

## Operating Instructions

Front Linkage  
Front PTO

### CLAAS

CELTIS 426 - 456

AXOS 310 - 340

ARES 540 - 640/546 - 696/547 - 697

ARES 816 - 836

ARION 410 - 640

AXION 810 - 850

ATLES 926 - 946

## INTRODUCTION

Dear customer,

You have bought a sturdy and well-engineering SAUTER - front linkage - front PTO.  
Please read the following instructions thoroughly to ensure satisfactory and maximum performance.

Contact your dealer or directly us if you need any assistance or information.

We will be glad to help you.

Yours sincerely,

HANS SAUTER GmbH  
Landtechnik - Stahlbau

Tractor owner: \_\_\_\_\_

Delivery date: \_\_\_\_\_

Serial no.: \_\_\_\_\_

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## IN GENERAL

### 1. Intended use

Read these operating instructions before you start working and familiarise yourself with all operating installations and their functions.

The front linkage / the front PTO have been exclusively built for the normal use for agricultural or similar work, like for example, for municipal use.

Every other use is not considered as intended and has to be checked with a specialist workshop in advance.

The manufacturer cannot be held responsible for any damage resulting herefrom. The user solely bears the risk for this.

The intended use also includes the compliance with the operating, servicing and maintenance conditions given by the manufacturer.

Only use original spare parts or spare parts that have been approved of by the manufacturer!

The manufacturer cannot be held responsible for complaints arising from the use of parts or impements that have not been admitted or from manipulation or changes that have not been approved of by the manufacturer.

Have mounting and repairs carried out in a specialist workshop!

### 2. General instructions on guarantee

Skilled mounting together with regular servicing can to a great extent avoid failure.

Should nevertheless arise operational problems during the warranty period, please proceed as follows:

- Inform immediately the specialist workshop. Specify the serial number of the front linkage or front PTO.
- The tractor has to be driven to the dealer's workshop in order to execute the warranty works.
- Give your specialist workshop as much information as possible (type of work, symptoms of the trouble,...).

We would like to emphasise that normal servicing works and the provision of expendable goods like, for example, for an oil change or change of the oil filter are excluded from warranty.

### 3. Safety regulations

Users of the front linkage / front PTO must not be under the influence of alcohol or medicine or other drugs, which may have a negative effect on the attention or the capacity to coordinate!

Access to and staying in the danger zone are forbidden for unauthorized people!  
Control working / danger zone and secure if necessary (possibly with the help of additional people).

Be careful with unintentional manipulation by children!

When working at the front linkage, at the front PTO or at the connected front implement:

- Do not enter the direct danger zone!  
⇒ Danger of squashing or hitting by moving or rotating parts!
- Wear suitable protective clothing!

Front linkage and front PTO may only be operated with intended protective installations (e.g. protection funnel at the front PTO)!

Before servicing works are effected at the front linkage or at the connected front implement:

- Switch off the engine and secure against unintended starting!
- Release pressure pipes at front linkage (lock reversing valve)!
- Secure mounted front implement against lowering!

Always drive at a speed that allows full control of the tractor and of the front implement connected to the front linkage and that does not overcharge them.

## 4. Traffic regulations



**Please follow the traffic regulations valid in your country!**

### 4.1 Driving with front implement

#### Dimensions

It is allowed to transport implements held by the front linkage in public traffic if distance between center of steering wheel and front edge of implement does not exceed 3.5 m.

If distance is exceeded in individual cases, reductions in the sight field have to be compensated by being directed by another person or by technical means where necessary.

#### Auxiliary headlights

- If in case of mounted front implement the main headlights of the tractor are covered, the auxiliary headlights must be switched on.
  - ☞ Actuate top switch.
- Max. speed of 30 km/h is allowed with switched-on auxiliary headlights.

### 4.2 Driving without front implement

#### Dangerous traffic parts

In order to avoid endangerment of traffic parts

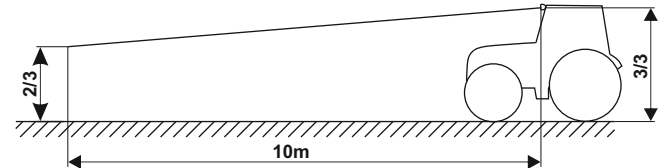
jutting out forward, the following must be observed if you drive on public roads:

- tilt lower links upward (first lift front linkage completely up) or
- dismantle lower links or
- hang up a tractor triangle (or a bumper) into the lower links.

### 4.3 Axle loads

- Make sure that the rear axle is sufficiently loaded when transporting front-mounted implements; counterballast if necessary.
- The admissible front axle load nor gross vehicle weight nor maximum drive speeds of the tractor model specified by Claas must not be exceeded.

### 4.4 Adjustment of auxiliary headlights



# FRONT PTO

## 1. Safety instructions

Before starting the motor, make sure that the front PTO is switched off if a front implement is mounted!

Work only with protected cardan shaft!

After longer use higher temperatures arise at the front PTO gearbox.  
⇒ Risk of burning!

In case of non-utilisation of front PTO, always unhitch or switch it off and cover it with a protecting cap!

## 2. Operating instructions

### 2.1 Mounting of a front implement

#### Length of cardan shaft:

Before setting the front PTO into operation, check length of cardan shaft; in case of mounted front implement, the cardan shaft must not be pushed completely together; this will inevitably lead to damages at the PTO gearbox and the shafts.

- ⇒ The cardan shaft must be adapted to the respective device;
- ⇒ See to a sufficient overlapping and sliding way;
- ⇒ Shorten cardan shaft according to manufacturer's instructions if necessary;

#### Speed and sense of rotation:

Before setting the front PTO into operation, make sure that speed and sense of rotation of the mounted implement are in compliance with those of the front PTO.

- ⇒  $n = 1000$  rpm counter-clockwise seen from the front (see also label on gearbox);

n... No. of revolutions of front PTO

## 2. 2 Setting the front PTO into operation

### Starting of front PTO:

- Start engine.
- Press front PTO switch at slightly increased idling speed.
  - ⇒ Front PTO symbol lights up on the instrument panel.
- Wait until front PTO starts running.
- Accelerate the no-load front mounted implement by increasing the motor speed until it reaches the required operating speed.

### Switching-off of the front PTO:

- Press front PTO switch again.
  - ⇒ Front PTO symbol on the instrument panel goes out;

### Front PTO symbol on instrument panel:



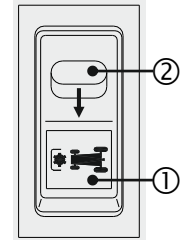
### Toggle switch:

In order to switch front PTO on, press toggle switch (①) and simultaneously pull catch (②) inside;

### Advice on safety circuit:

If the engine is stopped while the front PTO is running and then restarted, the front PTO will not start anymore!

⇒ Switch the front PTO off and on again as described above.

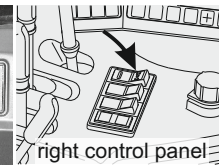


Celtis / Axos



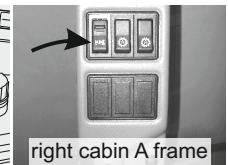
right control panel

Ares 540-640



right control panel

Ares 546-697 / 710-836  
Arion 410-430 / Atlés



right cabin A frame

### Pressure switch:

#### Switching on:

1. Press locking ring and cap together;
2. Pull locking ring and cap upward and hold this position approx. 2 seconds, then let them off;

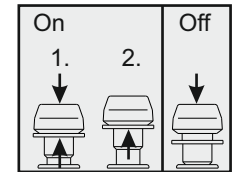
#### Switching off:

Press cap downward;

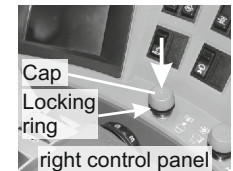
### Advice on safety circuit:

If the engine is stopped while the front PTO is running and then restarted, the front PTO won't start anymore!

⇒ Switch the front PTO on again as described above.



Arion 510-640 / Axion



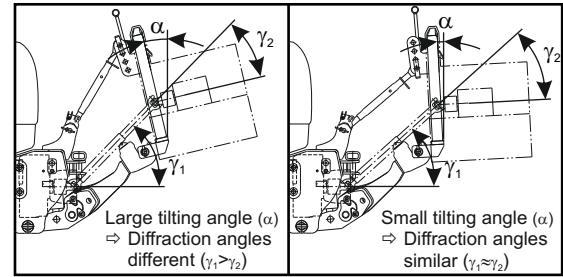
right control panel



## 2.3 Loss prevention

- Check the front PTO regularly for visible damage before setting it into operation!  
The tractor must not be started if damage at the elastic coupling, the cardan shaft or the gearbox arises.
- If unnormal sounds or vibrations occur while the PTO is running, it has to be switched off immediately and the cause has to be remedied by a specialist workshop if necessary.
- Use the cardan shaft only with overrunning and correctly adjusted overload clutch.
- Make sure that the sliding piece of the cardan shaft is sufficiently lubricated.
- Implements having very varying, oscillating or shocklike stress must not be driven by the front PTO (e.g. liquid manure stirrers or wood choppers).
- Front implements must not be lifted or lowered when the front PTO is running under load (e.g. first empty corn forage and silage trailer at the end of the row and lift only then).
- **Attention!**  
**Don't try to loosen stuck mounted implements caused by blockade or overcharging by repeated declutching and clutching.**  
**This may lead to overheating and thus to damage of the clutch.**

- The diffraction angles of cardan shaft, at tractor ( $\gamma_1$ ) and at implement ( $\gamma_2$ ) should be similar in any working position of the front linkage.  
(see also Front Linkage chapter 2.14)



- In harder working conditions (e.g. with greater heat, lots of dust) the servicing intervals indicated in the following chapter "maintenance of the front PTO" have to be shortened!

### 3. Maintenance of front PTO

#### 3.1 HN gearbox: Celtis / Axos

##### Oil change

Replace gear oil first after 50, then after every 500 tractor operating hours, but once a year at least.

Oil type:	<ul style="list-style-type: none"> <li>• 10 W 30 STOU</li> <li>• Claas Agrishift GA 12</li> </ul>
Oil quantity:	0.75 l

Gear must be filled with oil up to the lower edge of the oil filling boring.



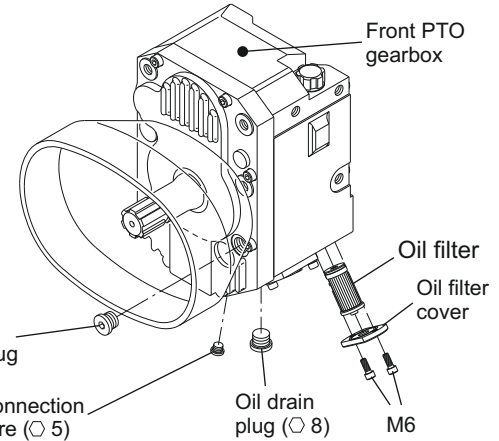
**Dispose of the waste oil in a non-polluting way!**

##### Change of oil filter

Replace the oil filter first after 50, then after every 500 tractor operating hours.

##### How to proceed:

- Clean front PTO gearbox from outside and drain oil from the gearbox;
- Remove oil filter cover;
- Pull oil filter out at journal by means of pliers;
- Lubricate every gasket;
- Mount new oil filter and fasten oil filter cover;
- Fill in fresh oil into the front PTO gearbox (type and quantity see chapter Oil change);

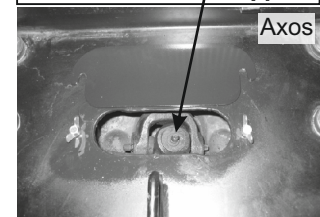
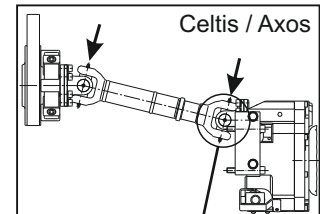


##### Lubrication of cardan shaft

(according to model)

Lubricate the cardan shaft every 20 operating hours of the front PTO, but at least once a year.

- ⇒ Axos: Loosen cover sheet and push to the back;
- ⇒ lubricating points see arrows (lubricate only at one grease nipple per lubricating point);



### 3.2 HI / HT gearbox: Ares / Arion / Atlés

#### Oil change

Replace gear oil first after 50, then after every 500 tractor operating hours, but once a year at least.

Oil type:	<ul style="list-style-type: none"> <li>• 10 W 30 STOU</li> <li>• Claas Agrishift GA 12</li> </ul>	With additional oil cooler: <ul style="list-style-type: none"> <li>• 10 W 40 STOU</li> </ul>
Oil quantity:	1,8 l	2,7 l

Gear must be filled with oil up to the lower edge of the oil filling boring.



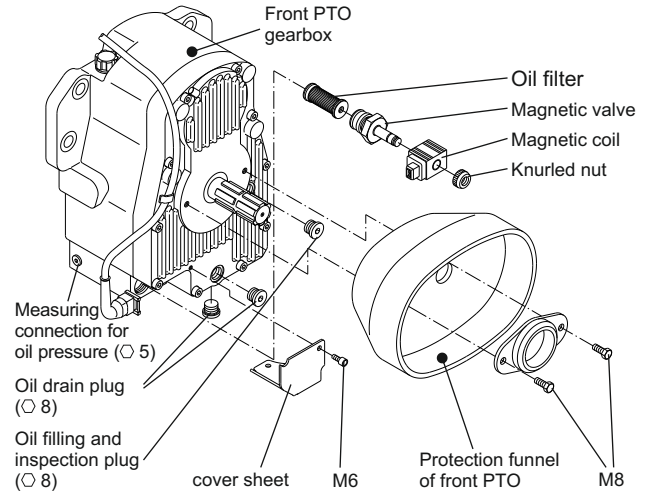
**Dispose of the waste oil in a non-polluting way!**

#### Change of oil filter

Replace the oil filter first after 50, then after every 500 tractor operating hours.

#### How to proceed:

- Clean front PTO gearbox from outside and drain oil from the gearbox;
- Unscrew protecting funnel from the front PTO;
- Remove cover sheet;
- Dismount magnetic coil and magnetic valve;
- Pull the front oil filter out of the gear housing by means of an M8 screw;
- Lubricate every gasket, mount new oil filter and all dismantled parts;
- Fill fresh oil into the front PTO gearbox (type and quantity see chapter Oil change);



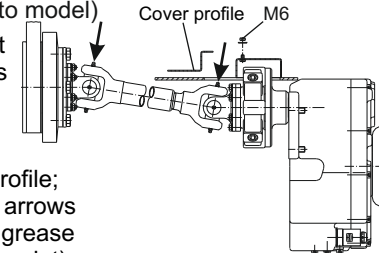
**Too high tightening moments may have a negative influence on the function of the magnetic valve.**

#### Lubrication of cardan shaft

(Ares / Arion; according to model)

Lubricate the cardan shaft every 20 operating hours of the front PTO, but at least every 250 tractor operating hours.

- ⇒ Ares: remove cover profile;
- ⇒ lubricating points see arrows (lubricate only at one grease nipple per lubricating point);



### 3.3 HW gearbox: Axion

#### Oil change

Replace gear oil first after 50, then after every 500 tractor operating hours, but once a year at least.

Oil type	• 10 W 30 STOU • Claas Agrishift GA 12	Oil quantity	approx. 3.5 l
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The gear must be filled with oil between center and upper edge of the oil-level gauge.

⇒ Check oil level immediately after test run and fill oil in if necessary.



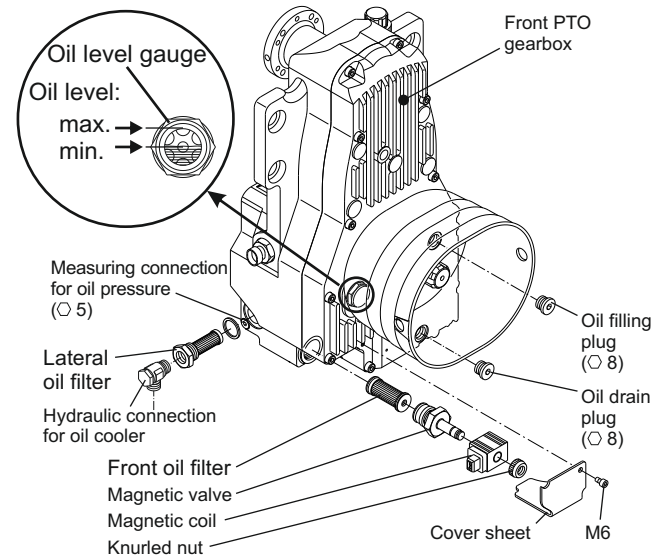
**Dispose of the waste oil in a non-polluting way!**

#### Change of oil filter

Replace the oil filter first after 50, then after every 500 tractor operating hours.

#### How to proceed:

- Clean front PTO gearbox from outside and drain oil from the gearbox;
- Remove cover plate;
- Dismount magnetic coil and magnetic valve;
- Pull the front oil filter out of the gear housing by means of an M8 screw;
- Loosen lateral hydraulic connection for oil cooler and unscrew lateral oil filter;
- Lubricate every gasket, mount new oil filter and all dismantled parts;
- Fill fresh oil into the front PTO gearbox (type and quantity see chapter Oil change);

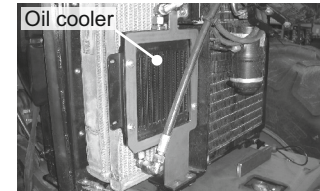


**Too high tightening moments may have a negative influence on the function of the magnetic valve.**

#### Cleaning of oil cooler

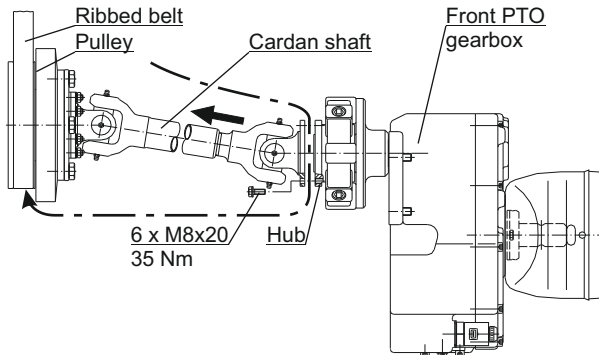


**Keep the oil cooler clean!**



## 4. Belt change

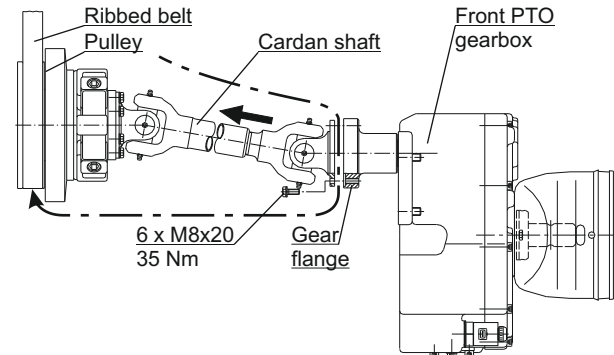
### Ares 540-640 DPT / 546-696 / 547-697 / 816-836:



#### How to proceed:

- Unscrew cover plate at support of front axle;
- Unscrew the 6 hexagon socket screws M8x20 out of cardan shaft and hub;
- Push cardan shaft completely together;
- Change ribbed belt;
  - ⇒ see also operating instructions of tractor;
- Screw cardan shaft down to hub;
  - ⇒ Tighten hexagon socket screws M8x20 to 35 Nm;

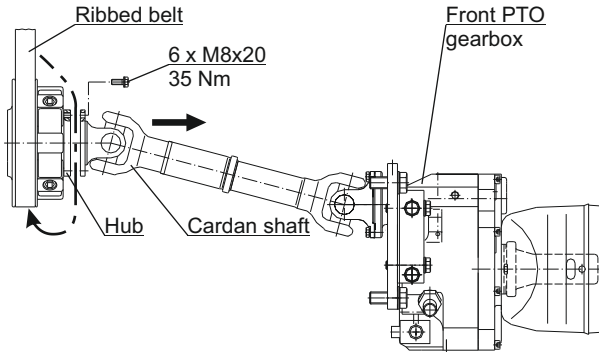
### Ares 540-640 DPS / 710-735 / 815-825:



#### How to proceed:

- Unscrew cover plate at support of front axle;
- Unscrew the 6 hexagon socket screws M8x20 out of cardan shaft and gear flange;
- Push cardan shaft completely together;
- Change ribbed belt;
  - ⇒ see also operating instructions of tractor;
- Screw cardan shaft down to gear flange;
  - ⇒ Tighten hexagon socket screws M8x20 to 35 Nm;

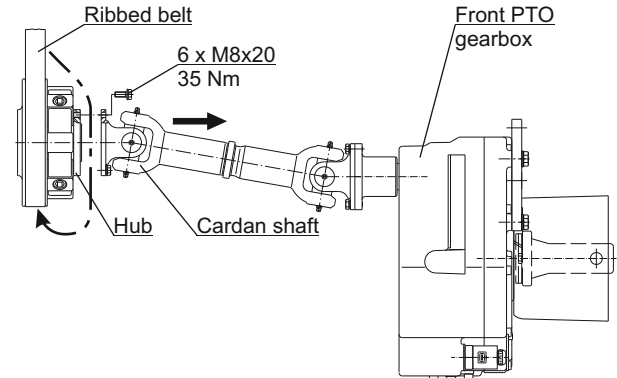
**Celtis 426-456 / Axos 310-340:**



**How to proceed:**

- Unscrew the 6 hexagon socket screws M8x20 out of cardan shaft and hub;
- Push cardan shaft completely together;
- Change ribbed belt;
  - ⇒ see also operating instructions of tractor;
- Screw cardan shaft down to hub;
  - ⇒ Tighten hexagon socket screws M8x20 to 35 Nm;

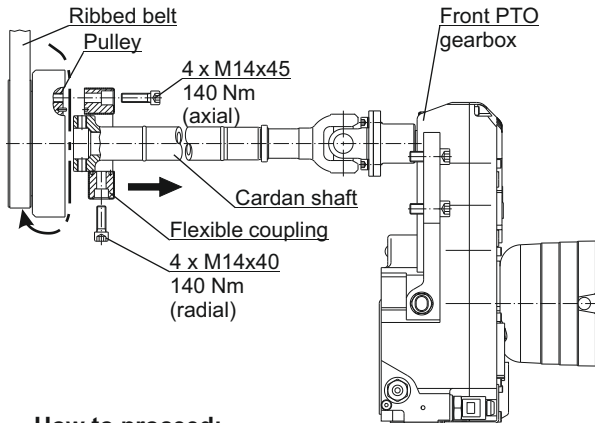
**Arion 410-640:**



**How to proceed:**

- Unscrew the 6 hexagon socket screws M8x20 out of cardan shaft and hub;
- Push cardan shaft completely together;
- Change ribbed belt;
  - ⇒ see also operating instructions of tractor;
- Screw cardan shaft down to hub;
  - ⇒ Tighten hexagon socket screws M8x20 to 35 Nm;

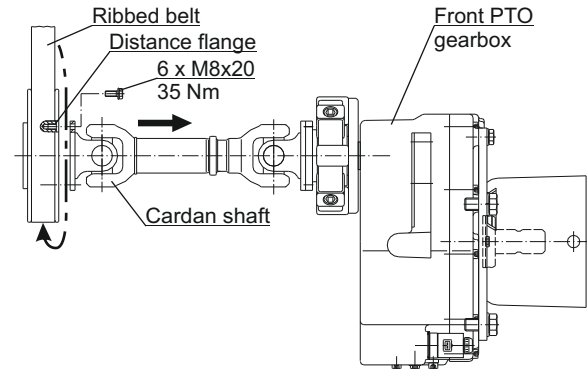
**Axion 810-850:**



**How to proceed:**

- Unscrew all hexagon socket screws M14x40 / M14x45 out of flexible coupling;
- Push flexible coupling a little ahead;
- Change ribbed belt;
  - ⇒ see operating instructions of the tractor;
- Refasten flexible coupling;
  - ⇒ Tighten M14x40 / M14x45 to 140 Nm

**Atlés 926-946:**



**How to proceed:**

- Unscrew the 6 hexagon socket screws M8x20 out of cardan shaft and distance flange;
- Push cardan shaft completely together;
- Change ribbed belt;
  - ⇒ see also operating instructions of tractor;
- Screw cardan shaft down to distance flange;
  - ⇒ Tighten hexagon socket screws M8x20 to 35 Nm;

## 5. Technical data for front PTO

Tractor type	Claas					
	Celtis 426-456 Axos 310-340	Ares 540-697 816-836	Arion 410-640	Axion 810-850	Atlès 926-946	Atlès 926-946 with additional oil cooler
<b>Gearbox type</b>	HN	HI	HT	HW	HI	HI
<b>Gear ratio</b>	2,06	2,1	1,93	1,93	2,1	2,1
<b>Effective speed</b> (with motor nominal speed)	1050 rpm	1050 rpm	1150 rpm	1150 rpm	1050 rpm	1050 rpm
<b>Max. continuous power and torque</b> (at 1000 rpm)	50 kW ( 68 HP ) 480 Nm	110 kW ( 150 HP ) 1050 Nm	110 kW ( 150 HP ) 1050 Nm	125 kW ( 170 HP ) 1200 Nm	110 kW ( 150 HP ) 1050 Nm	132 kW ( 180 HP ) 1260 Nm
<b>Max. admissible power and torque</b> (at 1000 rpm)	74 kW ( 100 HP ) 700 Nm	147 kW ( 200 HP ) 1400 Nm *)	147 kW ( 200 HP ) 1400 Nm	147 kW ( 200 HP ) 1400 Nm	147 kW ( 200 HP ) 1400 Nm	147 kW ( 200 HP ) 1400 Nm
<b>Profile</b> (Shaft DIN 9611)	1 3/8"					
<b>Sense of rotation of front PTO</b> (top view seen from the front)	left					

\*) Max. admissible  
performance:  
(released by Claas  
with reservation)  
88 kW ( 120 HP )



## 6. Troubleshooting with front PTO

Fault	Check	Comment	Correction	
<b>Front PTO does not start</b>	oil level	see chapter "Oil change"	correct	
	oil filter	blocked; see chapter oil filter change	replace	
	voltage at magnetic valve	front PTO switched on, jack must be plugged to the magnetic valve	repair	
	oil pressure	front PTO switched on: 18-24 bar (HN: 24-30 bar), ⇒ Measuring connection M10x1 - ⌀ 5		
	- check valve in pump	accidentally opened during oil change and lost steel ball ø8 , M12x1,5 - ⌀ 6	complete	
<b>Front PTO switches off by itself</b>	voltage at magnetic valve	voltage supply with defective contact	repair	
<b>Front PTO does not stop or clutch still engaged (shaft still revolves)</b>	electrical parts	dismantle jack at magnetic valve	repair	
	oil pressure	front PTO switched off: <1 bar, open measuring connection plug M10x1- ⌀5	clean magnetic valve / oil filter, replace	
	oil type	see chapter "Oil change"	change oil	
	magnetic valve	stuck		replace
		there is voltage despite switching off		repair

Please contact your workshop for repair works and further troubleshooting.

# FRONT LINKAGE

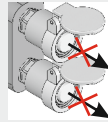
## 1. Safety instructions

Should you have to do maintenance works under the lifted implement, the following must be observed:

- Stop motor!
- Secure implement against lowering!

Make sure that there is nobody (children) between tractor and implement, when connecting the implement!

When using the front linkage, never use the remote outlets that are connected to the control unit!  
The plugs mounted to lock the remote outlets must not be removed!



Before starting to drive with an implement, make sure that every bolt is duly secured and that the implement is safely locked in the three-point seat or in the tractor triangle resp.!  
⇒ Plug in locking pin!

When jacking the tractor up, please follow the tractor manufacturer's operating instructions!

In case of transport, the support of the lower links must be sufficiently lifted and the reversing valve must be in locking position.

## 2. Operating instructions

### 2.1 Control unit

The hydraulic cylinders of the front linkage are connected to a double-acting control unit of the tractor.

For operation of the control unit see operating instructions of the tractor (Control units).

- Manipulate **carefully** the corresponding lever!
- When you leave the driver seat, make sure that temporary and continuous operation and floating position of control units have been finished.  
⇒ Bring control units into neutral position!

## 2.2 Reversing valve


### 2.2.1 General function

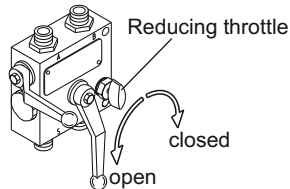
The reversing valve is mounted between the control unit and hydraulic cylinders and is operated by two levers by which three different functions can be set. (see right-hand table)

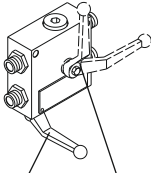
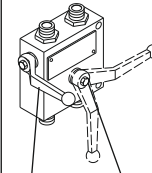
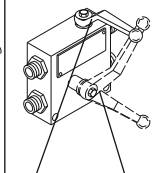
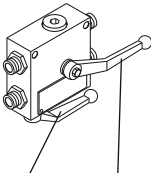
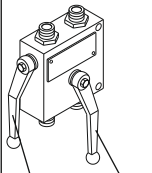
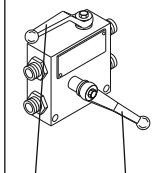
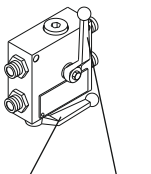
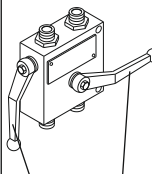
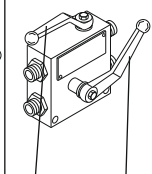
### 2.2.2 Reversing valve with throttle


The reversing valve with reducing throttle allows a throttled lowering of the front implement.


- Continuously adjustable lowering speed;
- Lifting speed is not influenced;

 If you use the throttle together with a hydraulic accumulator, the throttle must be opened completely in position "double-acting"!

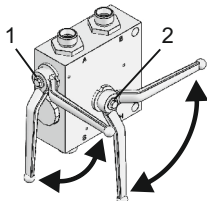


Function	Delineation			Description
	Celtis / Axos	Arion 410-430 Ares / Atlés	Arion 510-640 Axion	
Front linkage <b>locked</b>				<ul style="list-style-type: none"> <li>• "Lifting" and "Lowering" not possible</li> <li>• Both pipes locked</li> </ul> ⇨ Front linkage remains in instantaneous position
	Lever 1    Lever 2	Lever 1    Lever 2	Lever 1    Lever 2	
	Lever 1: Flow closed Lever 2: No function			
Front linkage <b>single-acting</b>				<ul style="list-style-type: none"> <li>• "Lifting" under pressure</li> <li>• "Lowering" without pressure</li> </ul> ⇨ Pressing not possible
	Lever 1    Lever 2	Lever 1    Lever 2	Lever 1    Lever 2	
	Lever 1: Flow open Lever 2: Single-acting position			
Front linkage <b>double-acting</b>				<ul style="list-style-type: none"> <li>• "Lifting" under pressure</li> <li>• "Lowering" under pressure</li> </ul> ⇨ Front-mounted implement can be pressed onto the ground
	Lever 1    Lever 2	Lever 1    Lever 2	Lever 1    Lever 2	
	Lever 1: Flow open Lever 2: Double-acting position			

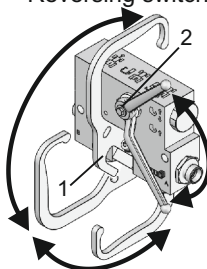
 The reversing levers must always be turned as far as it will go. (Don't use as a throttle!)  
⇒ Intermediate positions will cause damage!

 Lever 2 (changeover between "single-acting" and "double-acting" and vice versa) is to be manipulated in depressurized condition only.

Reversing valve

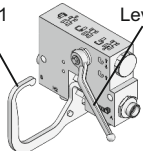
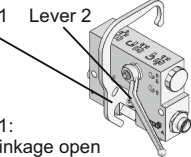
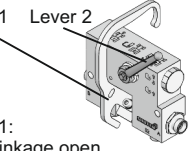
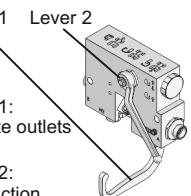


Reversing switch



### 2.3 Reversing switch

If the reversing switch has been mounted as an option instead of the reversing valve, switching between the front linkage and the remote outlets at the back connected to the same control unit is possible (see right-hand table).

Function	Delineation	Description (Front linkage)
Front linkage and remote outlets <b>locked</b>	 <p>Lever 1: Flow closed Lever 2: No function</p>	<ul style="list-style-type: none"> <li>• "Lifting" and "Lowering" not possible</li> <li>• Both pipes locked</li> </ul> <p>⇒ Front linkage remains in instantaneous position</p>
Front linkage <b>single-acting</b>  (Remote outlets locked)	 <p>Lever 1: Front linkage open Lever 2: Single-acting position</p>	<ul style="list-style-type: none"> <li>• "Lifting" under pressure</li> <li>• "Lowering" without pressure</li> </ul> <p>⇒ Pressing not possible</p>
Front linkage <b>double-acting</b>  (Remote outlets locked)	 <p>Lever 1: Front linkage open Lever 2: Double-acting position</p>	<ul style="list-style-type: none"> <li>• "Lifting" under pressure</li> <li>• "Lowering" under pressure</li> </ul> <p>⇒ Front-mounted implement can be pressed onto the ground</p>
Front linkage <b>locked</b>  (Remote outlets open)	 <p>Lever 1: Remote outlets open Lever 2: No function</p>	<ul style="list-style-type: none"> <li>• "Lifting" and "Lowering" not possible</li> <li>• Both pipes locked</li> </ul> <p>⇒ Front linkage remains in instantaneous position</p>

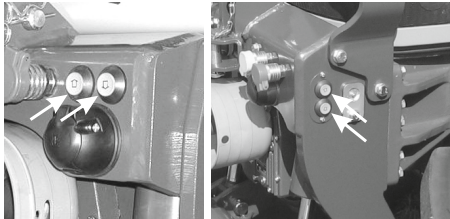
## 2.4 Control from the front

(only with Electropilot)

The front linkage can be slowly lifted and lowered by means of 2 key buttons mounted at the front.

Attention: Nested intervals!


When driving a longer way, the key button must be actuated several times.



Use the assembly and setting instructions of the control from the front when adjusting the oil flow rate.

### Safety instructions:

- The front linkage may always only be operated from inside the cabin **or** from outside.
  - ⇒ Danger of accident when operated simultaneously!
  - ⇒ The signal of the front control takes priority!
- Operating from outside is only permitted if the operating lever in the cabin is in neutral position. When you leave the driver seat, make sure that temporary and continuous operation and floating position of control units have been finished.
- Don't stay in the danger area!
- If the front linkage is not required, first lift completely the front linkage and then pivot lower links upward!

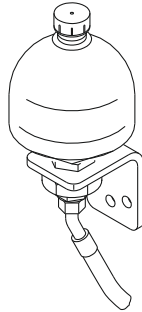
 **When using the front linkage, never simultaneously use the rear remote outlets, which are connected to the control unit! The plugs mounted to lock the remote outlets must not be removed!**

 **Make sure that the control unit of the front linkage does not activate any other functions (e.g. front loader)!**

## 2.5 Hydraulic accumulator

The hydraulic accumulator buffers impacts with transports with front-mounted implements.

- ⇒ Recommendable with heavy implements;
- Connection to lifting conduction;
- Reversing valve in position "locked";
- 👉 Lower front linkage a little after lifting (in intermediate position as well) in order to guarantee optimum function!



### Another possibility of use:

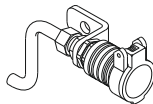
The hydraulic accumulator provides a steady bearing pressure (e.g. with use of packer).

- Connection to pressing conduction;
- Reversing valve in position "double-acting";

## 2.6 Front remote outlet

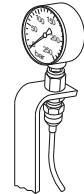
Hydraulic cylinders of front-mounted implements can be connected to the front hydraulic clutch (e.g. lifting cylinders of mowers).

- ⇒ Connected with front linkage at lifting conduct;
- ⇒ To operate the connected front implements, please follow the operating instructions of the tractor manufacturer.



## 2.7 Pressure gauge

The working pressure which can be set at the control valve of the front linkage can be controlled with a pressure gauge (outside cabin).

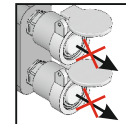
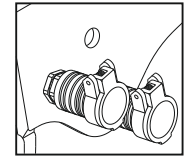


## 2.8 Hydraulic connections at the front

The connected front implement is operated by the corresponding control unit in the cabin.

### ⚠ Safety instructions:

When using the front hydraulic connections, never simultaneously use the rear remote outlets, which are connected to the control unit!  
The plugs mounted to lock the remote outlets must not be removed!



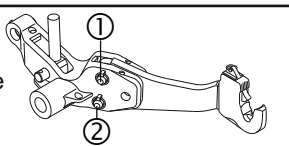
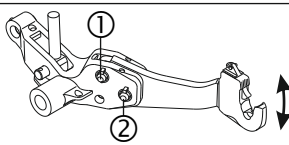
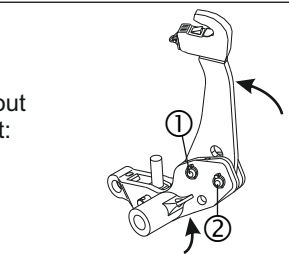
Front linkage

## 2.9 Lower links

### 2.9.1 Positions of lower links

The lower links can be fixed with two bolts each at the support of lower links in three different positions (see table below).

Bolt ① needs not to be pulled out when changing the position of the lower links.

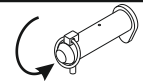
<p><b>Position 1:</b> <b>Rigid lower links</b> Lower links are fixed free from play;</p>	
<p><b>Position 2:</b> <b>Balance of oscillating motion</b> Approx. 90 mm up and down motion possible;</p>	
<p><b>Position 3:</b> <b>Lower links folded up</b> (Transport position) In case of transport without front-mounted implement: • First lift front linkage completely up! • Then pivot lower links completely upward!</p>	

The lower links can be removed without any tools, if necessary (among others with use of front loader):

⇒ Pull bolts ① and ② out!

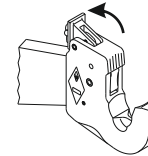


**Always secure lower link bolts with a folding split pin!**

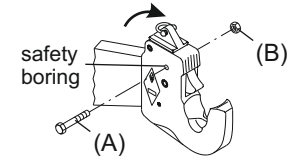


### 2.9.2 Catch hooks

unlocked:



locked:



**Category indicated on catch hooks must be in compliance with the balls used.**



**When driving with mounted implements, the catch hooks must be safely locked.**



**The catch hooks can be additionally secured against unintended opening during especially difficult operating conditions (e.g. forestry works).**

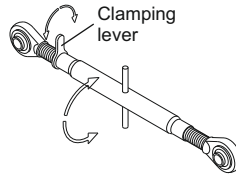
**Therefore put screw (A) e.g. M8x50 through safety boring and fix by nut (B);**

## 2.10 Top links

### 2.10.1 Spindle-adjusted top link

#### Adjustment:

- Place tractor with mounted implement on an even surface and lower front linkage;
- Loosen clamping lever;
- Turn top link until desired length is reached;
- Fix clamping lever by a locknut against top link sleeve;



#### Spindle-adjusted top link with catch hook

Category indicated on catch hooks must be in compliance with the balls used.



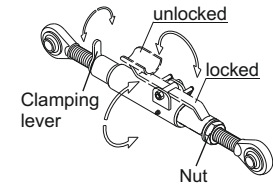
**Make sure that the catch hook is safely locked!**

### 2.10.2 Telescopic top link (lockable)

#### Adjustment:

- Place tractor with mounted implement on an even surface;
- Open locking flap;
- Lower front linkage;
- Loosen clamping lever;
- Turn top link upto a spring deflection of approx. 10 mm (recommended if a front mower is mounted);
- Fix clamping lever by a locknut against top link sleeve;

By loosening the nut (nut across flats 46), the top link can be lengthened or shortened.



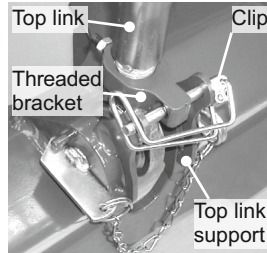


### 2.10.3 Top link support

#### Top link in off-position:

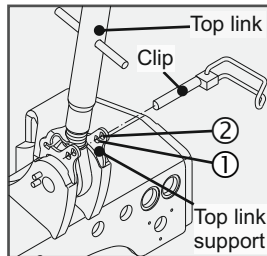
##### Celtis / Atlas:

- Fold top link upward;
- Fasten threaded bracket with clip in boring of top link support;



##### Axos / Ares / Arion / Axion:

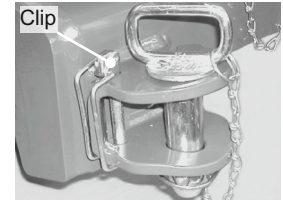
- Fold top link upward;
- Put clip in front boring of the top link support;
  - spindle M30: ①;
  - spindle M36: ②;



#### Top link in working position:

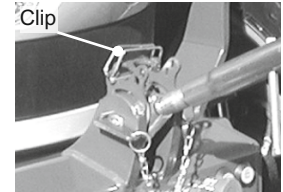
##### Celtis / Atlas:

- Put clip in boring of drawbar coupling;



##### Axos / Ares / Arion / Axion:


- Put clip in rear boring of the top link support;



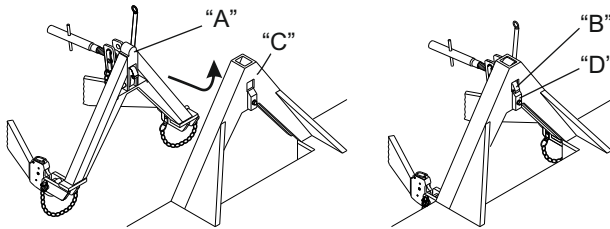
 **Make sure that top link is safely held when securing it!**

## 2.11 Front implement seats

### 2.11.1 Tractor triangle

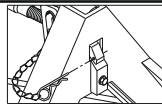
 **When mounting the tractor triangle, make sure that every fixing bolt (at lower and top link) is safely locked and secured!**

**Connection to front-mounted implement:**



- Place carefully the tractor triangle "A" under the quick-coupling unit frame "C".
- Lift the tractor triangle until the locking hook "B" will snap on the adjustable catch "D".  
**Important: Set catch!**

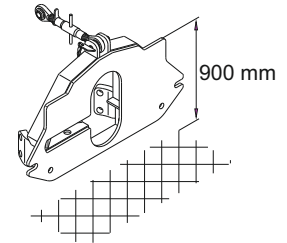
 **Secure the locking hook "B" with a linch pin!**




### 2.11.2 Mounting plate (size 3 / 5)

For mounting of different front implements used for municipal vehicles:

- Set working height to 900 mm; (size 5 to 1000 mm)
- Switch reversing valve to position "locked";



 **Make sure that there is enough clearance to the mounting plate to put the front PTO through!**

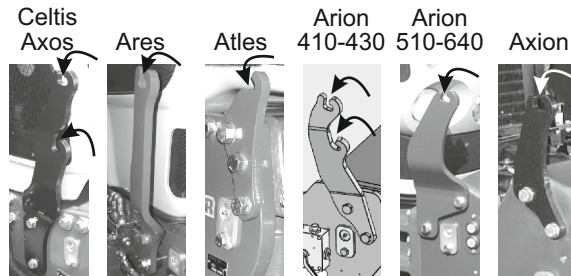
## 2.12 Holder for relief springs

Hang relief springs for implements up in holders (see arrows).

⇒ Not suitable for chains of pulled front mowers!

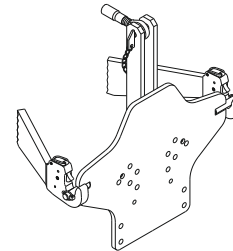
### Another possibility of use:

Can be used as a buffer if a front loader is mounted;

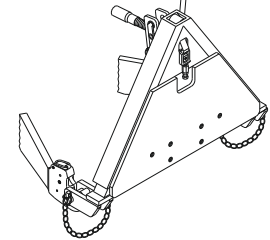


## 2.13 Ballasting

**Ballast support (for 3-point-seat)**



**Ballast support (for mounting on tractor triangle)**



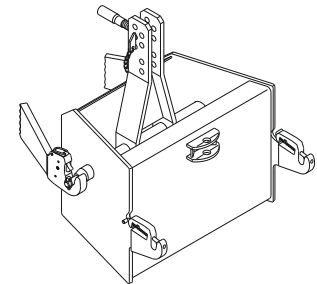
**Make sure that the ballasts are safely fixed!**

### Ballast container

Total weight:

- with concrete filling: approx. 720 kg;
- with other filling materials: upto 1000 kg;

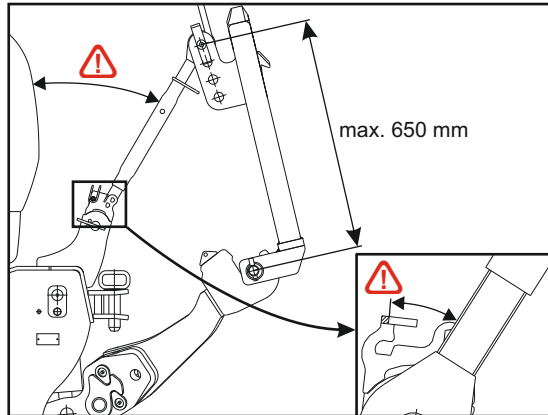
Implements having a weight of upto 1000 kg can be fixed at the catch hooks.



## 2.14 Instructions for the use of front implements

- When mounting a front implement, please check if tractor, front linkage, top link, cardan shaft and front implement have sufficient clearance in any motion (e.g. clearance at top link, see drawing below).

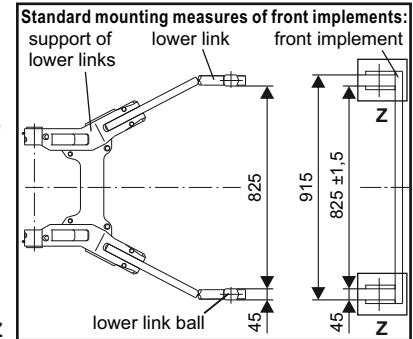
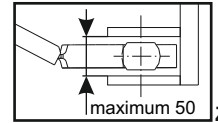
If necessary, appropriate measures to avoid crashes must be taken.



- If a front loader is mounted, please check if there is sufficient clearance to the front linkage in any position.

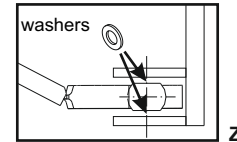
- When mounting a front implement, pay attention to the following instructions:

If there is too much clearance of the lower link balls at the front-mounted implement, damage may be caused by too high transverse forces.

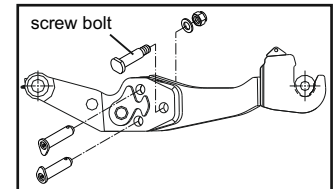


### Remedy:

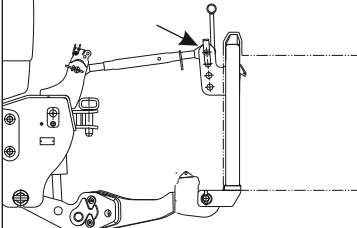
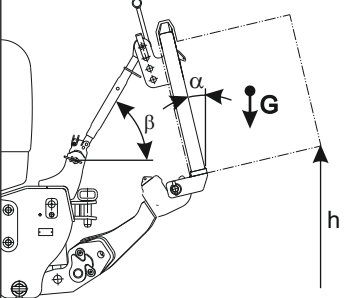
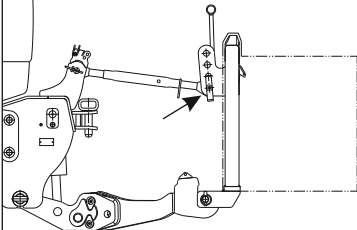
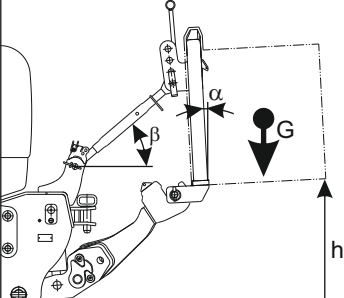
- Reduce clearance;



- Fix lower links at the back with both bolts respectively and fix with screw bolts (accessory) through front boring of support of lower links;



- Positioning of top link:

	Support of lower links in working position	Support of lower links completely lifted	Consequences
Top link in highest boring of front implement			<ul style="list-style-type: none"> <li>- large lifting height (h)</li> <li>- large tilting angle (<math>\alpha</math>)</li> <li>- large top link angle (<math>\beta</math>)</li> <li>- small max. implement weight (G)</li> </ul>
Top link in lowest boring of front implement			<ul style="list-style-type: none"> <li>- small lifting height (h)</li> <li>- small tilting angle (<math>\alpha</math>)</li> <li>- small top link angle (<math>\beta</math>)</li> <li>- large max. implement weight (G)</li> </ul>


- The front linkage is supplied only with double-acting cylinders.

If you use front-mounted implements which **must not** be pressed, switch the reversing valve over to “single-acting“;

⇒ This shall prevent that front-mounted implements are pressed into the ground if the control unit is wrongly operated by mistake (pressing instead of floating position).

- The front linkage is designed for usual agricultural works.

The use of devices of large height (e.g. stackers), large working width (e.g. bulldozer blades, cultivators), large overhang (e.g. bracket mowers) or high speeds (e.g. snow ploughs) may result in unforeseeable stress to the front linkage or tractor.

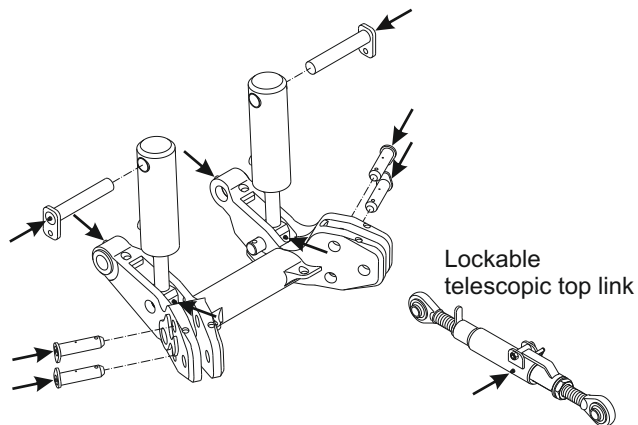
 **No responsibility will be taken over for damages which may occur due to overstress!**

- Depending on tractor type and implement, strengthening pieces may be necessary.
  - ⇒ Please contact herefor Messrs. Sauter or the tractor manufacturer.

### 3. Maintenance of the front linkage

**We recommend you to get your dealer to do the maintenance works:**

- Tighten fastening screws first after 10 operating hours, then at inspection;
- Tighten hydraulic pipe unions at inspection; (System must be pressureless  
⇒ Set control lever to free floating position);
- Check during inspection of hydraulic pipes if there are leakages, damage or deterioration and exchange if necessary;
- Clean all movable parts of the front linkage at inspection and lubricate them with grease (**lubricating nipples see sketch**);



### 4. Technical data for front linkage

Tractor type	Lifting power at catch hook	Straight-through lifting power at implement center of gravity (800mm from coupling points)	Working pressure
Claas			
Celtis 426-456	28 kN (2,8 t)	18 kN (1,8 t)	180 bar
Axos 310-340	28 kN (2,8 t)	18 kN (1,8 t)	180 bar
Ares 546-566 547-577	35 kN (3,5 t)	22 kN (2,2 t)	200 bar
Ares 616-696 617-697	38 kN (3,8 t)	24 kN (2,4 t)	200 bar
Ares 710-836	50 kN (5 t)	33 kN (3,3 t)	200 bar
Arion 410-430	28 kN (2,8 t)	18 kN (1,8 t)	200 bar
Arion 510-540	35 kN (3,5 t)	22 kN (2,2 t)	200 bar
Arion 610-640	38 kN (3,8 t)	25 kN (2,5 t)	200 bar
Axion 810-850	50 kN (5 t)	33 kN (3,3 t)	200 bar
Atlas 926-946	50 kN (5 t)	33 kN (3,3 t)	200 bar

## 5. Troubleshooting with front linkage

Fault	Check	Comment	Correction
<b>Front linkage lowers:</b>			
<b>- Reversing valve "open"</b>	control unit of tractor	front linkage stands still if reversing valve is "locked"	repair
<b>- Reversing valve "locked"</b>	valve in reversing valve	front linkage lowers if reversing valve is in position "single-acting" front linkage stands still if reversing valve is in position "double-acting"	repair by cleaning or replace conical nipple
	hydraulic cylinder	front linkage lowers if reversing valve is "locked" and in position "double-acting"	repair

Please contact your workshop for repair works and further troubleshooting.







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