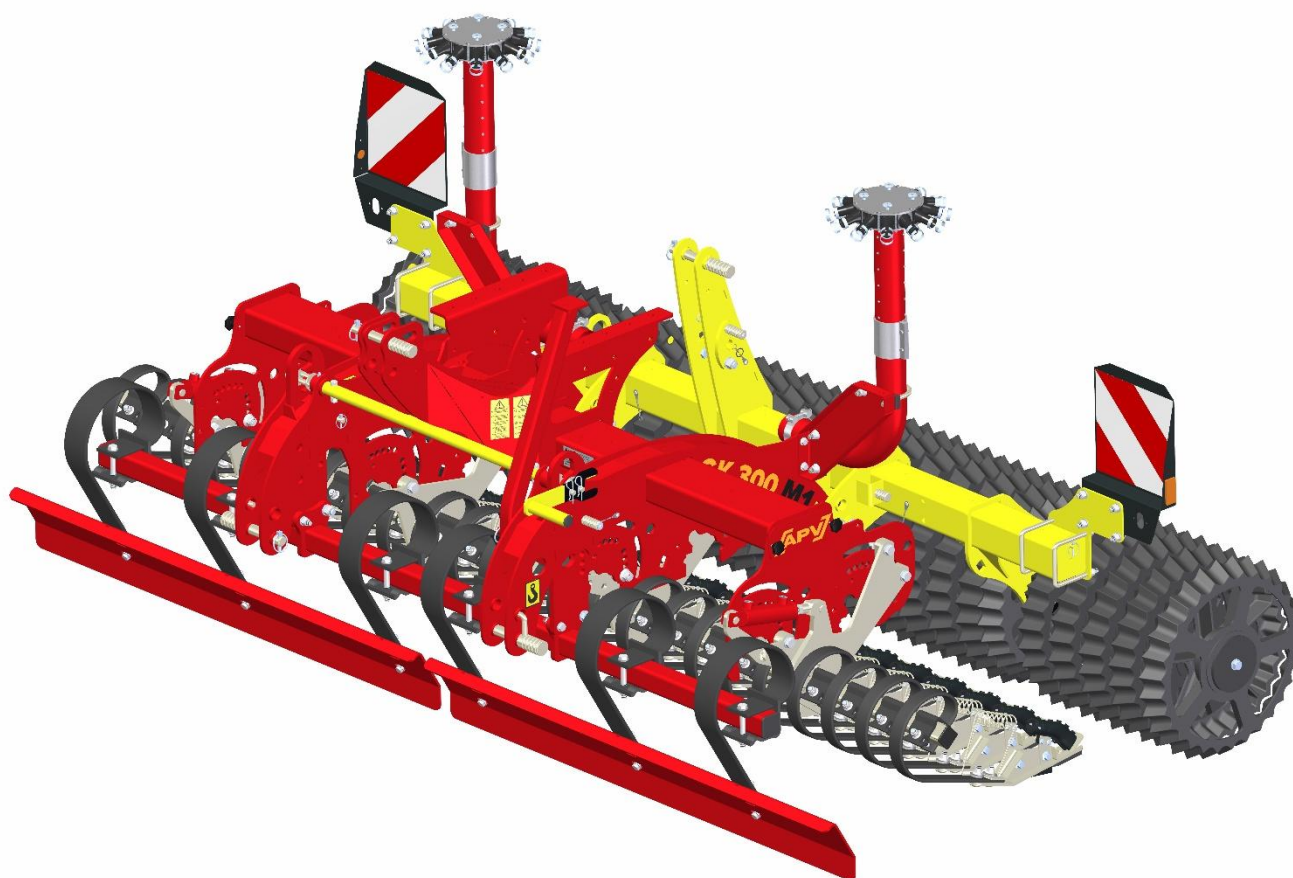


GRASSLAND COMBI

GK 250 S | GK 300 S

OPERATING MANUAL



PLEASE READ CAREFULLY BEFORE COMMISSIONING!

Translation of the original operating manual

Version: 1.0 EN; item number: 00603-3-363



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1 EC DECLARATION OF CONFORMITY



Manufacturer: **APV - Technische Produkte GmbH**
Dallein 62
AT - 3753 Hötzelstdorf

hereby declares that the mounted implement series described in the following complies with the applicable basic safety and health requirements of the above-mentioned Directives in terms of its concept and design as well as the versions put on the market.

This declaration loses its validity if there are any changes to the implement that are not approved by **APV - Technische Produkte GmbH**.

Name of the mounted implement series: **Grassland Combi GK**
GK 250 S
GK 300 S

Year of manufacture: from **2025**

Serial number: Starting from 06031-01000

Relevant Directives: EC Machinery Directive 2006/42/EC
EMC Directive 2014/30/EU

For the planning, design, construction and marketing of the implement, the following harmonised European standards were applied:

EN ISO 12100:2010	Safety of machinery – General principles for design; risk assessment and risk reduction
EN ISO 4254-1:2015	Agricultural machinery – Safety – Part 1: General requirements
EN ISO 13857:2019	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs

The special technical documents belonging to the implement in accordance with Appendix VII, Part A have been prepared.

Responsible for the technical documentation: Development and Design department, Dallein 62

Dallein / Hötzelstdorf, 10/2025



In. Karl Heinz Steindl
Managing Director (authorised person in der EU)

2 UK CONFORMITY ASSESSED



Manufacturer: **APV - Technische Produkte GmbH**
Dallein 62
AT - 3753 Hötzelstdorf

hereby declares that the mounted implement series described in the following complies with the applicable basic safety and health requirements of the above-mentioned Directives in terms of its concept and design as well as the versions put on the market.

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Dallein / Hötzelstdorf, 10/2025



In. Karl Heinz Steindl
Managing Director (authorised person in der EU)

3 IDENTIFICATION OF THE IMPLEMENT

The Grassland Combi can be clearly identified by the following information on the type plate.

- Designation
- Model
- Production number

Position of the type plate

The type plate is found on the main tube beside the mounting frame bracket.

The following image (Figure 1) shows the layout of the type plate:



Figure 1

The data on the type plate have the following meaning:

- 1: Designation
- 2: Model
- 3: Product number / serial number
- 4: Weight
- 5: Year of manufacture



NOTE!

In cases of inquiries or warranty claims, please always tell us the production number / serial number of your implement.

4 SERVICE

Please contact our service address in the following cases:

- If you still have questions regarding the handling of this implement despite the information provided in this operating manual
- For questions regarding spare parts
- To order maintenance and servicing work

Service address:

APV - Technische Produkte GmbH
ZENTRALE
Dallein 62
A-3753 Hötzelstdorf
AUSTRIA

Telephone: +43 (0) 2913 8001-5500
Fax: +43 (0) 2913 8002
Email: service@apv.at
Web: www.apv.at

5 WARRANTY

Please check the implement for any transport damage immediately upon receipt. Later claims regarding transport damage can no longer be considered.

We grant a six-month factory warranty starting on the date of delivery and based on a warranty activation (see Point 5.1). Your invoice or the delivery slip serve as a warranty certificate.

This warranty is applicable for cases of material or construction faults and does not include parts that are damaged by normal or excessive wear.

The warranty expires

- if damage is caused by external forces.

- in cases of operating errors.
- if the kW/HP limits are significantly exceeded.
- if the implement is modified, expanded or equipped with third-party spare parts without our permission.

5.1 WARRANTY ACTIVATION

To be able to offer the best possible service, warranty activation must be performed for your implement after acquisition.

To activate the warranty for your implement, simply scan the QR code with your smartphone – you will then be taken directly to the warranty activation page.

You can also call up the warranty activation page through our website www.apv.at in the Service area.



6 SAFETY INFORMATION

This chapter contains general rules of conduct for the intended use of the implement and safety-related information that should always be observed for your safety.

The list is very extensive, and some of the information does not apply exclusively to the delivered implement. However, the summary of the information often reminds you of unconsciously neglected safety regulations for the everyday operation of machines and implements.

6.1 INTENDED USE

The Grassland Combi GK 250 S / GK 300 S is designed to prepare seedbeds and to work in and press down the seeds. It must only be used in normal deployment for agricultural tasks.

The implement must only be operated within its specified performance limits (see technical data).

Any use beyond that is deemed to be improper. The manufacturer is not liable for any resulting damage, the operator alone bears the associated risk.

Intended use also includes compliance with the conditions for operation, maintenance, and repairs prescribed by the manufacturer.

The implement may only be used, maintained and repaired by persons who have relevant experience and were instructed on the risks. The safety instructions must also be handed over to other users.

The applicable country-specific accident prevention regulations as well as the other generally safety-related, occupational health and road traffic regulations must also be observed.

The manufacturer is not liable for any damage resulting from unauthorised modifications and the use of components and auxiliary parts.

The Grassland Combi is intended for outdoor operation in dry weather, within a temperature range from +5 °C to 40 °C.

6.2 GENERAL SAFETY-RELATED INSTRUCTIONS AND ACCIDENT PREVENTION REGULATIONS

- The operator has read and understood this operating manual before handling the implement.
- The operator must train and instruct their personnel if necessary. The personnel must have read and understood this operating manual before handling the implement.

- Always keep the operating manual close to the implement for reference purposes.
- When passing on the implement, be sure to pass on the operating manual.
- Do not use the implement if you are tired or under the influence of drugs, alcohol or medication.
- **Check the implement and the tractor for road and operational safety before every use (e.g. defective parts, connections, hoses, etc.)!**
- Inspections before and during operation as well as regular care and maintenance of the implement must be performed.
- **Before starting work, get to know all of the equipment and operating elements as well as their functions. It is too late to do so during operation!**
- The general applicable safety and accident prevention regulations of the respective countries must be observed.
- Always secure the parked implement against unintentional rolling.
- The implement may only be used by persons who are informed of the hazards and who know the regulations for transport on public roads. The owner is responsible for regularly checking the competence / driving licence of the users.
- The warning and information signs applied to the implement provide important instructions for safe operation, observe them for the sake of your own safety!
- The implements must be checked regularly by the operator (before every use) for any fractures and cracks, chafe marks, leaks, loose bolts and connections, vibrations, unusual sounds, and to ensure they function correctly.
- Observe the respective country-specific road traffic regulations when using public roads!
- The user should wear close-fitting clothing. Avoid wearing loose clothes!
- To reduce the risk of fire: Keep the implements clean!
- Before starting up and operating the implement: Check the surrounding area! (Children!) Ensure sufficient visibility!
- It is not allowed to carry passengers on the implement! The operator must ensure that no one is riding on the implement before placing the implement in service.
- It is forbidden to transport working materials on the implement!
- The implement must be coupled according to the instructions and only onto the specified devices!
- Special care must be taken when coupling and uncoupling implement to and from the tractor!
- When mounting and dismounting, put the support devices in their respective positions! (Stability)
- Always attach ballast weights at the intended attachment points according to the specifications!
- Observe the permissible axle load, total weight and transport dimensions!
- Transport equipment - e.g. lighting, warning signs and any protective equipment, must be checked and mounted!
- Triggers for fast couplers must be hanging loosely and must not trigger themselves when lowered.
- Never leave the driver's platform while driving!
- The driving behaviour, steering and braking capacity are also affected by mounted or towed implements and ballast weights. For this reason, always ensure sufficient steering and braking capacity!
- When driving in curves, take account of the wide radius and/or the centrifugal mass of the implement (pay attention to the minimum turning curve)!
- The implement may only be operated when all of the protective devices are installed and in safety position!
- **It is forbidden to stand in the working area of the implement!**
- **Do not stand near rotating and swivelling parts of the implement!**
- Hydraulic folding frames may only be actuated when nobody is standing in the swivelling range.
- There are pinch and shear points on externally powered (e.g. hydraulic) parts!
- On implements with manual folding, always ensure that the implement is stable!
- Danger after lifting due to centrifugal mass that is still rotating! Only approach the implement when it has come to a standstill!
- Before exiting the tractor, lower the implement onto the ground, switch off the motor and remove the ignition key!

- Standing between the tractor and the implement is forbidden unless the vehicle is secured against rolling away using the parking brake and/or with wheel chocks!
- Folded frames and lifting devices must be locked in transport position!
- Safety glasses, hearing protection and safety shoes must be used.

6.3 MOUNTED IMPLEMENTS

- Before mounting and dismounting implements on the three-point linkage, move the operating devices into the position that excludes unintentional lifting or lowering!
- For three-point mounting, the mounting categories of the tractor and the implement must match or be adapted!
- There is a risk of injury due to crushing and shearing points in the area of the three-point linkage!
- Do not stand between the tractor and the implement when actuating the external controls for the three-point mounting!
- When the implement is in transport position, always ensure that the tractor three-point linkage is sufficiently locked to the sides!
- When driving on roads with the implement lifted, the operating lever must be locked against lowering!

6.4 HYDRAULIC SYSTEM

- **Inspect the hydraulic hose lines at regular intervals and replace in case of damage or wear! The replacement lines must comply with the technical requirements of the implement manufacturer!**
- The hydraulic system is under high pressure!
- When connecting hydraulic cylinders and motors, the specified connection of the hydraulic hoses must be observed!
- When connecting the hydraulic hoses to the tractor hydraulic system, make sure that the hydraulic system on the tractor and implement side is unpressurised!
- For hydraulic function connections between the tractor and the implement, coupling sleeves and connectors should be marked to rule out operating errors! If the connections are interchanged, the function will be inverted! (e.g. lifting/lowering) – Risk of accident!
- Due to the risk of injury, use suitable tools when searching for leaks!
- Liquids escaping under high pressure (hydraulic oil) can penetrate skin and cause serious injuries! Consult a doctor immediately in case of injury! (Risk of infection!)
- Before working on the hydraulic system: Park the implement, depressurize the system and switch off the motor!
- The securing chain should only be unhooked when it is relieved of tension! (cylinder must be filled with oil)

6.5 MAINTENANCE

- Maintenance, repair, and cleaning work as well as the elimination of malfunctions should always be performed when the drive is switched off and the motor is at a standstill (remove the ignition key) and the implement is uncoupled from the towing vehicle!
- The maintenance work itself may only be performed by trained specialist personnel and may never be performed alone.
- Extreme caution must be taken when changing defective components or tools. Replacing components that cannot be removed with tools such as a screwdriver or wrench may only be replaced by specialist personnel from an appropriately authorised company or by APV Customer Service.
- If repairs or maintenance are required on the implement that can only be performed in conjunction with the towing vehicle, this work must be identified by a clearly visible information sign "Caution: maintenance work".
- Check the nuts and bolts regularly for tight fit and retighten if necessary!
- When performing maintenance on the lifted implement, always ensure safety through suitable support elements!

- When changing work tools with sharp edges, always use suitable tools and gloves!
- Properly dispose of oils, grease and filters!
- Always cut the power supply when working on the electrical system!
- When performing electrical welding work on the tractor and mounted implement, disconnect the cable on the generator and the battery!
- Spare parts must at least comply with the technical requirements specified by the implement manufacturer! This is ensured with original parts!

6.6 TYRES

- When working on the tyres, it must be ensured that the implement is safely parked and secured against rolling away (wheel chocks).
- The mounting of wheels and tyres requires sufficient knowledge and proper installation tools.
- Repair work on the tyres may only be performed by specialists and with suitable installation tools.
- Check the tyre pressure regularly. Observe the prescribed inflation pressure (2.1 bar)!

6.7 MOUNTED SEEDERS

- When using a seeder, all of the specifications of the implement manufacturer must be observed.
- The seeder can be easily reached with using a ladder and platform. They must be clean and dry during use.
- It is strictly forbidden to stand on the platform or its access ladder while driving.
- When not in use, the ladder must be folded up and secured.

6.7.1 FILLING THE SEEDER

- The seeder is filled using a supply vehicle.
- The platform kit may not be used to fill the seeder or as a storage area for objects or seed. When filling the seeder, never stand under a suspended load!
- When driving up to the implement with seed, nobody may be standing on or around the implement.
- The platform kit may only be accessed to open the seed sacks when the load has been stabilised above the opening of the seed hopper.
- During the loading procedure, avoid any contact with the treated seed and wear gloves, a dust mask and safety glasses.

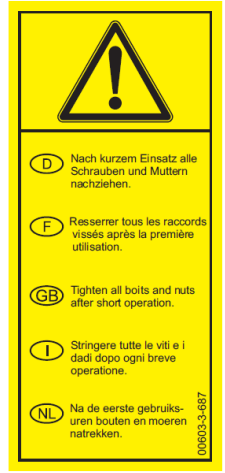
CAUTION!
Misprints, errors and omissions excepted!

7 INFORMATION SIGNS / HAZARD LABELS

Pay special attention to these stickers on the implement, as they warn you of specific dangers!

7.1 INFORMATION SIGNS

 Read and observe the operating manual before operating the implement!	 Do not stand on the implement while driving!	 Loading hooks. When loading the implement, attach the ropes or chains to these points!	 Always switch off the engine and remove the key before maintenance work!
--	---	--	---

 After a short period of operation, re-tighten all bolts and nuts.	 Labelling of the grease nipple position.	 Label for the recess for installing the 24-mm pins.
--	---	---

7.2 HAZARD LABELS



Be careful with
escaping high-pressure
liquids!
Observe the
instructions in the
operating manual!



Do not stand between
the machines when
connecting the
implements and
actuating the hydraulic
system!



Do not climb onto
rotating parts, use the
intended access
ladders!



Caution, crushing area!
Never reach into the
crushing danger zone
as long as the parts
could still move!



Danger due to parts
being flung out;
Observe the safety distance!

8 OPERATING MANUAL FOR GK 250 S / GK 300 S

8.1 MOUNTING ON THE TRACTOR

- The air pressure in the rear tractor tyres should be of **0.8 bar** during operation. If the tyres have a lower load capacity, increase the pressure.
- Under difficult operating conditions, additional wheel weights can be useful. Please also refer to the operating manual from the tractor manufacturer.
- The tractor should be equipped with sufficient ballast weight on the front to ensure the steering capacity and braking capacity. At least 20 % of the empty vehicle weight is required on the front axle.
- The lifting struts must be adjusted to the same height on the left and on the right.
- Mount the implement on the 3-point linkage of the tractor.
- Mount the top link so that it slants down towards the tractor during operation. Observe also the sticker on the implement. (Observe the specifications from the tractor manufacturer)
- After coupling the lower link, turn around the parking support by pulling out the pin, reposition it and then secure. (Figure 2; Figure 3)



Figure 2

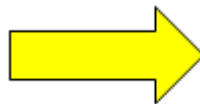


Figure 3

- Connect the hydraulic hoses to a double-acting control unit. During connection, make sure that the hoses are unpressurised both on the tractor and implement sides.



NOTE!

To ensure correct connection, the hydraulic hoses are labelled as follows:

→ + : Cylinder extends

→ - : Cylinder retracts

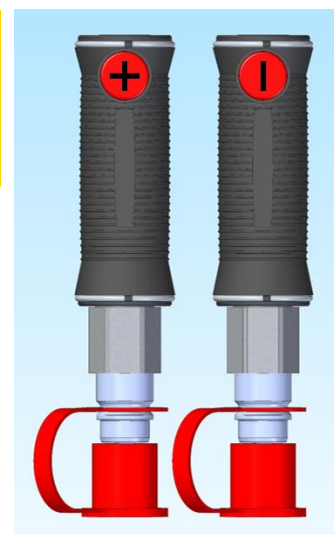


Figure 4

8.2 OPERATION OF THE GK 250 S / GK 300 S WITH FRONT-MOUNTED MEADOW HARROW

The front-mounted harrow loosens the sward to make space for the seed. The seed is placed in the soil with the seeding system of the GK 250 S / GK 300 S.



Figure 5

8.3 SEPARATE OPERATION OF THE HARROW AND ROLLER

On steep terrain or with a tractor with low lifting capacity, it is recommended to separate the operation of the implement. To do so, the harrow and the roller must be separated.



Figure 6

Proceed as follows:

- Lift the implement until the roller no longer has contact with the ground.
- Move the support for the roller to an optimal position to park the roller safely.



TIP!
The supports are stowed in the roller frame (Figure 7). The mounting position is shown in Figure 8.



Figure 7



Figure 8

CAUTION!

For mounted seeders, the second support must also be used, which is integrated in the respective bracket (see Figure 9).

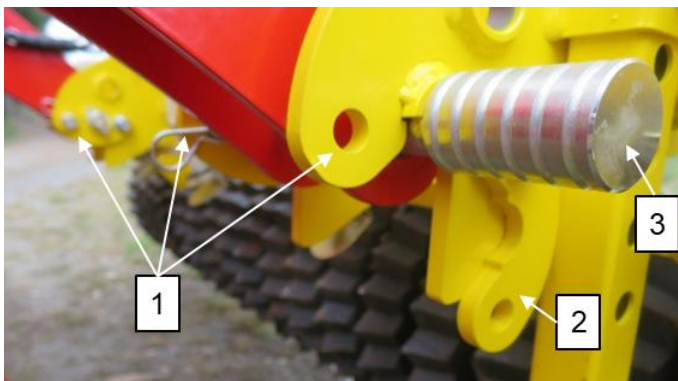


Figure 9

- Now remove the 4 short, 16 mm-thick pins (Figure 10) and fold down the pin lock.

CAUTION!

The continuous 28 mm connecting pins must NOT be removed for now!



- 1: 16 mm pin
- 2: Pin lock
- 3: Continuous 28 mm connecting pin

Figure 10

- Carefully lower the implement until the roller is stable, then offload the roller cylinder so that the pin can be pulled out.



TIP!

To prevent paint damage, remove the roller cylinder.

- Disconnect the plug connection for the wiring harness on the tractor side and open the releasable cable ties on the harrow frame. The wiring harness is then only still fastened to the roller. Install the top link sensor from the harrow onto the roller.
- Now carefully lower the harrow until the connecting pins for the roller are completely detached from the roller frame. Now you can slowly drive forward and uncouple the harrow.
- Insert the connecting pins from the harrow in the roller frame. If you want to couple the roller, you still have to use the fitting balls with the supplied spacer bushings (Figure 11).

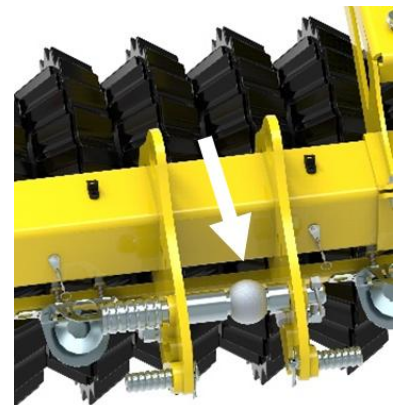
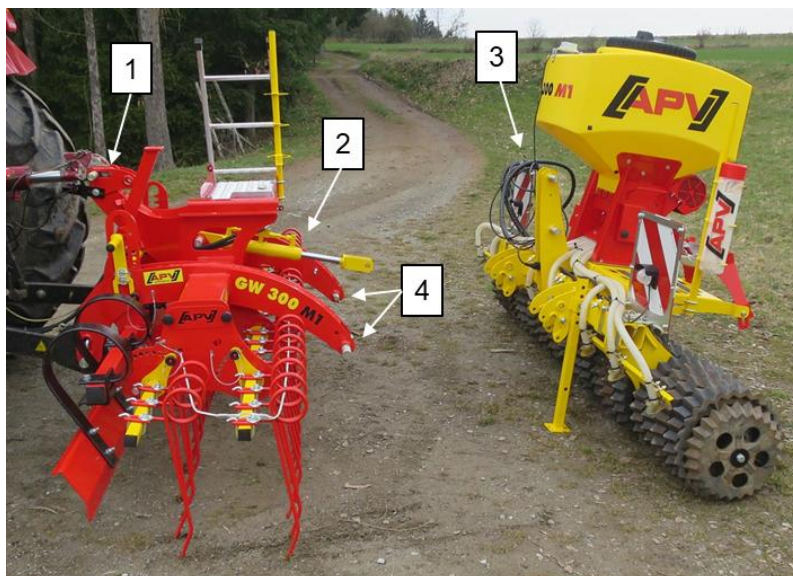


Figure 11



- 1: Top link sensor
- 2: Roller cylinder
- 3: Wiring harness
- 4: Connecting pin

Figure 12



TIP!

If you are using the roller in conjunction with a pneumatic seeder, position the parking support in the intended parking position (in the hollow profile of the roller frame). This prevents impact of the seed on the support and therefore an uneven spread pattern.

8.4 MOUNTING FOR FRONT OPERATION



NOTE!

For mounting at the front, you need the "Front mounting" accessories kit (Item no.: 06031-2-112).

- Put the pins with the balls in Position 2 (see Figure 13).
- Install the front mounting (see Figure 13).
- Connect the roller cylinder or the top link spindle with the top link rocker and the elongated slot of the implement.
- Now you can mount the harrow.



NOTE!

To install the front mounting, 25-mm and 24-mm pins are used. Since the pin dimensions can hardly be distinguished visually, the 24-mm pins are marked with a yellow shrink hose. (Figure 14) Moreover, each recess for installing a 24-mm pin is marked with a round yellow sticker (on the roller cylinder and on the harrow frame in this case, on which the top link rocker is fastened. Figure 15).



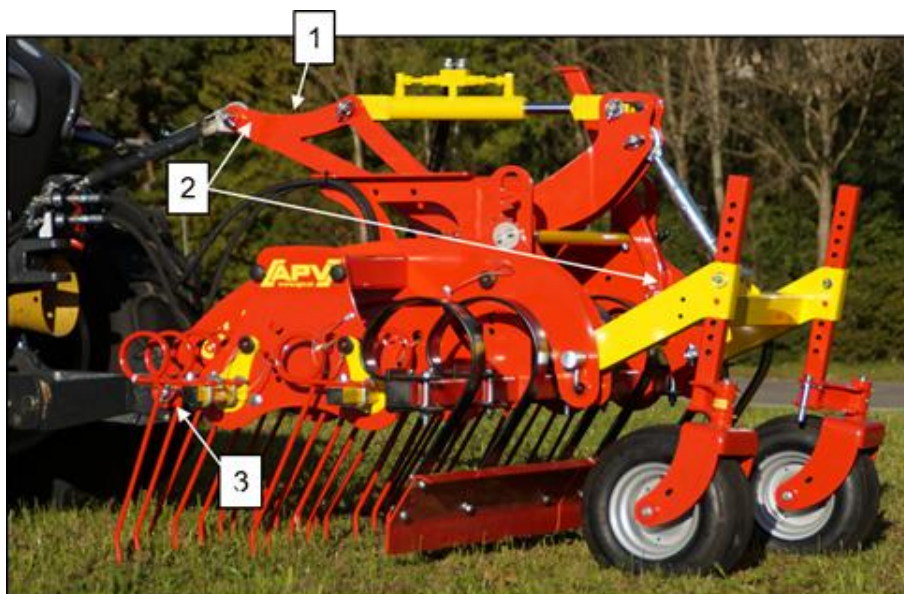
NOTE!

To achieve good ground adaptation, the front hydraulic system is operated in float position during operation. If this is not possible, make sure that the top link pin is in the middle of the elongated slot.



CAUTION!

The maximum permissible total weight for the front hydraulic system as well as the front axle must be observed!



- 1: Top link rocker
- 2: Front mounting
- 3: Position 2

Figure 13



Figure 14

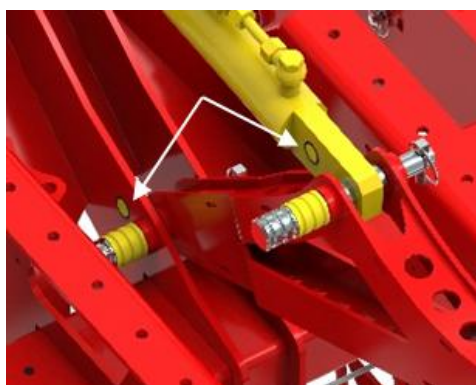


Figure 15

9 LAYOUT AND MODE OF OPERATION

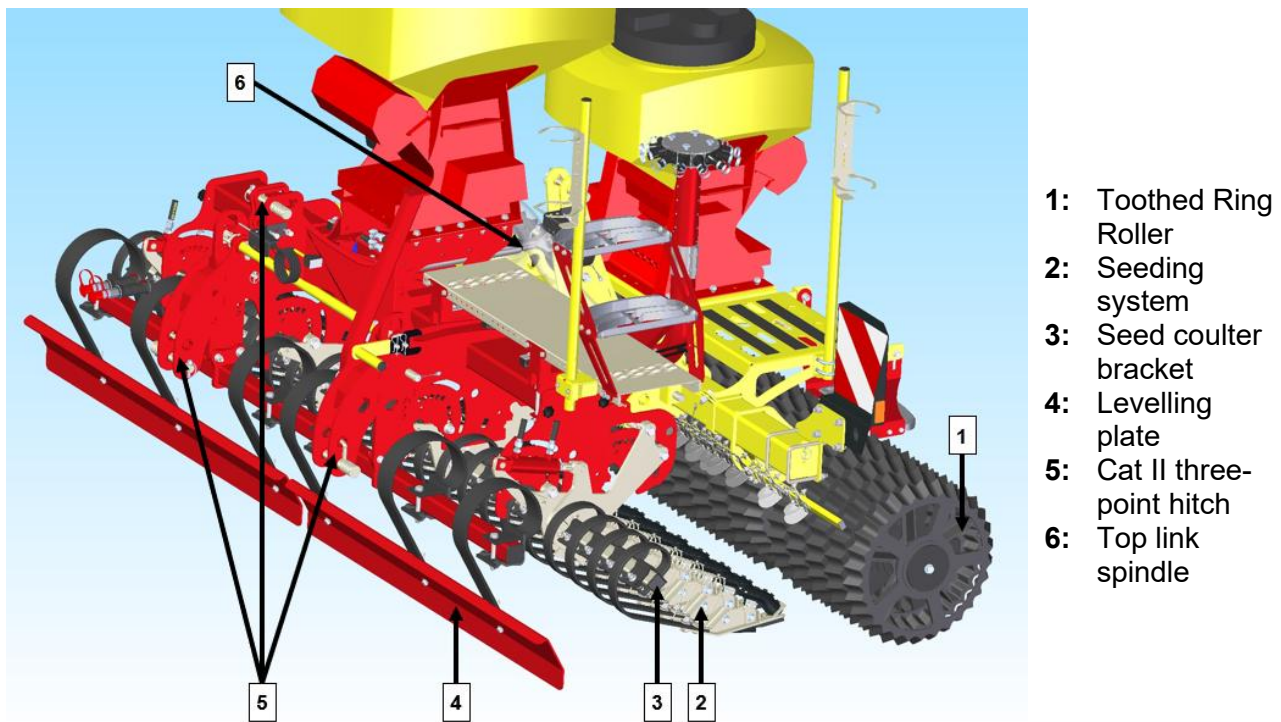


Figure 16

Thanks to its robust and compact design, the Grassland Combi GK 250 S / GK 300 S is ideal for new seeding, reseeding, and controlling weeds on grassland.

The height-adjustable levelling plate removes coarse unevenness in the grassland and spares the seeding system unnecessary strain.

Thanks to the narrow line spacing of the individual tines on the front-mounted harrow, the sward is optimally prepared and the reseed can germinate rapidly. With the high contact pressure of the utilised roller, soil closure over the seed is improved and the nutrient supply for the reseed is optimised.

To obtain the best possible rolling results, a forward speed of 8 km/h should not be exceeded. A speed of 6-12 km/h is ideal for grassland.

10 WORKING POSITION AND SETTING THE WORKING DEPTH

10.1 DEPTH ADJUSTMENT

To adjust the depth of the GK 250 S / GK 300 S, two work steps are required.

- To adjust the working depth of the seeding system, appropriately adjust the top link relative to the roller using the top link spindle.
- The lower link must be positioned such that the frame of the implement is horizontal to the field. Reference points for this are the shaped tube (160 x 80 mm) or the pneumatic spreader (this should be positioned vertically to the field).

During operation, the top link on the implement-side must always be attached in the elongated slot. For normal operation, the pin should be in the middle of the elongated slot.

If you want to use the GK 250 S / GK 300 S with the roller lifted, i.e. the roller is in the highest position and the roller cylinder or top link spindle is completely retracted, then you must firmly fasten the top link so that it is fixed in place on the implement side. This position must also be used in road traffic.

10.2 LEVELLING PLATE

The levelling plate eliminates molehills after the winter and serves to roughly level the grassland. The height should be adjusted so that it runs along the sward just above the ground. It should not scratch into the sod. However, if the sod is very uneven, allowing the levelling board to slightly penetrate into the soil can improve the levelling effect on the long term.

To adjust the working height, remove the 2 locking pins, crank the levelling plate to the desired height and fix it in place at the new height with the locking pins (Figure 17).

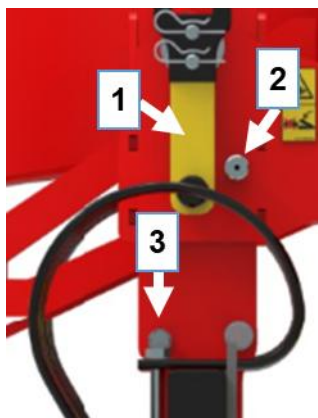


Figure 17



Figure 18

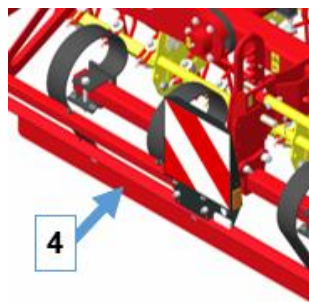


Figure 19

1	Crank
2	Locking pin
3	Shear bolt
4	Levelling plate

CAUTION!

Only operate the crank with one hand; two-hand operation poses a considerable risk of injury (hand or finger injuries). The crank has a slip safeguard for better handling and transmission of force.

Note that crank operation requires very high actuation forces to adjust the levelling plate. If the user or operator is unsure as to whether the required actuation forces can be applied, the levelling plates must be secured with blocks placed underneath them.

**NOTE!**

Remove the bolt on the right first, and then the left bolt, so that you can lift the levelling plate more easily with the crank.

The levelling plate has a shear-off safety to prevent damage to the frame due to excessive loads on the levelling plate.

**NOTE!**

The implement accessories include 3 sets of shear bolts. When these have been used, attention must be paid to the quality of the replacement bolts. Only M12x60 bolts with a quality of 4.6 may be used.

The tightening torque of 10 Nm for the M12 bolts may not be exceeded. If the M16 bolts behind have become loose, a maximum tightening torque of 15 Nm must be observed (Figure 17).

10.3 USING INDIVIDUAL TOOLS

It is possible to use individual tools on the implement (levelling plate, seeding system, harrow and roller) separately or in any combination.

For example, the roller can be used alone by completely extending the roller cylinder or top link spindle. In this way, you can also use the implement on field crops for rolling after seeding.

If you just want to level and roll, the roller and the levelling plate are moved downwards and the tine rows or seeding system are moved into the highest position, so that they are lifted off of the ground.

10.4 MECHANICAL ADJUSTMENT WITH THE SERIES OF HOLES

In addition to the depth setting, the aggressiveness of each tine row can also be changed individually on the implement. This makes it possible to compensate for the different levels of wear of the individual tines.

For series of holes adjustment, the bolts for the tine sections are inserted either in a higher / more forward or lower / more rearward hole (see Figure 20).

The tine rows 8 mm/black or 10 mm/red or 12 mm/red tear open the sward and produce an optimal seedbed for the new grasses.

If the tines should work more aggressively or more gently, the pin must be placed either in one of the rear holes or in one of the front holes.

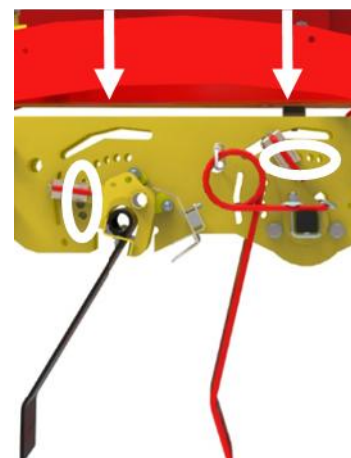


Figure 20

At an optimal forward speed, the tines make an elliptical motion. The steeper the position of the tines, the smaller the motion. The flatter the position of the tines, the larger the motion. If the sward is dense and intense tillage is required, the tines should be positioned more steeply (see Figure 20).

10.5 HYDRAULIC TINE ADJUSTMENT

As an option, the ground contact pressure of the tine rows (10 mm or 12 mm tines/red) on the Meadow Harrow is hydraulically adjustable.



Figure 21

10.6 SEEDING SYSTEM

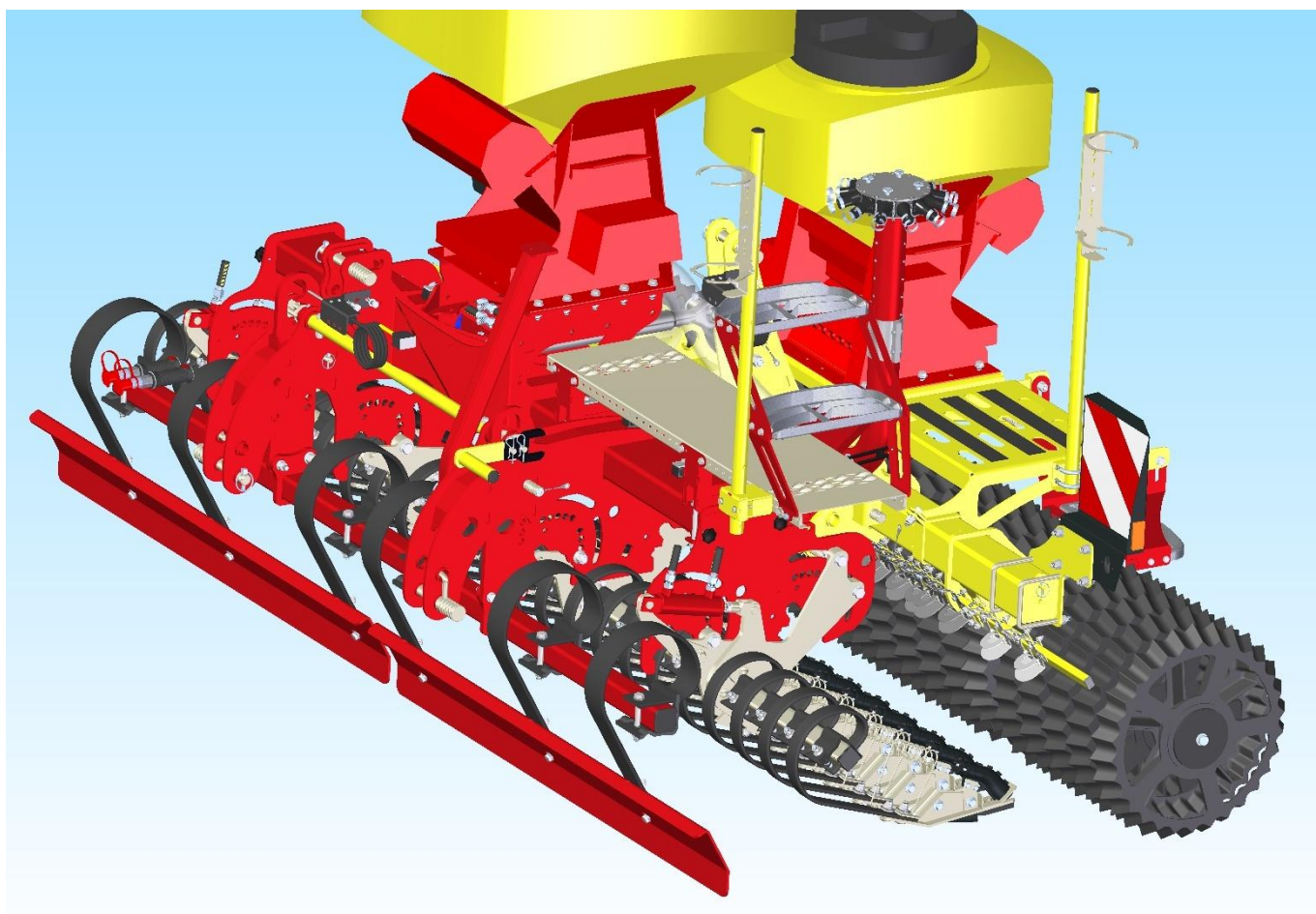


Figure 22

The seeding system is ideal for reseeding grassland. The tines on the front-mounted Meadow Harrow tear open the soil, and behind it, the seed is precisely placed in the soil by the seed coulters. The roller presses the seed into the soil to achieve better germination. With this system, cover crops or cereals can also be precisely and accurately seeded.

The hydraulic circuit of the seeding system is for adjusting the ground pressure of the seed coulters.

CAUTION!

In highly uneven or poor soil conditions, it may be necessary to retract the seeding system when turning.

10.7 ADJUSTING THE SEEDING SYSTEM

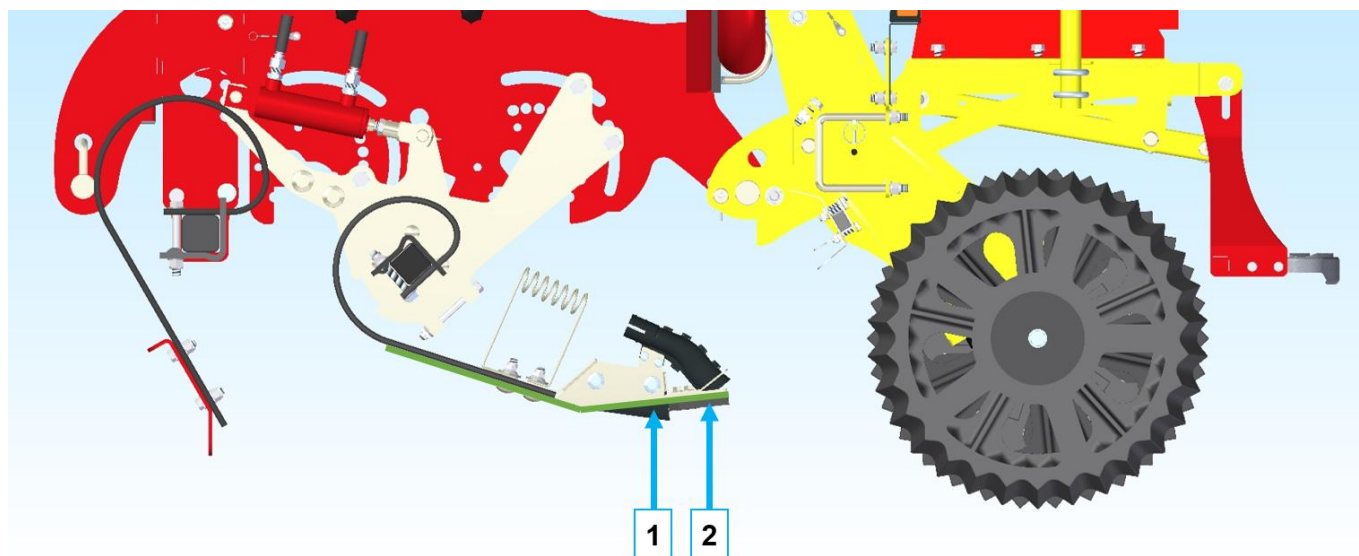


Figure 23

To optimally adjust the seeding system, ensure that the area marked in green is slightly above the ground. This ensures that these particular parts are not subjected to wear, because they are not wear parts.

The plate marked in green should only slide over the soil, while the wear parts, namely the slitters (1) and furrow former (2), do the actual work.

For the correct adjustment, the top link spindle of the roller must first be set correctly. Then the cylinder of the seeding system is finely adjusted.

11 MAINTENANCE AND CARE

11.1 GENERAL MAINTENANCE INSTRUCTIONS

To maintain the implement in good condition even after a long service life, the following instructions must be observed:

- **Before every commissioning, check the hydraulic hose lines for wear, damage and ageing.**
- When replacing the hydraulic hose lines, lines must be used that comply with the technical requirements of the implement manufacturer.
- In Point 6, you will find some basic safety regulations for maintenance work.
- Original parts and accessories are designed especially for the machines or implements.
- Please note that spare parts and accessories not supplied by us have also not been tested and approved by us.
- The installation or use of such products can therefore possibly negatively change or impede the constructional properties of your implement. The manufacturer rules out any liability for damages resulting from the use of non-original parts and accessories.
- The manufacturer is not liable for any unauthorised modifications and the use of components and auxiliary parts.
- **CAUTION!** Liquids escaping under high pressure can penetrate the skin. For this reason, a physician must be consulted immediately in case of accident!!!
- After cleaning, lubricate all of the grease points and distribute the grease evenly in the bearing points (e.g. perform a short test run).
- Do not use a high pressure cleaner to clean bearing and hydraulic parts.
- The paint can be damaged by cleaning with excessive pressure.

- During the winter, the implement should be protected against rust with an environmentally-friendly product.
- Park the implement protected from weather conditions.
- Put down the implement in a way that the tines are not needlessly strained (roller all the way down, use the parking supports at the front).

11.2 REGULAR MAINTENANCE INSTRUCTIONS

- All bolted connections should be re-tightened at the latest after 3 operating hours and again after 20 hours, and then checked regularly (loose bolts can cause significant consequential damage, which is not covered by the warranty).
- The grease points on the joints and bearings must be lubricated regularly (approx. every 10 operating hours with universal grease).
- Regular visual inspection of the tine safety must be performed.
- For implements with fast coupler, the guide slots must also be lubricated.
- After the first 10 operating hours and every 50 operating hours thereafter, the hydraulic units, hydraulic hoses, and hydraulic couplings must be checked for leaks and the screw connections must be tightened if necessary.
- **Hydraulic hose lines must be replaced at the latest 6 years after their manufacturing date. The manufacturing date of the hydraulic hose lines is specified on the fittings.**
- The platform kit and its access ladder must be visually inspected on a regular basis.
- The rubber for fastening the access ladder of the platform kit must be checked regularly for wear and replaced if necessary. It should only be replaced by trained specialist personnel and with original parts.

11.3 CHANGING THE TINES

To replace broken or worn tines, unscrew the nuts and take off the tines.

- The new 10 mm or 12 mm tine, as shown in Figure 24, is hooked into the hooks and the nuts are firmly retightened. Pay attention to the proper line spacing! The tines in the rear row cut the distance of the front tines in half.
- The new 8 mm tine, as shown in Figure 25, is fixed in place with a bolt. Ensure that the bolt rests firmly on the tine and that all tines form a straight line. There must be one washer above and below the tine respectively, and one washer below the mount.
- Always use new lock nuts.

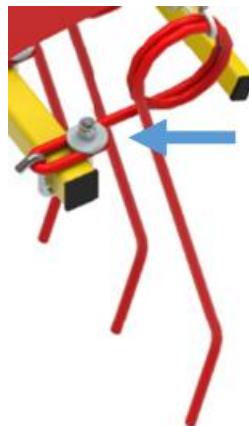


Figure 24



Figure 25

11.4 TINE SAFETY

The Meadow Harrow is factory-equipped with a tine safety element that prevents loss of the 10 mm or 12 mm tines by means of a rope. This tine safety element safeguards the tines in the event of damage.

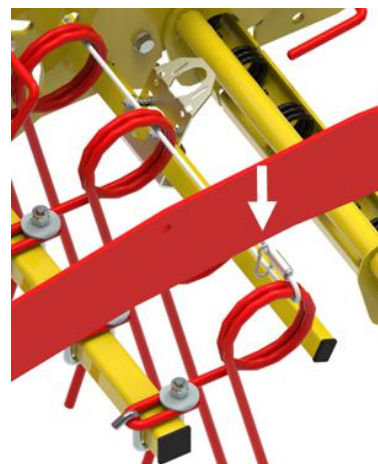


Figure 26

11.5 REPAIRS AND SERVICE

In case of failure or damage to the Grassland Combi, please contact the manufacturer. The contact data can be found in chapter 4.

12 INFORMATION ON NATURE CONSERVATION AND ENVIRONMENTAL PROTECTION

Reduction of noise pollution during use

Any loose parts (e.g. chains) should be attached to prevent unnecessary noise.

Energy-efficient use

The tines of the Grassland Combi should not penetrate into the soil deeper than necessary. By doing so, the towing vehicle is not unnecessarily strained and fuel can be saved.

Recyclable raw materials during disposal

Many parts of the Grassland Combi are made of steel or spring steel (such as the frame, tine section, tines, ...) and can be accepted and recycled by a waste disposal plant.

13 TECHNICAL DATA

Type designation:	GK 250 S	GK 300 S
Mode of operation:	Level by means of leaf springs with wear plate, selective, precise seed placement by means of the seed coulters Optimum germinating conditions by rolling over the seed	
Working width [m]:	2.40	2.96
Transport width [m]:	2.50	3.00
Dimensions (with seeder) (H x W x D):	1.82 m x 2.50 m x 2.00 m	1.82 m x 3.00 m x 2.00 m
Working depth:	0 to 40 mm	
Seed coulter:	20 hydraulically adjustable seed coulters Coulter pressure 70 kg	24 hydraulically adjustable seed coulters Coulter pressure 70 kg
Line distance:	125 mm	
Mounting/hitch (three-point, ...):	CAT II	
Weight (with 1 seeder):	approx. 1400 kg	approx. 1640 kg
Weight (with 2 seeders):	approx. 1450 kg	approx. 1700 kg
Minimum tractor performance:	90 PS	120 PS
Special features:	All components can be used individually or in different combinations, and they offer separability into a front implement and a rear implement	
Special accessories:	Lighting with warning signs Front mounting for harrow Mounting device for seeder Platform kits for harrow and roller Dispersion plate installation on the harrow and roller Sensor set GPSa + top link linkage sensor	
Combination options:	Pneumatic Seeder 120-300 & multi-metering system with electric and hydraulic fan	

14 HYDRAULIC DIAGRAM

T:	Tractor-side
G:	Implement-side
1:	Control unit
2:	Coupling sleeve BG 2
3:	Coupling plug BG 2
4:	Load-holding valve
5:	T-connection
6:	Throttle disc diameter 0.8
7:	Double-acting cylinder for seed coulters

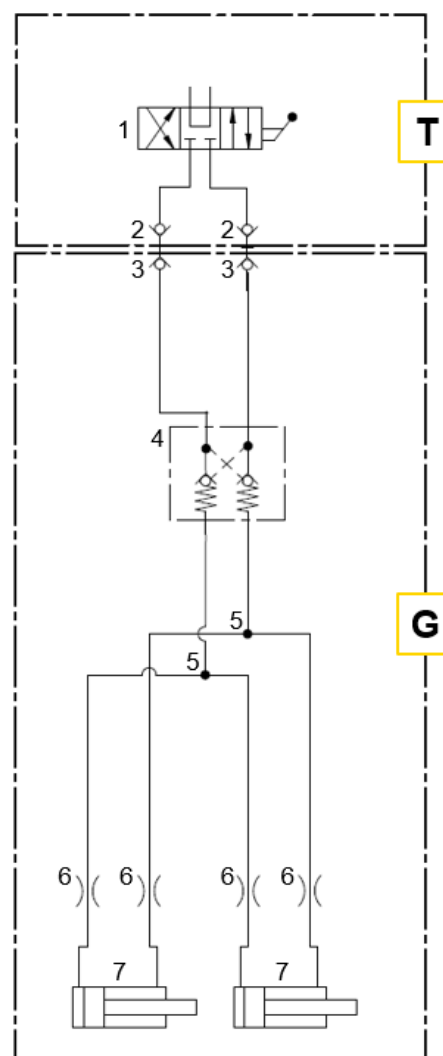


Figure 27

15 ROAD TRANSPORT OF THE GK 250 S / GK 300 S

15.1 TRANSPORT ON PUBLIC ROADS (GENERAL INFORMATION)

- Make sure than none of the safety splints or similar were lost during operation.
- Comply with the road traffic regulations of your country's legislation.
- Only relieve the hydraulic hoses at home by putting the tractor control unit into float position.
- The holder for the warning sign with lighting (optional equipment) is mounted on the carrier for the roller and should be positioned vertically to the road.
- On the implement-side, the top link must be firmly attached - never in the elongated slot of the implement.
- If you are using a ground wheel for the pneumatic spreader with a side bracket, please remove it and hang it on the frame so that the transport width of 3 m is maintained.
- Protective covers and equipment items that warn of the danger points in road traffic, must be checked before each use!

15.2 TRANSPORT ON PUBLIC ROADS (MOST IMPORTANT SPECIFICATIONS)

- The axle load and the total weight of the towing vehicle may not be exceeded.
- The mounted implement must be identified with warning signs or stickers with red and white slanted lines (according to DIN, ÖNORM or the respective country-specific STANDARDS).
- Any part posing a traffic hazard or dangerous parts must be covered and additionally identified with warning signs or stickers. Warning signs or stickers should be visible at a height of max. 150 cm above the road when driving.
- Lighting equipment of the towing vehicle may not be hidden by the implement, otherwise they must be replicated on the mounted implement.
- The steering capacity of the tractor must not be impeded or reduced by the mounted implement!

15.3 CALCULATION OF THE WEIGHT RATIOS

If you want to drive with an implement that is attached to the 3-point linkage, you must ensure that you do not exceed the tractor's permissible axle loads and tyre load capacities with the mounted implement. The front axle of the tractor must be loaded with at least 20 % of the net weight of the tractor. All of these values can be determined with this calculation:

Specifications:

- | | |
|-------|--|
| T_L | Tractor net weight |
| T_V | Front axle load of the empty tractor |
| T_H | Rear axle load of the empty tractor |
| G_H | Total weight of the rear-mounted implement |
| G_V | Total weight of the front-mounted implement |
| a | Distance from the centre of gravity of the front-mounted implement to the centre of the 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-mounted implement |

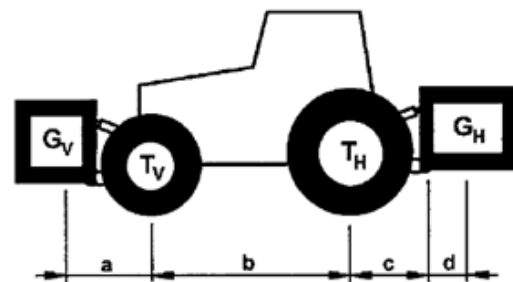


Figure 28

Weight calculations:

1. Calculation of the minimum front ballasting for rear-mounted implements $G_{V \min}$:

$$G_{V \min} = \frac{G_H \cdot (c + d) - T_V \cdot b + 0,2 \cdot T_L \cdot b}{a + b}$$

This result is entered in the table on the next page.

2. Calculation of the minimum rear ballasting for front-mounted implements $G_{H \min}$:

$$G_{H \min} = \frac{G_V \cdot a - T_H \cdot b + 0,45 \cdot T_L \cdot b}{b + c + d}$$

This result is also entered in the table.

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

If the required minimum front ballasting ($G_{V \min}$) is not reached with the front-mounted implement (G_V), the weight of the front-mounted implement must be increased to the weight of the minimum front ballasting!

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

Now enter the calculated actual front axle load and the permissible front axle load specified in the tractor operating manual in the table.

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

If the required minimum rear ballasting (G_H) is not reached with the rear-mounted implement ($G_H \min$), the weight of the rear-mounted implement must be increased to the weight of the minimum rear ballasting!

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

Now enter the calculated total weight and the permissible total weight specified in the tractor operating manual in the table.

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

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

Enter the calculated actual rear axle load and the permissible rear axle load specified in the tractor operating manual in the table.

6. Tyre load capacity:

Enter the doubled value (two tyres) for the permissible tyre load capacity (see e.g. tyre manufacturer documents) in the table.

15.4 TABLE FOR THE WEIGHT RATIOS

	Actual value acc. to calculation		Permissible value acc. to operating manual		Double the permissible tyre load capacity (2 tyres)
Minimum ballast front/rear	kg				
Total weight	kg	≤	kg		kg
Front axle load	kg	≤	kg	≤	kg
Rear axle load	kg	≤	kg	≤	kg

**The minimum ballast must be attached to the tractor as a mounted implement or ballast weight!
The calculated values may not be higher than the permissible values!**

16 LIGHTING CIRCUIT DIAGRAM

- R** Right
L Left
1 12 V plug, 7-pin
2 Rear light, right
2.1 Turn signal
2.2 Rear light
2.3 Brake light
3 Rear light, left
3.1 Brake light
3.2 Rear light
3.3 Turn signal

Plug and cable assignment:

No.	Desi g.	Colour	Function
1	L	yellow	Turn signal, left
2	54g	---	----
3	31	white	Ground
4	R	Green	Turn signal, white
5	85R	brown	Rear light, right
6	54	red	Brake light
7	58L	black	Rear light, left

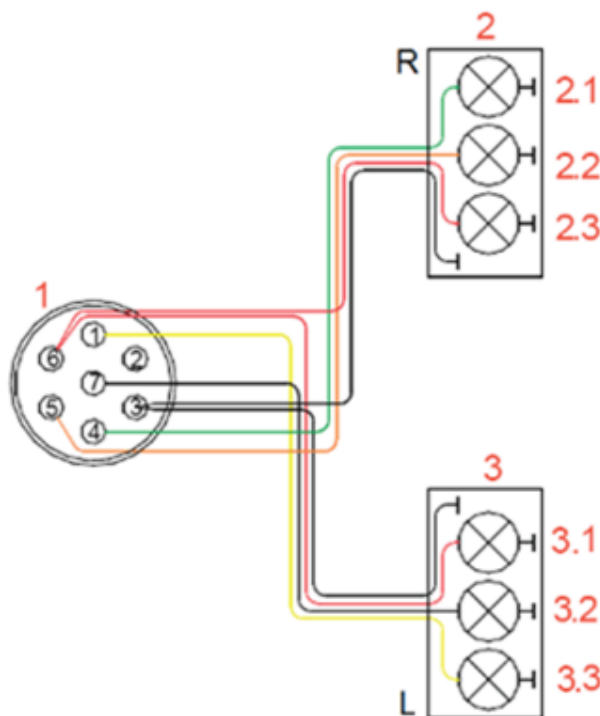


Figure 29

17 DECOMMISSIONING, STORAGE AND DISPOSAL

17.1 DECOMMISSIONING THE IMPLEMENT

To ensure that the implement remains fully functional, even if it is out of operation for longer periods of time, it is important to take precautions for storage: To do so, observe Point 17.2.

17.2 STORAGE OF THE IMPLEMENT

- The implement must be stored in a dry place protected from weather conditions to ensure that it remains functional even if it is stored for a longer period of time.
- The parking surface must be suitable for parking the implement. The ground must be firm and level, so that the stands do not sink in and the Grassland Combi does not roll away.
- To ensure safe parking of the implement, lower the stand of the Grassland Combi.
- Make sure that the tines do not touch the ground in the process to prevent damage to the tines.
- The stand must be secured with a spring cotter on the pin to prevent accidental loosening.
- Secure the implement against unintentional rolling away.
- Then the hydraulic hoses to the tractor must be depressurised and uncoupled.
- Nothing may be deposited or stored on the implement.
- The Grassland Combi must always be parked and stored in a secured area. Unauthorized commissioning must be prevented.

17.3 DISPOSAL

Disposal of the implement must be performed according to the local disposal regulations for implements.

18 ACCESSORIES

The following parts are available as accessories:

18.1 LIGHTING WITH WARNING SIGNS (ON BOTH SIDES)

Is required when the GK is transported on public roads.

Scope of delivery:

2 warning signs, bracket, installation material

Order number:

WS 250: 06031-2-097

WS 300: 06031-2-098

GW 250: 06031-2-099

GW 300: 06031-2-100



Figure 30

18.2 ACCESSORIES KIT FOR DISPERSION PLATE INSTALLATION ON THE GK

Scope of delivery:

1 hollow profile 30 x 20 mm, 6 or 8 clamping plates for dispersion plates, installation material

Order number:

GK 250 S, 6 clamping plates: 06031-2-101

GK 300 S, 6 clamping plates: 06031-2-102

GK 250 S, 8 clamping plates: 06031-2-103

GK 300 S, 8 clamping plates: 06031-2-104



Figure 31

18.3 PLATFORM KIT FOR THE ROLLER OF THE GK

Note that the Pneumatic Seeder must be mounted in compliance with ISO 4254-1.

Scope of delivery:

Platform kit, climbing aid, installation material

Order number:

GW: 06031-2-105

GK 250 S: 06031-2-106

GK 300 S: 06031-2-107



Figure 32

18.4 MOUNTING KIT FOR PNEUMATIC SEEDER ON MEADOW HARROW OR ROLLER

Note that the Pneumatic Seeder must be mounted in compliance with ISO 4254-1.

Scope of delivery:

2nd support for the roller, PS bracket, installation material

Order number:

PS120-500 on WS: 06031-2-108

PS120-300 on GW: 06031-2-109

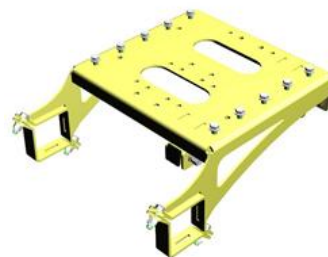


Figure 33

18.5 MOUNTING KIT FOR MULTI-METERING SYSTEM ON MEADOW HARROW OR ROLLER

Please note that the Multi-Metering System must be mounted in compliance with ISO 4254-1.

Scope of delivery:

2nd support for the roller, MD bracket, installation material

Order number:

MD on GW: 06031-2-110

MD on WS: 06031-2-111

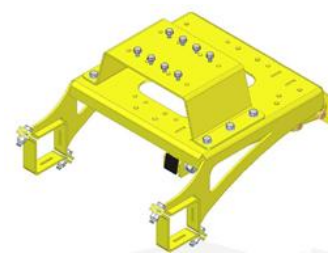


Figure 34

18.6 FRONT-MOUNTED MEADOW HARROW OF THE GK

Scope of delivery:

2 steered feeler wheels, feeler wheel bracket, CAT 2-1 lower link pin, CAT 2 top link (max. length 1730 mm), installation material

Order number:

06031-2-112



Figure 35

18.7 SENSOR SET - GPSA + LINKAGE SENSOR TOP LINK

Scope of delivery:

GPSa sensor, linkage sensor for the top link, installation material

Order number:

06031-2-113



Figure 36



Figure 37

18.8 SENSOR SET ISOBUS SPLITTER CABLE FOR 2 PNEUMATIC SEEDERS

Order number:

06031-2-114



Figure 38

19 SPARE PARTS

You have the option to order your required spare parts directly through our online spare parts catalogue. To do so, scan the QR code with your smartphone - you will be taken directly to our online spare parts catalogue. Please keep your product number / serial number at hand.

You can also view our online spare parts catalogue on our website www.apv.at in the Service area.



If you have any questions regarding spare parts or your order, our Customer Service (see point 4 for contact data) is also happy to assist you.

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NOTES

NOTES



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