

# Operating manual

## PistenBully 300 Kandahar

Ab WKU 5 825 MA 5 L 012471

Für WKU.....

EN



*PistenBully®*



KÄSSBOHRER GELÄNDEFahrZEUG AG

Kässbohrer Geländefahrzeug AG  
Kässbohrerstraße 11  
D-88471 Laupheim

CALIFORNIA \_\_\_\_\_

Proposition 65 Warning \_\_\_\_\_

Diesel engine exhaust and some of its constituents are known \_\_\_\_\_  
to the State of California to cause cancer, birth defects, and \_\_\_\_\_  
other reproductive harm. \_\_\_\_\_

**Printed in Germany**

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Technical details might not necessarily be exactly as described or illustrated in this operating manual.

Printed on environmentally compatible paper (bleached without chlorine, recyclable).

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**55 MULTIFLEX ROTARY SNOW PLOUGH 138****ACCOMPANYING DOCUMENTS:**

- Driver's log book
- Operating Manual for Kahlbacher front-mounted rotary snow plough (special equipment).
- Operating Manual for capstan winch (special equipment).
- Operating Manual Diesel engine
- Maintenance work folder

**YOUR OPINION IS IMPORTANT  
TO US!**

To ensure that you always receive  
the best possible operating Manual.

Sender: .....

Tel: .....

Fax: .....

**To:**

**Kässbohrer Geländefahrzeug AG**

**Kässbohrerstraße 11**

**D-88471 Laupheim**

For the attention of. Mr. Peter Görlich

Fax no.: 07392/900122

E-mail: peter.goerlich @ pistenbully.com

**Quality of translation:**

Correctly translated

Translation containing errors

Comments: .....

.....

.....

.....

**Diagrams and photos:**

Provide good explanations

Diagrams with better explanations required

Comments: .....

.....

A CD-ROM would be good!

This operating manual provides information about:

- how to handle, maintain and care for your Pisten Bully.
- important instructions concerning correct and economical operation.
- warnings so that you recognise dangers in good time and avoid them.



Make sure that the operating manual is always in the oddments tray in the driver's cab.

## ABBREVIATIONS USED

e.g. . . . . = for example

$M_A$  . . . . = tightening torque

SP no. . . = order number for spare part

min./max. = minimum/ maximum

pos. . . . . = position

## SYMBOLS USED



### WARNING!

Non-observance of working and operating instructions with this symbol may result in danger to life and limb.



### CAUTION!

Non-observance of working and operating instructions with this symbol may result in damage to machines or property.



Important information and recommendations.



Environmental protection instruction or information on environmentally-friendly operation.

- Handling information



**Technical customer service (TKD)**

	<b>Telephone number at work</b>	<b>Mobile number</b>
Management of entire service GSMr. Knab	+49(0)7392/900-101	0171-4338602
Departmental manager of TKD Mr. Strähle	+49(0)7392/900-103	0171-5769732
Regional manager of TKD Mr. Stockinger	+49(0)7392/900-106	0171-4066984
Regional manager of TKD Mr. Braun	+49(0)7392/900-105	0171-4066982
Regional manager of TKD Mr. Arbogast	+49(0)7392/900-118	0171-4338395
Regional manager of TKD Mr. Bohnet	+49(0)7392/900-116	0171-4439069

Fax +49(0)7392/900-100

**24-hour emergency number: Tel. 0171/7124096**

Spare parts department (ET)

ETV management Mr. Kristen +49(0)7392/900-135 Fax+49(0)7392/900-140

**Emergency number for sales of spare parts: Tel. 0171/3732230**

**Contact at my national office:**

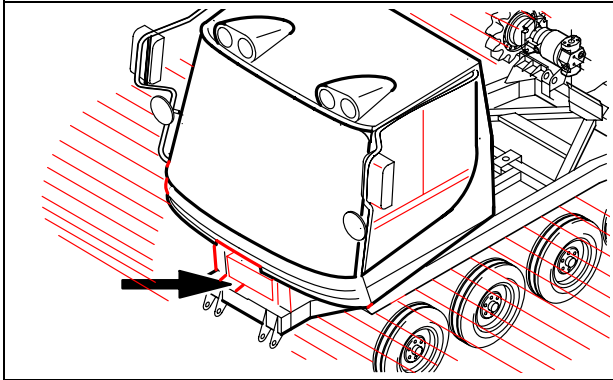
Name of Technical customer service : .....Telephone number :.....

Name of Spare parts department : .....Telephone number:.....

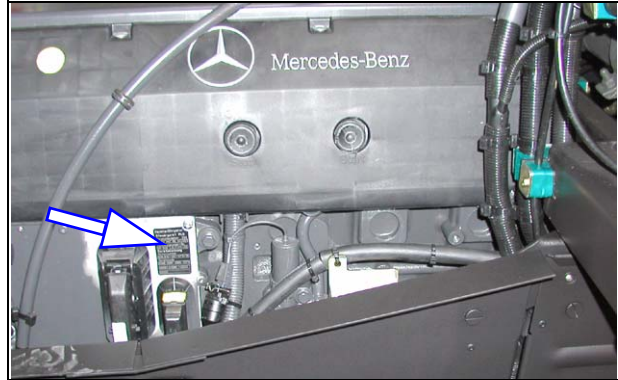
Name of Repairs fitter: .....Telephone number:.....



Always quote the vehicle number when making enquiries and ordering spare parts.  
TKD centrally controls the use of customer service engineers.



**The vehicle identification number (VIN)** is embossed on the front of the outside face of the right-hand side of the chassis.



**The engine number** is embossed on the type plate on the engine.



In your own interest please note the following: we recommend that you use the **genuine components** from **Kässbohrer Geländefahrzeug AG** and the conversion and auxiliary components approved specifically for your vehicle type. These components have undergone a special inspection procedure which tested their reliability, safety and suitability for Kässbohrer Off-Road Vehicles. Despite ongoing studies of the market, we are unable to assess whether this is the case for other products – even if they have passed a TÜV approval test or have official approval. We therefore cannot vouch for such products.

Genuine components and approved conversion and auxiliary components can be obtained from your **Kässbohrer Geländefahrzeug AG** service support centre. There you will also receive comprehensive advice, including about permissible technical modifications, and our trained staff will carry out the fitting of parts.

The use of any non-genuine components renders all warranty claims invalid. We do not recognise liability for secondary damage resulting from this.

KÄSSBOHRER GELÄNDEFahrZEUG AG

## OPERATION

### Correct usage:

Snow groomers may only be operated as specified in the manufacturer's operating manual.

The Pisten Bully may be used for the following purposes only:

- grooming ski-slopes.
- removing snow from paths and tracks in the countryside. Not on public roads.
- grooming Nordic ski-runs.
- transporting people in the special people-carrier cabin (optional extra).

If you wish to use the vehicle for any other purpose, you must apply for written approval from the manufacturer.

## DRIVERS

- Drivers must be specifically appointed to drive snow groomers.
- You may appoint people to drive the snow groomers on their own only when you are certain that they will be able to reliably fulfill the tasks assigned to them.

### In particular, they must satisfy the following:

- be at least 18 years old.
- be physically and mentally suitable.
- be trained in how to drive the snow groomer and have proven their driving ability to the operator.
- be familiar with the characteristics of the snow and the characteristics of operating ski-slopes.
- be familiar with the area where the vehicle is to be used, especially with regard to particularly dangerous areas.
- be familiar with first-aid procedures in the event of an accident.

- if avalanches pose a threat in the area where snow groomers are to be used, in addition to the aforementioned conditions, drivers must also be instructed about how avalanches are started, the consequences of them and how to behave when there is a risk of avalanches.

### DANGER ZONE FOR PERSONS

- No-one is permitted to enter the snow groomer's immediate danger zone.
- The driver may only operate and drive the snow groomer provided that there is no-one in the immediate danger zone.
- The driver must issue warnings when in dangerous circumstances.
- Special protection measures must be taken if the snow groomer is being used in an area where the driver does not have a clear view of the surrounding area and people may unintentionally enter the danger zone. Depending on the circumstances of each case, these measures may take the form of warning signs, closed runs or off-limit markers.

### DRIVING THE VEHICLE

- Never leave the vehicle unattended with the engine running.
- Risk of poisoning from exhaust gases. Never leave the engine running in enclosed spaces.
- The driver may only start and/or move the snow groomer when seated in the driver's seat, after fastening the seat belt.
- Never try to adjust the driver's seat and steering wheel when driving.
- Snow groomers must be used and operated in a manner which ensures their stability.
- Drivers may only drive the snow groomer at a speed which they can continually control. They must adapt the speed to the snow, terrain and visibility conditions and to the characteristics of the snow groomer. If necessary, they must take account of the auxiliary equipment used.
- The driver must not exceed a safe speed for prevailing visibility. This does not apply to steep

slopes where the vehicle cannot be stopped as a result of the angle of the terrain. Drivers may only drive on such steep slopes once certain that they can do so without putting themselves and others at risk.

- Never drive the Pisten Bully with open doors.
- Loads must be correctly secured.
- When driving past people, slow down, keep at a safe distance and always bear in mind that the people may behave unexpectedly.
- Always come to a complete stop before reversing the vehicle.
- Ensure that the area behind the machine is clear.
- Avoid crossing slopes at an angle because the Pisten Bully may slip downhill.
- When driving a tracked vehicle, the traction is so great that the vehicle may be driven well beyond the point at which it should start to tilt and then suddenly tip over.
- Risk of damage to the electronics of the Pisten Bully! The use of mobile phones in the cab while the diesel engine is running is prohibited.

## **ENTERING / STOPPING / PARKING**

- Danger of slipping on the track when entering and exiting the driver's cab.
- When parking on a slope, be particularly careful when opening the door. The door opens at an angle.
- Do not park the vehicle where it cannot be seen.
- Lower front- and rear-mounted auxiliary equipment to the ground, switch off snow blower, set the direction-of-travel switch to "neutral", apply the parking brake.
- Never leave the vehicle unattended with the engine running and do not leave the engine running in an enclosed space. Switch off the engine, remove the key when you exit the vehicle, and lock the cab.

## OPERATION UNDER UNUSUAL CONDITIONS

- Before using the snow groomer, check that the area can be traversed.

## RISK OF BREAK-THROUGH



- Driving on frozen rivers and lakes is very dangerous. We would therefore advise against this.

## SNOWDRIFTS



## DANGER OF AVALANCHES DANGER OF FALLING STONES



- The driver must be accompanied by a co-driver when driving in areas where the vehicle cannot be seen and when the weather is bad, unless several vehicles are working together as a team. This does not apply if the driver uses a radio to remain in constant contact with someone at the base who can send out a rescue team should an accident occur.
- When using snow groomers at night-time, handheld searchlights must also be used.
- The driver must be secured by means of the safety belt when the winch is in operation.

## DRIVING WITH PASSENGERS

- Only 1 co-driver may sit in the driver's cab.
- The co-driver must be seated on the co-driver's seat at all times when the vehicle is in motion.
- When persons travel in the PB people carrier cabin, they must sit on their seats with their safety belts correctly fastened, and hold tight.
- The retaining screws of the people carrier cabin must be checked every day to ensure that they are tight.

### **Do not drive the vehicle with people on:**

- the load platform
- the auxiliary driven machinery
- an attachment

### **The gallery railing:**

#### **Correct usage:**

- The gallery railing is an accessory for the Pisten-Bully 300 / 300 Polar.
- The gallery railing is designed for the transportation of a wide variety of material.
- The commercial transport of persons is prohibited.
- The transport of persons is permitted in Germany (DIN 30770) and Austria (Austrian Standard M9850).  
Persons carried in this way must be instructed by the company operating the vehicle with regard to behaviour and risks relating to transportation on a vehicle fitted with a gallery railing.
- The gallery railing must be secured at both ends. Both safety chains must be closed and locked.
- Risk of burns caused by the exhaust bowl. Keep clear.
- Always check the security of all threaded fasteners before each use.
- Avoid abrupt changes of direction and angles of inclination..



## MAINTENANCE

- Snow groomers must be maintained by trained staff specifically appointed by the operator.
- Do not perform maintenance work under movable parts in their open or raised positions unless they have been secured to prevent them from slamming closed or dropping.
- Snow groomers and raised equipment must be secured before maintenance work is started to prevent them from accidentally moving.
- Markings, warning signs and information plates on the Pisten Bully and auxiliary equipment must not be removed or covered over or made illegible in any other way.
- Compliance with the manufacturer's maintenance instructions is mandatory.
- Faults which could affect safety levels must be rectified immediately.

## MONITORING

- Before starting off, the driver must check the function of the vehicle parts which assure safe operation, e.g. by testing the brakes, switching on the lighting, checking the function of the warning devices. Operation of the controls for auxiliary equipment must also be checked.
- If radios are required to ensure safe operation of the snow groomer, before starting off checks must be performed to ensure that the radio is functioning correctly and that there is a radio connection.
- The driver must immediately report defects to the supervisor and, on vehicle handover, to the replacement driver.
- In the event of damage, defects or changes that endanger operational safety, the driver must immediately cease operation of the vehicle.
- The supervisor must be notified immediately in the event of accidents involving injury to persons or damage to property or to the vehicle.
- The supervisor must perform random checks in order to ensure that the snow groomer is operated in a safe manner.

## INSPECTION

The operator must ensure that the snow groomers are inspected whenever necessary, at least once a year and after maintenance work. This inspection must ensure that the snow groomers are safe and must be performed by a skilled specialist.

Skilled specialists are people who have an extensive knowledge about vehicle technology as a result of their specialist training and experience. They are also sufficiently familiar with the appropriate national safety at work legislation, accident prevention guidelines, directives and generally accepted rules of engineering practice (e.g. DIN sheets, VDE requirements) to ensure that they can judge whether snow groomers are in a condition suitable for operation..

The results of the inspection must be recorded in writing and filed.

## FIRST-AID KIT

The fire extinguisher is stowed behind the driver's seat.



Note expiry date.

Always make sure that the first-aid kit is complete.

## FIRE EXTINGUISHER

The fire extinguisher is beneath the co-driver's seat.



Note expiry date.

Replace used fire extinguishers immediately

**WARNING PLATES****WARNING!**

Strictly observe all warning plates fitted to the Pisten Bully and the auxiliary equipment!

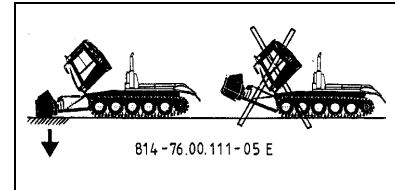
**WARNING!**

Always replace damaged or lost warning plates immediately!

**WARNING PLATE:**

Fitted to: **Engine cover**  
KGG No. 8.762.685.000E

Text: **Caution! Riding on the load platform is strictly prohibited.**

**WARNING PLATE:**

Fitted to: **Steering wheel**  
KGG No. 814.76.00.111.05E

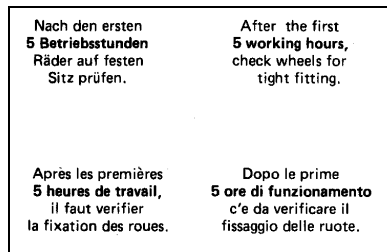
Text: **Tilting driver's cab and lowering equipment carrier (risk of collision).**

**WARNING PLATE:**

Fitted to: **driver's cab / parking  
brake.**

KGG No.8.765.311.058E

Text: **Caution! Apply parking  
brake before leaving the driver's  
cab.**

**WARNING PLATE:**

Fitted to: **Windshield.**

KGG No. 8.762.430.057E

Text: **After the first 5 operating  
hours, check that wheels are se-  
curely mounted.**

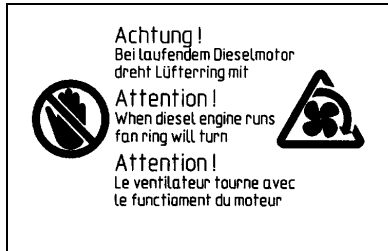
**WARNING PLATE:**

Fitted to: **Diesel engine**

KGG No. 8.312.085.064

Text: **Warning! Do not use starter  
fluids or ether when switching  
on the diesel engine (risk of ex-  
plosion).**

## WARNING PLATE:



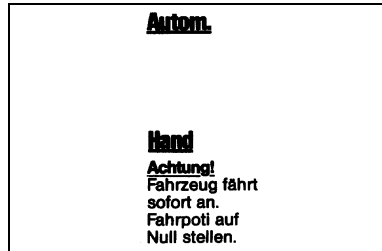
Fitted to: **Fan / engine**  
KGG No. 8.762.634.054E

Text: **Caution! When the diesel engine is running, the fan rotor turns.**



Protect fan against damage.

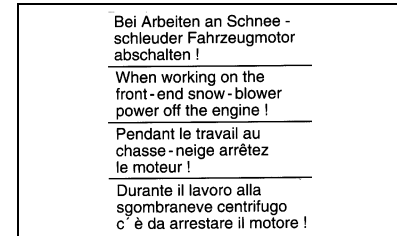
## WARNING PLATE:



Fitted to: **Console / driver's cab**  
KGG No. 8.765.246.000E ( **D** )  
KGG No. 8.765.246.001E ( **F** )  
KGG No. 8.765.246.005E ( **GB** )  
KGG No. 8.765.246.008E ( **I** )  
KGG No. 8.765.246.011E ( **E** )

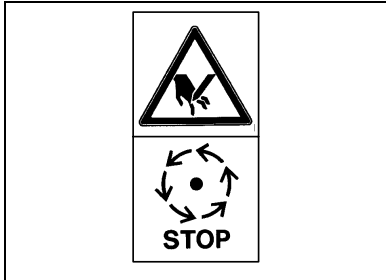
Text: **Caution! In manual mode (digital electronics switched off), vehicle sets off immediately. Zeroise the drive potentiometer.**

## WARNING PLATE:



Fitted to: **KFS**  
KGG No. 8.762.435.058E

Text: **Always switch off the engine before working on the rotary snow blower!**

**WARNING PLATE:**

Fitted to: **rotary plough**  
KGG No. 8.762.638.058E

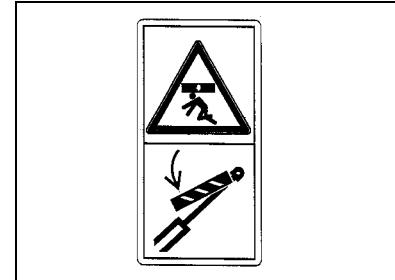
**Text: Do not touch mechanical components until they have come to a complete stop!**

**WARNING PLATE:**

Only fitted with KFS: **Steering wheel.**

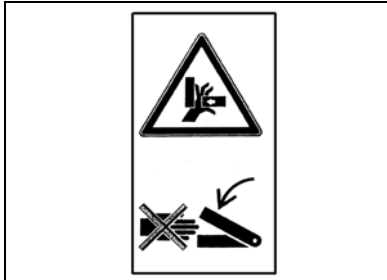
KGG No. 8.765.679.000E ( **D** )  
KGG No. 8.765.679.001E ( **F** )  
KGG No. 8.765.679.005E ( **GB** )  
KGG No. 8.765.679.008E ( **I** )  
KGG No. 8.765.679.011E ( **E** )

**Text: Reversing with inching potentiometer is not permitted! Comply with Operating Manual.**

**WARNING PLATE:**

Fitted to: **Engine cover**  
KGG No. 8.762.643.000E

**Text: Standing in the danger area (load bridge) is prohibited unless the lifting cylinder inhibit has been enabled!**

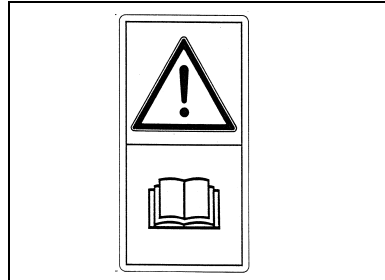
**WARNING PLATE**

Attached to: **auxiliary equipment**  
KGG no. 8.762.660.000 E

Text:

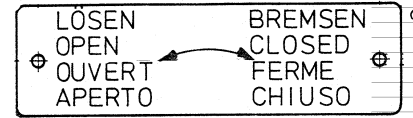
**Warning!**

**Do not reach into crushing zone  
while parts there may be moving!**

**WARNING PLATE:**

Fitted to: **Driver's cab**  
KGG No. 8.762.642.000E

Text: **Before driving the vehicle,  
read and follow the Operating  
Manual and safety instructions!**

**Information plate:**

Attached to: **parking brake**

KGG no. 8.761.994.058E

Text:

**Release parking brake.  
Actuate parking brake.**

## INFORMATION PLATE



Attached to: frame  
 KGG no. 8.762.689.000 E

Text:  
 Raising and lowering lever positioning for driver's cab and loading bridge.

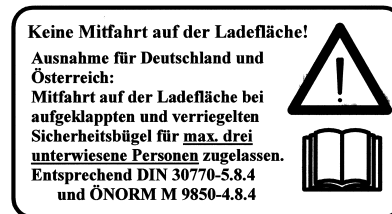
## KITEMARK:



Fitted to: **Console / passenger**  
 KGG No. 8.762.631.000E

Text: **Manufacturers use the CE-kitemark to demonstrate that a product complies with all guidelines, standards and legislation.**

## Warning sign:



Affixed to: **Gallery railings**  
 KGG No. 8.762.658.000E

Text: **Transportation of persons on the load platform is prohibited. Exception for Germany and Austria:**  
**Transportation on the load platform of max. three persons familiar with the risks involved is permitted with the safety devices in position and locked. Compliant with DIN 30770-5.8.4 and Austrian Standard M 9850-4.8.4**





## **WARNING!**

**While engine is running maintain a safe distance from rotating parts.**

**Always carry out essential inspection work before operation.**

**Carry out inspection work with engine switched off and on a horizontal parking area.**



The oil and coolant marks measured (dipstick, overflow plug etc.) must be strictly adhered to.

## **TOPPING UP OR CHANGING FLUIDS AND LUBRICANTS**

### **Fluids and lubricants:**

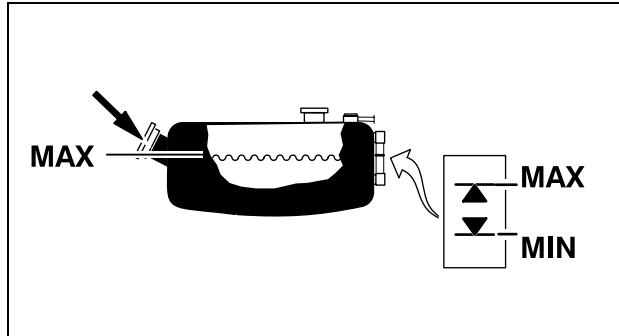
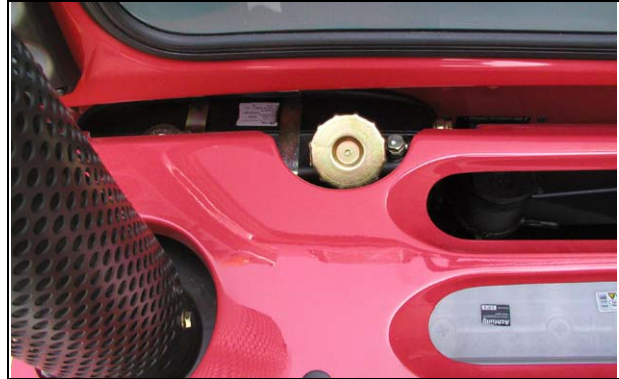
- do not bring into contact with skin (wear safety gloves, change any clothing they have touched).
- do not breathe in or drink (danger of poisoning).
- do not mix different sorts of fluids and lubricants.
- Fluids and lubricants nicht spill (danger of polluting soil and ground water).
- Dispose of carefully (comply with national legislation).

## CHECKING COOLANT LEVEL



Check and top up coolant only when it is cold.

- Check coolant level on sight glass of expansion tank.  
The water level must be between the min. and max. marks.
- Check the anti-freeze of the coolant, (refer to fluids and lubricants specification).
- Check that connecting hoses in the cooling and heating systems are sealed.

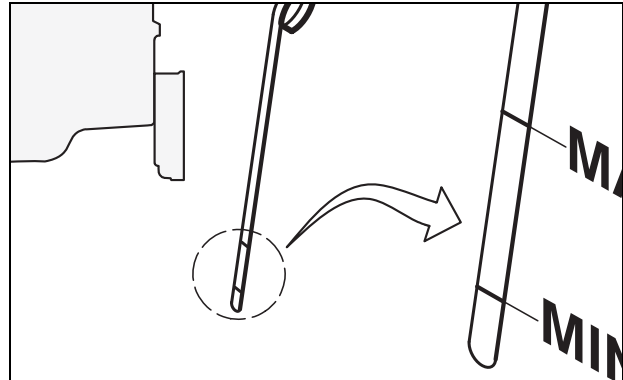
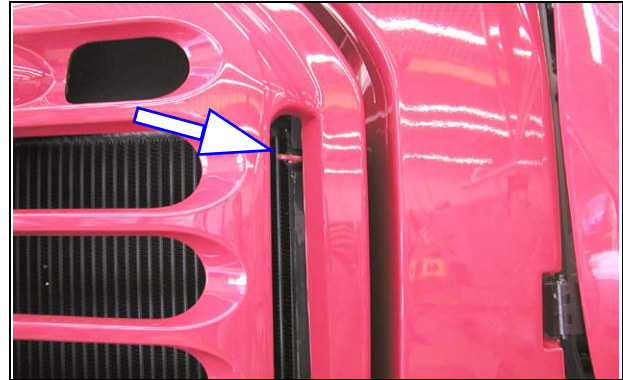


## CHECKING ENGINE OIL LEVEL

- You use the oil dipstick to undertake the oil level check.
- Top up oil when engine is at standstill and when the Pisten Bully is standing on level horizontal ground. The oil level must be between the min. and max. marks on the oil dipstick.



Only top up with approved engine oils (refer to fluids and lubricants specifications).

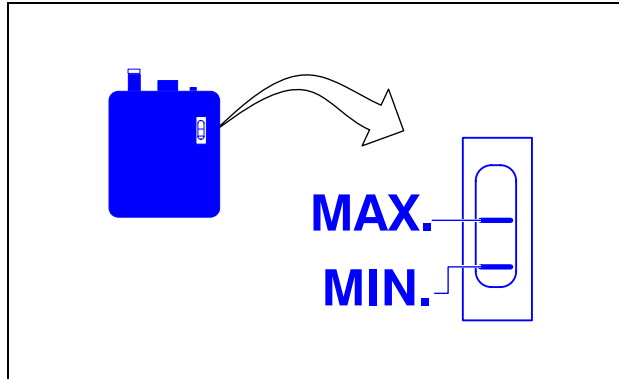


## CHECKING HYDRAULIC OIL LEVEL

- Only check and fill up the hydraulic oil when it is in operating temperature.
- The oil level must be between the min. and max. marks.



Only top up using approved hydraulic oil (refer to fuel specifications)



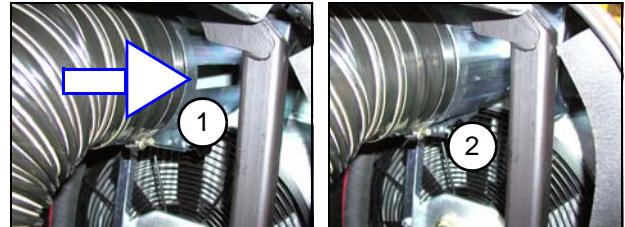
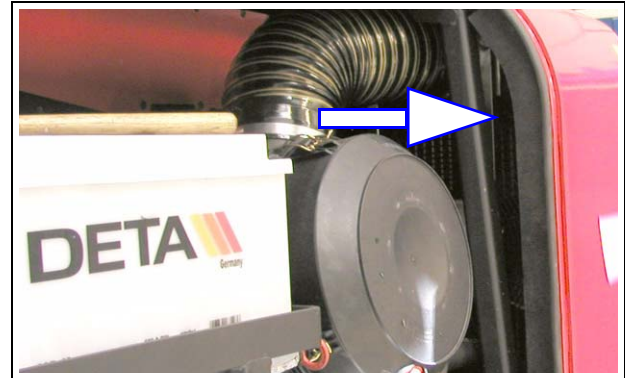
## ADJUSTING AIR INTAKE:

There is a risk of ice particles damaging the turbocharger blades:

- at temperatures below  $-10^{\circ}\text{C}$
- powder snow or very fine snow
- when air humidity is high



At temperatures above  $0^{\circ}\text{C}$ , move intake air flap to pos. **2**, otherwise power will be lost on the diesel engine.



### Setting intake air flap

- in pos. **1** = engine compartment air intake.
- in pos. **2** = fresh air (cold air).



# NOTIZ

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## CHECKING THE ELECTRICAL SYSTEM

- Monitor lighting and turn signals and rotary beacon. Repair when necessary. While doing so, follow instructions for the rotary beacon (high-voltage).
- Replace defect bulbs and fuses.
- Windshield wipers, horn and reversing alarm.

### **WARNING!**

**Never operate Pisten Bully without properly functioning warning and rotary beacon systems.**

## VISUAL INSPECTIONS

- Carry out visual inspection of tracks and wheels. Look for damage to tyres.
- Carry out visual inspection of attachment of auxiliary equipment (cotter pins, bolts, nuts).
- Carry out visual inspection of hydraulic system (vehicle and auxiliary hydraulics) hydraulic lines, cou-

plings, hoses, appliance cylinders. Look for signs of leakage and chafing.

## CHECKING PARKING BRAKE

- Do not allow anyone to enter the danger area!
- Start engine – apply parking brake: telltale lights up.
- Move direction of travel switch / speed range selector lever to "Forwards" and rev engine up briefly to approx. 2000 rpm: **The Pisten Bully must not move forwards!**

### **WARNING!**

**Never drive with defective parking brake.**

- When parking brake is released, telltale in instrument cluster must go out.
- Carry out daily inspection work
- Check drive belt on engine (viscous fan, 3-phase alternator) for belt tension and damage (refer to engine manufacturer's Operating Manual).

## CHECKING FUEL DELIVERY FILTER

- Unscrew filter housing **1** remove filter **2** and clean with diesel fuel using soft brush.

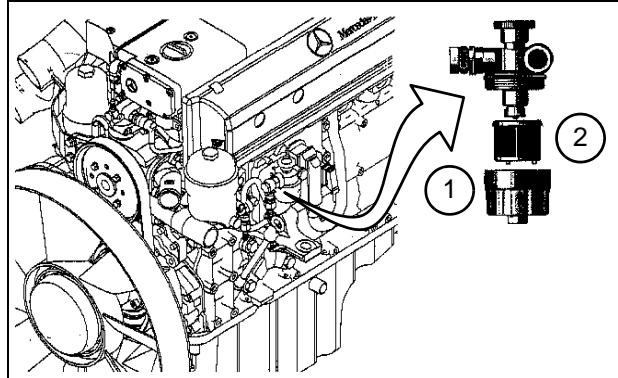


Replace very dirty and/or damaged filters.

- Check filter housing seal and replace if necessary.
- Place filter in filter housing and screw it in. Tightening torque 10 Nm.



Ensure seal is in correct position.



Comply with national guidelines when disposing of used filters and remaining fuel.



## TRACK TENSION

### Check track tension:

- on horizontal snow-covered ground.
- with unloaded vehicle and lowered auxiliary equipment.
- once track tension is balanced by driving backwards and forwards.

The track is at the correct tension if the upper part of the track can be raised by no more than approx. 40 – 50 mm when lifted in the middle.

- Check condition of track belts, locks, brackets and cleats and replace damaged parts.

## TEST RUN

- Conduct function and display checks.
- Check suspension and engine / transmission unit for abnormal noises.
- Visually inspect the development of smoke at the exhaust.



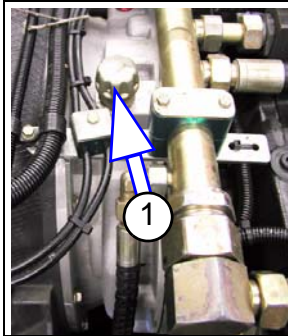
If there is an unusual development of smoke, check the air filter element.

## CHECK THE WHEELS

- Check that wheels are securely mounted, and check tyre pressures.

### Tightening torque / Tyre pressure

Type	Track tensioning axle	Tyre pressure Track tensioning axle	Idler axle	Tyre pressure Idler axle
Pisten Bully 300	300 Nm	-----	300 Nm	7.0 bar



Use only approved oil for transfer cases (see fluids and lubricants specifications).

## TRANSFER BOX

- Tilt the load platform.
- Use the dipstick to check the engine oil level.
- Brass cap **1** w/f 36; measure with oil dipstick set on (screw threads not engaged).
- The oil level must be between the min. and max. marks on the oil dipstick.



## DIESEL FUEL

- When using diesel fuels with a sulphur content comprising 0.5 % of volume, the oil change intervals must be twice as frequent.
- When using diesel fuels with a sulphur content comprising 1 % of volume, the oil change intervals must be three times as frequent.

### Diesel fuels at low temperatures

Select the diesel fuel's resistance to the cold in accordance with the temperature characteristics in the area of use and source the fuel from the fuel supplier (refer to MB Fluids and Lubricants Specifications 137.0 and 137.1)

## CHANGING COOLANT

### Water quality:

Free from contamination (grease, dirt, lime...)

If not observed: reduction in heat transfer capability and formation of deposits and blockages in coolant ducts.

Note: drinking water often satisfies the water quality requirements.

Changing coolant:

**Note:** Filling container and funnel must not contain any residue from other fluids and lubricants.

## 1. Select antifreeze agent

Only use antifreeze agents as defined in

### **MB fluids and lubricants specification 325.2.**

The coolant is mixed for the whole year using a mixture containing 50% water + 50 vol.% antifreeze agent. Antifreeze guaranteed to down to approx. -37°C (refer to MB Fluids and Lubricants Specification 310).



### **CAUTION!**

**Risk of engine overheating!**

**Do not exceed 55 vol.% of antifreeze agent.**

## Antifreeze agent change interval

**At least:** every 3 years

**After engine operating hours:** every 3600 hours

## Other antifreeze agents



### **CAUTION!**

**Engine overheating!**

**Risk of coolant foaming and therefore engine overheating.**

- The use of other antifreeze agents for topping up and antifreeze changes is strictly forbidden.

### **Remedy: If foaming occurs in cooling system**

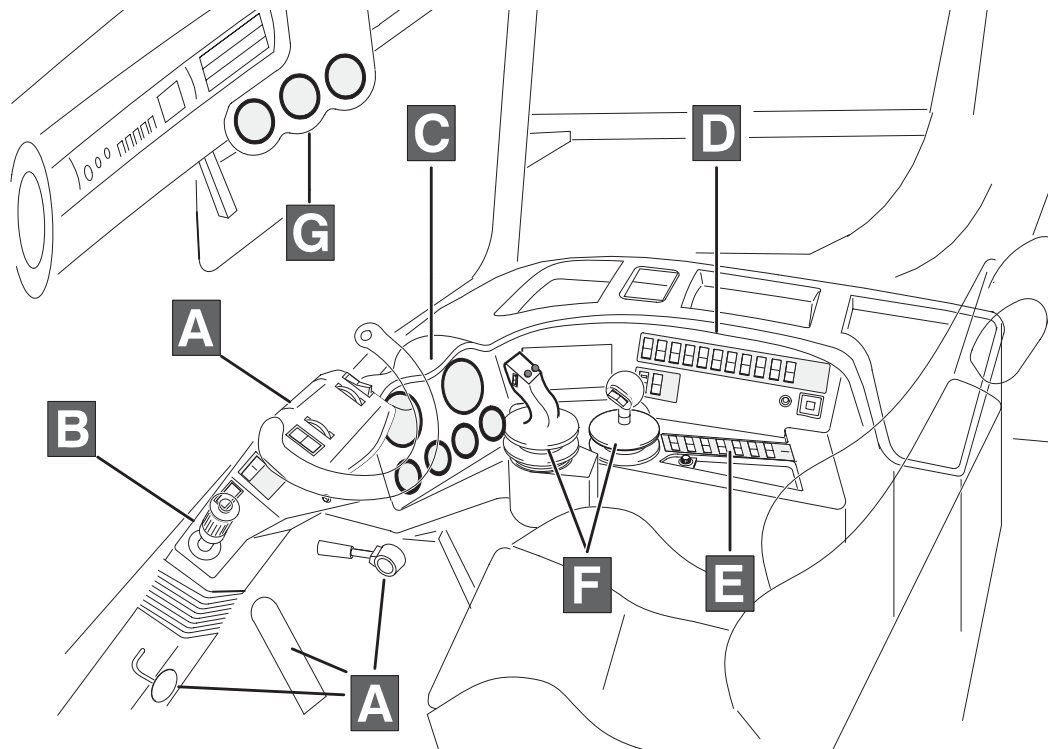
- Drain out all coolant. Fill cooling system with tap water and bring up to operating temperature.
- Drain out coolant (repeat process until coolant no longer foams).
- Fill cooling system with specified antifreeze agent mix.

Group	Designation	Grade	Fill quantity	Change intervals
01	<b>Mercedes Benz engine OM 926 LA</b>	MB sheet 228.5 SAE 10W 40/ 5W 40	28 litres	at least: every year every 800 hours
		MB sheet 228.1/ .3		at least: every year every 600 hours.
		<b>If a different quality engine oil is used to fill up the engine, the maintenance interval for the lower oil quality applies.</b>		
02	<b>Fuel tank</b>	MB sheet 137.0/ 137.1	180 litres	at least: every year Drain condensate.
	<b>Fuel filter</b>			every 800 hours
03	<b>Air filter</b>			at least: every year every 1200 hours
04	<b>Cooling / heating system</b>	50 % water + 50 % antifreeze agent. (MB sheet 325.2)	33 litres	at least: every 3 years every 3600 hours
06	<b>Transfer box</b>	<b>Poly Alpha Oleofin (PAO)</b> - CLP HCVG 150 / VG 220 <b>VG 220</b> (for summer operation) - API-GL4 SAE 75 W 90	3,2 litres 2,0 litres SW36	at least: every year every 800 hours new vehicle 100 hours
06	<b>Planetary gearbox</b>	<b>Poly Alpha Oleofin (PAO)</b> - CLP HCVG 150 / VG 220 <b>VG 220</b> (for summer operation) - API-GL4 SAE 75 W 90	6,0 litres 4,5 litres	at least: every year every 800 hours new vehicle 100 hours

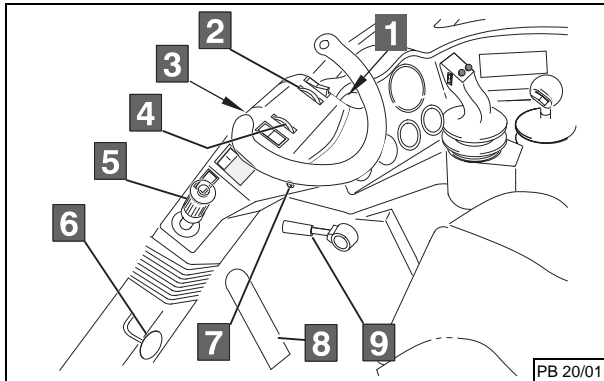
## FLUIDS AND LUBRICANTS TABLE

Group	Designation	Grade	Fill quantity	Change intervals
<b>07</b>	<b>Hydraulics</b> Travelling drive + auxiliary device	HVLPD DIN 51524 ATF Type A Suffix A DEXRON II D / III F	approx. 47 litres	at least: every year every 1200 hours
	Hydraulic oil filter			at 100 hours every 1200 hours
<b>18</b>	<b>Hydrostatic vehicle drive</b> refer to Lubricants Chap.	OKS 250		
	Lubricate hubs and swinging arms.	Calcium saponified grease Aviacal 2 LD KP2K-20, DIN 51502		every 400 hours
	Other lubrication points refer to Lubricants Chap.	Calcium saponified grease Aviacal 2 LD KP2K-20, DIN 51502		every 100 hours
	Swing lever seal	Syntogrease 1 KPE 1K-40, DIN 51502 DIN 51825		at least: after 3 years every 3600 hours
	Rotary plough, spiral-bevel coupling,	Avialith 2 F, OKS 400, Molykote BR 2		every 1200 hours
<b>24</b>	<b>Electrical system</b> Battery terminals	Boschfett FT 40V1		
	Alternator with staufer bush	Boschfett FT 1V34		every 1200 hours
	Servo adjustment device for Moog valves	Insulation oil DIN 57370 / VDE 0370		





Notes in text such as e. g.: **see D 17** = Driver's cabin Section D, Item 17



### 1 IGNITION SWITCH:

0 – Insert and remove ignition key. Switch off engine.  
 I – Operational readiness t/drive  
 II – start

### 2 KNURLED WHEEL: ADJUST TILLER SHAFT SPEED

Boost function = Increased speed 1250 to 1600 rpm. Scale reading 6.5 - 9 speed with boost function Scale reading 6 no boost function (old version) Scale reading 9.

**3 CONTROL BUTTON** Swivel rear carrier plate  
 (see Chap. 23)

**3 EMERGENCY STOP**  
 (see Chap. 26)

**4 KNURLED WHEEL: REDUCE SPEED OF TRAVEL.**

**5 CLUSTER SWITCH (REFER TO SECTION B).**

**6 DETENT POSITION** for steering column adjustment

**7 CONTROL BUTTON:** When actuating, operate wipers once on front and rear window.

**8 ACCELERATOR PEDAL**

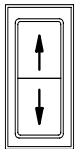
**9 PARKING BRAKE**



Always engage parking brake when parking or leaving vehicle. Buzzer check sounds: Brake and doors open.

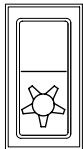
## 10 MANUAL THROTTLE ADJUSTMENT

### 3-POSITION -SWITCH



**Selector switch for direction of travel**  
 Pressed at top = **Forwards**  
 Centre = **Neutral**  
 Pressed at bottom = **Backwards with reverse travel warning!**

### ROCKER SWITCH

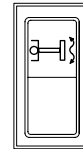


**3. Variable displacement pump – Rotary plough drive**  
 On/Off  
 Indicator lamp comes on (refer to Chap. 22).



When the parking brake is engaged, the rotary plough drive is automatically deactivated (telltale flashes). Once the parking brake has been released, the rotary plough drive remains deactivated. To activate the rotary plough, the toggle switch has to be switched off and on again .

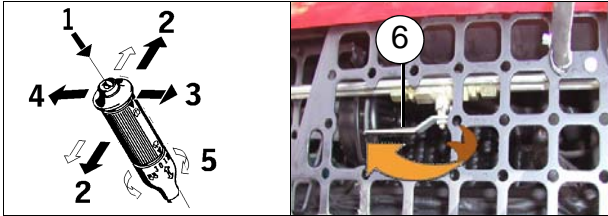
### 3-POSITION – CONTROL BUTTON



Pressed at top = **Float position carrier plate at rear / at side left-right in operation.** Indicator lamp **C1.8** comes on.  
 Centre neutral = **carrier plate locked in position**  
 Pressed at bottom = **Rear carrier plate centred.**



Only functions with hand control sensor (HSG) in grid setting (refer to Chap. 23).



### 1 HORN

Press button

### 2 Flashing turn indicators

Left or right without automatic cancellation. Move control stalk past stop until it locks in position.

### 3 HEADLIGHT FLASHER

Push stalk to the right

### 4 HIGH-BEAM/LOW-BEAM HEADLIGHTS

**High beam** – Push stalk to the left until it locks in position.

**Low beam** – Push stalk to the right until it locks in position.

### 5 WIPERS

Turn control stalk sleeve:

Position II = fast

Position I = normal

Position 0 = off

Position INT = intermittent wipe

**Windscreen wipers heated:** *(optional equipment)*

Swivel stalk **6** at front in the direction indicated by the arrow.



Programming new intermittent-wipe time

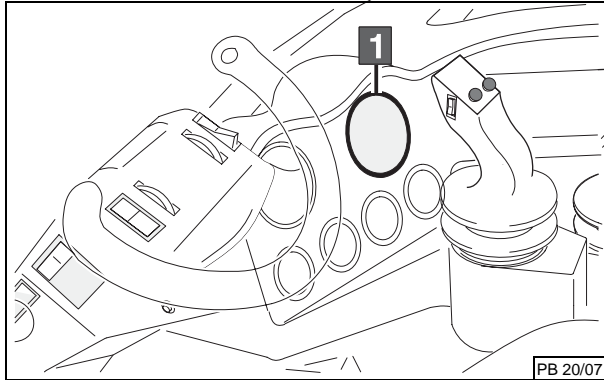
○ Set multipurpose control **2** to position 0.

○ Briefly press button **1**.

Wipers perform one sweep.

○ Wait for intermittent -wipe time required and move multipurpose control **2** to the INT position.

The time you waited between pressing the button and moving the switch back to INT is the programmed intermittent -wipe time.

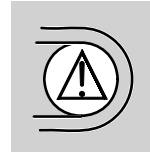


### 1.1 WARNING LAMP (RED)



**Brake air check, parking brake release pressure has dropped below 120 bar.**  
Comes on:  
**Parking brake engaged**

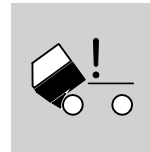
### 1.2 INDICATOR LAMP (YELLOW)



**Emergency driving mode**

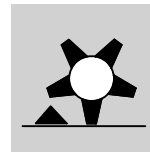
**Warning!** Switched from electronic to manual control (see Chap. 40).

### 1.3 WARNING LAMP (RED)



Warning: Driver's cabin locking device not fully engaged.

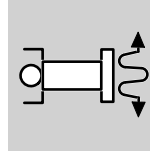
### 1.4 INDICATOR LAMP (YELLOW)



Load off rotary plough (Up-pressure).

**1.5 INDICATOR LAMP (YELLOW)**

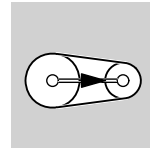
Warning! Rotary plough shaft turning

**1.8 INDICATOR LAMP (YELLOW)**

Float position at rear / at side left-right (horizontal).

**1.6 INDICATOR LAMP (YELLOW)**

Warning! Rotary plough drive switched on.

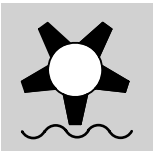
**1.9 INDICATOR LAMP FLASHES (YELLOW)**

Track tensioning system activated

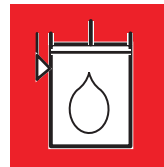


**WARNING!**

No driving mode permitted

**1.7 INDICATOR LAMP (YELLOW)**

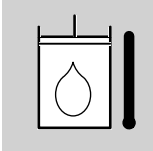
Float position at rear raise / lower (vertical).

**1.10 WARNING LAMP (RED)**

Hydraulic system oil level below min.

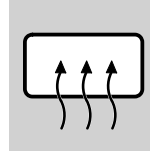
Additional acoustic warning provided by **buzzer**.

## 1.11 WARNING LAMP (RED)



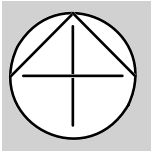
Hydraulic system oil temp. above max. (80 °C).  
Additional acoustic warning provided by **buzzer**.

## 1.14 INDICATOR LAMP (YELLOW)

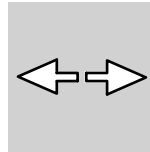


Electric windshield heating system switched on.

## 1.12 NOT ASSIGNED

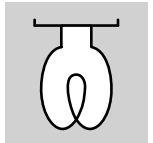


## 1.15 INDICATOR LAMP FLASHES (GREEN)



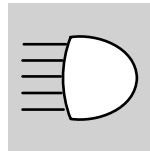
Direction indicator check left / right

## 1.13 WARNING LAMP (RED)

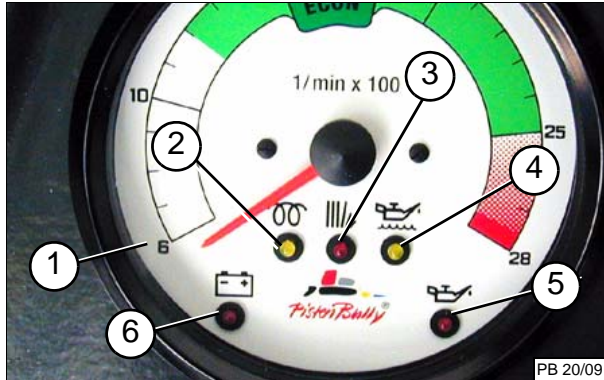


Intake air preheating ON.  
refer to chapter 30

## 1.16 INDICATOR LAMP (BLUE)



Headlight main beam switched on



**1 TACHOMETER (SEE CHAP. 30).**

**2 INTAKE AIR PRE-HEATING (SEE CHAP. 30).**



## WARNING!

When the acoustic signal sounds (buzzer), an operating state has reached the min. or max. permitted value: stop the vehicle – engage parking brake – identify cause! No driving mode permitted.

### 3 ENGINE SETTING - TELLTALE

illuminated if there are engine control defects

- If the telltale lights up, drive vehicle to nearest workshop. Only trained staff can perform repair work.

### 4 NOT ASSIGNED

### 5 ENGINE OIL PRESSURE GAUGE:

When the oil pressure drops to an unacceptable level, an acoustic warning signal is provided by **buzzer**.

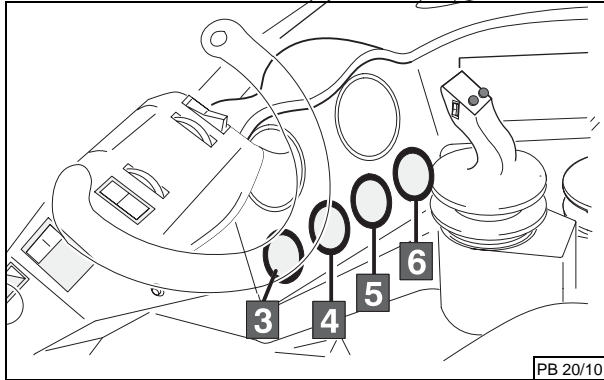
### 6 CHARGING CHECK



Indicator lamp lights up when vehicle in motion!

- Stop vehicle
- track down cause!





### 3 REDARY PLOUGH DEPTHS DISPLAY

0 = min. / 6 = max.

### 4 COOLANT TEMPERATURE ENGINE:

**Warning!** If an unacceptably high operating temperature is reached (103 °C) an acoustic warning signal is provided by **buzzer**.



When the acoustic warning signal sounds (buzzer) no driving mode is permitted.

### 5 OIL PRESSURE GAUGE:

300-12471.en

**Warning!** If the oil pressure drops to an unacceptable level, an acoustic warning signal is provided by **buzzer**.

### 6 SNOW-FLAP INDICATOR

#### TELLTALE



Coolant level display



If the telltale lights up:

- stop the vehicle. - rectify cause.
- top up coolant



### WARNING!

#### Risk of scalding

The cooling system is subject to excess pressure.

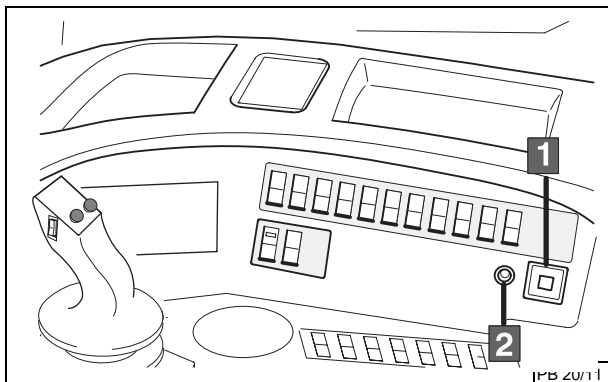
Remedy: wear safety gloves.

#### TELLTALE



### AIR-FILTER MONITOR

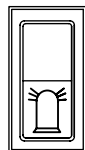
Check the air filter and replace if necessary.



**1 EXTERNAL MIRROR ADJUSTMENT**

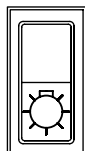
**2 SOCKET: 24 Volt**

### ROCKER SWITCH



**Rotating warning beacon**

### ROCKER SWITCH



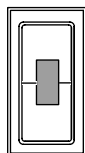
**Headlight low beam**

Pressed at top = OFF

Centre = Parking light

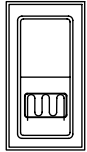
Pressed at bottom = Dipped beam

### KNURLED WHEEL



**Instrument lighting regulation.**

## ROCKER SWITCH



**Front windshield heating**

Indicator lamp comes on.



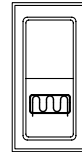
Switch remains on for max. time of approx. 10 min. with engine running. If longer period of operation required, press button again.

- Clear badly iced or snowed up windshields before switching on windshield heating.



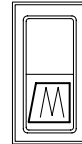
The battery is placed under considerable load due to the relatively large current being drawn. Switch off windshield heating as soon as the glass is demisted or thawed.

## ROCKER SWITCH



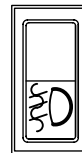
**Rear windshield heating**

## ROCKER SWITCH



**Side windshield heating  
External mirror heating**

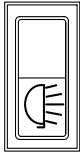
## ROCKER SWITCH



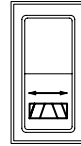
**Fog lamp**



For information on the fog lamps, read the enclosed xenon headlamp operating manual.

**ROCKER SWITCH****Rear operating light**

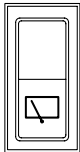
- Top depressed: OFF
- Centre: Dipped beam
- Bottom depressed: Main beam

**ROCKER SWITCH**

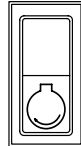
Special equipment:

Kahlbacher **Front rotary plough centrifuge (KFS) move to side.**

Switch **On** and manual controller moved to **left** or **right** position.

**ROCKER SWITCH****Rear windshield wiper**

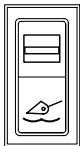
- Top depressed: OFF
- Centre: Intermittent sweep
- Bottom depressed: ON

**PUSHBUTTON****Controlling diesel engine idle speed**

Pushed at top = increase speed

Pushed at bottom = reduce speed

**Note:** speed display

**ROCKER SWITCH WITH LOCKING DEVICE**

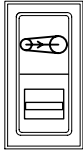
**carrier plate float position at front**  
(refer to **Chap. 22**).

**ROCKER SWITCH**

Special equipment:

**DW belt locking device**

## ROCKER SWITCH WITH LOCKING DEVICE



### Track tensioning:

Pressed at top + unlocked: **track detensioning fixed**. Indicator lamp flashes.

Centre: **Track tensioning in operation**.

Button pressed: **Detension track**

Indicator lamp flashes.

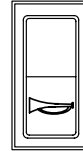


Before releasing the track, park vehicle on level ground and chock to prevent it from rolling away. Engage the parking brake.



If the Pisten Bully is to be left standing for an extended period of time, release track tension to avoid any unnecessary stretching of track cleats.

## TOGGLE SWITCH



### Acoustic warning alarm

Pressed at top: warning alarm ON during forwards travel.

Pressed at bottom: warning alarm OFF for forwards travel

## Pushbutton



### ParkBlade

Top section pressed = Retract

Centred = Neutral position

Bottom section pressed = Extend

See Section 30 / 52



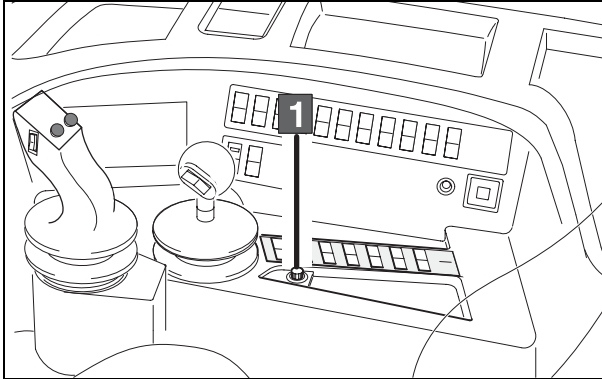
### MOBILE MOUNTING

#### CAUTION!

**Electronic damage to Pisten Bully!  
Mobile phones must not be used in the driver's  
cab when the diesel engine is running.**

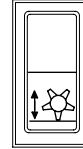


Use pushbutton (see arrow) to clamp mobile into place.



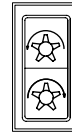
**1 POTENTIOMETER: Downward or load-relieving pressure on rotary plough** (see Chap. 22/ 23).

## CONTROL BUTTON



**Rotary plough depth setting:**  
Indicator lamp comes on.  
(Refer to Chap. 22 / 23).

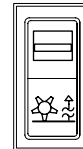
## ROCKER SWITCH



**Rotary plough – running in/against direction of travel**

- Top depressed: In direction of travel
- Bottom depressed: Against direction of travel

## ROCKER SWITCH WITH LOCKING DEVICE



**Automatic raising** of auxiliary equipment at rear when travelling backwards. (Locking device engaged).

**Automatic raising when not in use.** Release locking device and operate switch. (Refer to Chap. 22 / 23).

**ROCKER SWITCH (3P)** *(optional equipment)*

Drive hydraulics for auxiliary equipment at front or rear.

Top section pressed = Front ON

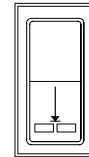
Centre = OFF

Bottom section pressed = Rear ON

**Note:****Drive hydraulics front ON**

Direction of travel switch forward and driving speed scale 0 to -3.

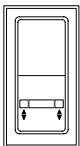
When reversing, vehicle's steering direction is reversed.

**ROCKER SWITCH**

Tilt switch – rigid setting

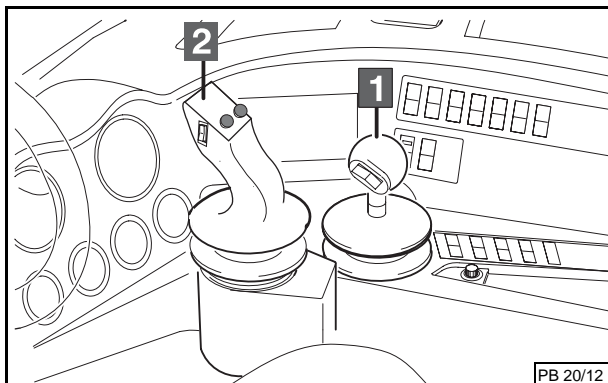
Push upwards = rigid setting "OFF"

Press downwards = rigid setting "ON"

**PUSHBUTTON**

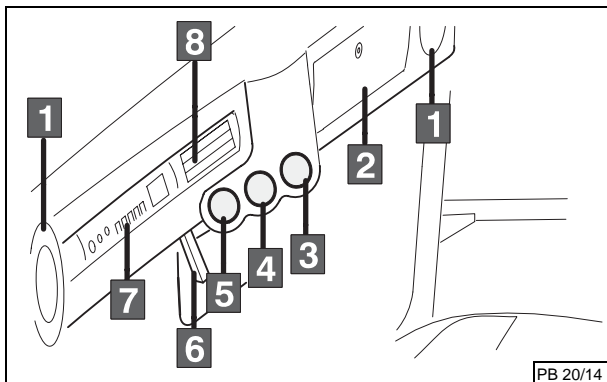
When actuating side section, fold smoother in / out.





**1 MANUAL CONTROLLER FOR REAR HYDRAULIC SYSTEM WITH ROCKER SWITCH (SEE Chap. 23).**

**2 MANUAL CONTROLLER FOR FRONT HYDRAULIC SYSTEM WITH CONTROL BUTTON (SEE Chap. 22).**



**7 RADIO – PREPARED FOR INSTALLATIO**  
**RADIO UNIT – PREPARED FOR INSTALLATION**

**8 Heating in driver's cab**

**1 LOUDSPEAKER**

**2 GLOVE COMPARTMENT**

**3 OPERATING HOURS**

**4 FUEL SUPPLY -DISPLAY**

**5 CLOCK**

**6 SEARCHLIGHT**

## Manually adjusting blower output

- Start the diesel engine.



- Press button.



### Blower setting:

OFF - AUTO - 1 - 2 - 3 - 4 - 5 - 6 - 7  
Use the pushbuttons to select.



## Selecting temperature readout in °C / °F

- Ignition ON.



- Simultaneously press both buttons.

Display shows: CODE



- CODE = Press the button three times.



- Press the button until the display shows 16



- Press the button to confirm.



- Press the button to select °C / °F.



- Simultaneously press both buttons.

The setting for temperature readout is saved.



## Interior-temperature gauge



- Press the button until the LED is OFF.

## Interior-temperature gauge



- Press the button until the LED is ON.

Reading is displayed automatically when the engine starts.

## Blower and heating to maximum



- Press button.  
"dEF" appears in the display.

## Adjusting automatic heater and blower control

- Start the diesel engine.

## Adjusting the target interior temperature



- Press button.  
The target interior temperature appears in the display. (interior temperature with blower - AUTO).



- Situational help  
The display shows the blower's discharge temperature.



- Briefly press both buttons.  
The target interior temperature appears in the display.



## Entering the target interior temperature

Increase



Decrease



- Set the blower to AUTO.

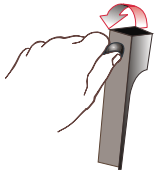
Automatic heater and blower control is active.



If the target interior temperature you select is lower than the outdoor temperature the fan will generally run at maximum speed, because there is no air-conditioning system installed.

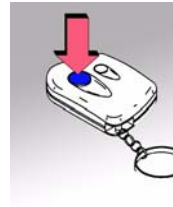
## Operation

### Precondition for function



- Manually unlock both doors.  
The remote control is now ready

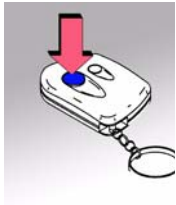
### Closing the central locking



- By again pressing the blue button.

The right-hand button has no function.

### Opening the central locking



- Press blue button 1x  
This is confirmed by the turn indicator flashing 1x and the interior lighting being switched on.



### Description of function:

#### 1 SAFETY HEADREST

height and angle adjustable

#### 2 HAND WHEEL

for side-section adjustment for individual adaptation

of the lateral control

#### 3 HAND WHEEL

for infinitely variable tilt adjustment of back rest

#### 4 3-STOP LEVER

to limit the swing lever to

- 150 mm stroke
- 90 mm stroke
- 75 mm stroke (fixed position)

#### 5 HAND WHEEL FOR

infinitely variable adjustment of seat area across 8°

#### 6 HAND WHEEL

for infinitely variable weight and height adjustment

#### 7 HORIZONTAL LENGTH ADJUSTMENT

via dual-sided notching rails

## 9 HAND WHEEL FOR SIDE-SECTION ADJUSTMENT

for individual adaptation of lateral control

## 10 INFINITELY VARIABLE SEAT DEPTH ADJUSTMENT

from 495 to 570 mm using rotary grip

## 11 SEATBELT

## 12 LUMBAR SUPPORT

with height adjustment, electrically actuated

## 13 Toggle switch for convex shaping

## 14 Toggle switch for height

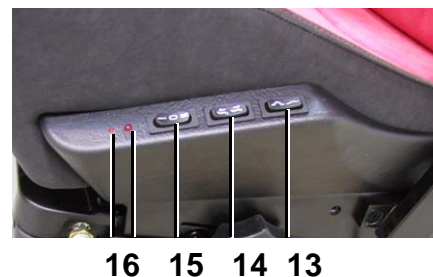
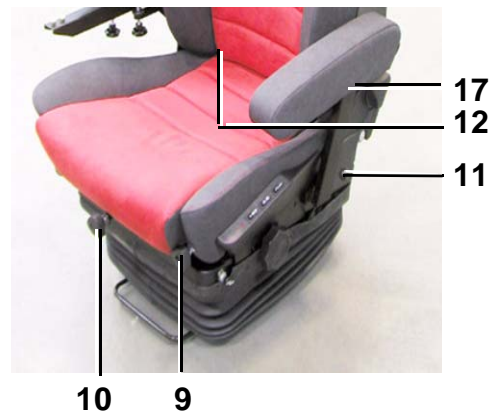
## 15 SWITCH FOR DUAL-STAGE CONTROL

Seat and back heating

## 16 TELLTALES FOR HEATING SYSTEM

## 17 ARMREST HOLD

Left-hand armrest, heated



### Operating instructions:

The seat area can be tilted in an infinitely variable manner by 8° by turning the hand wheel 5) clockwise or anti-clockwise.



The seat angle is set perfectly when the pedals can be actuated without too great a pressure on the underside of the thigh.

Lumbar support with electrical adjustment for **convex shaping and height** (12).

The convex shaping is adjusted by pressing the toggle switch (13).

The height is adjusted by pressing the toggle switch (14).

#### Heating for **seat and back**

The heating system can be controlled in 2 stages by pressing the rocker switch (15).

- Both telltales functioning = full heating rating
- Only one telltale functioning = reduced heating rating.

**Left-hand armrest** heated with holder (17).

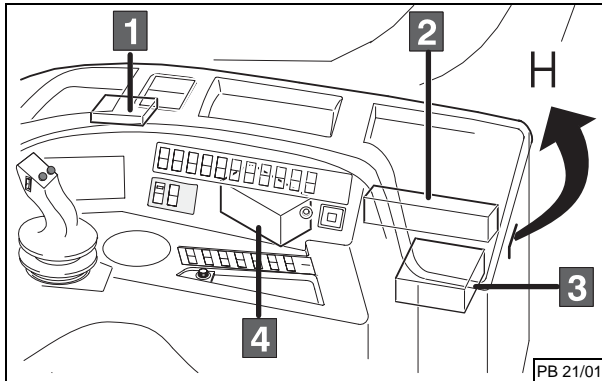
The angle of the armrest can be adjusted by means of a knurled screw on the lower side.

As an option, the armrest holder (17) can fitted 30 mm to the front or to the rear.



When the vehicle is not used during the summer period, the seat should be placed in the fixed position so that the suspension is relieved of load. The lateral seat wings can be adjusted via mechanical components. You must therefore not sit on these.

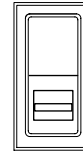




- Take a grip in the handle recess and raise center console **H**. A gas-filled strut holds the console open.

### 1 CONSOLE SWITCH

### LATCHING ROCKER SWITCH



**Emergency switch for drive electronics**  
Telltale light ON  
see **Section 40**

### 2 FUSES / MINIATURE RELAYS

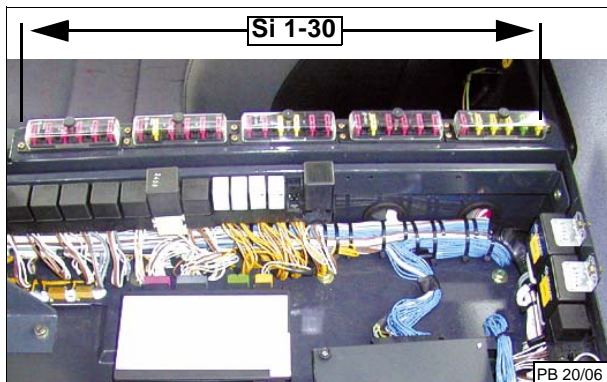
#### Replacing fuses:

Fuses are designed to provide protection against excessively high currents in the electrical system.



#### **WARNING!**

**Risk of cable fire and short-circuiting – never attempt to jumper or repair fuses or insert replacement fuses with a higher ampere rating than the originals.**



### Fuses (Si):

- |   |        |  |    |        |   |
|---|--------|--|----|--------|---|
| 1 | (10 A) | High-beam headlights and telltale                          | 9  | (10 A) | Propulsion/snow-blower electronics  |
| 2 | (10 A) | Low-beam headlights  | 10 | (10 A) | Steering wheel (power supply)   |
| 3 | (10 A) | Overhead spotlight, left                                   | 11 | (10 A) | Front snow blower   |
| 4 | (10 A) | Overhead spotlight, right                                  | 12 | (10 A) | Rear wiper, finisher board  |
| 5 | (10 A) | Instrument lighting, parking light/tail light, right.      | 13 | (10 A) | Front wiper, radio  |
| 6 | (10 A) | Instrument-panel lighting, parking light/tail light, left. | 14 | (10 A) | Instruments, telltales  |
| 7 | (20 A) | Xenon fog lights   | 15 | (20 A) | Reversing light, searchlight  |
| 8 | (20 A) | Rear spotlights.   | 16 | (20 A) | Working hydraulics  |
|   |        |  | 17 | (25 A) | Drum winch  |
|   |        |  | 18 | (10 A) | Flashing indicators, horn, headlight flasher, grid heater                           |
|   |        |  | 19 | (20 A) | Cab heater  |
|   |        |  | 20 | (10 A) | Engine electronics  |
|   |        |  | 21 | (10 A) | Engine electronics  |
|   |        |  | 22 | (10 A) | Engine electronics  |
|   |        |  | 23 | (20 A) | Start/stop engine, 24/12 V converter, driver's seat, PB 300 central locking system. |
|   |        |  | 24 | (10 A) | Engine electronics  |
|   |        |  | 25 | (10 A) | Socket  |
|   |        |  | 26 | (30 A) | Starter relay   |
|   |        |  | 27 | (20 A) | Voltage with engine running, mirror heating, side-window heating                    |
|   |        |  | 28 | (20 A) | Rear-window heater  |
|   |        |  | 29 | (30 A) | Front windscreen heater   |

30 (20 A) Rotating beacon, clock,



Unmarked fuses: 10 amperes.

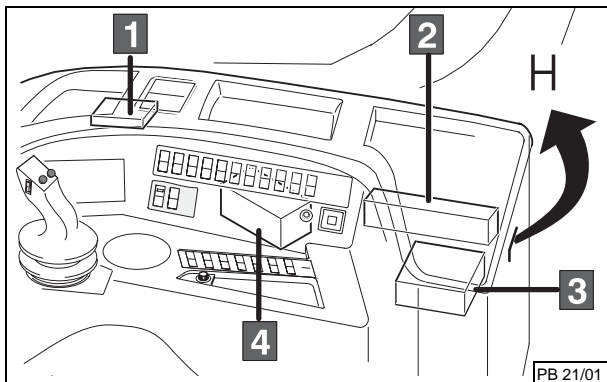
## Miniature relays (K):

- 1 Flashing indicators
- 2 Horn
- 3 Voltage with engine running.
- 4 Parking lights
- 5 Driving lights
- 6 Reversing light
- 7 Rear-window heater
- 8 Wiper interval, front wipers
- 9 Drum winch
- 10-13 Front snow blower
- 14
- 15 / 16 Start/stop engine
- 16.1 Propulsion stage II



Miniature relays are not interchangeable.





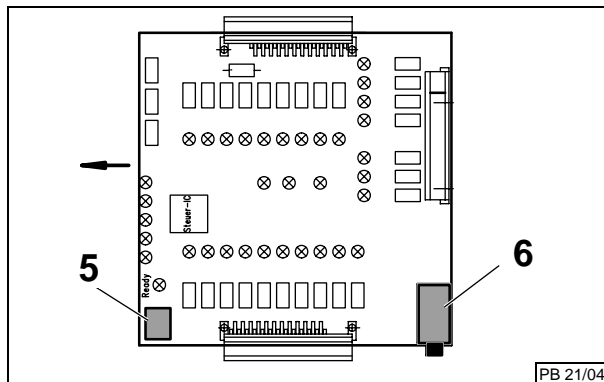
### 3 CONTROL FOR OPERATING HYDRAULICS

#### EMERGENCY ACTUATION OF OPERATING HYDRAULICS:



#### WARNING!

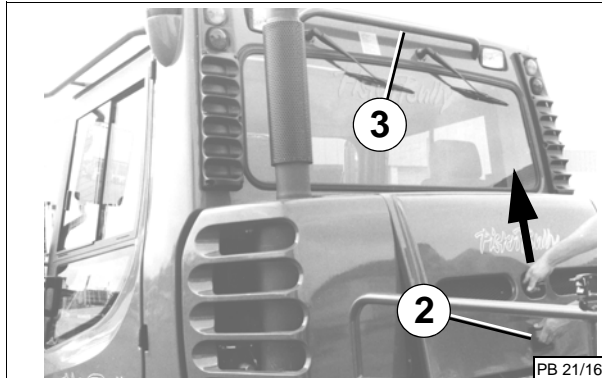
Switch off rotary plough!



If there is a failure in the control unit, the auxiliary hydraulics should be raised using the **emergency button** (5).

Voltage supply via the **circuit breakers 16A** (6).

### 4 DIGITAL DRIVE AND ROTARY PLOUGH ELECTRONICS (refer to Chap. 42).



## VEHICLE BATTERIES:

The batteries 2 x 12 V 135 Ah/600 A are installed on a retractable carriage on the top frame.

### OPENING THE COVER (1) ON THE CARRIER FRAME:

- Open locking feature (2).
- Using both hands, raise cover in direction of arrow and attach to retaining rod (3).

300-12471.en

## WARNING!

1. Battery must be secured using the retaining fixtures!
2. Never use naked light near batteries – Risk of explosion due to formation of explosive gas!
3. Do not place metal parts on the battery!

### TOPPING UP BATTERY FLUID:



#### WARNING!

Caution when handling battery acid – risk of serious burns

Wear protective gloves and safety goggles

- Unfasten screw cover
- top up with distilled water up to maximum mark.

### CHARGING BATTERY:



#### WARNING!

- **When connecting up a charger, disconnect batteries from vehicle electrical system!**
- Do not confuse battery terminals.
- Do not allow cable clips to touch each other.
- Keep battery compartment well ventilated (formation of explosive gas).

### JUMP LEADS:



#### WARNING!

If jump leads are connected incorrectly, this can cause a fatal electric shock or risk serious burns.

Do not allow cable clips to contact each other!

Do not attach jump leads to bridge linking the two batteries.

### CONNECT UP JUMP LEADS:

1. From + terminal PB battery to + terminal of jump-start battery (24 V).
2. From – terminal PB of battery to – terminal on jump-start battery (24 V).

## The battery isolator should be actuated:

- if there is a defect on the electronics.
- to conserve the battery during long periods of standstill.

### **WARNING!**

**Peaks in voltage.**

**If the engine is running, the battery isolator should only be actuated during emergencies.**

### **WARNING!**

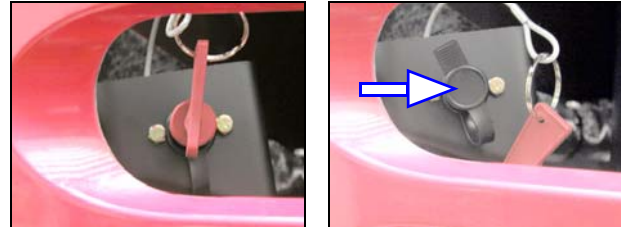
**Data loss from the digital electronics for engine and grooming equipment.**

**Before you disconnect the battery isolator:**

- switch off ignition.
- wait 30 seconds.
- only then may you actuate the battery isolator.

**Fitting battery isolator**

- actuate battery isolator.
- wait 30 seconds.
- only then may you switch on the ignition.



## Actuating battery isolator:

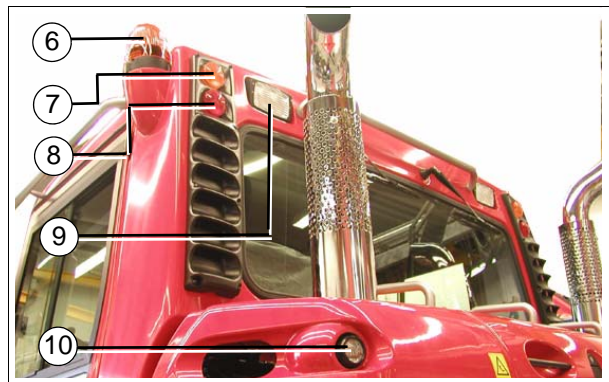
- Pull off protective cap.
- Plug in shift cable and turn to the until it snaps in.

The battery is isolated from the electrical circuit.

**LIGHTS:**

Do not touch the glass of halogen bulbs.  
 (See notes on halogen-xenon bulbs).

- 1 FLASHING TURN INDICATOR**
- 2 HIGH-BEAM HEADLIGHTS / PARKING LIGHTS**
- 3 LOW-BEAM**



- 4 FOG LIGHTS**
- 5 SPOTLIGHT**
- 6 ROTARY BEACON**
- 7 FLASHING TURN INDICATOR**
- 8 TAIL LIGHT**
- 9 - 10 REAR SPOTLIGHTS**





## XENON HEADLAMP

### **WARNING!**

**Bright light may damage eyes!  
Do not look directly at the bright light.**

### **WARNING!**

**Gases may put health at risk!  
If the xenon lamp smashes in an enclosed room,  
the room must be aired and not entered for  
at least 20 minutes.**

### **CAUTION!**

**Electronic damage to power supply unit!**  
Persistent starting problems, indicated by a flickering of the gas discharge lamp, may result in the electronics of the power supply unit being destroyed.  
Switch off engine immediately if this lamp flickers!

### **CAUTION!**

**Risk of the glass breaking!  
Do not use liquid to clean heated glass.**

- Occasionally clean glass when cold.
- Do not use aggressive or scratching cleaning agents.

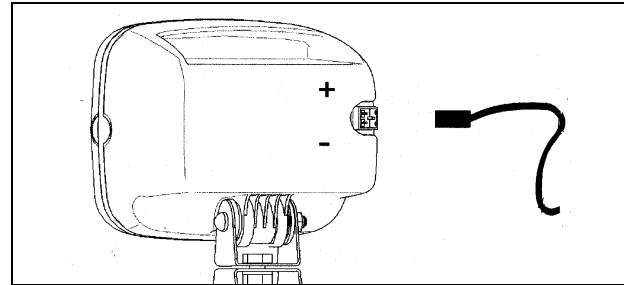
#### **Safety instructions for changing xenon lamp:**

- Headlamp must always be switched off and disconnected from the voltage supply before changing the lamp.
- Do not reach into the lamp mounting.

- The electrical connection between the headlamp and power supply unit is a high-voltage connection and must not be disconnected.
- The power supply unit must never be operated without the lamp because dangerous peaks in voltage may occur on the lamp mounting and result in damage.
- Allow the lamp to cool before changing.
- Wear protective glasses and safety gloves when changing lamps.
- The glass body of the xenon lamp is pressurised (risk of shattering).
- Only handle lamp by its base.
- Only operate xenon lamp in a closed headlamp.



Dispose of the old xenon lamp as waste requiring special attention.



#### Electrical connection:

- Before connecting up, always interrupt the power supply using the battery isolator.

Only ever use the pre-installed line for the electrical connection.

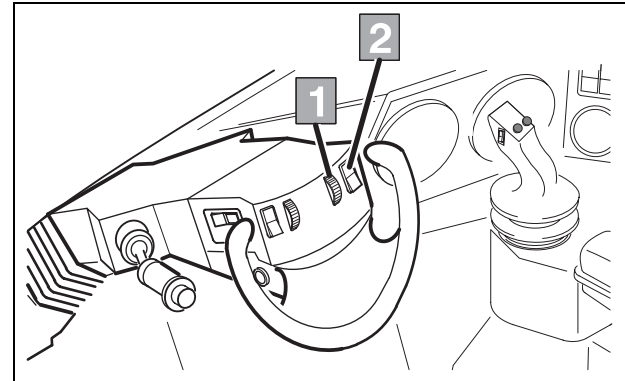
## Precondition for starting up the drive hydraulics:

- Driver's cab must be fully lowered and locked.
- Load bridge must be fully lowered
- Rear rotary plough must be at a distance of less than 500 mm to the piste.
- Auxiliary equipment connector must be plugged in (socket E).



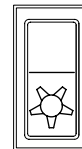
Non-compliance will result in electronically-controlled speed reduction not being available.

- The diesel engine speed must at least correspond to the setting of speed of 1200 rpm.



**1 KNURLED WHEEL: REDUCTION OF ROTARY PLOUGH SHAFT SPEED.**

**2 ROCKER SWITCH: 3RD ADJUSTMENT PUMP-GROOMING DRIVE**



Pressed at top: **OFF**

Pressed at bottom: **ON**

Indicator lamp **C1.13** lights up.

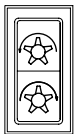


For reasons associated with safety, when raising the rear auxiliary equipment to approx. 50 cm, the drive hydraulics are switched off.



If the drive hydraulics leak, always switch off the diesel engine and rectify the fault.

### ROTARY PLOUGH, SYNCHRONOUS RUNNING - CONTRAROTATION



**Rotary plough - synchronous running / contrarotation**

Pressed at top: synchronous running

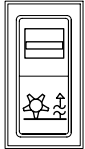
Pressed at bottom: contrarotation



Contrarotation is not suitable for uphill travel because increased power is required.

## Automatically raising auxiliary equipment during reverse travel:

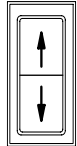
Rocker switch (refer to driver's cab - Section E ).



**Automatic raising** of rear auxiliary equipment during reverse travel. (Locking device snapped into place).

**Automatic raising function not in operation.** Unfasten locking device and press switch.

Rocker switch (refer to driver's cab - Section A)



**Selector switch for direction of travel**

- Pressed at top = **forwards**
- Centre = **neutral**
- Pressed at bottom = **reverse with reverse travel alarm**

When in the "**automatic raising**" rocker switch position and when changing the **direction of travel switch** into the "**reverse**" direction of travel, the following hydraulic circuits are actuated at the same time:

- vertical and horizontal float position off.
- equipment carrier moves into central position.
- equipment carrier raises the auxiliary equipment approx. 1.2 m from the piste

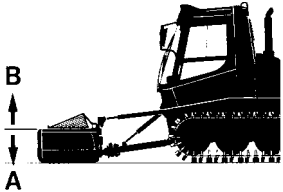
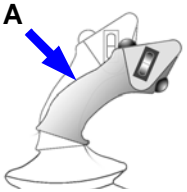

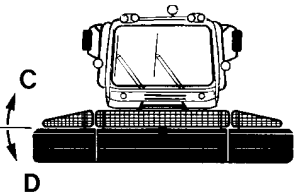
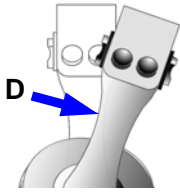
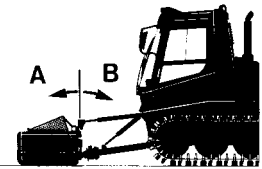
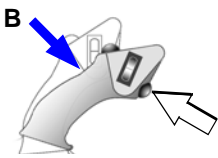
- during ploughing operations, the grooming drive is switched off when at a distance of more than 0.5 m from the piste.

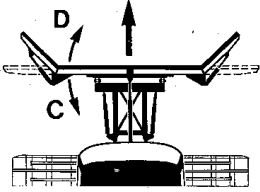
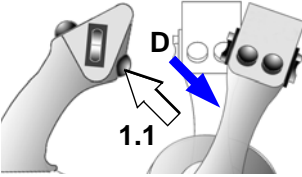
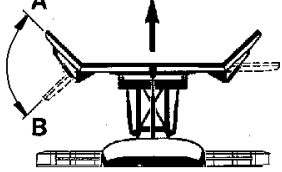
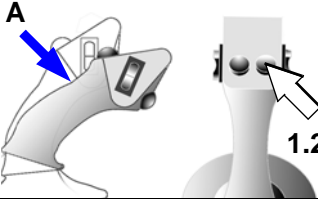
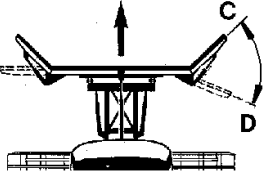
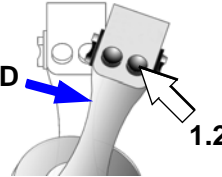
- reverse travel light lights up.

When in the "**automatic raising**" rocker switch position and when changing the **Direction of travel switch** into the "**forwards**" direction of travel, the following hydraulic circuits are activated at the same time:

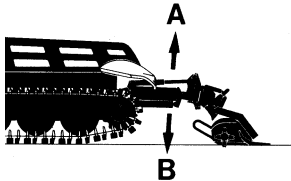
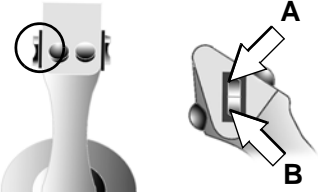
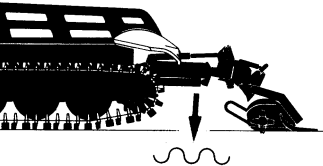
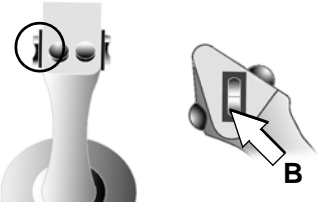
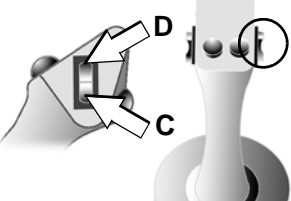
- equipment carrier automatically lowers.
- if the float position was previously engaged, this is disengaged again.
- if the rotary plough is fitted, this engages again when at a distance of less than 0.5 m to the piste.
- equipment carrier remains fixed in the central position. If a different position is required, this has to be re-selected.

If automatic raising of the auxiliary equipment is not required during reverse travel, e.g. when changing the auxiliary equipment, the locking device of the rocker switch can be triggered and the automatic raising function deactivated. **D**

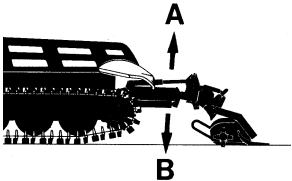
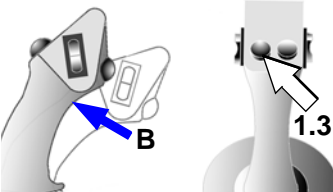

Function Front blade	Joystick electric / hydraulic	Joystick position	Pushbutton or rocker switch
<b>RAISE - LOWER</b> 		A - Lower  B - Raise	Floating position 
<b>TILT</b> 		C - Left  D - Right	
<b>ROLL</b> 		A - Forward  B - Back	1.1

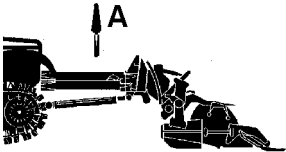
Function Front blade	Joystick electric / hydraulic	Joystick position	Pushbutton or rocker switch
<p><b>SWING</b></p> 		<p>C - Swivel left D - Swivel right</p>	<p>1.1</p>
<p><b>WING, LEFT</b></p> 		<p>A - Move wing in B - Move wing out</p>	<p>1.2</p>
<p><b>WING, RIGHT</b></p> 		<p>C - Move wing i. D - Move wing out</p>	<p>1.2</p>

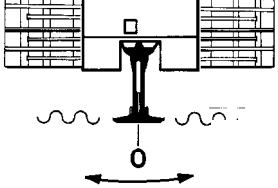
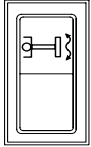
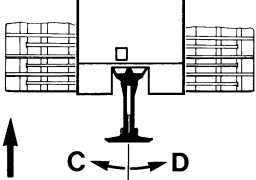

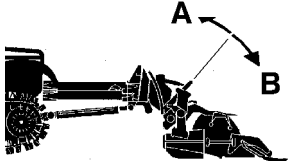
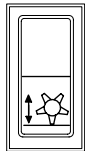
## ACTUATION OF REAR AUXILIARY HYDRAULICS

Function Front blade	Joystick electric / hydraulic	Joystick position	Pushbutton or rocker switch
<p><b>RAISE - LOWER</b></p> 		<p><b>Button pressed:</b> A- raise</p> <p><b>Central position:</b> fixed</p> <p><b>Pressed at bottom:</b> B - lower</p>	
<p><b>FLOATING POSITION</b></p> 		<p>Position <b>B</b> pressed</p>	
		<p><b>D - pressed:</b> relieve load on rotary plough can be set via poti <b>F2</b>.</p> <p><b>Centre:</b> float position</p> <p><b>C - pressed:</b> contact pressure on</p>	



Function Front blade	Joystick electric / hydraulic	Joystick position	Pushbutton or rocker switch
<p><b>RAISE - LOWER</b></p> 		<p>Position <b>B</b> pressed</p> <p><b>1.3 briefly pressed =</b> Raise rotary plough to full 120 cm <b>Press 1.3 again =</b> Lower rotary plough</p>  <p>Press before rotary plough is fully raised = Hold rotary plough in position</p> <p><b>VARIANT 2</b> Position <b>B</b> pressed <b>1.3 pressed</b> for longer than 1 second = Raise rotary plough <b>Release 1.3 =</b> Hold rotary plough in position <b>1.3 pressed again =</b> Lower ro- tary plough.</p>	<p><b>1.3</b></p>

Function Front blade	Joystick electric / hydraulic	Joystick position	Pushbutton or rocker switch
<p><b>RAISE</b></p> 		<p><b>VARIANT 3</b>  <b>Briefly press 1.3</b> = Raise rotary plough  <b>Press 1.3 again</b> = Hold rotary plough in position</p> <p><b>VARIANT 3.1</b>  <b>Press 1.3</b> for longer than 1 second = Raise rotary plough  <b>Release 1.3</b> = Hold rotary plough in position  <b>Press 1.3 again</b> = Raise rotary plough</p>	<p><b>1.3</b></p>

Equipment carrier for auxiliary equipment at rear	Manual control sensor electrical / hydraulic	Actuation	Button or rocker switch
<p><b>FLOAT POSITION</b></p> 		<p><b>Pressed at top:</b> left/ right float position  <b>Central position:</b> fixed  <b>Pressed at bottom:</b> centring of equipment carrier at rear. Manual control sensor in stop position (zero position).</p>	<p>Button</p> 
<p><b>SWIVEL HORIZONTALLY</b></p> 		<p><b>C</b> - Swivel left (locked)   <b>D</b> - Swivel right (locked)</p>	<p>Pushbutton (see steering wheel)</p> 
<p><b>DEPTH ADJUSTMENT</b></p> 		<p><b>Pressed at top</b> - relieve load   <b>Pressed at bottom</b> - contact pressure                      Depth display can be viewed via instrument <b>D1</b>.</p>	<p>Button</p> 



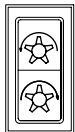
# NOTIZ




For safety reasons, when raising the rear auxiliary equipment to approx. 50 cm, the auxiliary equipment drive hydraulics are switched off.

When working with the Fun Park version, the auxiliary equipment drive hydraulics can be switched on when raised. Take particular care to ensure that there is not anyone in the danger area.

## ROTARY PLOUGH, SYNCHRONOUS RUNNING - CONTRAROTATION



**Rotary plough - synchronous running / contrarotation**

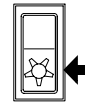
Pressed at top: synchronous running

Pressed at bottom: contrarotation



Contrarotation is not suitable for uphill travel because increased power is required.

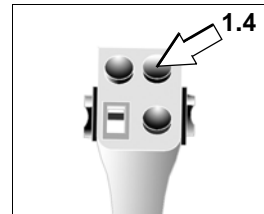
## Switch rotary plough on when raised



○ Rotary plough drive rocker switch **ON**

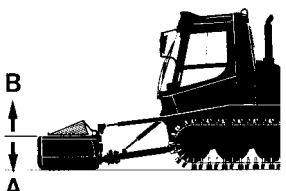
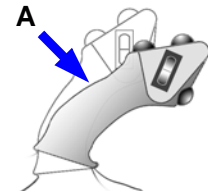
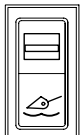
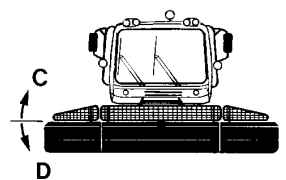
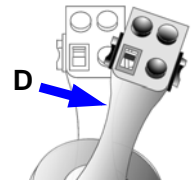
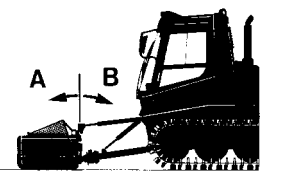
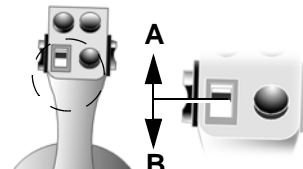
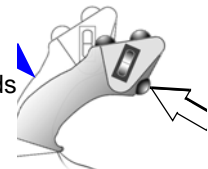
The rotary plough telltale **C1.13** lights up.

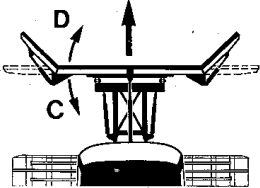
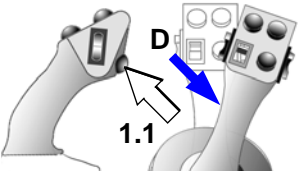
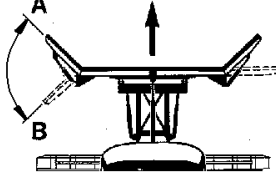
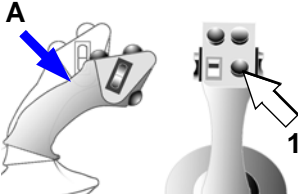
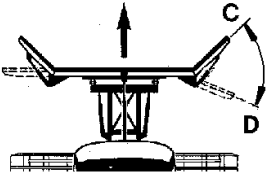
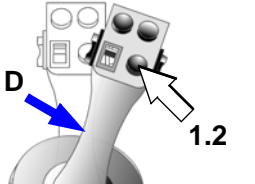
○ Diesel speed over 1100 rpm.

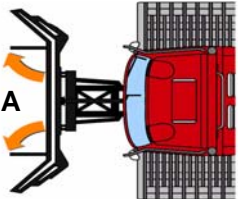
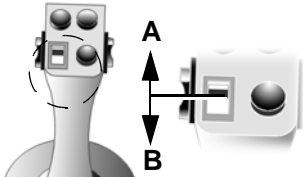



○ Button **1.4** pressed

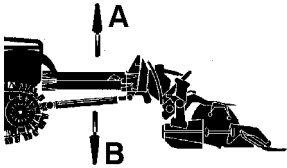
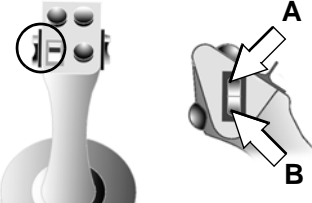
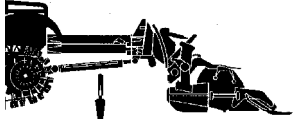
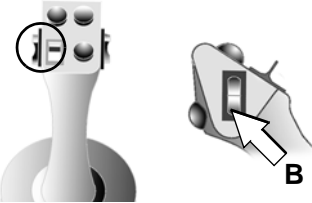
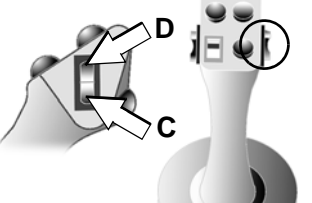
The rotary plough is switched on.

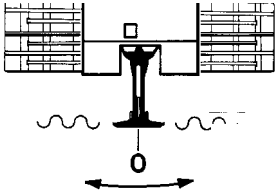
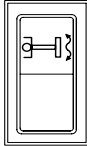
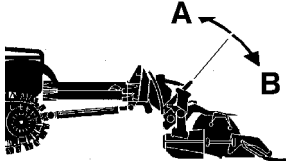
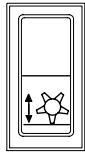
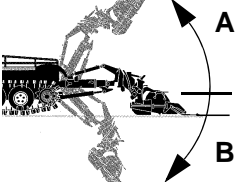
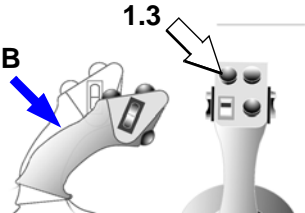
Function scraper plate	Manual control sensor electrical / hydraulic	Lever position	Button or rocker switch	Hydraulic connection: Front equipment carrier.
<b>RAISE - LOWER</b> 		<b>A</b> - lower  <b>B</b> - raise	Float position. 	B1 - bright grey A1 - white
<b>TILT</b> 		<b>C</b> - to the left  <b>D</b> - to the right		A4 - yellow B4 - red
<b>DIP</b> 	<b>1ST VARIANT</b> 	<b>A</b> - forwards  <b>B</b> - backwards	<b>2ND VARIANT</b> 	B2 - brown A2 - bright green

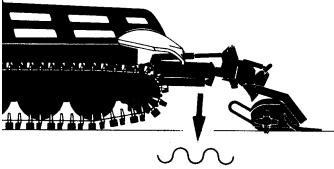
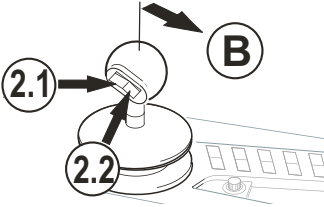
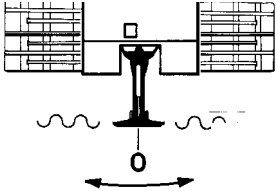
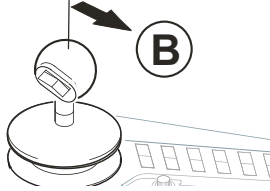
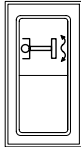
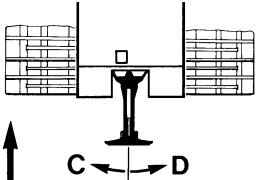
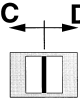
Function scraper plate	Manual control sensor electrical / hydraulic	Lever position	Button or rocker switch	Hydraulic connection: front equipment carrier.
<p><b>SWIVEL</b></p> 		<p><b>D</b> - swivel to the right.</p> <p><b>C</b> - swivel to the left.</p>	<p><b>1.1</b></p>	<p>A3 - ochre B3 -</p>
<p><b>LEFT SIDE SECTION</b></p> 		<p><b>A</b> - side section inwards.</p> <p><b>B</b> - side section outwards.</p>	<p><b>1.2</b></p>	<p>A6 - dark green B6 - blue</p>
<p><b>RIGHT SIDE SECTION</b></p> 		<p><b>D</b> - side section outwards.</p> <p><b>C</b> - side section inwards.</p>	<p><b>1.2</b></p>	<p>A5 - silver B5 - black</p>

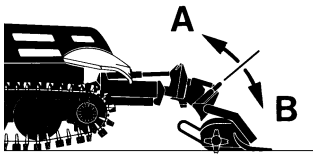

Function Front blade	Joystick electric / hydraulic	Joystick position	Pushbutton or rocker switch	Hydraulic connection: Carrier plate, front
<p><b>PARKBLADE</b></p> 		<p><b>A</b> - Extend ParkBlade</p> <p><b>B</b> - Retract ParkBlade</p>		



Equipment carrier for auxiliary equipment at rear	Manual control sensor electrical / hydraulic	Actuation	Button or rocker switch
<p><b>RAISE - LOWER</b></p> 		<p><b>Button pressed:</b> A - raise</p> <p><b>Central position:</b> fixed</p> <p><b>Pressed at bottom:</b> B - lower</p>	
<p><b>RELIEVE LOAD - CONTACT PRESSURE</b></p> 		<p>Position <b>B</b> pressed</p>	
		<p><b>D</b> - pressed: relieve load on rotary plough can be set via poti <b>F2</b>.</p> <p><b>Centre:</b> float position</p> <p><b>C</b> - pressed: contact pressure on</p>	

Equipment carrier for auxiliary equipment at rear	Manual control sensor electrical / hydraulic	Actuation	Button or rocker switch
<p><b>FLOAT POSITION</b></p> 		<p><b>Pressed at top:</b> left/ right float position  <b>Central position:</b> fixed  <b>Pressed at bottom:</b> centring of equipment carrier at rear. Manual control sensor in stop position (zero position).</p>	<p>Button</p> 
<p><b>DEPTH ADJUSTMENT</b></p> 		<p><b>Pressed at top</b> - relieve load  <b>Pressed at bottom</b> - contact pressure            Depth display can be viewed via instrument <b>D1</b>.</p>	<p>Button</p> 
<p><b>POWER ANGLE</b></p> 		<p><b>A</b> - raise  <b>B</b> - lower</p>	<p><b>1.3</b></p>

Equipment carrier for auxiliary equipment at rear	Manual control sensor electrical / hydraulic	Actuation	Button or rocker switch
<p><b>FLOATING POSITION</b></p> 		<p><b>B</b> - Latched position</p>	<p><b>2.1 pressed</b> = Load relief for equipment carrier can be set by potentiometer <b>E1</b>. Indicator light comes on. <b>Centre</b> = Floating position Indicator light comes on. <b>2.2 pressed</b> = Downward force on equipment carrier can be set by potentiometer <b>E1</b>.</p>
<p><b>FLOAT POSITION</b></p> 		<p><b>B</b> - Latched position</p>	 <p><b>Pressed at top:</b> left/right float position <b>Central position:</b> fixed <b>Pressed at bottom:</b> centring of equipment carrier at rear. Manual control sensor in stop position (zero position).</p>
<p><b>SWIVEL HORIZONTALLY</b></p> 		<p><b>C</b> - Swivel left (locked) <b>D</b> - Swivel right (locked)</p>	<p>Pushbutton (see steering wheel)</p> 

Equipment carrier for auxiliary equipment at rear	Manual control sensor electrical / hydraulic	Actuation	Button or rocker switch
<p><b>DEPTH ADJUSTMENT</b></p> 			 <p><b>Pressed at top</b> - relieve load</p> <p><b>Pressed at bottom</b> - contact pressure Depth display can be viewed via instrument.</p>

## Requirement:

- Before tilting the driver's cab or the load bridge, remove any loose parts!
- Park vehicle on as horizontal a piece of ground as possible.
- Engage the parking brake.



- Switch off grooming drive .



- Move direction of travel switch into neutral position.

- Lower rear and front auxiliary equipment.



## CAUTION!

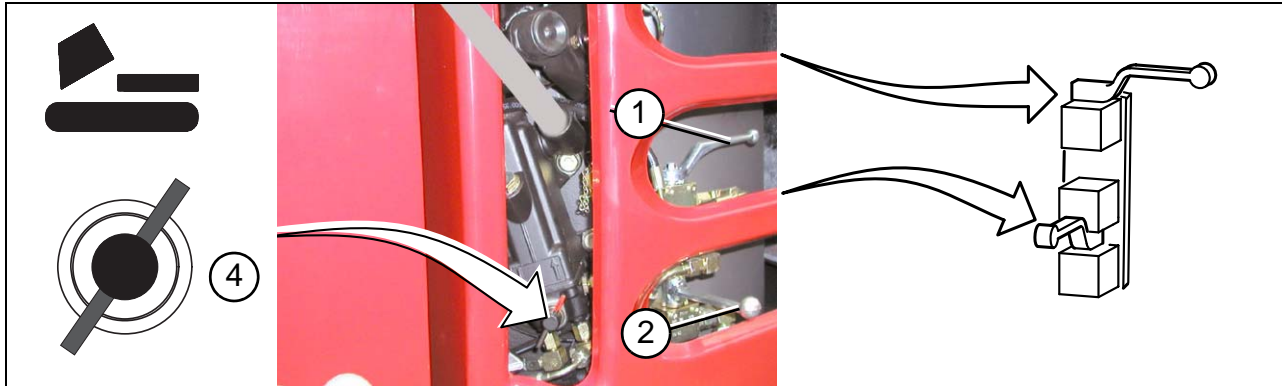
**Non-compliance will result in risk of collision between load bridge or driver's cab and auxiliary equipment!**

- Exit driver's cab
- Close doors



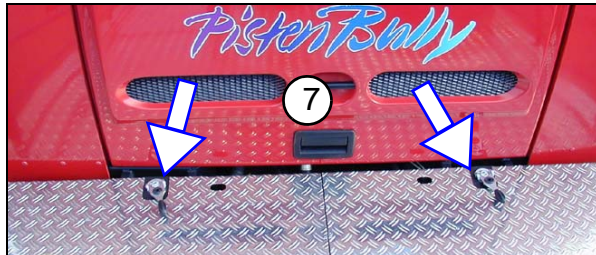
## CAUTION!

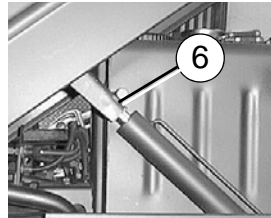
**Non-compliance will result in a risk of accident caused by the doors banging shut.**



### TILTING DRIVER'S CAB AND LOAD BRIDGE

- Unscrew knurled screws **7** from load bridge.
- Move lever of block ball cock **1** and **2** into position (refer to illustration above).
- Adjustment valve **4** in position. (refer to illustration above).





- Press button **5**  
The driver's cab and load bridge are raised.



The tilting process is interrupted by releasing the button.

Indicator lamp in instrument cluster lights up. Driver's cab lock not engaged.

- Unlock and swivel down the supports on the cylinder piston rod **6**. (Lock so that the load bridge cannot independently swivel down).

## LOWERING DRIVER'S CAB AND LOAD BRIDGE

- Swivel load bridge supports up until they lock into the spring clip.



- Turn valve lever to the left, press and turn to right until it locks.
- Press button

The driver's cab and the load bridge are lowered.  
Indicator lamp goes out.

- Screw knurled screws onto load bridge.

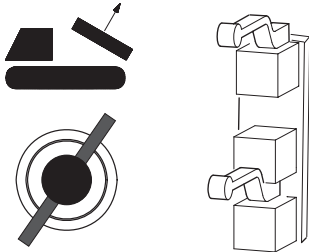


The rear hydraulics will not function if the driver's cab lock is not engaged or if the load bridge is not fully lowered.

## TILTING THE DRIVER'S CAB

Load bridge remains screwed onto intermediate console with **knurled screws**.

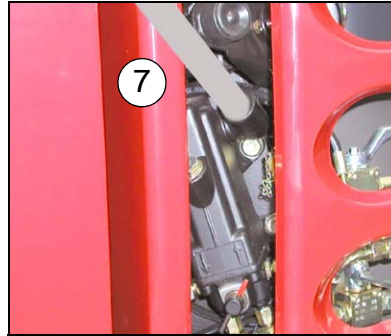
Further steps as when tilting driver's cab and load bridge.



## TILTING THE LOAD BRIDGE

- Move lever of block ball cock into position.

Further steps as when tilting driver's cab and load bridge.



## TILTING AND LOWERING WITH MANUAL PUMP

- Diesel engine OFF

Preparation as when tilting with engine hydraulics.

- Connect tube (on-board toolkit) to manual pump 7 and actuate.

Further steps as when tilting and lowering driver's cab and load bridge.





## Initiate an emergency stop:

- in dangerous situations.



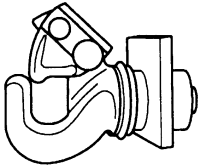
The vehicle comes to a stop and cannot be steered.

- Immediately engage the parking brake.
- Move the direction of travel switch to the "neutral" position.
- Switch off diesel engine.

## Operating after an emergency stop

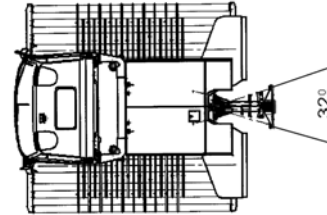
- Turn emergency stop pushbutton **2** and pull upward.

The PistenBully is again ready for operation.



### Towing the PistenBully

- Only trained, qualified persons are permitted to operate the emergency release of the parking brake.
- Towing a PistenBully is an operation requiring extensive safety measures. Please consult your nearest Service Support Center.



### Approved load for towing hitch

#### Permissible towed weight

- Max. towed weight 3000 kg.
- Max. off-centre angle for descents 16° to left or right.



The towed load must be secured to ensure that it cannot skew beyond the maximum permissible off-centre angle on descents or when inclines are crossed.



# NOTES

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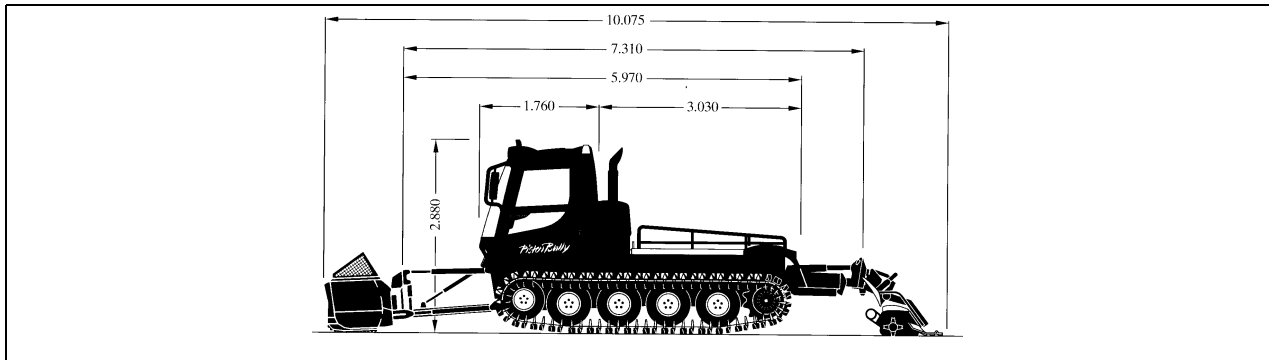
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**Dimensions:****Width:**

without tracks ..... 2500 mm

Across aluminium track..... 4160 mm

Across steel tracks..... 4160 mm

Across rotary plough 2000 ..... 4900 mm

Across multiflex rotary plough..... 5400 mm

**Height** with tilted driver's cab ..... 3325 mm

Height with rear-mounted attachment .. 3300 mm

**Weight:**

Unladen weight with aluminium tracks 6200 kg

Unladen weight with steel tracks ..... 6500 kg

Permissible total weight incl. auxiliary  
equipment..... 8400 kgPayload of load platform without auxil-  
iary equipment..... 1500 kg

Load platform..... 2300 x 1920

**Engine:**

**Electrics:**

Type .....OM 926 LA Mercedes Benz

Low-voltage system ..... 24 volt

Number of cylinders ..... 6

Alternator ..... 28V /120A

Displacement ..... 7.200 cm<sup>3</sup>

Batteries..... 2 x 12V / 135 Ah

Power in accordance with ECE .. 240 KW/330 ECE-PS

Cold start power ..... 600 A

Max. torque..... 1300 Nm/1200 rpm

**Usage data:**

Oil filling with filter..... max. 32 l.

Continuously variable speed ..... 0 - 21 km/h

Fuel consumption approx. .... 16 l/h

Spec. surface loading with alum. tracks  
0.044 kg/cm<sup>2</sup>

Tank content..... 190 l

Spec. surface loading with steel tracks..... 0.046 kg/cm<sup>2</sup>

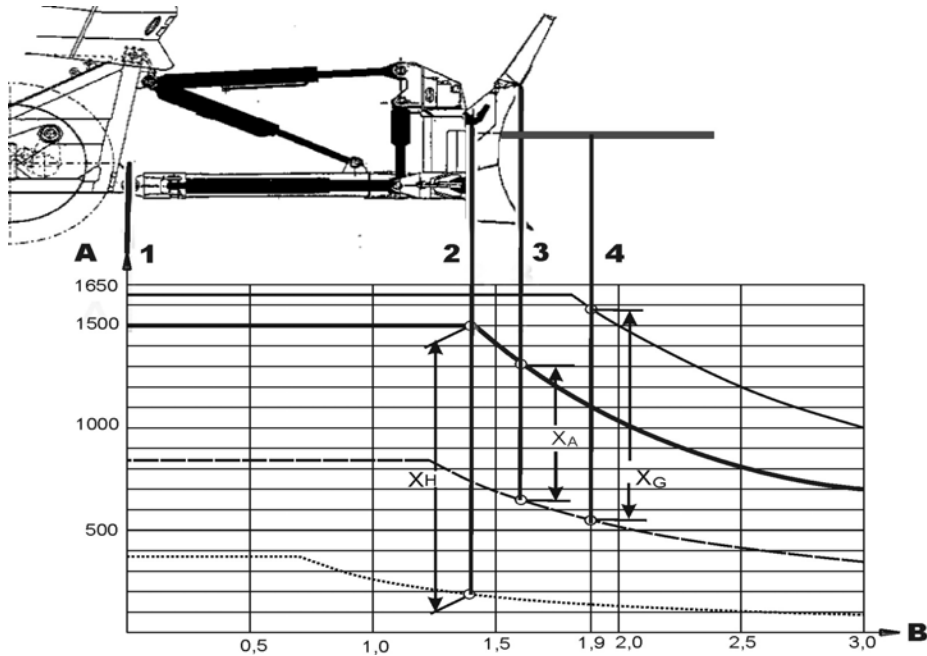
**Brakes:**

Ground coverage with rotary plough..... 90 000 m<sup>2</sup>/h

Zero-wear (hydrostatic)

2 disc brakes

# PERMISSIBLE WEIGHT RANGE OF FRONT ATTACHMENTS



**Key:**

**A** = Counterweight (kg)

**B** = Projection (m)

- 1 = Pivot point  
(main frame, quick-change system).
- 2 = Hook plane, quick-change system
- 3 = End face, front blade centre
- 4 = Fork, length 400 mm (ParkBlade)

- Maximum short-term attachment moment  
under restricted operating conditions  
(M = 30000 Nm).  
Maximum long-term attachment moment  
(M = 21000 Nm)
- Max. long-term attachment moment  
(M = 2100 Nm)
- Attachment moment of the quick-change  
system with front blade (M = 10350 Nm)
- ..... Attachment moment of the quick-change  
system (M = 2600 Nm)

## Example:

Attachment at hook plane, quick-change system **2**  
 $X_H = 1315$  kg maximum long-term attachment weight.

Attachment to quick-change system with front blade **3**  
 $X_A = 665$  kg maximum long-term attachment weight.

Attachment to fork **4**, length 400 mm  
 $X_G = 1000$  kg maximum short-term attachment  
weight.

## Safety instructions

- Attaching excessively heavy machinery or machinery with an excessively high moment voids the vehicle manufacturer's warranty and excludes liability on the part of the vehicle manufacturer. The only exceptions to this rule are those items of auxiliary equipment for which the vehicle manufacturer has issued approval.

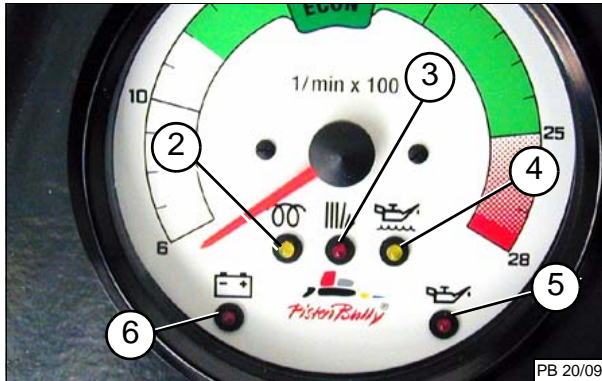
**Short-term attachment moment under restricted operating conditions:**

- Speed for transport and operation limited to max. 10 km (set potentiometer A7 to position 7 on the scale.
- The high moment of the auxiliary equipment restricts the manoeuvrability of the vehicle, so the route to the work zone must be through easily accessible terrain.
- It is essential to comply with the instructions regarding the transport position of the auxiliary equipment (see the operating instructions for the auxiliary equipment).
- Operation with an item of auxiliary equipment is restricted to the intended purpose and is subject to the limit of the time required for said purpose (short-term).
- The transport of persons is prohibited.
- Do not permit the load to obstruct the driver's field of vision.
- The load must be adequately secured to ensure that it cannot shift.
- Always retract the forks when they are not needed.
- When the forks are extended, the side section of the front blade must be pivoted all the way out.
- Alterations to the forks are prohibited.
- The load must be suitable for lifting with the forks.
- Make sure that the weight of the load is evenly distributed across both forks.
- Risk of toppling.  
Check the terrain and make sure it is suitable for driving.
- Reduce speed to allow for the extra weight of the equipment.

**Safety instructions, ParkBlade****WARNING!**

**Risk of injury by crushing:  
when extending / retracting the forks.  
Make sure there is no-one in the danger zone.**





## STARTING THE ENGINE

### **WARNING!**

**Additional starting aids (e.g. starter pilot) may not be used as a result of the risk of explosion**

- Engage the parking brake.
- Move direction of travel switch into neutral position.
- Switch off electrical consumers.

- Turn ignition key to stage I

The indicator lamps light up:

- ◆ Charge indicator lamp 6
- ◆ Engine oil pressure control 5
- ◆ Brake venting check
- ◆ Engine control 3
- ◆ Intake air preheating 2
- ◆ Intake air preheating hazard warning light

### Situational help

The warning light for air-intake preheating may stay lit for up to approx. 3 minutes after the engine starts.

### **CAUTION!**

Damage to electronics

If the warning light for air-intake preheating lights up during operation:

- Cease operations and proceed to the nearest workshop.
- Switch off the battery master switch.

## Start procedure

- Ignition ON



Depending on the ambient temperature, the intake-air preheating light goes out after approx. 2 seconds (no preheating) or within 30 seconds (maximum preheating time).

### When the intake-air preheating light goes out:

- Start the engine
- Do not depress the accelerator pedal.
  - Operate the starter until the engine is turning at 700 rpm
  - maximum duration of start attempt 30 seconds

### Engine refuses to start:

Immediately repeat the start attempt (do not repeat the preheating procedure).

Duration of start attempt, max. 30 seconds

### If it is necessary to repeat the reheating procedure:

- Ignition OFF
- Wait for 5 - 10 seconds
- Ignition ON..

## WARMING-UP PHASE:

### Air temperature between 0<sup>0</sup> C and -20<sup>0</sup> C



- Let diesel engine run (idling while stationary) for approx. 3 minutes.
- Drive off using partial throttle.
- Full throttle can be used as of a coolant temperature of + 80° C.

### Air temperature below -20<sup>0</sup> C



- Let diesel engine run (idling while stationary) for approx. 6 minutes.
- Drive off using partial throttle.
- Full throttle can be used as of coolant temperature of + 80° C.

## RUNNING-IN SPECIFICATIONS:

### Up to 40 operating hours

- Run in the engine carefully and do not exceed max. 3/4 of full throttle position

### From 40 operating hours

- Slowly build up to full engine power

## MOST FUEL-EFFICIENT ENGINE SPEED RANGE

**On sharp gradients** it is advisable to select an engine speed to suit requirements, i.e. one which lies outside the most fuel-efficient speed range. At full throttle, the electronic control unit governs max. engine speed.

**When navigating extreme terrain** you may have to drive so slowly that the auxiliary equipment attached is unable to operate at a high enough speed.

In this event, you can use the potentiometer **(A4)** to reduce vehicle speed to such a point that the diesel engine has to run faster to cope: this in turn enables you to increase the operating speed of the auxiliary equipment to a suitable level.

**If the PistenBully slows down too much, to a lack of engine power**, auxiliary equipment can be switched to synchronous running. In addition, you can use the potentiometer **(A2)** to decrease the operating speed of auxiliary equipment, thereby also reducing the engine power required to operate it.

This means that more engine power is available to drive the vehicle.

## SWITCHING OFF THE ENGINE

### CAUTION!

**Turbocharger - risk of overheating!**

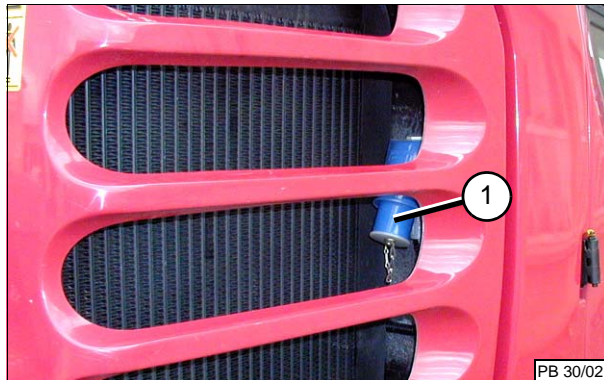
**Do not immediately switch off the diesel engine if it has been run with a full throttle. Drive using partial throttle for approx. 2 minutes and then switch off.**

- Turn ignition key (A1) in setting **0**.
- Use coolant preheater.

**The outside power connection 1** 220 V enables you to heat the coolant system using the thermostatically-controlled preheater and, as an additional option, the hydraulic fluid.



The 1 - 2 hours of preheating before a start does not improve the cold start.  
Undertake preheating immediately after parking the vehicle.



Only use external power supply units which comply with national legislation.

## Driving

- Adjust idle speed with manual throttle to less than 1000/rpm. If you do so, you will not be able to brake to a standstill.



### WARNING!

**Before driving off, ensure that no-one is in the danger area i.e. right beside the vehicle or on or beside the tracks.**

- Move direction of travel switch into forward or reverse position: If you choose to reverse, you will hear a beeping noise (reversing alarm).



However, the driver still has a duty to keep the area behind the vehicle always in view when reversing.

- Increase engine speed with the accelerator above initial engine speed: the Pisten Bully starts to move off.

As engine speed rises, the Pisten Bully will accelerate, up to maximum speed if so desired, doing so in direct

proportion to engine speed and the electronically controlled hydraulic ratio of the hydrostatic drive unit.

During operation, the electronic control unit monitors the engine speed set by the accelerator and selects the most appropriate hydraulic ratio for engine load so that the set engine speed remains at a constant level and only the vehicle speed changes.



### WARNING!

**When steering, ensure that the right and left drive hydraulics are switched to contra-rotation just before full steering lock. This causes the Pisten Bully to execute a pivot turn.**

- Watch the instrument panel when driving!

**Engine oil pressure:** When the engine is at operating temperature, oil pressure at full load should be at least 2 – 3 bar, and at least 0.5 bar at idle speed.

- If there is a drop in oil pressure, stop immediately, switch off engine and find out why this has happened (too little oil in oil reservoir?).

**Engine operating temperature:** If an unacceptably high operating temperature is reached an acoustic warning signal is provided by **buzzer**.  
find cause. (Is display unit operating correctly? Not enough coolant in system? Is outside of radiator dirty? V-belt tension? Viscous fan?)

**Fuel level:** Check fuel level at regular intervals and top-up when necessary. This will prevent fuel running out when negotiating steep slopes where the engine might cut out at a bad time.

**Battery charge telltale:** If battery charge telltale lights up when engine is running, alternator is no longer charging the starter batteries. Find cause and repair damage (loose cable connections? Alternator dirty? Belt slipping or torn?).

**Warning light hydraulic oil level:** Occasional flashing when driving downhill does not indicate a fault.

**Parking brake telltale:** When telltale lights up, check parking brake.

## Braking and stopping:

The vehicle is braked without mechanical wear using the hydrostatic drive. By releasing pressure on the accelerator, the engine speed drops, the hydraulic ratio changes and driving speed is reduced.

If the engine speed falls below the initial speed, both variable displacement pumps of the drive electronics will go back to the zero position and the Pisten Bully will come to a halt.



### WARNING!

**Do not operate direction of travel switch when driving or the Pisten Bully will brake to a complete stop.**

A parking brake which controls both drive wheels has also been added (spring accumulator brake) which is operated with the hand lever.



### WARNING!

**Only use parking brake as a handbrake, i.e. when stationary. Do not stop or park in areas outwith field of view.**



## **WARNING!**

Before leaving Pisten Bully, always apply parking brake, move direction of travel switch into neutral position and lower the auxiliary equipment.



## **WARNING!**

If engine cuts out for whatever reason, apply parking brake immediately.

.....

**After use:**

- lower the auxiliary equipment and switch off the rotary plough.
- move direction of travel switch into "neutral".
- apply parking brake.
- before switching off engine, let it run at idle speed for approx. 1 – 2 minutes (to prevent coolant escaping).
- Refuel Pisten Bully immediately after use to avoid build up of condensate in tank.
- Then remove as much snow and ice as possible from tracks, sprocket wheels and idler wheels, in order to prevent freezing over and damage during subsequent trips.
- Raise and secure auxiliary equipment.
- Connect coolant and preheater.

**WARNING!**

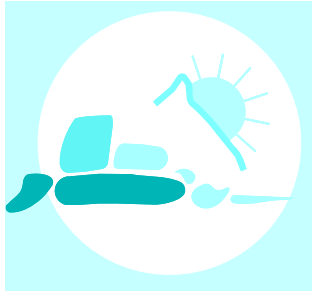
**Never let engine run unsupervised or in closed areas.**

- Switch off engine by using stop cable or ignition key.
- Take out ignition key and lock cabin.



When entering and leaving driver's cab  
BE CAREFUL OF tracks and door.





Quality and cost-effectiveness are more important than quantity.

## LOW FUEL CONSUMPTION / LOW POLLUTANT EMISSIONS

- **Diesel engine speed** (green area in tachometer). Maximum torque 1325 Nm at 1200-1500 rpm.
- **Regulate rotary plough speed** according to snow conditions **with potentiometer**. **Maximum activation of rotary plough pump at 1400 rpm**.
- **Immediately regulate depth of rotary plough** according to snow conditions **with pushbutton and display unit**. Do not plough any deeper than absolutely necessary.
- **Immediately regulate contact pressure of rear-mounted attachment with manual control sensor**. Drive with the **least possible contact pressure** to suit prevailing snow conditions.

## MEDIUM SNOW

Snow is formed from water droplets in the atmosphere at temperatures of  $-4^{\circ}\text{C}$  or below.

Ice crystals form in a range of different shapes:

Sleet consists of snow crystals which are enlarged by being covered by ice. They are usually either round or cone-shaped.

Rime is the result of water vapour and precipitation on very cold objects (fences, hedges, surface of snow).

Hoar frost occurs when very cold water droplets are deposited by wind on solid objects.

Fresh snow initially forms a crystalline structure containing a lot of air which bonds to a greater or lesser extent.

However, the original forms are already beyond recognition a few days after any fresh fall of snow.

Certain natural changes cannot be controlled (shrin-

age results from the combined effects of wind pressure, freezing and evaporation; volume increases due to the temperature gradient i.e. the temperature differential between surface of ground below snow layer and air temperature at surface of snow). Nevertheless, always comply with the following guidelines:



When working with snow, cause as little damage as possible. The crystalline structure of snow breaks down completely if worked on too aggressively with auxiliary equipment e.g. the rotary plough. It loses its bonding capacity and turns into slush (all too familiar in the entries to garages and lifts and confined spaces).

## Grooming of new snow

New snow/powder snow consists of loosely connected snow crystals which therefore include a lot of air. The grooming process removes some of this air and compresses the crystals. This results in a snow layer capable of bearing weight.

## Mogul pistes

Some of the crystals melt due to the film of water created by passing skiers. This results in ice patches and softer areas.

When the uppermost layer is broken in the course of time by the skiers, mogul pistes are formed.

When these pistes are groomed, older and relatively "fresh" snow (snow crystals) are mixed, which results in long snow durability.

At sufficiently low temperatures, the snow freezes into lumps – **when this happens, only the rear-mounted rotary plough can create an aesthetically pleasing piste.**

The rotary plough's teeth break the lumps into slush. This slush fills the hollow areas in the piste's surface. It is then combed into shape by the finisher and is bon-

ded by the build up of water film. The crystalline structure is also destroyed when lumps are broken up. Only a limited amount of bonding can take place. Therefore, ice can only produce slush and never powder snow.



Only a mixture including fresh snow or untouched older snow which lay beneath the snow's surface can produce a durable piste.

## Ice pistes/ice sheets

Only break up an ice piste if layer is sufficiently deep or if fresh snow has fallen. The slush thus formed can only bond with new snow or with water – in this case turning back into ice. Therefore, we recommend that you only roughen up the surface of ice pistes to make them navigable again for skiers. You can work on ice sheets on otherwise good pistes by mixing them with underlying snow crystals.



The more the snow is tilled and the crystals destroyed, the less they will bond.

## Wet snow/Sugar snow

High levels of humidity and the water film build up on the finisher can lead to a relatively hard surface which causes great difficulties to less experienced skiers. Therefore, Kässbohrer has created the angled setting option of the rear-mounted attachment. Special finishers can alter the uniform surface structure and thereby create a "powder snow" effect.

## Extreme sugar snow in spring

We recommend the use of the smoother here because driving the rotary plough might cause snow to bank along the edges. For more effective use, Kässbohrer offers an extra wide smoother with side swivel option – this enables you to groom the piste to either side of the Pisten Bully in turn.

If sugar snow prevents you from creating optimum piste conditions, we recommend that you wait for two to three hours until temperatures change again. In the meantime, you can groom pistes at different altitudes.



Leave snow so that crystals can be formed..

## Gradability

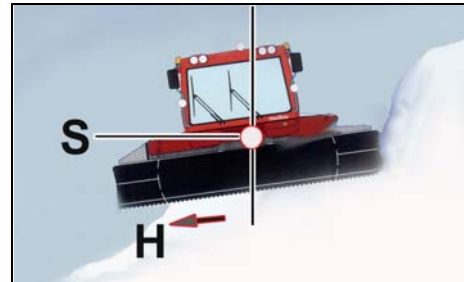
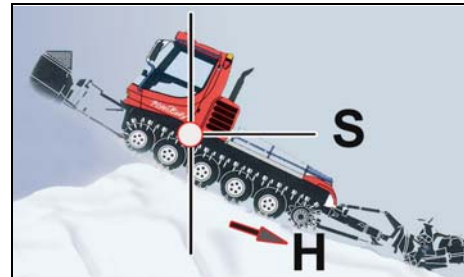
Pisten Bully's ability to climb depends on snow's limit of adhesion. The machine's centre of gravity also affects gradability. It is important that the driver should ensure that as much of each track as possible is in contact with snow, otherwise there is a risk of the Pisten Bully tipping over. The danger limits largely depend on use, payload, prevailing conditions of terrain and the skill of the driver.

**S = CENTRE OF GRAVITY**

**H = GRAVITY EXERTED BY SLOPE**



Carefully consider every situation of potential use. Never assume that simply because a vehicle has driven on certain terrain, that the same terrain can be driven on now.



Learner drivers should first acquaint themselves with the vehicle before attempting difficult tasks.

## DRIVING WITH THE PISTEN BULLY



The basic rule of thumb is: Only drive on snow-covered areas where it is not possible to damage the turf.

The aim of piste-grooming is to create an aesthetically pleasing piste.

At critical locations, build up reserves of snow in good time which can be used to patch up thin areas.

When driving and turning, smooth out any holes or bumps created straightaway.

If you drive too fast, the tracks and auxiliary equipment will throw snow to one side, covering the piste you have already groomed.

Remove all snow from the load platform at regular intervals. This reduction in weight helps to improve fuel economy.

Always drive in the fuel-efficient engine speed range (marked in green on tachometer).

The drive electronics ensure that vehicle speed is matched to prevailing engine speed.

## Driving: uphill

Always look for the easiest point to set off before driving uphill. Do not set off at the steepest point. It is often better to reach the slope's summit via a detour and to groom the first lane from top to bottom.

Where possible, drive on slopes up the fall line and keep steering to a minimum.

Never drive with more engine power than is necessary; ensure good track grip (traction). Excessive engine power causes tracks to spin and vehicle will dig itself in. If tracks begin to dig in, stop immediately and look for a new route.



Digging in destroys the piste and base of the slope.

## Turning

To preserve the piste, turn at its edge or outside the skiable area. Look for turning areas where there is no vegetation (do not use protected areas or any similar areas.)

Before turning, always raise the auxiliary equipment at the front and back!

### Turning using contra-rotation:

Contra-rotating the tracks allows vehicle to execute a pivot turn. Because this makes the machine dig in slightly, only use this method for turning when there is sufficient depth of snow. We recommend that you use this form of turning only in exceptional circumstances. Pivot turns exert very high loads on the rubber track belts and track cleats.

## Driving: downhill

When driving downhill, ensure that you are driving at moderate speed. This stops the engine from over-revving, the machine from drifting off out of control and the snow from being torn up. If necessary, reduce vehicle speed using the drive speed.

When driving, keep steering to a minimum. Ensure that both tracks are turning.

When driving over bulges, reduce speed so that Pisten Bully's forward tilting can be controlled. This ensures that the scraper plate does not "stick in" and the tracks do not spin.

### Only drive down slopes after ensuring that:

- snow adhesion is good enough.
- there is a safe runout from the base of the slope.
- there are no skiers in the danger area.



If, when driving downhill, PistenBully slides and drifts off to the right or left (i.e. if the longitudinal axis is at an oblique angle to fall line), immediately steer in the opposite direction until tracks start to contra-rotate (move steering wheel to left or right limit position). This will bring the longitudinal axis back into the same direction as fall line. Also increase engine speed for a short time. If vehicle slips in the fall line, reverse the direction of rotation of the rotary plough and carefully lower the scraper plate to slow down the slipping motion to the point where the vehicle has stabilized once again.



## **WARNING!**

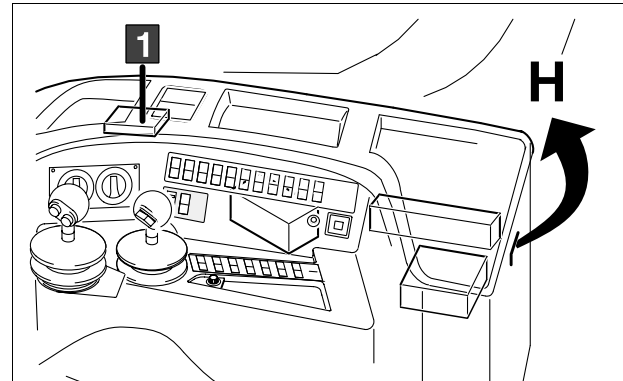
Failure to comply with the following procedure entails a risk of an accident because the vehicle would be able to set off at any time without warning.

- Apply parking brake!
- Shift direction of travel switch into neutral position.
- Turn vehicle speed potentiometer to 0.

## **WARNING!**

**On vehicles equipped for Kahlbacher rotary ploughs:**

**When you actuate the steering wheel, the vehicle will move, even if the vehicle speed potentiometer is set to "0". Assuming that engine speed is raised above initial speed by using the accelerator.**



- Fold up centre console H.
- Unlock toggle switch 1 "Emergency operation" and switch to manual control – telltale lights up.
- Switch on diesel engine and increase speed to approx. 2000 rpm.
- Move direction of travel switch into the desired direction of travel.
- Release parking brake.

- Slowly turn vehicle speed potentiometer to 9 – the Pisten Bully starts to move off.

 **WARNING!**

**If the electronic control unit fails, you are only permitted to drive as far as the nearest workshop (in emergency driving mode).**

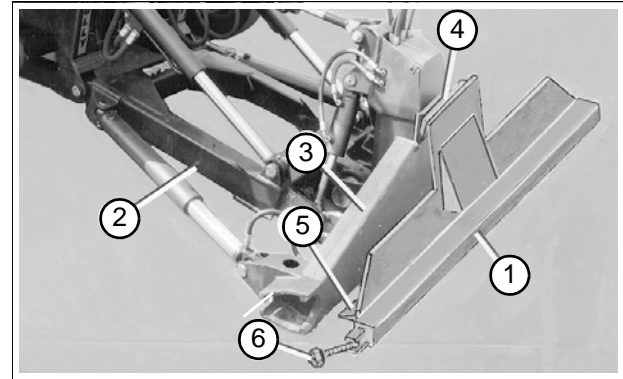
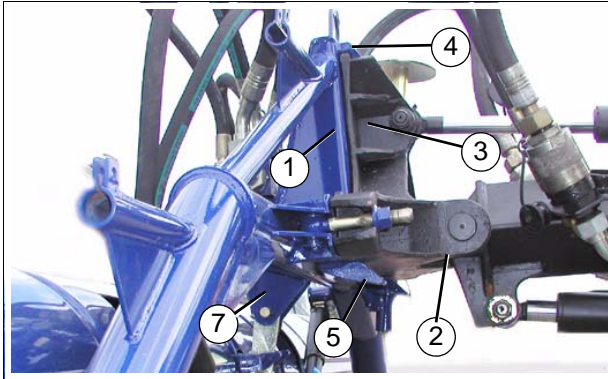
- Only drive at low speed. Watch the engine speed when so doing: The engine can be stalled by reciprocating loads (i.e. alternately depressing and releasing the accelerator pedal).
- To brake, turn back the vehicle speed potentiometer.

 **WARNING!**

**Putting direction of travel switch to neutral position brings vehicle to a halt!**

 **WARNING!**

**When engine stops, immediately apply parking brake.**



## Fitting auxiliary equipment

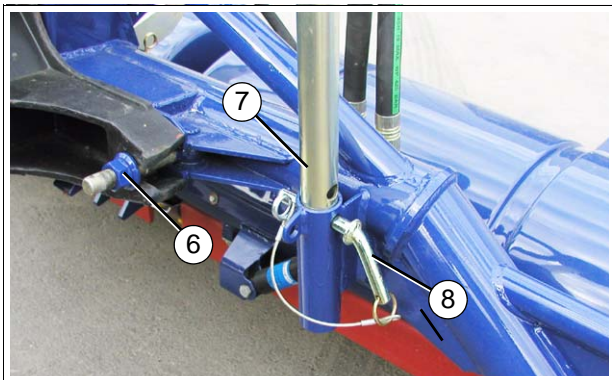
- Clean snow and ice off equipment attachment plate and centring head of auxiliary equipment.

### **WARNING!**

**When the engine is running, ensure no-one steps between the vehicle and the auxiliary equipment!**

- Lower the equipment carrier or the mounting for front-mounted equipment **2**.
- Tilt the attachment plate **3**.
- Drive Pisten Bully up to the auxiliary equipment, which should now be ready to attach.
- Apply parking brake.
- Slowly raise equipment carrier and/or mounting for front-mounted equipment **2**.

The attachment plate **3** locates in the mounting hooks **4**, the equipment attachment plate **1** closes in against



the attachment plate **3** and, at the same time, centres itself on the two centring tapers **5** on the attachment plate **3**.

- Only raise equipment carrier and/or mounting for front-mounted equipment **2** until the auxiliary equipment makes contact with the attachment plate **3**. If the centring tapers **5** do not slide under the attachment plate **3**, you can jolt the auxiliary equipment into the correct position by a series of brisk movements. Switch off engine!

- Swivel eye bolts **6** inwards and tighten down nuts (tightening torque 250 Nm).

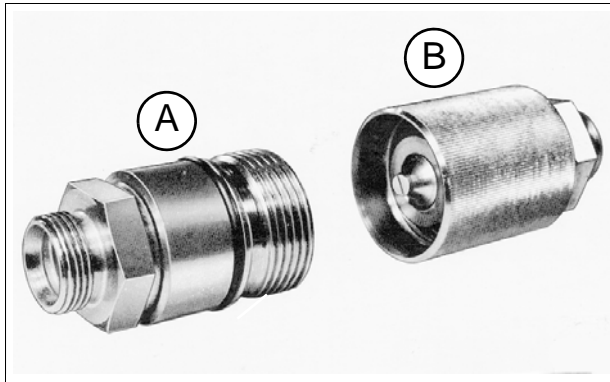
 **WARNING!**

**After operating the equipment for approx. 10 minutes, tighten the nuts down again!**

- Unlock the support, swivel support base **7** completely upwards and secure with pin **8**.
- Lower auxiliary equipment



Remove rear auxiliary equipment in protracted over-run operations



## Connect up hydraulic coupling for auxiliary equipment.

The screw-mounted high-pressure couplings are used for connecting and separating filled lines. When the couplings are opened/closed, valves are actuated automatically. They open up or close down the flow of hydraulic fluid. To link up the high-pressure coupling between the coupling connector and the coupling sleeve, screw down the hand-tightened nut on the connector section as far as the mark.

**A** = vehicle end  
**B** = equipment end

### **WARNING!**

**Before connecting/disconnecting any auxiliary equipment always: switch off engine! apply parking brake!**

- depressurise hydraulic lines by actuating the appropriate functions.



When connecting up couplings, ensure that both ends of the coupling are completely clean.

- Firstly connect leakage oil adapter.
- Connect up hydraulic hoses, ensuring that colour codes are matched up and that the hydraulic couplings are perfectly seated. Tighten down hydraulic couplings using suitable tools.
- Insert electrical connector of auxiliary equipment in the receptacle of the Pisten Bully and tighten down firmly. The connector closes the electrical circuit which detects the presence of auxiliary equipment.

- Function test of auxiliary equipment.



### **WARNING!**

**Ensure no-one is standing in the danger area!**

- Check auxiliary equipment for oil leaks and, if necessary, have it repaired by trained staff.

### **Removing auxiliary equipment**

- Lower auxiliary equipment onto solid horizontal ground with supports folded out and secured.
- To remove the auxiliary equipment, proceed as for fitting but in reverse order.
- Finally remove leakage oil adapter.



If the auxiliary equipment stands outside for protracted periods, protect it from direct sunlight.

## OPENING THE GALLERY RAILING

- Swing the gallery railing up (Figure 1)



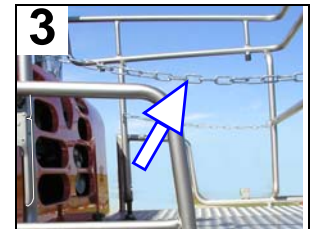
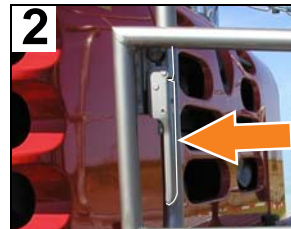
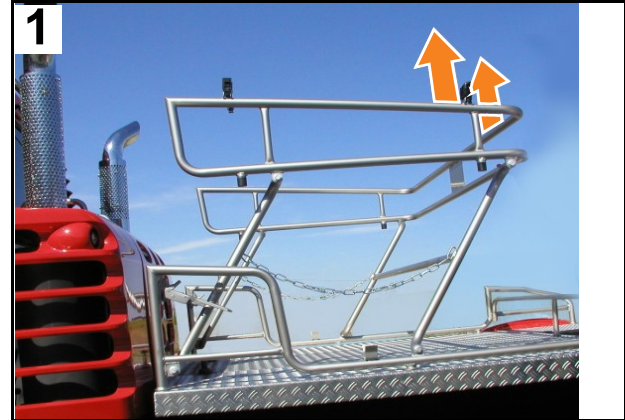
See direction arrows for points to hold for opening.

- Push both locking levers all the way down (Figure 2).



The safety catch on the locking lever must engage.

- Close both safety chains (Figure 3).



- Snap the two spring locks into position to close the base lock (Figure 4).

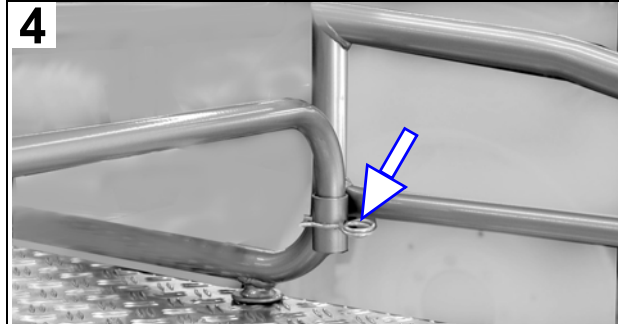
## CLOSING THE GALLERY RAILING

- Press the safety catch and open the locking lever (Figure 5).

### **WARNING!**

**Risk of injury by crushing:  
When lowering the gallery railing.  
Hold the gallery railing at the points shown in Figure 1 when swinging it into position.**

- Fully lower the gallery railing.





When grooming the piste, ensure that the side finishers overlap the groomed piste to ensure there is a seamless transition from one grooming track to the next.

### Notes on ploughing depth:

Correct setting of the plough depth ensures that you obtain:

- aesthetically pleasing piste.
- an undisturbed firm base under piste.
- optimum fuel economy.
- minimum stress and strain for the Pisten Bully and rotary plough.

### The effects of incorrect plough depth settings:

- Rotary plough shaft too high: plough does not perform.
- No signs of piste grooming on hard areas.
- Plough shaft too deep: not enough snow passing through the plough blades, causing snow to flow to either side of the plough where it forms side walls.

- Bonding of snow crystals and the quality of the base is adversely affected.
- More engine power required – uneconomical.

### Contra-rotation of rotary plough:

On Pisten Bullys with electronic rotary plough regulation it is possible to run the plough shafts backwards as well as forwards (standard direction of rotation).



Reverse direction can, for example, be employed as a braking aid when descending steep sections of terrain.

## Operator errors and remedial action

Remedial measures in summary form:

### formation of side walls to left and right sides.

- Speed too high.
- Depth setting too deep.
- Contact pressure setting selected instead of float setting.
- Cylinder on equipment carrier misaligned.
- Rotary shafts stationary.

### Piste not in good visual condition – some of it not groomed:

- Rotary plough set too high (shallow depth setting).
- Engine speed too low.
- Lever not in detent position (float setting).
- Vehicle speed too high.
- No flat surface with U-scraper plate (rotary plough standing on a bump).

### Vehicle remains almost stationary with the engine under load:

- Rotary plough too deep.
- Engine speed too high.
- Cylinder on equipment carrier accidentally misaligned.
- Contra-rotation.
- Rotary plough shafts stationary – blocked, jammed, frozen over.

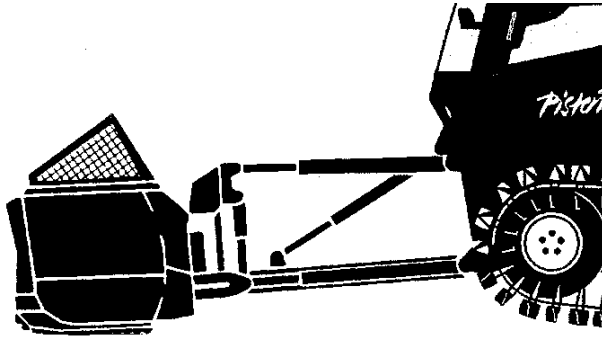
### Severe vibration in vehicle once rotary plough is switched on:

- Shaft not balanced, tooth broken off – arrange for trained staff to repair it.
- Snow frozen onto surface – remove it.



### WARNING!

**Imbalance inevitably leads to vibration – screws loosen themselves and bearings are destroyed – repair any imbalance!**



## Applications:

- Use of scraper plate on steep slopes of fresh snow
- Levelling washed out pistes
- Levelling mogul pistes
- Making a track



## CAUTION!

**During bulldozer work ( i.e. when pushing snow with ploughblade), fully raise rear device carrier.**

To perform modern piste-grooming activities, these vehicles have to be fitted with a front-mounted scraper plate.

This plate can be used to level mogul pistes and to move aside snow. In addition, the scraper plate is an important climbing aid on fresh snow. It also protects the vehicle from slipping backwards. For this reason, never remove the scraper plate.

## Levelling mogul pistes

To level low moguls or undulations, drive with the scraper plate in what is referred to as the float setting. In this setting, the scraper plate is only just in contact with the ground – no hydraulic pressure is applied.

The tilt cylinder is used to set the scraper plate into a range of progressively more "aggressive" operating positions. This must be done very carefully since, if the blade is tilted too sharply, it would dig into the ground too deeply.

Drive at large moguls at about half-height, and not in float setting, to ensure that snow drops forwards into the depression behind each mogul. Here too, ensure that the cutting depth is correctly set with the tilt cylinder.

der: do not make so much use of the upwards/downwards movements of the scraper plate. This will ensure that you leave a smooth piste in your wake.



Under ideal conditions, a roll of snow forms in front of the scraper blade which automatically compensates for any irregularities in the surface of the piste.

### **Making a trail**

The best idea is to approach any slippery slope from above at an oblique angle, and to create a flat track with the scraper blade swivelled to one side.

It is advisable to start with very little snow, gathering more snow as you proceed forwards. In this way, you can make your way across the entire width of the piste. The snow pushed out towards the valley inevitably widens the track and makes the route safer for skiers.

### **Use of scraper plate on steep pistes covered with fresh snow**

When grooming fresh snow, you need the scraper plate both to push the snow and also to achieve good distribution of weight and uniform surface pressure.

You can use the scraper plate as a climbing aid on steep slopes by briefly bringing Pisten Bully to a halt just before it digs in and then reversing with scraper plate lowered. This flattens the step. When setting off again, you can drive for several metres with scraper plate raised in order to overcome inclines which are difficult to negotiate.

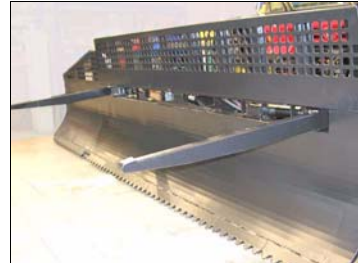
### **Levelling washed out pistes**

A consequence of modern skiing is that skiers tend to wear away the snow layer, causing it to accumulate at the bottom of pistes. The aim of piste-grooming is to cover the piste with a blanket of snow which is as uniform as possible. To do so, the snow must be pushed back up the slope. If required, use Pisten Bully with a winch.

When the scraper plate is swivelled, an oblique setting is created. The snow can slide off and get between the vehicle and its scraper blade. This lateral problem can be improved by adjusting the build-up side wings of the 12-way scraper plate to an appropriate angle. By using the whole range of possible adjustments, the scraper plate can be ideally adapted to the terrain. This leads to effective movement of snow.

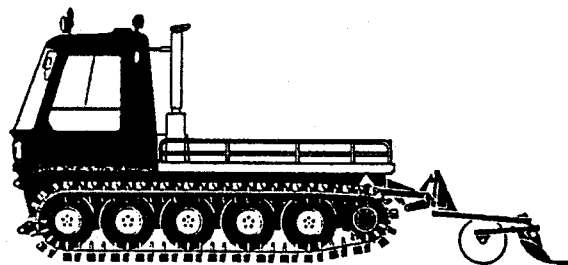
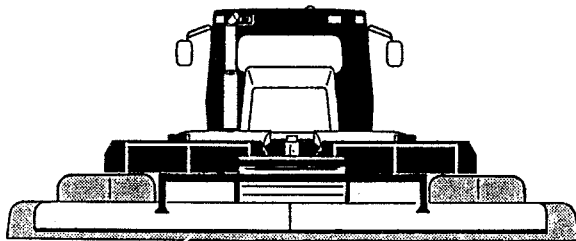
The learner driver should note that quantity and speed are not always of the essence. Drivers must decide for themselves on the basis of terrain conditions whether bulldozing downhill is worthwhile or not, or whether it would in fact lead to further loss of snow.

## PARKBLADE (FUNPARK)



### **Correct usage:**

The ParkBlade is designed for constructing and maintaining funparks and boarder crosses. Funpark obstacles such as funboxes and rails can be transported on the forks.



The rear-mounted attachment is an item of auxiliary equipment which should mostly be used with fresh snow and soft spring snow: It packs the snow, smoothes the pistes and obliterates marks left by the tracks. The roller packs the snow in the area between the tracks.

The rear-mounted attachment consists of a frame with a quick-change system. The smoother can be adjusted to a steeper or flatter setting.

#### **Advantages:**

- Pistes are groomed faster.
- Rear-mounted attachment does not use up any of the vehicle's power.
- Fuel consumption is reduced. Environment-friendly use.

#### **Use of rear-mounted attachment**

If the smoother setting is too steep, this leads to what is known as a raking effect. This can cause snow piles which are too undulating.

If smoother setting is too flat, too little snow will be transported. Potential holes in piste will not be filled.

The correct smoother setting is determined by the conditions of the snow.

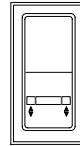
A well-groomed piste has no piles of snow, no snow walls and is aesthetically pleasing.



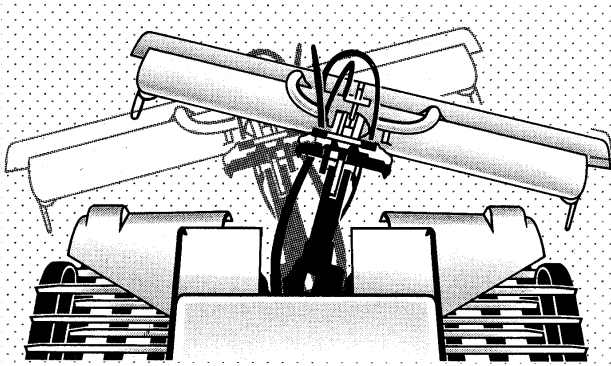
Always raise rear-mounted attachment when pushing snow or crossing streets and similar areas.

## Special equipment in 6 m smoother.

### PUSHBUTTON



When actuating **side section**, fold smoother **in / out**.



The rotary plough 2000 is hydrostatically driven and is used to loosen up pistes after use by a lot of skiers. It is also used to reduce lumps of snow and ice and to mix up old and fresh snow.

You can hydraulically adjust the depth at which the rotary plough shaft is used from driver's cab. In addition, the rotary plough shaft can be operated in either contra-rotating or synchronous running mode. Both rotary plough shafts are of identical construction. You can swap them over quickly and replace them with other versions of rotary plough shaft if the type of snow requires it.

The rotary snow plough 2000 can be fitted or removed by 1 person thanks to its quick-change system. The rotary snow plough 2000 is an item of auxiliary equipment which can be used with all types of snow if the snow is deep enough.

- Regrooming of pistes covered in fresh snow.
- Dealing with mogul pistes (using scraper plate).
- Roughening up icy pistes.
- Breaking up hard lumps of snow.
- Penetrating ice sheet.
- Mixing old and fresh snow.
- Packing wet snow.
- Dealing with glacier ice (in summer).

### Adjusting depth of rotary plough

- Lift rotary plough completely out of the snow with rotary plough depth adjustment pushbutton.

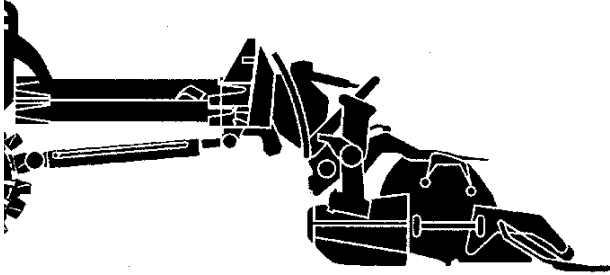
The only part of the rotary plough in contact with piste is the finisher.

- Operate rotary plough at medium speed and set off.
- Slowly increase depth of shaft when driving.





The optimum shaft depth is reached when the piste surface behind the finisher is aesthetically pleasing. When driving uphill, ensure that the rotary plough is in synchronous running mode and drive at a speed which creates the piste conditions required. If the rotary plough is operated at excessively high speeds, then a correspondingly high level of power is required which will no longer be available for driving the Pisten Bully. When driving downhill at a steep gradient, the rotary shaft can be set in contra-rotation mode in order to stabilize the Pisten Bully.



The Multiflex rotary snow plough is a further development of the tried and tested rotary snow plough 2000 which is even more piste-friendly when tilling the snow.

It adapts to the natural contours of the terrain with adjustable tilt angle of up to 20°.

Both of the rotary plough's components are guided across the ground with a three-point mounting. This creates pistes which look very natural.

Both rotary plough shafts are driven by a hydraulic mo-

tor and are connected by a synchronous propeller shaft to ensure that they move at the same speed and have the same torque.

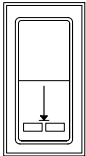
The specially constructed rotary plough shafts and finisher distribute the snow in an optimum manner so that the piste always looks groomed no matter what the conditions of use are.

## Rigid setting of the Multiflex rotary plough

If you want to achieve a flat area (and not adapt to the terrain), the Multiflex rotary plough can be placed in a rigid setting.

### Hydraulic actuation for "set to rigid" (FunPark)

- Set down the Multiflex tiller on a firm, level surface.
- Operate pushbutton for **rigid setting of rotary plough** (special equipment) until hydraulic cylinder is completely extended.



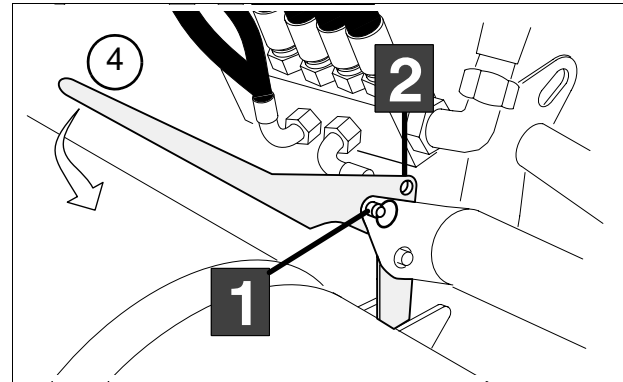
#### Tilt switch – rigid setting

Push upwards = **rigid setting "OFF"**

Press downwards = **rigid setting "ON"**

### Cancelling "set to rigid" (unlock)

- Set down the Multiflex tiller on a firm, level surface.



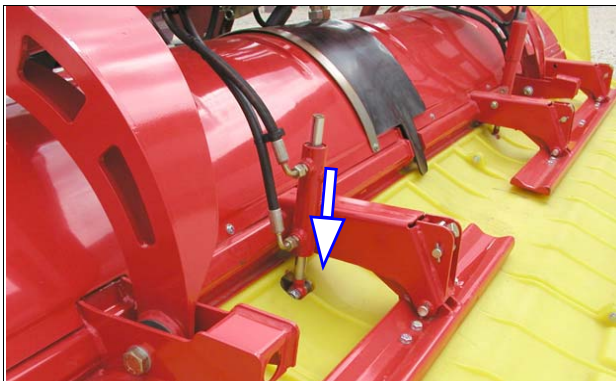
- Actuate pushbutton rotary plough in rigid setting until hydraulic cylinder is completely retracted.

### Manual rigid setting (series):

- Adjustment lever **4** in pos. **1**
- Secure with retaining pin.

### Cancel rigid setting:

- Adjustment lever **4** in Pos. **2**
- Secure with retaining pin.



### Snow-flap Adjuster - Tiller

The snow-flap adjuster enables you to vary the snow path through the tiller by means of pushbutton controls.

#### Snow-flap **retract**

With the snow flap set to this position when the vehicle is used on an ice-covered slope, for example, chunks of ice will be forced to pass the tiller shaft several times and this will help ensure optimum processing.

### PUSHBUTTON



#### Snow-flap position for rotary plough

Top section pressed = Extend snow flap  
 Bottom section pressed = Retract snow flap  
 (see the section entitled "Multiflex rotary plough")

See Snow-flap position indicator

- When **ascending**, always set the tiller shaft to forward operation and use a suitable working speed until the ski slope has been prepared to specification.

An attempt to operate the tiller shaft at too high a speed will divert too much output power from the engine, with the result that the engine will not be able to develop enough power to propel the PistenBully.

- When **descending** extremely steep gradients, the tiller shaft can be set to counter-rotate so as to help stabilize the PistenBully.