



Original operating instructions

Front attachment rack

for

GS 300 M1 & GS 600 M1

Read this carefully before operating!

Can be mounted from serial number: 07002-01251

Version: 04/2014, V1.0



		Technische Produkte 3753 Hötzelzdorf Austria	
Modell:	<input type="text"/>	Modell	<input type="text"/>
Type:	<input type="text"/>	Type	<input type="text"/>
Fab. Nr.:	<input type="text"/>	0890	<input type="text"/>
Kontrolle:	<input type="text"/>	Baujahr:	<input type="text"/>
Basisgew.:	<input type="text"/> kg	2009	<input type="text"/>

Order No.: 00600-3-371

It should NOT be

an inconvenience or a luxury to read and comply with the operating instructions. You cannot simply experience from others that something is a good product, then make the purchase and assume everything will be self-explanatory.

Those who go down this route not only inflict damage on their own property, but make the mistake of attributing the cause of any failure to the machine, and not to themselves.

In order to be sure of success you must get into the spirit of the thing, by learning about the purpose of each individual device on the machine and by gaining experience in how to use it. Only then will you be satisfied both with the machine and with yourself. These operating instructions are intended to help you achieve this.

Leipzig-Plagwitz 1872

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1 EC Declaration of Conformity

in accordance with Directive 2006/42/EC

The manufacturer APV Technische Produkte, Dallein 15 A-3753 Hötzelndorf hereby declares that the product

Front attachment rack

Machine type designation / Product No. (see delivery declaration and title page)

to which this declaration of conformity refers, complies with all relevant basic health and safety requirements specified in the EC Directive 2006/42/EC as well as with the requirements specified in the other relevant EC Directives

2006/42/EC

If applicable: title / number / version of the other EC directives.

The following standards and/or technical specifications have been drawn upon to properly implement the health and safety provisions stipulated by the EU Directives:

EN 12100/1; EN 1200100/2

If applicable: title / number / version

Your contact on CE matters at APV is Ing. Jürgen Schöls.
He can be reached by telephone at +43 (0) 2913-8001.

Dallein, 04/2014
Location, date



Signature

Ing. Jürgen Schöls
Managing Director

2 Provisions

Dear customer!

Congratulations! We are pleased you have purchased our product and wish you much enjoyment and success working with it!

Please read all instructions contained in this operating manual before using the device!

3 Guarantee

On acceptance, please immediately check for any damage incurred to the device during transport. Claims made for transport-related damage at a later date cannot be accepted.

We provide a six month factory warranty from the date of delivery (your invoice or delivery note serves as the warranty card).

This guarantee is limited to faults in material or design/construction and does not extend to parts that are damaged by normal or excessive wear and tear.

The guarantee is voided if:

- the damage is caused by external forces
- operator error is at issue
- the stipulated kW/HP limitation is exceeded
- the device is modified, augmented, or fitted with third-party replacement parts without our consent.

4 Accident prevention

The generally applicable accident prevention regulations of the respective country in which the device is used must be observed.

Always secure the device against rolling away accidentally when parked.

The device may only be used by persons who have been informed of the possible dangers and who know the regulations for transportation on public highways.

5 Transportation on public highways (most important provisions)

The axle load and the total weight of the tractor must not be exceeded.

The attachment must be marked with country-specific warning signs or decals with white/red diagonal stripes (per DIN, ÖNORM or respective STANDARDS).

Parts which are hazardous or hazardous to traffic must be covered and additionally identified with warning signs or decals. Warning signs or decals shall be a max. of 150cm above the road when driving.

Tractor lights must not be covered by the device, otherwise they must be installed on the attachment.

The steering abilities of the tractor must not be impaired or reduced by the attachment!

Attached equipment may only be pulled on public roads with an operating licence.

Fold up hydraulic equipment into transport position.

Make sure that the stop valve is closed or the safety chain is attached.

Also check to ensure that none of the locking pins have been lost while working with the equipment.

Observe the legal regulations of your country.

Only relieve the pressure from the hydraulic hose once you are home by means of the floating position on the tractor control unit. The holder for the warning sign (additional equipment) is mounted on the support of the tine frame (Fig.: 3).

Remove residues (soil, grass, etc.) from the tine frames for travel on roads after field work.

The vehicle must only be driven on public roads as described in the section "Transport position"

Fix the hydraulic lower link (U) so that the device cannot be swing out to the side.

6 Operating instructions for the front attachment rack GS300/600

6.1 Attaching to the tractor

In difficult operating conditions additional wheel weights can be advantageous. See also the tractor manufacturer's operating manual.

The tractor should be equipped with sufficient ballast at the front to guarantee the steering and braking capabilities. At least 20 % of the vehicle's empty weight is required on the front axle.

The left and right lift rods must be set to the same height. Mount the device on the 3-point linkage of the tractor.

Mount the top link such that this drops down towards the tractor even when operating (observe the tractor manufacturer's instructions).

Adjust the side bars such that the device can swing freely on the field, but can be fixed in its position when raised.

Observe the maximum permissible total weight of the front hydraulics and the front axle.

7 Road transport of the GS 300 M1/GS 600 M1

7.1 General instructions

- Make sure that no safety bolts, locking pins, etc. have been lost while working with the device.
- Observe the legal regulations of your country.
- Only relieve the pressure from the hydraulic hoses once you are home by means of the floating position on the tractor control unit.
- The holder for the warning sign with lights (additional equipment) is mounted on the support of the tine frame.
- Fix the hydraulic lower link (U) so that the device cannot be swing out to the side.
- According to the "data sheet for attachments", if the size of the front end exceeds 3.50 m, any restriction to the field of vision must be corrected!



Tip: Ask your consultant about the view projector to compensate for restrictions to the field of vision.

7.2 Calculation of the weight proportions

If you wish to drive with a device that is fastened onto the 3-point linkage then you must ensure that you do not exceed the highest permissible total weight, the permissible axle loads and the tyre load bearing capacity of the tractor with the attachment.

The front axle of the tractor must be loaded with at least 20% of the tractor's net weight.

All these values can be determined with this calculation:

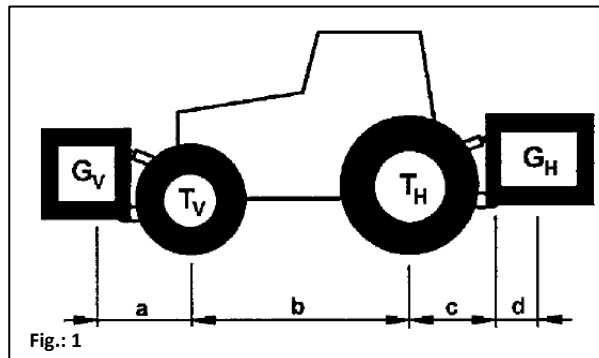


Fig.: 1

Information:

- | | |
|-------|--------------------------------------|
| T_L | Net weight of the tractor |
| T_V | Front axle load of the empty tractor |
| T_H | Rear axle load of the empty tractor |
| G_H | Total weight of rear attachment |
| G_V | Total weight of front attachment |
-
- | | |
|---|---|
| a | Distance from centre of gravity of the front attachment to centre of front axle |
| b | Wheelbase of the tractor |
| c | Distance from the centre of the rear axle to the centre of the lower link ball |
| d | Distance from the centre of the lower link ball to the centre of gravity of the rear attachment |

Weight calculations

1. Calculation of the minimum front ballast with rear attachments $G_{V \min}$:

$$G_{V \min} = \frac{G_H \cdot (c + d) - T_V \cdot b + 0.2 \cdot T_L \cdot b}{a + b}$$

Enter this result in the table on the next page.

2. Calculation of the minimum rear ballast with front attachments $G_{H \min}$:

$$G_{H \min} = \frac{G_V \cdot a - T_H \cdot b + 0.45 \cdot T_L \cdot b}{b + c + d}$$

Enter this result in the table too.

3. Calculation of the actual front axle load $T_{V \text{tat}}$:

If the required minimum front ballast ($G_{V \min}$) is not reached with the front attachment (G_V) then the weight of the front attachment must be increased to the weight of the minimum front ballast!

$$T_{V \text{tat}} = \frac{G_V \cdot (a + b) - T_V \cdot b - G_H \cdot (c + d)}{b}$$

Now enter the permissible rear axle load stipulated in the tractor's operating instructions and the actual front axle load calculated in the table.

4. Calculation of the actual total weight G_{act} :

If the required minimum rear ballast ($G_{H \min}$) is not reached with the rear attachment (G_H) then the weight of the rear attachment must be increased to the weight of the minimum rear ballast!

$$G_{\text{act}} = G_V + T_L + G_H$$

Now enter the calculated total weight and the permissible weight stated in the operating instructions of the tractor, in the table.

5. Calculation of the actual rear axle load $T_{H \text{tat}}$:

$$T_{H \text{tat}} = G_{\text{tat}} - T_{V \text{tat}}$$

Now enter permissible rear axle load stipulated in the tractor's operating instructions and the actual rear axle load calculated, in the table.

6. Tyre load bearing capacity:

Enter the doubled value (two tyres) of the permissible tyre load bearing capacity (see the tyre manufacturer's documentation for example) into the table.

Table:

The minimum ballast required must be attached to the tractor as attachment or ballast weights!

The calculated values must not be larger than the permissible values!

	Actual value per calculation		Permissible value per information in the		Doubled permissible tyre load bearing capacity (2 tyres)
Minimum ballast front/rear	<input type="text"/> kg		---		---
Total weight	<input type="text"/> <input type="text"/> kg	≤	<input type="text"/> kg		---
Front axle load	<input type="text"/> kg	≤	<input type="text"/> kg	≤	<input type="text"/> kg
Rear axle load	<input type="text"/> kg	≤	<input type="text"/> kg	≤	<input type="text"/> kg

8 Maintenance and care:

To maintain the device in good condition after many hours of operation, please always observe the following instructions:

- ✓ Basic safety instructions for maintenance are included in the “For your safety...” enclosure.
- ✓ Original parts and accessories have been specially designed for the machines or devices.
- ✓ We draw express attention to the fact that parts and accessories that we have not delivered have not been checked and approved for use by us.
- ✓ Under certain circumstances, the installation and/or use of such products may therefore negatively change or impact on the stipulated design characteristics of your device. The manufacturer is not liable for damage caused by use of non-original parts and accessories.
- ✓ Unauthorised modifications, as well as the use of parts and attachments on the machines, void the liability of the manufacturer.
- ✓ Re-tighten all screw connections at the latest after 3 operating hours and again after approx. 20 operating hours, and check them regularly thereafter. Loose screws may result in serious damage which is not covered by warranty.
- ✓ Grease the lubrication points on the linkages and bearings regularly (approx. every 10 operating hours with universal grease).
- ✓ Also grease the guide slots on devices with quick-release couplers.

- ✓ Check the hydraulic power units and tubing for leaks and tighten screwed connections if necessary after the first 10 operating hours and every 50 hours thereafter.
- ✓ Check the hydraulic hoses for wear every time before starting operations.
- ✓ Attention!!! Liquids under high pressure can penetrate the skin. So, seek medical attention immediately in the event of an accident!!!
- ✓ After cleaning, grease all lubrication points and spread the lubricant evenly on the bearing surface (e.g. perform a short test run).
- ✓ Do not use high pressure washers for cleaning bearings and hydraulic parts.
- ✓ Paint damage may occur when cleaning at too high a pressure.
- ✓ During winter, protect the device from rust using an environmentally-friendly agent.
- ✓ Park the device in a weather-proof area.
- ✓ Only park hydraulically or mechanically folded devices in the folded state.
- ✓ Park the device such that the tines will not be unnecessarily stressed.
- ✓ Check the tyre pressure occasionally (16x6.50 tyres approx 2 bar, 18x8.50 approx. 3 bar).

9 Lubrication

You have 2 to 4 steerable depth wheels, depending on the model. They each have two lubrication nipples and should be lubricated as needed.

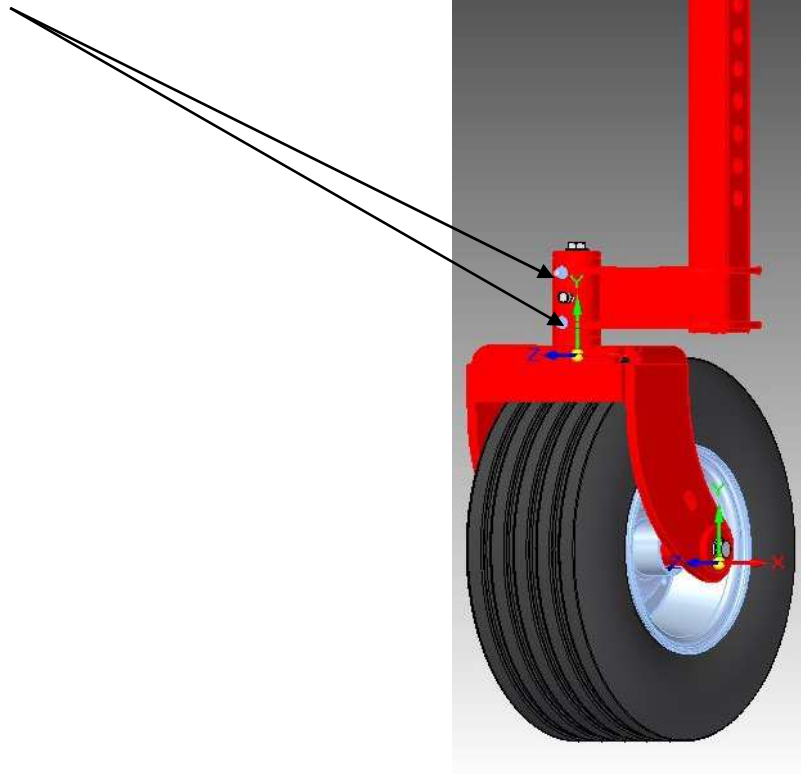


Fig.: 2

10 Location of the type plate

The type plate is located on the main frame next to the triangular attachment bracket.



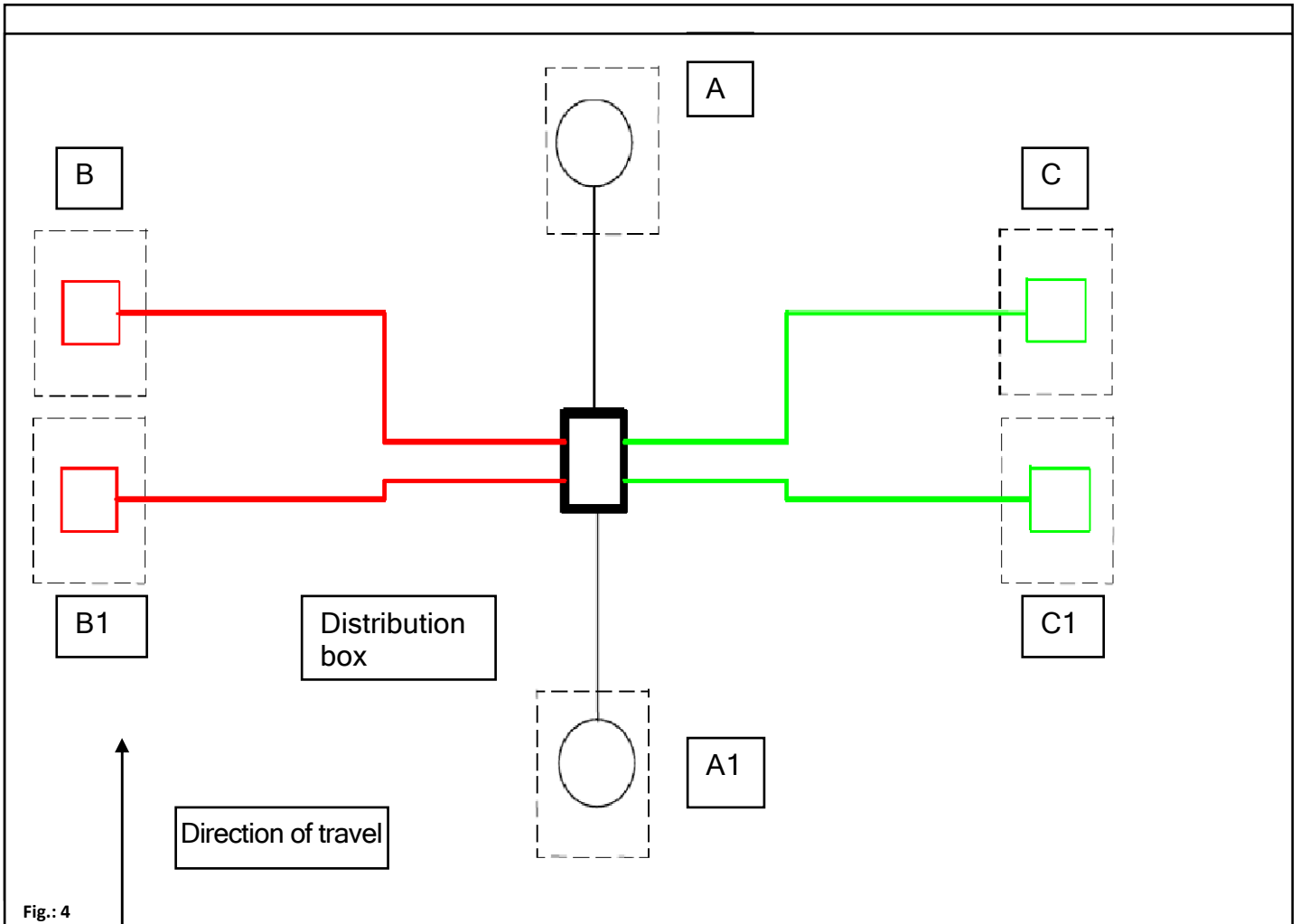
Tip: When asking questions or for guarantee claims, please specify your machine's production number.



Fig.: 3

11 Lighting circuit diagram (accessory)

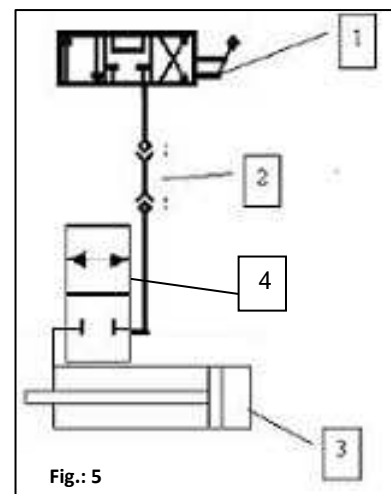
A / A1	B / B1	C / C1	Connection
Pin 1 / violet	Pin 4 / grey		5-pin cable clip
Pin 2			
Pin 3 / blue	Pin 1 / blue	Pin 1 / blue	2x5-pin cable clip
Pin 4 / orange		Pin 4 / grey	5-pin cable clip
Pin 5 / red		Pin 3 / black	5-pin cable clip
Pin 6 / brown	Pin 2 / brown	Pin 2 / brown	2x5-pin cable clip
Pin 7 / black	Pin 3 / black		5-pin cable clip



12 Hydraulic diagram

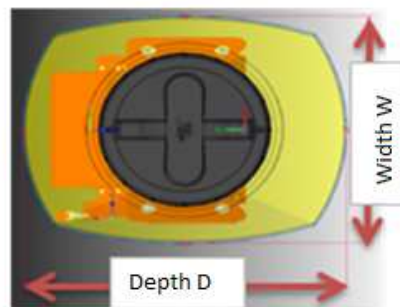
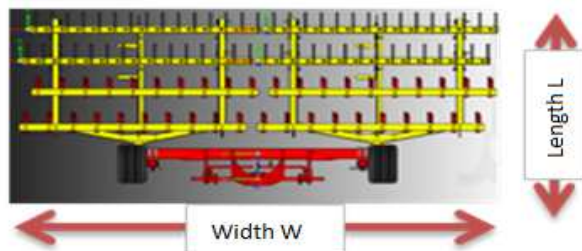
Hydraulic folding of the GS 600 M1:

- 1 Control device
- 2 Hydraulic couplings
- 3 Hydraulic folding cylinder
- 4 2/2 directional ball valve



TD combination possibilities of front assembly PS

					PS120 E	PS120 H	PS200 E	PS200 H	PS300 E	PS300 H	PS500 E	PS500 H	PS800	Part for assembly
GS/PS	Dimensions (delivery) LxWxH [m]	Dimensions (road transport) LxWxH [m]	Dimensions (road transport) LxWxH [m]	GS weight [kg]	Dimensions HxWxD[cm]	Dimensions HxWxD[cm]	Dimensions HxWxD[cm]	Dimensions HxWxD[cm]	Dimensions HxWxD[cm]	Dimensions HxWxD[cm]	Dimensions HxWxD[cm]	Dimensions HxWxD[cm]	Dimensions HxWxD[cm]	
		without PS	with PS 300	without PS	88x60x79	88x60x105	100x70x88	100x70x110	110x77x100	110x77x150	117x80x122	117x80x125	127x105x170	
GS300	1.85x3.00x1.30	1.85x3.00x1.16	1.83x3.00x1.95	~ 300	YES	NO*	YES	NO*	YES	NO*	NO	NO	NO	Mounting kit PS120-300
GS600	2.00x3.00x2.34	2.00x3.00x2.94	2.00x3.00x2.94	~ 700	YES	YES	YES	YES	YES	YES	NO	NO	NO	



* more affordable versions possible

13 My idea

The **front attachment rack** has been developed and tested for a long time. A lot of time passed between the initial concept and series production. This required a lot of commitment from individual staff and the whole of the development team. We cooperated with universities and specialists from the farming industry, and commissioned research projects.

Nevertheless, practice is the most valuable experience. Our motto is:

“Inspired by farmers & realised by professionals.”

This means that YOU are also the most important person in the development of an agricultural machine that is to be used in practical applications. Without responding to your opinions, experiences, enthusiasm, wishes and even your frustrations, and then taking them seriously, it would not be possible to continue to develop and improve our machines.

We would like to give you the opportunity right here to take an active part in the development and improvement of our machines.

Write to us telling us about the positive and negative experiences you have had with the machine.

Write to us with your suggestions for improvements and with your requests!

Take photos or make drawings - we are open to all information and appreciate any submission, no matter what form it comes in.

Please send this information to meineidee@apv.at, fax us at +43/2913 8002, or send a letter to our address. Heading/subject: My idea.

The information is passed on directly to our design department, where it will be discussed and taken into consideration. Please do not forget to indicate the serial number of your machine.

Please understand that we cannot accept suggestions for improvements on the telephone because of how costly and time-consuming this is to arrange. However, if you still wish to talk to someone face-to-face then you can discuss your experiences with our sales staff at trade fairs and field days. If there are urgent problems then of course we will be right there for you. Please call us or address your query to our sales partner.

Good ideas are important to us - and they will therefore be rewarded. If one of your ideas is implemented then you will receive a practical gift as a thank-you for this.

Thank you in advance for your constructive suggestions.

Kind regards,



Ing. Gregor Witzmann
Development/Engineering

14 Safety instructions



For your safety...

This enclosure to the operating instructions contains general rules of conduct on the correct use of the device as well as safety instructions which you must always observe for your own safety.

The list is quite exhaustive, so some of the instructions do not exclusively refer to the delivered device. However, the summarised instructions can often remind you of safety regulations that you have unintentionally forgotten in your daily work with such machinery.

14.1 Intended use

The device has been built exclusively for its customary use in agricultural work (the intended use).

Any other use of the device is deemed to be not as intended. The manufacturer is not liable for any damage occurring therefrom; the user alone assumes this risk.

Intended use also entails observance of the operating, maintenance and repair requirements stipulated by the manufacturer.

The device may only be used, maintained and repaired by persons who are acquainted with it and who have been informed of the dangers and risks. All safety instructions must be passed on to any and all other users.

The relevant accident-prevention regulations as well as other generally-recognised safety, occupational health and road traffic regulations must be observed. Unauthorised modifications to the device preclude the manufacturer from liability for any damage resulting therefrom.

14.2 General safety instructions and accident-prevention regulations

- Every time before starting up the device and the tractor, check that they are roadworthy and safe for operation!
- Observe the generally applicable safety and accident-prevention regulations!
- Warning and instruction plates/signs attached to the device provide important instructions on safe operation; observe them for your own safety!
- Observe all appropriate regulations when using public roads!
- Before starting work, familiarise yourself with all equipment and control elements as well as with their functions. It is too late to do this when you are already using the machine/device!
- The user must wear tight-fitting clothes! Avoid loose clothing!
- Keep machines clean to avoid the risk of fire!
- Before starting up and commissioning, check the vicinity! (Children!) Make sure you have a sufficient field of view!
- Passengers are not allowed during work and the working tool should not be used for transport!
- Connect the device in accordance with the instructions and only attach it to the prescribed equipment!
- Special care must be taken when connecting and disconnecting devices to or from the tractor!
- Position the support equipment correctly for mounting and dismounting! (Firm footing)
- Always attach weights in accordance with the instructions, at the prescribed fixing points!
- Observe the permitted axle load, overall weight and transport dimensions!
- Check and attach any transport equipment such as, e.g. lighting, warning equipment and any protective equipment!
- Release parts for quick-release couplings must hang loosely and must not self-actuate if positioned low down!
- Never leave the driver's cab when driving!
- Driving performance, steering and braking are also affected by devices and ballast attached or hitched to the device. Therefore, make sure that there is sufficient steering and braking ability!
- When cornering, take into account the width of the overhang and/or the centrifugal mass of the device!
- Only put the machine into operation after all protective equipment has been attached and is in its protective position!
- It is forbidden to remain within the working area!
- Do not linger within the swivel and rotating area of the device!
- Folding hydraulic frames may only be actuated when there are no persons within the swivel area.
- There are crushing and cutting zones on power-operated parts (e.g. hydraulics)!
- Make sure you have a firm footing when operating manual folding devices!
- For fast-driven devices with ground-driven tools - Danger after digging from residual inertial forces! Only approach the device after all parts are at standstill!

- Before leaving the tractor, set the device down on the ground, switch off the engine and remove the ignition key!
- No-one should be located between the tractor and the device without first having secured the vehicle against rolling with the handbrake and/or with chocks!
- Secure folded frames and digging equipment in transport position!
- Swivel in and lock grabber arms before road transport!
- Lock track marker in transport position!

14.3 Attached devices

- Before attaching and removing devices to the three-point support, put operating equipment into a position in which unintentional lifting or lowering is excluded!
- In order to use the three-point attachment, the attachment categories of the tractor and the device must be identical or must be adapted to each other!
- There is a hazard posed by cutting and crushing zones in the area of the three-point linkage!
- When using the external controls for the three-point attachment, do not step between the tractor and the device!
- When the device is in transport position, always make sure there is sufficient side-locking of the tractor three-point linkage!
- When driving on the road with the device lifted, the operating lever must be locked to prevent lowering!

14.4 Hydraulic system

- The hydraulic system is under high pressure!
- Observe the specified connection for the hydraulic hoses when connecting hydraulic cylinders and motors!
- When connecting the hydraulic hoses to the tractor's hydraulic system, make sure that the hydraulics on both the side of the tractor and of the device is pressureless!
- When establishing functional hydraulic connections between the tractor and the device, coupling sleeves and connectors must be labelled in order to prevent any operating errors! Reversing the connections results in reverse function! (e.g. lifting/lowering) - accident hazard!
- Regularly check hydraulic hose lines and replace them if they are damaged or old/worn! The replacement lines must comply with the technical requirements specified by the device manufacturer!
- To prevent accidents, use suitable equipment when looking for leaks!
- Fluids escaping under high pressure (hydraulic oil) can penetrate your skin and cause serious injuries! Consult a doctor immediately in case of injury! (risk of infection!)
- Before working on the hydraulics system, set down the device, depressurise the system and turn off the motor!

- Only hang the safety chains once loosened! (Cylinders must be filled with oil)

14.5 Maintenance

- Repairs, maintenance and cleaning work, as well as remedying of malfunctions must always be carried out after the drive has been switched off and the engine has reached a standstill! - Remove the ignition key!
- Regularly check nuts and bolts for tight seating and retighten if necessary!
- During maintenance work when a device is lifted, always secure using suitable supporting elements!
- When replacing blades in working tools, use suitable tools and gloves!
- Dispose of oils, greases and filters correctly!
- Always disconnect the power before working on electrical systems!
- When carrying out electrical welding on the tractor and its attached devices, disconnect the cable on the generator and the battery!
- Spare parts must comply at the very least to the technical requirements stipulated by the device manufacturer! This is guaranteed by using original spare parts!

14.6 Tyres

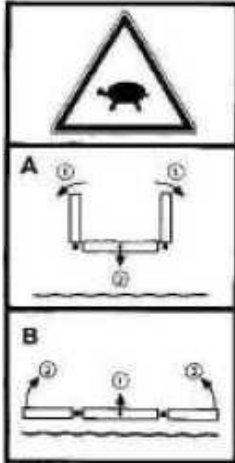
- When working on the tyres it must be ensured that the device is securely parked and has been secured against rolling away (wheel chocks).
- Appropriate skills and the prescribed tools are required for the mounting of wheels and tyres!
- Repair work on the tyres may only be performed by qualified experts with the appropriate assembly tool for this purpose!
- Check the air pressure regularly! Observe the prescribed air pressure!



Attention: Printing errors reserved, all information is provided without warranty.

15 Safety signs

Please pay particular attention to the stickers on the device, as they indicate particular risks and dangers!



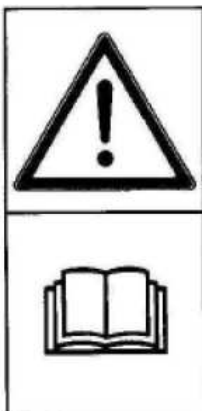
The device may only be raised from the ground and folded in or out slowly.



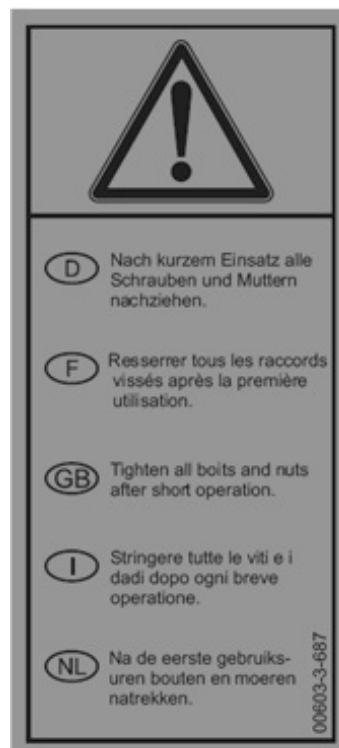
Remaining in the danger area (swing range) is prohibited!



Attention!
Danger of crushing.

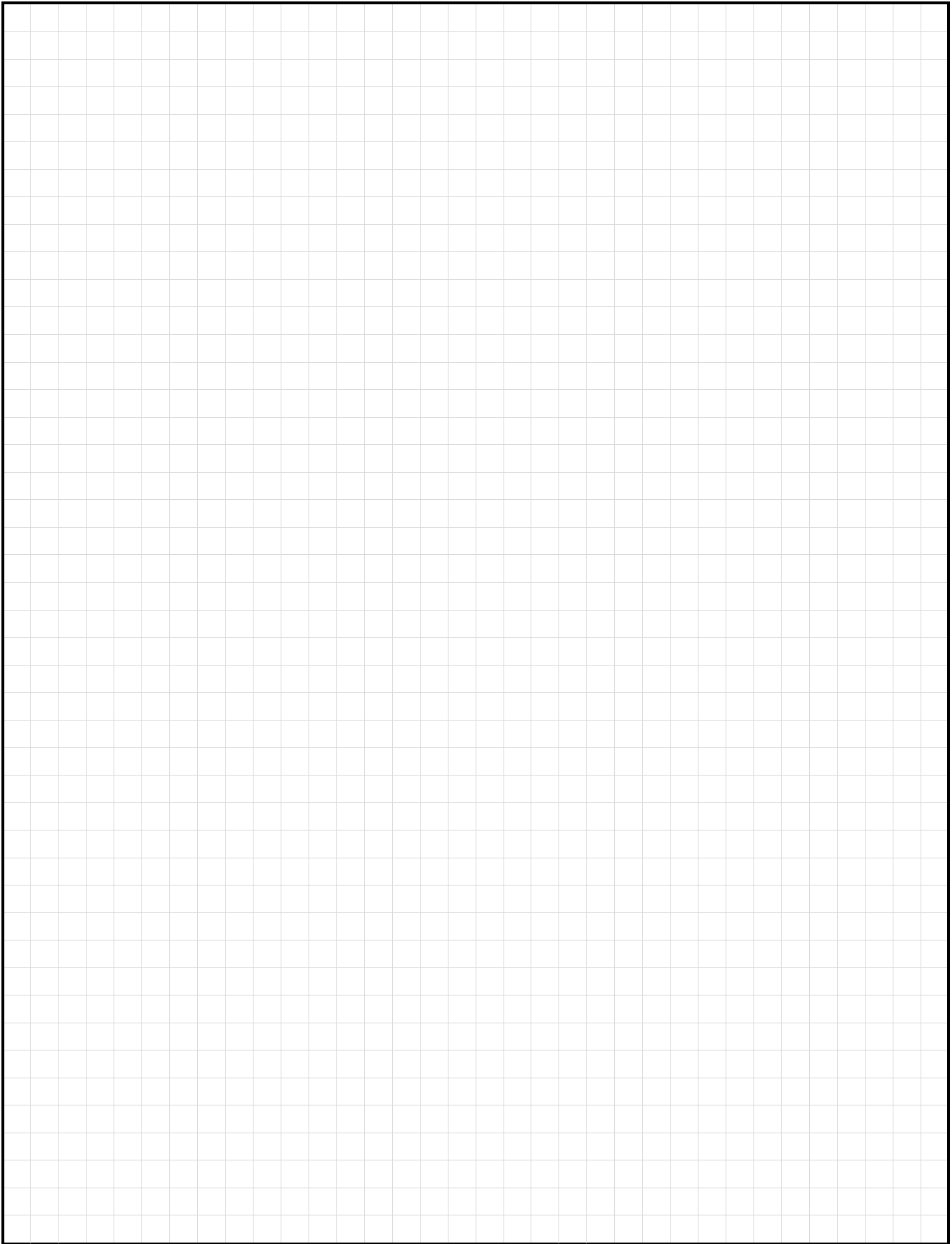


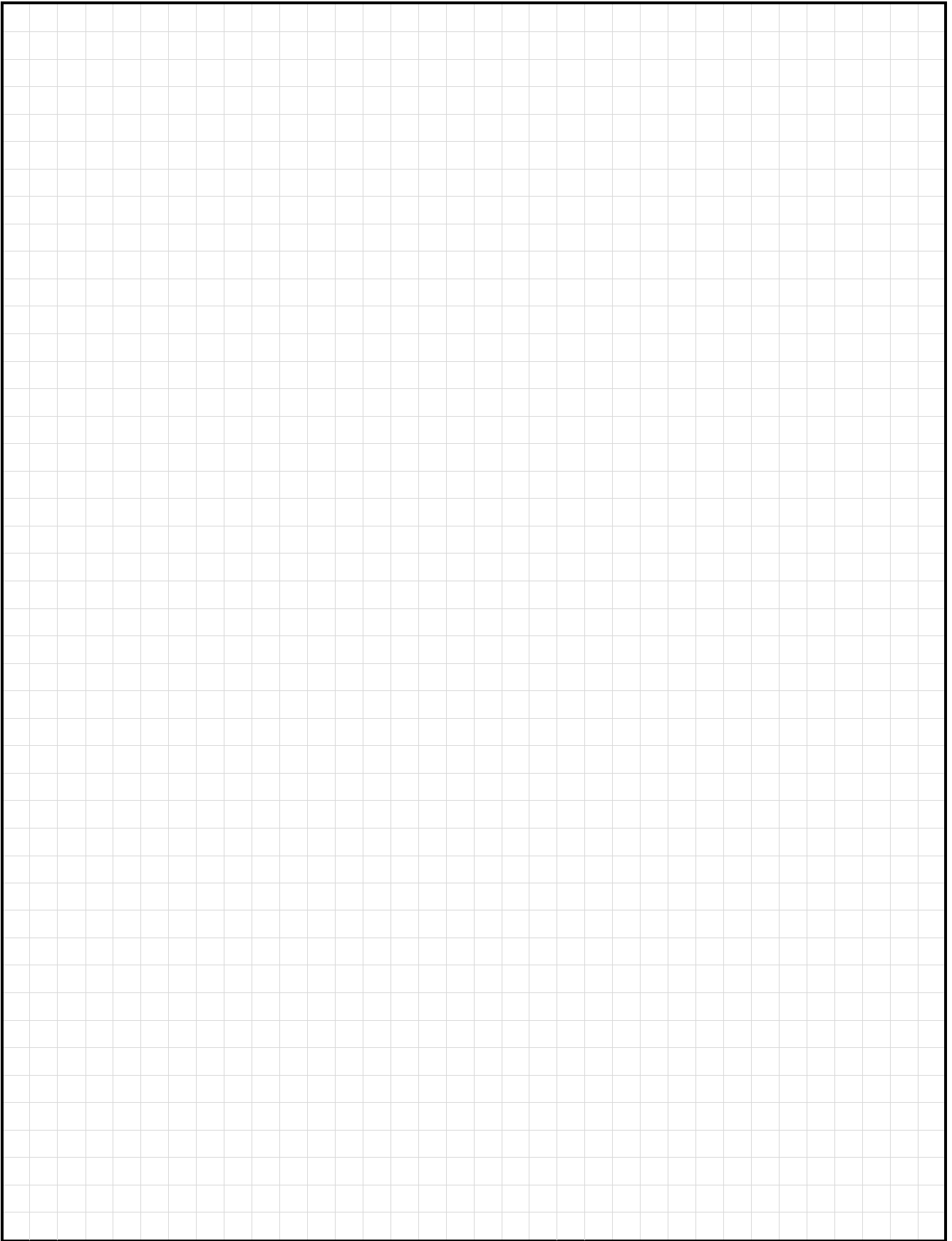
Read and comply with the operating and safety instructions before operating.



16 Notes

A large rectangular area filled with a fine grid of small squares, intended for writing notes. The grid is approximately 30 squares wide and 50 squares high.





Quality for professionals

Inspired by farmers & realised by professionals



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