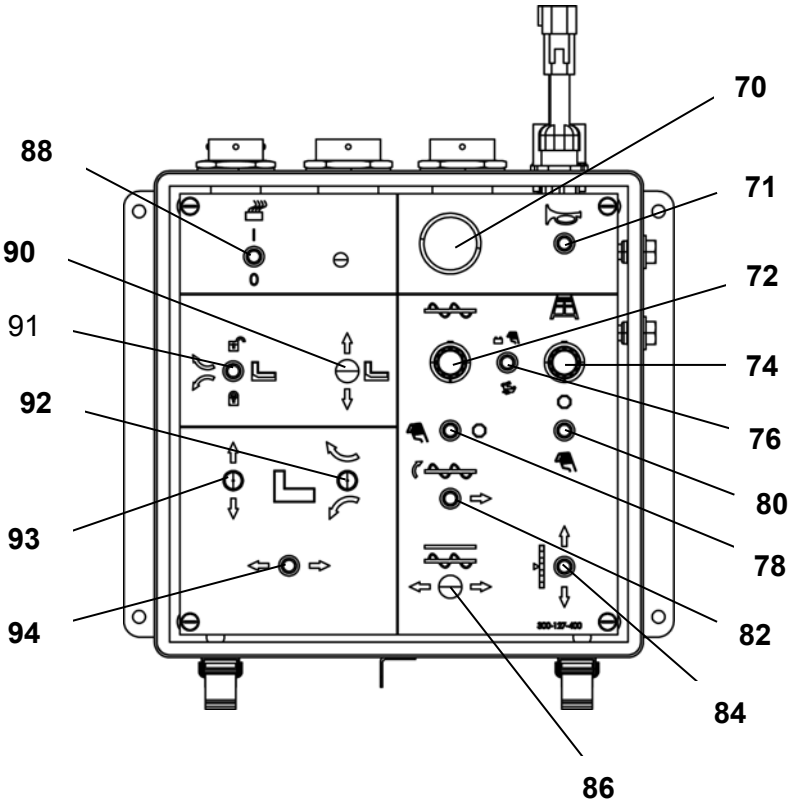
Item	Designation	Brief description
60	Cooling fan reverse	Press and release to reverse the direction of the cooling fan for 15 seconds. Fan automatically returns to the normal direction after 15 seconds.
61	Headlights ON / OFF	Controls the working lights. - Toggle the switch up: Turns on the lights - Toggle the switch down: Turns off the lights. **NOTICE** To prevent the battery from being drained, switch the headlights "ON" only when the diesel engine is running!
62	Release Agent fluid spray system ON / OFF	Activates the Release Agent fluid spraying system. - Toggle the switch up: Turns on the sprayer. - Toggle the switch down: Turns off the sprayer. **NOTICE** To prevent the battery from being drained, switch the sprayer "ON" only when the diesel engine is running!
63	Hazard warning flasher	Push button to turn the Hazard Warning Flasher "ON". Hazard Warning Flasher must be turned "ON" on roads and in the construction site area. NOTE: The Hazard Warning Flasher button is also for activating the rotary beacon when attached.

4 Left / right remote controls and handsets



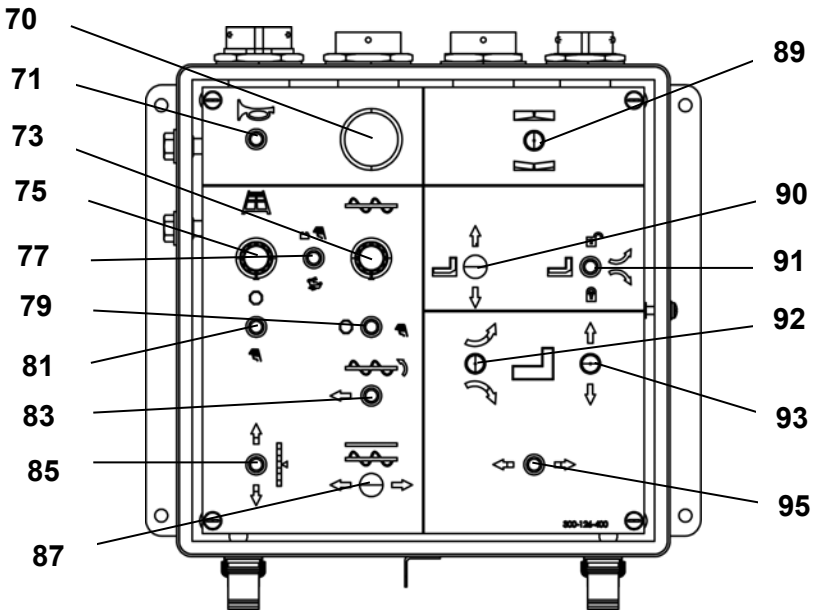
Item	Designation	Brief description
A	LEFT remote control	- Control certain functions on the left-hand side of the vehicle and various overall functions.
B	RIGHT remote control	- Control certain functions on the right-hand side of the vehicle and various overall functions.
C	LEFT handset	- Removable handset for controlling certain functions on the left-hand side of the vehicle.
D	RIGHT handset	- Removable handset for controlling certain functions on the right-hand side of the vehicle.

Left / right remote control

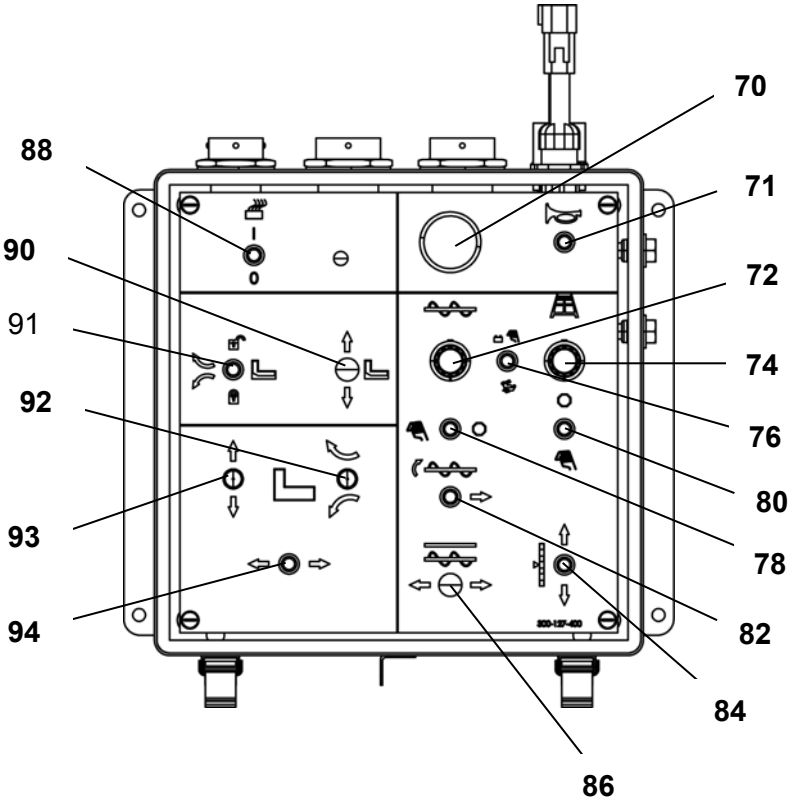


The left remote controls the left auger and conveyor

The right remote controls the right auger and conveyor

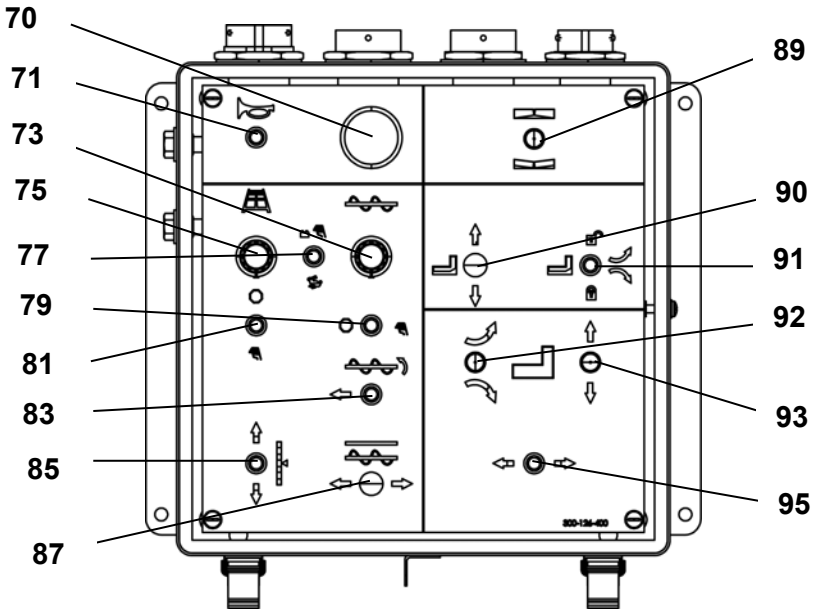


Item	Designation	Brief description
70	Emergency stop button	In case of an emergency (danger to persons, possible collision, etc.), press the Emergency Stop button! - Pressing the Emergency Stop button switches the engine, the drives and the steering system off. **⚠ WARNING** Paving, lifting the screed or other functions are no longer possible! Do not reset the Emergency Stop Button until the danger is no longer present! - To restart the engine, the button must be pulled out again.
71	Horn	Sound the horn to warn of danger! NOTE: The horn can also be used to communicate with the vehicle driver!
72	Left auger pile height	Manually adjusts the percentage of maximum speed in auto mode. If 10% is selected, then the maximum speed when no material is sensed is 10% of its highest possible speed. Knob function: - Turn the knob clockwise to raise the speed. - Turn the knob counter-clockwise to lower the speed.
73	Right auger pile height	Manually adjusts the percentage of maximum speed in auto mode. If 10% is selected, then the maximum speed when no material is sensed is 10% of its highest possible speed. Knob function: - Turn the knob clockwise to raise the speed. - Turn the knob counter-clockwise to lower the speed.
74	Left conveyor pile height	Manually adjusts the percentage of maximum speed in auto mode. If 10% is selected, then the maximum speed when no material is sensed is 10% of its highest possible speed. Knob function: - Turn the knob clockwise to raise the speed. - Turn the knob counter-clockwise to lower the speed.
75	Right conveyor pile height	Manually adjusts the percentage of maximum speed in auto mode. If 10% is selected, then the maximum speed when no material is sensed is 10% of its highest possible speed. Knob function: - Turn the knob clockwise to raise the speed. - Turn the knob counter-clockwise to lower the speed.
76	Left speed manual / max. output	Overrides the auger and conveyor function automatic mode. Toggle switch function: - Toggle the switch away from the operator (upward) to run the auger and conveyor only using the pile height knobs. The material sensor will not be used. - Toggle the switch in the center position to run the auger and conveyor in auto mode. - Momentarily toggle the switch towards the operator (downward) to run the auger and conveyor at full speed.

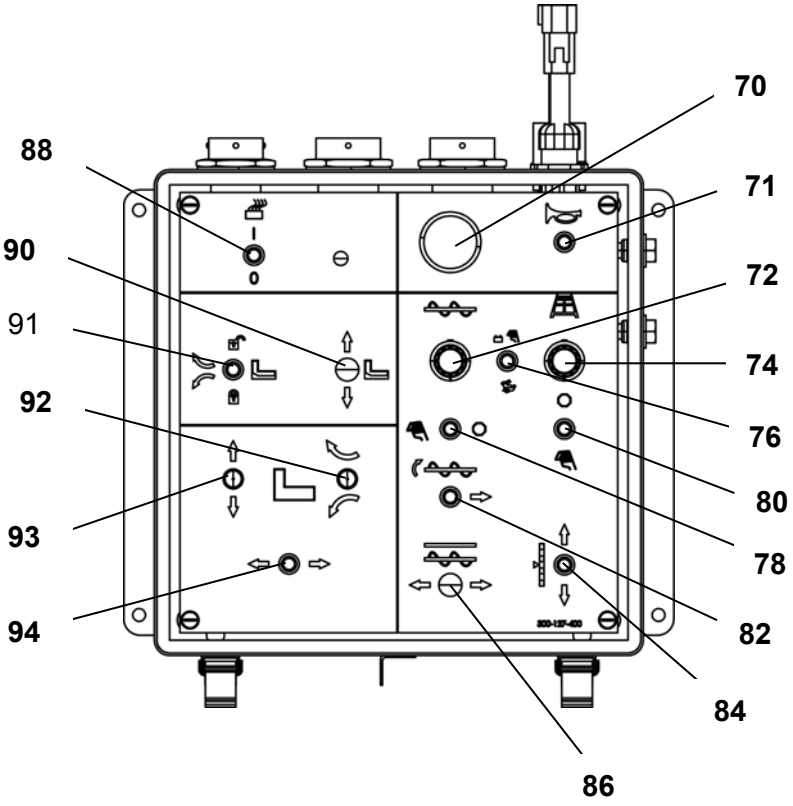


The left remote controls the left auger and conveyor

The right remote controls the right auger and conveyor

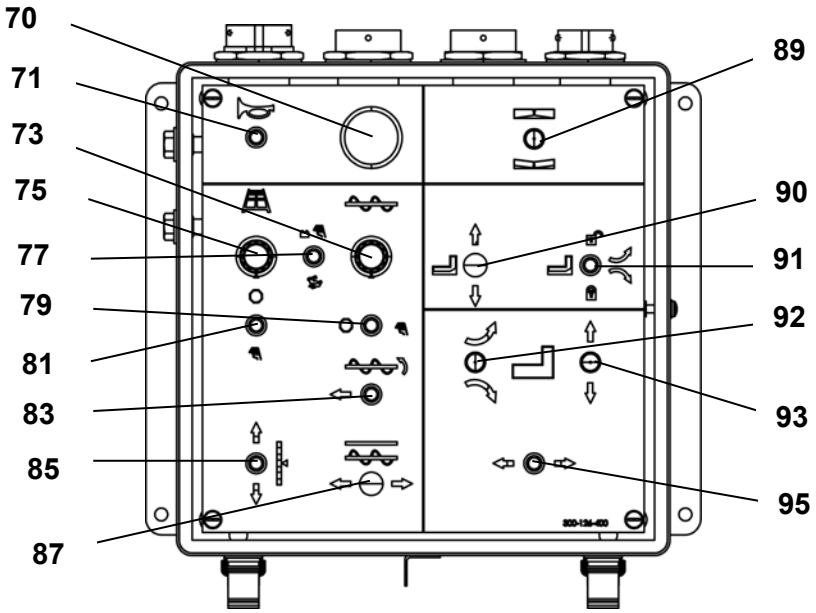


Item	Designation	Brief description
77	Right speed manual / max. output	Overrides the auger and conveyor function automatic mode. Toggle switch function: - Toggle the switch away from the operator (upward) to run the auger and conveyor only using the pile height knobs. The material sensor will not be used. - Toggle the switch in the center position to run the auger and conveyor in auto mode. - Momentarily toggle the switch towards the operator (downward) to run the auger and conveyor at full speed.
78	Left auger OFF / max. output	Overrides the auger function in automatic and manual mode. Toggle switch function: - Toggle the switch right: Auger OFF. - Toggle the switch left: Auger 100% feed capacity.
79	Right auger OFF / max. output	Overrides the auger function in automatic and manual mode. Toggle switch function: - Toggle the switch left: Auger OFF. - Toggle the switch right: Auger 100% feed capacity.
80	Left conveyor OFF / max. output	Overrides the conveyor function in automatic mode. Toggle switch function: - Toggle the switch forward (away from operator): Conveyor OFF. - Toggle the switch back (toward the operator: Conveyor 100% feed capacity.
81	Right conveyor OFF / max. output	Overrides the conveyor function in automatic mode. Toggle switch function: - Toggle the switch forward (away from operator): Conveyor OFF. - Toggle the switch back (toward the operator: Conveyor 100% feed capacity.
82	Left auger reversing switch	The conveying direction of the left half of the auger can be reversed in order to slightly reverse a material supply which may be too high. **NOTICE** The switch can be activated as often as needed to allow the conveyor to run further in the reverse direction.
83	Right auger reversing switch	The conveying direction of the right half of the auger can be reversed in order to slightly reverse a material supply which may be too high. **NOTICE** The switch can be activated as often as needed to allow the conveyor to run further in the reverse direction.

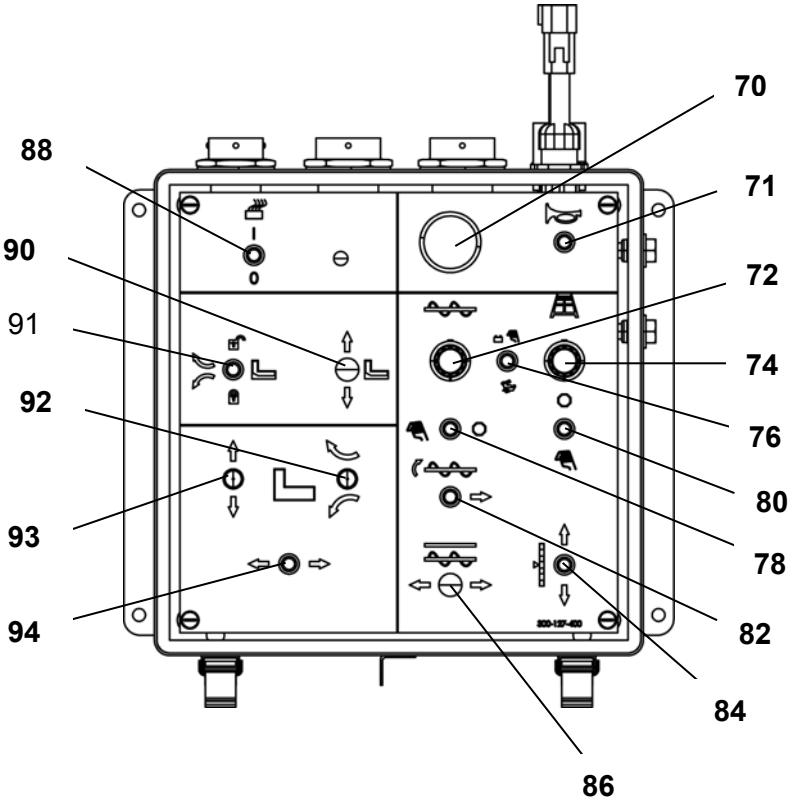


The left remote controls the left auger and conveyor

The right remote controls the right auger and conveyor

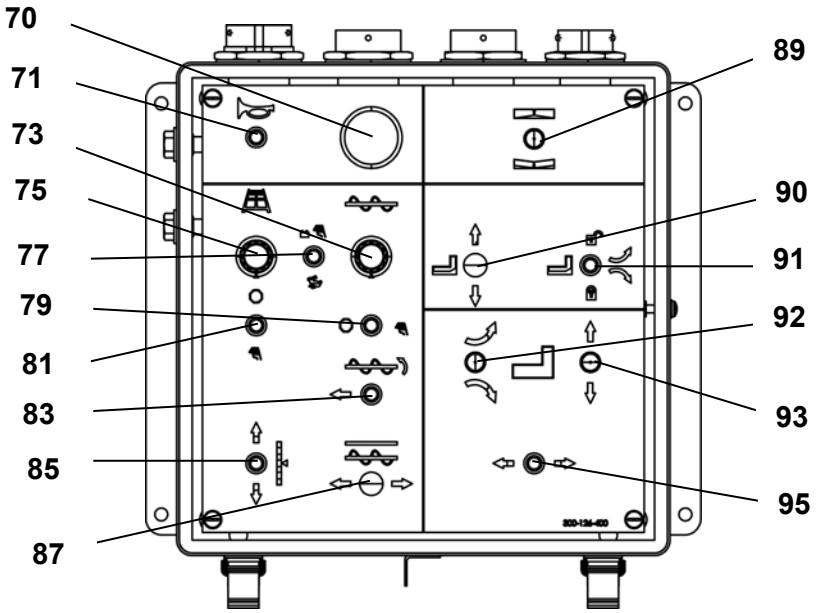


Item	Designation	Brief description
84	Left leveling cylinder	Manually extends and retracts the leveling cylinder when the vehicle is being operated without the automatic leveling system. Toggle switch function: - Toggle the switch forward (away from the screed): Retract or raise the leveling cylinder to raise the screed. - Toggle the switch back (toward the screed): Extend or lower the leveling cylinder to lower the screed. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and persons are clear of the machine!
85	Right leveling cylinder	Manually extends and retracts the leveling cylinder when the vehicle is being operated without the automatic leveling system. Toggle switch function: - Toggle the switch forward (away from the screed): Retract or raise the leveling cylinder to raise the screed. - Toggle the switch back (toward the screed): Extend or lower the leveling cylinder to lower the screed. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and per- sons are clear of the machine!
86	Left hydraulic tunnel extension / retract (option)	Controls the tunnel extension. Toggle switch function: - Toggle the switch outward (away from the screed): Extends tunnel extension. - Toggle the switch inward (toward the center of the screed): Re- tracts tunnel extension.
87	Right hydraulic tunnel extension / retract (option)	Controls the tunnel extension. Toggle switch function: - Toggle the switch outward (away from the screed): Extends tunnel extension. - Toggle the switch inward (toward the center of the screed): Re- tracts tunnel extension.
88	Screed heater system ON / OFF + activation LED	Jointly switches all of the screed heater system's heating sections on and off. Toggle switch function: - Toggle the switch forward (away from the operator): Screed heater system ON and indicator (LED) light ON. - Toggle the switch back (toward the operator): Screed heater sys- tem OFF.
89	Crowning adjustment	The screed is equipped with adjustable crowning; adjusting this enables the required crowning to be set. Toggle switch function: - Toggle the switch forward (away from the operator): Increases Crowning. - Toggle the switch back (toward the operator): Decreases Crowning.

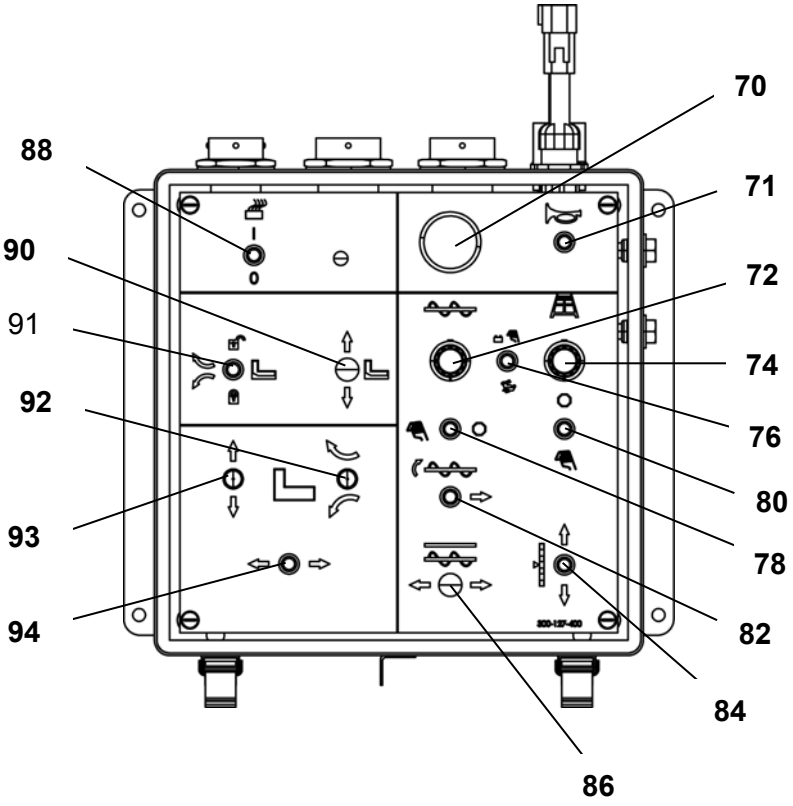


The left remote controls the left auger and conveyor

The right remote controls the right auger and conveyor

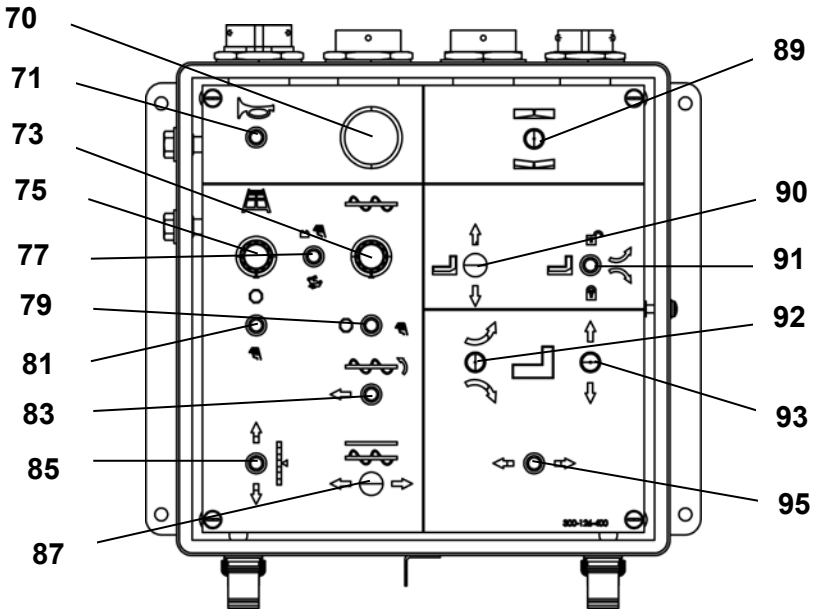


Item	Designation	Brief description
90	Berm raise / lower (Option)	Hydraulically raises or lowers the Berm. Toggle switch function: - Toggle the switch forward (away from the operator): Raises Berm. - Toggle the switch back (toward from the operator): lower Berm. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and persons are clear of the machine!
91	Berm lock / unlock (Option)	Locks and unlocks the Berm. Toggle switch function: - Toggle the switch forward (away from the operator): Unlocks the Berm. - Toggle the switch back (toward from the operator): Locks the Berm. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and per- sons are clear of the machine!
92	Raise / lower extension scope	Hydraulically raises and lowers the extension slope. Toggle switch function: - Toggle the switch forward (away from the operator): Raise extension slope. - Toggle the switch back (toward the operator): Lower extension slope **⚠ WARNING** Before operating the toggle switch, ensure that equipment and persons are clear of the machine!
93	Raise / lower extendable screed part	Hydraulically raises and lowers the extendable screed part. Toggle switch function: - Toggle the switch forward (away from the operator): Raise extendable part. - Toggle the switch back (toward the operator): Lower extendable part. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and per- sons are clear of the machine!



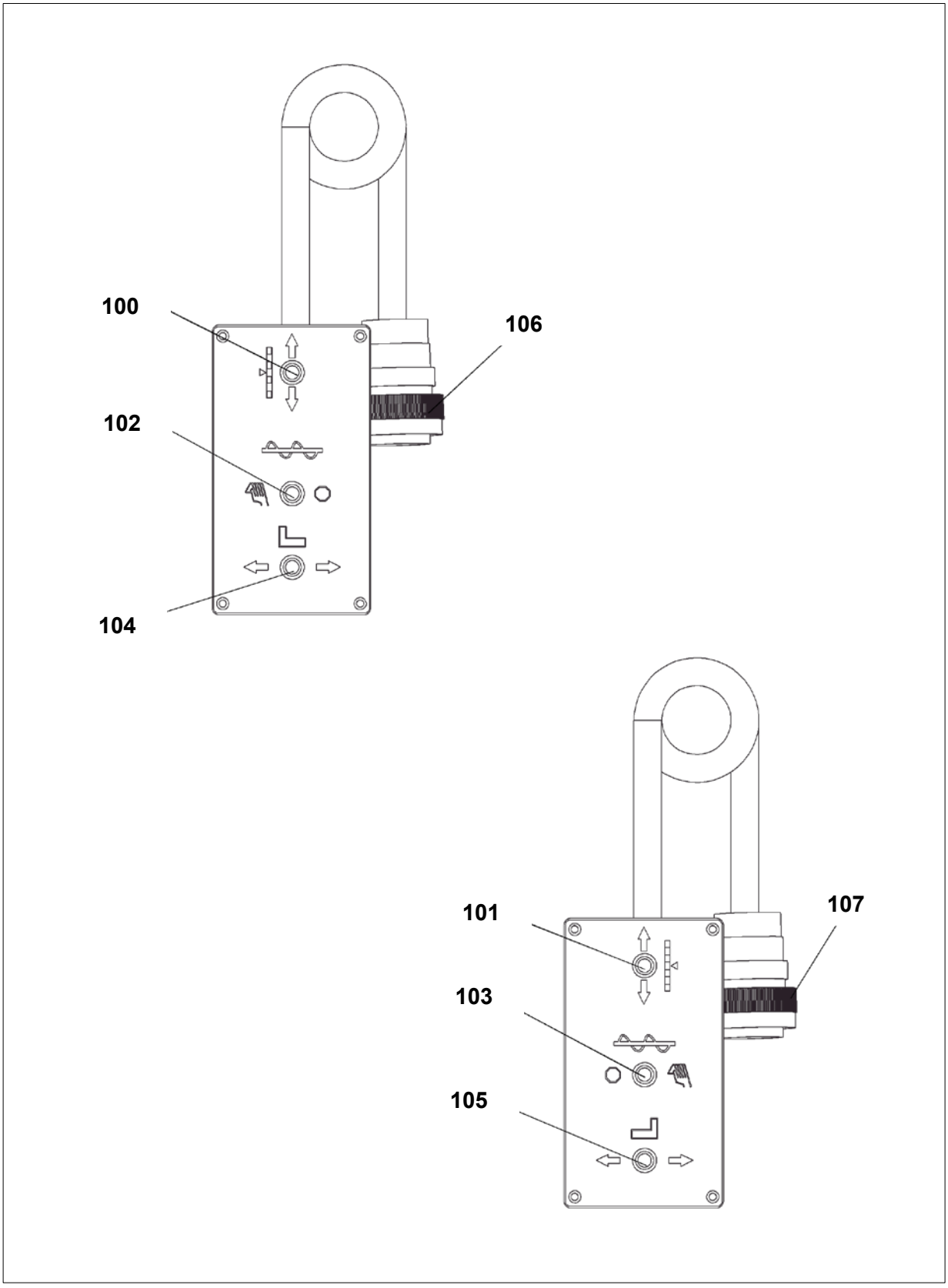
The left remote controls the left auger and conveyor

The right remote controls the right auger and conveyor

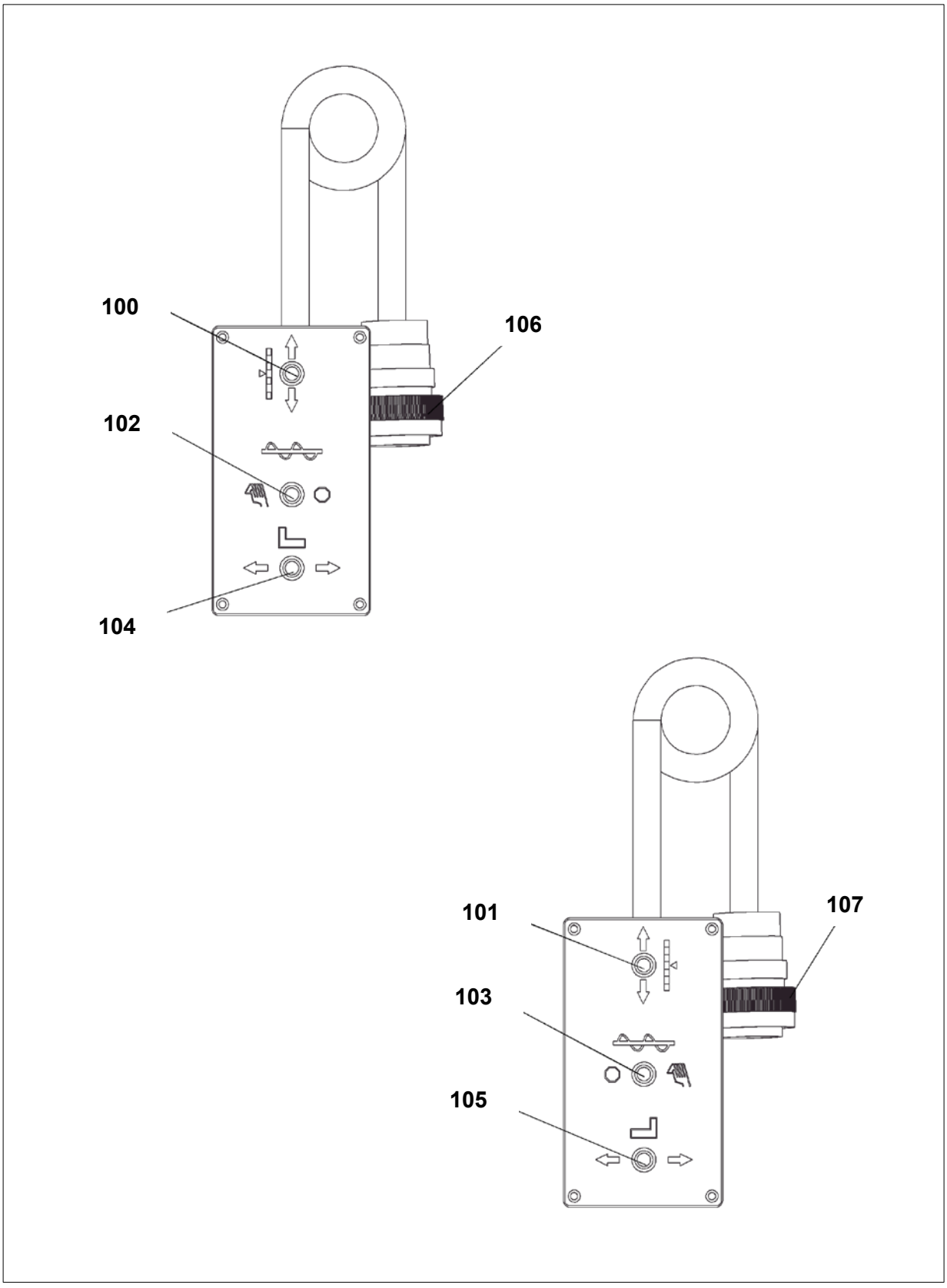


Item	Designation	Brief description
94	Extend / retract left screed extension	Hydraulically retracts and extends the left extendable part of the screed. Toggle switch function: - Toggle the switch left: Extend screed extension. - Toggle the switch right: Retract screed extension. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and persons are clear of the machine!
95	Extend / retract right screed extension	To hydraulically retract and extend the right extendable part of the screed. Toggle switch function: - Toggle the switch left: Retract screed extension. - Toggle the switch right: Extend screed extension. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and per- sons are clear of the machine!

Left / right handset



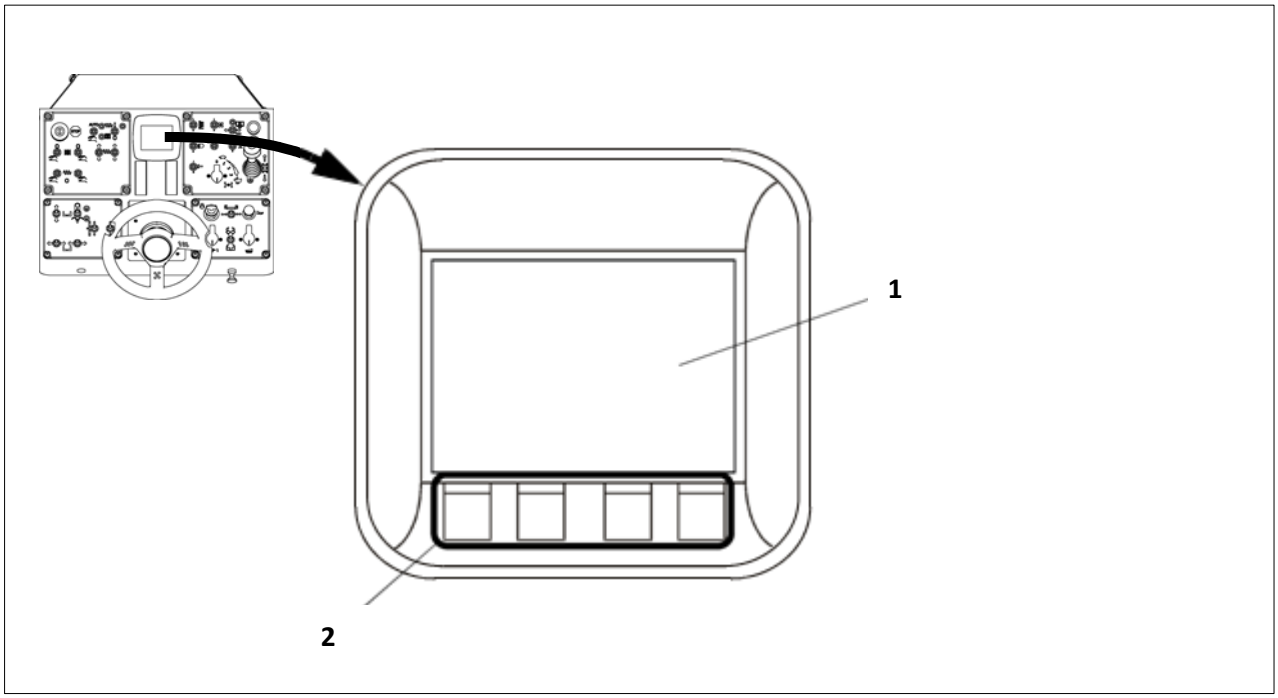
Item	Designation	Brief description
100	Left leveling cylinder	Manually extends and retracts the leveling cylinder when the vehicle is being operated without the automatic leveling system. Toggle switch function: - Toggle the switch forward (away from the operator): Raises the left screed side arm. - Toggle the switch back (toward the operator): Lowers the screed side arm. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and per- sons are clear of the machine!
101	Right leveling cylinder	Manually extends and retracts the leveling cylinder when the vehicle is being operated without the automatic leveling system. Toggle switch function: - Toggle the switch forward (away from the operator): Raises the right screed side arm. - Toggle the switch back (toward the operator): Lowers the screed side arm. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and per- sons are clear of the machine!
102	Left auger OFF / max. output	Overrides the auger function in automatic mode. Toggle switch function: - Toggle the switch right: Auger OFF. - Toggle the switch left: Auger 100% feed capacity.
103	Right auger OFF / max. output	Overrides the auger function in automatic mode. Toggle switch function: - Toggle the switch left: Auger OFF. - Toggle the switch right: Auger 100% feed capacity.
104	Extend / retract left screed	Hydraulically retracts and extends the left extendable part of the screed. Toggle switch function: - Toggle switch left: Extend screed. - Toggle switch right: Retract screed. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and per- sons are clear of the machine!


100
106
102
104
101
107
103
105

Item	Designation	Brief description
105	Extend / retract right screed	Hydraulically retracts and extends the right extendable part of the screed. Push button function: - Toggle switch left: Retract screed. - Toggle switch right: Extend screed. **⚠ WARNING** Before operating the toggle switch, ensure that equipment and per- sons are clear of the machine!
106	Handset connection cable	- Connects to the left remote control.
107	Handset connection cable	- Connects to the left remote control.

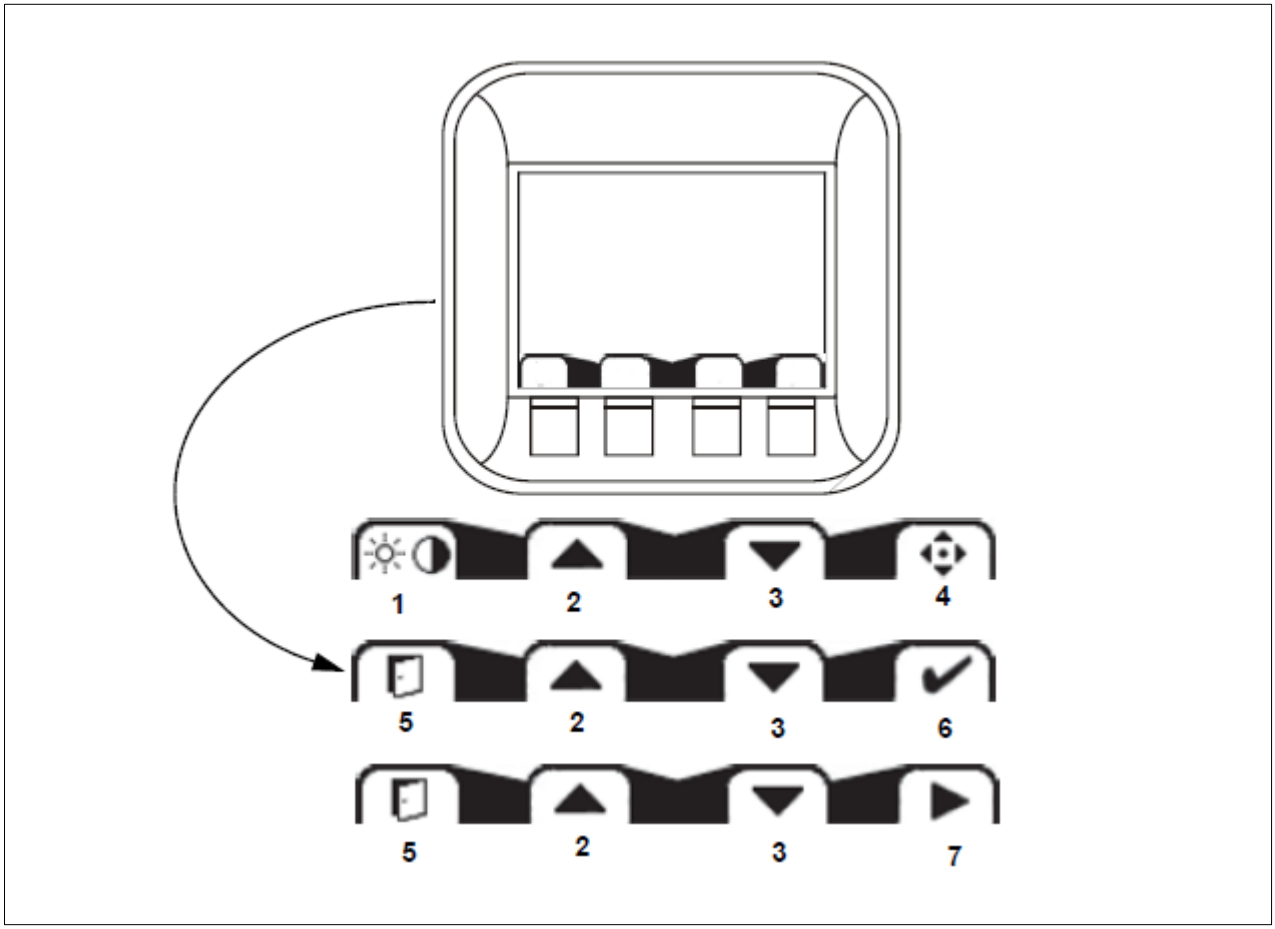
D 2.0 Operation

1 Operation of the graphical terminal



Item	Designation	Brief description
1	Display	- Display for engine information, diagnostic information and configuration.
2	Soft keys	- Terminal is controlled by navigation through a set of four soft keys. The keys are context dependent. Soft key selection options are displayed above each key and are dependent on the current navigation location within the engine monitor software program.

1.1 Navigation using Soft keys



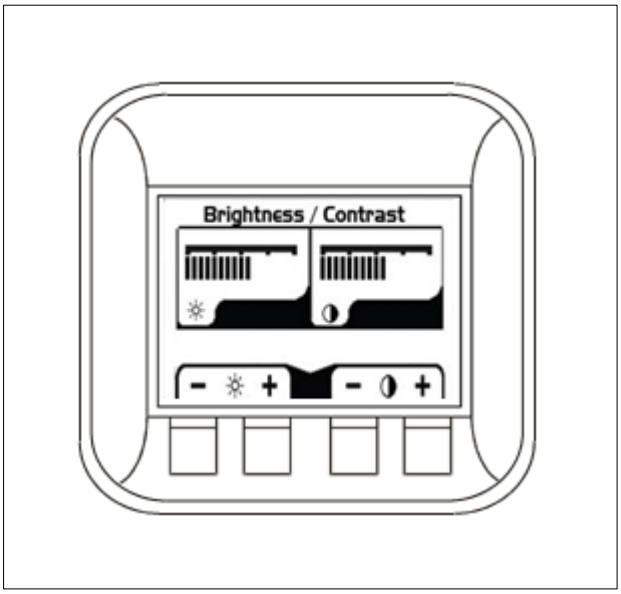
Item	Designation	Brief description
1	Brightness/Contrast	- Press to access brightness and contrast settings.
2	Navigate Up	- Press up to move up through menu items.
3	Navigate Down	- Press up to move down through menu items.
4	Main Menu	- Press to go to Main Menu screen.
5	Exit/back one screen	- Press to go back one screen.
6	Select	- Press to make selection.
7	Next	- Press to navigate to next digit or screen element.

NOTICE

As a general rule, the far right soft key is the selector button and the far left soft key is the step back one screen key. To engage full screen use, the on-screen selections are not displayed when not in use. Press any soft key to display current selection options. The selection options will be displayed for three seconds

Brightness / Contrast Adjustment

- Adjust brightness and contrast levels by pressing the far left soft key. This will display the brightness and contrast soft key bar.

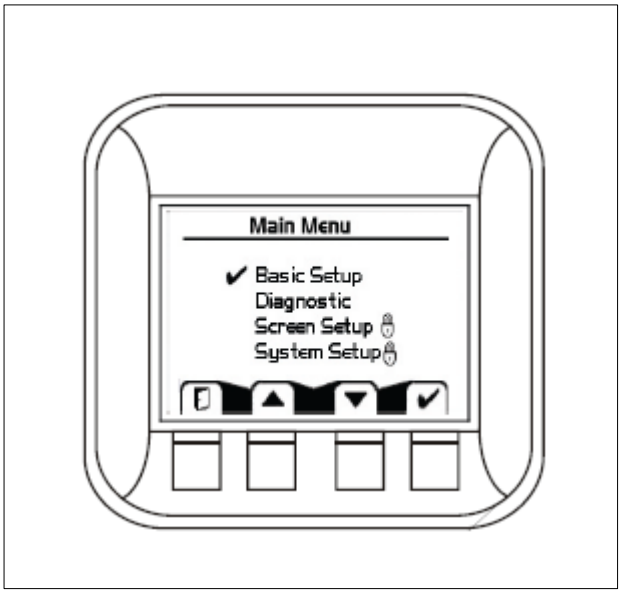


NOTICE

The bar will disappear after 3 seconds of inactivity.

Main Menu – Start Menu

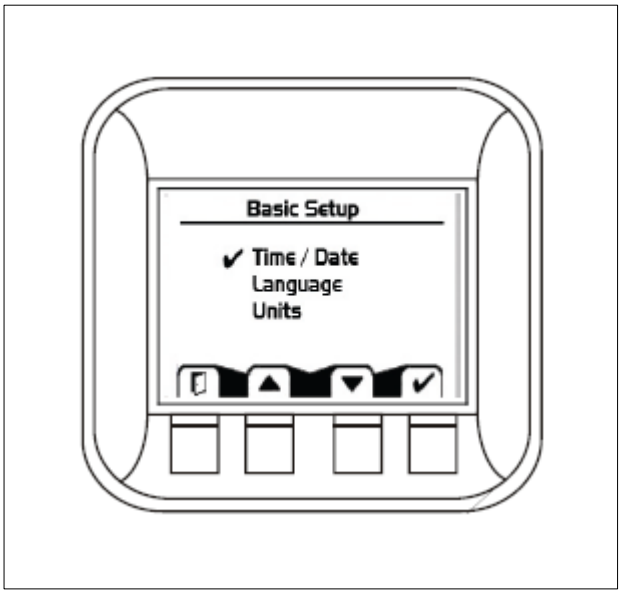
The Main Menu screen is the starting point for configuring the termianl.



Basic Setup	- Use to set time/date, language and units.
Diagnostics	- Use to set system info, info fault log and J1939 lists.
Screen Setup	- (PIN protected)
System Setup	- (PIN protected)

Main Menu – Basic Setup

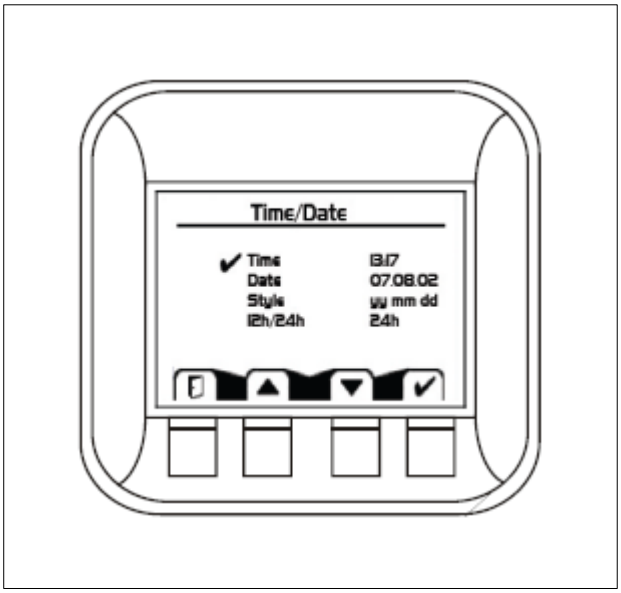
Use the Basic setup screen to set time, language and display units for the terminal.



Time / Date	- Use Time/Date set date and display style for time and date information.
Language	- Use Language to set the system language.
Units	- Use Units to set speed, distance, pressure, volume, temperature and fuel rates and economy settings.

Main Menu – Basic Setup

Use Time/Date screen to set Time, Date, calendar style and time style. Use up, down select and next soft keys to navigate.

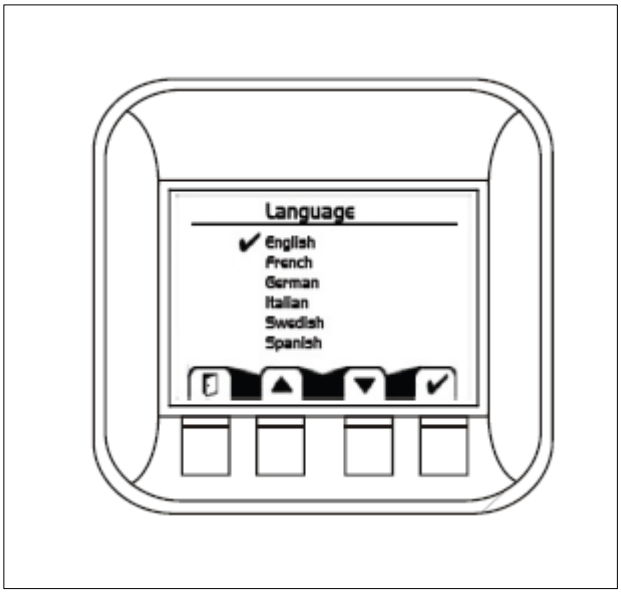


Main Menu – Basic Setup - Language

Use Language screen to select program language.

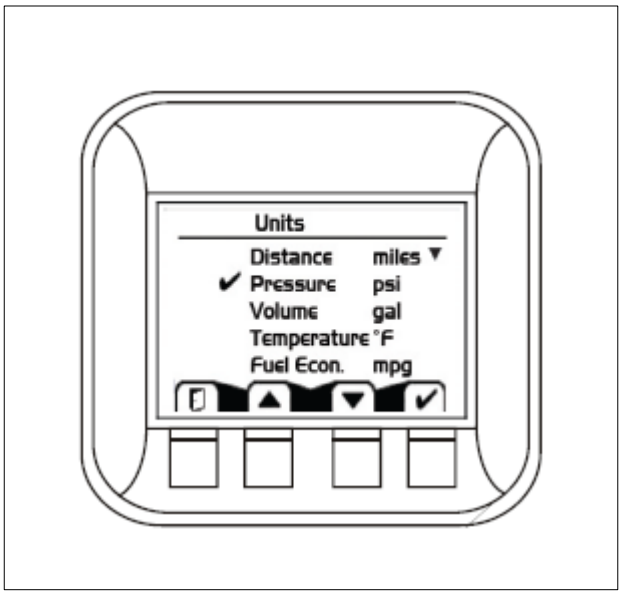
Languages available: English, French, German, Italian, Swedish and Spanish.

The default language setting is English



Main Menu – Basic Setup - Units

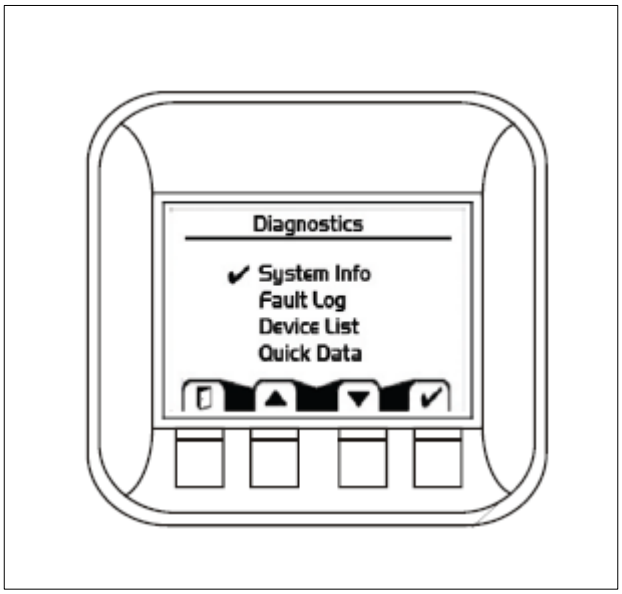
Use the up, down, select and next soft keys to define unit measurements



Speed	- km/h, mph
Distance	- km, mi
Pressure	- kPa, bar, lbs/sq in
Volume	- l, gal, imp, gal
Temperature	- °C, °F
Fuel Economy	- 1/100km, mpg, mpig
Fuel Rate	- l/h, g/h, ig/h

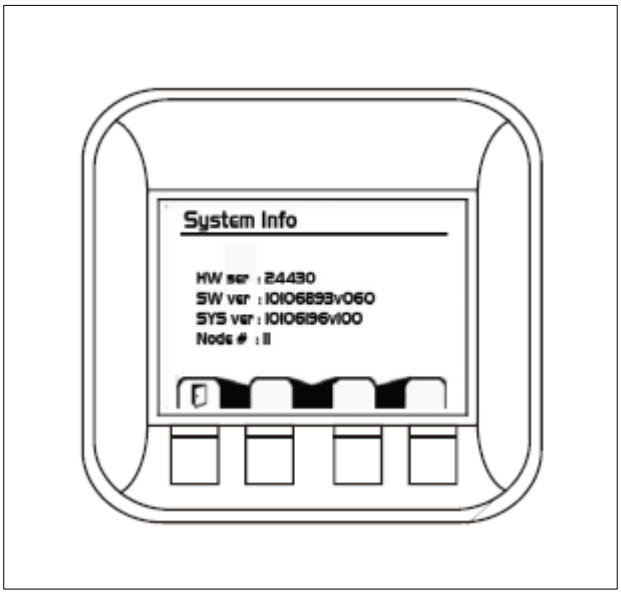
Main Menu – Diagnostics

Use the Diagnostics screen to display current system in- formation, view and monitor fault logs and display all J1939 devices connected to the graphical terminal.



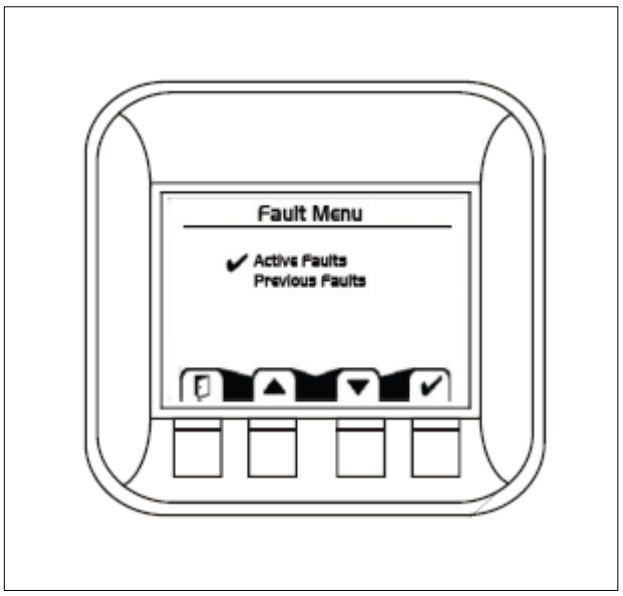
Main Menu – Diagnostics
– System Info

The system info screen dis- plays the hardware system serial number, current soft- ware version, current system version and node number. Only information is displayed in the System Info window. No changes can be made.



Main Menu – Diagnostics
– Fault Log

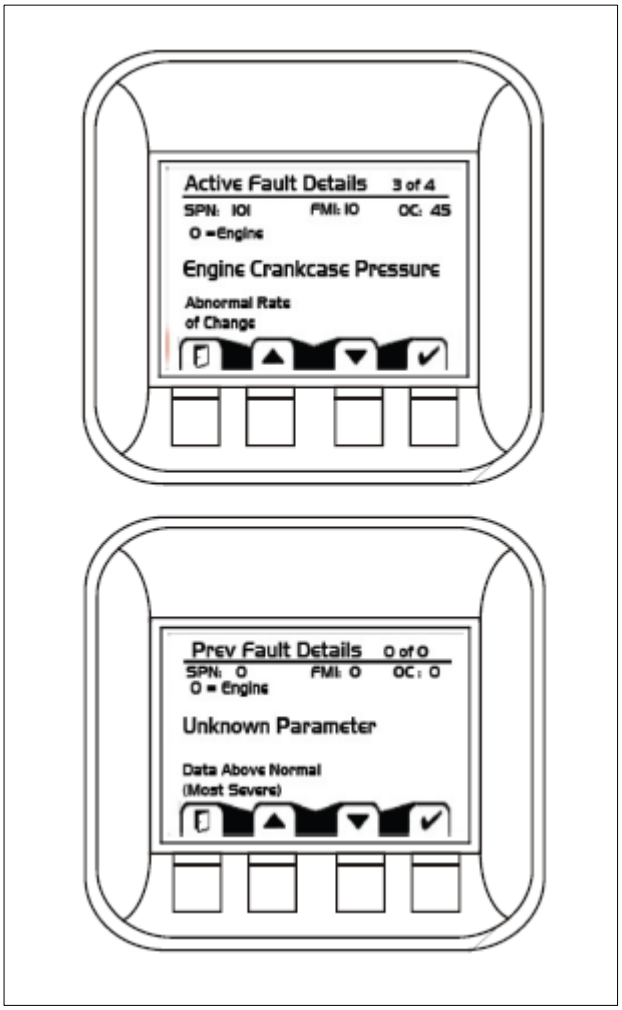
Fault information is saved and stored to the fault log. Select either Active or Previous Faults to monitor fault activity. Select specific faults to list more information



Main Menu – Diagnostics
– Fault Log
Active and Previous Faults

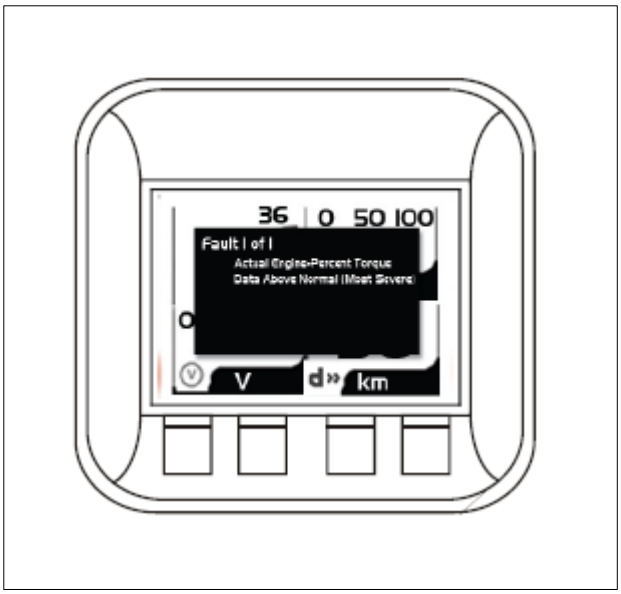
Selecting Active Faults in the Fault Menu will display all active faults on the CAN network.

Selecting Previous Faults in the Fault Menu will display all previously active faults on the CAN network.



Main Menu – Diagnostics
– Fault Pop – Up Alarms

When a fault is detected on the CAN network, a flashing red warning alarm will be activated and a fault information pop-up window will be displayed listing current fault information.
Warning lights will flash when
a popup alarm occurs and will stay flashing until acknowledged.
Warning lights will remain lit until the fault is no longer on the CAN network



	- Select to clear pop up and return directly to previous screens.
	- Scroll between screens and within screens.
	- Scroll between screens and within screens.
	- Confirm any selections or acknowledge any fault/ warning and to go back to normal screen.

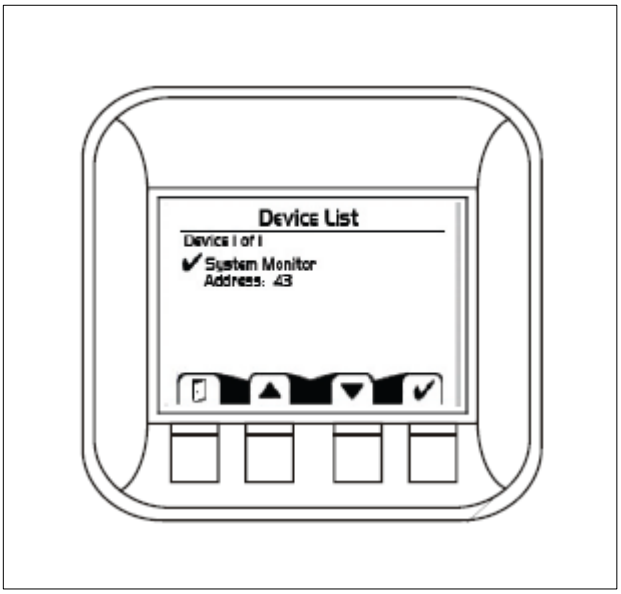
NOTICE

Fault Pop-Up Alarms

- Faults no longer active will also be displayed in the Previous Faults log.
- Faults that have been acknowledged and are no longer active will be shown in the current Active Faults log in italics.
- Pop-up fault alarms can be displayed by setting the Fault Pop-Up to section of the System.

Main Menu – Diagnostics – Device List

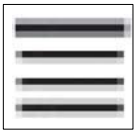
The Device list page will list all J1939 devices and addresses that are currently being monitored on the network



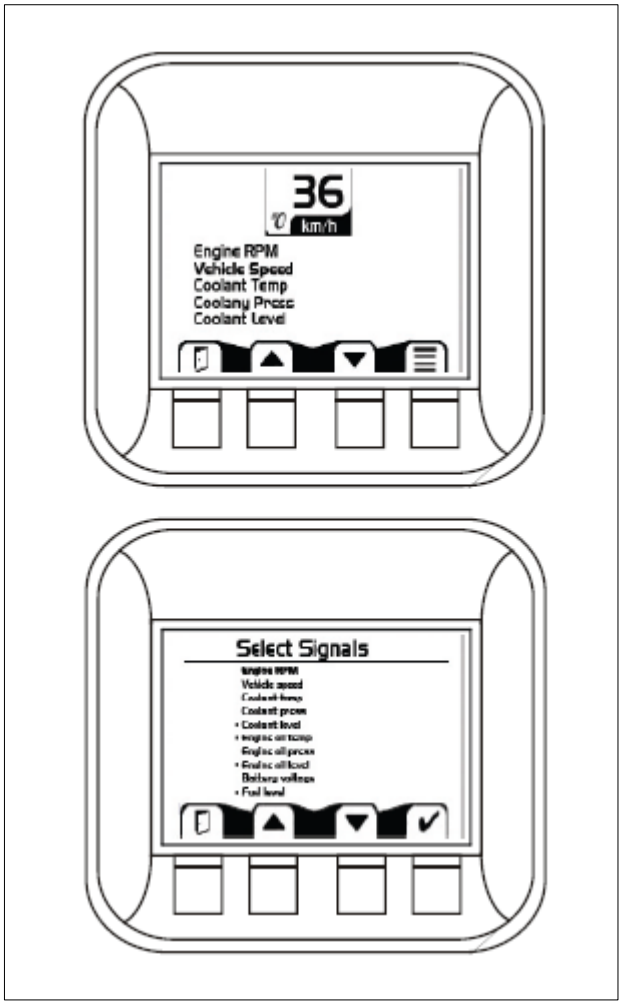
Main Menu – Diagnostics
– Quick Data

The Quick Data function allows selected signals to be monitored in a scrollable single view display.
To select signals for display, press the far right soft key

Quick Data soft key



Scroll through signal list using the up and down arrow soft keys and select/de-select signals for Quick View monitoring by pressing the far right (check mark) soft key. Signals selected for display will show an asterisk to the left of the signal name

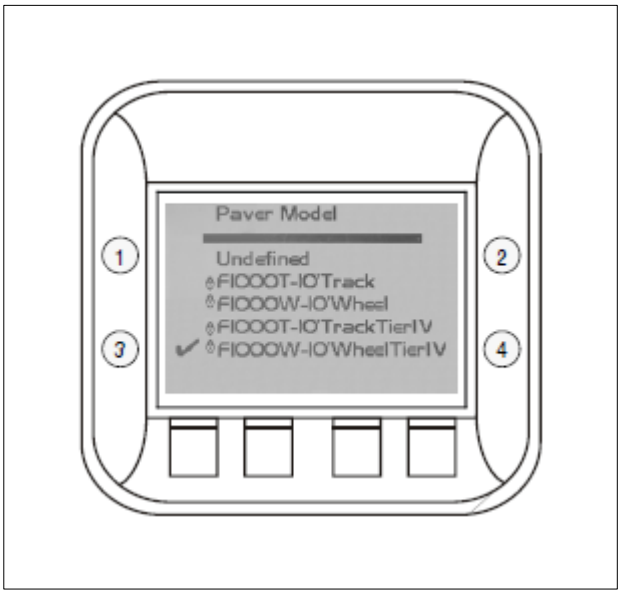


Start Display

Appears at system start.

Model Select

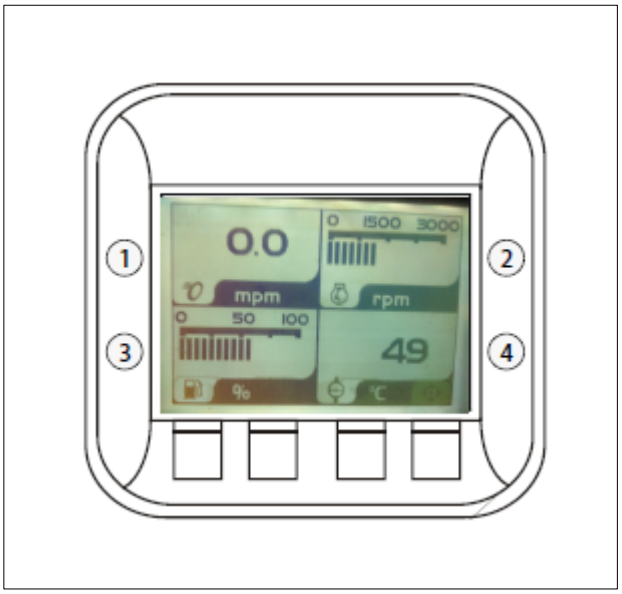
Use the scroll buttons to select the appropriate paver model.
Once the check mark is on the correct model, press “OK”.



Display 01

Display menu

- Vehicle Speed (1) in fpm
- Engine RPM (2) In rpm – with bar chart
- Diesel tank filling (3) in % - with bar chart
- Engine Coolant Temperature (4) in °C



Display 02

Display menu

- Hydraulic Oil Temperature (1) in °C
- Engine Operation Hours (2) in hours
- Engine Coolant Level (3) in % - with bar chart
- Actual Engine Torque (4) in % - with bar chart

Active Faults Display

Appears when a fault occurs.

- To see a list with active faults, first use button 2 or 3 from the current screed and go to Active Fault Screen, then press button 4 to get into the Active Fault Screen.
- After entering the Active Fault Screen, Scroll thru the faults by using button 2 or 3.
- To leave the Active Fault Screen, press button 1.

Fault Sources and Codes

Nr.	Source	Nr.	Source
1	Sensor Power	2	Battery
3	Left Joystick	4	Right Joystick
5	Left Steer Wheel / Position Sensor	6	Right Steer Wheel / Position Sensor
7	Left Trim Steer POT	8	Right Trim Steer POT
9	Left Max Speed POT	10	Right Max Speed POT
11	Left Pump	12	Right Pump
13	Generator Pump	14	Left PPU
15	Right PPU	16	Generator PPU
17	Fan Motor	18	Left Conveyor POT
19	Right Conveyor POT	20	Left Auger POT
21	Right Auger POT		

Nr.	Source
10	Open circuit
11	Input at 0V
12	Short circuit
13	Input at 5V
20	Too low
21	Too high
30	No response
40	Invalid calibration
41	Invalid configuration

Warning Display

Appears due to faulty machine operation.

- Line (1): Actual displayed Warning of (x) active Warnings. Code number is displayed.
- Scroll between the active warnings by using buttons 2 or 3.
- Leave Warning display by using button 1.

Warning Codes

Situation	Code	Display Message
Propel Selector in Position 4, while joystick is stroked backward	1	Counter Rotate: stroke joystick forward
Propel Selector in Position 4, while joystick is in neutral for long (e.g. more than 10 seconds)	2	Counter Rotate: stroke joystick forward
Change Propel selector switch while machine in moving	3	Change propel selector when machine is stopped
Change Propel selector switch while joystick is not neutral	4	Change propel selector when joystick is in neutral
Joystick not in neutral when machine is powered up	5	Return Joystick to neutral
Brake is applied, try to stroke joystick	6	Release the brake before driving
Change console selector switch while machine in moving	7	Change active console when machine is stopped
Change console selector switch while joystick is not in neutral	8	Change active console when joystick is in neutral
Propel Selector in Position 4, Joystick is moved forward with no steering command for more than 5 seconds	9	
Slope detection beyond the allowable limit	11	Beyond allowable slope. Bring the gear down.
If the Generator frequency goes beyond the allowable limits	12	Generator is not within allowable limit
High hydraulic oil temperature	15	HydOilTemp_ToHigh
Low hydraulic oil level	17	HydOilLevel_Low

Situation	Code	Display Message
LH conveyor ultrasonic sensor open/short	Open: 19 Short: 18	UltrasConvLH_Open, UltrasConvLH_Short
RH conveyor ultrasonic sensor open/short	Open: 21 Short: 20	UltrasConvRH_Open, UltrasConvRH_Short
LH auger ultrasonic sensor open/short	Open: 23 Short: 22	UltrasAugerLH_Open, UltrasAugerLH_Short
RH auger ultrasonic sensor open/short	Open: 25 Short: 24	UltrasAugerRH_Open, UltrasAugerRH_Short
LH conveyor potentiometer open/short	Open: 27 Short: 26	Conv_PotLH_Open, Conv_PotLH_Short
RH conveyor potentiometer open/short	Open: 29 Short: 30	Conv_PotRH_Open, Conv_PotRH_Short
LH auger potentiometer open/short	Open: 31 Short: 30	AugerPotLH_Open, AugerPotLH_Short
RH auger potentiometer open/short	Open: 33 Short: 32	AugerPotRH_Open, AugerPotRH_Short
Fan Motor Open/Short	Open: 35 Short: 34	FanDriveMotor_Open, FanDriveMotor_Short

1.2 Engine Error messages

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
111	629	12	Red	Controller #1	Engine Control Module Critical Internal Failure - Bad intelligent device or component	X
115	612	2	Red	System Diagnostic Code #2	Engine Magnetic Speed/Position Lost Both of Two Signals - Data erratic, intermittent or incorrect	X
122	102	3	Amber	Engine Intake Manifold #1 Pressure	Intake Manifold 1 Pressure Sensor Circuit - Voltage above normal, or shorted to high source	X
123	102	4	Amber	Engine Intake Manifold #1 Pressure	Intake Manifold 1 Pressure Sensor Circuit - Voltage below normal, or shorted to low source	X
124	102	16	Amber	Engine Intake Manifold #1 Pressure	Intake Manifold 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
125	102	18	Amber	Engine Intake Manifold #1 Pressure	Intake Manifold 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	
131	91	3	Red	Accelerator Pedal Position 1	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source	X
132	91	4	Red	Accelerator Pedal Position 1	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source	X
133	974	3	Red	Remote Accelerator Pedal Position	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source	X
134	974	4	Red	Remote Accelerator Pedal Position	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source	X
135	100	3	Amber	Engine Oil Pressure	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage above normal, or shorted to high source	X
141	100	4	Amber	Engine Oil Pressure	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage below normal, or shorted to low source	X
143	100	18	Amber	Engine Oil Pressure	Engine Oil Rifle Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
144	110	3	Amber	Engine Coolant Temperature	Engine Coolant Temperature 1 Sensor Circuit - Voltage above normal, or shorted to high source	X
145	110	4	Amber	Engine Coolant Temperature	Engine Coolant Temperature 1 Sensor Circuit - Voltage below normal, or shorted to low source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
146	110	16	Amber	Engine Coolant Temperature	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
147	91	1	Red	Accelerator Pedal Position 1	Accelerator Pedal or Lever Position 1 Sensor Circuit Frequency - Data valid but below normal operating Range	X
148	91	0	Red	Accelerator Pedal Position 1	Accelerator Pedal or Lever Position Sensor 1 - Data valid but above normal operational range - Most Severe Level	X
151	110	0	Red	Engine Coolant Temperature	Engine Coolant Temperature - Data valid but above normal operational range - Most Severe Level	X
153	105	3	Amber	Engine Intake Manifold 1 Temperature	Intake Manifold 1 Temperature Sensor Circuit - Voltage above normal, or shorted to high source	X
154	105	4	Amber	Engine Intake Manifold 1 Temperature	Intake Manifold 1 Temperature Sensor Circuit - Voltage below normal, or shorted to low source	X
155	105	0	Red	Engine Intake Manifold 1 Temperature	Intake Manifold 1 Temperature - Data valid but above normal operational range - Most Severe Level	X
187	3510	4	Amber	Sensor supply voltage 2	Sensor Supply 2 Circuit - Voltage below normal, or shorted to low source	X
193	520199	3	Amber	Cruise Control	Cruise Control (Resistive) Signal Circuit - Voltage above normal, or shorted to high source	
194	520199	4	Amber	Cruise Control	Cruise Control (Resistive) Signal Circuit - Voltage below normal, or shorted to low source	
195	111	3	Amber	Engine Coolant Level	Coolant Level Sensor 1 Circuit - Voltage above normal, or shorted to high source	X
196	111	4	Amber	Engine Coolant Level	Coolant Level Sensor 1 Circuit - Voltage below normal, or shorted to low source	X
197	111	18	Amber	Engine Coolant Level	Coolant Level - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
212	175	3	Amber	Engine Oil Temperature 1	Engine Oil Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source	
213	175	4	Amber	Engine Oil Temperature 1	Engine Oil Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source	
214	175	0	Red	Engine Oil Temperature 1	Engine Oil Temperature - Data valid but above normal operational range - Most Severe Level	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
221	108	3	Amber	Barometric Pressure	Barometric Pressure Sensor Circuit - Voltage above normal, or shorted to high source	X
222	108	4	Amber	Barometric Pressure	Barometric Pressure Sensor Circuit - Voltage above normal, or shorted to low source	X
227	3510	3	Amber	Sensor supply voltage 2	Sensor Supply 2 Circuit - Voltage above normal, or shorted to high source	X
231	109	3	Amber	Engine Coolant Pressure	Coolant Pressure Sensor Circuit - Voltage above normal, or shorted to high source	
232	109	4	Amber	Engine Coolant Pressure	Coolant Pressure Sensor Circuit - Voltage below normal, or shorted to low source	
233	109	18	Amber	Engine Coolant Pressure	Coolant Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	
234	190	0	Red	Engine Speed	Engine Crankshaft Speed/Position - Data valid but above normal operational range - Most Severe Level	X
235	111	1	Red	Engine Coolant Level	Coolant Level - Data valid but below normal operational range - Most Severe Level	X
237	644	2	Amber	Engine External Speed Command Input	External Speed Command Input (Multiple Unit Synchronization) - Data erratic, intermittent or incorrect	
238	3511	4	Amber	Sensor supply voltage 3	Sensor Supply 3 Circuit - Voltage below normal, or shorted to low source	X
239	3511	3	Amber	Sensor supply voltage 3	Sensor Supply 3 Circuit - Voltage above normal, or shorted to high source	X
241	84	2	Amber	Wheel-Based Vehicle Speed	Wheel-Based Vehicle Speed - Data erratic, intermittent or incorrect	X
242	84	10	Amber	Wheel-Based Vehicle Speed	Wheel-Based Vehicle Speed Sensor Circuit tampering has been detected - Abnormal rate of change	X
245	647	4	Amber	Engine Fan Clutch 1 Output Device Driver	Fan Control Circuit - Voltage below normal, or shorted to low source	X
249	171	3	Amber	Ambient Air Temperature	Ambient Air Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source	X
253	98	1	Red	Engine Oil Level	Engine Oil Level - Data valid but below normal operational range - Most Severe Level	
256	171	4	Amber	Ambient Air Temperature	Ambient Air Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
261	174	16	Amber	Engine Fuel Temperature 1	Engine Fuel Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	
263	174	3	Amber	Engine Fuel Temperature 1	Engine Fuel Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source	
265	174	4	Amber	Engine Fuel Temperature 1	Engine Fuel Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source	
266	174	0	Red	Engine Fuel Temperature 1	Engine Fuel Temperature - Data valid but above normal operational range - Most Severe Level	
269	1195	2	Red	Anti-theft Password Valid Indicator	Antitheft Password Valid Indicator - Data erratic, intermittent or incorrect	
271	1347	4	Amber	Engine Fuel Pump Pressurizing Assembly #1	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage below normal, or shorted to low source	X
272	1347	3	Amber	Engine Fuel Pump Pressurizing Assembly #2	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage above normal, or shorted to high source	X
281	1347	7	Amber	Engine Fuel Pump Pressurizing Assembly #3	Engine Fuel Pump Pressurizing Assembly 1 - Mechanical system not responding or out of adjustment	X
285	639	9	Amber	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link)	SAE J1939 Multiplexing PGN Timeout Error - Abnormal update rate	X
286	639	13	Amber	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link)	SAE J1939 Multiplexing Configuration Error - Out of Calibration	X
288	974	19	Red	Remote Accelerator Pedal Position	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Position Sensor System - Received Network Data In Error	X
291	625	9	Red	Proprietary Datalink	Proprietary Datalink Error (OEM/Vehicle Datalink) - Abnormal update rate	X
292	441	14	Red	Auxiliary Temperature 1	Auxiliary Temperature Sensor Input 1 - Special Instructions	X
293	441	3	Amber	Auxiliary Temperature 1	Auxiliary Temperature Sensor Input 1 Circuit - Voltage above normal, or shorted to high source	X
294	441	4	Amber	Auxiliary Temperature 1	Auxiliary Temperature Sensor Input 1 Circuit - Voltage below normal, or shorted to low source	X
295	108	2	Amber	Barometric Pressure	Barometric Pressure - Data erratic, intermittent or incorrect	
296	1388	14	Red	Auxiliary Pressure #2	Auxiliary Pressure Sensor Input 2 - Special Instructions	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
297	1388	3	Amber	Auxiliary Pressure #2	Auxiliary Pressure Sensor Input 2 Circuit - Voltage above normal, or shorted to high source	X
298	1388	4	Amber	Auxiliary Pressure #2	Auxiliary Pressure Sensor Input 2 Circuit - Voltage below normal, or shorted to low source	X
319	251	2	Amber (Blinking)	Real Time Clock	Real Time Clock - Data erratic, intermittent or incorrect	
322	651	5	Amber	Engine Injector Cylinder #01	Injector Solenoid Driver Cylinder 1 Circuit - Current below normal or open circuit	X
323	655	5	Amber	Engine Injector Cylinder #05	Injector Solenoid Driver Cylinder 5 Circuit - Current below normal or open circuit	X
324	653	5	Amber	Engine Injector Cylinder #03	Injector Solenoid Driver Cylinder 3 Circuit - Current below normal or open circuit	X
325	656	5	Amber	Engine Injector Cylinder #06	Injector Solenoid Driver Cylinder 6 Circuit - Current below normal or open circuit	X
331	652	5	Amber	Engine Injector Cylinder #02	Injector Solenoid Driver Cylinder 2 Circuit - Current below normal or open circuit	X
332	654	5	Amber	Engine Injector Cylinder #04	Injector Solenoid Driver Cylinder 4 Circuit - Current below normal or open circuit	X
334	110	2	Amber	Engine Coolant Temperature	Engine Coolant Temperature - Data erratic, intermittent or incorrect	
338	1267	3	Amber	Idle Shutdown Vehicle Accessories Relay Driver Circuit	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage above normal, or shorted to high source	X
339	1267	4	Amber	Idle Shutdown Vehicle Accessories Relay Driver Circuit	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage below normal, or shorted to low source	X
343	629	12	Amber	Controller #1	Engine Control Module Warning Internal Hardware Failure - Bad intelligent device or component	X
349	191	16	Amber	Transmission Output Shaft Speed	Transmission Output Shaft Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
351	3597	12	Amber	ECU Power Output Supply Voltage #1	Injector Power Supply - Bad intelligent device or component	X
352	3509	4	Amber	Sensor supply voltage 1	Sensor Supply 1 Circuit - Voltage below normal, or shorted to low source	X
386	3509	3	Amber	Sensor supply voltage 1	Sensor Supply 1 Circuit - Voltage above normal, or shorted to high source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
415	100	1	Red	Engine Oil Pressure	Engine Oil Rifle Pressure - Data valid but below normal operational range - Most Severe Level	X
418	97	15	Amber (Blinking)	Water In Fuel Indicator	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Least Severe Level	X
421	175	16	Amber	Engine Oil Temperature 1	Engine Oil Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	
422	111	2	Amber	Engine Coolant Level	Coolant Level - Data erratic, intermittent or incorrect	
425	175	2	Amber	Engine Oil Temperature 1	Engine Oil Temperature - Data erratic, intermittent or incorrect	
426	639	2	None	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link)	J1939 Network #1 - Data erratic, intermittent or incorrect	
427	639	9	None	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link)	SAE J1939 Datalink - Abnormal update rate	
428	97	3	Amber	Water In Fuel Indicator	Water in Fuel Indicator Sensor Circuit - Voltage above normal, or shorted to high source	X
429	97	4	Amber	Water In Fuel Indicator	Water in Fuel Indicator Sensor Circuit - Voltage below normal, or shorted to low source	X
431	558	2	Amber	Accelerator Pedal 1 Low Idle Switch	Accelerator Pedal or Lever Idle Validation Switch - Data erratic, intermittent or incorrect	X
432	558	13	Red	Accelerator Pedal 1 Low Idle Switch	Accelerator Pedal or Lever Idle Validation Switch Circuit - Out of Calibration	X
435	100	2	Amber	Engine Oil Pressure	Engine Oil Rifle Pressure - Data erratic, intermittent or incorrect	X
436	105	2	Amber	Engine Intake Manifold 1 Temperature	Intake Manifold 1 Temperature - Data erratic, intermittent or incorrect	
441	168	18	Amber	Battery Potential / Power Input 1	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
442	168	16	Amber	Battery Potential / Power Input 1	Battery 1 Voltage - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
449	157	0	Red	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure - Data valid but above normal operational range - Most Severe Level	X
451	157	3	Amber	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage above normal, or shorted to high source	X
452	157	4	Amber	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage below normal, or shorted to low source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
471	98	17	Amber (Blinking)	Engine Oil Level	Engine Oil Level - Data Valid But Below Normal Operating Range - Least Severe Level	
483	1349	3	Amber	Engine Injector Metering Rail 2 Pressure	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage above normal, or shorted to high source	
484	1349	4	Amber	Engine Injector Metering Rail 2 Pressure	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage below normal, or shorted to low source	
487	626	18	Amber	Engine Start Enable Device 1	Start Enable Device 1 Canister Empty (Ether Injection) - Data Valid But Below Normal Operating Range	
488	105	16	Amber	Engine Intake Manifold Temperature	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
489	191	18	Amber	Transmission Output Shaft Speed	Transmission Output Shaft Speed - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
497	1377	2	Amber	Engine Synchronization Switch	Multiple Unit Synchronization Switch - Data erratic, intermittent or incorrect	X
515	3514	3	Amber	Sensor supply voltage 6	Sensor Supply 6 Circuit - Voltage above normal, or shorted to high source	X
516	3514	4	Amber	Sensor supply voltage 6	Sensor Supply 6 Circuit - Voltage below normal, or shorted to low source	X
523	611	2	Amber	System Diagnostic Code #1	Auxiliary Intermediate (PTO) Speed Switch Validation - Data erratic, intermittent or incorrect	X
527	702	3	Amber	Auxiliary I/O #02	Auxiliary Input/Output 2 Circuit - Voltage above normal, or shorted to high source	X
528	93	2	Amber	Engine Net Brake Torque	Auxiliary Alternate Torque Validation Switch - Data erratic, intermittent or incorrect	
529	703	3	Amber	Auxiliary I/O #03	Auxiliary Input/Output 3 Circuit - Voltage above normal, or shorted to high source	X
535	174	2	Amber	Engine Fuel Temperature 1	Engine Fuel Temperature - Data erratic, intermittent or incorrect	
546	94	3	Amber	Engine Fuel Delivery Pressure	Fuel Delivery Pressure Sensor Circuit - Voltage above normal, or shorted to high source	X
547	94	4	Amber	Engine Fuel Delivery Pressure	Fuel Delivery Pressure Sensor Circuit - Voltage below normal, or shorted to low source	X
553	157	16	Amber	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
554	157	2	Amber	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure - Data erratic, intermittent or incorrect	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
555	101	16	Amber	Engine Crankcase Pressure	Crankcase Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
556	101	0	Red	Engine Crankcase Pressure	Crankcase Pressure - Data valid but above normal operational range - Most Severe Level	X
559	157	18	Amber	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
584	677	3	Amber	Engine Starter Motor Relay	Starter Relay Driver Circuit - Voltage above normal, or shorted to high source	X
585	677	4	Amber	Engine Starter Motor Relay	Starter Relay Driver Circuit - Voltage below normal, or shorted to low source	X
595	103	16	Amber	Engine Turbocharger 1 Speed	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
599	640	14	Red	Engine External Protection Input	Auxiliary Commanded Dual Output Shutdown - Special Instructions	X
611	1383	31	None	Engine was Shut Down Hot	Engine Shut Down Hot - Condition Exists	
629	1176	18	Amber	Engine Turbocharger 1 Compressor Intake Pressure	Turbocharger 1 Compressor Intake Pressure - Data Valid But Below Normal Operating Range - Moderately	
649	1378	31	Amber (Blinking)	Engine Oil Change Interval	Engine Oil Change Interval - Condition Exists	X
686	103	2	Amber	Engine Turbocharger 1 Speed	Turbocharger 1 Speed - Data erratic, intermittent or incorrect	
687	103	18	Amber	Engine Turbocharger 1 Speed	Turbocharger 1 Speed - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
688	98	0	Red	Engine Oil Level	Engine Oil Level - Data valid but above normal operational range - Most Severe Level	
689	190	2	Amber	Engine Speed	Engine Crankshaft Speed/Position - Data erratic, intermittent or incorrect	X
691	1172	3	Amber	Engine Turbocharger 1 Compressor Intake Temperature	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage above normal, or shorted to high source	X
692	1172	4	Amber	Engine Turbocharger 1 Compressor Intake Temperature	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage below normal, or shorted to low source	X
693	1172	2	Amber	Engine Turbocharger 1 Compressor Intake Temperature	Turbocharger 1 Compressor Intake Temperature - Data erratic, intermittent or incorrect	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
697	1136	3	Amber	Engine ECU Temperature	Engine ECU Temperature Sensor Circuit - Voltage above normal, or shorted to high source	
698	1136	4	Amber	Engine ECU Temperature	Engine ECU Temperature Sensor Circuit - Voltage below normal, or shorted to low source	
699	1136	2	Amber	Engine ECU Temperature	Engine ECU Temperature - Data erratic, intermittent or incorrect	
731	723	7	Amber	Engine Speed 2	Engine Speed / Position Camshaft and Crankshaft Misalignment - Mechanical system not responding or out of adjustment	X
741	1176	3	Amber	Engine Turbocharger 1 Compressor Intake Pressure	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage above normal, or shorted to high source	X
742	1176	4	Amber	Engine Turbocharger 1 Compressor Intake Pressure	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage below normal, or shorted to low source	X
743	1176	2	Amber	Engine Turbocharger 1 Compressor Intake Pressure	Turbocharger 1 Compressor Intake Pressure - Data erratic, intermittent or incorrect	X
755	157	7	Amber	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure - Mechanical system not responding or out of adjustment	
769	597	3	Amber	Brake Switch	Brake Switch Circuit - Voltage above normal, or shorted to high source	
771	597	4	Amber	Brake Switch	Brake Switch Circuit - Voltage below normal, or shorted to low source	
778	723	2	Amber	Engine Speed 2	Engine Camshaft Speed / Position Sensor - Data erratic, intermittent or incorrect	X
784	1590	2	None	Adaptive Cruise Control Mode	Adaptive Cruise Control Mode - Data erratic, intermittent or incorrect	
1117	3597	2	None	ECU Power Output Supply Voltage #1	Power Supply Lost With Ignition On - Data erratic, intermittent or incorrect	X
1139	651	7	Amber	Engine Injector Cylinder #01	Injector Solenoid Driver Cylinder 1 - Mechanical system not responding or out of adjustment	
1141	652	7	Amber	Engine Injector Cylinder #02	Injector Solenoid Driver Cylinder 2 - Mechanical system not responding or out of adjustment	X
1142	653	7	Amber	Engine Injector Cylinder #03	Injector Solenoid Driver Cylinder 3 - Mechanical system not responding or out of adjustment	X
1143	654	7	Amber	Engine Injector Cylinder #04	Injector Solenoid Driver Cylinder 4 - Mechanical system not responding or out of adjustment	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
1144	655	7	Amber	Engine Injector Cylinder #05	Injector Solenoid Driver Cylinder 5 - Mechanical system not responding or out of adjustment	X
1145	656	7	Amber	Engine Injector Cylinder #06	Injector Solenoid Driver Cylinder 6 - Mechanical system not responding or out of adjustment	X
1228	27	2	Amber	Engine Exhaust Gas Recirculation 1 Valve Position	EGR Valve Position - Data erratic, intermittent or incorrect	
1239	2623	3	Amber	Accelerator Pedal #1 Channel 2	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage above normal, or shorted to high source	X
1241	2623	4	Amber	Accelerator Pedal #1 Channel 2	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage below normal, or shorted to low source	X
1242	91	2	Red	Accelerator Pedal Position 1	Accelerator Pedal or Lever Position Sensor 1 - Data erratic, intermittent or incorrect	X
1256	1563	2	Amber	Incompatible Monitor/Controller	Control Module Identification Input State Error - Data erratic, intermittent or incorrect	
1257	1563	2	Red	Incompatible Monitor/Controller	Control Module Identification Input State Error - Data erratic, intermittent or incorrect	
1427	4185	31	Amber	Overspeed Shutdown Relay Driver	Overspeed Shutdown Relay Driver Diagnostic has detected an error - Condition Exists	X
1428	4186	31	Amber	Low Oil Pressure Shutdown Relay Driver	Low Oil Pressure (LOP) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists	X
1429	4187	31	Amber	High Engine Temperature Shutdown Relay Driver	High Engine Temperature (HET) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists	X
1431	4188	31	Amber	Pre-Low Oil Pressure Indicator Relay Driver	Pre-Low Oil Pressure Warning Relay Driver Diagnostic has detected an error - Condition Exists	X
1432	4223	31	Amber	Pre-High Engine Temperature Warning Relay Driver	Pre-High Engine Temperature Warning Relay Driver Diagnostic has detected an error - Condition Exists	X
1515	91	19	Red	Accelerator Pedal Position 1	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Received Network Data In Error	X
1539	1387	3	Amber	Auxiliary Pressure #1	Auxiliary Pressure Sensor Input 1 Circuit - Voltage above normal, or shorted to high source	X
1548	657	5	Amber	Engine Injector Cylinder #7	Injector Solenoid Driver Cylinder 7 Circuit - Current below normal or open circuit	
1549	658	5	Amber	Engine Injector Cylinder #8	Injector Solenoid Driver Cylinder 8 Circuit - Current below normal or open circuit	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
1551	660	5	Amber	Engine Injector Cylinder #10	Injector Solenoid Driver Cylinder 10 Circuit - Current below normal or open circuit	
1552	661	5	Amber	Engine Injector Cylinder #11	Injector Solenoid Driver Cylinder 11 Circuit - Current below normal or open circuit	
1553	662	5	Amber	Engine Injector Cylinder #12	Injector Solenoid Driver Cylinder 12 Circuit - Current below normal or open circuit	
1554	663	5	Amber	Engine Injector Cylinder #13	Injector Solenoid Driver Cylinder 13 Circuit - Current below normal or open circuit	
1555	664	5	Amber	Engine Injector Cylinder #14	Injector Solenoid Driver Cylinder 14 Circuit - Current below normal or open circuit	
1556	665	5	Amber	Engine Injector Cylinder #15	Injector Solenoid Driver Cylinder 15 Circuit - Current below normal or open circuit	
1557	666	5	Amber	Engine Injector Cylinder #16	Injector Solenoid Driver Cylinder 16 Circuit - Current below normal or open circuit	
1621	1387	4	Amber	Auxiliary Pressure #1	Auxiliary Pressure Sensor Input 1 Circuit - Voltage below normal, or shorted to low source	X
1622	659	5	Amber	Engine Injector Cylinder #9	Injector Solenoid Driver Cylinder 9 Circuit - Current below normal or open circuit	
1654	1323	31	Amber	Engine Misfire Cylinder #1	Engine Misfire Cylinder 1 - Condition Exists	X
1655	1324	31	Amber	Engine Misfire Cylinder #2	Engine Misfire Cylinder 2 - Condition Exists	X
1656	1325	31	Amber	Engine Misfire Cylinder #3	Engine Misfire Cylinder 3 - Condition Exists	X
1657	1326	31	Amber	Engine Misfire Cylinder #4	Engine Misfire Cylinder 4 - Condition Exists	X
1658	1327	31	Amber	Engine Misfire Cylinder #5	Engine Misfire Cylinder 5 - Condition Exists	X
1659	1328	31	Amber	Engine Misfire Cylinder #6	Engine Misfire Cylinder 6 - Condition Exists	X
1664	4796	31	Amber	Aftertreatment 1 Diesel Oxidation Catalyst Missing	Aftertreatment 1 Diesel Oxidation Catalyst Missing - Condition Exists	X
1668	1761	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Voltage below normal, or shorted to low source	X
1669	1761	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Voltage above normal, or shorted to high source	X
1673	1761	1	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data valid but below normal operational range - Most Severe Level	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
1677	3031	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage below normal, or shorted to low source	X
1678	3031	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage above normal, or shorted to high source	X
1679	3031	2	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Data erratic, intermittent or incorrect	X
1682	3362	31	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Input Lines	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Input Lines - Condition Exists	X
1683	3363	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage above normal, or shorted to high source	X
1684	3363	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage below normal, or shorted to low source	X
1685	3364	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage below normal, or shorted to low source	X
1686	3364	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage above normal, or shorted to high source	X
1691	5298	18	Amber	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
1694	3226	2	Amber	Aftertreatment 1 Outlet NOx	Aftertreatment 1 Outlet NOx Sensor - Data erratic, intermittent or incorrect	X
1695	3513	3	Amber	Sensor supply voltage 5	Sensor Supply 5 - Voltage above normal, or shorted to high source	X
1696	3513	4	Amber	Sensor supply voltage 5	Sensor Supply 5 - Voltage below normal, or shorted to low source	X
1699	1761	2	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Data erratic, intermittent or incorrect	
1712	3363	18	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
1713	3363	16	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Above Normal Operating Range - Moderately Severe Level	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
1714	3364	13	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality - Out of Calibration	X
1715	3364	11	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality - Root Cause Not Known	X
1718	1322	31	Amber	Engine Misfire for Multiple Cylinders	Engine Misfire for Multiple Cylinders - Condition Exists	
1776	2634	3	Amber	Power Relay	Power Relay Driver Circuit - Voltage above normal, or shorted to high source	
1777	2634	4	Amber	Power Relay	Power Relay Driver Circuit - Voltage below normal, or shorted to low source	
1843	101	3	Amber	Engine Crankcase Pressure	Crankcase Pressure Circuit - Voltage above normal, or shorted to high source	X
1844	101	4	Amber	Engine Crankcase Pressure	Crankcase Pressure Circuit - Voltage below normal, or shorted to low source	X
1847	110	14	Red	Engine Coolant Temperature	Engine Coolant Temperature - Special Instructions	
1852	97	16	Amber	Water In Fuel Indicator	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
1861	3217	2	Amber	Aftertreatment 1 Intake O2	Aftertreatment Intake Oxygen Sensor - Data erratic, intermittent or incorrect	
1866	411	2	Amber	Engine Exhaust Gas Recirculation 1 Differential Pressure	Exhaust Gas Recirculation Differential Pressure - Data erratic, intermittent or incorrect	X
1867	412	2	Amber	Engine Exhaust Gas Recirculation 1 Temperature	Exhaust Gas Recirculation Temperature - Data erratic, intermittent or incorrect	
1879	3251	3	Amber	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage above normal	
1881	3251	4	Amber	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage below normal	
1883	3251	2	Amber	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor - Data erratic, intermittent or incorrect	
1885	3216	4	Amber	Aftertreatment 1 Intake Nox	Aftertreatment 1 Intake NOx Sensor Circuit - Voltage below normal, or shorted to low source	X
1887	3226	4	Amber	Aftertreatment 1 Outlet NOx	Aftertreatment 1 Outlet NOx Sensor Circuit - Voltage below normal, or shorted to low source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
1893	2791	9	Amber	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	EGR Valve Control Circuit - Abnormal update rate	
1896	2791	13	Amber	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	EGR Valve Controller - Out of Calibration	X
1898	641	13	Amber	Engine Variable Geometry Turbocharger Actuator #1	VGT Actuator Controller - Out of Calibration	X
1921	3251	16	Amber	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range	
1922	3251	0	Red	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Aftertreatment Diesel Particulate Filter Differential Pressure - Data valid but above normal Operating Range	
1923	3482	3	Amber	Aftertreatment 1 Fuel Enable Actuator	Aftertreatment Fuel Shutoff Valve Circuit - Voltage above normal, or shorted to high source	
1924	3482	4	Amber	Aftertreatment 1 Fuel Enable Actuator	Aftertreatment Fuel Shutoff Valve Circuit - Voltage below normal, or shorted to low source	
1925	3482	2	Amber	Aftertreatment 1 Fuel Enable Actuator	Aftertreatment Fuel Shutoff Valve - Data erratic, intermittent or incorrect	
1926	3480	2	Amber	Aftertreatment Fuel Pressure	Aftertreatment Fuel Pressure Sensor - Data erratic, intermittent or incorrect	
1927	3480	3	Amber	Aftertreatment Fuel Pressure	Aftertreatment Fuel Pressure Sensor Circuit - Voltage above normal, or shorted to high source	
1928	3480	4	Amber	Aftertreatment Fuel Pressure	Aftertreatment Fuel Pressure Sensor Circuit - Voltage below normal, or shorted to low source	
1932	3556	2	Amber	Aftertreatment Hydrocarbon Doser	Aftertreatment Doser - Data erratic, intermittent or incorrect	
1938	3597	18	Amber	ECU Power Output Supply Voltage #1	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
1939	3597	3	Amber	ECU Power Output Supply Voltage #1	ECU Power Output Supply Voltage 1 - Voltage above normal, or shorted to high source	
1941	3597	4	Amber	ECU Power Output Supply Voltage #1	ECU Power Output Supply Voltage 1 - Voltage below normal, or shorted to low source	
1942	101	2	Amber	Engine Crankcase Pressure	Crankcase Pressure - Data erratic, intermittent or incorrect	X
1943	3555	17	None	Ambient Air Density	Ambient Air Density - Data Valid But Below Normal Operating Range - Least Severe Level	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
1961	2791	15	Amber	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	EGR Valve Control Circuit Over Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	X
1962	641	15	Amber	Engine Variable Geometry Turbocharger Actuator #1	VGT Actuator Driver Over Temperature (Calculated) - Data Valid But Above Normal Operating Range - Least Severe Level	X
1963	3482	7	Amber	Aftertreatment 1 Fuel Enable Actuator	Aftertreatment Fuel Shutoff Valve - Mechanical system not responding or out of adjustment	
1964	3556	7	Amber	Aftertreatment Hydrocarbon Doser	Aftertreatment Doser - Mechanical system not responding or out of adjustment	
1974	101	15	Amber (Blinking)	Engine Crankcase Pressure	Crankcase Pressure - Data Valid But Above Normal Operating Range - Least Severe Level	X
1977	3556	5	Amber	Aftertreatment Hydrocarbon Doser	Aftertreatment Doser Circuit - Current below normal or open circuit.	
1981	3936	15	Amber	Aftertreatment Diesel Particulate Filter System	Aftertreatment 1 Diesel Particulate Filter System - Data Valid But Above Normal Operating Range - Level	
1992	190	16	Red	Engine Speed	Engine Crankshaft Speed/Position - Data Valid But Above Normal Operating Range - Moderately Severe Level	
1993	4795	31	Amber	Aftertreatment 1 Diesel Particulate Filter Missing	Aftertreatment 1 Diesel Particulate Filter Missing - Condition Exists	
2182	1072	3	Amber	Engine (Compression) Brake Output #1	Engine Brake Actuator Driver 1 Circuit - Voltage above normal, or shorted to high source	
2183	1072	4	Amber	Engine (Compression) Brake Output #1	Engine Brake Actuator Driver 1 Circuit - Voltage below normal, or shorted to low source	
2185	3512	3	Amber	Sensor supply voltage 4	Sensor Supply 4 Circuit - Voltage above normal, or shorted to high source	X
2186	3512	4	Amber	Sensor supply voltage 4	Sensor Supply 4 Circuit - Voltage below normal, or shorted to low source	X
2198	641	11	Amber	Engine Variable Geometry Turbocharger Actuator #1	VGT Actuator Driver Circuit - Root Cause Not Known	X
2215	94	18	Amber	Engine Fuel Delivery Pressure	Fuel Pump Delivery Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	
2249	157	1	Amber	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure - Data valid but below normal operational range - Most Severe Level	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
2261	94	15	Amber (Blinking)	Engine Fuel Delivery Pressure	Fuel Pump Delivery Pressure - Data Valid But Above Normal Operating Range - Least Severe Level	
2262	94	17	Amber (Blinking)	Engine Fuel Delivery Pressure	Fuel Pump Delivery Pressure - Data Valid But Below Normal Operating Range - Least Severe Level	
2263	1800	16	Amber	Battery 1 Temperature	Battery Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	
2264	1800	18	Amber	Battery 1 Temperature	Battery Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level	
2265	1075	3	Amber	Engine Electric Lift Pump for Engine Fuel Supply	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage above normal, or shorted to high source	
2266	1075	4	Amber	Engine Electric Lift Pump for Engine Fuel Supply	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage below normal, or shorted to low source	
2272	27	4	Amber	Engine Exhaust Gas Recirculation 1 Valve Position	EGR Valve Position Circuit - Voltage below normal, or shorted to low source	X
2273	411	3	Amber	Engine Exhaust Gas Recirculation 1 Differential Pressure	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage above normal, or shorted to high source	X
2274	411	4	Amber	Engine Exhaust Gas Recirculation 1 Differential Pressure	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage below normal, or shorted to low source	X
2288	103	15	None	Engine Turbocharger 1 Speed	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Least Severe Level	X
2311	633	31	Amber	Engine Fuel Actuator 1 Control Command	Electronic Fuel Injection Control Valve Circuit - Condition Exists	X
2321	190	2	None	Engine Speed	Engine Crankshaft Speed/Position - Data erratic, intermittent or incorrect	X
2322	723	2	None	Engine Speed 2	Engine Camshaft Speed / Position Sensor - Data erratic, intermittent or incorrect	X
2346	2789	15	None	Engine Turbocharger 1 Calculated Turbine Intake Temperature	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe	X
2347	2629	15	None	Engine Turbocharger 1 Compressor Outlet Temperature	Turbocharger Compressor Outlet Temperature (Calculated) - Data Valid But Above Normal Operating Range	
2349	2791	5	Amber	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	EGR Valve Control Circuit - Current below normal or open circuit	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
2353	2791	6	Amber	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	EGR Valve Control Circuit - Current above normal or grounded circuit	X
2357	2791	7	Amber	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	EGR Valve Control Circuit - Mechanical system not responding or out of adjustment	X
2363	1073	4	Amber	Engine (Compression) Brake Output #2	Engine Brake Actuator Driver Output 2 Circuit - Voltage below normal, or shorted to low source	X
2365	1112	4	Amber	Engine (Compression) Brake Output #3	Engine Brake Actuator Driver Output 3 Circuit - Voltage below normal, or shorted to low source	
2367	1073	3	Amber	Engine (Compression) Brake Output #2	Engine Brake Actuator Driver Output 2 Circuit - Voltage above normal, or shorted to high source	X
2368	1112	3	Amber	Engine (Compression) Brake Output #3	Engine Brake Actuator Driver 3 Circuit - Voltage above normal, or shorted to high source	
2372	95	16	Amber	Engine Fuel Filter Differential Pressure	Fuel Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
2373	1209	3	Amber	Engine Exhaust Gas Pressure 1	Exhaust Gas Pressure Sensor 1 Circuit - Voltage above normal, or shorted to high source	X
2374	1209	4	Amber	Engine Exhaust Gas Pressure 1	Exhaust Gas Pressure Sensor 1 Circuit - Voltage below normal, or shorted to low source	X
2375	412	3	Amber	Engine Exhaust Gas Recirculation 1 Temperature	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage above normal, or shorted to high source	X
2376	412	4	Amber	Engine Exhaust Gas Recirculation 1 Temperature	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage below normal, or shorted to low source	X
2377	647	3	Amber	Engine Fan Clutch 1 Output Device Driver	Fan Control Circuit - Voltage above normal, or shorted to high source	X
2387	641	7	Amber	Engine Variable Geometry Turbocharger Actuator #1	VGT Actuator Driver Circuit (Motor) - Mechanical system not responding or out of adjustment	X
2398	171	2	Amber	Ambient Air Temperature	Ambient Air Temperature - Data erratic, intermittent or incorrect	
2448	111	17	Amber (Blinking)	Engine Coolant Level	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level	X
2449	641	13	Red	Engine Variable Geometry Turbocharger Actuator #1	VGT Actuator Controller - Out of Calibration	X
2451	2789	16	None	Engine Turbocharger 1 Calculated Turbine Intake Temperature	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
2468	190	16	Amber	Engine Speed	Engine Crankshaft Speed/Position - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
2554	1209	2	Amber	Engine Exhaust Gas Pressure 1	Exhaust Gas Pressure 1 - Data erratic, intermittent or incorrect	X
2555	729	3	Amber	Engine Intake Air Heater Driver #1	Engine Intake Air Heater 1 Circuit - Voltage above normal, or shorted to high source	X
2556	729	4	Amber	Engine Intake Air Heater Driver #1	Engine Intake Air Heater 1 Circuit - Voltage below normal, or shorted to low source	X
2557	697	3	Amber	Auxiliary PWM Driver #1	Auxiliary PWM Driver 1 Circuit - Voltage above normal, or shorted to high source	X
2558	697	4	Amber	Auxiliary PWM Driver #1	Auxiliary PWM Driver 1 Circuit - Voltage below normal, or shorted to low source	X
2571	2630	3	Amber	Engine Charge Air Cooler 1 Outlet Temperature	Engine Charge Air Cooler Outlet Temperature - Voltage above normal, or shorted to high source	X
2572	2630	4	Amber	Engine Charge Air Cooler 1 Outlet Temperature	Engine Charge Air Cooler Outlet Temperature - Voltage below normal, or shorted to low source	X
2634	641	12	Red	Engine Variable Geometry Turbocharger Actuator #1	VGT Actuator Controller - Bad intelligent device or component	X
2635	641	31	Red	Engine Variable Geometry Turbocharger Actuator #1	VGT Actuator Driver Circuit - Condition Exists	X
2636	641	9	Red	Engine Variable Geometry Turbocharger Actuator #1	VGT Actuator Driver Circuit - Abnormal update rate	X
2637	5018	11	None	Aftertreatment Diesel Oxidation Catalyst	Aftertreatment 1 Diesel Oxidation Catalyst Face Plugged - Root Cause Not Known	X
2639	3251	15	None	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Aftertreatment Diesel Particulate Filter Differential Pressure - Data valid but above normal Operating Range	
2646	110	31	Amber	Engine Coolant Temperature	Engine Coolant Temperature - Condition Exists	X
2659	110	31	None	Engine Coolant Temperature	Engine Coolant Temperature - Condition Exists	X
2661	629	31	Red	Controller #1	At Least One Unacknowledged Most Severe Fault - Condition Exists	
2662	629	31	Amber	Controller #1	At Least One Unacknowledged Moderately Severe Fault - Condition Exists	
2683	3227	9	Amber	Aftertreatment 1 Outlet O2	Aftertreatment Outlet Oxygen Sensor Circuit - Abnormal update rate	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
2699	520320	7	Amber	Crankcase Depression Valve	Crankcase Depression Valve - Mechanical system not responding or out of adjustment	
2721	599	2	Amber	Cruise Control Set Switch	Cruise Control Set Switch - Data erratic, intermittent or incorrect	
2732	4097	3	Amber	Aftertreatment 1 Fuel Drain Actuator	Aftertreatment Fuel Drain Valve Circuit - Voltage above normal, or shorted to high source	
2733	4097	4	Amber	Aftertreatment 1 Fuel Drain Actuator	Aftertreatment Fuel Drain Valve Circuit - Voltage below normal, or shorted to low source	
2738	626	3	Amber	Engine Start Enable Device 1	Start Enable Device 1 Circuit (Ether Injection) - Voltage above normal, or shorted to high source	
2739	626	4	Amber	Engine Start Enable Device 1	Start Enable Device 1Circuit (Ether Injection) - Voltage below normal, or shorted to low source	
2741	3482	13	Amber	Aftertreatment 1 Fuel Enable Actuator	Aftertreatment Fuel Shutoff Valve Swapped - Out of Calibration	
2742	3249	17	None	Aftertreatment 1 Exhaust Gas Temperature 2	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Least Severe Level	
2743	3249	18	Amber	Aftertreatment 1 Exhaust Gas Temperature 2	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Moderately Severe Level	
2754	81	16	Amber	Engine Diesel Particulate Filter Intake Pressure	Engine Diesel Particulate Filter Intake Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
2755	520332	3	Amber	Cruise Control	Cruise Control (Resistive) #2 Signal Circuit - Voltage above normal, or shorted to high source	
2756	520332	4	Amber	Cruise Control	Cruise Control (Resistive) #2 Signal Circuit - Voltage below normal, or shorted to low source	
2764	1209	16	Amber	Engine Exhaust Gas Pressure 1	Exhaust Gas Pressure 1 - Data Valid But Above Normal Operating Range - Moderately Severe Level	
2765	2797	13	None	Engine Injector Group 1	Engine Injector Bank 1 Barcodes - Out of Calibration	
2771	3226	9	Amber	Aftertreatment 1 Outlet NOx	Aftertreatment 1 Outlet NOx Sensor - Abnormal update rate	X
2777	3703	31	Amber (Blinking)	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch	Particulate Trap Active Regeneration Inhibited Due to Inhibit Switch - Condition Exists	
2778	3481	16	Amber	Aftertreatment 1 Fuel Rate	Aftertreatment Fuel Rate - Data Valid But Above Normal Operating Range - Moderately Severe Level	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
2789	110	18	Amber	Engine Coolant Temperature	Engine Coolant Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level	
2878	4097	7	Amber	Aftertreatment 1 Fuel Drain Actuator	Aftertreatment Fuel Drain Valve - Mechanical system not responding or out of adjustment	
2881	3480	17	Amber	Aftertreatment Fuel Pressure	Aftertreatment Fuel Pressure Sensor - Data Valid But Below Normal Operating Range - Least Severe Level	
2961	412	15	None	Engine Exhaust Gas Recirculation 1 Temperature	Exhaust Gas Recirculation Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	X
2962	412	16	Amber	Engine Exhaust Gas Recirculation 1 Temperature	Exhaust Gas Recirculation Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
2963	110	15	None	Engine Coolant Temperature	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	
2964	105	15	None	Engine Intake Manifold #1 Temperature	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	X
2973	102	2	Amber	Engine Intake Manifold #1 Pressure	Intake Manifold 1 Pressure - Data erratic, intermittent or incorrect	
2976	3361	2	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Temperature - Data erratic, intermittent or incorrect	
2998	1632	14	Amber	Engine Torque Limit Feature	Engine Torque Limit Feature - Special Instructions	X
3133	3610	3	Amber	Aftertreatment Diesel Particulate Filter Outlet Pressure	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source	
3134	3610	4	Amber	Aftertreatment Diesel Particulate Filter Outlet Pressure	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source	
3135	3610	2	Amber	Aftertreatment Diesel Particulate Filter Outlet Pressure	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Data erratic, intermittent or incorrect	
3136	5019	3	Amber	Engine Exhaust Gas Recirculation 1 Outlet Pressure	Engine Exhaust Gas Recirculation Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source	
3137	5019	4	Amber	Engine Exhaust Gas Recirculation 1 Outlet Pressure	Engine Exhaust Gas Recirculation Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3138	5019	2	Amber	Engine Exhaust Gas Recirculation 1 Outlet Pressure	Engine Exhaust Gas Recirculation Outlet Pressure - Data erratic, intermittent or incorrect	
3139	3667	3	Amber	Engine Air Shutoff Status	Engine Air Shutoff Circuit - Voltage above normal, or shorted to high source	X
3141	3667	4	Amber	Engine Air Shutoff Status	Engine Air Shutoff Circuit - Voltage below normal, or shorted to low source	X
3142	4360	3	Amber	Aftertreatment 1 SCR Catalyst Intake Gas Temperature	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source	X
3143	4360	4	Amber	Aftertreatment 1 SCR Catalyst Intake Gas Temperature	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source	X
3144	4360	2	Amber	Aftertreatment 1 SCR Catalyst Intake Gas Temperature	Aftertreatment 1 SCR Intake Temperature Sensor - Data erratic, intermittent or incorrect	X
3146	4363	3	Amber	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source	X
3147	4363	4	Amber	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source	X
3148	4363	2	Amber	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature	Aftertreatment 1 SCR Outlet Temperature Sensor - Data erratic, intermittent or incorrect	X
3151	4794	31	Amber	Aftertreatment 1 SCR Catalyst System	Aftertreatment 1 SCR Catalyst System Missing - Condition Exists	X
3152	4809	3	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal	
3153	4809	4	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal	
3154	4809	2	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect	
3155	4810	3	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature Sensor Circuit - Voltage above normal	
3156	4810	4	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature Sensor Circuit - Voltage below normal	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3157	4810	2	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data erratic, intermittent or incorrect	
3158	4793	31	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst	Aftertreatment Warm Up Diesel Oxidation Catalyst Missing - Condition Exists	
3162	4810	0	Red	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data valid but above normal operating Range -Most Severe level	
3164	4360	15	None	Aftertreatment 1 SCR Catalyst Intake Gas Temperature	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe	X
3165	4363	0	Red	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature	Aftertreatment 1 SCR Outlet Temperature - Data valid but above normal operational range - Most Severe	X
3166	4809	13	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Swapped - Out of Calibration	
3167	3556	18	Amber	Aftertreatment Hydrocarbon Doser	Aftertreatment Doser - Data Valid But Below Normal Operating Range - Moderately Severe Level	
3169	4810	16	Red	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data Valid But Above Normal Operating Range	
3186	1623	9	Amber	Tachograph output shaft speed	Tachograph Output Shaft Speed - Abnormal update rate	X
3213	1623	19	Amber	Tachograph output shaft speed	Tachograph Output Shaft Speed - Received Network Data In Error	X
3222	520435	12	Amber	Glow Plug Module	Glow Plug Module - Bad intelligent device or component	
3223	3490	4	Amber	Aftertreatment 1 Purge Air Actuator	Aftertreatment Purge Air Actuator Circuit - Voltage below normal, or shorted to low source	
3224	3490	3	Amber	Aftertreatment 1 Purge Air Actuator	Aftertreatment Purge Air Actuator Circuit - Voltage above normal, or shorted to high source	
3225	3490	7	Amber	Aftertreatment 1 Purge Air Actuator	Aftertreatment Purge Air Actuator - Mechanical system not responding or out of adjustment	
3228	3216	2	Amber	Aftertreatment 1 Intake NOx	Aftertreatment 1 Intake NOx Sensor - Data erratic, intermittent or incorrect	X
3229	4360	0	Red	Aftertreatment 1 SCR Catalyst Intake Gas Temperature	Aftertreatment 1 SCR Intake Temperature - Data valid but above normal operational range - Most Severe Level	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3231	4360	16	Red	Aftertreatment 1 SCR Catalyst Intake Gas Temperature	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
3232	3216	9	Amber	Aftertreatment 1 Intake NOx	Aftertreatment 1 Intake NOx Sensor - Abnormal update rate	X
3235	4363	16	Red	Aftertreatment 1 SCR Catalyst Outlet Gas Temperature	Aftertreatment 1 SCR Outlet Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
3237	4340	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage above normal, or shorted to high source	X
3238	4340	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage below normal, or shorted to low source	X
3239	4342	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage above normal, or shorted to high source	X
3241	4342	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage below normal, or shorted to low source	X
3242	3363	7	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Mechanical system not responding or out of adjustment	X
3243	3060	18	Amber	Engine Cooling System Monitor	Engine Cooling System Monitor - Data Valid But Below Normal Operating Range - Moderately Severe Level	
3245	3936	7	Amber	Aftertreatment 1 Diesel Particulate Filter System	Aftertreatment 1 Diesel Particulate Filter System - Mechanical system not responding or out of adjustment	
3247	4809	16	Red	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range	
3249	4810	15	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data Valid But Above Normal Operating Range	
3251	4765	16	Red	Aftertreatment Diesel Oxidation Catalyst Intake Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range	X
3253	3242	16	Red	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3254	3242	15	Amber	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range	
3255	3246	16	Red	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range	
3256	3246	15	Amber	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range	
3258	4340	5	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 State	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Current below normal or open circuit	X
3261	4342	5	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 State	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Current below normal or open circuit	X
3298	1194	13	Red	Anti-theft Encryption Seed Present Indicator	Anti-theft Encryption Seed - Out of Calibration	X
3311	3242	0	Red	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data valid but above normal operation	
3312	3246	0	Red	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data valid but above normal operation	
3313	4765	4	Amber	Aftertreatment Diesel Oxidation Catalyst Intake Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source	X
3314	4765	3	Amber	Aftertreatment Diesel Oxidation Catalyst Intake Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source	X
3315	4765	2	Amber	Aftertreatment Diesel Oxidation Catalyst Intake Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect	X
3316	3242	4	Amber	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source	
3317	3242	3	Amber	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source	
3318	3242	2	Amber	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data erratic, intermittent or incorrect	
3319	3246	3	Amber	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3321	3246	4	Amber	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source	
3322	3246	2	Amber	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data erratic, intermittent or incorrect	
3325	4765	13	Amber	Aftertreatment Diesel Oxidation Catalyst Intake Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Swapped - Out of Calibration	
3326	91	9	Red	Accelerator Pedal Position 1	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Abnormal update rate	X
3328	191	9	Amber	Transmission Output Shaft Speed	Transmission Output Shaft Speed - Abnormal update rate	X
3329	1231	2	None	J1939 Network #2	J1939 Network #2 - Data erratic, intermittent or incorrect	X
3331	1235	2	None	J1939 Network #3	J1939 Network #3 - Data erratic, intermittent or incorrect	X
3337	5395	16	Amber	Engine Idle Fuel Quantity	Engine Idle Fuel Quantity - Data Valid But Above Normal Operating Range - Moderately Severe Level	
3338	5395	18	Amber	Engine Idle Fuel Quantity	Engine Idle Fuel Quantity - Data Valid But Below Normal Operating Range - Moderately Severe Level	
3341	107	16	Amber	Engine Air Filter 1 Differential Pressure	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
3348	1176	1	Red	Engine Turbocharger 1 Compressor Intake Pressure	Turbocharger 1 Compressor Intake Pressure - Data valid but below normal operational range - Most Severe Level	
3361	102	10	Amber	Engine Intake Manifold #1 Pressure	Intake Manifold 1 Pressure - Abnormal rate of change	
3366	111	18	None	Engine Coolant Level	Coolant Level - Data Valid But Below Normal Operating Range - Moderately Severe Level	
3367	4490	9	Amber	Specific Humidity	Specific Humidity Sensor - Abnormal update rate	
3368	4490	19	Amber	Specific Humidity	Specific Humidity Sensor - Received Network Data In Error	
3369	1172	9	Amber	Engine Turbocharger 1 Compressor Intake Temperature	Turbocharger 1 Compressor Intake Temperature Sensor - Abnormal update rate	
3371	1172	19	Amber	Engine Turbocharger 1 Compressor Intake Temperature	Turbocharger 1 Compressor Intake Temperature Sensor - Received Network Data In Error	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3372	1176	9	Amber	Engine Turbocharger 1 Compressor Intake Pressure	Turbocharger 1 Compressor Intake Pressure - Abnormal update rate	
3373	1176	19	Amber	Engine Turbocharger 1 Compressor Intake Pressure	Turbocharger 1 Compressor Intake Pressure - Received Network Data In Error	
3374	1818	31	None	ROP Brake Control active	Roll Over Protection Brake Control Active - Condition Exists	
3375	5397	31	Amber	Aftertreatment 1 Diesel Particulate Filter Regeneration too Frequent	Aftertreatment Diesel Particulate Filter Regeneration too Frequent - Condition Exists	
3376	5319	31	Amber	Aftertreatment 1 Diesel Particulate Filter Incomplete Regeneration	Aftertreatment Diesel Particulate Filter Incomplete Regeneration - Condition Exists	
3377	5396	31	Amber	Engine Crankcase Ventilation Hose Disconnected	Engine Crankcase Ventilation Hose Disconnected - Condition Exists	
3385	105	18	Amber	Engine Intake Manifold 1 Temperature	Intake Manifold 1 Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level	
3396	3750	31	Amber	Diesel Particulate Filter 1 Conditions Not Met for Active Regeneration	Diesel Particulate Filter 1 Conditions Not Met for Active Regeneration - Condition Exists	
3418	191	19	Amber	Transmission Output Shaft Speed	Transmission Output Shaft Speed - Received Network Data In Error	X
3419	5125	3	Amber	Sensor supply voltage 7	Sensor Supply 7 Circuit - Voltage above normal, or shorted to high source	X
3421	5125	4	Amber	Sensor supply voltage 7	Sensor Supply 7 Circuit - Voltage below normal, or shorted to low source	X
3422	4344	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage above normal, or shorted to high source	X
3423	4344	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage below normal, or shorted to low source	X
3425	4344	5	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 State	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Current below normal or open circuit	X
3478	2630	2	Amber	Engine Charge Air Cooler 1 Outlet Temperature	Engine Charge Air Cooler Outlet Temperature - Data erratic, intermittent or incorrect	
3488	563	9	Amber	Anti-Lock Braking (ABS) Active	Anti-Lock Braking (ABS) Controller - Abnormal update rate	X
3494	1081	7	Amber	Engine Wait to Start Lamp	Engine Wait to Start Lamp - Mechanical system not responding or out of adjustment	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3497	1761	17	Amber (Blinking)	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Least Severe Level	X
3498	1761	18	Amber (Blinking)	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
3525	84	19	Amber	Wheel-Based Vehicle Speed	Wheel-Based Vehicle Speed - Received Network Data In Error	X
3526	84	9	Amber	Wheel-Based Vehicle Speed	Wheel-Based Vehicle Speed - Abnormal update rate	
3527	558	19	Red	Accelerator Pedal 1 Low Idle Switch	Accelerator Pedal or Lever Idle Validation Switch - Received Network Data In Error	X
3528	558	9	Red	Accelerator Pedal 1 Low Idle Switch	Accelerator Pedal or Lever Idle Validation Switch - Abnormal update rate	
3531	171	9	Amber	Ambient Air Temperature	Ambient Air Temperature - Abnormal update rate	X
3532	171	19	Amber	Ambient Air Temperature	Ambient Air Temperature - Received Network Data In Error	
3535	1213	9	Amber	Malfunction Indicator Lamp	Malfunction Indicator Lamp - Abnormal update rate	
3543	4094	31	Amber	NOx limits exceeded due to Insufficient Diesel Exhaust Fluid Quality	NOx limits exceeded due to Insufficient Reagent Quality - Condition Exists	X
3545	3226	10	Amber	Aftertreatment 1 Outlet NOx	Aftertreatment 1 Outlet NOx Sensor - Abnormal rate of change	X
3547	4096	31	Amber	NOx limits exceeded due to Empty Diesel Exhaust Fluid Tank	Aftertreatment Diesel Exhaust Fluid Tank Empty - Condition Exists	X
3555	1081	9	Amber	Engine Wait to Start Lamp	Engine Wait to Start Lamp - Abnormal update rate	X
3556	1081	19	Amber	Engine Wait to Start Lamp	Engine Wait to Start Lamp - Received Network Data In Error	
3558	3361	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage above normal, or shorted to high source	X
3559	3361	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage below normal, or shorted to low source	X
3562	5491	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage above normal, or shorted to high source	X
3563	5491	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage below normal, or shorted to low source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3567	5394	5	Amber	Aftertreatment Diesel Exhaust Fluid Dosing Valve	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Current below normal or open circuit	X
3568	5394	7	Amber	Aftertreatment Diesel Exhaust Fluid Dosing Valve	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Mechanical system not responding or out of adjustment	X
3571	4334	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage above normal, or shorted to high source	X
3572	4334	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage below normal, or shorted to low source	X
3574	4334	18	Amber	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Below Normal Operating Range	X
3575	4334	16	Amber	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Above Normal Operating Range	X
3577	4376	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Return Valve	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage above normal, or shorted to high source	X
3578	4376	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Return Valve	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage below normal, or shorted to low source	X
3582	4364	18	Amber	Aftertreatment 1 SCR Conversion Efficiency	Aftertreatment SCR Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level	X
3583	5031	10	Amber	Aftertreatment 1 Outlet Gas NOx Sensor Heater Ratio	Aftertreatment 1 Outlet NOx Sensor Heater - Abnormal rate of change	X
3596	4334	2	Amber	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data erratic, intermittent or incorrect	X
3613	111	9	Amber	SAE J1939 Multiplexing PGN Timeout	SAE J1939 Multiplexing PGN Timeout Error - Abnormal update rate	X
3614	111	19	Amber	SAE J1939 Multiplexing PGN Timeout	Coolant Level Sensor - Received Network Data in Error	X
3616	2633	7	None	Engine Variable Geometry Turbocharger (VGT) 1 Nozzle Position	Engine VGT Nozzle Position - Mechanical system not responding or out of adjustment	
3633	5484	3	Amber	Engine Fan Clutch 2 Output Device Driver	Engine Fan Clutch 2 Control Circuit - Voltage above normal, or shorted to high source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3634	5484	4	Amber	Engine Fan Clutch 2 Output Device Driver	Engine Fan Clutch 2 Control Circuit - Voltage below normal, or shorted to low source	X
3641	748	9	Amber	Transmission Output Retarder	Transmission Output Retarder - Abnormal update rate	X
3649	5024	10	Amber	Aftertreatment 1 Intake Gas NOx Sensor Heater Ratio	Aftertreatment 1 Intake NOx Sensor Heater - Abnormal rate of change	X
3681	3228	2	Amber	Aftertreatment 1 Outlet Gas Sensor Power Status	Aftertreatment 1 Outlet NOx Sensor Power Supply - Data erratic, intermittent or incorrect	X
3682	3218	2	Amber	Aftertreatment 1 Intake Gas Sensor Power Status	Aftertreatment 1 Intake NOx Sensor Power Supply - Data erratic, intermittent or incorrect	X
3683	1127	7	Amber	Engine Turbocharger 1 Boost Pressure	Engine Turbocharger 1 Boost Pressure - Mechanical system not responding or out of adjustment	
3694	4184	4	Amber	Gain Adjust Potentiometer Circuit	Gain Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source	
3695	4182	4	Amber	Generator Output Frequency Adjust Potentiometer Circuit	Generator Output Frequency Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source	
3696	4183	4	Amber	Droop Adjust Potentiometer Circuit	Droop Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source	
3697	630	12	Red	Engine Control Module Calibration Memory	Engine Control Module Calibration Memory - Bad intelligent device or component	X
3712	5246	0	Red	Aftertreatment SCR Operator Inducement Severity	Aftertreatment SCR Operator Inducement - Data valid but above normal operational range - Most Severe level	X
3713	5491	7	Amber	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay - Mechanical system not responding or out of adjustment	
3714	1569	31	Amber	Engine Protection Torque Derate	Engine Protection Torque Derate - Condition Exists	X
3715	188	16	Amber	Engine Speed At Idle, Point 1 (Engine Configuration)	Engine Speed At Idle - Data Valid But Above Normal Operating Range - Moderately Severe Level	
3716	188	18	Amber	Engine Speed At Idle, Point 1 (Engine Configuration)	Engine Speed At Idle - Data Valid But Below Normal Operating Range - Moderately Severe Level	
3717	3226	13	Amber	Aftertreatment 1 Outlet NOx	Aftertreatment 1 Outlet NOx Sensor - Out of Calibration	X
3718	3216	13	Amber	Aftertreatment 1 Intake NOx	Aftertreatment 1 Intake NOx - Out of Calibration	X
3724	168	17	Amber	Battery Potential / Power Input 1	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Least Severe Level	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3725	3216	10	Amber	Aftertreatment 1 Intake NOx	Aftertreatment 1 Intake NOx Sensor - Abnormal rate of change	X
3726	3216	16	Amber	Aftertreatment 1 Intake NOx	Aftertreatment 1 Intake NOx - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
3727	5571	7	None	High Pressure Common Rail Fuel Pressure Relief Valve	High Pressure Common Rail Fuel Pressure Relief Valve - Mechanical system not responding or out of adjustment	X
3733	862	3	Amber	Crankcase breather Heater Ciruit	Crankcase Breather Filter Heater Circuit - Voltage above normal, or shorted to high source	
3734	862	4	Amber	Crankcase breather Heater Ciruit	Crankcase Breather Filter Heater Circuit - Voltage below normal, or shorted to low source	
3735	2884	9	None	Engine Auxillary Governor Switch	Engine Auxiliary Governor Switch - Abnormal update rate	
3737	1675	31	None	Engine Starter Mode	Engine Starter Mode Overcrank Protection - Condition Exists	X
3741	5571	0	Amber	High Pressure Common Rail Fuel Pressure Relief Valve	High Pressure Common Rail Fuel Pressure Relief Valve - Data valid but above normal operational range	X
3748	3216	20	Amber	Aftertreatment 1 Intake NOx	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High	X
3749	3226	20	Amber	Aftertreatment 1 Outlet NOx	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High	X
3751	4792	7	None	Aftertreatment SCR Catalyst System	Aftertreatment SCR Catalyst System - Mechanical system not responding or out of adjustment	X
3753	3713	31	None	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout - Condition Exists	
3755	5394	2	None	Aftertreatment Diesel Exhaust Fluid Dosing Valve	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Data erratic, intermittent or incorrect	X
3765	442	3	Amber	Auxiliary Temperature 2	Auxiliary Temperature Sensor Input 2 Circuit - Voltage above normal, or shorted to high source	X
3766	442	4	Amber	Auxiliary Temperature 2	Auxiliary Temperature Sensor Input 2 Circuit - Voltage below normal, or shorted to low source	X
3838	2978	9	Amber	Estimated Engine Parasitic Losses - Percent Torque	Estimated Engine Parasitic Losses - Percent Torque - Abnormal update rate	
3839	596	7	Amber	Cruise Control Enable Switch	Cruise Control Enable Switch - Mechanical system not responding or out of adjustment	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
3841	596	2	Amber	Cruise Control Enable Switch	Cruise Control Enable Switch - Data erratic, intermittent or incorrect	
3842	596	13	Amber	Cruise Control Enable Switch	Cruise Control Enable Switch - Out of Calibration	
3843	5603	9	None	Cruise Control Disable Command	Cruise Control Disable Command - Abnormal update rate	X
3844	5605	31	None	Cruise Control Pause Command	Cruise Control Pause Command - Condition Exists	X
3845	5603	31	None	Cruise Control Disable Command	Cruise Control Disable Command - Condition Exists	X
3866	3364	1	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality - Data valid but below normal operational range - Most Severe Level	
3867	3364	18	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Below Normal Operating Range - Moderate Severe Level	X
3868	3364	9	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal update rate	X
3876	3364	7	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Mechanical system not responding or out of adjustment	X
3877	3364	12	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Bad intelligent device or component	X
3878	3364	2	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality - Data erratic, intermittent or incorrect	X
3917	104	18	Amber	Engine Turbocharger Lube Oil Pressure 1	Engine Turbocharger Lube Oil Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	
3931	1109	0	Red	Engine Protection System Approaching Shutdown	Engine Protection System Approaching Shutdown - Data valid but above normal operational range - Most	
3988	3265	9	Amber	Aftertreatment 2 Outlet NOx	Aftertreatment 2 Outlet NOx - Abnormal Update Rate	
4143	5741	3	Amber	Aftertreatment 1 Outlet Soot Sensor	Aftertreatment 1 Outlet Soot Sensor - Voltage Above Normal, or Shorted to High Source	
4144	5741	4	Amber	Aftertreatment 1 Outlet Soot Sensor	Aftertreatment 1 Outlet Soot Sensor - Voltage below normal, or shorted to low source	
4145	3255	9	Amber	Aftertreatment 2 Intake NOx	Aftertreatment 2 Intake Nox Sensor - Abnormal update rate	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
4151	5742	9	Amber	Aftertreatment Diesel Particulate Filter Temperature Sensor Module	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Abnormal update rate	X
4152	5743	9	Amber	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Abnormal update rate	X
4153	5747	3	Amber	Aftertreatment 1 Outlet Soot Sensor Heater	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage Above Normal, or Shorted to High Source	
4154	5747	4	Amber	Aftertreatment 1 Outlet Soot Sensor Heater	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage below normal, or shorted to low source	
4155	5746	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage Above Normal, or Shorted to high source	X
4156	5746	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage below normal, or shorted to low source	X
4157	4376	7	Amber	Aftertreatment 1 Diesel Exhaust Fluid Return Valve	Aftertreatment Diesel Exhaust Fluid Return Valve - Mechanical system not responding or out of adjust	X
4158	5742	12	Amber	Aftertreatment Diesel Particulate Filter Temperature Sensor Module	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Bad intelligent device or component	X
4159	5743	12	Amber	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Bad intelligent device or component	X
4161	5742	3	Amber	Aftertreatment Diesel Particulate Filter Temperature Sensor Module	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage Above Normal, or Shorted to high source	X
4162	5742	4	Amber	Aftertreatment Diesel Particulate Filter Temperature Sensor Module	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage below normal, or shorted to low source	X
4163	5742	16	Amber	Aftertreatment Diesel Particulate Filter Temperature Sensor Module	Aftertreatment Diesel Particulate Filter Temperature Sensor Module- Data Valid But Above Normal Operating Range	X
4164	5743	3	Amber	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage Above Normal, or Shorted to high source	X
4165	5743	4	Amber	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage below normal, or Shorted to low source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
4166	5743	16	Amber	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Data Valid But Above Normal	X
4168	5745	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage Above Normal, or Shorted to High	X
4169	5745	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage below normal, or shorted to low source	X
4171	5745	18	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Data Valid But Below Normal Operating Range	X
4174	4337	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor - Voltage Above Normal, or Shorted to High Source	
4175	4337	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor - Voltage below normal, or shorted to low source	
4213	3695	2	Amber	Aftertreatment Regeneration Inhibit Switch	Aftertreatment Regeneration Inhibit Switch - Data erratic, intermittent or incorrect	X
4215	563	31	None	Anti-Lock Braking (ABS) Active	Anti-Lock Braking (ABS) Active - Condition Exists	X
4233	3515	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Voltage above normal, or shorted to high source	
4234	3515	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Voltage below normal, or shorted to low source	
4235	3521	31	Red	Aftertreatment 1 Diesel Exhaust Fluid Property	Aftertreatment 1 Diesel Exhaust Fluid Property - Condition Exists	
4241	3364	19	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality - Received Network Data In Error	X
4242	3515	2	Amber	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Data erratic, intermittent or incorrect	
4243	3515	10	Amber	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Abnormal Rate of Change	X
4244	4337	2	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Data erratic, intermittent or incorrect	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
4245	5798	2	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Data erratic, intermittent or incorrect	
4249	4337	10	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Abnormal Rate of Change	X
4251	5798	10	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Abnormal Rate of Change	X
4252	1081	31	Amber	Engine Wait to Start Lamp	Engine Wait to Start Lamp - Condition Exists	
4253	5797	12	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Bad intelligent device	
4254	5797	3	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal, or shorted to high source	
4255	5797	4	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Voltage below normal, or shorted to low source	
4256	5797	16	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range −Moderately Severe Level	
4258	5797	11	Amber	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known	
4259	5742	11	Amber	Aftertreatment Diesel Particulate Filter Temperature Sensor Module	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Root Cause Not Known	
4261	5743	11	Amber	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Root Cause Not Known	X
4262	5571	3	Amber	High Pressure Common Rail Fuel Pressure Relief Valve	High Pressure Common Rail Fuel Pressure Relief Valve - Voltage Above Normal, or Shorted to High Source	X
4263	5571	4	Amber	High Pressure Common Rail Fuel Pressure Relief Valve	High Pressure Common Rail Fuel Pressure Relief Valve - Voltage below normal, or shorted to low source	X
4265	5571	11	Amber	High Pressure Common Rail Fuel Pressure Relief Valve	High Pressure Common Rail Fuel Pressure Relief Valve - Root Cause Not Known	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
4277	3364	10	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal Rate of Change	X
4284	5793	9	Amber	Desired Engine Fueling State	Desired Engine Fueling State - Abnormal Update Rate	
4286	520595	3	Amber	Closed Crankcase Ventilation System Pressure Sensor	Closed Crankcase Ventilation System Pressure Sensor - Voltage Above Normal, or Shorted to High Source	
4287	520595	4	Amber	Closed Crankcase Ventilation System Pressure Sensor	Closed Crankcase Ventilation System Pressure Sensor - Voltage below normal, or shorted to low source	
4288	520595	2	Amber	Closed Crankcase Ventilation System Pressure	Closed Crankcase Ventilation System Pressure - Data erratic, intermittent or incorrect	
4293	5097	3	Amber	Engine Brake Active Lamp Data	Engine Brake Active Lamp - Voltage Above Normal, or Shorted to High Source	
4294	5097	4	Amber	Engine Brake Active Lamp Data	Engine Brake Active Lamp - Voltage below normal, or shorted to low source	
4437	1668	2	None	J1939 Network #4 - Data erratic	J1939 Network #4 - Data erratic, intermittent or incorrect	X
4449	5747	10	Amber	Aftertreatment 1 Outlet Soot Sensor Heater	Aftertreatment 1 Outlet Soot Sensor Heater - Abnormal rate of change	
4451	5741	2	Amber	Aftertreatment 1 Outlet Soot	Aftertreatment 1 Outlet Soot - Data erratic, intermittent or incorrect	
4452	520668	31	Amber	Aftertreatment 1 Outlet NOx Sensor Closed Loop Operation	Aftertreatment 1 Outlet NOx Sensor Closed Loop Operation - Condition Exists	
4484	3667	7	Red	Engine Air Shutoff	Engine Air Shutoff - Mechanical System Not Responding or Out of Adjustment	X
4485	5838	31	Amber	EGR Valve Malfunction	EGR Valve Malfunction - Condition Exists	
4486	5839	31	Amber	Diesel Exhaust Fluid Consumption Malfunction	Diesel Exhaust Fluid Consumption Malfunction - Condition Exists	
4487	5840	31	Amber	Diesel Exhaust Fluid Dosing Malfunction	Diesel Exhaust Fluid Dosing Malfunction - Condition Exists	
4488	5841	31	Amber	Diesel Exhaust Fluid Quality Malfunction	Diesel Exhaust Fluid Quality Malfunction - Condition Exists	
4489	5842	31	Amber	SCR Monitoring System Malfunction	SCR Monitoring System Malfunction - Condition Exists	
4517	237	13	Amber	Vehicle Identification Number	Vehicle Identification Number - Out of Calibration	X
4526	521	2	Amber	Brake Pedal Position	Brake Pedal Position - Data erratic, intermittent or incorrect	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
4533	4766	3	Amber	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage above normal, or shorted to high source	X
4534	4766	3	Amber	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage below normal, or shorted to low source	X
4568	3482	16	Amber	Aftertreatment 1 Fuel Enable Actuator	Aftertreatment Fuel Shutoff Valve - Data Valid But Above Normal Operating Range - Moderately Severe	
4572	3031	9	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Abnormal Update Rate	X
4573	3826	18	Amber	Aftertreatment 1 Diesel Exhaust Fluid Average Consumption	Aftertreatment 1 Diesel Exhaust Fluid Average Consumption - Data Valid But Below Normal Operating Range	
4584	3936	14	Red	Aftertreatment Diesel Particulate Filter System	Aftertreatment Diesel Particulate Filter System - Special Instructions	
4585	4792	14	Red	Aftertreatment 1 SCR Catalyst System	Aftertreatment 1 SCR Catalyst System - Special Instructions	X
4586	4339	31	Amber	Aftertreatment 1 SCR Feedback Control Status	Aftertreatment 1 SCR Feedback Control Status - Condition Exists	
4615	94	0	Red	Engine Fuel Delivery Pressure	Engine Fuel Delivery Pressure - Data Valid but Above Normal Operational Range - Most Severe Level	
4658	4331	18	Amber	Aftertreatment 1 Diesel Exhaust Fluid Actual Dosing Quantity	Aftertreatment SCR Actual Dosing Reagent Quantity - Data Valid But Below Normal Operating Range - Mo	
4679	1761	5	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current below normal or open circuit	
4682	3031	5	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor Circuit - Current below normal or open circuit	
4688	6301	3	Amber	Water in Fuel Indicator 2 Sensor Circuit	Water in Fuel Indicator 2 Sensor Circuit - Voltage above normal, or shorted to high source	
4689	6301	4	Amber	Water in Fuel Indicator 2 Sensor Circuit	Water in Fuel Indicator 2 Sensor Circuit - Voltage below normal, or shorted to low source	
4691	5585	18	Amber	Engine Injector Metering Rail 1 Cranking Pressure	Engine Injector Metering Rail 1 Cranking Pressure - Data Valid But Below Normal Operating Range - Mo	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
4713	5357	31	Amber	Engine Fuel Injection Quantity Error for Multiple Cylinders	Engine Fuel Injection Quantity Error for Multiple Cylinders - Condition Exists	
4721	237	31	Amber	Vehicle Identification Number	Vehicle Identification Number - Condition Exists	
4722	237	2	Amber	Vehicle Identification Number	Vehicle Identification Number - Data erratic, intermittent or incorrect	
4724	702	5	Amber	Auxiliary I/O #02	Auxiliary Input/Output 2 Circuit - Current below normal or open circuit	
4725	702	6	Amber	Auxiliary I/O #02	Auxiliary Input/Output 2 Circuit - Current above normal or grounded circuit	
4726	1239	16	Amber	Engine Fuel Leakage 1	Engine Fuel Leakage - Data Valid But Above Normal Operating Range - Moderately Severe Level	
4727	157	15	Amber	Engine Injector Metering Rail 1 Pressure	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Least Severe Level	
4731	3031	13	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Out of Calibration	X
4732	1761	13	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Out of Calibration	X
4734	701	14	Red	Auxiliary I/O #01	Auxiliary Input/Output 1 - Special Instructions	X
4736	3031	6	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor Circuit - Current above normal or grounded circuit	
4737	3031	11	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Root Cause Not Known	X
4738	1761	6	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current above normal or grounded circuit	
4739	1761	11	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Root Cause Not Known	X
4741	3364	5	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current below normal or open circuit	X
4742	3364	6	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Quality	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current above normal or grounded circuit	X
4743	3515	5	Amber	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current below normal or open circuit	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
4744	3515	6	Amber	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current above normal or grounded	X
4745	3515	11	Amber	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Root Cause Not Known	X
4752	520716	3	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Above Normal, or Shorted to High Source	
4753	520716	4	Amber	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Below Normal, or Shorted to Low Source	
4768	3521	11	Amber	Aftertreatment 1 Diesel Exhaust Fluid Property	Aftertreatment 1 Diesel Exhaust Fluid Property - Root Cause Not Known	X
4769	1761	10	Amber	Aftertreatment 1 Diesel Exhaust Fluid Tank Level	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Abnormal Rate of Change	X
4789	1639	0	Amber	Fan Speed	Fan Speed - Data Valid but Above Normal Operational Range - Most Severe Level	X
4791	1639	1	Amber	Fan Speed	Fan Speed - Data Valid but Below Normal Operational Range - Most Severe Level	X
4841	6653	16	Amber	Cold Start Injector Metering Rail 1 Pressure	Cold Start Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderate Severe Level	
4842	3364	15	None	Aftertreatment Diesel Exhaust Fluid Quality	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Above Normal Operating Range - Least Severe Level	X
4863	5245	31	Amber	Aftertreatment Selective Catalytic Reduction Operator Inducement Active	Aftertreatment SCR Operator Inducement Active - Condition Exists	X
4867	5571	31	Amber	High Pressure Common Rail Fuel Pressure Relief Valve	High Pressure Common Rail Fuel Pressure Relief Valve - Condition Exists	X
4936	5380	11	Amber	Engine Fuel Valve 1	Engine Fuel Valve 1 - Root Cause Not Known	
4937	5380	13	Amber	Engine Fuel Valve 1	Engine Fuel Valve 1 - Out of Calibration	
4951	6655	3	Amber	ECU Power Lamp	Maintain ECU Power Lamp - Voltage Above Normal, or Shorted to High Source	X
4952	6655	4	Amber	ECU Power Lamp	Maintain ECU Power Lamp - Voltage Below Normal, or Shorted to Low Source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
4953	3353	3	Amber	Alternator 1 Status	Alternator 1 Status - Voltage Above Normal, or Shorted to High Source	
4954	3353	4	Amber	Alternator 1 Status	Alternator 1 Status - Voltage Below Normal, or Shorted to Low Source	
4956	6713	13	Red	Variable Geometry Turbocharger Actuator	Variable Geometry Turbocharger Actuator Software - Out of Calibration	X
4957	6713	31	Red	Variable Geometry Turbocharger Actuator	Variable Geometry Turbocharger Actuator Software - Condition Exists	X
5133	2006	9	Amber	Source Address 6	Source Address 6 - Abnormal Update Rate	
5167	111	17	Amber	Engine Coolant Level	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level	
5177	6713	9	Amber	VGT Actuator Driver Circuit	VGT Actuator Driver Circuit - Abnormal update rate	X
5183	520784	3	Amber	Fan Blade Pitch Position Sensor Circuit	Fan Blade Pitch Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source	X
5184	520784	4	Amber	Fan Blade Pitch Position Sensor Circuit	Fan Blade Pitch Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source	X
5185	520784	5	Amber	Fan Blade Pitch	Fan Blade Pitch - Mechanical system not responding or out of adjustment	X
5193	1632	31	Amber	Engine Torque Limit Feature	Engine Torque Limit Feature - Condition Exists	
5215	520791	2	Amber	Engine Boost Curve Selection	Engine Boost Curve Selection - Data erratic, intermittent or incorrect	
5221	3667	2	Red	Engine Air Shutoff Status	Engine Air Shutoff Status - Data erratic, intermittent or incorrect	X
5247	4360	16	Amber	Aftertreatment 1 SCR Intake Temperature	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	
5248	1623	13	Amber	Tachograph Output Shaft Speed	Tachograph Output Shaft Speed - Out of Calibration	X
5271	649	3	Amber	Engine Exhaust Back Pressure Regulator Control Circuit	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Above Normal, or Shorted to High Source	
5272	649	4	Amber	Engine Exhaust Back Pressure Regulator Control Circuit	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Below Normal, or Shorted to Low Source	
5273	649	5	Amber	Engine Exhaust Back Pressure Regulator Control Circuit	Engine Exhaust Back Pressure Regulator Control Circuit - Current Below Normal or Open Circuit	

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
5274	5625	2	Amber	Engine Exhaust Back Pressure Regulator Position	Engine Exhaust Back Pressure Regulator Position - Data Erratic, Intermittent or Incorrect	
5275	5625	3	Amber	Engine Exhaust Back Pressure Regulator Position Sensor Circuit	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source	
5276	5625	4	Amber	Engine Exhaust Back Pressure Regulator Position Sensor Circuit	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source	
5277	5626	13	Amber	Engine Exhaust Back Pressure Regulator	Engine Exhaust Back Pressure Regulator - Out of Calibration	
5291	520808	31	Amber	Engine Emergency Shutdown Switch Actived	Engine Emergency Shutdown Switch Actived - Condition Exists	X
5292	520809	31	Amber	Excessive Time Since Last Engine Air Shutoff Maintenance Test	Excessive Time Since Last Engine Air Shutoff Maintenance Test - Condition Exists	X
5386	4766	2	Amber	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Erratic, Intermittent, or Incorrect	X
5387	4766	0	Amber	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Most Severe Level	X
5388	4766	16	Red	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
5389	4766	15	Amber	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	X
5391	520826	9	Amber	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Abnormal Update Rate	X
5392	520826	12	Amber	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Bad Intelligent Device or Component	X
5393	520826	3	Amber	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal or Shorted to High Source	X
5394	520286	4	Amber	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Below Normal or Shorted to Low Source	X

Fault Code	J1939_ SPN	J1939 _FMI	Lamp	J1939_SPN Description	Cummins_Description	QSB 6.7
5395	520286	11	Amber	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known	X
5396	520826	16	Amber	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range - Moderately Severe Level	X
5576	107	15	Amber	Engine Air Filter 1 Differential Pressure	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Least Severe Level	X
5585	5571	15	Amber	High Pressure Common Rail Fuel Pressure Relief Valve	High Pressure Common Rail Fuel Pressure Relief Valve - Data Valid But Above Normal Operating Range - Least Severe Level	X
5617	524286	31	Amber	Aftertreatment 1 Diesel Oxidation Catalyst System	Aftertreatment 1 Diesel Oxidation Catalyst System- Special Instruction	X
5631	6928	31	None	SCR System Cleaning Inhibited Due to System Timeout	SCR System Cleaning Inhibited Due to System Timeout - Condition Exists	X
5632	6918	31	Maintenance	SCR System Cleaning Inhibited Due to Inhibit Switch	SCR System Cleaning Inhibited Due to Inhibit Switch - Condition Exists	X
5653	6881	9	Amber	SCR Operator Inducement Override Switch	SCR Operator Inducement Override Switch - Abnormal Update Rate	X
5654	6881	13	Amber	SCR Operator Inducement Override Switch	SCR Operator Inducement Override Switch - Out of Calibration	X
9491	524286	31	Amber		Reserved for temporary use - Condition Exists	
9999	524286	31	Amber		Reserved for temporary use - Condition Exists	

D 3.0 Operation

1 Operating elements on the paver

Operator's platform

Seat console

The seat console can pivot beyond the outer edge of the vehicle, providing the driver with a better view of the paving area in this position

- Release the platform lock (1).
- Swing the seat console to the desired position.
- Engage the lock into one of the fixed positions (2).

⚠ CAUTION

After locking the seat console, check it to ensure it will not move into another position!

Dust cover

The dust cover (3) can be stored on the bar (4) behind the seat.

Dust cover

⚠ CAUTION

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

⚠ CAUTION

After the adjustments are set, check the seat to ensure it does not move out of adjustment.

- **Seat forward and back adjustment (1):** The seat can be moved forward or it can be moved back to adjust the seat; raise the lever on the lower left side of the seat to release the lock. Once the seat is in the desired position, release the lever and the seat will lock into place.
- **Seat back rest adjustment (2):** The back rest can be adjusted to lean forward or lean back. To adjust the back rest, turn the knob on the lower front part of the seat. Turn the knob clockwise to lean the back rest forward; turn the knob counter-clockwise to lean the back rest back

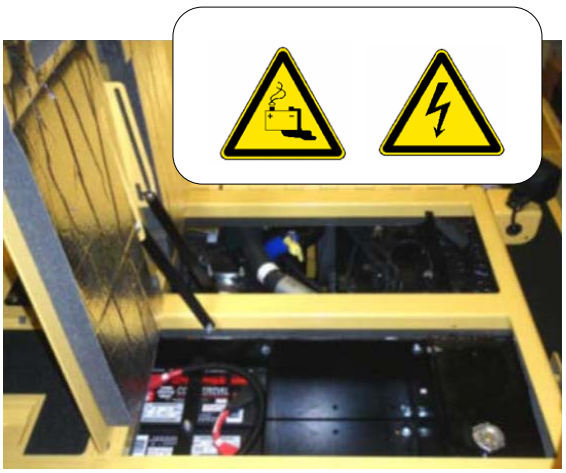
- **Armrest positions (3):** The armrest can be lowered to support the arm or it can be raised to be stowed out of the way.

Batteries

The batteries are located under the right hand side (from operator platform) maintenance door.

There are two 12 V batteries to produce the 24V needed for the electrical system.

For servicing, see chapter F.



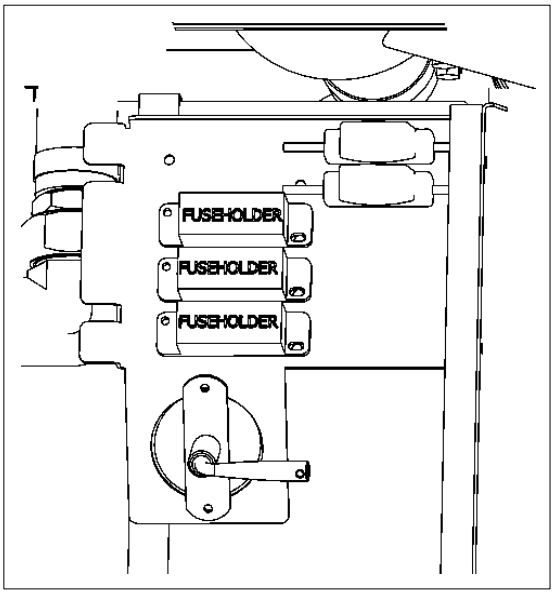
Batteries

NOTICE

Follow the instructions when jump starting the paver. (See section D 4)

Battery main switch

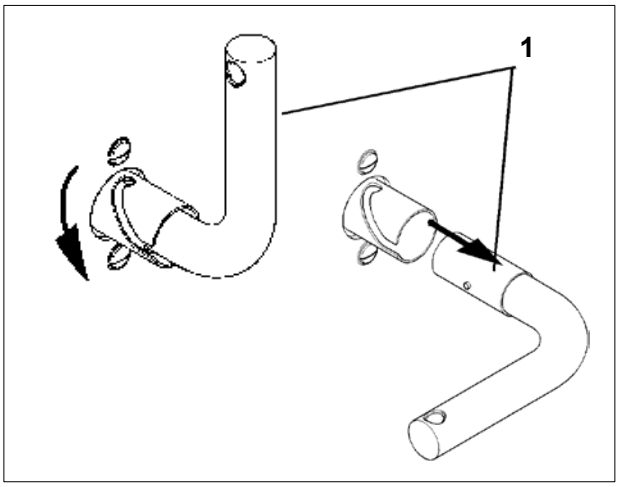
The main switch interrupting the circuit between the battery and the main fuse is located above the battery pack.



NOTICE

See chapter F for fuse locations and fuse order.

- To switch the ignition off, turn the key (1) to the left and pull it out



⚠ WARNING

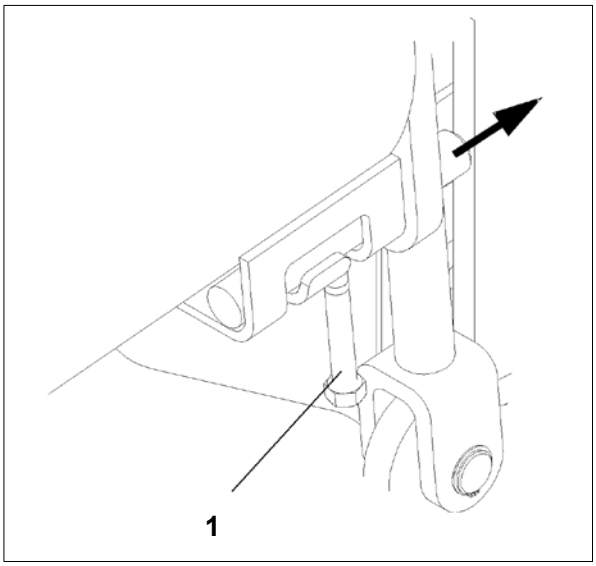
Do not lose the key. Without it the paver can no longer be moved!

⚠ CAUTION

Do not turn the main switch off until 100 seconds after the ignition has been turned off!
Lock the service doors/covers.

- To prevent the engine's electronic control module (ECM) from sustaining damage.
- To avoid battery discharging.
- To make it difficult for unauthorized persons to start and operate the machine.

Transport safeguards for the hopper



Before parking or transporting the paver, the hopper halves must be pivoted upwards and the trans- port safeguards for the hopper must be inserted.

- Before parking or transporting the paver, the hopper halves must be pivoted upwards and the trans- port safeguards for the hopper must be inserted.
- Without transport safeguards inserted, the hopper halves will slowly open; danger during transportation.

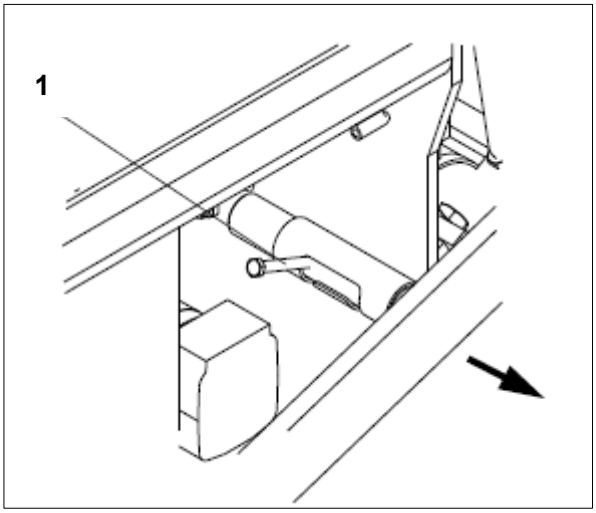
⚠ WARNING

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

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

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

- Lift the screed.
- Activate the levers (1).
- Check that the safety (to the left and to the right) engage under the crossbeams.



⚠ WARNING

Transportation with an unsecured screed bears the danger of accidents

⚠ DANGER

Insert screed lock only at crown adjustment "zero"! Lock the screed only for transportation. Use the lock for transportation only! Do not enter or work under screed if it is only secured with the screed locked for transportation

Paving thickness indicator

The Paving Thickness Indicator scales are located on the left and right sides of the vehicle.

- The Paving Thickness Indicator (1) shows the setting on the Scale (2).
- In normal paving situations, the same paving thickness should be set on both sides of the vehicle!

⚠ CAUTION

Avoid different settings on the scales as this will produce un-even pavement

Release Agent System

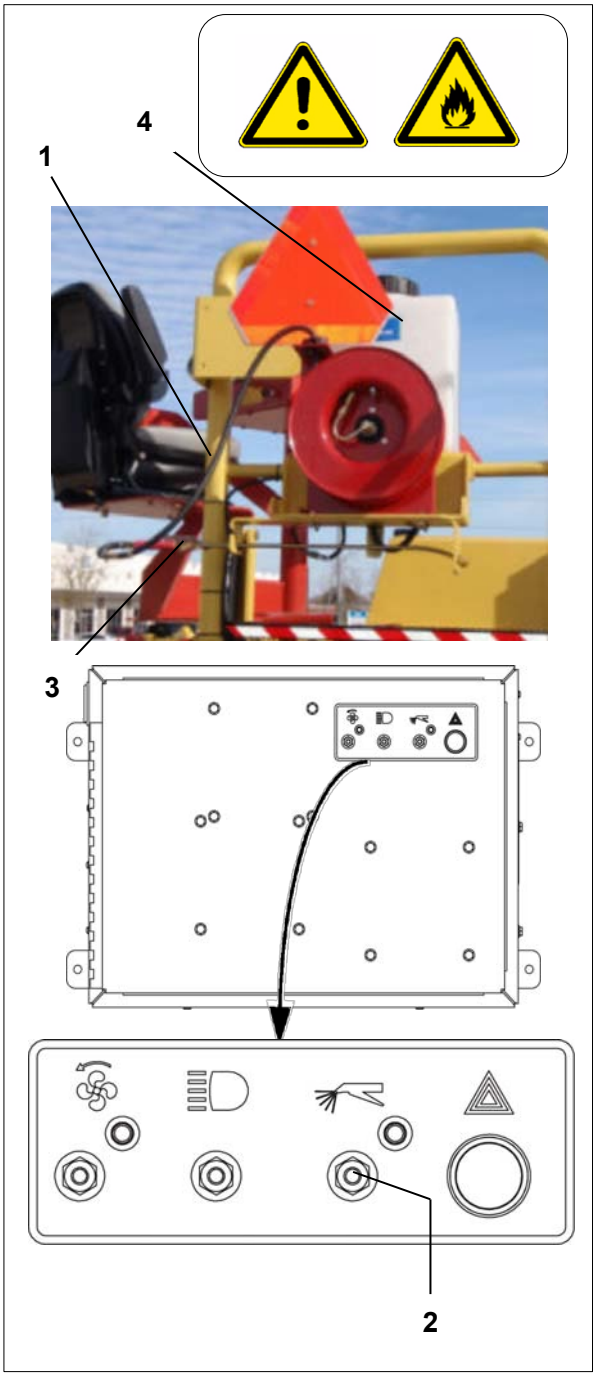
Used to spray the parts coming into contact with asphalt with a separator emulsion.

NOTE:
Check local regulations concerning use of cleaners and use of solvents

- Pull hose (1) out of the guide until there is an audible click. The hose will lock in this position.

NOTE:
The hose will retract automatically into the guide by pulling out until it clicks again, then it will reel in again.

- On/off switch (2) for the emulsion pump.
- Press hand-valve (3) to spray, release to stop spraying.
- The spraying system is fed by the tank (4).
- (Only fill the tank when the machine is not moving.)



⚠ CAUTION

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

⚠ DANGER

Don’t spray into open flame or onto hot surface! Danger of explosion!

On/Off switch of working lights (1)

Toggle switch (1) to switch on all installed working lights.

On/Off switch hazard flasher (2)

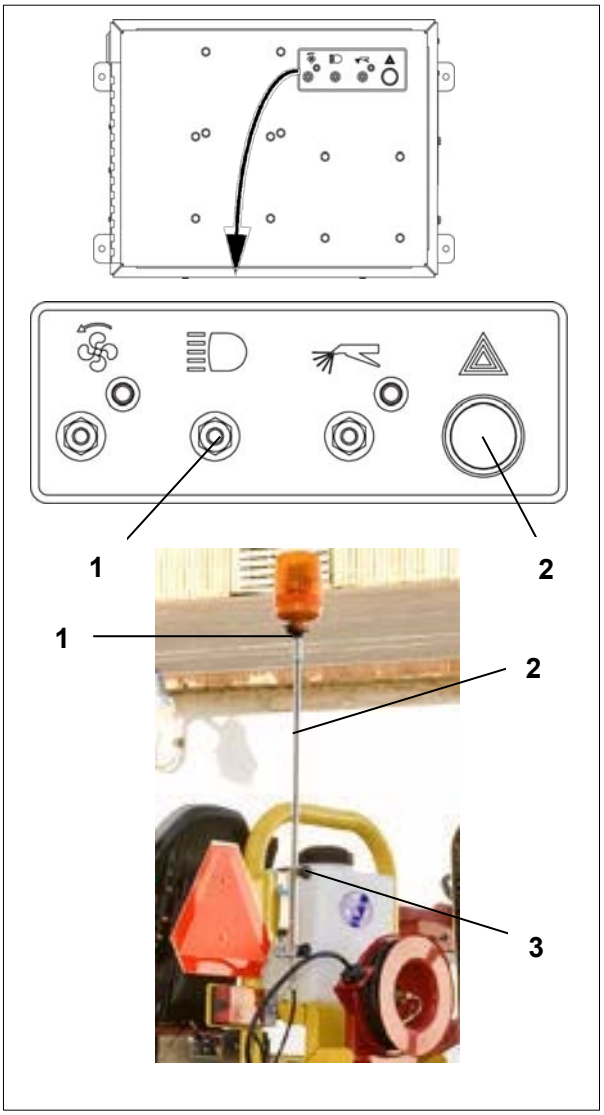
Activate switch (2) to switch on installed flasher

Warning Beacon

NOTE:

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

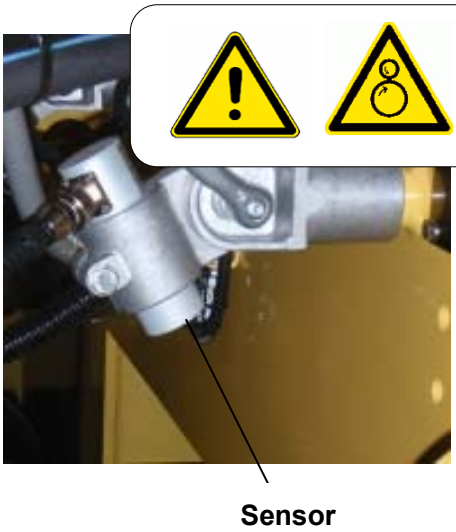
- Place the warning beacon onto the plug-in contact and secure with a wing bolt (1).
- Slide the warning beacon with tube (2) to the desired height and secure with the both clamping screws (3).
- Turn the switch on to active the warning beacon.



NOTE:
The rotary warning beacon is easy to remove and should be stored securely when the work is done.

Conveyor limit sensors

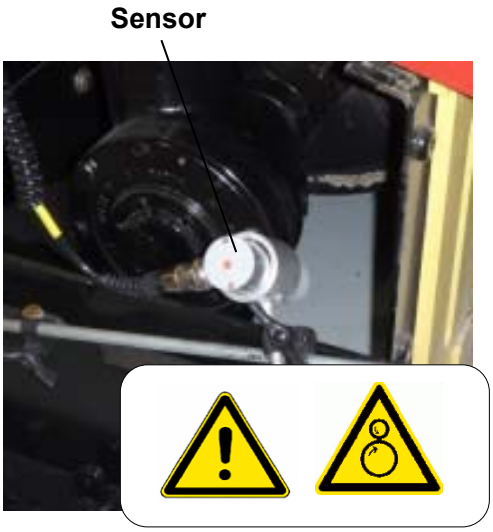
The ultrasonic conveyor limit sensors control the material flow at the respective conveyor half. The conveyors should stop when the material has roughly reached the area below the auger tube
NOTE:
This requires that the auger height has been adjusted correctly (see chapter E).



Ultrasonic auger limit sensors (left and right)

The limit sensors control the material flow at the respective auger half.
The ultrasonic sensor is mounted to the side plate. Loose clamping lever for adjustment and modify angle / height of the sensor.
The cables must be connected to the remote control units located at the sides of the screed

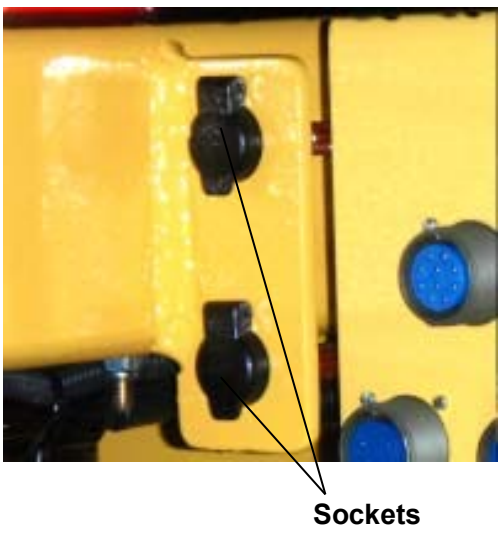
NOTE:
Adjust the limit sensor positions while the material is distributed.



Socket 24V
Connect the working lights (24 V) or other devices here.

- Power is present when the main switch is switched on

NOTE:
As an option, one socket can be used to provide power for accessories.



D 4.0 Operation

1 Preparation of operation

Required equipment and tools

To avoid delays on site, check before starting work whether or not the following equipment and tools are present

- Wheel loader for transporting heavy extendable parts.
- Diesel fuel.
- Engine oil and hydraulic oil, lubricants.
- Separating agents (emulsion) and manual injector.
- Shovel and broom.
- Scraper (shovel or scoop) for cleaning the auger and the hopper intake area.
- Necessary parts for extending the auger.
- Necessary parts for extending the screed.
- Percentage spirit level and leveling rail, 4 yards (4 m) long.
- Leveling wire.
- Protective clothing, signal vest, gloves, hearing protection.

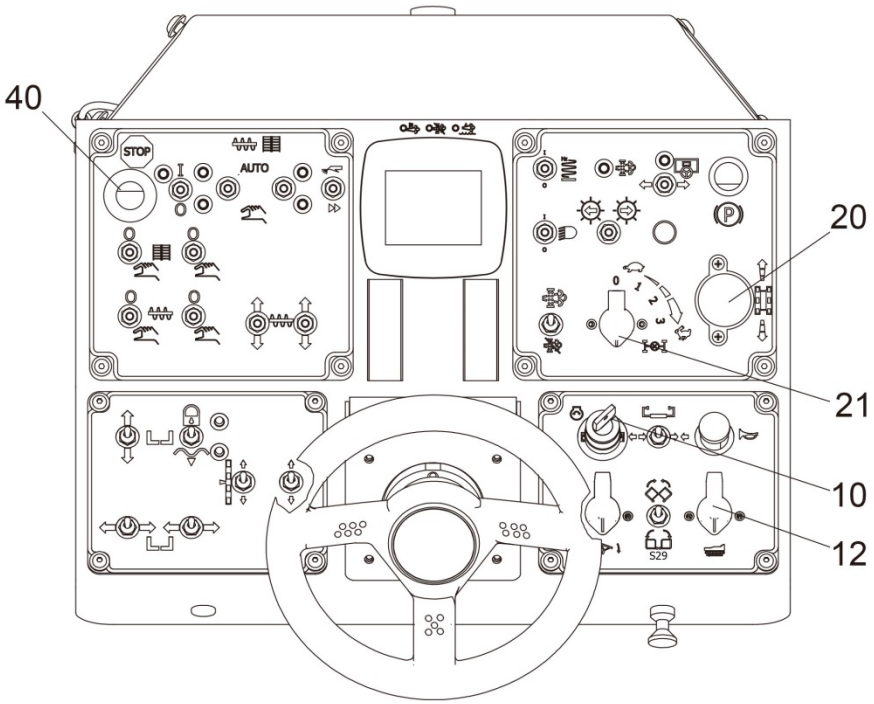
Before starting work
(In the morning or when starting paving).

- Follow the safety instructions.
- Check personal protective equipment
- Take an inspection walk around the paver and check for leaks and damages.
- Install parts removed for transportation or for the night.
- 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. Button must be pulled out to start machine again.
Steering	The paver must follow every movement of the steering wheel. 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 paver started), walk around the paver and inspect it, then switch off again.

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, the operator must be able to engage both screed transport safeguards.
Hopper transport safeguard	When the hopper is closed, the operator must be able to engage both hopper transport safeguards.
Miscellaneous: - Engine hood - Lateral flaps	Check that the hoods and flaps are closed and secured.
Accessories: - First-aid kit	The accessories must be in the pro- vided holders.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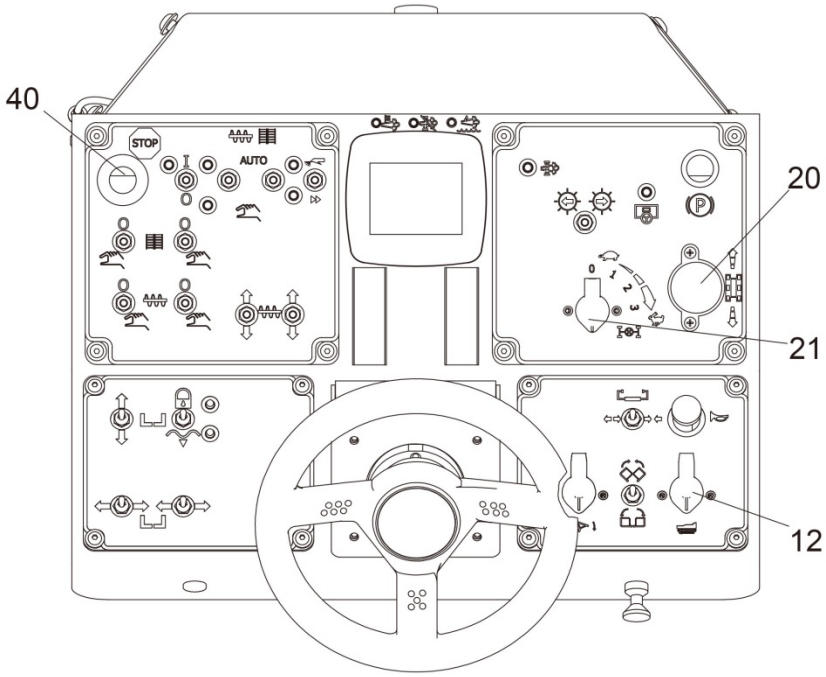
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STOP
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1.1 Starting the paver

Before starting the paver

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

- Daily maintenance of the paver (see chapter F)

⚠ CAUTION

Check the operating hours 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.

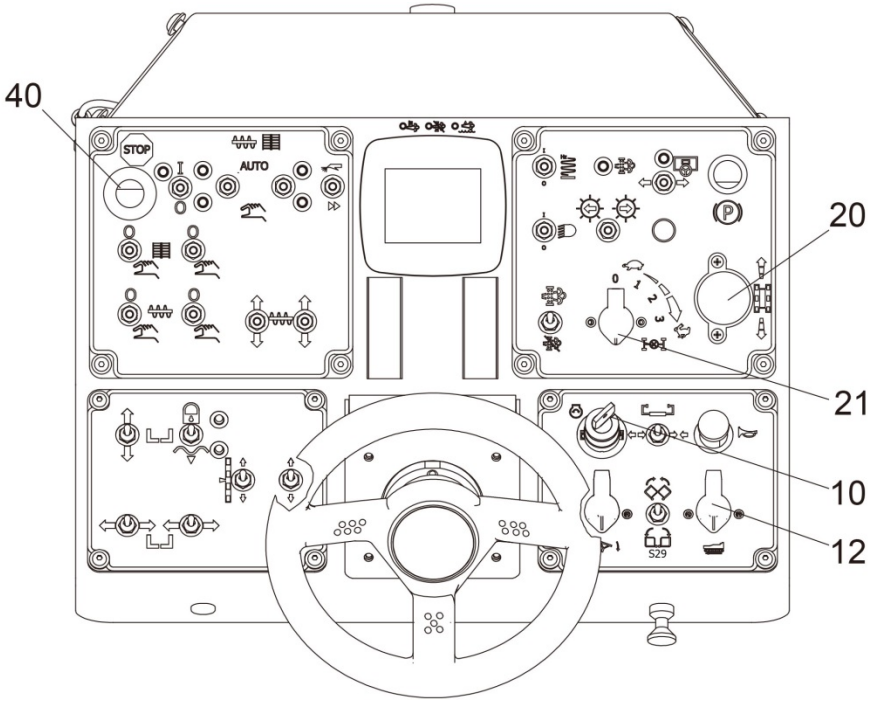
“Normal” starting

- Set the drive lever (20) to the center position and the speed preselector (12) and the selector (21) for traction drive / engine to minimum.
- Insert the ignition key (10) in position “0”. The lights should be switched off during starting to reduce the current drain on the battery

NOTICE

Starting is not possible if the drive lever is not in the central position or if the emergency stop button (40) is depressed

- Turn the ignition key (10) into position 3 to start the engine. Once engine has started, release the key and it will spring-return to the “On” position. Do not let the starter run continuously for more than 20 seconds; wait 1 minute before turning the starter again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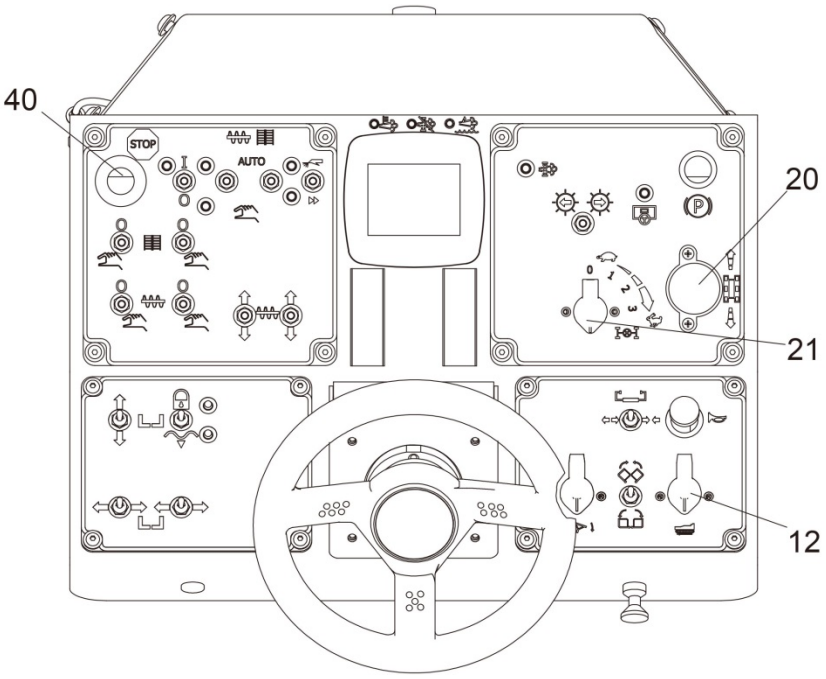
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STOP
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Jump starting

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

Suitable power sources are:
- Other vehicles with a 24V system
- Additional 24V battery
- Start device that is suitable for jump starting (24V / 90A).

NOTICE

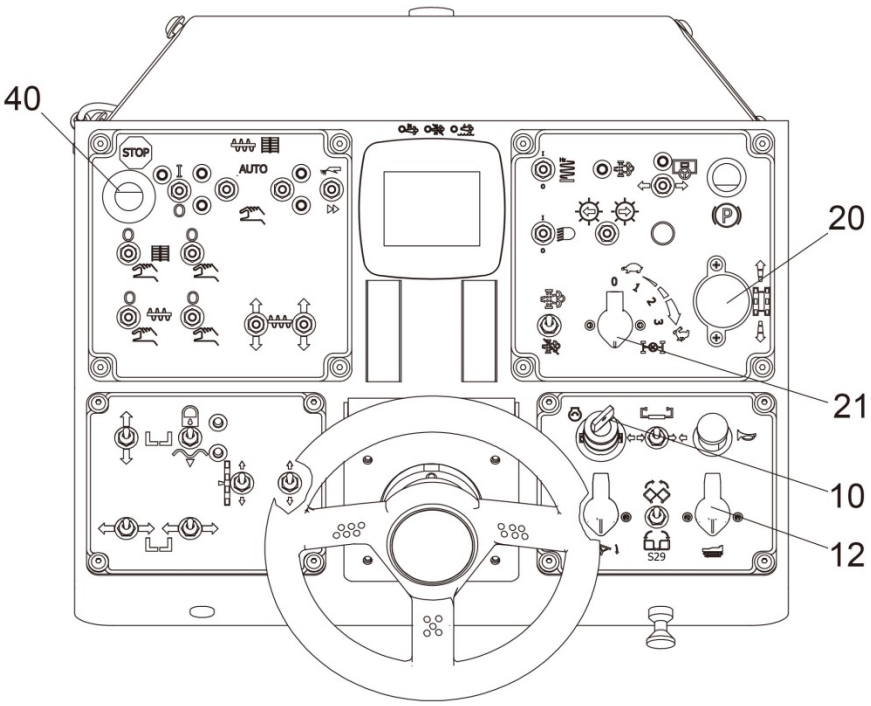
Standard 12V chargers or quick chargers cannot be used for jump starting.

To jump start the engine:
- Set the drive lever (20) to the center position. Set the speed preselector (12) and the selector (21) for traction drive / engine to minimum.
- Insert ignition switch (10) to position “0” to turn on the ignition.
- Connect the power source with the appropriate cables.

⚠ CAUTION

Check for proper polarity! Always connect the negative cable last and remove it first!

- Turn the ignition key (10) completely to the right to start the engine. Once the engine starts, release the key and it will spring-return to the “ON” position. Do not let the starter run for more than 20 seconds; wait 1 minute after every attempt before turning the starter again!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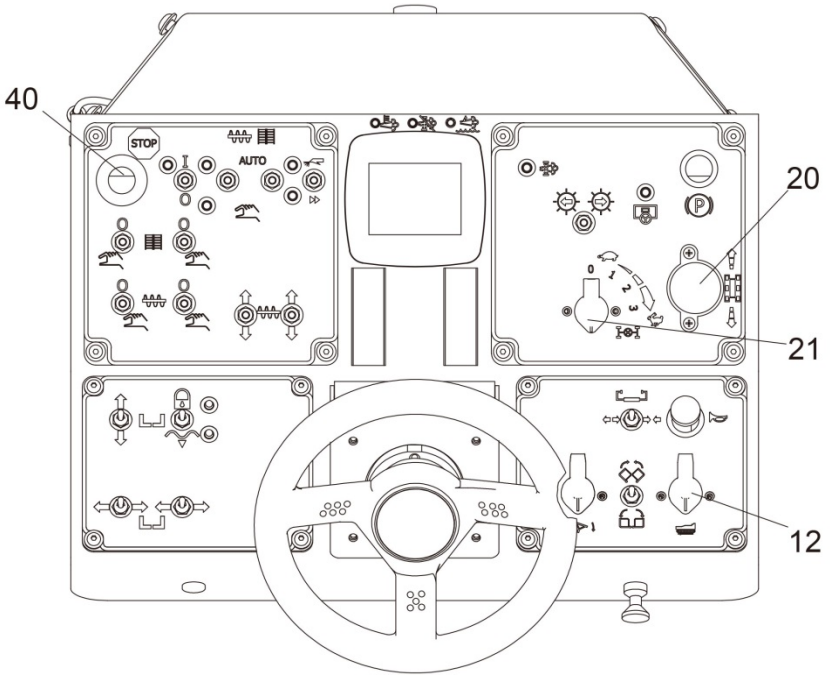
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STOP
AUTO

After starting

To increase the engine speed:

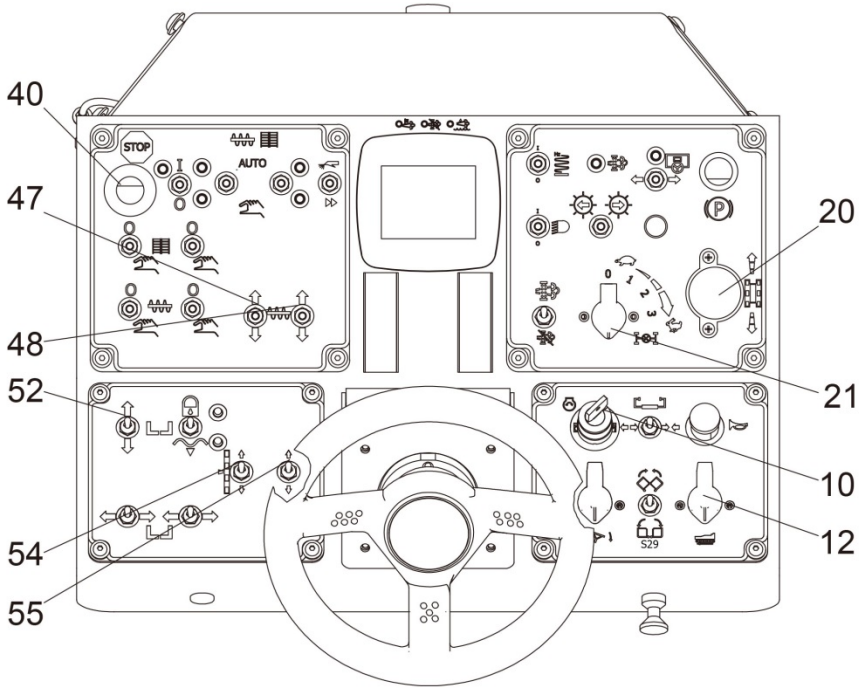
- Set selector (21) for traction drive / engine to position 2.

NOTICE

Let the paver warm up for about 5 minutes if the engine is cold.

NOTICE

Read and follow Chapter D2 of this manual for possible warnings on the graphical terminal!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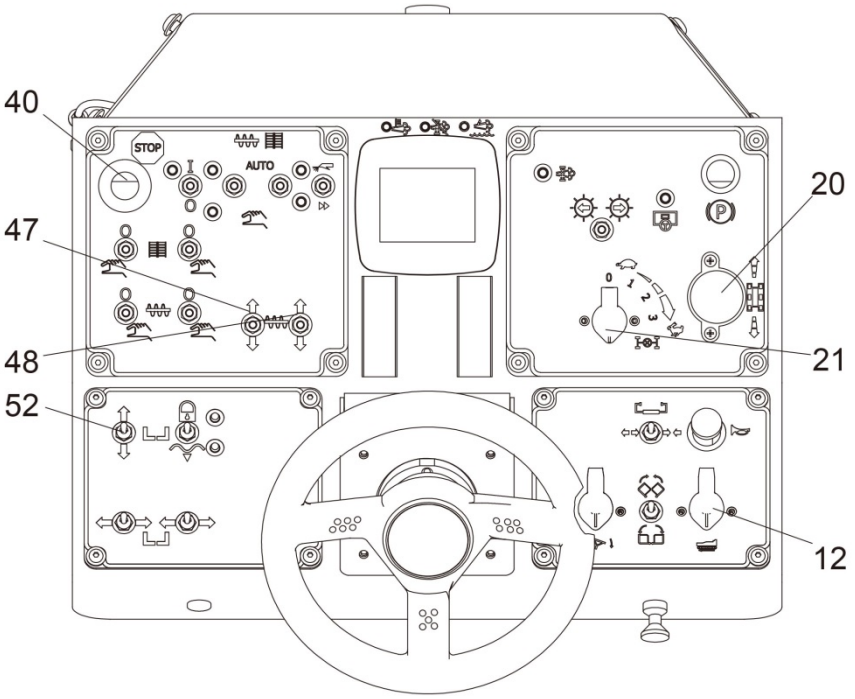
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STOP
AUTO

1.2 Transport Operation

Lifting and securing the screed

- Raise the screed using switch (52).
- Center the leveling cylinders using the switches (54) / (55).

NOTICE

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

- Raise the auger crossbeam using switches (47) / (48).

NOTICE

Engage both screed transport safeguards to secure the screed in the raised position.

Driving and stopping the paver

- Set the selector (21) for traction drive / engine to position 3.
- Set the preselector (12) for traction drive to approx. 50%.
- To start driving, carefully tilt the drive lever (20) forward or backward according to the drive direction desired

⚠ WARNING

In case of an emergency, press the emergency stop button (40)!

- To stop the vehicle, move the drive lever (20) into its center position.

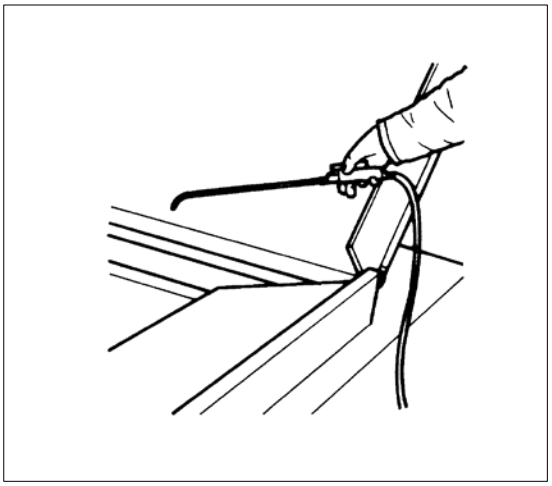
Switching off and securing the paver

- Lower the screed using switch (52).
- Turn off the engine by turning the ignition key (10) to the “0“position. Pull the key out of the switch

⚠ CAUTION

The battery may become drained if the paver stands still for long periods of time even though the ignition is not switched on.

1.3 Preparation for paving



Releasing agent

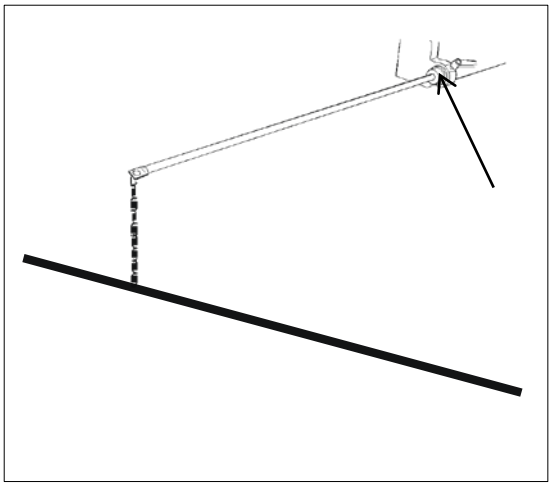
Spray the parts coming into contact with asphalt (hopper, screed, auger, push roller) with a separator emulsion.

⚠ WARNING

Do not use diesel fuel as it dissolves the bitumen.

Screed heater

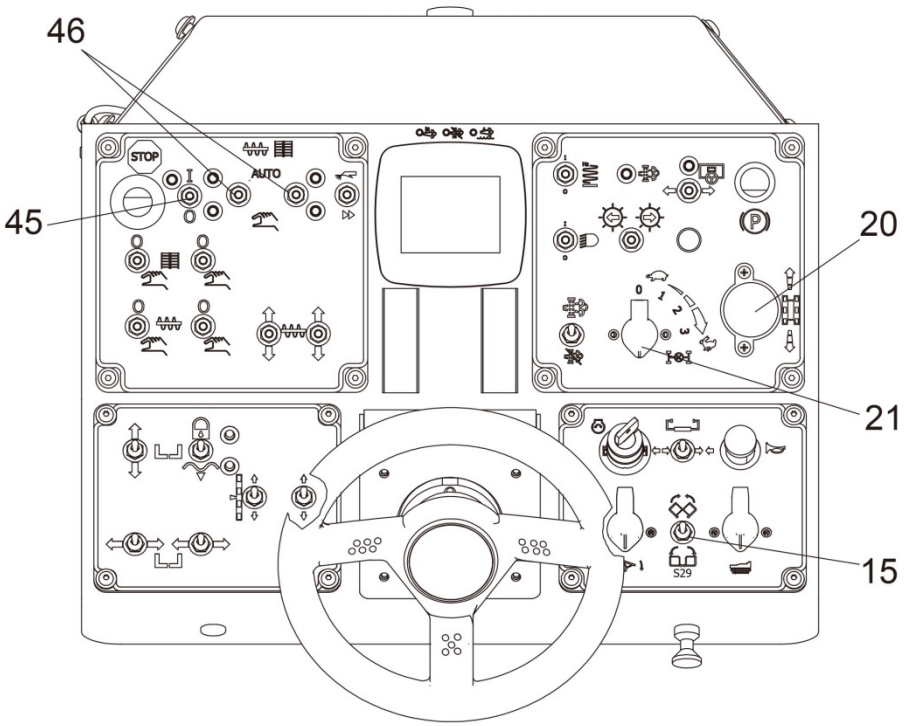
Switch the screed heater “On” for about 15–30 minutes (depending on the ambient temperature before paving begins. Warming up prevents the material from sticking to the screed plates



Direction marks

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

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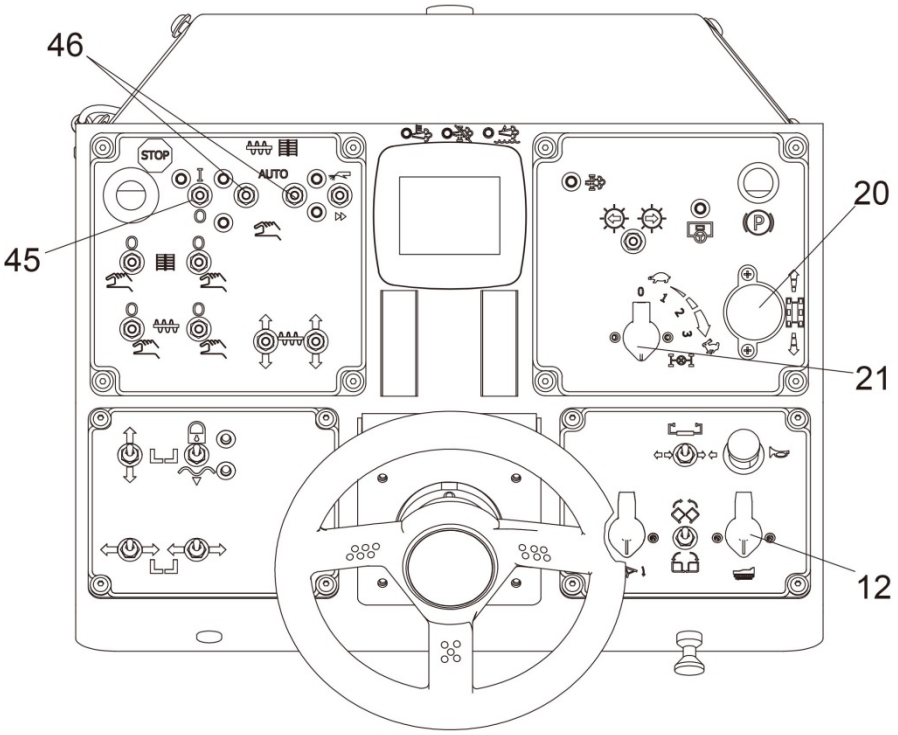
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STOP
AUTO

Loading / distributing material

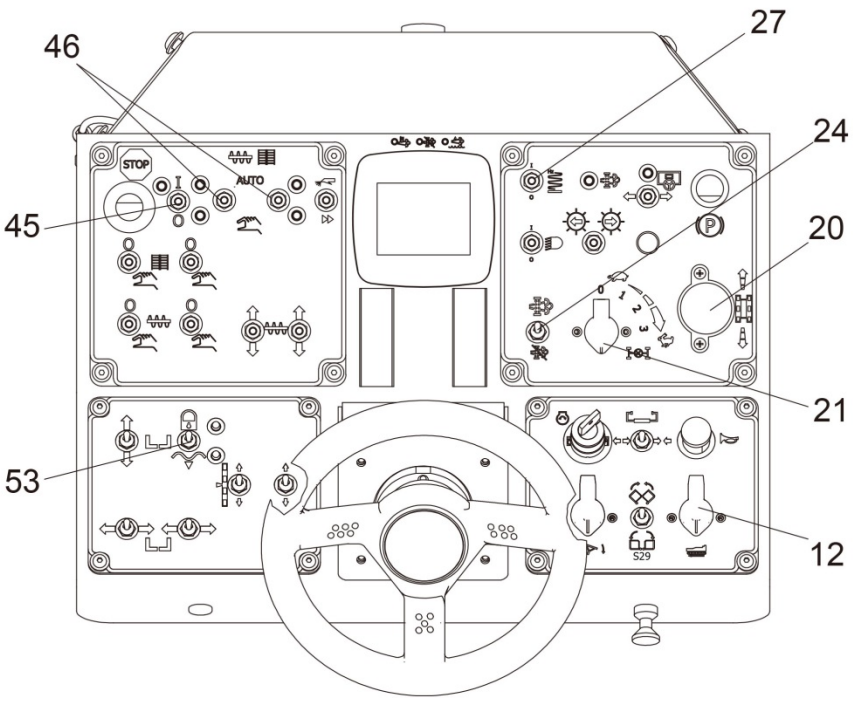
- Open the hopper with switch (15).
  Have the truck back short of the paver and pull the paver against the truck tires. Guide the truck driver when dumping the material mix
- Set the switch (45) of the auger and conveyor to the “ON” position.
- Set both switches (46) of the auger and conveyor to “AUTO “position.
- Set the appropriate auger switch on the remote control and conveyor switch (if applicable) to “AUTO “position.
- Set the selector (21) for traction drive / engine to position 1 and push the drive lever (20) forward (away from operator)

NOTICE

The limit sensors for the conveyors and augers must switch off the function when the material has reached the height limit in the area beneath the auger crossbeam (conveyor sensors) or at the auger ends (auger sensors).

Check that the material is being conveyed properly.

- If the material is not being conveyed properly, switch conveyor and auger to “MAN UAL“ by using switch (46) until a sufficient amount of material lies in front of the screed.
- Switch conveyor and auger to “AUTO “using switch (46).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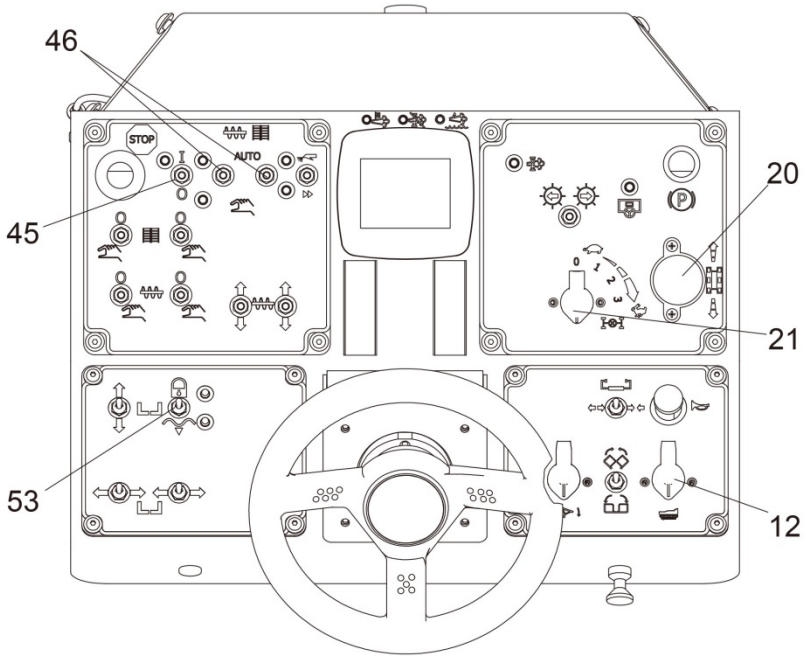
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12
STOP
AUTO

1.4 Starting for paving

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
21	Selector	position 1
12	Preselector	approx. 50%
53	Screed position	to floating position.
27	Vibration	ON
45	Auger + Conveyor	ON
46	Auger + Conveyor	AUTO

- Push the drive lever (20) to its forward position and start driving. Screed floating position is activated now.
- Observe the distribution of the material and adjust the limit sensors if necessary.
- Set the compaction elements (vibration and/or tamper) according to the required compaction ratio.
- Let the paving supervisor check the layer thickness after 15-20 feet (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 screed setting must be corrected when the actual layer thickness deviates significantly from the value needed for the job requirement (see the operating instructions for the screed).

1.5 Checking during paving

The following points must be constantly observed during paving:

Paving function

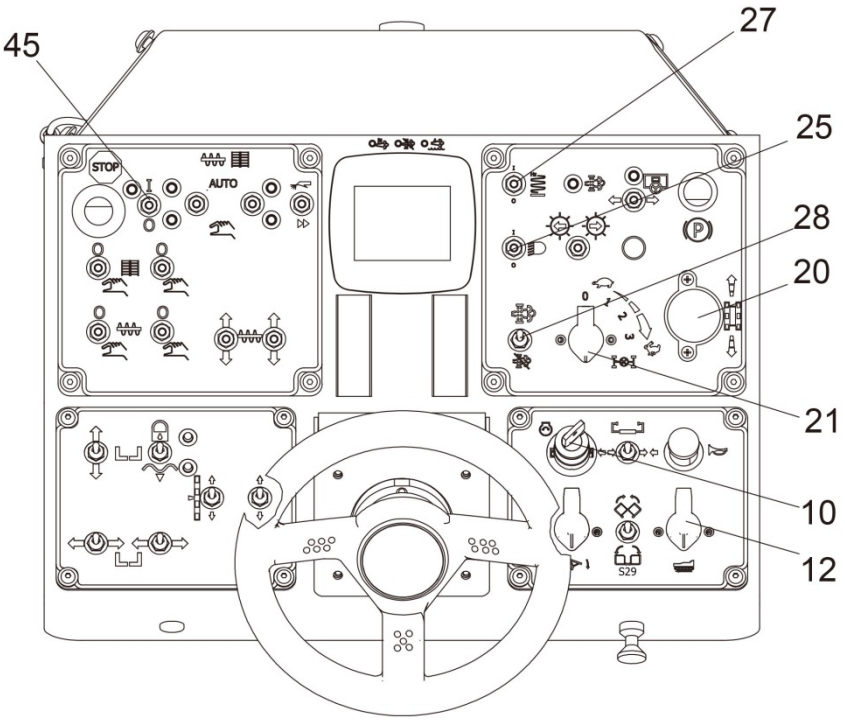
- Screed heater
- Vibration and / or tamper
- Engine oil and hydraulic oil temperature
- The screed parts must be retracted and extended in time when obstacles are in the way.
- Uniform material transport and distribution or supply to the screed; may require corrections to settings of the material switches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

NOTE:
See the section D4 “Malfunctions” when paver functions fails.

Quality of the layer

- Mat thickness
- Slope
- Evenness in the driving direction and at right angles to it (check with a level)
- Surface structure / texture behind the screed

NOTE:
See section D4 “Malfunctions, Problems during paving” if the paving quality is poor.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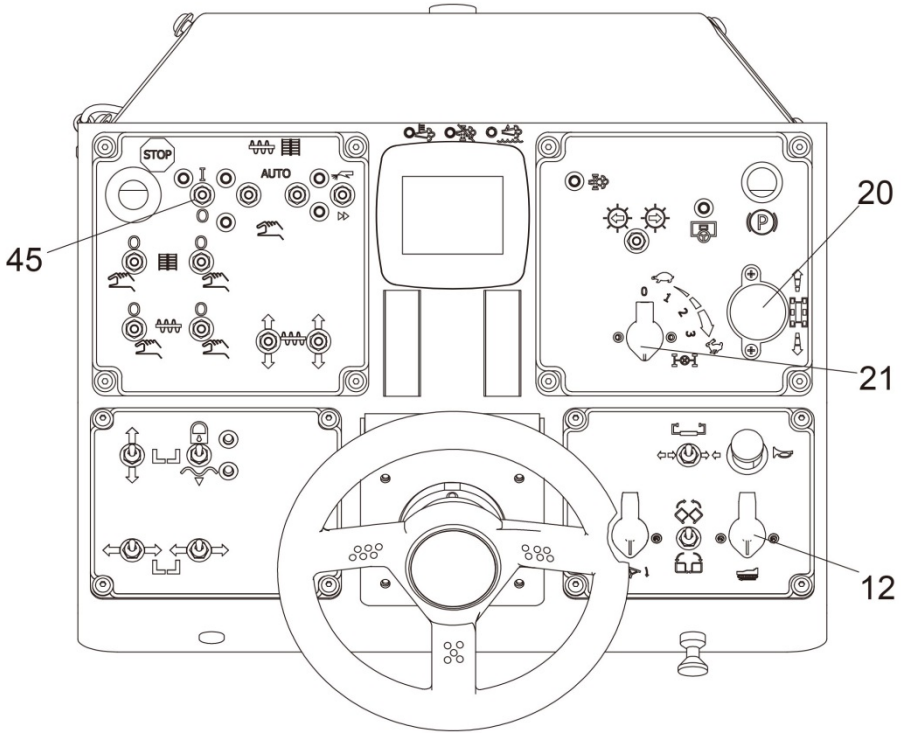
AUTO
S29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STOP
AUTO

1.6 Interrupting / terminating operation

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

- Determine the approximate duration.
- When the material's temperature drops below the minimum paving temperature, run the paver empty and create an edge like the end of a layer.
- Set the drive lever (20) to the center position.

NOTICE

Screed will be switched into "STOP "function automatically.

During extended interruptions (i.e. lunch break)

- Turn drive lever (20) to center position. Move the preselector (12) and selector (21) to minimum position.

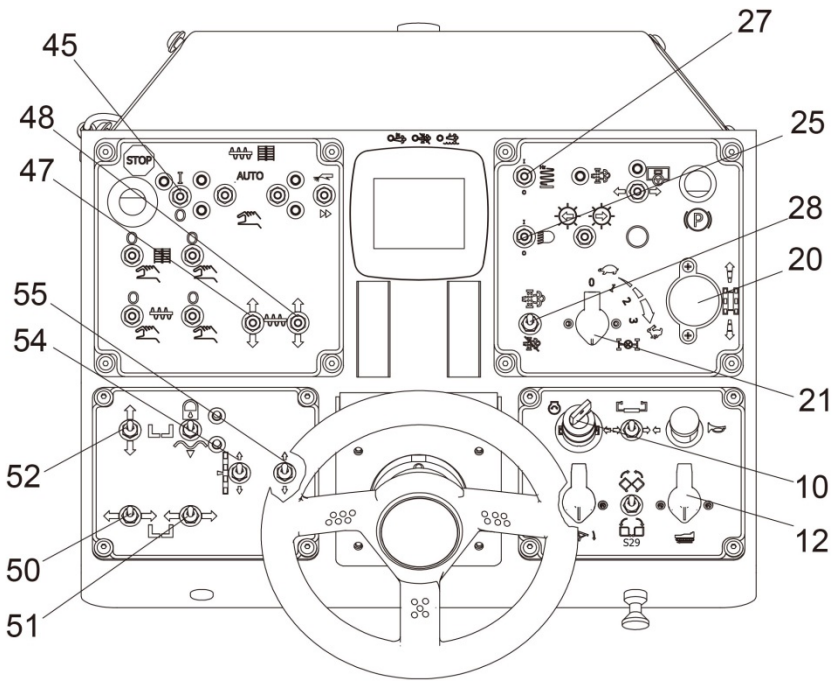
NOTICE

Screed will be switched into "STOP "function automatically.

- Switch off conveyor + auger (45), vibration (27), lights (25) and exhaust system (28).
- Switch ignition (10) off.
- Switch screed heater (system) off.

NOTICE

The screed must be heated up to the correct paving temperature before paving can be resumed.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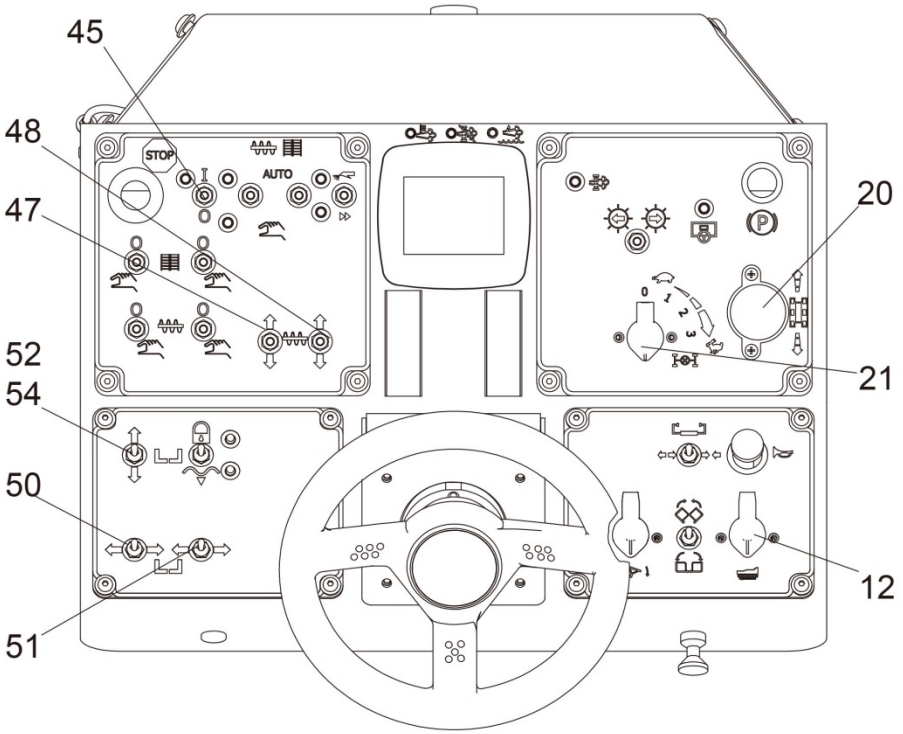
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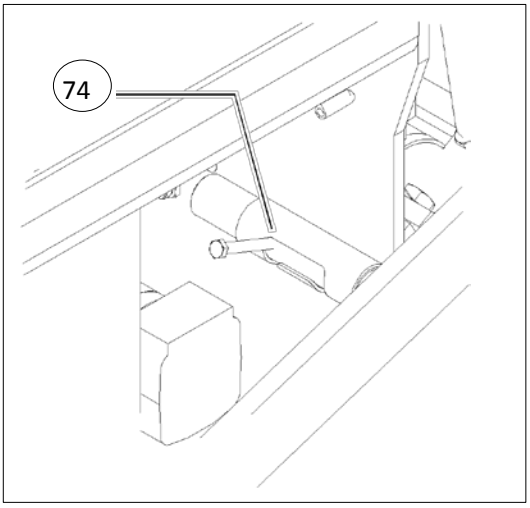
STOP
AUTO

When work is finished

- Run the paver empty, then bring it to a stop.
- Turn drive lever (20) to the center position. Move the preselector (12) and selector (21) to minimum position.
- Switch off conveyor + auger (45), vibration (27), and lights (25).
- Lift the screed by using switch (52).
- Retract the screed parts to the basic screed width with switches (50) and (51).
- Use switch (47) and (48) to lift the auger.
- Where applicable, completely extend the leveling cylinders by using switches (54) and (55).
- Insert the mechanical screed transport safeguard (74) on both screed lifting cylinders.
- While operating the tampers at a low speed, let any material residue drop out.



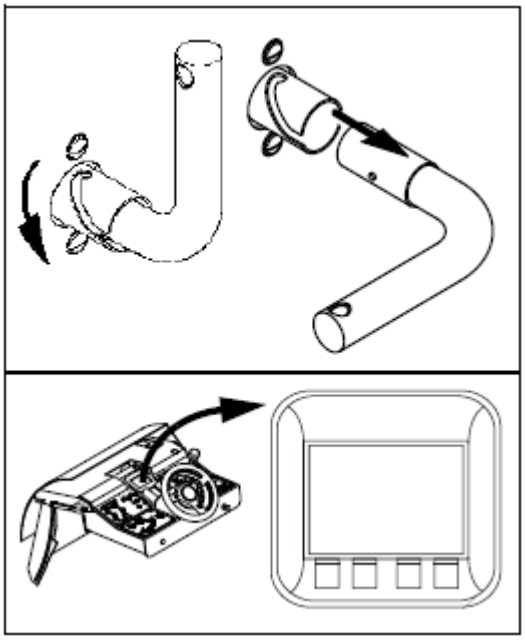
Switch the ignition (10) off

- Switch screed heater (system) off.
- Remove the leveling units and stow them away in their boxes and close the boxes.
- Remove all parts that extend beyond the paver width. Secure them if the paver is to be transported over public roads on a low-bed trailer.

⚠ CAUTION

Do not turn the main switch off until 100 seconds after the ignition has been turned off!

The engine electronics require this length of time to back up data, and such device can prevent the engine's electronic control module (ECM) from sustaining damage and battery discharging.



- Read and check the operating hour meter to determine whether maintenance work must be performed (see chapter F).
- Cover and lock the operation panel, so as to restrain unauthorized persons from starting and operating the machine.
- Remove material residue from the screed and the paver and spray all parts with release agent fluid.

2 Malfunctions

2.1 Problems during paving

Problem	Cause:
Wavy surface ("short waves")	- change in the material temperature, segregation - wrong material composition - incorrect operation of the roller - incorrectly prepared foundation - long idle standing times between loads - grade control reference line is not suitable - grade control jumps to the reference line - grade control toggles between up and down (inertia setting is too high) - bottom plates of the screed are loose - bottom plates of the screed are warped or not uniformly worn - screed does not work in the floating position - too much play in the mechanical screed link/suspension - paver speed is too high - augers are overloaded - changing material pressure against the screed
Wavy surface ("long waves")	- change in the material temperature - segregation - roller has stopped on the hot material - roller has turned or roller speed has been changed too quickly - incorrect roller operation - incorrect foundation preparation - truck brake is applied too tight - long idle standing times between loads - grade control reference line is not suitable - incorrect installation of the grade control - limit sensors are 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

Problem	Cause:
Cracks in the layer (cover the entire width)	- material temperature is too low - change in the material temperature - moisture on the foundation - segregation - wrong material composition - wrong layer height for the maximum grain size - cold screed - bottom plates of the screed are worn or warped - paver speed is too high
Cracks in the layer (entire strip)	- temperature of the material - cold screed - bottom plates are worn or warped - wrong crowning
Cracks in the layer (outer strip)	- temperature of the material - screed extendable parts are incorrectly installed - limit switch is not correctly set - cold screed - bottom plates are worn or warped - paver speed is too high
Layer composition is not uniform	- temperature of the material - change in the material temperature - moisture on the foundation - segregation - wrong material composition - incorrectly prepared foundation - wrong layer height for the maximum stone size - long idle standing times between loads - vibration is too slow - screed extendable parts are incorrectly installed - cold screed - bottom plates are worn or warped - screed does not work in the floating position - paver speed is too high - auger is overloaded - changing material pressure against the screed

Problem	Cause:
Marks in the surface	- truck hits against the paver too much while aligning to the paver - too much play in the mechanical screed link/suspension - truck parking brake is applied - vibration is too high while standing in one spot
Screed does not react to corrective measures as expected	- temperature of the material - change in the material temperature - wrong layer height for maximum grain size - incorrect installation of the grade control - vibration is too slow - screed does not work in the floating position - too much play in the mechanical screed link - paver speed is too high

2.2 Malfunctions on the paver or screed

Malfunction	Cause:	Remedy
At the diesel engine	Diverse	See operating instructions for the engine
Diesel engine does not start	Batteries drained	See ”External starting" (start assistance)
	Other	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	Fill with 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 dirty or plugged (clogged)	Replace the filter
Conveyor or augers run too slowly	Hydraulic oil level in the tank is too low.	Fill with oil
	Power supply is interrupted	Check fuses and cables; replace if necessary
	Sensor is defective	Replace the sensor
	One of the pressure limiting valves is defective	Repair or replace the valves
	Pump shaft broken	Replace the pump
	Limit sensor does not regulate correctly	Check the sensor; replace the sensor if necessary
	Pump is defective	Replace the pump. Check the system for contaminants
	Oil filter is dirty or plugged	Replace the filter
Hopper cannot be swung open	Engine speed is too low	Increase the speed
	Hydraulic oil level is too low	Fill with oil
	Leak in the suction line	Tighten the connections
	Flow rate regulator defective	Replace
	Leaking seals in the hydraulic cylinder	Replace
	Control valve is defective	Replace
	Power supply interrupted	Check fuse and cables; replace if necessary

Malfunction	Cause:	Remedy
Hoppers lowers inadvertently	Control valve is defective	Replace
	Leaking seals in the hydraulic cylinder	Replace
Screed cannot be lifted	Oil pressure too low	Increase the oil pressure
	Leaking seal	Replace
	Screed relieving or charging is switched on	Switch must be in the center position
	Power supply is interrupted	Check fuse and cables; replace if necessary
Lifting Arms cannot be lifted or lowered	Check to see if the switch on the remote control is set to ”auto”	Set the switch to ”manual”
	Power supply is interrupted	Check fuse and cables; replace if necessary
	Switch on the operating panel defective	Replace
	Excess pressure valve defective	Replace
	Flow rate regulator defec- tive	Replace
	Seals defective	Replace
Lifting Arms 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 is on the operating panel)
	Power supply is interrupted	Check potentiometer, cables, connectors; replace if necessary
	Traction drive monitoring defective	Replace
	Electro-hydraulic servo unit of the pump is 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 at hydraulic pumps or engine is 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 for ”engine speed control” defective	Replace (fuse strip on the operating panel)
	Defective power supply cables (cables broken or short-circuits)	Check potentiometer, cables, connectors; replace if necessary

E 01 Set-up and modification

1 Special note on safety

⚠ DANGER

Inadvertently starting the engine, the traction drive, the conveyor, the auger, the screed or the lifting units can be dangerous. Unless specified otherwise, work may only be performed when the engine is not running!

- To protect the paver against inadvertent starting:
  Set the drive lever to the center position and set the preselector to zero; if applicable, pull out the ignition key and the battery main switch
- Secure lifted machine parts (e.g. screed or hopper) against lowering by means of mechanical supports.
- Replace parts or have them replaced as required.

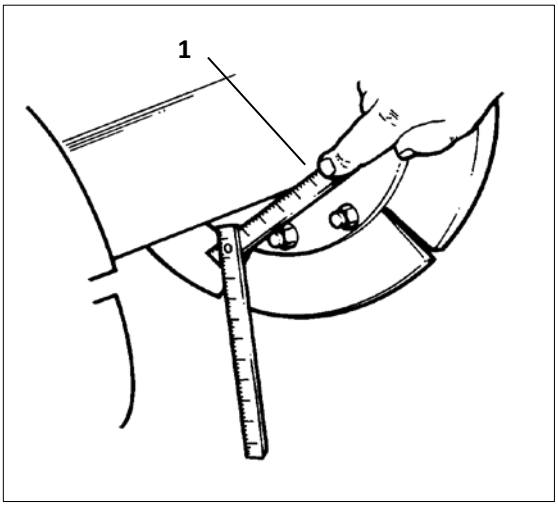
⚠ WARNING

When connecting or disconnecting hydraulic hoses and when working on the hydraulic system, hot hydraulic fluid can escape at a high pressure.

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

- Mount all protective and safety devices before re-commissioning the paver.
- The walking platform must always reach over the entire width of the screed. The hinged walkway (optional 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 mix of materials, when working with layer thicknesses of up to 10 in. (25.4 cm), the height of the distribution auger (1). – measured from its bottom edge – should be around 5 cm (2 inches) above the material layer thickness (depending on its mix of materials).

Example:
Layer height 3 in. (7.6 cm)
Adjustment: 5 in. (12.7 cm) from the ground

An incorrect height adjustment can result in the following problems

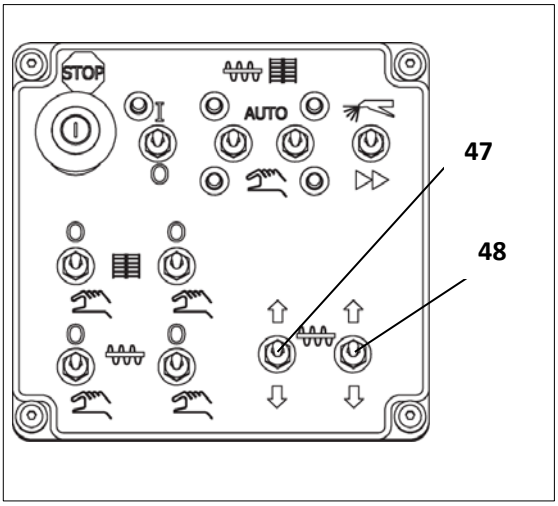
- Auger too high:
  Too much material in front of the screed; material overflow. When operating with larger widths, segregation and traction problems may occur
- Auger too low:
  Not enough material that can be pre-compacted by the auger. Irregularities resulting from this cannot be completely compensated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

2.2 Auger crossbeam – Hydraulic height adjustment

- Measure the set height of the auger crossbeam (left and right).

NOTE:
Equally press both switches/buttons (47) / (48) so that the auger beam stays level.

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



2.3 Auger extension

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

NOTICE

Auger and screed extension must match. See the operating instructions for the appropriate screed, chapter “Set-up and modification”, especially:

- Screed extension chart
- Auger extension chart

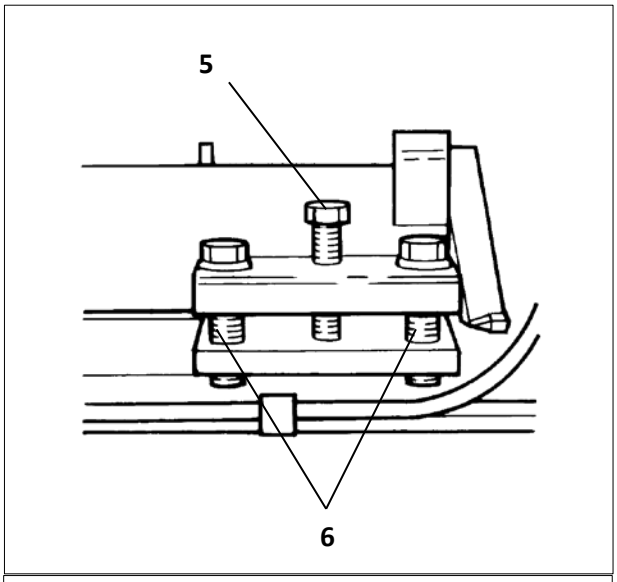
To attain the desired working width, the respective screed extensions, side plates, augers, tunnel plates or cut-off shoes must be mounted

For widths of more than 11.5 ft. (3.5 m.), the auger should be fitted with extension parts on both sides to improve material distribution and to reduce the wear

⚠ DANGER

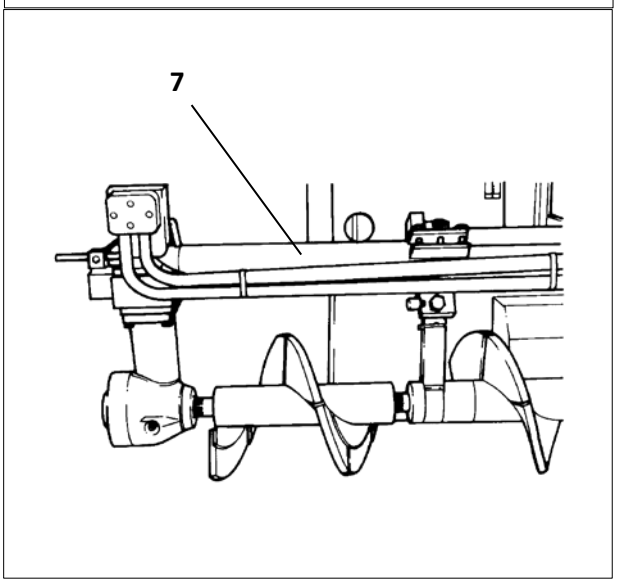
The diesel engine must be switched off whenever work is performed on the auger as there is a danger of being pulled into rotating parts. This could cause severe injury or death

2.4 Mounting extension parts



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

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



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

- Install auger so pick end of auger is “IN TIME” with the discharge of the main auger. This is called “IN TIME” or “NORMAL” set up and is used to prevent segregation (or separation) of material. The auger pickup can be mounted 180 degrees away from the discharge. This called “OUT OF TIME” and is used with large or rounded stone to prevent segregation. If already mounted and segregation occurs in the mat at extension to main connection, move the auger pickup 180 degrees from the current position.
- 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 treads of the augers match.
- Remove the expansion screw (5). Then tighten the clamping screws (6). Finally tighten the expansion screw by hand.

⚠ CAUTION

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.

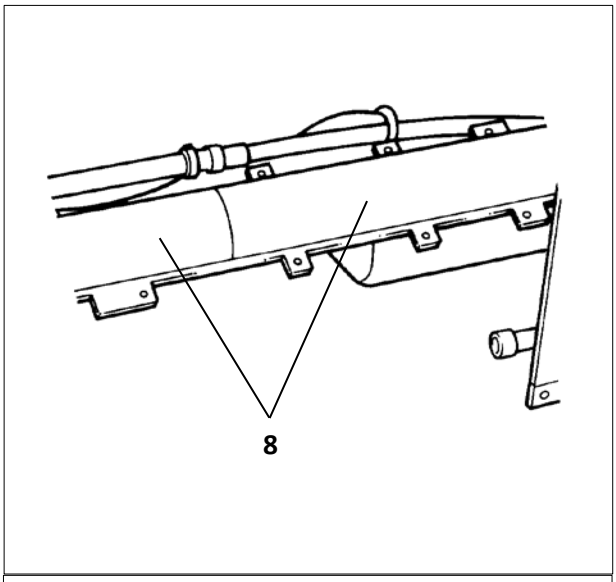
⚠ DANGER

When clamped insufficiently, the telescopic tube can slide out of the support tube and can cause severe injury or death as well as damage to the machine!

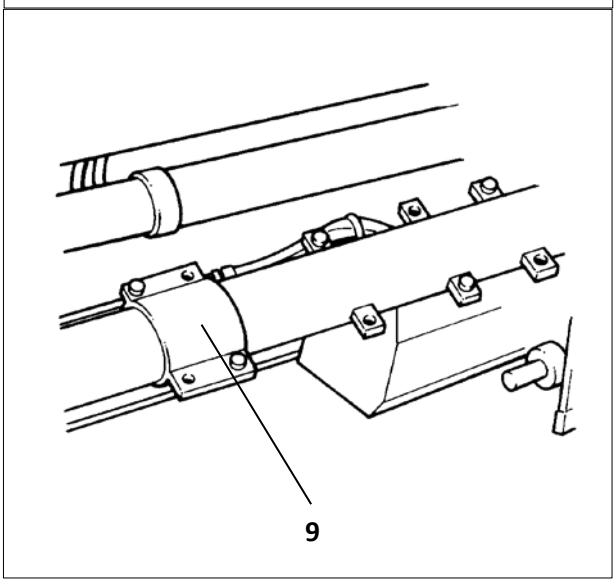
2.5 Mounting support tube extensions

If the working width exceeds 23 ft. (7.01 m.) an auger crossbeam extension must be mounted.

The support tube extension of the auger cross-beam consists of two halves (8) and is attached to the existing support tube by using a total of 5 screws. After the two halves have been screwed to the support tube, they also must be linked to each other by means of screwed connections



Clamping of the telescopic tube occurs by tightening the screwed connections (9) linking the support tube extension.



If the working width exceeds 14 ft. (6.26 m.) the hydraulic hoses (10) for the auger motors must be replaced with longer ones.
These long hoses are included in the scope of delivery for this working width.

⚠ DANGER

When connecting or disconnecting hydraulic hoses, hydraulic fluid can spray out at a high pressure and can cut or enter the skin.
Switch the paver off and de-pressurize the hydraulic circuit! Protect your eyes!

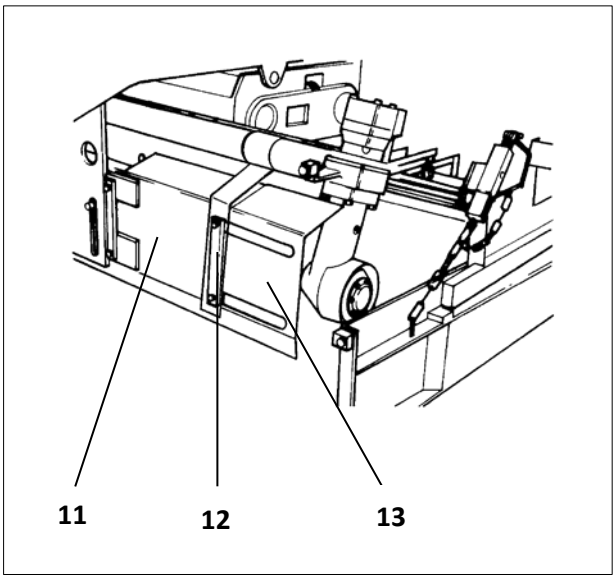
⚠ CAUTION

When installing the hoses, make sure that the area around the connections is clean.
Any contaminants that enter the hydraulic system can cause damage to the hydraulic system.

2.6 Installing tunnel plates

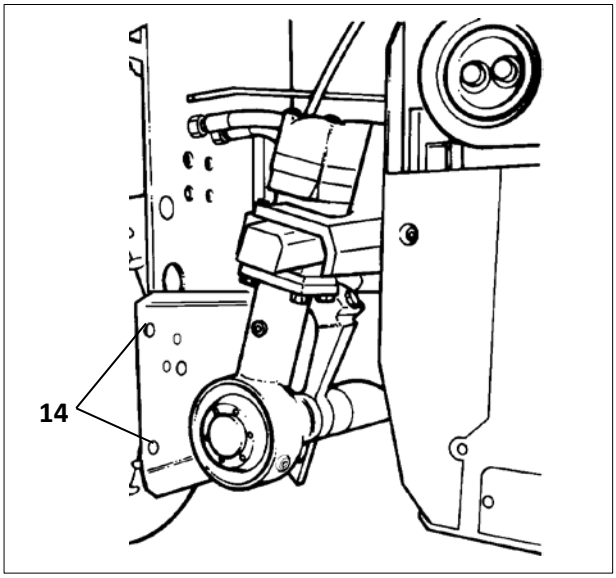
To ensure an optimum material flow - especially in the case of large paving widths – so-called tunnel plates (11) must be installed.
They are located directly in front of the auger distributor and – in conjunction with the auger – is an ideal system for conveying the material.

When operating with widths of more than 14.4 ft (4.4 m), two or more combined tunnel plates (13) must be used.
In this case, additional stabilizing supports (12) must be attached to the telescopic tube.



The tunnel plates must be directly screwed to the receptacles provided for this purpose (14); they are located on the auger frame sides and can 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.



2.7 Installation additional braces

When operating with width of more than 25 ft. (7.62 m.) the augers must be provided with an additional support.

To do so, attach two braces on both the left-hand and the right-hand side, between the tunnel plate support and the bracket provided on the paver.

The braces are included in the scope of delivery for this working width.

3 Screed

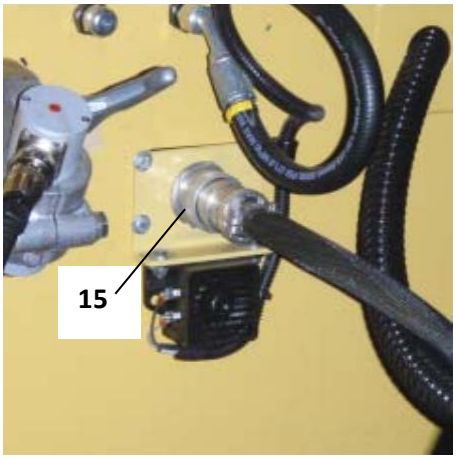
The operating instructions for the screed explains what is required for mounting, setting up and extending the screed

4 Electrical connections

Ensure the following connections have been made once the screed has been mounted and set up.

4.1 Remotes from screed to paver

The screed plugs into the back of the paver socket (15). The paver and the screed communicate through this connection.



4.2 Right hand conveyor sensor control

The conveyor sensor connects to the DC control box. The control box is connected to the right remote by a cable through the rear bulkhead. The remote then sends the signal from the sensor to the paver thru the cable shown.

4.3 Right hand auger sensor control

The auger sensor connects to the DC control box. The control box is connected to the right remote by a cable through the rear bulkhead. The remote then sends the signal from the sensor to the paver thru the cable shown.

4.4 Left hand conveyor sensor control

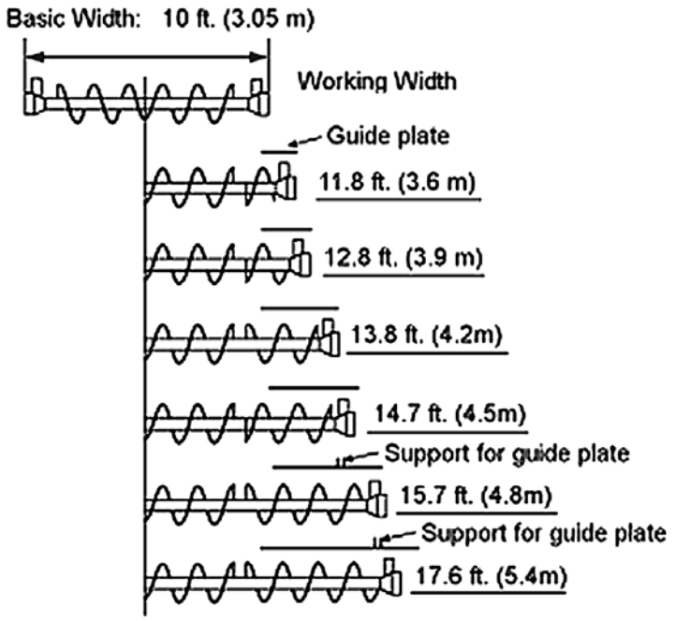
The conveyor sensor connects to the DC control box. The control box is connected to the right remote by a cable through the rear bulkhead. The remote then sends the signal from the sensor to the paver thru the cable shown.

4.5 Left hand auger sensor control

The auger sensor connects to the DC control box. The control box is connected to the right remote by a cable through the rear bulkhead. The re- mote then sends the signal from the sensor to the paver thru the cable shown.

4.6 Auger Chart

Auger ext. parts per side							
Auger			Guide plate				
1	2	3	1	2			
11.4 in. (290 mm)	17.0 in. (434 mm)	34.1 in. (866 mm)	11.75 in. (298 mm)	19.75 in. (502 mm)	Support for tunnel extensions	Hydr. Hose as required	Auger extension width (per side)
1			1			3	11.4 in. (289.6 mm)
	1			1		3	17.0 in. (431.8 mm)
2			1	1		3	22.8 in. (579.1 mm)
1	1		1	1		3	28.4 in. (721.4 mm)
		1		2	1	3	34.1 in. (866.1 mm)
1		1	1	2	1	3	45.5 in. (1155.7 mm)



F 1.0 Maintenance

1 Notes regarding safety

⚠ WARNING

Maintenance work: Maintenance work may only be carried out when the engine is not running.

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

- Set the drive lever to the center position and the speed preselector to zero.
- Remove the ignition key and the battery main switch,.

⚠ WARNING

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

⚠ CAUTION

Spare parts: Use only approved parts and install them according to the specifications! If no doubt, contact the manufacturer!

⚠ CAUTION

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

⚠ WARNING

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

⚠ WARNING

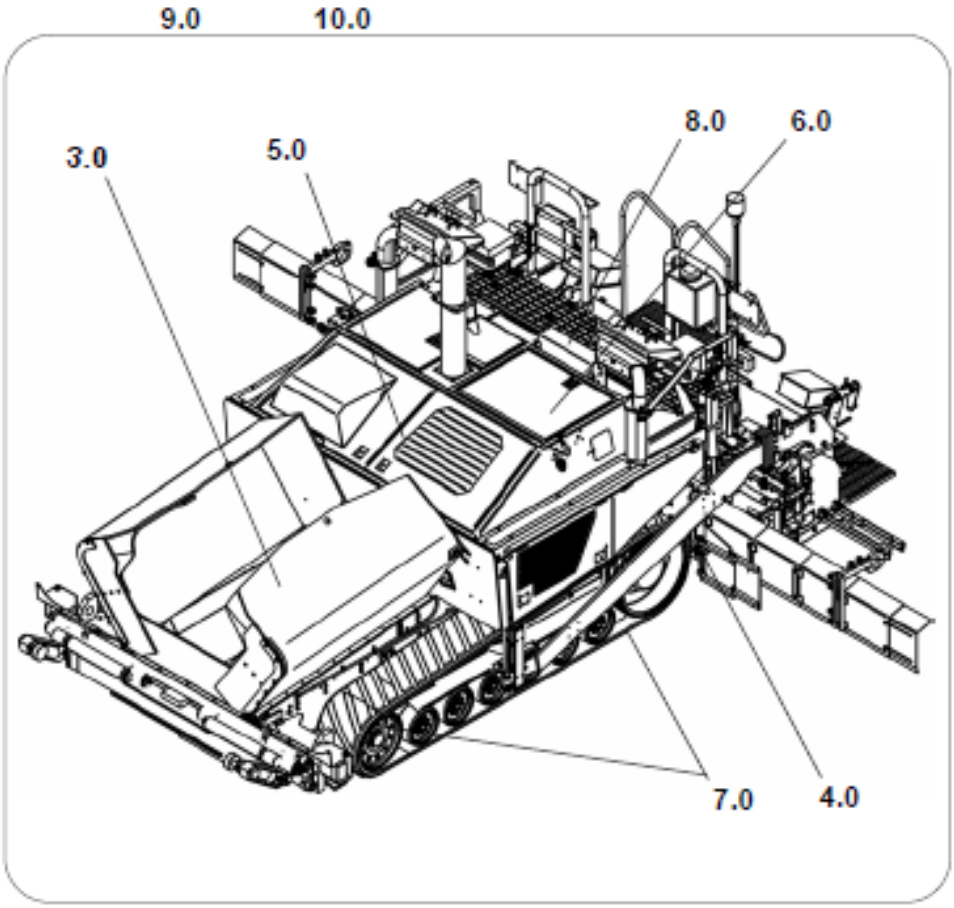
Working in closed environments: Always run the engine in a well-ventilated area.

NOTICE

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

F 2.0 Maintenance overview

1 Maintenance overview

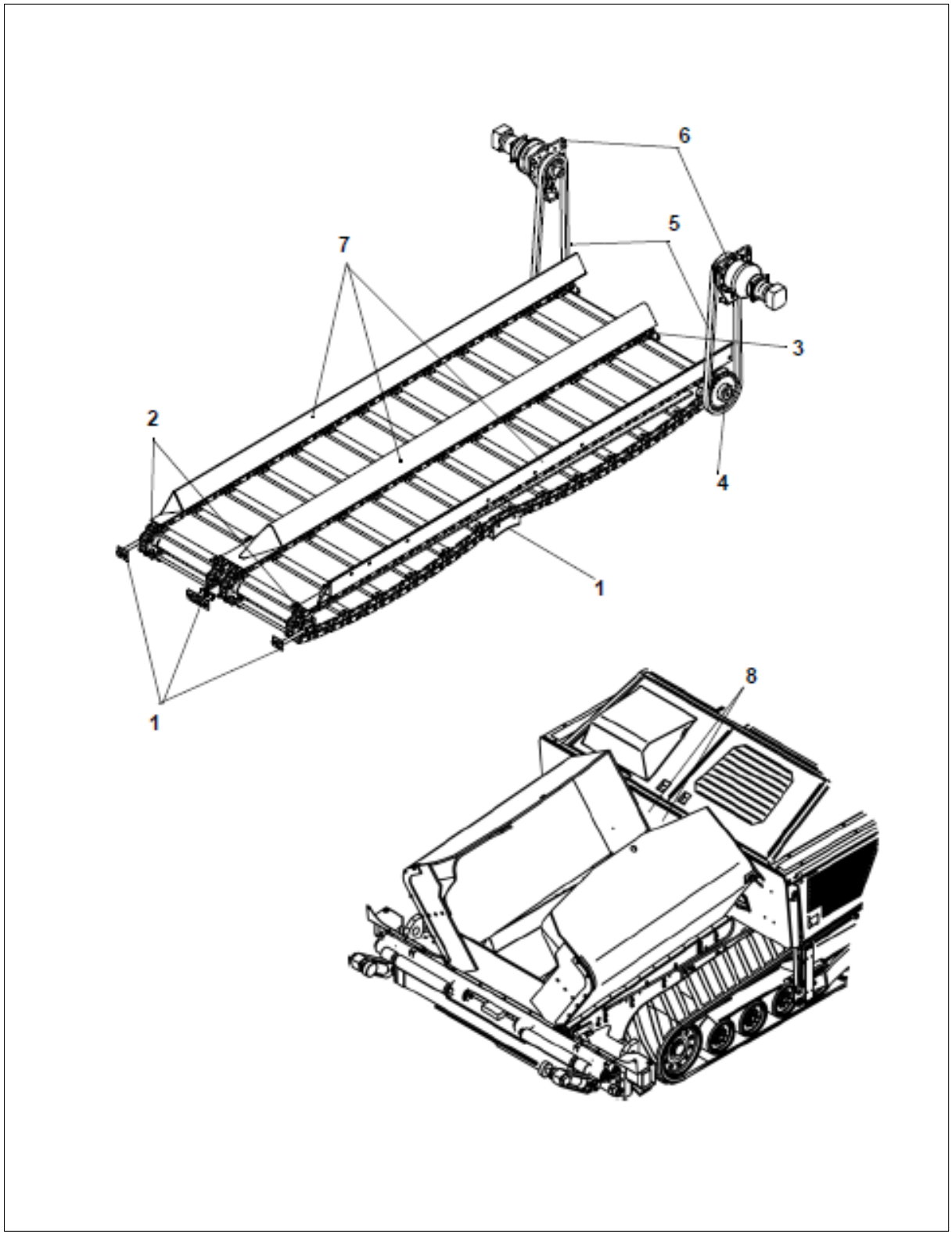


Assembly	Chapter	Maintenance required after the following service hours									
		10	50	100	250	500	1000 / annually	2000 / every 2 years	5000	20000	If necessary
Conveyor and Hopper	F3.0		■	■	■		■	■			■
Auger	F4.0		■	■	■		■	■			■
Engine	F5.0	■			■	■	■	■			■
Hydraulics	F6.0	■	■			■	■	■			■
Track	F7.0	■	■		■		■				■
Electronics	F8.0	■		■	■		■		■	■	■
Lubrication points	F9.0		■					■			■
Checking/decommissioning	F10.0	■					■				■

Maintenance required	■

F 3.0 Maintenance – Conveyor and Hopper

1 Maintenance – Conveyor and hopper



1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	1000	250	500	1000 / year	2000 / 2 years	as required		
1		■							- Checking the tension of the conveyor chain	
								■	- Adjusting the tension of the conveyor chain	
			■						- Conveyor chain - Check chain	
								■	- Conveyor chain - Replace chain	
						■			- Clean Conveyor chain supports	
2		■							- Conveyor tensioning sprocket - Lubricate grease zert	
3		■							- Conveyor bearing - Lubricate grease zert	
4		■							- Conveyor drive bearings - Lubricate grease zert	
5			■						- Conveyor drive / drive chains Check chain tension	
								■	- Conveyor drive / drive chains Set chain tension	
6				■					- Conveyor drive - planetary gear - Oil level check	
								■	- Conveyor drive - planetary gear - Fill with oil	
			▲				■		- Conveyor drive - planetary gear Oil change (▲ indicates initial break-in period)	
7						■			- Check conveyor chain guards, conveyor plates	
								■	- Replace conveyor chain guards, conveyor plates	
8		■							- Hopper cylinders - Lubricate grease zerts	

Maintenance	■
Maintenance during break-in period	▲

1.2 Points of maintenance

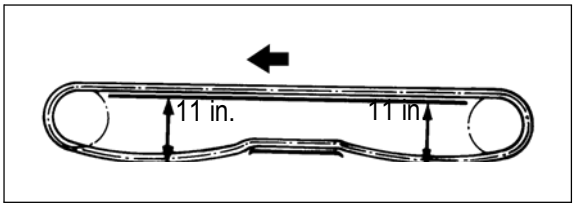
Chain tension of the conveyor (1)

Checking the track tension:

For daily inspection look straight through under the bumper. The chain must not hang below the bottom edge of the bumper.
Should readjustment be necessary, measure the slack unloaded from the bottom edge of the floor plate to the bottom edge of the chain (see the figure). Also conveyor chain supports should be inspected daily and can be seen by looking straight through under the bumper. Clean the support every 1000 hours of operation and before adjusting the tension.

⚠ CAUTION

The chains should not be too tight or too slack. If the chain is too tight, material between the chain and the sprocket wheel can lead to stoppage or breakage.
If the chain is too slack, it may get stuck in the protruding objects and be damaged.



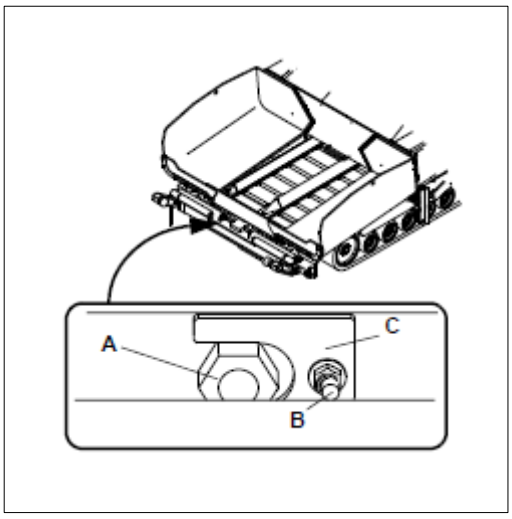
NOTICE

With the paver resting on a level surface the sag of both portions should be a minimum of 11 inches!

Checking the chain tension:

Chain tension can be adjusted with 4 tension-screws (A). The tension-screws are located at the front of the crossbeam.

- Loosen the bolts (B) and remove the locking clamp (C).
- Set the necessary chain tension by turning the tension-screws (A).
- Remount the locking clamp (C) with the bolt (B).



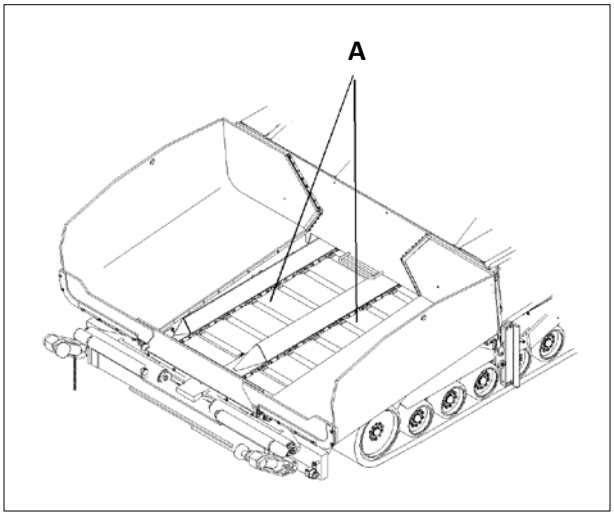
Check / replace chain:

NOTICE

When the conveyor chains (A) have stretched so far that they can no longer be adjusted, they must be replaced.

⚠ WARNING

Chain links must not be removed to shorten the chain!
Shortening the chains would lead to the destruction of the drive sprockets!
Adjust the tensioning instead!



⚠ CAUTION

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

- Conveyor chain
- Conveyor chain guards
- Conveyor chain tensioning sprockets
- Conveyor gear drive sprockets

NOTICE

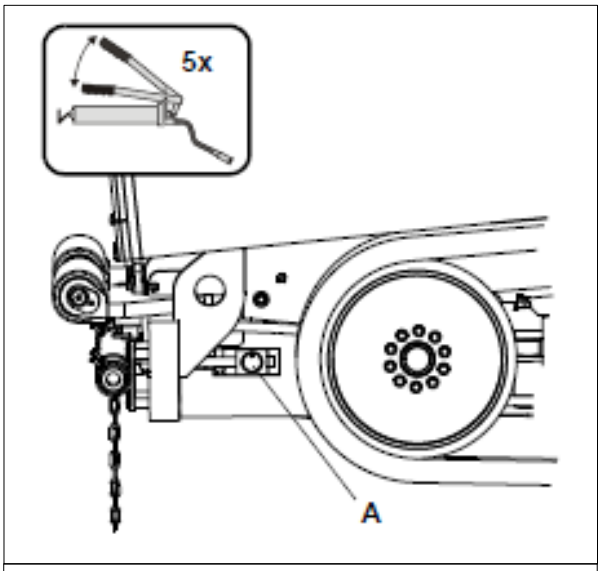
Contact your Dynapac customer service representative for support during maintenance, repair and the replacement of worn parts!

Conveyor tensioning sprocket bearings (2)

The tensioning sprocket bearings for the conveyors are lubricated at the grease zerts (A) located behind the crossbeam.

The center bearings are lubricated at the outer lubricating grease zerts.

Pump 5 strokes of grease with a grease gun!



Conveyor bearing block (1)

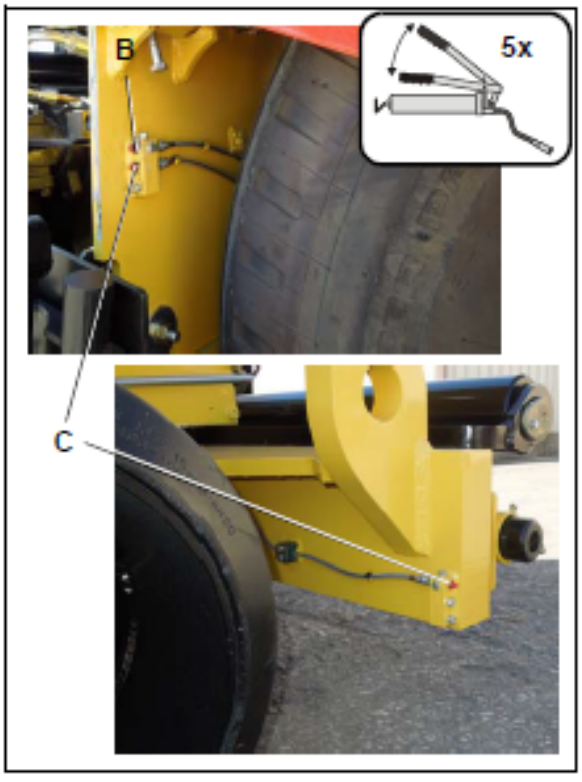
The center conveyor bearing block is lubricated with the grease zert (B) located inside the rear crossbeam, r. h. side.

Pump 5 strokes of grease with a grease gun!

Conveyor drive bearing (4)

The conveyor drive bearings are lubricated with grease zerts (C) located inside the front and rear crossbeam, r. h. and l. h. side.

Pump 5 strokes of grease with a grease gun!



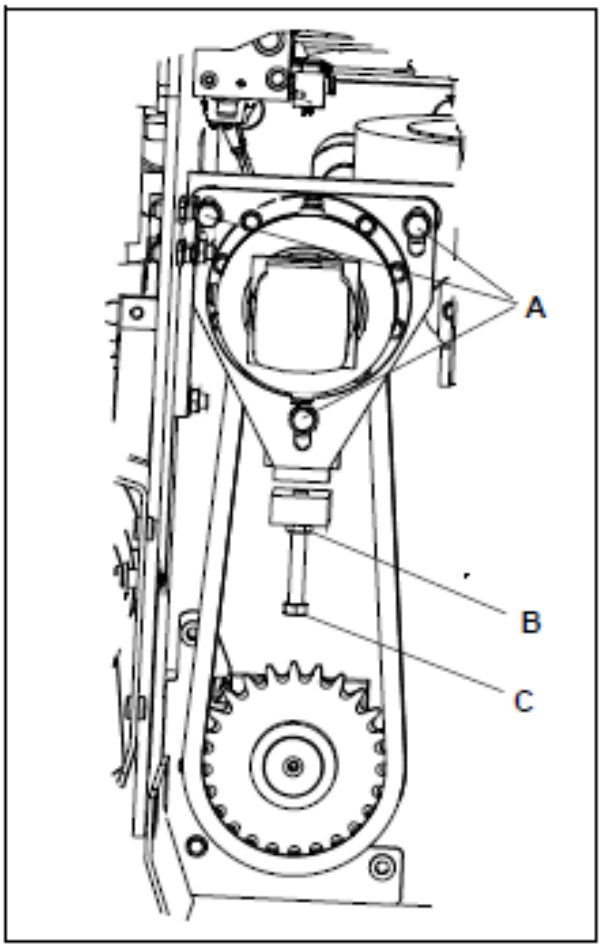
Conveyor drive – (5) drive chains

Checking for chain **tension**:

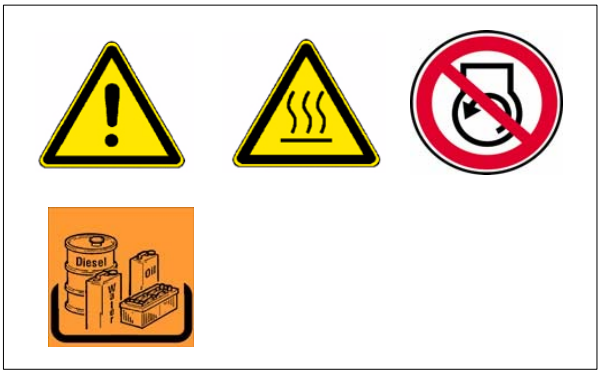
- In normal conditions, the chain has to have approximately .4 to .6 inch (10 – 15 mm) of play.

To set the chain **tension**:

- Loosen the locking bolts (A) and the lock-nut (B).
- Set the necessary chain tension with the tension-screw (C).
- Tighten the locking bolts (A) and lock-nut (B) again.



Conveyor drive – (6) planetary drive (Left/right)



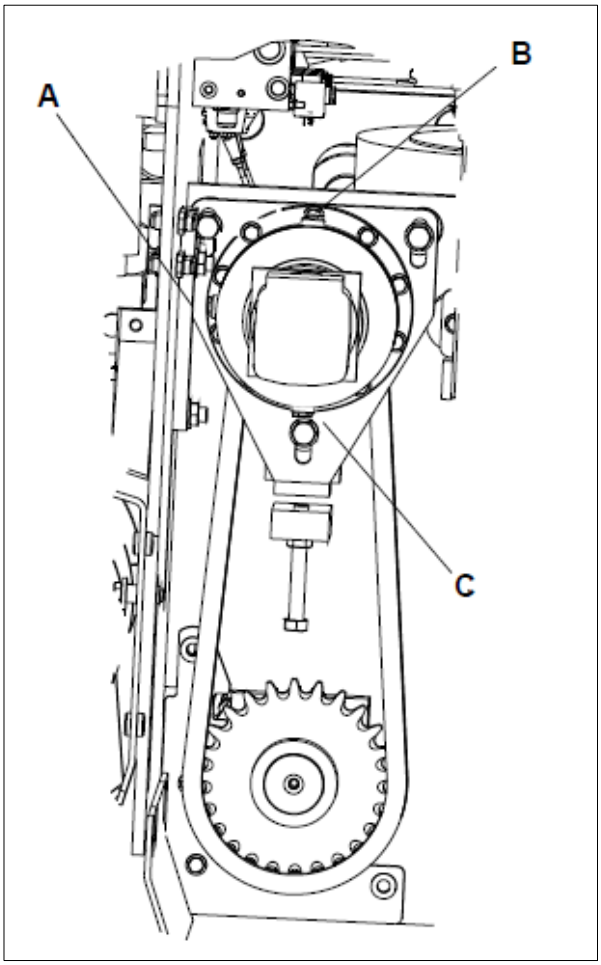
- To check the oil level, unscrew the inspection plug (A).

NOTE:

For proper oil level, the oil must be at the lower edge of the inspection port or a little oil flows from the hole.

To **add** oil:

- Check oil at oil level site glass (A).
- Fill with oil of the correct specification through port (B) until the oil level reaches the middle of the oil level site glass (A). Use only recommended oil.



Oil change:

NOTE:

Change the oil when the engine is at operating temperature.

- Remove the filling plug (B) and the drain plug (C).
- Drain the oil.
- Return plug (C).
- Fill oil through the filling port until the oil level reaches the middle of the oil level site glass (A).
- Replace the plug at the filling port (B).

⚠ CAUTION

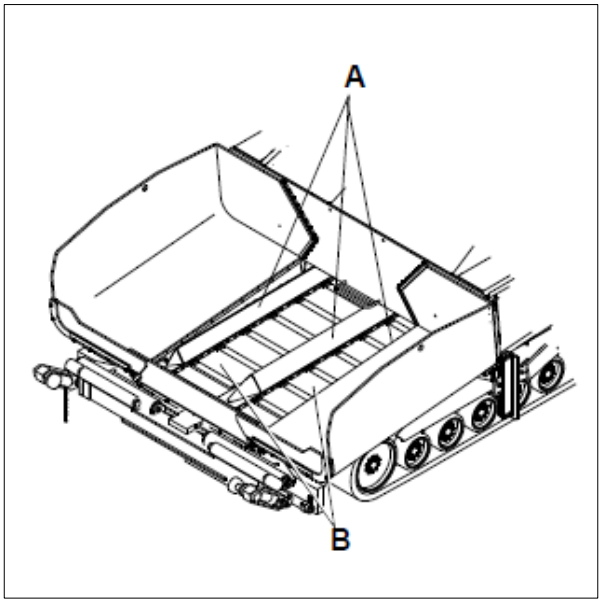
Make sure that no pollution or foreign matter gets into the drive.

Conveyor chain guards / conveyor plates (7)

NOTE:
When the lower edges of the conveyor chain guards (A) are worn or reveal holes, they must be replaced.

⚠ CAUTION

The conveyor chain is not protected when the conveyor chain guards are worn!



- Remove conveyor chain guard bolts.
- Remove the conveyor chain guards from the material tunnel.
- Install new conveyor chain guards with new bolts.

NOTE:
The conveyor plates (B) must be replaced when the wear limit of .2 inch (5 mm) in the rear area beneath the chain has been reached.

⚠ CAUTION

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

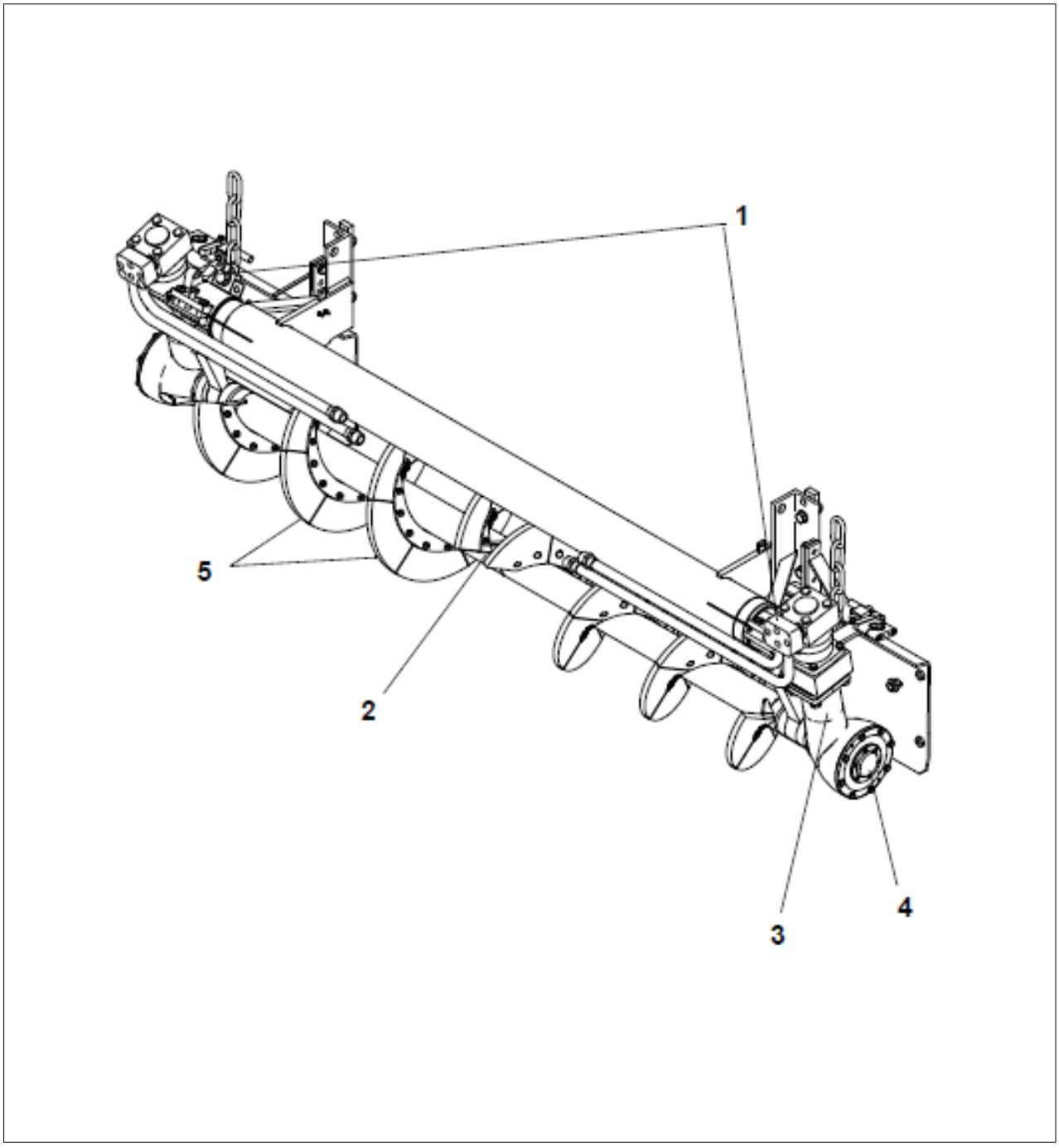
- Conveyor chain
- Conveyor chain guards
- Conveyor plates
- Conveyor chain tensioning sprockets
- Conveyor gear drive sprockets

NOTICE

Contact your Dynapac customer service representative for support during maintenance, repair and the replacement of worn parts!

F 4.0 Maintenance – Auger

1 Maintenance – Auger



1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1		■							- Auger - outer bearing Lubrication	
2				■					- Auger central bearing Lubrication	
3		▲				■			- Auger drive neck bearing Lubrication	
4		▲		■					- Auger bevel gear oil level check	
								■	- Auger bevel gear topping up the oil	
						■			- Auger bevel gear oil change	
5			■						- Auger wear plates (auger segments) Check wear	
								■	- Auger wear plates (auger segments) Replace auger blade	

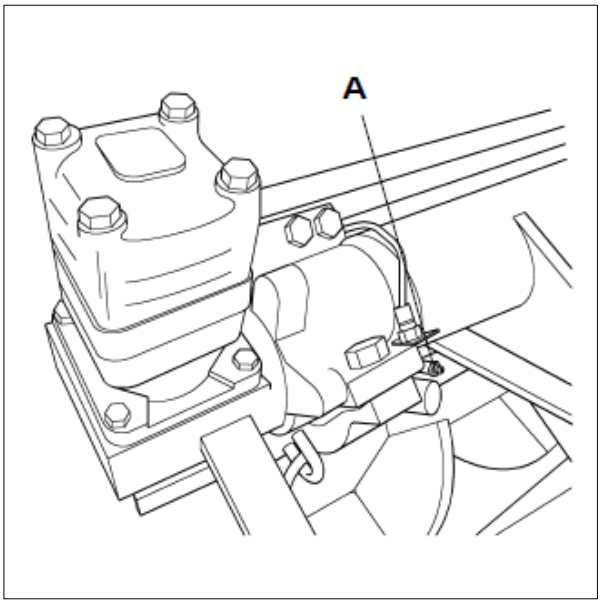
Maintenance	■
Maintenance during run-in period	▲

1.2 Points of maintenance

Auger – outer bearing (1)

The grease zerts (A) are located on each side on the top of outer bearing. These zerts must be lubricated each time work is finished.

NOTICE



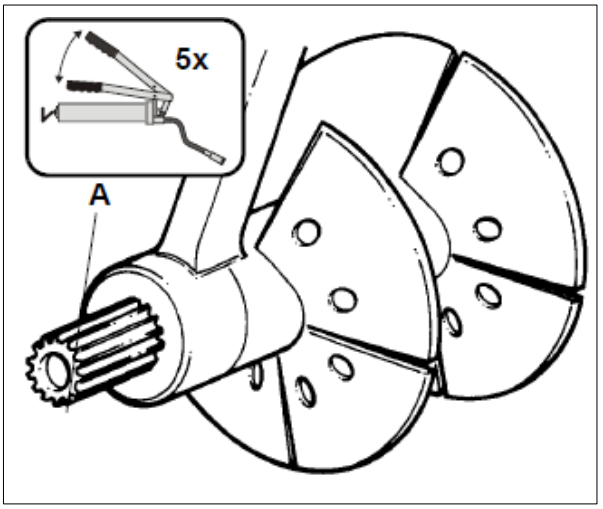
The outer bearings of the auger must be lubricated when hot, so that the eventual bitumen residue is expelled.

Pump 5 strokes of grease with grease gun!

Auger middle bearing (2)

The central bearing (A) is lubricated on the LH-side of the auger.
To do so, slide the bevel gear out.

NOTICE



The central bearing (A) is lubricated when hot, so that the eventual residue is expelled.

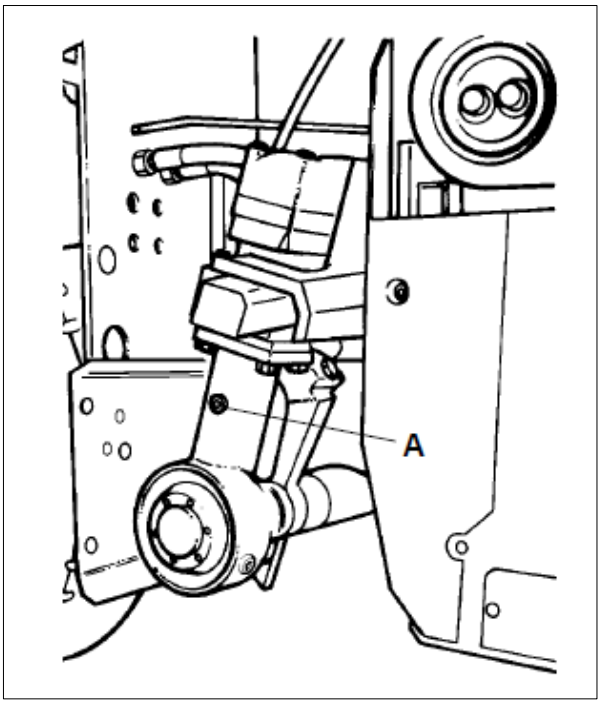
Pump 5 strokes of grease with grease gun!

Auger – drive gear neck bearing (3)

Remove the hexagonal plug (A) in the neck of the drive. Replace the plug under it with an extended grease zert 10 x 1.

Use a grease gun to pump about 10 strokes of grease.

Next, unscrew the grease zert and screw back in both plugs. The neck of the drive is sealed downloads and is lubricated with grease gun.



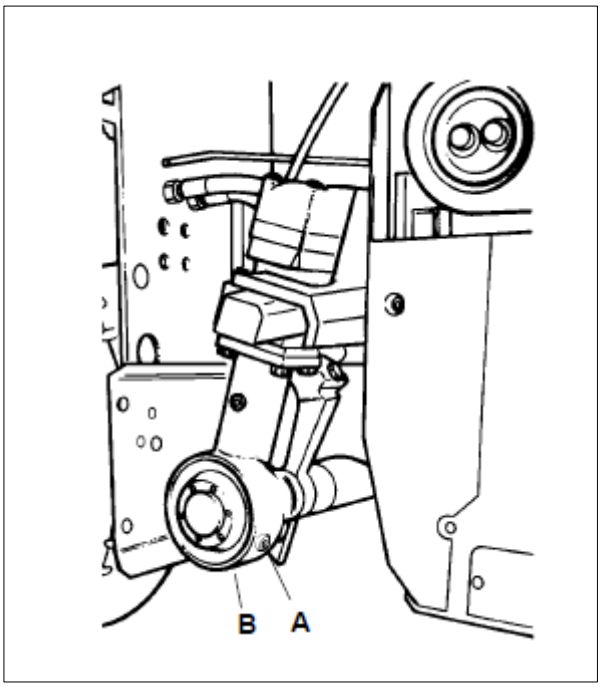
Auger bevel gear (on the RH and LH sides) (4)

- To **check the oil level**: unscrew the inspection / filling plug (A).

NOTE:
The oil level is full when the oil is at the lower edge of the inspection port or a little oil flows from the hole.

To **add** oil:

- Remove the inspection / filling plug (A).
- Add the proper oil through port (A) until the oil level reaches the power edge of the inspection hole (A). Use only approved oil.
- Replace the inspection / filling plug (A).



To **change** the oil:

NOTE:
Change the oil when the engine is at operating temperature.

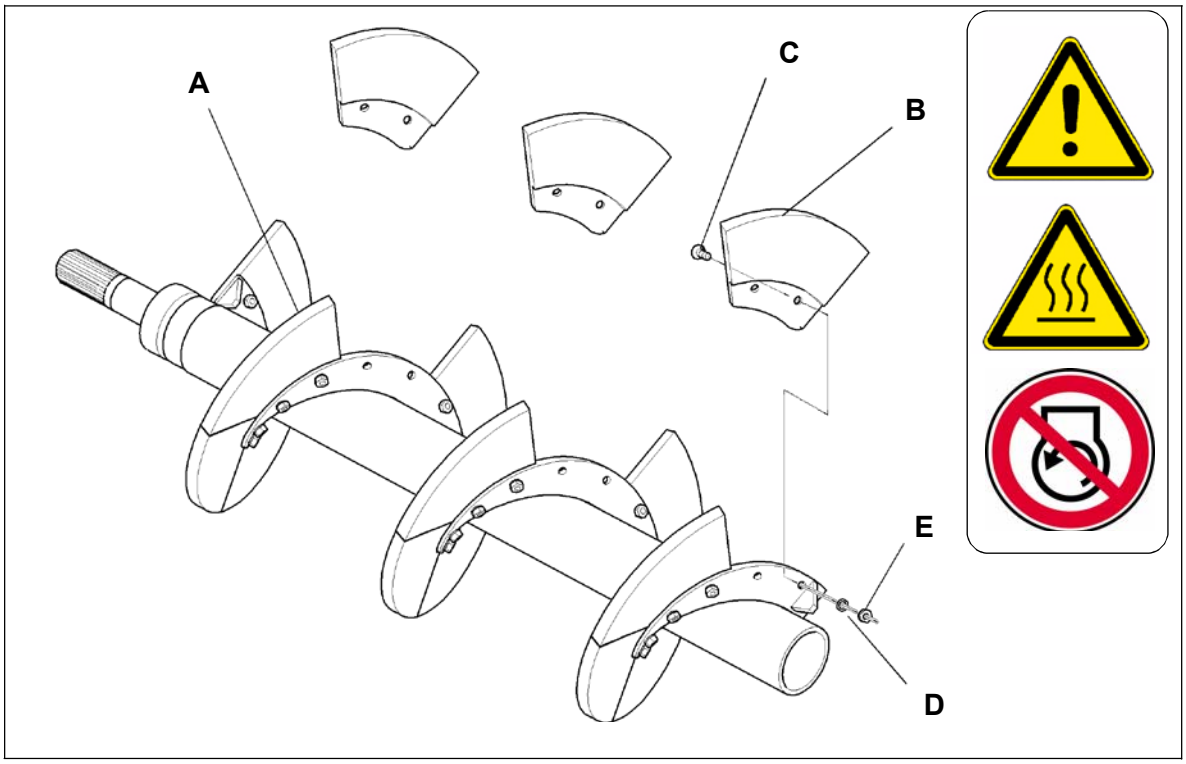
- Remove the inspection / filling plug (A) and the drain plug (B).
- Drain the oil.
- Return the oil drain plug (B) and tighten.
- Fill oil, using an approved fluid, through the filling port (A) until the oil level reaches the lower edge of the inspection hole (A).
- Replace the inspection / filling plug (A).

⚠ CAUTION
Keep the work area clean. Clean any spills!

Auger blade (5)

NOTICE

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



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

⚠ CAUTION

Sharp-edged parts can cause personal injury!

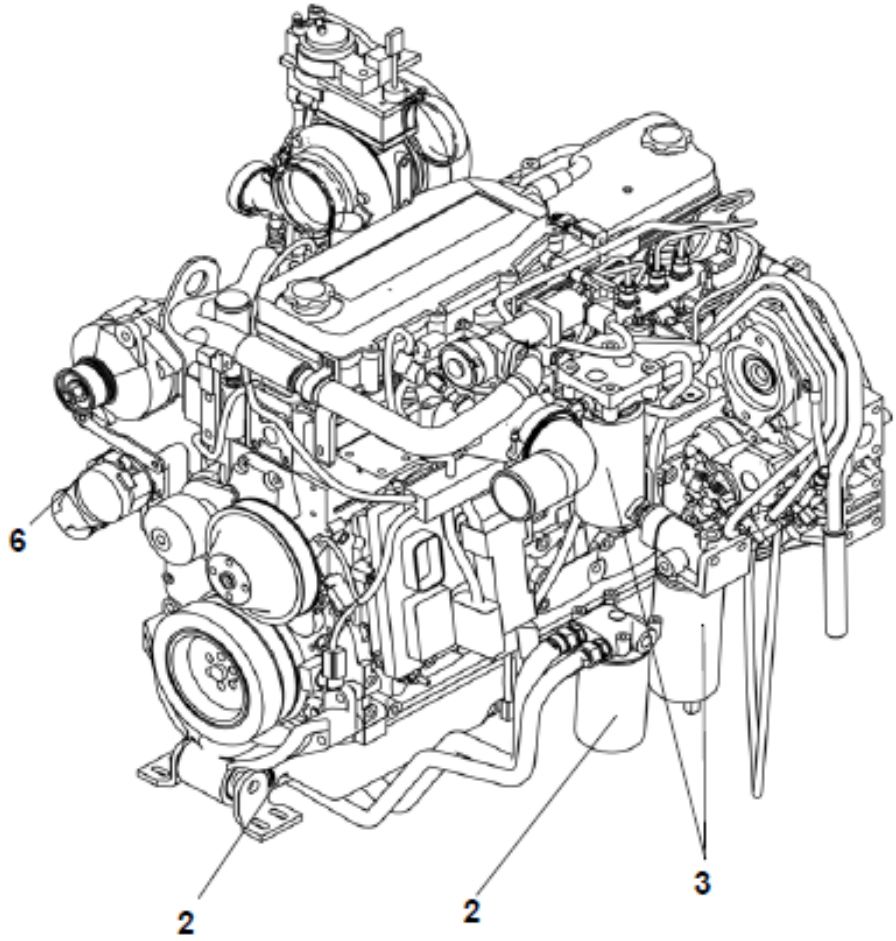
⚠ WARNING

Auger blades must be installed without any play and the contact surfaces must be dirt-free!

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

F 5.0 Maintenance – Engine

1 Maintenance – engine sub-unit



1 - Fuel Tank (Not Shown)
4 - Air Cleaner (Not Shown)
5 - Radiator (Not Shown)

NOTICE

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

1.1 Maintenance intervals

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

Maintenance	■
Maintenance during run-in period	▲

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
4	■								- Engine air filter Check the air filter	
	■								- Engine air filter Empty the dust collecting bin	
								■	- Engine air filter Clean / Replace the filter cartridge	
5	■								- Engine cooling system Inspection the radiator fins	
								■	- Engine cooling system Clean the radiator fins	
	■								- Engine cooling system Check the level of the coolant.	
								■	- Engine cooling system Fill with coolant	
							■		- Engine cooling system Changing the coolant	
					■				- Engine cooling system Check coolant level (additive concentration)	
6						■			- Engine drive belt Checking of drive belt	
								■	- Engine drive belt Tightening the drive belt	
						■			- Engine drive belt Replace drive belt	

Maintenance	■
Maintenance during run-in period	▲

1.2 Points of maintenance

Engine fuel tank (1)

NOTE:
There is one fuel tank on each side of the machine.

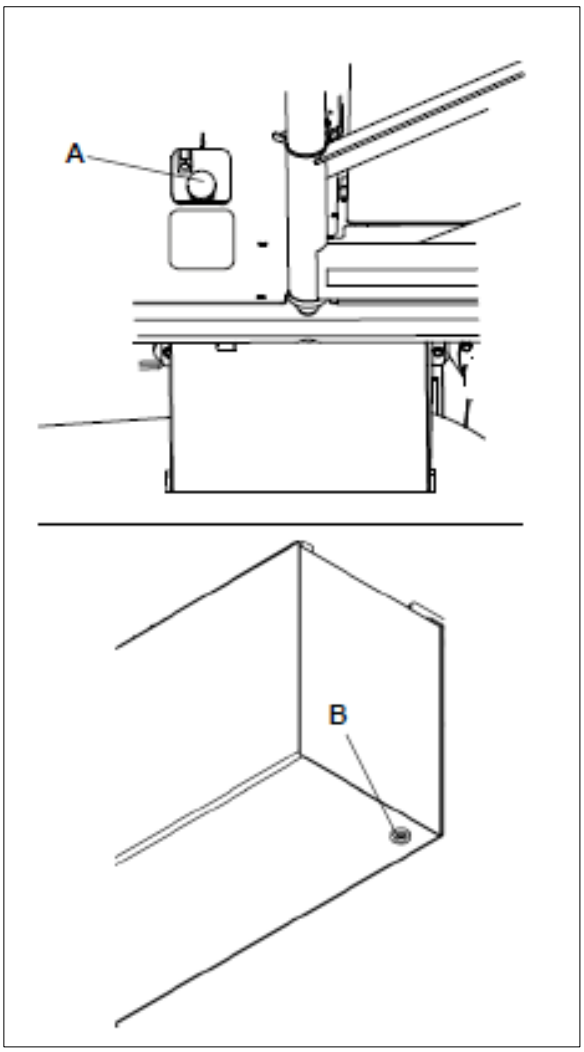
- Check the fuel level on the operating panel (check display).

NOTICE

Fill the fuel tank before each work shift to prevent the fuel system of running dry. If the tank is ran dry, the system will have to be bled causing work delay

To **add** fuel:

- Unscrew cap (A) (under tank covers, r. h. paver side).
- Fill with fuel through the filler neck until the tank is full.
- Replace the cap (A).
- Repeat the process for the other tank.



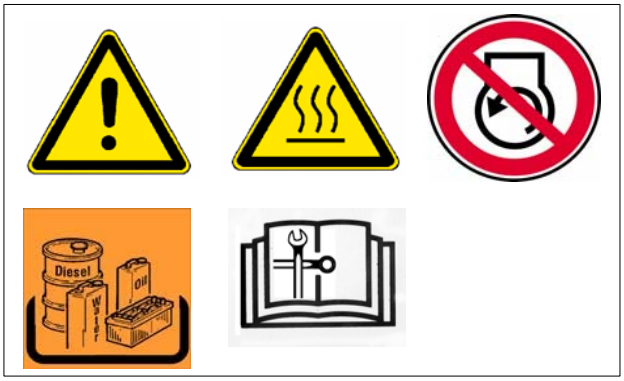
Cleaning the fuel tanks:

- Unscrew the plug (B) at the bottom of the tank and drain about 1 qt. (1 L) of fuel into an environmentally safe collection pan.
- After draining, add a new seal ring to the plug and screw the plug back in place.

Repeat the process for the second fuel tank.

Engine lube-oil system (2)

Check oil level



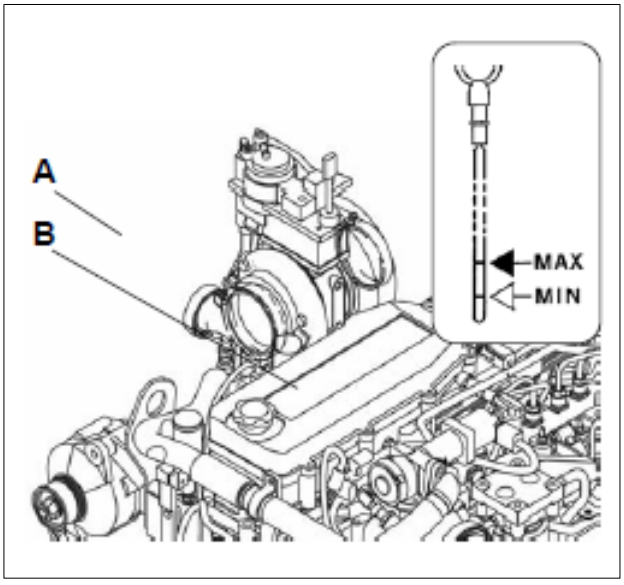
Check that the oil level is between the maximum and minimum lines on the dipstick (A).
NOTE:
Check the oil level with the paver parked on a flat surface!

⚠ WARNING

Some state and federal agencies in the United States of America have determined that used engine oil can be carcinogenic and can cause reproductive toxicity. Avoid inhaling vapors, ingestion and common prolonged contact with used engine oil. Do not allow used oil to drain into the ground. Always used proper procedures to dispose of the oil.

⚠ WARNING

To avoid personal injury, avoid direct contact of hot oil with your skin.



⚠ CAUTION

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

To **add** oil:

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

Oil change:

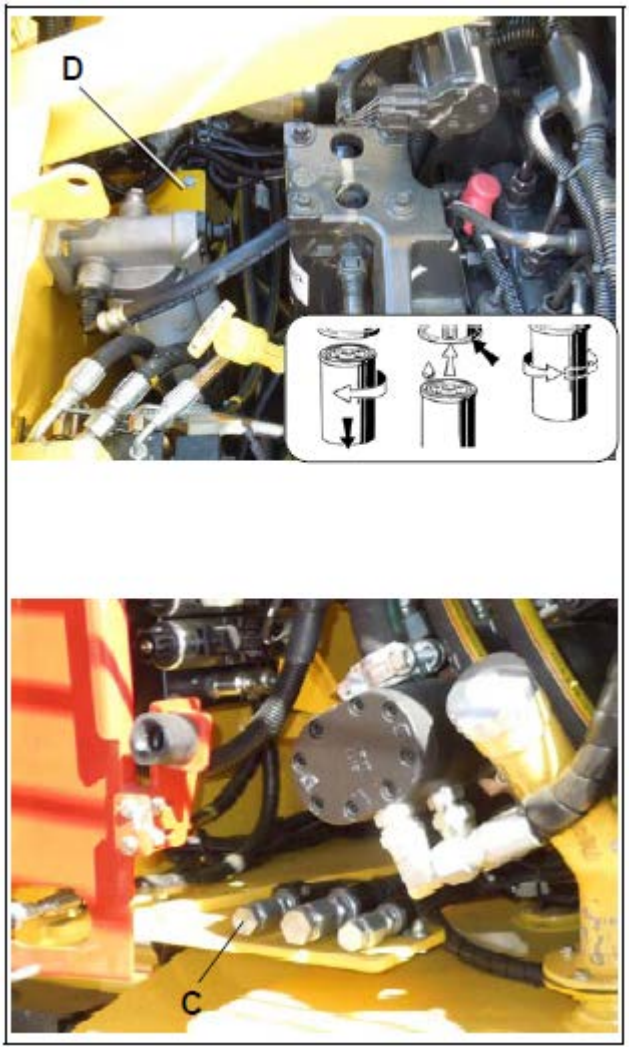
Do not drain the oil when the engine is cold. As the oil cools, suspended waste particals settle on the bottom of the oil pan. The waste particles are not removed with the draining cold oil. Drain the crankcase with the engine stopped. Draining the crankcase with the oil warm will allow the waste particles that are suspended in the oil to be drained properly.

⚠ WARNING

Avoid contact with hot oil or components. Do not allow used oil to drain into the ground.

There is a drain hose stored behind the left hand side flap.

- Place the end of the hose into a pan to catch the oil.
- Remove the oil drain port plug (C) and let the oil drain.
- Return the plug.
- Remove the oil cap (B) and add only approved oil until the oil level reaches the full mark on the dipstick (A).



Changing the oil filter:

When changing the oil, mount the new filter after the used oil has been drained.

- Remove the filter (D) located beneath the yellow plate and clean where the new filter installs.
- Apply a thin coat of oil to the seal of the new filter and fill the filter with oil, then mount the filter and tighten by hand.

⚠ CAUTION

Fill the oil filter(s) with clean lubricating oil before installation onto the engine. Lack of engine lubrication while the filter(s) are pumped full of oil is harmful to the engine.

Engine fuel system (3)

The fuel system consists of two filters:

- Pre-filter (A) with water separator (located in the engine compartment).
- Main filters (B).

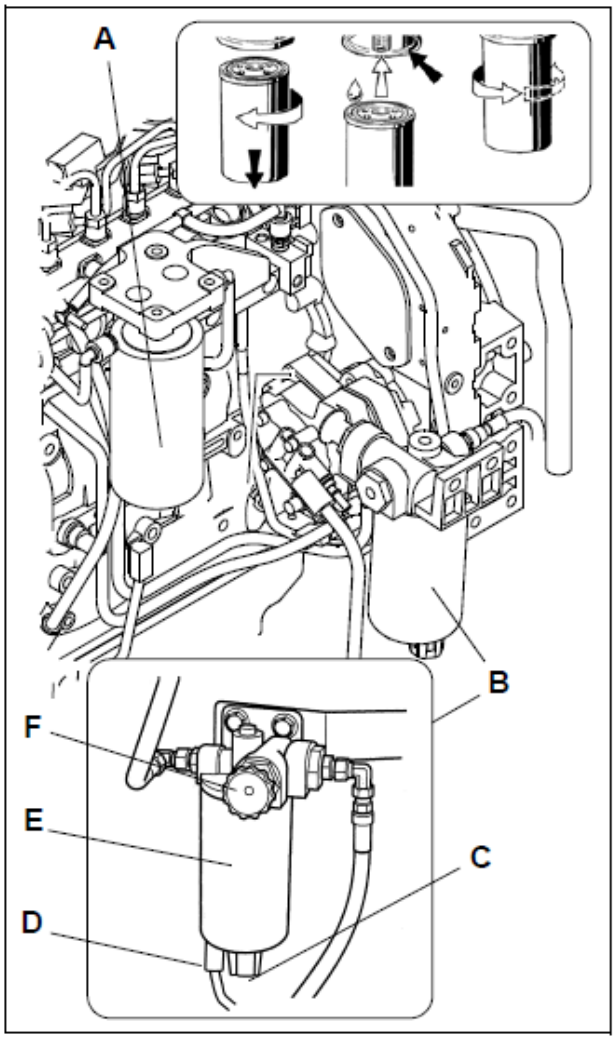
Pre-filter – drain the water

Empty the condensation prior to every engine start or when the engine electronics indicate a fault.

- Drain the water at the drain valve (C), collect it, and then close the drain valve again.

⚠ WARNING

Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire. To help prevent possible injury, turn the start switch off when changing fuel filter or water separator elements. Clean up any spilled fuel immediately



Change the pre-filter:

- Drain the separated water at the tap (C), collect it, then close the tap again.
- Remove the water detection indicator connection (D).
- Loosen the filter cartridge (E) using an oil filter wrench or oil filter strap and remove it.
- Clean the sealing surface where the new filter will mount.
- Apply a thin coat of oil to the gasket of the collection sump, mount it under the filter cartridge and tighten by hand.
- Apply a thin coat of oil to the gasket of the filter cartridges, mount them under the holder and tighten by hand.
- Replace the water detector indicator connection (D).
- Unscrew hand wheel of the pump (F). Pump the hand wheel until the filter has filled with fuel.

The system is filled with fuel when resistance at the hand wheel is noticeable during pumping!

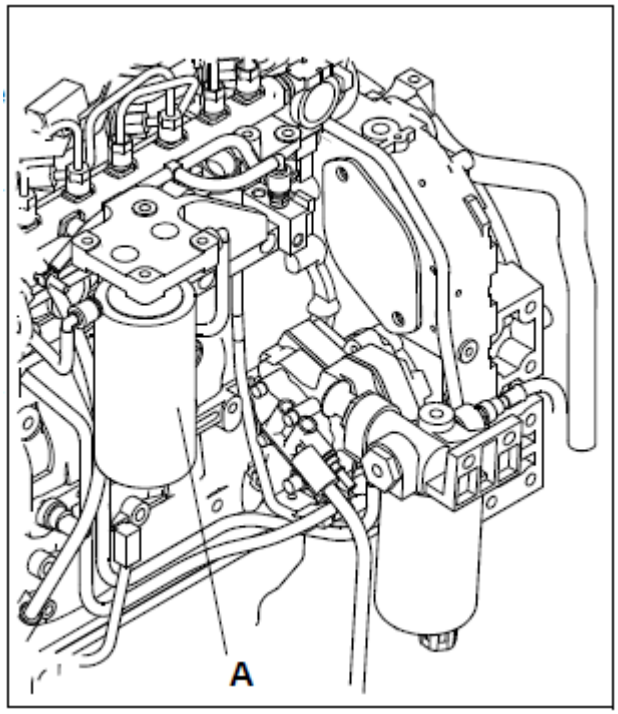
- Screw in pump's hand wheel (F).

Main filter replacement:

- Loosen the filter (A) and clean the surface where the new filter will mount.
- Apply a thin coat of oil to the gasket of the new filter.
- Tighten the filter by hand.

NOTE:

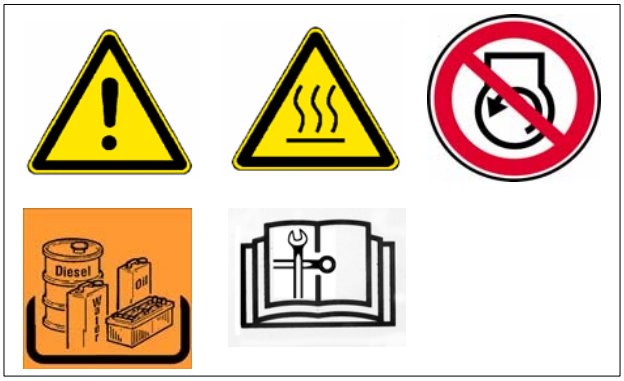
After mounting the filter, check it for proper tightness.



⚠ CAUTION

Do not fill the fuel filters with fuel before installing them. Then fuel would not be filtered and could be contaminated. Contaminated fuel will cause accelerated wear to the fuel system parts.

Engine air cleaner (4):



The function of the engine air cleaner is to filter the air taken into the engine through the engine's air intake. The engine air cleaner is the dry type with two elements: a primary element that is cleanable and replaceable, and a safety element that should only be replaced and not cleaned. The assembly also includes a dust vacuator valve and an air cleaner indicator

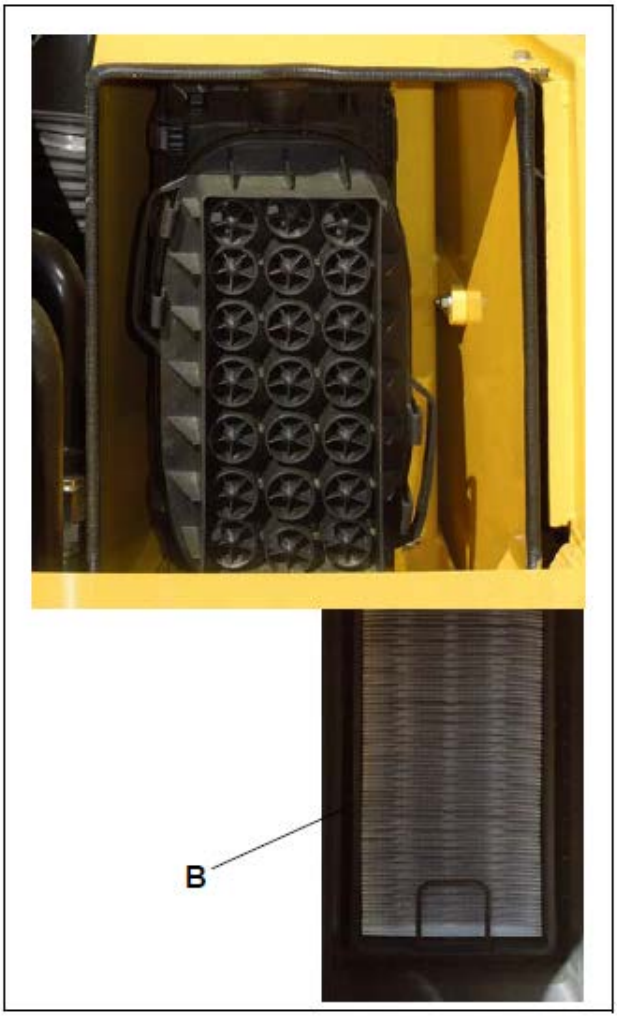
Cleaning / replacing the dust vacuator valve

NOTE:

Air intake filter pollution depends on the dust con- tent in the air and the mesh size of the filter selected.

The maintenance of the filter becomes necessary if:

- The restriction gauge reads 25" H2O when the engine is stopped. This indicates that a restriction has occurred. This usually means the filters are dirty and requires opening the air cleaner and cleaning or replacing the elements.
- When the engine electronic unit indicates service required.



NOTICE

Never leave the air cleaner open longer than necessary!

To remove the filter cartridges:

- Open the latches to remove the cover.
- Remove the primary filter and then the filter cartridge (B).

NOTE:

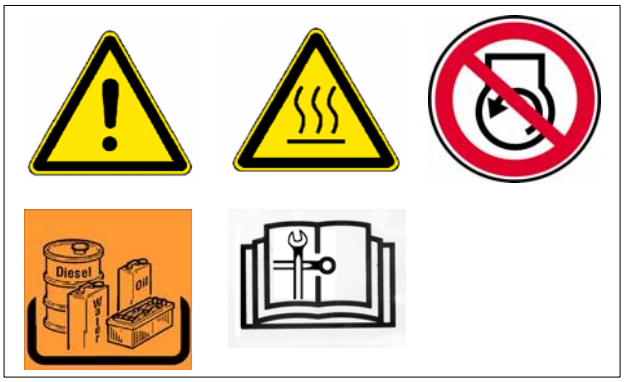
Clean the filter cartridge and replace at least once per year.

- Blow out with dry pressure air (max. 30 psi / 2.07 bar) from inside blowing out. In case of urgency, tap the cartridge to remove dust.
- Check the filter's paper of the filter cartridge (by exposing to light) and inspect the seals. Replace them as required.

After completing the maintenance:

- Press the reset button (F) for the maintenance indicator (if equipped). The maintenance indicator is ready for operation.

Engine Coolant system (5):

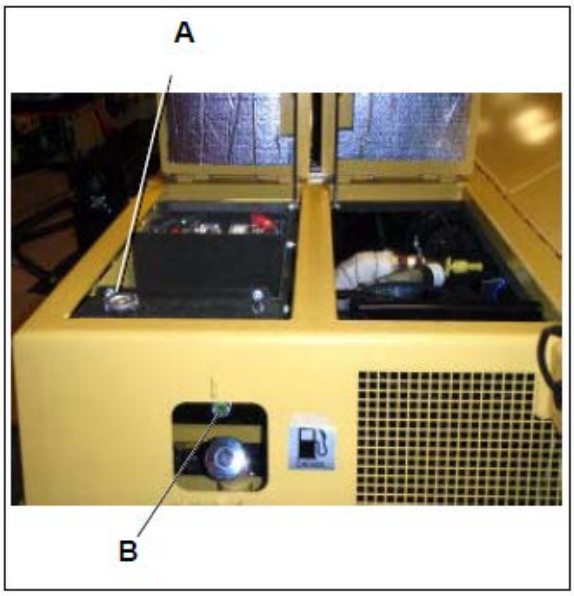


Fully formulated antifreeze must be mixed with quality water at a 50/50 ratio. A 50/50 mixture of water and ethylene glycol or propylene glycol antifreeze to fill the cooling system. The 50/50 mix gives protection to the cooling system at a range of --34_F (--36_C) freezing point and a 228_F. (110_C) boiling point, which is adequate for locations in North America. The actual lowest freezing point of ethylene glycol antifreeze is 68 percent. Using higher concentrations of antifreeze will raise the freezing point of the solution and increase the possibility of a silica gel problem.

⚠ WARNING

Do not remove the radiator cap from a hot engine. Wait until the temperature is below 120° F (50° C) before removing the pressure cap. Failure to do so can result in personal injury from heated coolant spray or steam. Remove the filler cap slowly to relieve coolant system pressure.

Checking / filling coolant level



The coolant level is checked when the engine is cold. Check the coolant level daily (10 hours or as needed). Use a Refractometer to ensure the anti-freeze and anti-corrosive liquid is sufficient (-25° F / -31.6° C)

- Add sufficient amount of coolant through the fill cap (A) on the coolant tank. Check the coolant level at the site-glass (B) inside the fuel fill door. Do not mix coolants. Only use Dynapac approved coolants.

⚠ CAUTION

Do not add cold coolant to a hot engine. Engine castings can be damaged. Allow the engine to cool to 120° F (50° C) before adding coolant.

Changing the coolant

To change the coolant:

- Remove the radiator cap.
- Open the drain valve at the bottom of the radiator and drain the cooler into an environmentally approved drain pan with a capacity of about 5 gallons (19 liters)
- Inspect the hoses to and from the radiator and replace them if they look worn or cracked.

- Once drained, dispose of the coolant fluid in an appropriate manner.

⚠ DANGER

Coolant is toxic. Keep away from children and pets. Dispose of in accordance with federal, state and local environmental regulations.

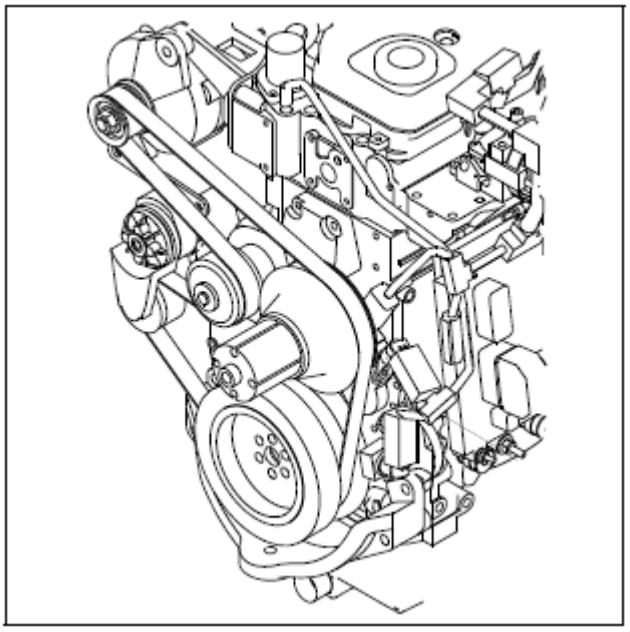
- Close the drain valve.
- Fill the radiator with a 50 / 50 mix of water and ethylene glycol or propylene glycol antifreeze.
- Install the radiator cap.
- Start the engine and allow it to run a few minutes.
- While the engine is running, check the radiator and hoses for leaks.
- When the engine coolant temperature reaches about 180°F (80°C), turn the engine off and check the coolant level again.

Checking and cleaning of the radiator fins

- If necessary, remove leaves, asphaltic oils and residue, dust or sand from the radiator.

Engine drive belt (6):

Check drive belt / replacement.



Under normal operating conditions, the engine drive belt(s) should be inspected daily. Belt damage can be caused by incorrect size or length, pulley misalignment, incorrect installation, severe operating environment and oil or grease on the belt(s).

Adjust the belt tension in order to minimize belt slippage. Belt slippage will decrease the life of a belt. If the belt is too loose, the belt will vibrate. This vibration is enough to cause unnecessary wear on the belt(s) and on the pulleys. If the belt(s) are too tight, unnecessary stresses are placed upon the pulley bearings and upon the belts. These stresses will shorten the life of the belt(s) and the pulley bearings

To maximize the engine performance, visually inspect the belts for tension, wear, breaks, cracks or other damage. Replace the belts that are cracked or frayed. Adjust belts that have a glazed or shiny surface which indicates belt slippage. Correctly installed and tensioned belt will show even pulley and belt wear

Refer to the Engine Manual for proper procedure for removing and installing the belts.

*** Please refer Operation and Maintenance Manual from Engine manufacturer for the entire Engine maintenance interval and procedures.**

Maintenance – DEF tank

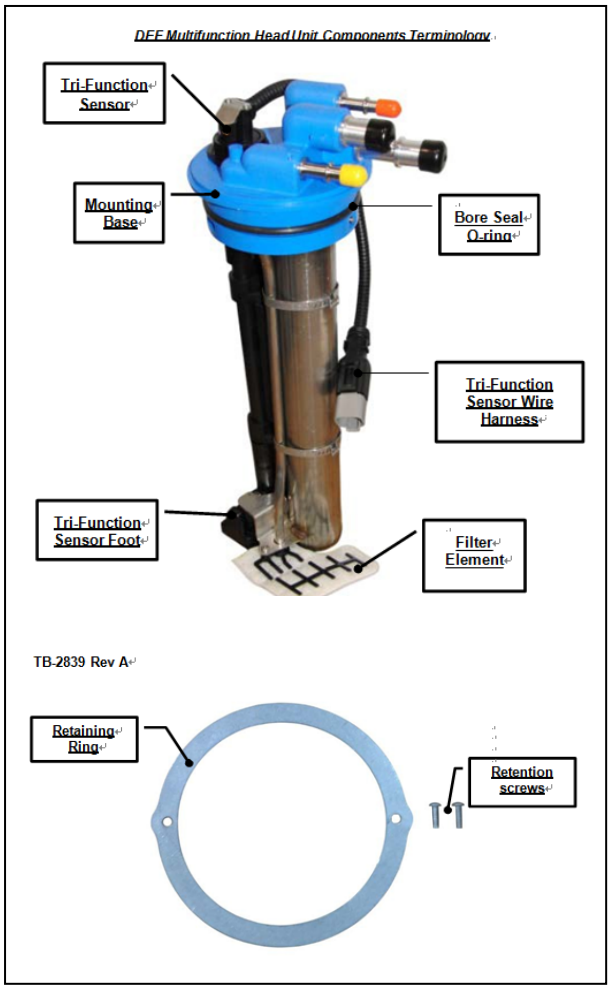
Clean the DEF tank

- Drain the tank.
- Remove the Multifunction Head Unit from the tank.
- Inspect the debris saturation of the DEF suction filter to determine if the filter needs to be replaced. If the filter is damaged or dirty, replace the filter.
- Rinse out the interior of the DEF tank using an ordinary hose or pressure washer.
- Rinse off the MFHU from top to bottom with low pressure, ensuring that all the debris has been removed.
- Reinstall the MFHU and the drain plug to fill the tank and verify no leakage occurs.

Multifunction Head Unit (MFHU) assembly

MFHU Removal:

- Using a T25 Torx Driver, unscrew the retention screws that secure the Retaining Ring to the reservoir.
- Using a flathead screwdriver, gently pry around where the head unit is connected to the reservoir while simultaneously pulling on the top of the unit. Continue until DEF mounting base is free from reservoir.
- Pull the DEF head unit out until the bottom of the header is at the bottom of the tank bore.
- Angle the heel of Tri-function sensor foot upward and rotate the header until the bottom of the header is positioned inside the tank bore. When the bottom of the header is in the tank bore, fold the filter downward towards the interior of the tank. Continue to carefully remove the header out of the tank bore until completely freed.



MFHU Installation:

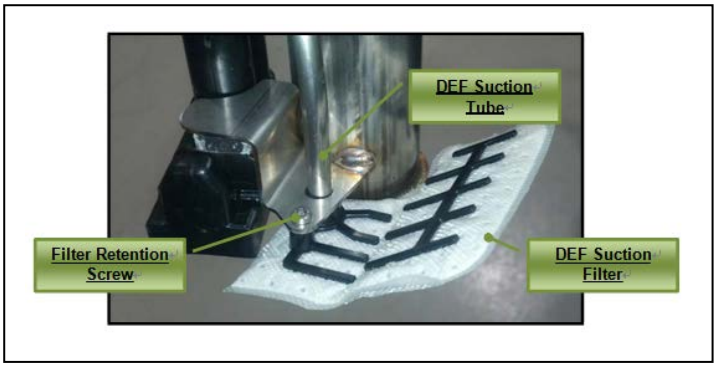
- Apply a thin layer of O-ring lubrication to the Bore seal O-ring.
- Fold the Filter element in half towards the bottom of the Tri-Function Sensor. Tilt the header to an approximate 45˚ angle, with respect to the top of the tank. With the heel of the Tri-Function Sensor foot angled upward, place the filter edge and the toe of the Tri-Function Sensor into the tank bore. Gradually work the bottom portion of the DEF head into the Bore opening until completely inserted in the tank.
- Position the DEF head unit in the desired orientation and press on the top of the blue

mounting base until it is completely seated in the tank bore.

- Position the retaining ring on Head unit and install the retention screws using the T25 Torx wrench. Recommended torque on screws is 20-30 in-lbs (2.26-3.38Nm)

DEF suction filter

DEF Suction Filter is located at the bottom of the Multifunction Head Unit assembly thus requiring the head unit to be removed from the DEF reservoir.



Filter Removal & Installation:

- Locate the filter retention screw and remove using the T15 screw driver. Discard the screw.
- Pull the old filter off of the suction tube and discard.
- Position the new filter's suction tube housing onto the bottom of the suction tube and press the filter flush against the bottom of the heater tube fin. Align the filter so the filter retention screw can screw into the retention screw housing.
- Install the retention new screw.
- Once the retention screw is installed, the MFHU will be ready to be installed into the tank.

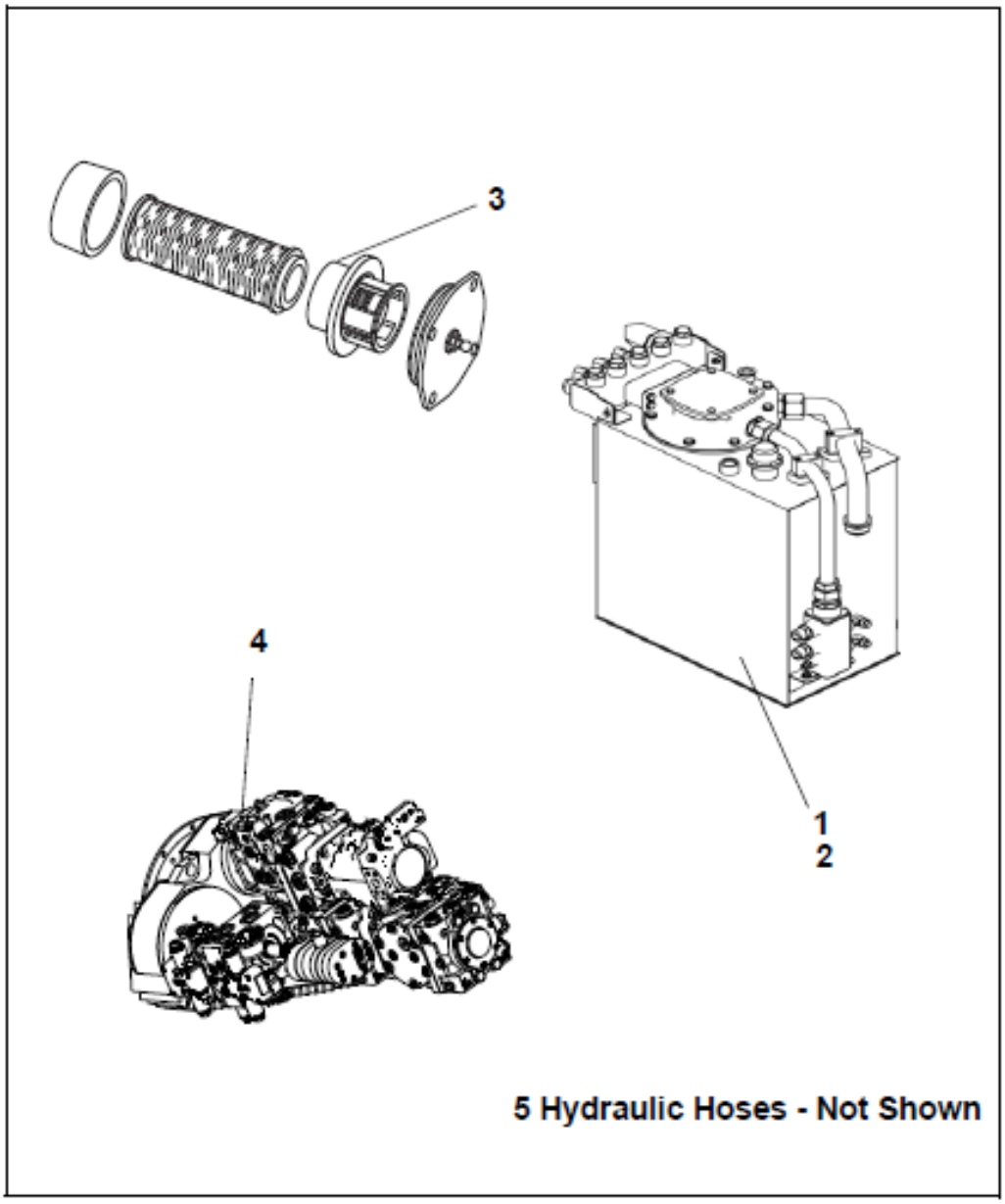
Tri-function sensor

Sensor Removal & Installation:

- Loosen and remove the Tri-Function Sensor nut using a 1-5⁄8" box wrench or pliers. Set the Sensor nut to the side.
- Remove the sensor and spacer from the retention clips and slide the Tri-Function Sensor from the DEF head mounting base. A flathead screwdriver may be used to assist in wedging the sensor free from the clips.
- Inspect the new Tri-Function Sensor for signs of damage. Verify an O-Ring is located below the threading at the top of the sensor and should have Parker O-Ring Lubrication applied.
- Feed the new Tri-Function Sensor cable into the bottom of the mounting base through the sensor opening. Press the Tri-Function Sensor into the retention clip with the foot of the sensor parallel with the Filter Element.
- Insert the spacer between the two retention clips and orient as seen in the image below.
- Position the top of the sensor through the mounting base such that the upper threaded portion of the sensor is seen. Ensure the top surface of the header is cleaned and install the Tri-Function Sensor nut on the top by feeding the cable through the sensor nut and screwing down the nut on the sensor down to the mounting base. Tighten nut to 40 in. lbs (4.5 Nm).
- Once the Sensor nut is installed the MFHU is ready to be installed into the tank assembly.

F 6.0 Maintenance – Hydraulic System

1 Maintenance – hydraulic system



1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1	■								- Hydraulic oil tank Check the oil level	
								■	- Hydraulic oil tank Fill with oil	
							■		- Hydraulic oil tank Oil change and cleaning	
2	■								- Hydraulic oil tank Check the maintenance indicator	
							■	■	- Hydraulic oil tank Intake / return	
			▲			■		■	- Change the hydraulic filter	
3	■								- High pressure filter Check the maintenance indicator	
			▲			■		■	- High pressure filter Replace the filter cartridge	
4		■							- Pump distribution gear Check the oil level	
								■	- Pump distribution gear Fill with oil	
						■			- Pump distribution gear Oil change	
5					■				- Hydraulic hoses Inspect hoses	
							■	■	- Hydraulic hoses Replace the hoses	

Maintenance	■
Maintenance during break-in period	▲

1.2 Hydraulic System

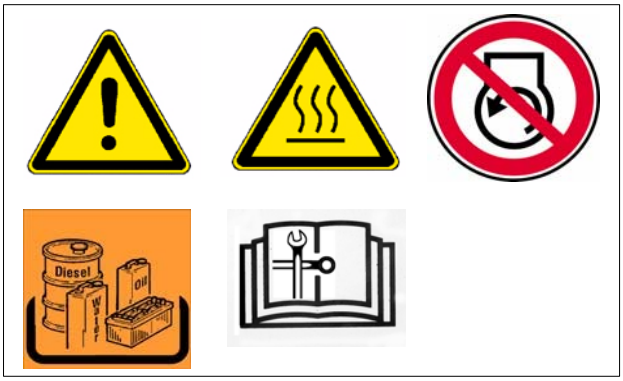
A paving machine has many components and implements that are controlled by a hydraulic system, either directly or indirectly. Before working on or inspecting any part of a paving machine, it is important that the individual knows how the components move and are controlled by the hydraulic system components including the respective control circuits

Before working on or inspecting any component, it must be physically constrained from any movement that could cause injury to the worker. The worker must be alert to not placing any part of his/her body where movement of a component could cause injury, unless that component is physically contrained from movement, if the hydraulic system fails, is disconnected, or is asignaled to cause movement

It must also be recognized that there are occasions where component and or vehicle movement may react to the release of potential energy. Where applicable it must be confirmed that all measures are employed to ensure that any and all sources of potential energy are released and/ or physically restrained

All tramming, hopper and conveyor functions and augers are hydraulically powered. The hydraulic system consists of a 50 gallon (189.21 liter) hydraulic reservoir with a 10 micron filtration system. The propel pumps, conveyor and auger pump, generator pump and screed functions are driven by the pump drive gear box which is mounted directly to the engine. The hydraulic system includes various motors, cylinders, valves, filters and hose piping. A hydraulic oil cooler assures optimum oil temperatures to maximize system efficiency and component life

1.3 Points of maintenance



Hydraulic oil tank (1)

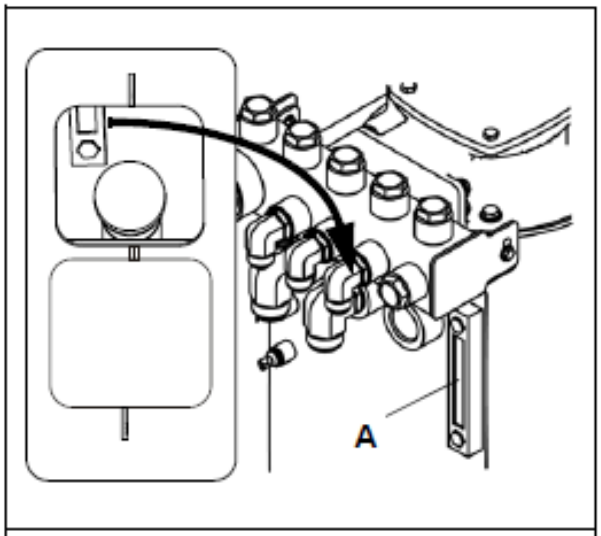
- **Oil level** check at the sight level gauge (A) on the side of the tank.

NOTE:

View the sight level gauge by the opening tank flap on the L.H. side of the machine.

NOTICE

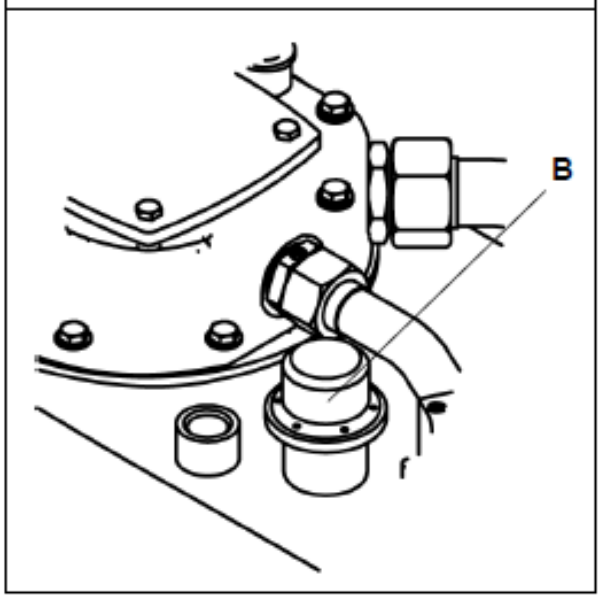
With the cylinders fully retracted, the oil level should at the upper mark.



To **add** oil:

- Remove cap (B).
- Add oil through the fill port until the level shows full at the sight level gauge (A).
- Return cap (B).

NOTE:

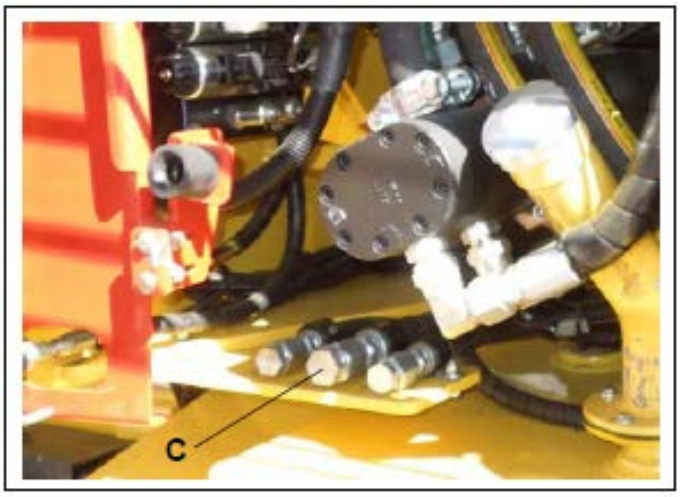


⚠ CAUTION

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

To **change** the oil:

- To drain the hydraulic oil unscrew the drain plug (C) at the bottom of the tank.
- Collect the oil in an appropriate container using a funnel.
- After draining, add a new seal ring and then screw the plug back into place.



⚠ WARNING

Hot oil or components can burn. Oil must be at normal temperature when draining. Avoid contact with hot oil or components.

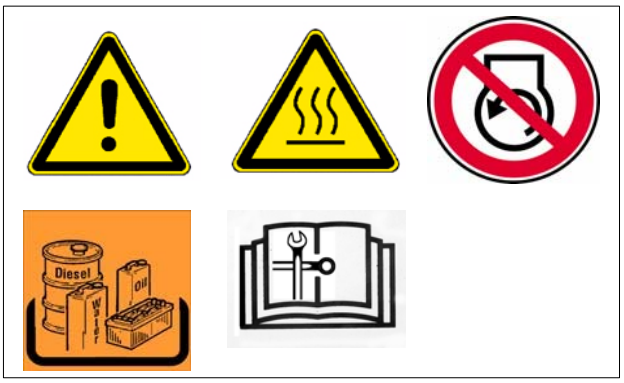
⚠ WARNING

Gearbox must be filled with fresh, clean oil.

⚠ WARNING

Always change the hydraulic oil filter(s) when changing the hydraulic oil.

Suction / return flow hydraulic filter (2)

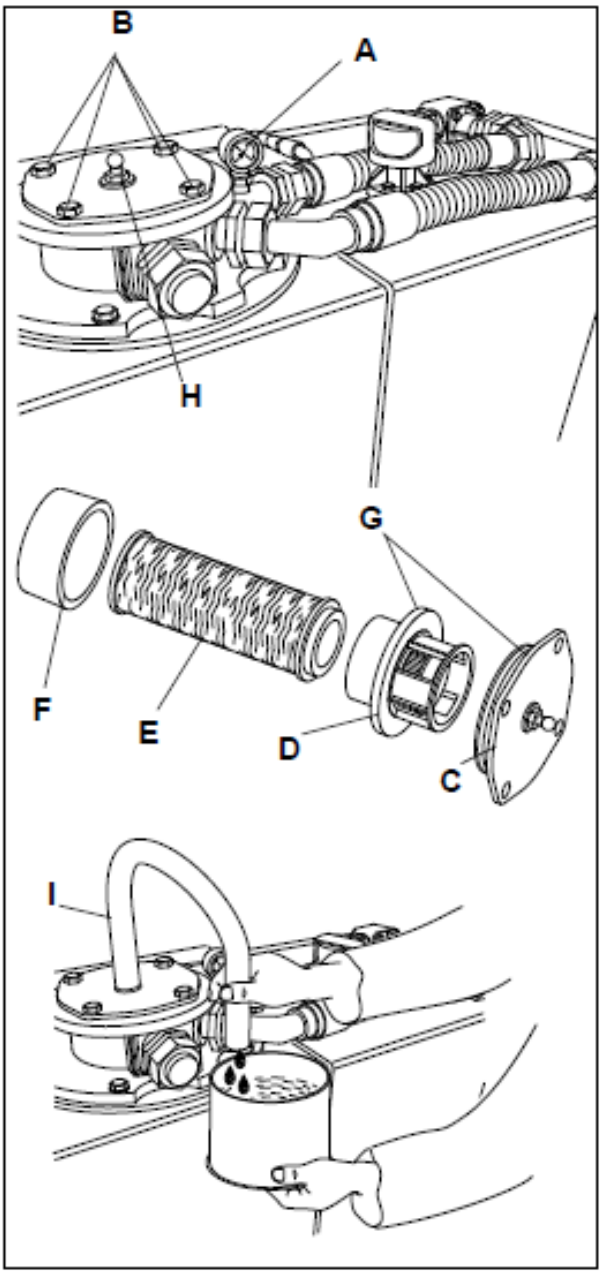


Change the **filter** at the intervals specified or when the **maintenance indicator (A)** is at the red mark or when changing hydraulic oil. When inspecting the maintenance indicator, the hydraulic oil must be at least 175° F (80° C)

⚠ WARNING

When changing the hydraulic oil also change the filter.

- Remove the lid fastening screws (B) and remove the lid.
- Disassemble the withdrawn unit into the following parts.
- Lid (C).
- Separating plate (D).
- Filter (E).
- Dirt collection cage (F).
- Clean the filter case, the lid, the separating plate and the dirt collection cage.
- Check and replace the O-rings (G) when required.
- Wet the seal surfaces and the O-ring with clean fuel



Venting the filter

- Fill the open filter case with hydraulic oil to just below the upper rim.
- Should the oil level drop, fill with oil.

NOTICE

The oil level slowly lowering by about 1/4 in. /min. (1 cm/min) is normal!

- When the oil level remains steady, mount the assembled unit with the new filter cartridge, carefully into the housing and tighten the locking screws of the lid (B).
- Open the vent screw (H).
- Mount a transparent hose (I) on the vent screw and lead it into an appropriate container.
- Start the engine and run it at idle speed.
- Shut-off the bleeding screw (H) as soon as the oil discharged through the hose is clean and free of air bubbles.

⚠ WARNING

The process from mounting the filter lid until starting the engine should take place within 3 minutes or the oil level will drop too much in the filter case.

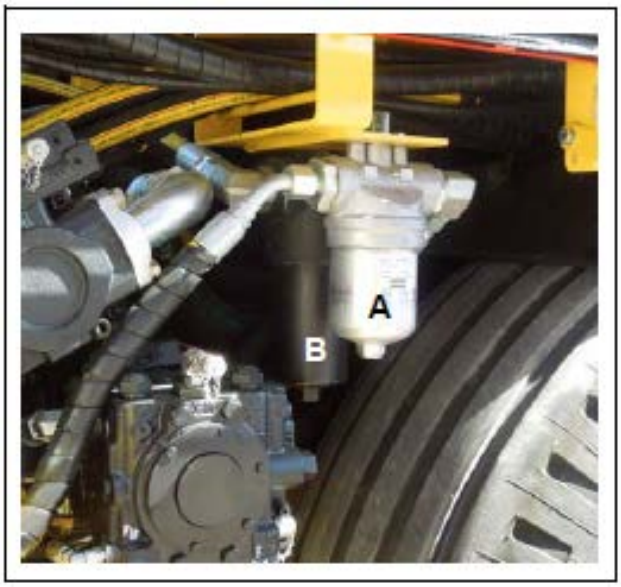
⚠ CAUTION

Check the seal after changing the filter.

High pressure filters (3)

Replace the auger charge filter (A) cartridge and conveyor pump / work system filter (B) when the maintenance indicator on top of the filter cartridge head turns “red”.

- Unscrew filter housing.
- Remove the filter cartridge.
- Clean the filter housing.
- Insert the new filter cartridge.
- Replace the seal (O-ring) on the filter housing.
- Screw the filter housing on by hand, then tighten it using the appropriate tool.
- Test the filter for tightness and leaks.



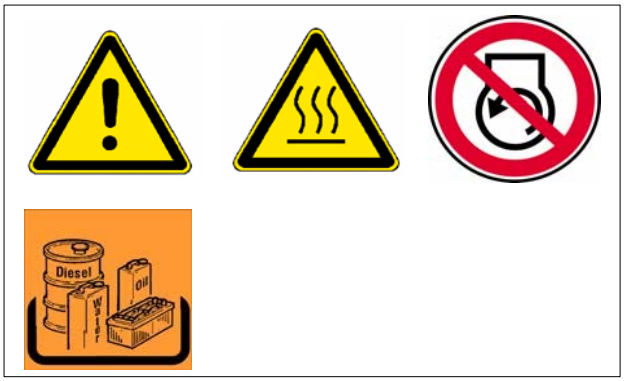
⚠ WARNING

Always replace the seal (O-ring) whenever the filter cartridge is replaced.

NOTICE

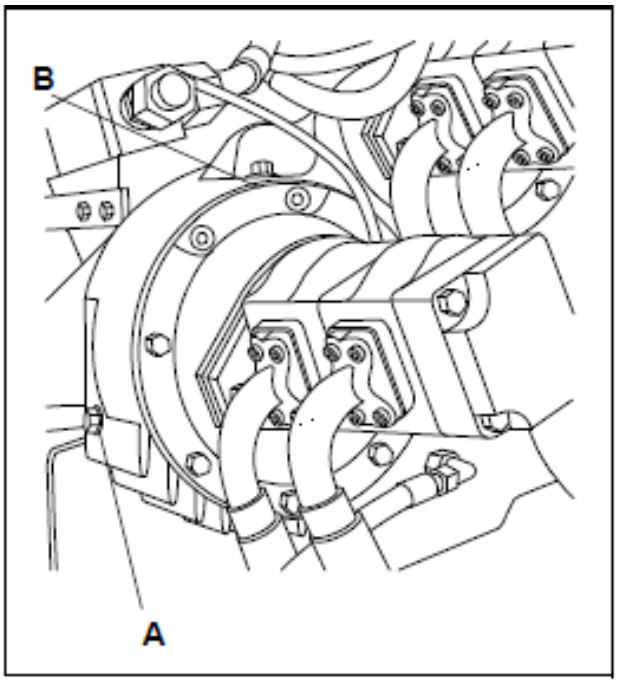
After the filter cartridge has been replaced, the indicator on top of the filter cartridge head will return to “green”.

Pump distribution gear (4)



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

NOTE:
The oil level must be up to the center of the sight glass.



To **add** oil:

- Unscrew the plug (B).
- Add oil until the sight glass (A) shows the correct fluid level.
- Return and tighten the plug (B).

⚠ CAUTION

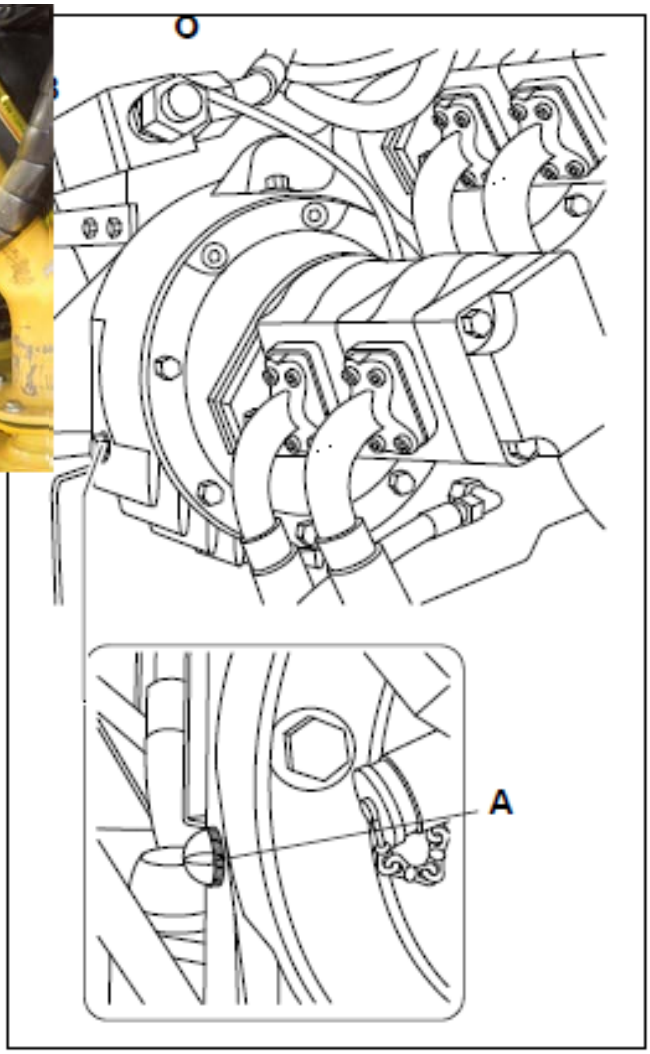
Keep the work area clean!

⚠ WARNING

Hot oil or components can burn. Oil must be at normal operation temperature when draining. Avoid con- tact with hot oil or components.

⚠ WARNING

Gearbox must be filled with fresh, clean oil.



Change the oil when the engine is at operating temperature.

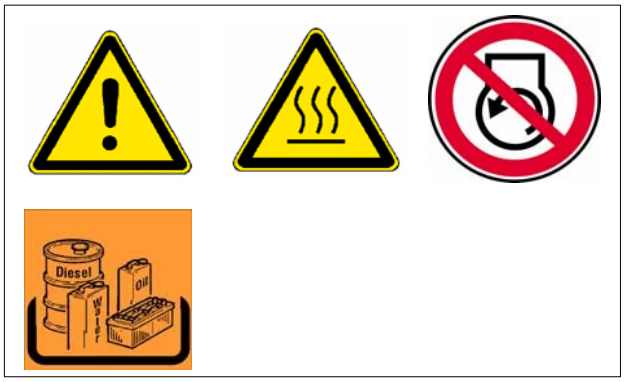
- Place the end of the hose in an appropriate container and catch the oil.
- Open the shut-off valve and let the oil drain completely.
- Shut off the valve, remove the hose and return the cover cap.
- Add only approved oil to the distribution box (B) until the oil level is at the center of the sight glass (A).

⚠ WARNING

Hot oil or components can burn. Oil must be at normal operation temperature when draining. Avoid contact with hot oil or components.

Hydraulic hoses (5)

Frayed or damaged hoses can break instantly causing hot hydraulic fluid to spray causing severe burns. Always replace worn or damage hoses immediately



⚠ WARNING

Hot oil or components can burn. Oil must be at normal operation temperature when draining. Avoid con- tact with hot oil or components.

- Check the condition of the hydraulic hoses carefully.
- Immediately replace any damaged hoses.

⚠ DANGER

Old hoses may become porous and burst! Hot oil spraying from a burst hose can cause severe burns!

NOTICE

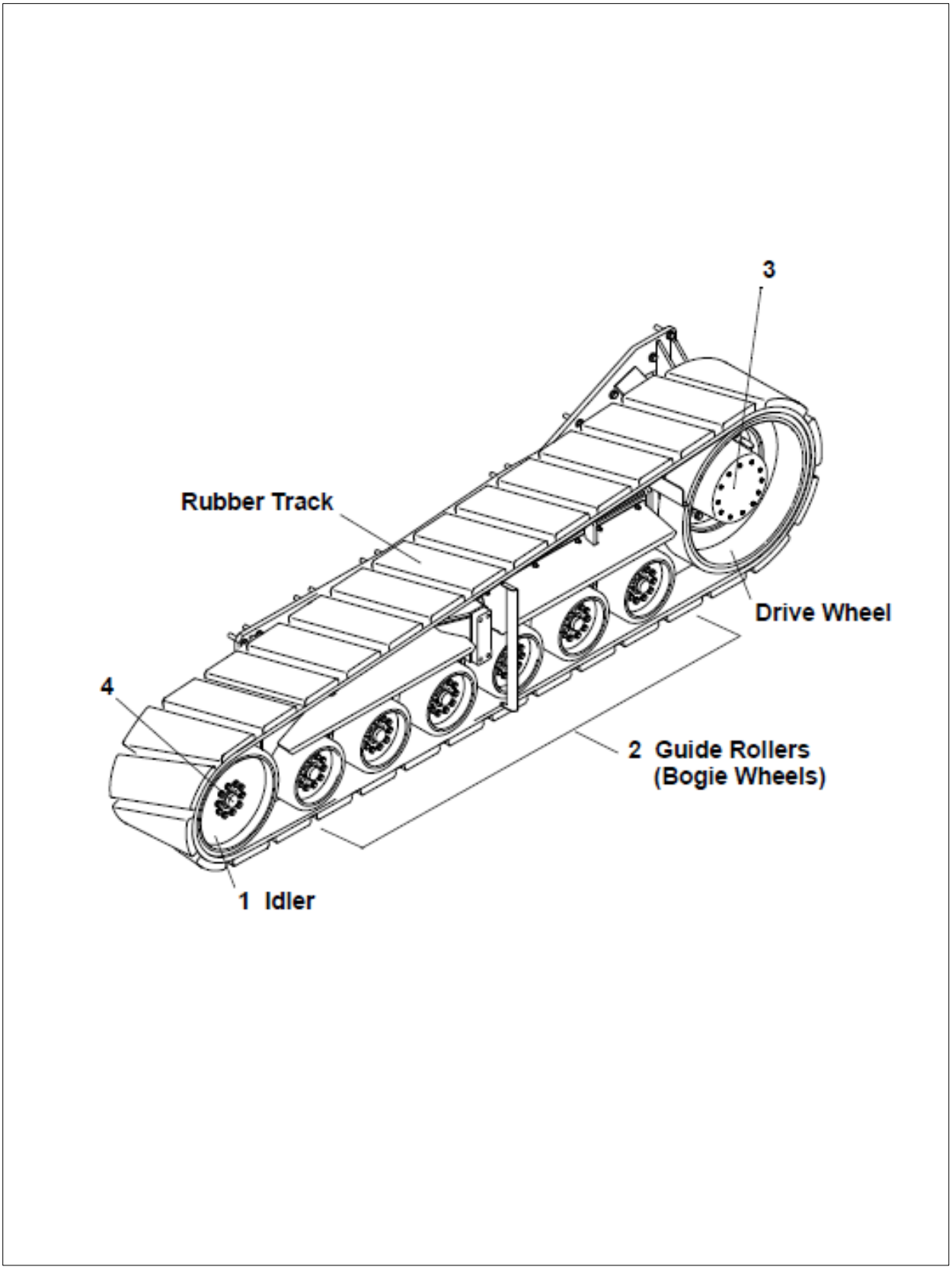
Each hose has the maximum pressure allowed for that hose printed on it.

⚠ CAUTION

Do not use hoses that have been in storage for a long time. Check for the proper pressure rating printed on the hose.

F 7.0 Maintenance – Track

1 Maintenance – running gear



1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1		■							- Idlers, guide rollers, drive wheels - Check the torque at the bolts	
								■	- Idlers, guide rollers, drive wheels - En- sure proper torque for bolts	
2	■								- Guide rollers - check straight running	
								■	- Guide rollers - straight running, setting	
	▲	■							- Guide rollers - ensure the adjusting bolts are tight	
								■	- Guide rollers - tighten the adjusting bolts	
3				■					- Planetary gear Check the oil level	
								■	- Planetary gear - fill with oil	
						■			- Planetary gear oil change	
4				■					- Gear- guide rollers front - Grease them	

Maintenance	■
Maintenance during run-in period	▲

1.2 Instructions for undercarriage maintenance

NOTICE

In order to avoid a disclaimer of responsibility by the manufacturer or dealer and to extend the life of the rubber parts, the directives below should be strictly adhered to.

⚠ CAUTION

Check and maintain the track and undercarriage as specified. Although the rubber itself needs little daily maintenance, the metal parts of the undercarriage are very sophisticated, therefore they require frequent checking. Ensure that they have no visible damage and that the drive wheels, idlers and guide rollers are properly secured to the vehicle. The drive wheels, idlers and rollers should not show evidence of unusual wear and tear (on the tread, on the driven surface and at the driving gears).

⚠ CAUTION

New drive wheels, idlers and guide rollers tend to become sticky. This is a normal consequence of the vulcanizing procedure. Generally, these parts work better if the sticky layer is removed. Therefore, we recommend coating each new drive wheel, idler and roller with chalk or similar non-corrosive material in order to make them work more smoothly. To do this, simply put a thin layer of this material on the driven surface of the drive wheel, idler or roller and turn on the drive for a very short period. This serves to remove the sticky layer and provides optimal “biting” for the gear and the drive wheel, idler and rollers. Pre-treatment of these parts is necessary only when they are new.

⚠ WARNING

The wheels, idlers or guide rollers should not come into contact with grease, oil, benzene, gasoline or other corrosive chemicals. These attack the rubber and in case of contact they should be immediately removed. When greasing the machine and/or the gear, strictly avoid grease or oil on the drive wheels, idlers and guide rollers. Frequently check for hydraulic oil leaks. Hydraulic oil making contact with the rubber should be avoided. Do not wash or treat the machine with gasoline or other fuels; use only appropriate cleaning materials instead (i.e. soft soap and water). Discuss use of other separating agents with your machine dealer.

NOTICE

If necessary, exchange the left and right side drive wheels with each other. In certain applications, wheel abrasion may differ. By exchanging the right and left wheels with each other, their lifetime can be prolonged.
In this chapter you shall find all information regarding lubrication materials required for maintenance of the undercarriage.

2.1 Long-term effect of parked machines

If the machine is not used for a long period, observe the following directives.

⚠ WARNING

Avoid exposing the machine to direct sunlight.
Over a period of time, the direct UV radiation may cause the drive wheels, idlers or guide rollers to become porous. They become rigid and tiny ruptures may appear. For these reasons, the machine should be stored under a roof or in a protected area when it is possible. If the machine must be stored outdoors, please cover the tracks, drive wheels, idlers and guide rollers with non-transparent canvas.

⚠ WARNING

Avoid excessive humidity. Longer contact with water may attack the drive wheels, idlers or guide rollers.
Do not store the machine in standing water. The machine must be stored under a roof or in a protected area whenever it is possible. If the machine must be stored outdoors, please cover the tracks, drive wheels, idlers and guide rollers with watertight canvas.

NOTICE

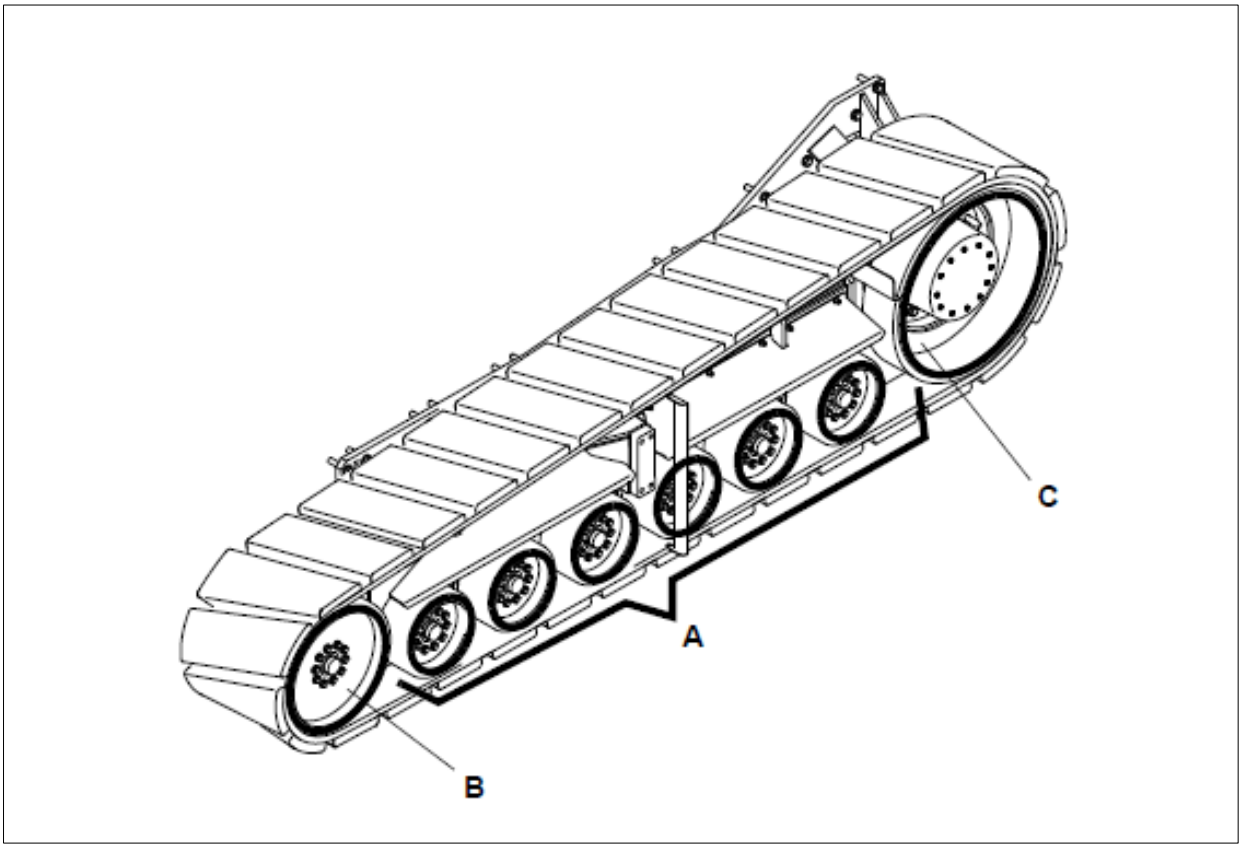
Separate directives apply to long/term storage for the drive wheels, idlers and guide rollers! Consult with the Dynapac, USA customer center for these directives.

2.2 Maintenance

Idlers, guide rollers, drive (1)

Check / tighten the mounting bolts

Mounting bolts for all idlers, guide rollers and drives should be checked and tightened if necessary!



The mounting bolts should be tightened to the following torque values:

- Guide rollers (A) - (12 rollers):
  105 ft. lbs / 142.4 Nm
- Idlers (B) - (2 idlers):
  314 ft. lbs / 425.7 Nm
- In addition to this, all mounting bolts on the drive wheel (C) should be checked and re-torqued if necessary!
- Drive wheels - (2 drive wheels):
  375 ft. lbs / 508.4 Nm

Guide rollers – straight running secure the adjustment bolts (2)

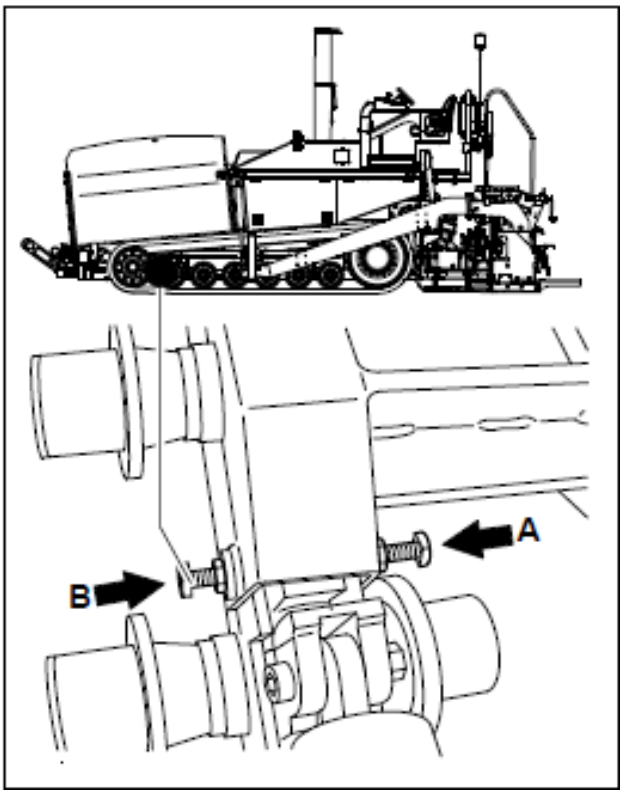
The adjustment bolts are located in the front part of the drives and at the regulator links of the guide rollers.

If the wheels and rollers run outwards or inwards or are not centered on the two guide rollers, side ward tilt of the guide rollers should be adjusted.

Check whether the adjusting bolts and counter nuts are properly tightened and retighten them if necessary.

Guide rollers runs excessively inwards:

- Loosen the counter-nuts of both adjusting bolts (A) and (B).
- Loosen the inner adjusting bolt (A).
- Retighten the outer adjusting bolt (B).



⚠ CAUTION

Never turn the adjusting bolts more than a half turn!

If the guide rollers run excessively outwards, you should adjust the guide rollers in the opposite direction!

- Move the machine forward and check to see if the rollers are running straight. Repeat the adjustment if necessary.

When checking the adjustments, drive the machine until the drive wheels make two complete turns

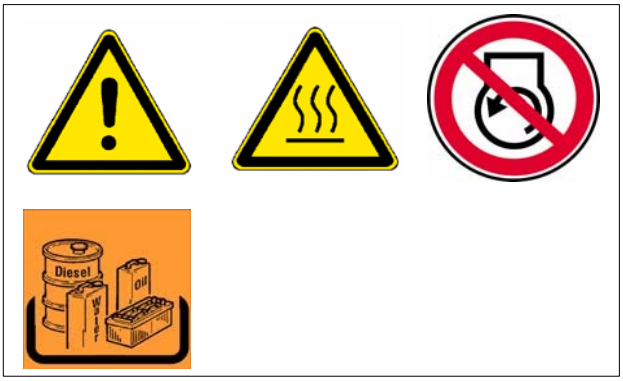
The adjustment is correct if the teeth of the rollers run in the middle between the idlers and the front / rear guide rollers!

- Tighten the counter-nuts on the adjusting bolts (A) and (B) on a regular basis!
- Move the machine forward and backward to check if the rollers are running straight!

⚠ CAUTION

The rollers running straight is very important and directly affects their life cycle!

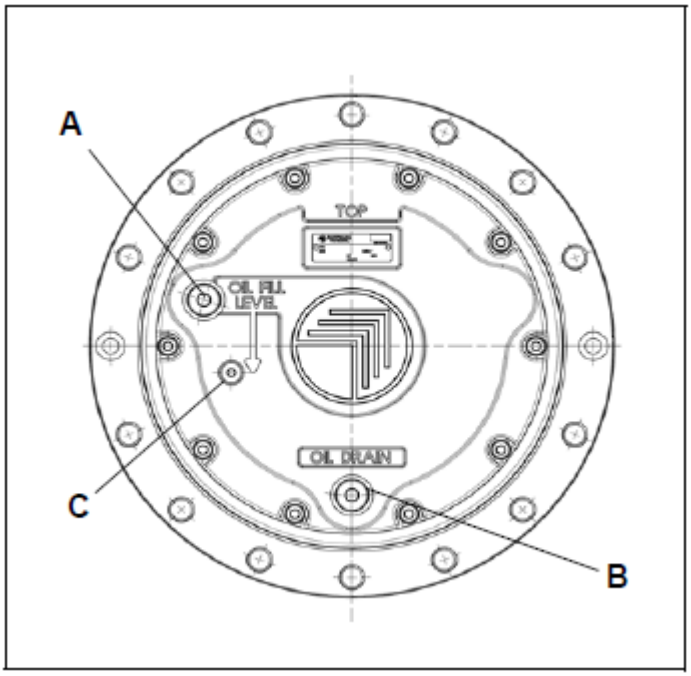
Planetary gear (3)



NOTICE

Care must be taken to ensure fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the paver. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids. Dispose of fluids according to local regulations and mandate

To check the oil level in the Planetary Gearbox:



- Position the planetary gearbox so that the oil drain (B) is vertical at its lowest point (about the 6 o'clock position). The oil filler plug (A) should then be on the Left or Right outside of the planetary middle.
- Clean the area around the check plug (C) and fill plugs and the drain plug.
- Place an oil collection container underneath the planetary gearbox.
- Remove the oil level check plug (C). The oil level should be at the oil level check port.
- If the level is low, add oil through the fill plug (A).
- If the oil looks contaminated, drain the oil completely.
- Insert the drain plug (B) and tighten.

⚠ WARNING

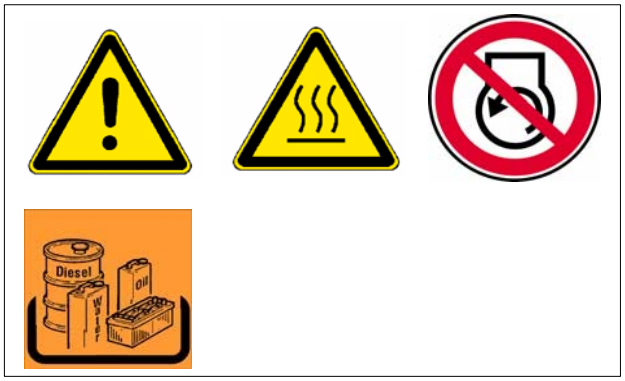
Gearbox must be filled with fresh, clean oil.

- Fill with oil until the level has reached the oil level check port (C). Insert check and fill plugs and then tighten.

⚠ WARNING

Hot oil or components can burn. Oil must be at normal operation temperature when draining. Avoid contact with hot oil or components.

Idler rollers, front (4)

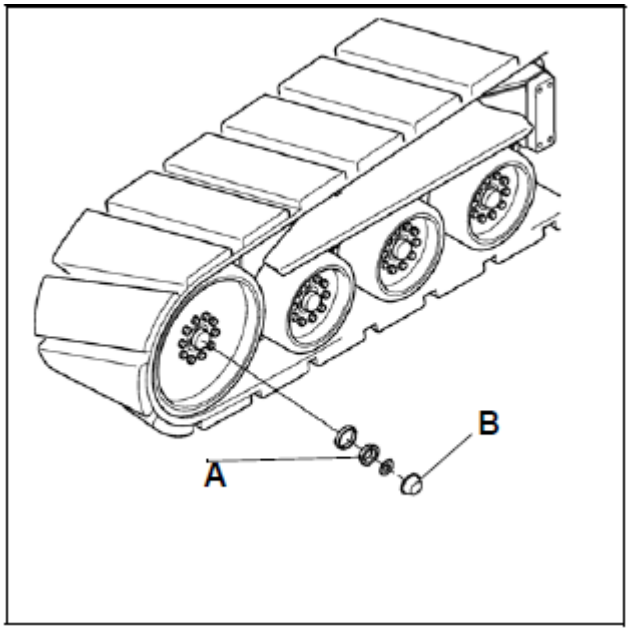


Tracks that are not adjusted properly can cause rapid wear at the idler bearings and can put extra stress on the undercarriage while wasting horsepower and causing higher fuel consumption.

Check the drive idler bearing (A) for wear and ensure they are filled with grease.

To re-grease the idler bearings:

- Remove protective cap (B).
- Clean any used grease from the bearing assembly (A) and replace the old grease with the proper amount of new grease by packing the grease into the bearing.
- Return protective cap (B).



⚠ CAUTION

Ensure no contaminants or foreign materials enter into the bearing.

3 Gear – lubrication materials (5)

3.1 Lubrications and fuels

NOTE:

Use only lubricants listed or the equivalent quality lubricants. Use only clean containers for adding oil or fuel.

Take into account the filling volumes (see the section “Filling volumes”)

⚠ WARNING

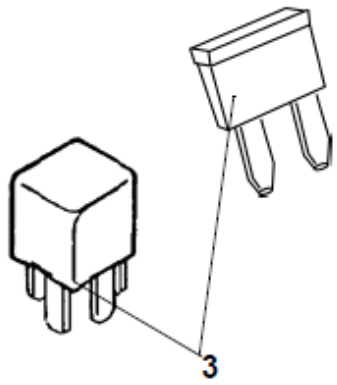
Low quality oil or lubricant causes faster wear and the failure of the machine.

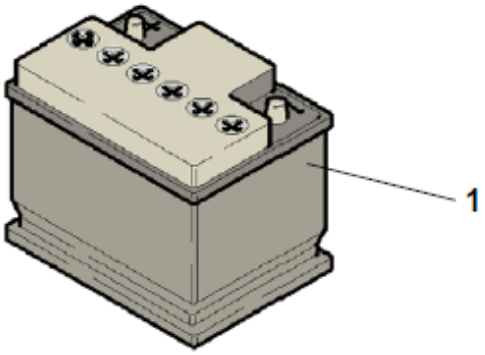
⚠ WARNING

Mixing of synthetic and natural oils is explicitly prohibited!

F 8.0 Maintenance – Electronic System

1 Maintenance – Electronic system





1.1 Maintenance intervals

Item	Interval									Maintenance point	Note
	10	50	100	250	500	1000 annually	5000	20000	If necessary		
1			■							Check the charge level of the batteries, replace if necessary	
				■						Apply grease to battery terminals	
3									■	Electric fuses	

Maintenance	■
Maintenance during the running-in period	▲

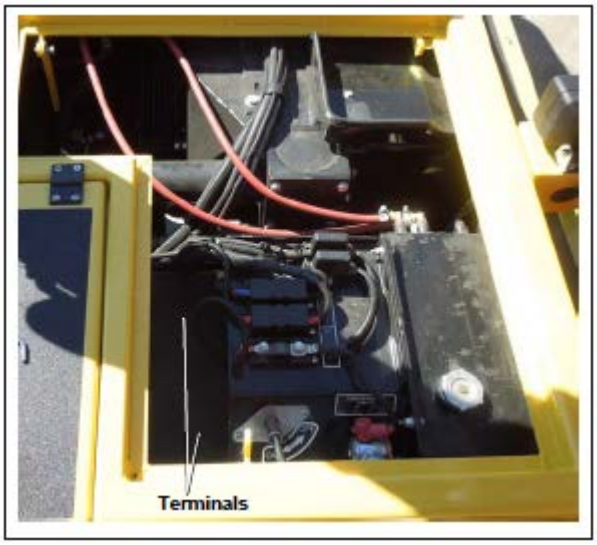
1.2 Points of maintenance

Batteries (1)

Maintenance of batteries

NOTE:

The batteries equipped with the paver are “Maintenance Free” batteries. When batteries can no longer hold a charge, they must be replaced.



NOTICE

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

⚠ CAUTION

When removing the batteries, always remove the negative terminal first, ensuring that the battery terminals do not short circuit.

⚠ WARNING

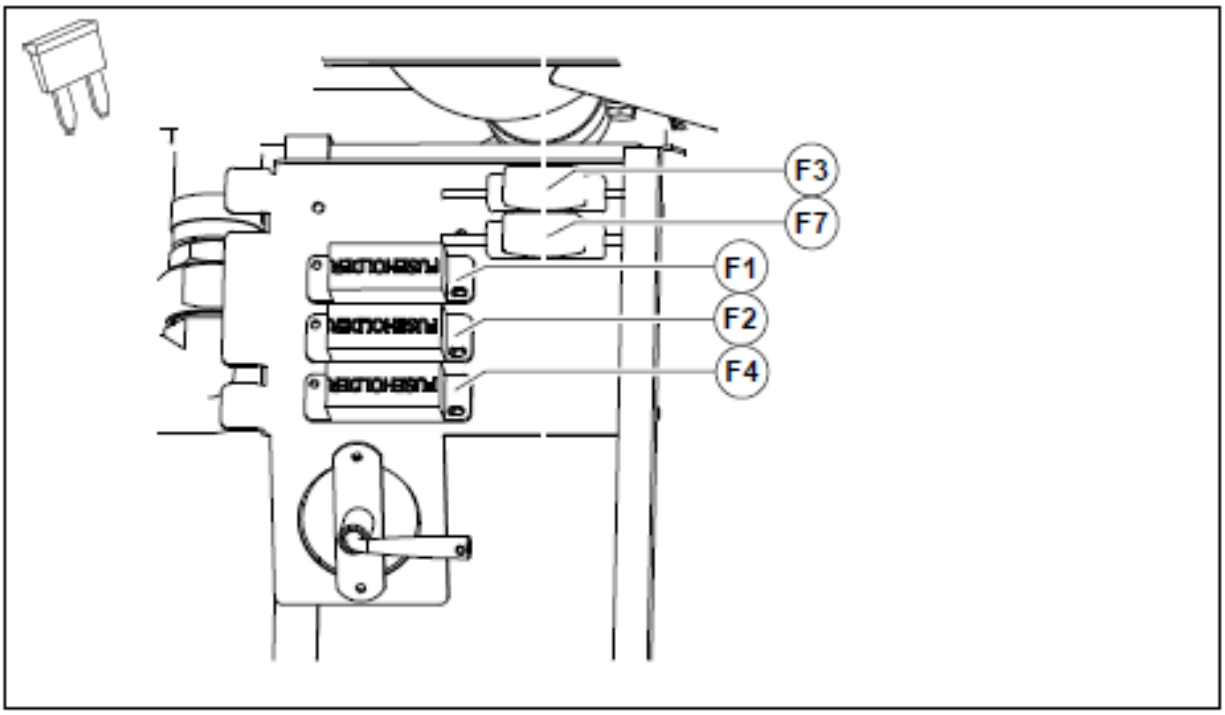
Always where protective glasses when working with batteries.

⚠ WARNING

Never disconnect any charging unit circuit or battery circuit cable from the battery when charging unit is operating. A spark can cause explosions.

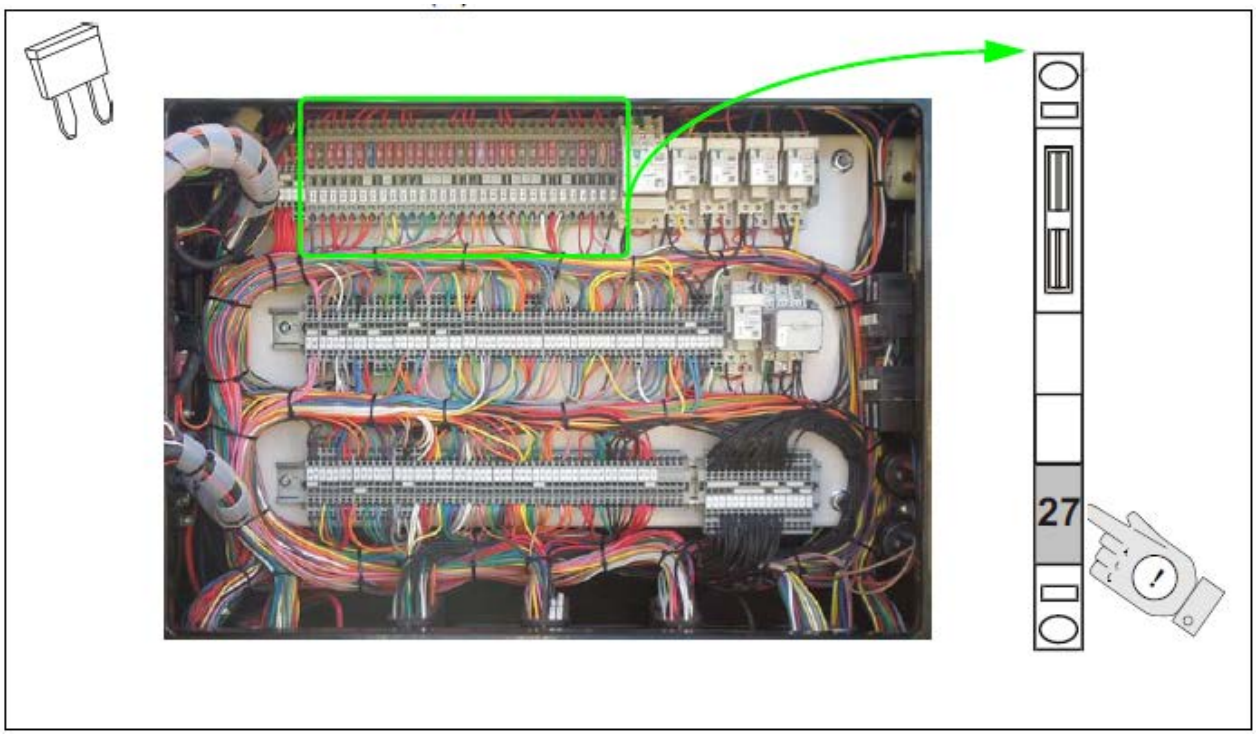
Electric fuses / relays (3)

Main fuses (A)



Fuse	Description	Rating (A)
F1	Main Battery	100
F2	Alternator	100
F3	Switch Power From Key	50
F4	Air Heater Power Supply	125
F7	ECM Power Supply	30

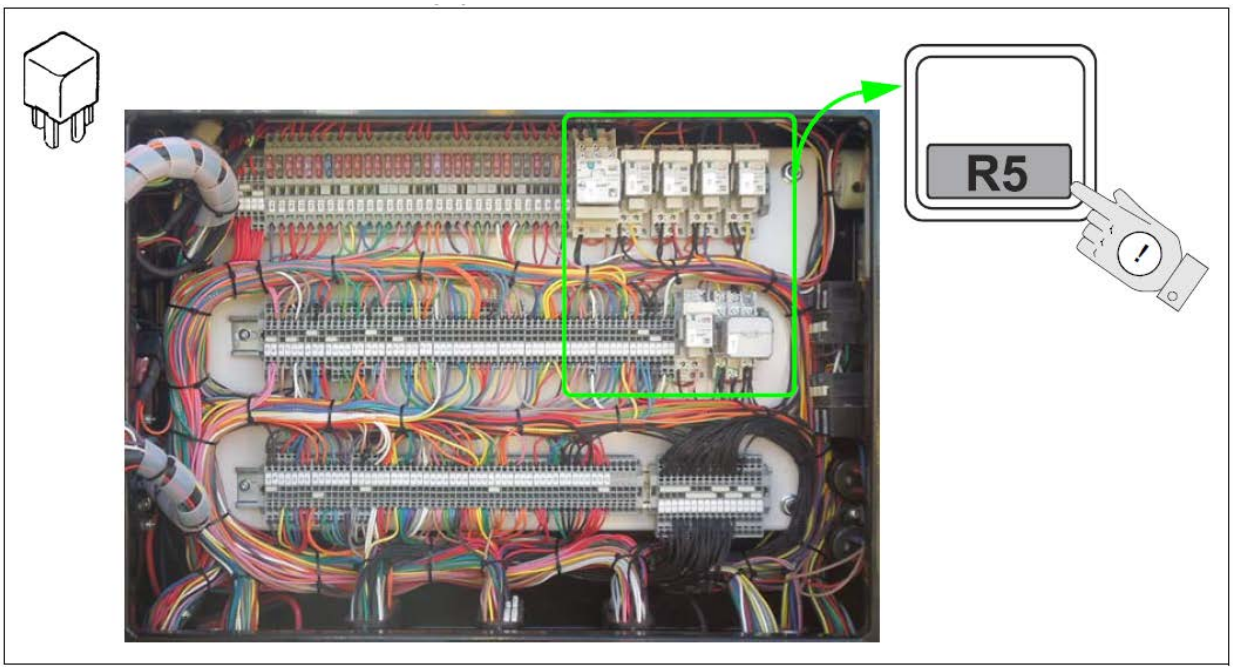
Fuses in terminal box (B)



Fuse No.	Description	Rating (A)
F5	Proper Controller	10
F6	Emergency Stop	5
F8	ECM Key Switch Signal	5
F9	Key Switch Power	10
F10	DP2000 Display Power	5
F11	Horn Power Supply	5
F12	Start Prevention Relay, Hour Meter	10
F13	Proper Devices	10
F14	Console Select Switch and Parking Brake	5
F15	Auger Conveyor On / Off and Auto / Manual Switch	5
F17	Auger Raise / Lower, Ext / Ret	10
F18	Tow Arm Levelling Control	10
F19	Screed Raise / Lower, Ext / Ret	10
F20	Vibration Solenoid	2
F22	Work Lights	10
F23	Dash Board Lamp	5
F24	DC 24 V Outlet Front	10
F25	DC 24 V Outlet Front	10
F26	DC 24 V Outlet Rear	10
F27	DC 24 V Outlet Rear	10
F28	Flasher 1	10

Fuse No.	Description	Rating (A)
F29	Flasher 2	10
F30	Roading Lights	10
F31	Truch Hitch and Wash Down	10
F32	Screed Power Supply	15
F33	Screed Power Supply	15
F34	Front Wheel Assist	3
F35	Auger / Conveyor Controller Power Supply	10
F36	Auger / Conveyor Cleaning / Fast Fill Switch	10
F37	Auger / Conveyor Ultrasonic Sensor	5
F38	Auger / Conveyor Override Switch Power	10

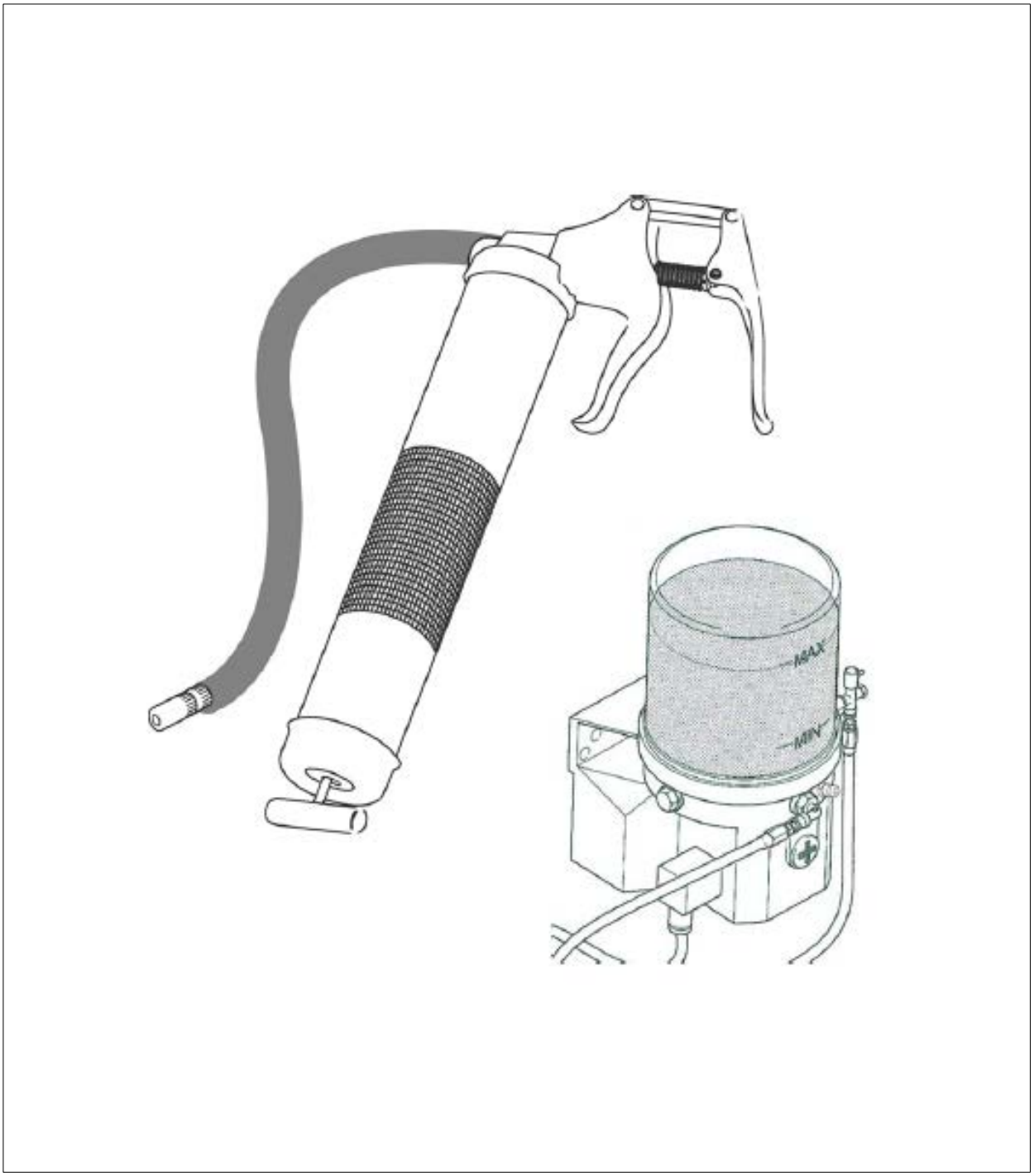
Relays in terminal box (C)



Relay No.	Description
K1	Starter
K2	Anti Start Circuit
K3	Emergency Stop Circuit
K4	Intake Air Heater
K5	Auger / Conveyor ON / OFF
K7	Auto Mode Enable (Screed Float, Vibration, Leveling)
K8	Left Conveyor OFF
K9	Right Conveyor OFF
K10	Starter Lock Out
K11	Screed Float / Lock
K12	Console Select Indication
K13	Left Auger OFF
K14	Right Auger OFF
K15	Key Switch Power
K16	Flasher - Warning / Turning Signal
K17	Flasher - Warning / Turning Signal

F 9.0 Maintenance – Lubricating Points

1 Maintenance – Lubricating points



NOTE:
The information on the lubrication points for the various assemblies is assigned to the specific maintenance descriptions (I.E. grease points for the auger are in the auger section and grease points for the undercarriage are in the section on undercarriages)!

1.1 Maintenance intervals

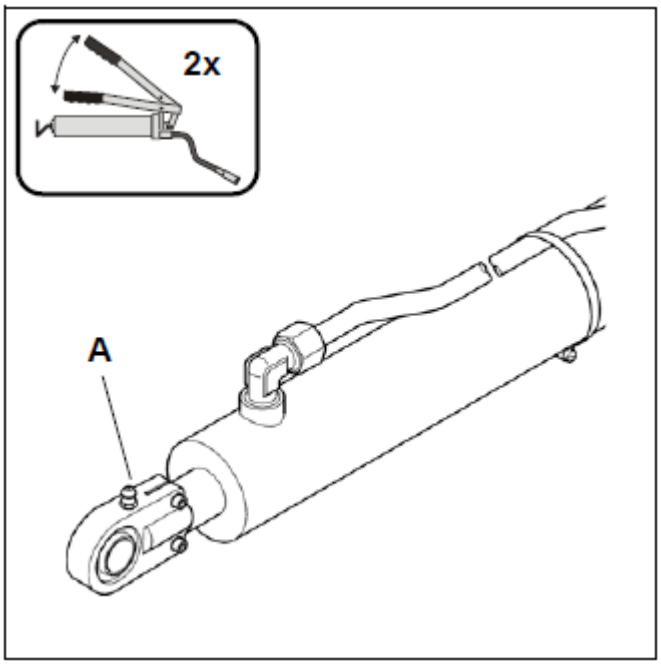
Item	Interval									Maintenance point	Note
	10	50	100	250	500	1000 annually	5000	20000	If necessary		
1		■								- Bearing points	

Maintenance	■
Maintenance during the break-in period	▲

1.2 Points of maintenance

Bearing points (1)

One grease zert (A) is located at each hydraulic cylinder bearing point (top and bottom).



F 10.0 Checks, Decommissioning

1 Tests, check-up, cleaning, stopping

1.1 Maintenance intervals

No.	Interval								Points of maintenance	Remark
	10	50	100	250	500	1000 / year	2000 / 2 years	as required		
1	■								- General observation	
2						■		■	- Checked by a specialist	
3								■	- Cleaning	
4								■	- Preservation for storage of paver	

Maintenance	■
Maintenance during run-in period	▲

2 General observation

The daily check includes a walk around the machine while checking the following items:

- Are any of the parts or controls damaged?
- Are there leaks at the engine, the hydraulics, the gearbox, etc?
- Are all the locking points secure (conveyor, auger, screed)?

⚠ CAUTION

Repair the damages and clean any spills immediately to avoid risks of accidents and environmental pollution!

3 Check performed by a specialist

The paver, the screed and the electrical equipment MUST be checked regularly by a specialist:

- As required (according to the circumstances of application and operating conditions).
- However, at least once a year, so that the machine retains its reliable operating condition.

4 Cleaning

- Clean all parts that come into contact with the material to be laid.
- Spray these parts with the release agent spray equipment.

⚠ CAUTION

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

- Clean the machine with after laying material mixes, lean concrete etc. Remove all residue of the material laid.

⚠ WARNING

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

- Remove the residue of the material laid.

⚠ CAUTION

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

⚠ DANGER

Slippery walkways and steps can result in severe or deadly slipping and failing! Ensure the cleanliness of the walkways and steps and that they are free of grease and oil.

5 Preservation for storage of paver

5.1 Downtime up to 6 months

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

NOTICE

Recharge the stored batteries every 2nd month.

- Protect all metal surfaces, (i.e. hydraulic cylinder piston rods) against corrosion using an appropriate agent.
- If the machine cannot be parked in a garage, barn or a shed, it must be covered with an appropriate canvas. In each case all the air inlets and outlets must be tightly sealed using plastic film and adhesive tape.

5.2 Downtime between 6 months and 1 year.

- Perform all operations described for “Downtime up to 6 months“.
- After draining the engine oil, fill the engine with preservative oil permitted by the manufacturer of the engine. Contact the Dynapac, USA customer center for further detail.

5.3 Re-commissioning:

- Reverse the steps in the section “Downtime“.

6 Environmental protection, disposal

6.1 Environmental protection

Packaging materials, used operating substances, cleaning agents and machine accessories must be correctly recycled.

Always observe the local regulations!

6.2 Disposal

Correctly sorted disposal must be carried out after replacing wear and spare parts and after the machine has been withdrawn from service (scrapped).
The materials must be sorted correctly according to metal, plastic, electronic scrap, various operating substances etc.
Any oily or greasy parts (hydraulic hoses, lube pipes etc.) must be treated separately.

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

Always observe the local regulations!

F 11.0 Lubricants and Operating Substances

1 Lubricants and operating substances

⚠ CAUTION

Use only the lubricants listed below or their equivalents.

Only use clean containers for filling oil or fuel.

Follow to the correct filling volumes (see the section “Capacities“).

⚠ CAUTION

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

⚠ WARNING

Never mix synthetic oils with mineral oils!

1.1 Capacities

No.	Lubrication	Substance	Volume	P/N
1	Engine Sump+Oil Filter, Cummins	PAROIL E GREEN	18.5 qts (**17.5 L**)	1630047100 5L 1630047200 20L 1630047300 209L
2	Hydraulic Oil	Hydraulic 100	66 gal (250 L)	9106230321 20L 9106230320 209L
3	Conveyor Gearbox - Left	Fluid Gearbox 100 (Environment degree between -20℃/+30℃)	1.58 qt. (**1.5 L**)	4812008274 5L 4812008275 20L 4812008276 209L
4	Conveyor Gearbox - Right	Fluid Gearbox 100 (Environment degree between -20℃/+30℃)	1.58 qt. (**1.5 L**)	4812008274 5L 4812008275 20L 4812008276 209L
5	Bonfig Drive - Left	Fluid Gearbox 100 (Environment degree between -20℃/+30℃)	0.8 gal (**3.0 L**)	4812008274 5L 4812008275 20L 4812008276 209L
6	Bonfig Drive - Right	Fluid Gearbox 100 (Environment degree between -20℃/+30℃)		
7	Pump Drive Gearbox	Fluid Gearbox 100 (Environment degree between -20℃/+30℃)	1.4 gal (**5.3 L**)	4812008274 5L 4812008275 20L 4812008276 209L
8	Auger Gearbox - Left	Fluid Gearbox 100 (Environment degree between -20℃/+30℃)	0.84 qt (0.8 L)	4812008274 5L 4812008275 20L 4812008276 209L
9	Auger Gearbox - Right	Fluid Gearbox 100 (Environment degree between -20℃/+30℃)		
10	Fuel Tank / Diesel	DIESEL-RED DIESEL LOW SULFER(ULSD)	61 gal (230L)	-
11	Engine Coolant	Coolant 100(60/40 Freeze point:-62°F)	8.45 gal (32L)	2658326217 5Gallon
		Coolant 150(50/50 Freeze point:-35°F)		2658449097 5Gallon
12	Urea	-	19L	-