

# Operating Manual



## Drum winch PistonBully 400W

From WKU 5 824 CQ B L 010609

EN

[www.pistenbully.com](http://www.pistenbully.com)

**PistonBully®**

# Kässbohrer Geländefahrzeug AG

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**Printed in Germany**

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## This operating manual provides information about:

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

## ABBREVIATIONS USED IN THIS MANUAL

e.g. . . . . = for example

$M_A$  . . . . = tightening torque

SP No. . . . = spare part order number

## SYMBOLS USED IN THIS MANUAL



### **Danger!**

**Direct and imminent danger threatening life and limb unless appropriate precautions are taken.**



### **WARNING!**

**Potentially highly dangerous situation!  
Danger to life and limb unless appropriate precautions are taken.**



### **CAUTION!**

**Dangerous situation!  
Could lead to injury unless appropriate precautions are taken**



**Important notes!**

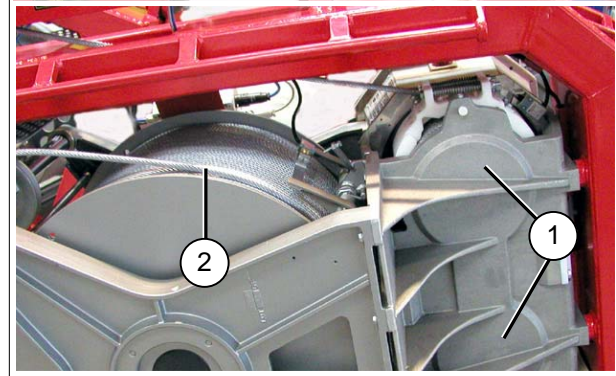
Possibility of damage to the machine or its immediate surroundings.



This symbol draws attention to practical tips

### DESCRIPTION

- \* The drum winch is used to keep the PistenBully from slipping downhill and to assist it to climb very steep gradients.
- \* The drum winch is **not** a rescue winch.
- \* The PistenBully's fourth pump pressurises the hydraulic fluid for the winch drive.
- \* The winch is driven by the pair of multi groove drums **1**.
- \* The windlass **2** keeps the cable under a defined tension.
- \* The pull on the cable can be varied by means of pulling-force regulator **3**.
- \* Usable cable length 1000 meters.



## INTENDED USE

### The drum winch:

- is an accessory for the PistenBully.
- must be operated on the platform of the PistenBully.

### Use the drum winch only:

- to secure the PistenBully to prevent it slipping on descents.
- to assist the PistenBully when ascending steep gradients.
- when it is in perfectly safe operating condition.



If you wish to use the equipment for any other purpose, you must obtain prior written approval from the manufacturer.

## BASIC RULE

Always comply with the operating instructions for the drum winch and the PistenBully 400.

### **An employee of Kässbohrer Geländefahrzeug AG or a person expressly appointed by the company has:**

- commissioned the equipment.
- instructed the driver in the use of a drum winch.
- instructed the personnel for checking and maintenance work.



When drivers change the owner-operator is responsible for providing correct and adequate instruction for the new driver.

### WARNING SIGNS AFFIXED TO THE EQUIPMENT

- Strict compliance with the warning signs affixed to the drum winch is mandatory.
- Warning signs must be replaced immediately if lost or damaged.

#### Warning sign:



Location: **Winch frame**  
SP No. 8.762.638.058E



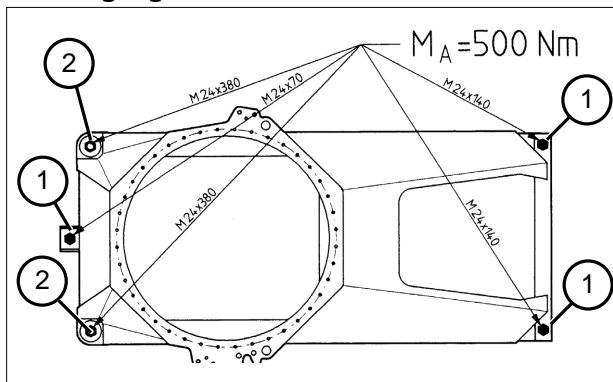
#### **WARNING!**

**Rotating components can crush fingers and hands.  
Keep well clear of component until it has come to a  
complete standstill.**





## Warning sign:



Location: **Winch frame**

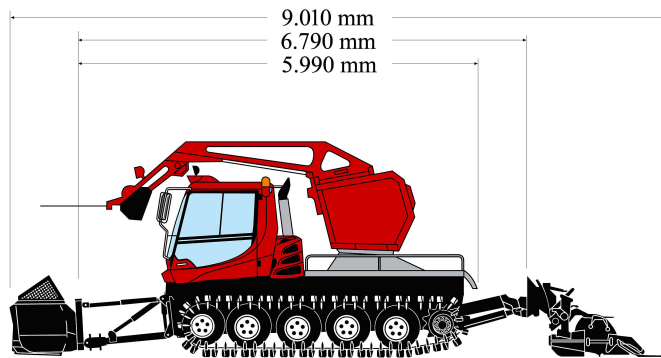
SP No. 8.762.651.000 E



## WARNING!

**Danger: Slackening of threaded fasteners.**  
**Strict compliance with the tightening torques as stated on the winch mounting is essential.**

## TECHNICAL DATA



### PistenBully 400 W

#### Speed

With drum winch . . . . . 0 - 20 km/h

#### Drum winch in operation

speed . . . . . 0 - 17 km/h

Fuel consumption . . . . . at least 22 l/h

#### Weight

Drum winch . . . . . 1,700 kg

Without cable . . . . . 1,000 kg

### Dimensions

Height with PistenBully . . . . . 3280 mm

With winch boom lowered . . . . . 2910 mm

### Winching drum system

Type TL40 60 AH 1050/11 . . . . . Plumettaz

### Winch pump

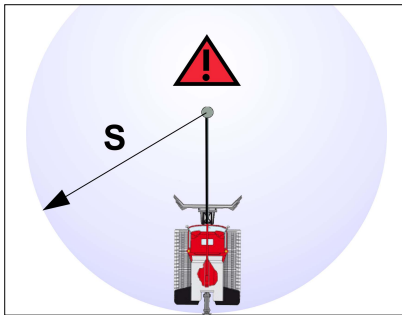
Type A4 VG90 . . . . . Hydromatik



Designation	Grade	Capacity	Interval between changes
<b>Gear oil</b>	<p>Fully synthetic gear oil  <b>Base:</b> Polyalphaoleofin (PAO)  <b>Classification:</b> DIN 51517 T3 CLP HC  <b>Viscosity class:</b> ISO VG 220</p> <p>Fully synthetic gear oil  <b>Base:</b> Polyalphaoleofin (PAO)  <b>Classification:</b> API GL 5/ MIL-L-2105 B/C  Viscosity class: SAE 75W140</p>	10 litres	<p>every 100 / 400 hours  At least: once a year  every 800 hours  100 / 400 hours after W4 maintenance</p>
<b>Windlass gear</b>  <b>Gear Slewling gear drive</b>	<p><b>Polyalphaoleofin (PAO)</b>  Classification: DIN 51517 T3 CLP HC  Viscosity index: <b>ISO VG 150</b>  <b>ISO VG 220</b> (summer)</p> <p><b>Polyalphaoleofin (PAO)</b>  Classification: <b>API - GL 4</b>  Viscosity class: SAE 75 W 90</p>	<p>0.5 litre</p> <p>0.9 litre  Slewling-gear drive</p>	<p>after 100 operating hours  At least: once a year  every 600 hours  every 3000 hours  100 operating hours after W4 maintenance</p>
<b>Winch brake</b>	<p>Engine oil MB sheet 228.5  <b>Viscosity class:</b> 5W40</p>	0.08 litre	<p>At least: once a year  every 3000 hours</p>
<b>Lube grease</b> for cable guide roll and slewling gear	<p>Calcium saponified grease KP 2 G-30 DIN 51502  AVIACAL 2 LD - 1 kg - 0.946.047.000</p>		<p>Cable guide roll:  daily  <b>Slewling gear:</b>  every 100 hours</p>



## NOTES

### ANGER ZONE FOR PERSONS



#### WARNING!

**Risk of fatal injury:**

**Before using the drum winch, make sure there is no one in the danger zone.**

**- Close off the ski slope.**

- Before using the drum winch, secure the **danger zone "S"**: the size of this zone depends on the length of the cable.

### DRUM WINCH



#### WARNING!

**Risk of fatal injury if cable breaks:**

**Operation is prohibited on slopes without sufficient flat runout at bottom.**

- Steep slopes must have sufficient runout.
- Additional safety measures:
  - Snow wall
  - Stopper nets
  - Flashing beacons
- Note that the cable can whip over several metres as the vehicle moves over surface irregularities on the slope.
- Driving with the cable attached and the drum winch switched off is prohibited.



### WARNING!

#### **Risk of collision:**

#### **Do not attempt to drive under:**

- cables
  - high-voltage electricity lines
  - drag lifts
  - cable-car runs
- 
- The anchor point for the load hook must be rated for at least 150 kN.
  - The mount for the load hook must be of non-swivel design.
  - Operation of the winch is permissible only when the winch cover is closed.

### AUXILIARY EQUIPMENT

The auxiliary equipment of Kässbohrer Geländefahrzeug AG has been approved for winch operation.



Risk of collision between auxiliary equipment and winch cable. Always allow adequate clearance from the winch cable when raising the auxiliary equipment.



Risk of collision between front snow blower and winch boom. The front snow blower must be suitable for a vehicle fitted with a winch.

- Use only winch cable from Kässbohrer Geländefahrzeug AG.



## TENSILE LOADS - UPPER FRAME



High tensile load on the upper frame.

Note pulling-force control when changing the direction of the PistenBully relative to the anchor point.

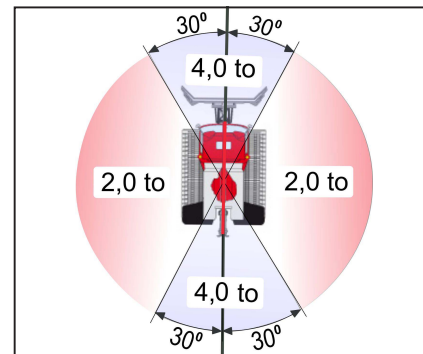
### Change of direction up to $30^{\circ}$ :

(winch boom / outside mirrors)

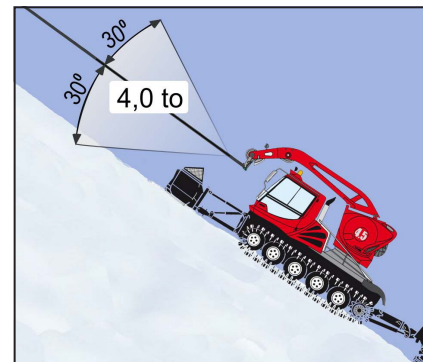
- Set pulling-force regulator to a maximum of 4 metric tons.

### Change of direction more than $30^{\circ}$ :

- Set pulling-force regulator to a maximum of 2.0 metric tons.



Pulling-force regulator



Pulling-force regulator

### WINCH-CABLE DESIGNATION

#### Winch-cable designation:

- Winch-cable diameter 11 mm
- Cable length 1050 metres.



Usable cable length 1000 metres.

The rest of the winch cable is marked red.



Use only Kässbohrer winch cables.



Always comply with all applicable national safety regulations for cable monitoring

### WINCH-CABLE USABLE LIFE

#### Depends on:

- the load on the cable
  - the number of turns over the drums.
  - handling and maintenance.
- 
- The winch cable is maintenance-free.
  - **Winch cable:**
    - Do not re-grease.
    - Do not apply preserving agents.
    - Do not clean with a high-pressure cleaner.
    - Use only a dry cloth to wipe off.





### THE WINCH CABLE IS DUE FOR REPLACEMENT IF:

#### Winch-cable condition:

- 5 wires are broken over a length of 66 mm.
- 10 wires are broken over a length of 110 mm.
- one strand is broken.
- the cable is wavy (corkscrew effect).
- the cable is kinked or crushed.

#### Situational help

##### A wire is broken on the winch cable:

- Slightly raise the broken ends and bend them back and forth until they break off at the root of the strand.



Make sure that there are no projecting wires.

- Do not cut off broken wires.

### WINCH CABLE



#### Pockets

##### Cause:

Over-frequent use of the same length of cable.

##### Remedy:

When work is completed, unreel the entire winch cable and take the strain off it. Leave the hook attached.

Reel the cable back onto the drum with less tension.



#### Snags

##### Cause:

Incorrect unreeling of the winch cable.

Snags damage the structure of the cable, reducing the cable to a fraction of its original strength.



### Slack cable

#### Cause:

Strain applied suddenly and then suddenly relieved.

#### Remedy:

When using the winch, apply strain to the cable slowly and relieve the strain slowly as well.

### Cable chafing

Do not permit the winch cable to chafe against or be deflected by hard, sharp-edged obstructions (stones, ice, steel, etc.).

### Corrosion

Do not treat the winch cable with or apply acids, sulphur, saline vapour or other aggressive substances.



### Storage

If possible, store the winch cable in a closed room.

## WINCH CABLE LOAD HOOK

### Load hook

The winch cable is fitted with a load hook with safety lock. In order to help prevent the cable from unravelling, the load hook is attached to the cable without a swivel.

## ANCHOR CABLE

The anchor cable (belay) is between the anchor point and the load hook of the winch cable.

- Always use a double cable or twist stopper between the anchor cable and the load hook of the winch cable.

This will prevent the winch cable from unravelling.



## INSTRUMENT DISPLAYS

### 1 Slewing-gear holding brake

lights up when holding brake is applied.

**Intermittent warning buzzer** sounds when cable is being reeled in.

### 2 Winch boom warning indicator

lights up when winch boom not locked.

**Intermittent warning buzzer** sounds.

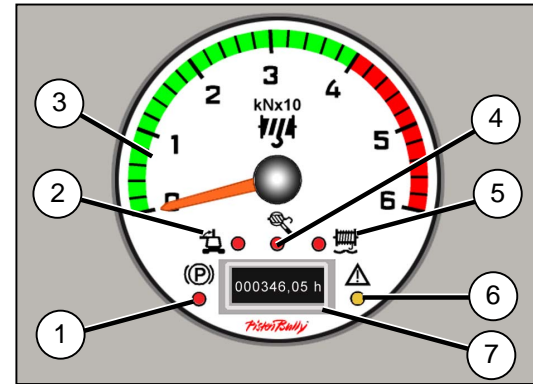
### 3 Pulling-force indicator

### 4 Cable-strand warning indicator

- is not a substitute for visual inspection of the cable.
- lights up if winch cable is defective.

**Warning buzzer sounds intermittently.**

- Cease operation and ascertain the cause of the problem.



### 5 Cable-reel warning indicator

- lights up when cable unreeled to maximum usable length.
- lights up if winch cable winding is faulty.

**Warning buzzer sounds**

**Turn immediately and check winch cable winding**  
(see *Driving uphill*).

### 6 Electronic pulling-force control

lights up when electronic pulling-force control is **OFF**

### 7 Operating hours counter for winch



## 1 Active winch

**Rocker switch ON = A** (*indicator light shows*)

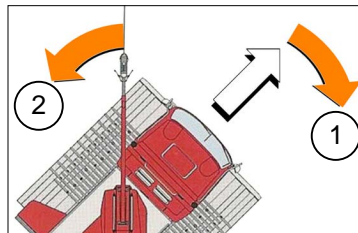


To help prevent overstraining the winch boom it is advisable to turn the PistenBully and switch off the active winch.



The winch's lateral pulling force depends on the steering angle and the pulling force of the winch.

## Driving with active winch

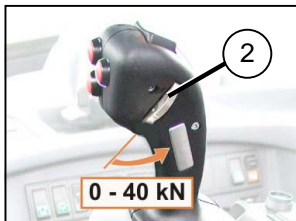


### When to switch on the active winch:

- PistenBully drifts off-line when crossing a steep slope.

**Example:** Driving forward and steering to right **1**: Winch-boom lateral pulling force **2** activated in direction indicated by arrow. The PistenBully turns more easily and holds its heading.





## 2 Pulling-force regulator for winch cable adjustable between 0 - 40 kN

### Latching rocker switch



#### WINCH CABLE - REEL IN / UNREEL

Top section pressed = Reel in cable  
Centred = Winch OFF  
Bottom section pressed = Unreel

### Rocker switch



#### SLEWING GEAR HOLDING BRAKE

Top section pressed = Apply brake  
Bottom section pressed = Release brake

### Rocker switch



#### SWIVEL WINCH BOOM

Top section pressed = Swivel right  
Bottom section pressed = Swivel left


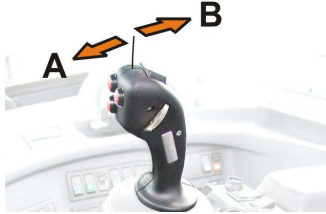

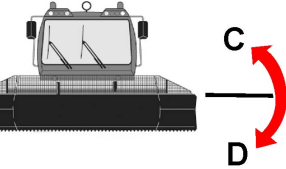

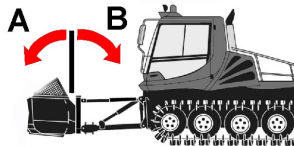
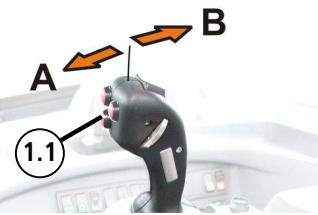
### Pushbutton



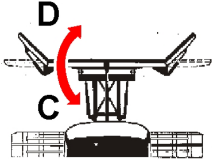
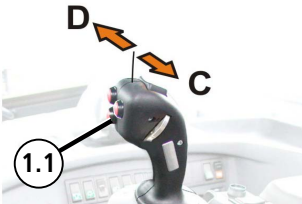
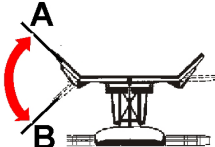
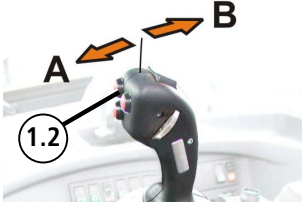
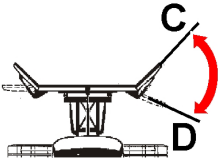
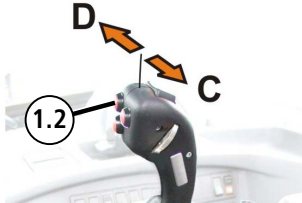
#### RESET ACOUSTIC WARNING FOR STRAND MONITOR

(see Uphill driving).

Function	Joystick
<b>RAISE</b> 	

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

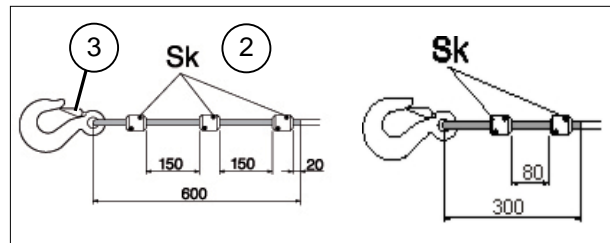
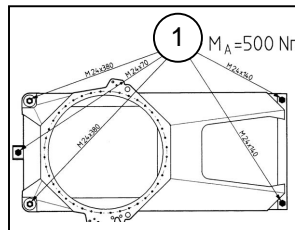


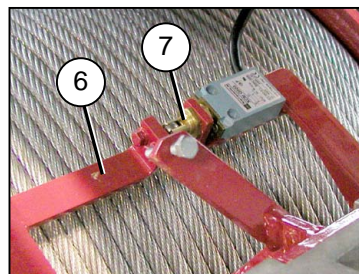
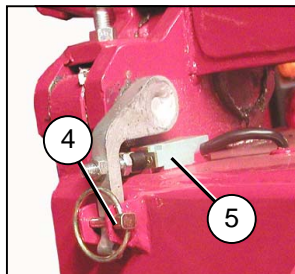
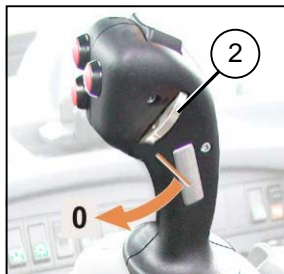
## NOTES




## 1. CHECKS BEFORE OPERATION

- Remove snow and ice from the winch.
- Check winch fasteners 1.  
Tightening torque  $M_A = 500 \text{ Nm}$ .
- Check operation of slewing-gear holding brake.
- Check that hydraulic lines and connectors are free of leaks and check for chafing.
- Check that the cable guide arm moves freely on the windlass.
- Clean viewing screen for winch cable winding.
- **3 cable cleats (Sk)** are installed spaced at 150 mm (see drawing). The specified tightening torque is **25 Nm**.
- **2 cable cleats (Sk)** are installed spaced at 80 mm (see drawing). The specified tightening torque is **30 Nm**.
- Check operation of safety lock 3.
- Check ease of movement of the cable relay rollers in the winch boom and of the cable guide arm.





## Checking winch boom warning indicator

- Diesel-engine ignition ON.
- Set pulling-force regulator **2** to 0.



- Set the rocker switch to the "reel in cable" position.

- Pull pin **4** and open the toggle.

The winch boom warning indicator lights up. The warning buzzer sounds.

## Checking cable-reel warning indicator

- Diesel-engine ignition ON.

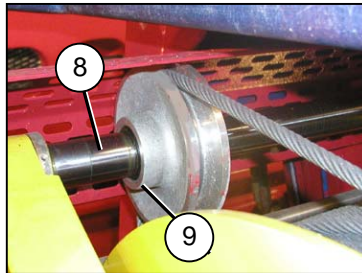


- Set the rocker switch to the "reel in cable" position.

- Press toggle **6** until switch contact **7** is open.

The cable-reel warning indicator lights up. The warning buzzer sounds.





## Greasing guide roll

- Grease nipple **9** and shaft **8** with special grease.

### Approved special grease:

#### Calcium saponified grease

Specification: Aviacal 2 LD, KP2K-20 DIN 51502

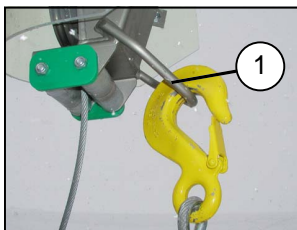


Special greases are not compatible with each other.

When changing to another special grease, grease entire guide roll.

- You can now start moving the vehicle into position.

## 2. MOVING THE VEHICLE INTO POSITION



Make sure there is no-one in the immediate danger zone.

- Apply the parking brake.
- Move the direction of travel switch to the "Neutral" position.
- Hook the winch cable hook into winch boom **1**.



Make sure that load hook is engaged right way round, not turned 180 °.

The safety lock could open if the hook were engaged wrong way round.



- Set the slewing-gear holding brake to "applied".

- Start the diesel engine.



- Set the rocker switch to the "reel in cable" position.  
The **warning buzzer** for slewing-gear holding brake sounds.



- Swivel winch boom to side in forward direction of travel



Top section pressed and held down = Swivel right  
Bottom section pressed and held down = Swivel left



- Centre the rocker switch.

- Drive the PistenBully up to the anchor point.
- Move the direction of travel switch to the "Neutral" position.
- Apply the parking brake.





– The indicator light is ON.



- Set the rocker switch to the "reel in cable" position.  
The **warning buzzer** for slewing-gear holding brake sounds.



- Swivel winch boom toward the anchor point  
Top section pressed = Swivel right  
Bottom section pressed = Swivel left

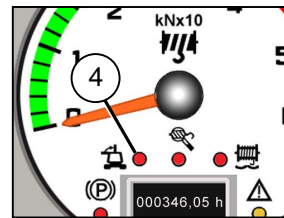


- Centre the rocker switch.  
The drum winch is out of action.

The vehicle is now in position.

- You can now start **attaching the winch cable to the anchor point.**

## 3. ATTACHING WINCH CABLE TO ANCHOR POINT



- Check that indicator light for winch boom **4** is **OFF**.
- Set pulling-force regulator **2** to 0.



– The indicator light is **ON**.  
Electronic pulling-force control is OFF



- Move the rocker switch to the "unreel" position, overcoming the detent.



The drive discs rub against the winch cable. This causes heating and accelerated wear.

Remedy: Work quickly and smoothly when engaging the winch cable.

- Disengage the load hook from the winch boom and pull it quickly to the anchor point.



- Visual inspection: The 2nd cable intake roll must also turn. Adverse weather can freeze the roll and prevent it from turning.

- Secure the load hook to the anchor point.



- Centre the rocker switch.

- You can now proceed to the **function check of the pulling-force regulator**.

## 4. FUNCTION CHECK OF PULLING-FORCE REGULATOR



High load on winch boom.

Keep far enough away from the anchor point to ensure that the high pulling force does not draw the winch boom down or up.

- Check: The pulling-force regulator must be at 0, otherwise the cable cannot be reeled in.





- Set the rocker switch to the "reel in cable" position.  
The **intermittent warning buzzer** for slewing-gear holding brake sounds.



- Slowly turn the pulling-force regulator in the direction indicated by the arrow until the cable reels in.
- Continue turning the pulling-force control until the setting reaches a maximum of 5 kN.  
- The winch cable is tensioned.



- The symbol **flashes**.



- Set the slewing-gear holding brake to "released".  
The **symbol lights up**.



- The brake indicator light is **OFF**
- Press the accelerator to increase the speed of the diesel engine to approximately 1200 rpm.



- Slowly turn the pulling-force regulator past 10 kN.  
Pulling force decreases slightly.

- The indicator light is **OFF**.

- Slowly turn the pulling-force regulator to its limit stop.



- The indicator must show a pulling-force reading of 38 - 40 kN.

- Back off the pulling-force regulator as far as it will go.  
Pulling force is reduced only to a minimum of 10 kN.



- The indicator light is **OFF**.  
Electronic pulling-force control is ON

This completes the function test of the pulling-force regulator.

- You can now start **operating the drum winch**.

## Situational help:



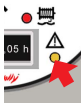
- The pulling-force regulator is turned in the direction indicated by the arrow and pulling force does not increase past 10 kN.  
- The indicator light is **ON**.

### Fault:

Pulling-force regulator was turned **too quickly** from 0 to beyond the 10 kN position.

### Remedy:

- Turn the pulling-force regulator to a setting lower than 10 kN.
- **Slowly** turn the pulling-force regulator clockwise.



- The indicator light is **OFF**.  
Electronic pulling-force control is **ON**

## Terminating electronic pulling-force control

- Turn the pulling-force regulator to 0.
- Switch cable reel out or cable reel in OFF and then ON again.  
Electronic pulling-force control is **OFF**.

## 5. OPERATING THE DRUM WINCH



- Buckle the seat belt and operate the rocker switch in the cockpit to engage the seat belt's electrically operated latch.



The seat belt does not provide protection unless the electrically operated latch is engaged.

- Buckle the **co-driver's** seat belt.
- Set the direction-of-travel switch to "forward".



- Check: The indicator light is **OFF**.

- Use the accelerator pedal to control your speed.
- Set pulling-force control to between 10 kN and max. 40 kN.

- i** If the slope is not particularly steep, reduce pulling force to minimise wear and tear on the drum winch.

- i** Pulling force / driving speed  
10 kN = approx. 16 km/h  
40 kN = approx. 8 km/h





## TURNING THE PISTENBULLY



Risk of collision between auxiliary equipment and winch cable.  
Always allow adequate clearance from the winch cable when raising the auxiliary equipment.

### Turning the PistenBully

- Lift the auxiliary equipment.
- Turn the pulling-force controller to 0.  
Pulling force is at approximately 10 kN.
- Turn the PistenBully and start driving downhill.

### Situational help

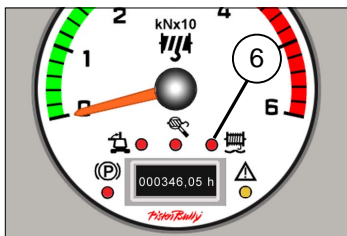
#### The winch cable is swinging:

- Do not drive when the winch cable is swinging.

#### The boom deflects the winch cable:

- Check the slewing-gear holding brake.

## DRIVING DOWNHILL



**Note the following for driving downhill:**

- Usable winch-cable length 1000 metres.

**Excess cable past 1000 metres:**

- The excess winch cable is marked red
- Warning buzzer sounds
- Warning indicator **6** lights up.



### WARNING!

The end of the winch cable is not secured to the winch. If the warning buzzer sounds and warning indicator 6 lights up: Immediately turn the PistenBully, stop and check winch cable winding.

## Driving downhill

- Set pulling-force control to between 10 kN and max. 40 kN.



If the slope is not particularly steep, reduce pulling force to minimise wear and tear on the drum winch.

## Situational help

**The pulling force of the drum winch increases when you drive downhill:**

- Use the potentiometer to reduce driving speed.

**Cable reel warning indicator 6 flashes**

- Immediately bring the vehicle to a standstill.
- Check winch cable winding.



## DRIVING UPHILL



High load on winch boom.

Do not approach too close to the anchor point: keep far enough away to ensure that the high pulling force does not draw the winch boom down or up.



Risk of collision between winch cable and PistenBully.

Make sure that the cable always remains taut when it is being reeled in.

Use the speed potentiometer to reduce speed on level ground.

Keep engine rpm constant.

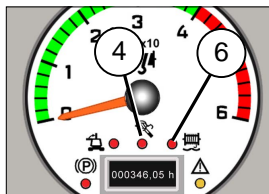
### Driving uphill

- Increase pulling-force control to between 10 kN and max. 40 kN, as necessary.
- If the slope is not particularly steep, reduce pulling force to minimise wear and tear on the drum winch.



Adjust the pulling-force regulator to a setting at which the tracks do not lose traction.

- Check that the winch cable is reeling in correctly onto the reel.  
You can watch the cable reeling onto the reel through the viewing window on the drum winch.



## Situational help

### Warning indicator for winch-cable strand monitor 4 lights up:

- Cease operation and ascertain the cause of the problem.



- Resetting acoustic warning for strand monitor  
Indicator light shows when winch is ON

### Warning indicator for winch cable winding monitor 6 lights up:

- Immediately bring the vehicle to a standstill.
- Direction of travel switch in neutral position.

- Apply the parking brake.
- Check the winch cable on the drum.

### Pulling force decreases:

- Use the potentiometer to reduce driving speed.  
Keep engine rpm constant.

## RELIEVING TENSION ON THE WINCH CABLE



Relieve the tension on the winch cable before ceasing operations.

- Unreel the winch cable as far as the red mark.
- Lay the cable on the ground and check for twist.  
(see customer's workshop information)
- Use a low pulling-force setting to reel in the cable and check it for damage.



## CEASING OPERATION

- Drive the PistenBully up as close as possible to the anchor point.



- Set the slewing-gear holding brake to "applied".



- The brake indicator light is **ON**.

- Set the pulling-force regulator to 0.  
Pulling force is at approximately 10 kN.

- Apply the parking brake.
- Direction of travel switch in neutral position.



- Move the rocker switch to the "unreel" position, overcoming the detent.

- Disengage the load hook from the anchor point.



Risk of damage due to cable unravelling  
Make sure that the strands of the wire rope cannot untwist.



- Set the rocker switch to the "reel in cable" position.  
The **warning buzzer** for slewing-gear holding brake sounds.



### WARNING!

**Risk of accident:**

- **Make sure there is no-one in the danger zone as the cable is being reeled in.**
- **Do not leave the cockpit.**

- Reel the cable onto the drum at low pulling force.
- Set the pulling-force regulator to 0.

## OPERATION



- The indicator light is **ON**.



- Centre the rocker switch.  
The drum winch is out of action.



- Secure the load hook to the winch boom.
- Set the rocker switch to the "reel in cable" position.  
The **warning buzzer** for slewing-gear holding brake sounds.



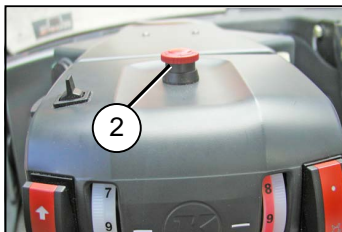
- Swivel the winch boom sideways in the direction of travel.



- Centre the rocker switch.  
The drum winch is out of action.

The drum winch is in its **transport position**.





## Press the STOP button

- if a dangerous situation arises



The PistenBully comes to an immediate stop and will not answer to the steering.

- Immediately apply the parking brake.
- Set the direction switch to the neutral position.
- Switch off the diesel engine.
- Check the drum winch and rectify the fault.



A stop places a severe strain on the brakes of the drum winch.

- Have the brakes checked for wear and to ensure that they are in full working order.



Driving with the cable attached and the drum winch switched off is prohibited.

## Operating the drum winch after a stop

- Set the pulling-force regulator to 0.



- Centre the rocker switch.  
The drum winch is out of action.

- Turn STOP button **2** and pull it up.

The drum winch is again ready for operation.

### Tilting the load platform



Risk of PistenBully slipping:

Do not tilt the winch unless the vehicle is on level ground.



### WARNING!

Make sure there is no-one in the danger zone.



- Set the slewing-gear holding brake to "applied".

- Move the direction of travel switch to the "Neutral" position.
- Apply the parking brake.



- Centre the rocker switch.  
The drum winch is out of action.

- Start the diesel engine.
- Lower the auxiliary equipment, if fitted.



- Set the rocker switch to the "reel in cable" position.  
The **warning buzzer** for slewing-gear holding brake sounds.



- Swivel the winch boom to the rear.

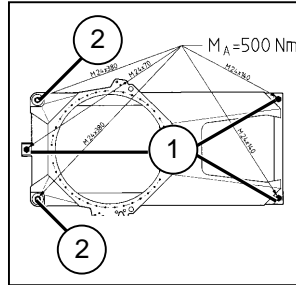


- Centre the rocker switch.  
The drum winch is out of action.
- Switch off the diesel engine.





## TILTING THE LOAD PLATFORM



- Check that screws **1** are secure.  
Tightening torque  $M_A = 500 \text{ Nm}$ .
- Remove screws **2**.
- Tilt the load platform: See the operating manual for the PistenBully.
- When the load platform has been returned to its lowered position, tighten screws **2** to the specified tightening torque  $M_A = 500 \text{ Nm}$ .

## Tilting the winch boom



### WARNING!

Make sure there is no-one in the danger zone.



- Set the slewing-gear holding brake to "applied".



- Centre the rocker switch.  
The drum winch is out of action.

- Direction of travel switch in neutral position.
- Apply the parking brake.
- Start the diesel engine.
- Lower the equipment carrier.



- The indicator light is ON.



- Set the rocker switch to the "reel in cable" position.  
The **warning buzzer** for slewing-gear holding brake sounds.



- Swivelling winch boom away from the forward position.



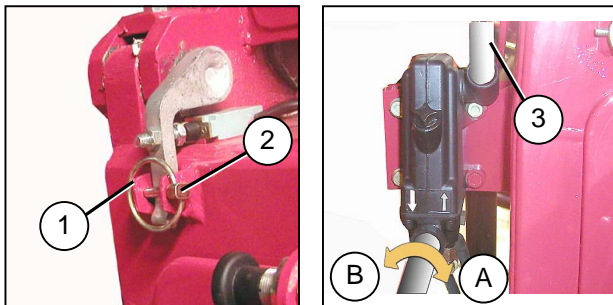
The winch boom will collide with the driver's cab if it is tilted when swivelled forward.



- Centre the rocker switch.  
The drum winch is out of action.

- Switch off the diesel engine.





### Using manual pump to tilt winch boom:

- Pull out keeper **1** and release pin **2**.
- Turn the manual pump lever to position B.
- Fit tube **3** and operate the manual pump.

### Using manual pump to raise winch boom:

- Turn the manual pump lever to position A.
- Fit tube **3** and operate the manual pump.

### Removing drum winch



#### WARNING!

**Make sure there is no-one in the danger zone.**



- Set the slewing-gear holding brake to "applied".



- Centre the rocker switch.  
The drum winch is out of action.

- Park the PistenBully underneath a crane.  
Rated lifting capacity of crane min. 2 metric tons  
and min. 50 cm lift.  
Comply with all applicable national regulations.
- Move the direction of travel switch to the "Neutral" position.
- Apply the parking brake.



- Centre the rocker switch.  
The drum winch is out of action.

- Start the diesel engine.
- Lower the auxiliary equipment, if fitted.



- Set the rocker switch to the "reel in cable" position.  
The WARNING BUZZER for slewing-gear holding brake sounds.



- Swivelling winch boom to the rear



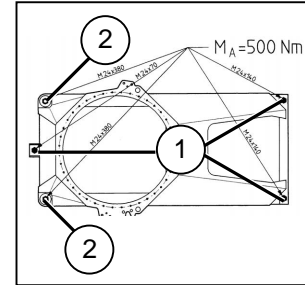
- Centre the rocker switch.  
The drum winch is out of action.

- Switch off the diesel engine.
- Disconnect the hydraulic lines.
- Disconnect the electrics.
- Install the protective caps.
- Attach the crane slings to the drum winch.



## REMOVING DRUM WINCH

- Remove screws **1** and **2**.
- Attach the crane slings to the drum winch.
- Remove the drum winch.
- Tighten screws **1** and **2** in the load platform.
- Fit the cover plate onto the upper frame.
- Place the winch in storage in the correct manner.
- Install the retaining bar.



Overview

Technical Data

Safety

Use

Checks

Operation

## Installing drum winch

- Lower the auxiliary equipment, if fitted.
- Switch off the diesel engine.
- Remove the cover plate from the upper frame.
- Remove the retaining bar.
- Lower the drum winch onto the guide points on the load platform.
- Install screws **1** and **2** and tighten to the specified tightening torque  $M_A = 500 \text{ Nm}$ .
- Disengage the crane slings from the drum winch.
- Connect the hydraulic lines.  
Connect the leak-off oil line first.



Make sure that the hydraulic couplings are secure.

- Connect the electric connector.
- Direction of travel switch in neutral position.
- Apply the parking brake..



- Set the slewing-gear holding brake to "applied".



- Centre the rocker switch.  
The drum winch is out of action.

- Start the diesel engine.



- Set the rocker switch to the "reel in cable" position.  
The **warning buzzer** for slewing-gear holding brake sounds.



- Swivel the winch boom sideways in the direction of travel.



- Centre the rocker switch.  
The drum winch is out of action.







KÄSSBOHRER GELÄNDEFahrZEUG AG



Dieser Betrieb ist ISO 14001  
und ISO 9001 zertifiziert