TINED WEEDER PRO

VS 470 M1, VS 600 M1, VS 750 M1, VS 900 M1, VS 1200 M1

OPERATING MANUAL

PLEASE READ CAREFULLY BEFORE INITIAL OPERATION

Translation of the original operating manual

Version: 2.1 en_US; item number: 00602-3-743

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1 EC DECLARATION OF CONFORMITY

in accordance with Machinery Directive 2006/42/EC
and Low Voltage Directive 2006/95/EU

APV-Technische Produkte GmbH
Dallein 15
3753 Hötzelsdorf, Austria

hereby declares that the mounted implement series described below complies with the relevant essential health and safety requirements of the directives cited above by virtue of its design and construction, and in the configuration we have placed on the market.
If the mounted implements are modified without prior consultation with APV-Technische Produkte this declaration shall lose its validity.

Designation of the mounted implement series:
TINED WEEDER PRO VS 470 M1
TINED WEEDER PRO VS 600 M1
TINED WEEDER PRO VS 750 M1
TINED WEEDER PRO VS 900 M1
TINED WEEDER PRO VS 1200 M1

Serial numbers:
Starting at 07032-01000 – starting at 07018-01000 – starting at 07019-01000 – starting at 07020-01000 starting at 07014-01000

Year of manufacture: from **2021**

Relevant EC directives:
Directive on machinery – Machinery Directive 2006/42/EC

For the planning, design, construction and marketing of the mounted implements VS 600 M1 to VS 1200 M1, the following harmonized European standards were applied in addition to the Directives, in particular:

EN ISO 12100:2010 Safety of machinery – General principles for design – Risk assessment and risk reduction
EN ISO 13857:2020 – Safety distances to prevent hazard zones being reached by upper and lower limbs
EN ISO 13849-1:2015 – Safety of machinery – Safety-related parts of control systems

Responsible for the technical documentation: Planing and Design department, Dallein 15

Ing. Jürgen Schöls
Managing Director
(Authorized person in the EU)

Dallein/Hötzelsdorf, 2023-02-15

2 IDENTIFICATION OF THE DEVICE

The Tined Weeder Pro can be clearly identified through the following information on the type plate:

- Designation
- Model
- Production number

Position of the type plate
The type plate is on the inside of the main frame, to the left in the direction of travel, on the front hollow profile (see Figure 1).

Figure 1

The illustration below (Figure 2) shows the structure of the type plate.

Figure 2

The information on the type plate has the following meaning:

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

NOTE!
Always specify your implement's production number/serial number for inquiries or warranty claims.

3 SERVICE

Contact us at our Service address in the following cases:

- If, despite of the information in this operating manual, you have questions concerning the handling of this device
- For questions regarding spare parts
- To commission service and maintenance tasks

Service address:

APV – Technische Produkte GmbH
Zentrale: Dallein 62
3753 Hötzelsdorf
AUSTRIA

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

4 WARRANTY

When taking delivery of the device, check it immediately for any transport damage. Subsequent complaints arising from transport damage can no longer be acknowledged.
Based on a warranty activation (see point 4.1), we provide a six-month factory warranty, starting from the date of first use (your invoice is the warranty certificate).
This guarantee shall apply in the event of material or design errors and does not extend to parts that become damaged through normal or excessive wear.

The warranty shall become null and void under the following circumstances,

- If damage occurs due to external force.
- In the event of an operating error.
- If the kW/HP limit is significantly exceeded.
- If the implement is altered, extended or fitted with third-party spare parts without our authorization.

4.1 WARRANTY ACTIVATION

Every APV implement must be registered immediately after delivery. The registration activates the claim for warranty performances and thus APV can guarantee the best service.
To activate the warranty for your implement, simply scan the QR code with your smartphone – this will take you directly to the Service area of our website.

Of course, you can also activate the warranty through our website www.apv.at in the Service area.

5 SAFETY INSTRUCTIONS

This chapter contains general rules of behavior for proper use of the implement and safety instructions that you must strictly comply with for your own safety.

The list is quite extensive, and some information does not just pertain to the provided implement. However, the summary of the information will often remind you of safety rules that are unconsciously disregarded when using the machines and implements in day-to-day work.

5.1 INTENDED USE

The Tined Weeder Pro VS 470 M1 to VS 1200 M1 is designed and built for implementation in agricultural operations.
It is designed so that its tines penetrate into the soil, loosen it up, and remove weeds that may be present in the soil.

Any use that beyond this is non-intended use. The manufacturer is not liable for any resulting damage, the user alone bears the associated risk.
Examples of non-intended use include:

- Do not operate the implement on grassland, it is only designed for use on fields within the specified boundary conditions.
- The maximum working speed is 12 km/h.
- Cornering is not permitted.
- Do not push the Tined Weeder Pro backward after it has been brought into working position. Roll-back must always be avoided when starting up, as well.
- Ensure that the side frames do not hit the ground when turning at headlands.
- Before placing the implement on the ground, ensure that the tines are in transport position and that the implement is aligned parallel to the ground (top link).

- Do not place the implement on the ground at standstill, if the tines are pre-tensioned in working position. Only place the implement on the ground when driving forward.
- Do not fold the implement when the tines are pre-tensioned.
- If the tines are placed on the ground, do not reduce the preload, if the implement is at standstill. This is not a problem when driving forward.

Intended use also includes compliance with the operation, service and maintenance conditions that are prescribed by the manufacturer.

The implement must only be used, maintained, and repaired by people who are familiar with the implement and have been instructed with regard to the hazards. Always hand over the safety instructions to other users.

The relevant, country-specific accident prevention regulations and other generally recognized safety, occupational health and safety, and road traffic regulations must be complied with.
Unauthorized changes to the implement exclude any and all liability on the part of the manufacturer for the resulting damage. This causes the Declaration of Conformity to lose its validity.

5.2 GENERAL SAFETY INFORMATION AND ACCIDENT PREVENTION REGULATIONS

- **The operator must have read and understood this operating manual before handling the implement.**
- **The owner must train and instruct their personnel. Personnel must have read and understood this operating manual before handling the implement.**
- Always keep the operating manual in the vicinity of the implement for reference purposes.
- When passing on the implement, always pass on the operating manual.
- Do not use the implement if you are tired or under the influence of drugs, alcohol or medications.
- **Each time before start-up, check the implement and the tractor for road safety and operational safety (e.g. defective parts, connections, hoses, guards, etc.)!**
- **Before each use, the folding device and its securing devices (securing chain) must be checked for proper function and effect.**
- Inspections before and during operation, as well as regular care and maintenance of the implement, must be performed.
- Comply with the generally valid safety regulations and accident prevention regulations of the respective country!
- This implement must only be used by persons who are informed of the danger zones and who are familiar with the regulations for transport on public roads.
- The warning and information signs affixed on the implement provide important instructions for safe operation. Do not remove the warning and information signs under any circumstances!
- Comply with the applicable country-specific road traffic regulations when using public traffic routes!
- **Before beginning work, familiarize yourself with all the devices, activating elements, and their functions. It is too late to do so during work implementation!**
- The user should wear close-fitting clothing! Avoid wearing loose clothing!
- Keep the implements clean to prevent a fire hazard!
- Always ensure that the implement is secured against unintentionally rolling when parking.
- Check your immediate surroundings before start-up! (Children!) Ensure that you have an adequate view!
- Carrying passengers while working and transporting them on the implement are prohibited!
- Climbing onto the implement is only allowed if a platform kit is installed.
- When using the platform kit, ensure that the implement has come to a standstill, that it is also unfolded, and that it is lowered onto the ground.
- Transporting work materials on the implement is prohibited!
- Properly hitch the implement and fasten only to the prescribed fixtures!
- Special caution is required when coupling implements onto or uncoupling implements from the tractor!

- Place the support devices in their respective positions during mounting and dismounting the implement! (Stability)
- Always install the weights properly at their designated fastening points!
- Pay attention to the permissible axle load, total weight, and transport dimensions!
- Check and install transport equipment, such as lighting, warning devices, and any protective devices!
- Never leave the driver's platform while implement and tractor are in motion!
- Handling, steering, and braking capability are also affected by mounted or attached implements and ballast weights. Consequently, ensure that there is adequate steering and braking capability!
- Take into account the wide sweep and/or the implement's centrifugal mass when turning (caution: tractrix curve)!
- Only operate the device when all protective devices are installed and in the protective position!
- Do not position yourself in the work area!
- Do not position yourself in the implements turning and swivel range!
- Hydraulic folding frames must only be activated if no one is in the swivel range.
- There are crushing and shearing points on power-operated parts (e.g. hydraulically-operated parts)!
- Always ensure that your have a secure, safe stance when using implements with manual folding!
- For high-speed implements with ground-drive tools – the oscillating mass that continues running poses a hazard after lifting-out! Only approach implement after it has come to a complete standstill!
- Before exiting the tractor, park the implement on the ground, turn off the engine and remove the ignition key!
- Do not allow anyone to enter the area between the tractor and implement without securing the vehicle from rolling off via the parking brake and/or the wheel chocks!
- Secure the folded-in frame and lift-out units in transport position!
- Swing in and lock the packer catch arms before road transport!
- Lock the track marker in transport position!
- A clear view of the attached tined weeder and the dangerous movement zone must be ensured (to monitor the process).
- Cleaning is recommended as specified in the maintenance manual (see point 8). In this regard you must proceed as specified in the maintenance manual and protective equipment must be used.
- Do not work under the implement – especially when it is lifted.
- The operator must regularly check the implement (before each use) for breakage, cracks, abrasion points, leaks, loose bolts and threaded connections, vibrations, abnormal noises, and proper function.
- Safety goggles and hearing protection must be used.
- During mounting, the operator must particularly ensure compliance with tractor requirements regarding power, axle loads, and weight distribution as stipulated in the operating manual, and the operator must ensure that the connections are properly established as specified in the operating manual.
- The operator must carefully and cleanly establish the connections to the tractor hydraulic system when installing the implement.
- Ensure that the hydraulic couplings are not soiled.
- According to the operating instructions, the tractor vehicle speed must be maintained between 1 and 12 km/h when performing work operations.
- If necessary, use additional lighting (e.g. hand lamp) for repair or maintenance tasks.
- When implement parts are moving (e.g. during the folding or preloading procedure) ensure that no one is standing in the danger zone of the implement – there is a risk of crushing.
- When driving under low obstructions or through narrow obstructions (e.g. power lines, underpasses, etc.), pay attention to the height and width of the implement to avoid collisions.
- If implement parts are lost or broken, they must be immediately replaced with original parts by trained specialist personnel.

5.3 ATTACHED IMPLEMENTS

- Before mounting and dismounting implements on the three-point linkage, bring the operating devices into the proper position that prevents unintentional lifting or lowering!

- For three-point mounting, the attachment categories for the tractor and implement must match or be agreed!
- There is a risk of injury due to crush and shear points in the three-point linkage area!
- Do not step between the tractor and implement when activating the external control operating unit for the three-point attachment!
- Always ensure that the tractor three-point linkage is adequately arrested on the side when the implement is in transport position!
- For road travel with lifted implement, the operating lever must be locked to prevent lowering!
- When mounting the implement, the operator must ensure that there is a metallic connection (ensured by the lower link) established with the tractor.
- The operator must ensure that no one is in the vicinity of the implement, when it or its components are moved by the tractor hydraulic system or when the side wings are lifted or lowered. The driver must perform a visual inspection!
- When driving on roads, which is only permitted with the implement lifted and with folded side wings, the control block on the hydraulic cylinder prevents lowering of the implement and lowering of the folded side wings (additionally secured with a chain). The hooked-in chain also prevents accidental lowering of the side frame in road transport in the event that the tractor hydraulic system fails.
- Mounting of any accessories on the implement must be executed in accordance with standards. Do not exceed the maximum permissible total weight.
- Only APV machines and accessories may be mounted on the implement.
- Accessories must be properly mounted in compliance with standards by qualified specialists from an appropriately authorized company.

5.4 HYDRAULIC SYSTEM

- **Regularly inspect hydraulic hose lines and replace them if they are damaged or ageing! The replacement hoses must meet the technical requirements specified by the implement manufacturer!**
- The hydraulic system is under high pressure!
- Ensure that the hydraulic hoses are connected as prescribed when connecting hydraulic cylinders and hydraulic motors!
- When connecting the hydraulic hoses to the tractor hydraulic system, ensure that the hydraulics on both tractor and implement are **depressurized**!
- For hydraulic function connections between tractor and implement, coupling sleeves and coupling connectors must be marked so that the possibility of operating error can be excluded! Mixing up the connections reverses the function (e.g. lifting/lowering)! – Danger of accident!
- Due to the danger of injury, use the appropriate aids when looking for leaks!
- Liquids that escape under high pressure (hydraulic oil) can penetrate the skin and cause severe injuries! If there are injuries, seek medical attention immediately! (Danger of infection!)
- Before tasks on the hydraulic system, set down the implement, depressurize the system, and turn off the engine!
- Only unhook the securing chains after they have become loose (cylinder must be filled with oil)!

5.5 MAINTENANCE

- Always perform repair, maintenance, and cleaning tasks, and eliminate malfunctions when the drive is switched off, the engine is at a standstill, and the implement has been uncoupled from the towing vehicle! Remove the ignition key!
- The maintenance tasks themselves must only be performed by trained specialists and must never be performed alone. The utmost caution is required when replacing defective components or tools.
- If repair or maintenance tasks are required on the implement, a clearly visible information sign "Caution: Maintenance Tasks" must be provided to alert others.
- Regularly check nuts and bolts for firm seat and retighten if necessary!
- When performing maintenance tasks on the raised implement, always prevent it from lowering by means of appropriate support elements!
- When changing work tools with sharp edges, always use suitable tools and cut-resistant gloves!

- Components that cannot be removed with tools, such as a screwdriver or wrench, may only be replaced by qualified specialists from an appropriately authorised company or by APV Customer Service.
- Dispose of oils, greases, and filters as prescribed by national regulations!
- Always disconnect the power supply before working on the electrical system!
- Disconnect the cables on the generator and battery when performing electrical welding tasks on the tractor and attached implements!
- Spare parts must at least meet the technical requirements specified by the implement manufacturer! Original parts meet these requirements!
- Use water or compressed air for cleaning. Only clean the implement when it is lowered, at standstill, and it has been prevented from restarting.

5.6 TIRES

- For tasks on tires, ensure that the implement has been safely parked and secured against rolling off (wheel chocks).
- Installing wheels and tires requires adequate knowledge and the prescribed installation tools!
- Repair tasks on the tires must only be performed by specialists and with the appropriate assembly tool!
- Regularly check the tire pressure! Pay attention to the prescribed air pressure (2.1 bar)!

5.7 ATTACHED SEEDERS

- When using a seeder, all the instructions provided by the implement manufacturer must be complied with.
- The seeder can be reached easily via a ladder and a platform. The ladder and platform must be clean and dry for use.
- While driving, it is strictly prohibited to stand on the platform or on its access ladder.
- When not in use, the ladder must be swung upward and secured.
- A ladder must be made in conformance with standards. This ladder is available from APV.

5.7.1 FILLING THE SEEDER

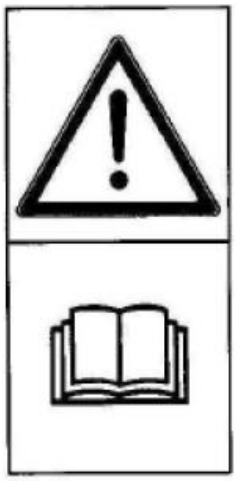
- The seeder is filled using a supply vehicle.
- The platform kit must not be used to fill the seeder or used as a storage area for objects or seed.
- When filling the seeder, never stand under a suspended load!
- When approaching the implement with seed, ensure that no one is on the implement or in the vicinity of the implement.
- During the loading procedure, avoid any contact with the treated seed; wear gloves, a dust mask, and safety goggles.

CAUTION!
Printing errors excepted, all information without guarantee.

6 INFORMATION SIGNS / HAZARD LABELS

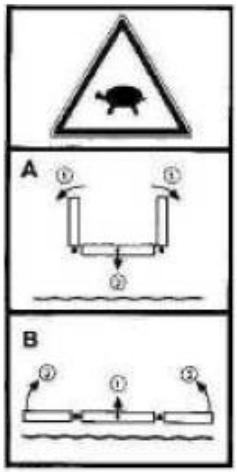
Pay attention to the stickers on the implement; they alert to particular hazards!

6.1 INFORMATION SIGNS



Read and comply with the operating manual before start-up!

Do not position yourself in the danger zone (swivel area)!

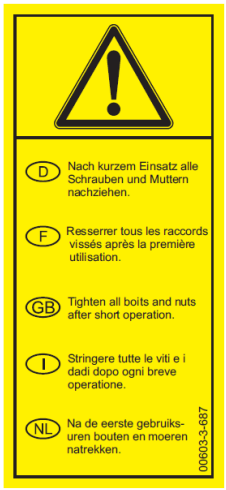


Only lift the implement off of the ground slowly

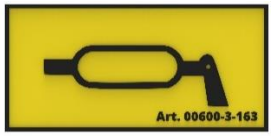
Do not stand on the implement while it is moving!

Loading hook.
Fasten the cable or chains here when loading the implement!

Ensure that the engine is turned off and that the key is removed before performing maintenance tasks!



Retighten all bolts and nuts after brief use.



Labelling of the grease nipple position

6.2 HAZARD LABELS

Caution, crushing area!
Never reach into the crush hazard zone as long as parts are moving in this zone!

7 OPERATING INSTRUCTIONS

7.1 MOUNTING ON THE TRACTOR

Additional wheel weights can be advantageous for difficult operating conditions. See the operating manual provided by the manufacturer of the tractor.
To ensure steering and braking capability, the tractor must be adequately equipped with ballast weight on the front. At least 20% of the unladen vehicle weight is required on the front axle.
The lifting struts must be adjusted at the same height on the left and right. The implement must be mounted on the 3-point linkage of the tractor.
Hook in the top link such that the top link is also inclined toward the tractor in work operation (comply with the information provided by the manufacturer of the tractor).

To ensure correct connection of the hydraulic hoses for tine preload, the hoses must be labelled as follows:

- 1 red cable tie: Return flow (A, -)
- 2 red cable ties: Flow (B, +)

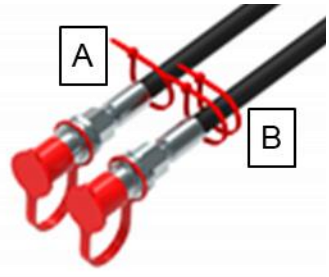


Figure 3

7.2 SAFE PARKING

- The parking area must be suitable for parking. The substrate must be paved and level, so that the feet of operating personnel do not sink into the ground, and so that the tined weeder cannot roll off.
- To ensure safe parking of the implement, lower the support stands at the rear of the tined weeder.
- In this process, to prevent damage to the tines or tine fastenings, ensure that the tines do not touch the ground.
- Each support stand must be secured with the spring cotter pin on the bolt to prevent it from loosening unintentionally.
- The securing chains must be hooked in on the side frames, and the ball valves on the folding cylinders must be locked to prevent unintentional lowering of the side frame (see Figure 5 and Figure 6).
- Then the hydraulic hoses to the tractor must be depressurized and uncoupled.

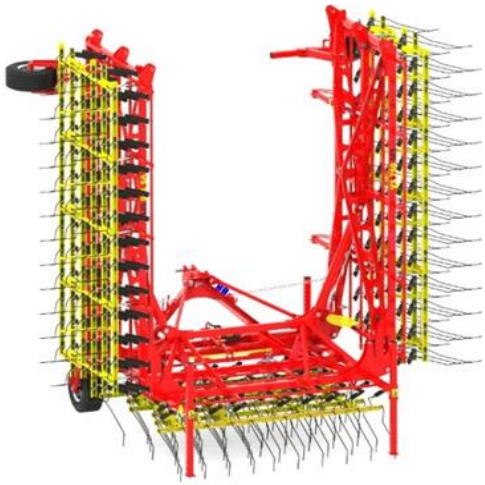


Figure 4

NOTE!
When uncoupling the hydraulic hoses for the tine preload under pressure, first close the stop tap, and only after this has been done, unplug the hydraulic hoses. This ensures that the tines remain in the desired position, even in parked status.

Figure 5: Ball valve open

Figure 6: Ball valve closed

7.3 SECURING THE TOP LINK PIN

When the Tined Weeder Pro is mounted on the tractor, the washer marked in Figure 7 must always be placed on the spring cotter on the top link! Without the washer it is possible that the implement can come off the hitch.

CAUTION!
The slotted hole must only be used for operation!
For road transport, use the round hole underneath the slotted hole.

Figure 7

7.4 FOLDING THE TINED WEEDER PRO

1. The implement can only be folded when it is lifted off the ground.
2. Ensure that no one is in the danger area!
3. Couple the plug connectors of the hydraulic line (ensure that they are always clean!).
4. Then fill the cylinder with oil (folding). The cylinder are filled as soon as the securing chains are offloaded.
5. Unhook the securing chains.
6. **When folding** into transport position, the implement must also be lifted off the ground and the **harrow tines must be folded upward** (preloading -3).
7. The feeler wheels on the side frame must be completely lifted before the harrow can be folded, to ensure compliance with the permissible transport width.
8. Hook in the securing chains again, after the harrow has been folded (see Figure 8).

CAUTION!
Only pre-tension the tines when the Tined Weeder Pro is unfolded.

During the folding procedure, first the outer side frame is folded by 180° onto the inner frame, which is then folded upward by 90°.

If the implement is unfolded into working position, the hydraulic control units and/or the double-acting hydraulic control units must be brought into the "N - neutral" position.

Figure 8

CAUTION!
To achieve a transport width of less than 3 m, the feeler wheels on the first side frame must be moved all the way up in the feeler wheel holder.

NOTE!
When uncoupling the hydraulic hoses for the tine preload under pressure, first close the stop tap, and only after this has been done, unplug the hydraulic hoses. This ensures that the tines remain in the desired position, even in parked status.

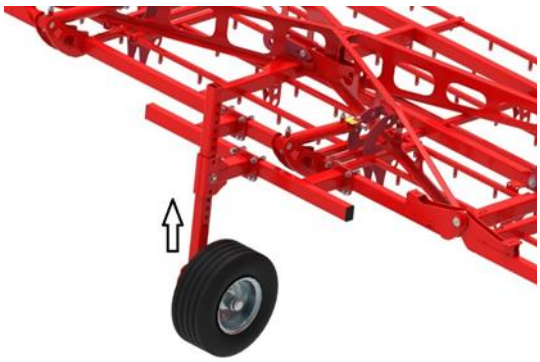


Figure 9: Folding the Tined Weeder Pro

7.5 WORKING POSITION AND ADJUSTING THE WORKING DEPTH

Weeding intensity is adjusted with the preload of the spring assembly. Adjustment occurs hydraulically and is executed conveniently from the tractor seat. On the scale (see Figure 10), the driver can read-off the level that is currently set. In this regard, note that the springs are not pre-tensioned at positions -3 to 0. Pre-tension begins at 0, and full preload is reached at position 6. At position -3, the tines are folded up, which means that the tines are in transport position.

The working speed has a significant determining influence on the intensity of the weeding. The normal speed range is between 1 and 12 km/h, depending on crop sensitivity and growth stage.

The feeler wheels can be moved on the frame, depending on the desired track width. Clearance and tine angle can be adjusted via the hole pattern in the feeler wheels.

Figure 10

The higher the feeler wheels are moved up in the frame, the smaller the distance between the frame and the ground and the steeper the position of the tine ends relative to the ground will be.
To set all of the feeler wheels, including those at the rear, to the same height, the same number of holes must be visible above the holder on all of the feeler wheels.

Figure 11: Working position

NOTE!
When the feeler wheels are moved further downward, clearance is increased and the tine angle becomes steeper, and therefore more aggressive. In this process the tine pressure remains the same.

NOTE!
In this regard an approximate right angle (90° - 100°) between the wear end of the tine and the ground is ideal (see Figure 12 – center). Due to the preload, this angle will only be reached while driving.

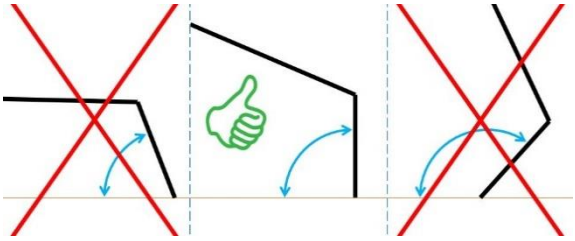


Figure 12: An angle of 90° - 100° is ideal

All tine rows should penetrate into the soil the same distance (working depth), this means the frame must be guided parallel to the ground.
To achieve this, the extension of the top link must also be adjusted. The parallelism of the frame to the ground can be read-out on the spirit level on the center frame, provided that you are on a horizontal plane.

CAUTION!
Only set the tined weeder with pre-tensioned springs on the ground when the vehicle is already in motion. If the tined weeder is set down on the ground too rapidly at standstill, the implement can be damaged.

CAUTION!
Do not push back or roll back the tined weeder with the tractor when the tined weeder is lowered; this can damage the tines and the bearing points.

CAUTION!
After a longer road transport or standstill period, differences in the preload can occur due to oil temperature changes in the hoses. Therefore, completely pre-tension the tines and then loosen them completely two times. After this has been done, set the desired preload (e.g. Level 2). This must occur when the implement is lowered onto the ground.

CAUTION!
Avoid cornering. However, if cornering cannot be avoided, then the curves must be driven in a very large radius.

CAUTION!
The working speed must not exceed 12 km/h.

7.6 HYDRAULIC TINE ADJUSTMENT

The tines are adjusted via multiple hydraulic cylinders connected in parallel. With hydraulic tine adjustment tine preload can be adjusted while driving.
All hydraulic cylinders (Figure 13) are integrated in an oil circuit. Adjustment occurs via a double-acting control unit and the flow divider on the center frame (Figure 14).

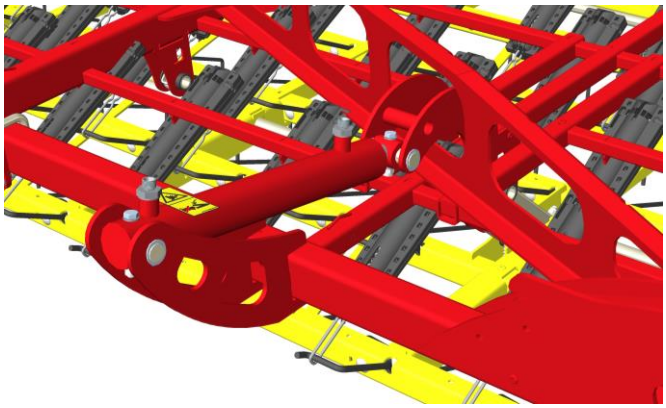


Figure 13: Hydraulic cylinders

Figure 14: Flow divider on the center frame

CAUTION!
For the combination of the VS 1200 M1 with a mounted pneumatic seeder, there is a risk of collision if the tines are preloaded.
This can result in material damage to the tines and bearing points.
NEVER fold the implement when the tines are preloaded.
NEVER preload the tines when the implement is folded.

7.7 ADDITIONAL ADJUSTMENT POSSIBILITIES FOR GROUND ADAPTATION

Ground adaptation of the Tined Weeder Pro can be further improved by means of the slotted hole in the cylinder working point on the side frame. If the laterally bolted-on, folding locking plates are mounted, upward ground adaptation of the side frame is fully available, but downward ground adaptation is limited. This offers the advantage of less harrow sag, which is helpful when turning. If the plates are dismounted, ground adaptation is fully available in both directions.

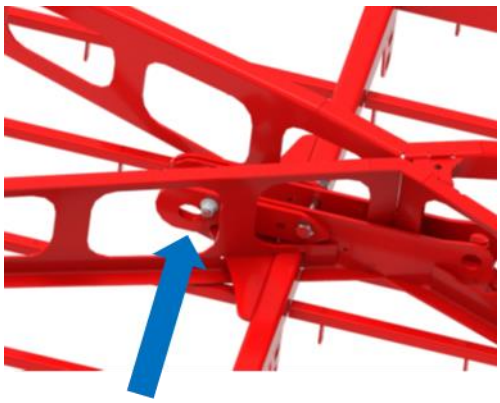


Figure 15: Folding locking plate on the side frame

7.8 ADJUSTING THE FEELER WHEEL TRACK

To set the desired track width for the feeler wheels, the nuts on the U-brackets of the feeler wheel holders must be loosened. Then the feeler wheel holder and the section are pushed into the desired position and the nuts are retightened.

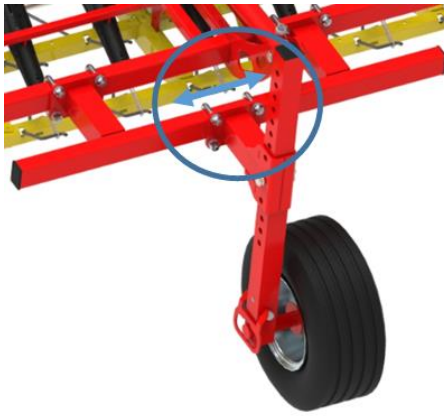


Figure 16

CAUTION!
The nuts on the U-brackets of all feeler wheel holders on the Tined Weeder Pro may only be tightened to a maximum of 25 Nm to prevent damage to the U-bracket.

8 MAINTENANCE AND CARE

8.1 GENERAL MAINTENANCE INSTRUCTIONS

To maintain the implement in good condition, even after a longer period of operation, comply with the instructions listed below:

- In Point 5, you will find some basic safety regulations for maintenance tasks.
- Original parts and accessories are specifically designed for the machines, i.e. implements.
- We expressly state that parts and accessories that are not delivered by APV are neither tested nor are they approved by APV.
- Consequently, installing and/or using such products can negatively alter or affect the prescribed design characteristics of your implement. The manufacturer cannot be held liable for damage that occurs due to use of non-original parts and accessories.
- The manufacturer is not liable for any unauthorized modifications to the implement or use of components or attachments on the implement that were not purchased from APV.
- **Check the hydraulic hoses for wear, damage, and ageing before every start-up. Damaged or faulty parts must be replaced immediately.**
- When replacing the hydraulic hose lines, original spare parts must be used that meet the technical requirements specified by the implement manufacturer.
- Caution! Liquids escaping under high pressure can penetrate the skin. Consequently, seek medical attention immediately if there is an accident!
- Lubricate all lubrication points after cleaning, and uniformly distribute the lubricant in the bearing points (e.g. perform a brief test run).
- Do not use a high-pressure cleaner to clean bearing parts and hydraulic parts.
- Cleaning with excessive pressure can damage the paint.
- Use environmentally-friendly agents to protect the implement from corrosion during the winter.
- Park the implement in a place where it is protected from the weather.
- Park the implement in a manner that prevents unnecessary load on the tines.
- **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 press fittings.**
- Park hydraulically folded, and also mechanically folded implements in a folded state only.
- The hydraulic system must be inspected at least once a year by a qualified specialist.

8.2 INSTRUCTIONS FOR REGULAR MAINTENANCE

- Retighten all bolted connections no later than after 3 operating hours, then repeat the process after approx. 20 operating hours, and perform regular inspections afterwards. Loose bolts can cause significant secondary damage that is not covered by the guarantee.
- Regularly lubricate the lubrication points on the joints and bearings (with multipurpose grease approx. every 10 operating hours).
- After the first 10 operating hours and every 50 operating hours thereafter, check the hydraulic units (hoses and couplings) as well as pipeline for leaks and retighten the threaded connections, if necessary.
- Occasionally check the tire pressure (2.1 bar).
- The platform kit and its access ladder must be visually inspected on a regular basis.
- The rubber for fixation of the access ladder of the platform kit must be checked regularly for wear and replaced if necessary.

NOTE!
When the implement is lifted off of the ground, the two side wings of the frame should face downward slightly. If this is not the case or if the wings are facing too far downwards, the stop screws on the joint must be adjusted.

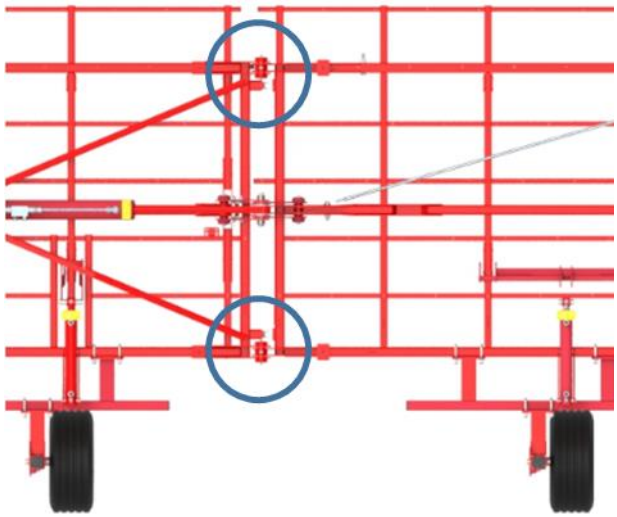


Figure 17

8.3 REPLACING THE TINES

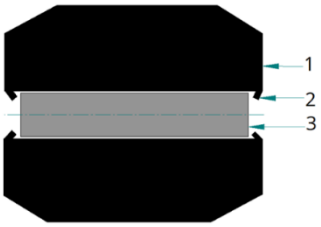
How to change broken or worn tines:
Unscrew the nut (1) on the plastic piece (2).
Pull the bearing unit (bolt + nut + bearing shell) and the tines out of the frame.
Assembly is performed in the reverse sequence.
The recommended tightening torque for the nut is 3 Nm. Ensure that the nut is not tightened too tightly, so that the tine can fall downward due to its own weight. If this is not the case, the tine cannot work properly at low preload.

Figure 18: 1 = nut, 2 = plastic part

8.4 CHANGING THE SPRING ASSEMBLY

8.4.1 SPRING ASSEMBLY WITHOUT BOLTED FASTENING

Diagram of the spring fastening:



1: Spring assembly plastic half shell
2: Snap-fit
3: Fastening bolt

Figure 19

1. Step:
Unlock the snap-fit on one side of the spring assembly. To do this, press a screw or a bolt (8 mm diameter) laterally into the hole in the spring assembly – as shown in Figure Figure 20 – until the two bolts touch. This ensures that the snap-hooks on one side are unlocked.

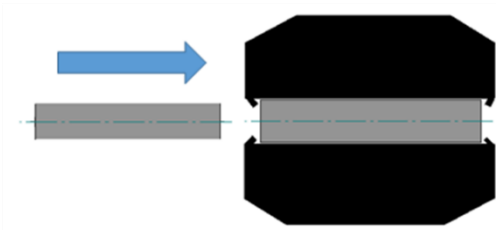


Figure 20: 1st step

2. Step:
Push the bolts out of the spring assembly. To do this, on the opposite side of the spring assembly, press a screw or a bolt (8 mm diameter) into the hole in the spring assembly. Thus all bolts can be pulled out of the spring assembly and the entire spring assembly detaches from the frame.

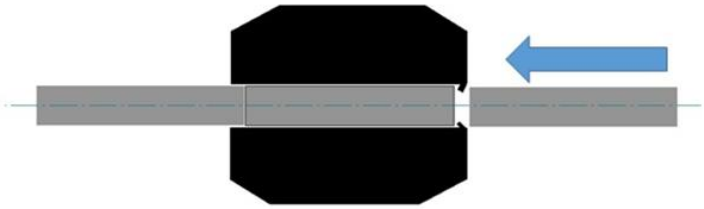


Figure 21: 2nd step

3. Step:
To mount the new spring assembly, it must first be brought into position.
Then the fastening bolt, as shown in Figure 22, is pressed into the hole in the spring assembly.

Ensure that all snap-fit elements are again locked. This will be the case if the fastening bolt has been pressed far enough into the hole. It may be necessary to push a little further with a screw or bolt (8 mm diameter).

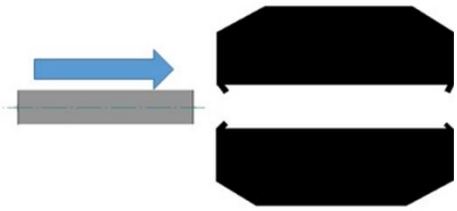
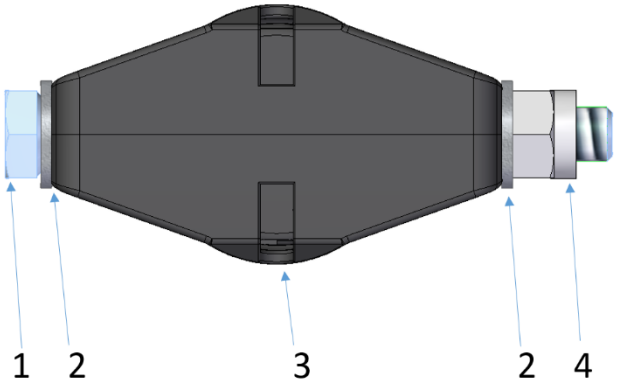


Figure 22: 3rd step

8.4.2 SPRING ASSEMBLY WITH BOLTED FASTENING

Diagram of the spring fastening:



1: Bolt M8x85
2: Washer M8
3: Spring assembly plastic half shell
4: Lock nut M8

Figure 23

- Unscrew the lock nut (4) with a wrench (width across flats 13).
- Pull the bolt (1) out of the spring assembly.
- Pull the spring assembly (3) out of the tine and replace it with a new spring assembly.
- Insert the bolt (1) through the new spring assembly (3) and tighten the nut (3).

CAUTION!
Only tighten the nut tight enough that the washers again rest on the spring assembly. Do not, under any circumstances, tighten so excessively that a gap occurs between the half shells.

8.5 REPAIR AND CORRECTIVE MAINTENANCE

Contact the manufacturer if the implement fails or is damaged. The contact data is provided in chapter 3.

9 INFORMATION ON NATURE CONSERVATION AND ENVIRONMENTAL PROTECTION

Reduction of noise exposure in use
Any loose parts (such as chains) should be fastened to avoid unnecessary noise.

Energy-efficient use
The tines of the implement should not penetrate into the field any deeper than necessary. This ensures that the load on the towing vehicle is no more than is strictly necessary and fuel can be saved.

Recyclable raw materials and disposal
Many parts of the implement are made of steel or spring steel (such as the center frame, side frames, tine section, and tines, etc.); these parts can be removed and recycled by a waste disposal company.

10 TECHNICAL DATA

type designation	VS 470 M1	VS 600 M1	VS 750 M1	VS 900 M1	VS 1200 M1
Mode of operation	With its unique tine spring system, the Tined Weeder Pro is a crop cultivation implement that adapts precisely to the ground. The weeder tines can be lifted out and are pivot-mounted, so that the weeder can only give way up and down, not to the left and right.				
Working width [m]	4.9	6.2	7.6	9.2	12.2
Transport dimensions, folded [L x W x H in m]	2.15 x 3.00 x 2.40	2.85 x 3.00 x 2.40	3.55 x 3.00 x 2.40	3.55 x 3.00 x 2.40	3.55 x 3.00 x 2.40
Working depth	0 to 30 mm (depending on soil conditions)				
Number of tines [pcs]:	140	178	218	264	350
Tine diameter [mm]	8				
Tine length [mm]	520				
Line spacing [mm]	35				
Mounting/hitch	Attachment – CAT 2 / CAT 2N				
Feeler wheels, standard equipment [pcs]	4	4	4	4	6
Net weight [kg]	810	900	1050	1300	1550
Parking supports	2 supports, if rear feeler wheels are not used				
Work tools	Cranked tines with a diameter of 8 mm				
Ground adaptation	Occurs through the unique tine spring system				
Minimum tractor power [kW/hp]	44 / 60	44 / 60	51 / 70	63 / 85	74 / 100
Can be equipped with:	PS 120 M1 – PS 500 M2 (see point 10.2)				

10.1 TINE SECTION WIDTHS

VS470:

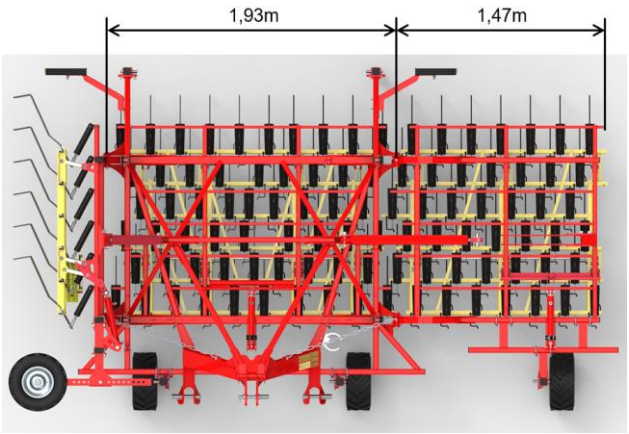


Figure 24: VS470

VS600:

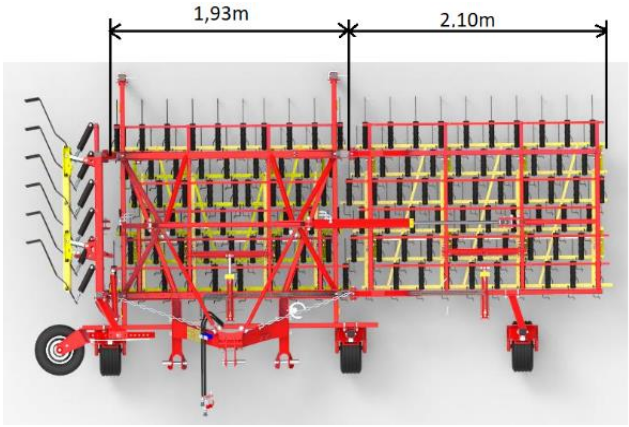


Figure 25: VS600

VS750:

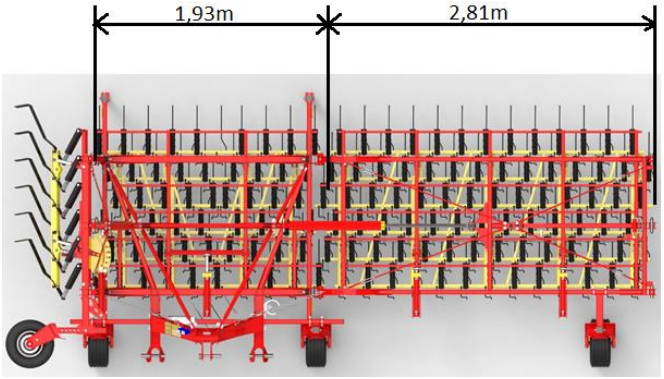


Figure 26: VS750

VS900:

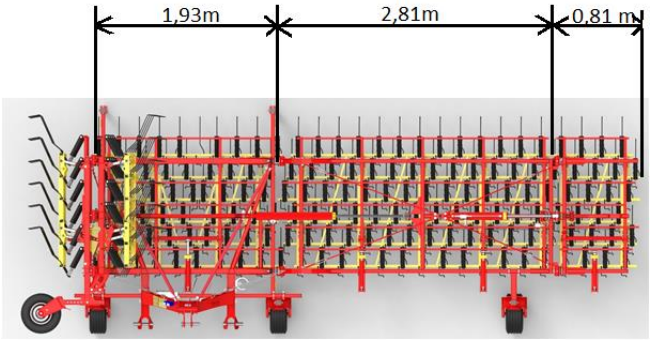


Figure 27: VS900

VS1200:

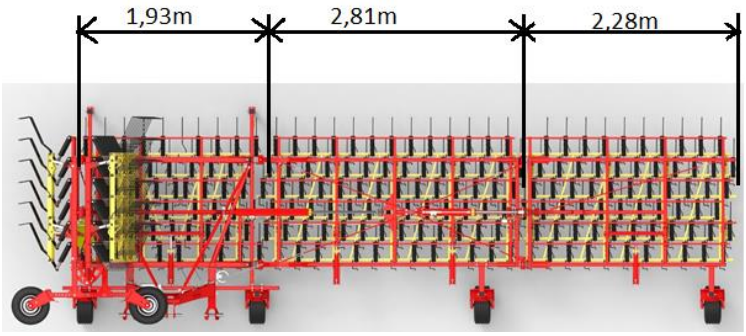


Figure 28: VS1200

10.2 COMBINATION OPTIONS FOR THE TINED WEEDER PRO WITH PNEUMATIC SEEDER (PS)

PS	PS 120 E	PS 200 E	PS 200 H	PS 300 E	PS 300 H	PS 500 E	PS 500 H	
Dimensions for PS HxWxD [cm]	90x60x80	100x70x90	100x70x110	110x80x100	110x80x115	125x80x120	125x80x125	
Weight [kg]	45	60	83	70	93	93	116	
VS	**Combined status: Dimensions HxWxD [cm] and weight [kg]**							**Part for mounting**
VS 470 M1 810	300x240x285 855	300x240x285 870	300x240x285 893	300x240x285 880	300x240x285 903	300x240x285 903	300x240x285 926	Mounting kit for PS see section 16
VS 600 M1 900	300x240x285 945	300x240x285 960	300x240x285 983	300x240x285 970	300x240x285 993	300x240x285 993	300x240x285 1,016	
VS 750 M1 1,050	Cannot be combined	Cannot be combined	300x240x355 1,133	Cannot be combined	300x240x355 1,143	Cannot be combined	300x240x355 1,166	
VS 900 M1 1,300			300x240x355 1,383		300x240x355 1,393		300x240x355 1,416	
VS 1200 M1 1,550			300x240x355 1,633		300x240x355 1,643		300x240x355 1,666	

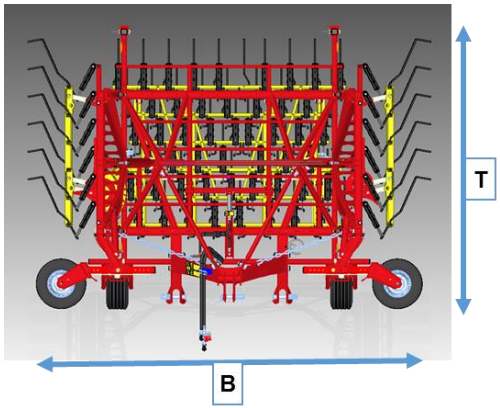


Figure 29: Tined Weeder Pro – view from above in transport position

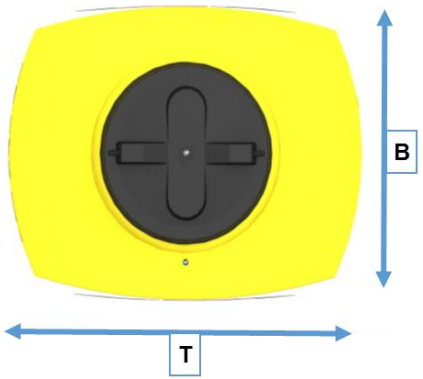


Figure 30: Pneumatic seeder – view from above

W: Width
D: Depth

11 HYDRAULIC SYSTEM DIAGRAM

VS 470 M1, VS 600 M1

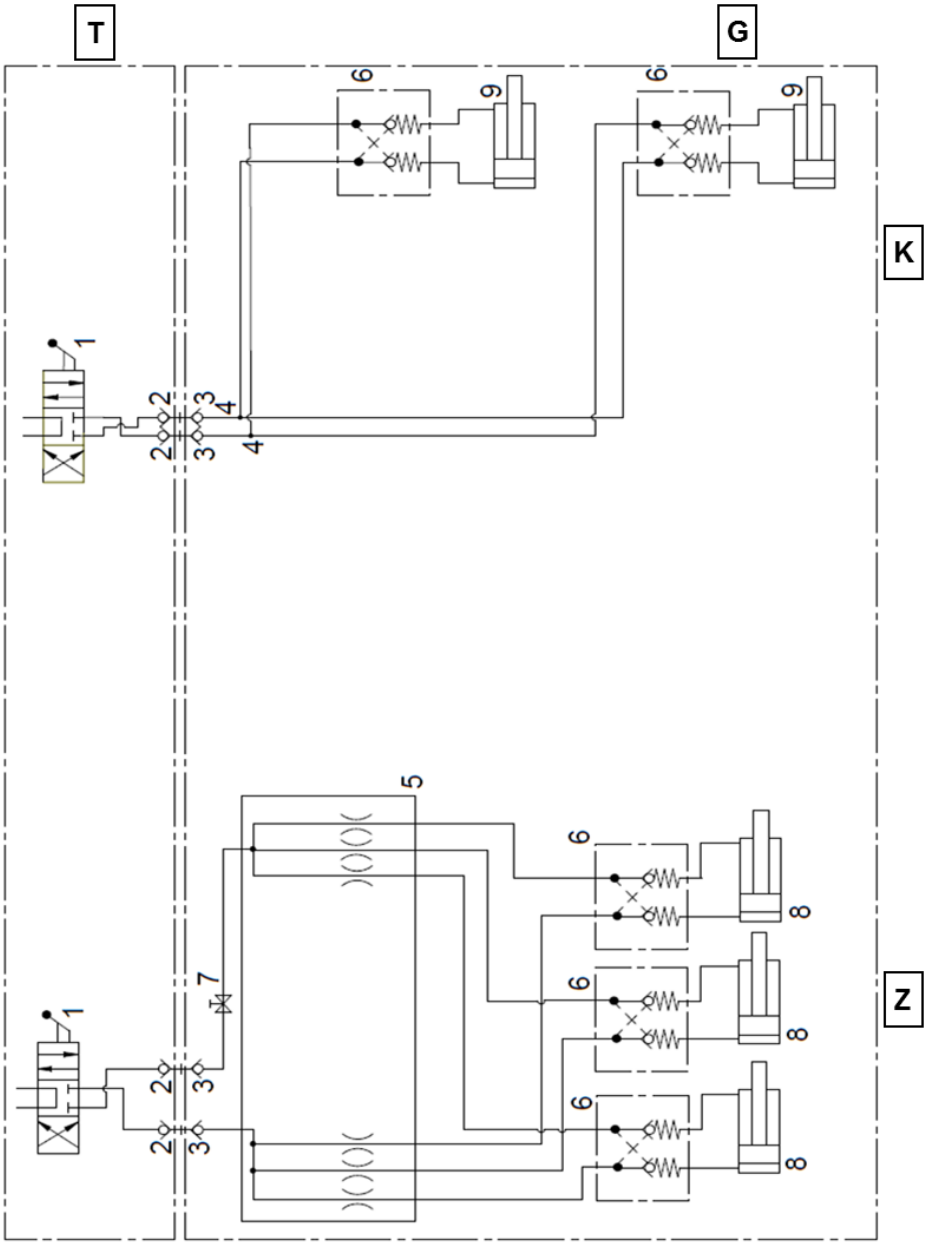


Figure 31: Hydraulic diagram VS 470 M1 and VS 600 M1

T	Tractor side	4	T-threaded connection
G	Implement side	5	Flow divider 3x
K	Folding	6	Shut-off unit
WA	Weeder adjustment	7	Ball valve
1	Control unit	8	Double-acting cylinder for tine adjustment
2	Coupling sleeve BG 2	9	Double-acting cylinder for folding
3	Coupling connector BG 2		

VS 750 M1

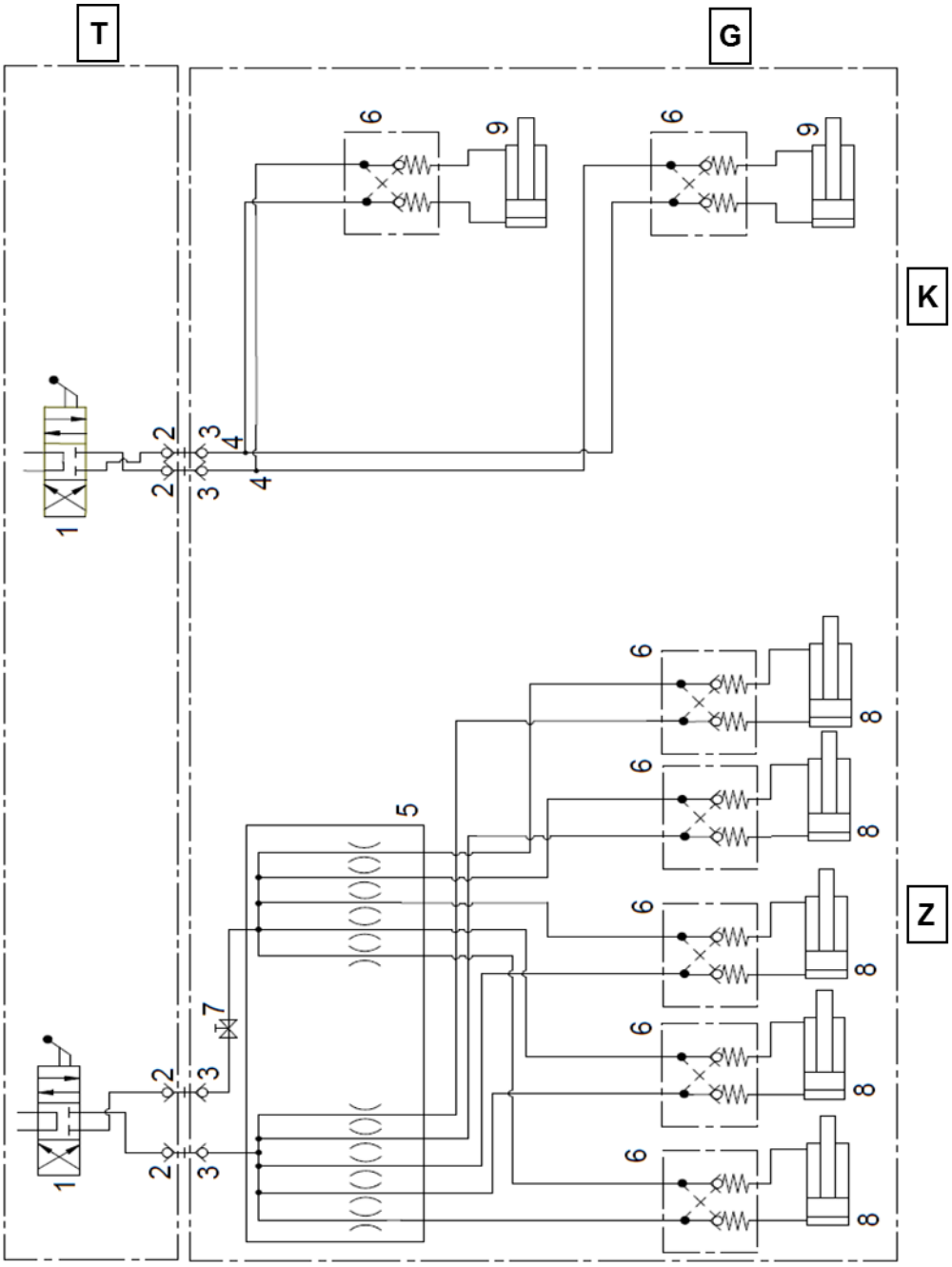


Figure 32: Hydraulic system diagram VS 750 M1

T	Tractor side	4	T-threaded connection
G	Implement side	5	Flow divider 3x
K	Folding	6	Shut-off unit
WA	Weeder adjustment	7	Ball valve
1	Control unit	8	Double-acting cylinder for tine adjustment
2	Coupling sleeve BG 2	9	Double-acting cylinder for folding
3	Coupling connector BG 2		

VS 900 M1 and VS 1200 M1

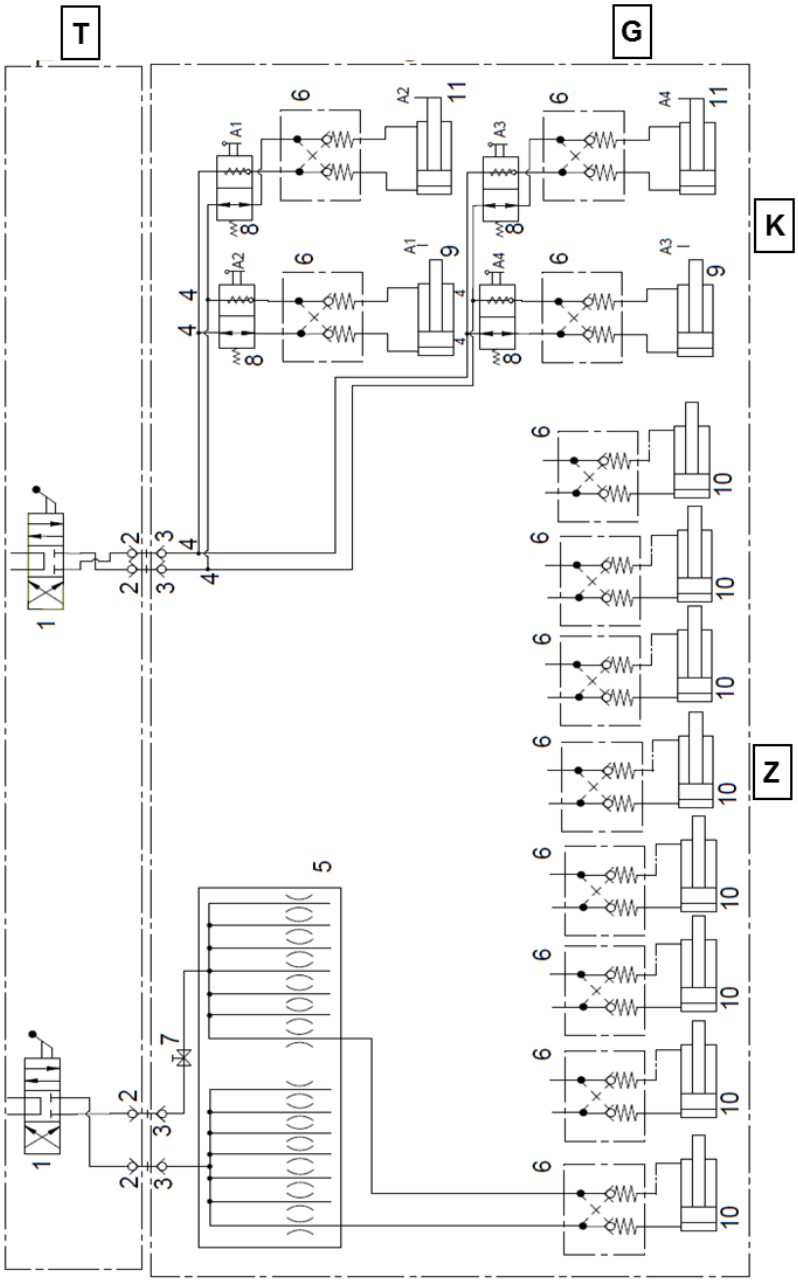


Figure 33: Hydraulic diagram VS 900 M1 and VS 1200 M1

T	Tractor side	5	Flow divider 7x
G	Implement side	6	Shut-off unit
K	Folding	7	Ball valve
WA	Weeder adjustment	8	Lift limiter
1	Control unit	9	Double-acting cylinder for folding, inside
2	Coupling sleeve BG 2	10	Double-acting cylinder for tine adjustment
3	Coupling connector BG 2	11	Double-acting cylinder for folding, outside
4	T-threaded connection		

12 ROAD TRANSPORT OF THE TINED WEEDER PRO

12.1 TRANSPORT ON PUBLIC ROADS (GENERAL INSTRUCTIONS)

- For road travel, clean the tine sections so that the tines are free of residues (soil, grass, etc) after field use.
- Comply with the relevant road traffic regulations in your country.
- The implement must be labeled with country-specific warning signs or foils with white-red slanted bars (in accordance with DIN, ÖNORM or the respective country-specific STANDARDS).
- Parts that endanger traffic or are hazardous (tines) must be covered and additionally labeled.
- Do not allow the implement to cover the tractor unit's lighting equipment; if it does the lighting equipment must be installed on the implement.
- Warning signs or foils should be no higher than 150 cm above the road surface in driving operation.
- The holder for the warning signs (supplemental equipment) is mounted on the center frame (see chapter 16 Accessories).
- Do not exceed the axle load and the total weight of the tractor unit.
- Do not allow the implement to impair or reduce the tractor's steerability!
- Hitched equipments may only be towed on public roads with an operating permit.
- Fold in the hydraulic equipment to transport position (tine preload).
- Ensure that the shut-off valve (if present) is closed or that the securing chains are mounted.
- Wait until you are just before unhitch the tractor unit to discharge the pressure in the hydraulic hoses; this is done via the float position of the tractor control unit.
- Only dissipate the pressure of the hydraulic hose at home, via the float position on the tractor control unit.
- Also ensure that securing cotter pins have not been lost due to work implementation.

CAUTION!
Do not transport the Tined Weeder Pro when the top link pin is in the slotted hole!
For road transport, the pin must be installed in the round hole (underneath the slotted hole) and safeguarded against loss with a cotter pin.

Figure 34

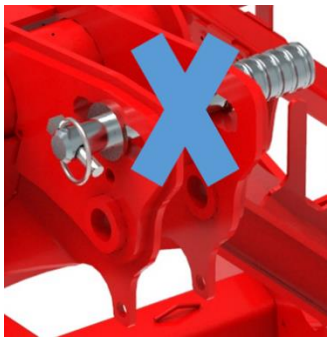


Figure 35

12.2 CALCULATION OF THE WEIGHT RATIOS OF AXLE LOADS ON THE TRACTOR UNIT AND BALLASTING

If you want to drive with an implement that is attached to the 3-point linkage, you must ensure that with the implemented mounted you do not exceed the tractor's maximum permissible total weight, the permissible axle loads, or the tire load capacities.

The front axle of the tractor must be loaded with at least 20% of its own weight.
You can calculate the necessary ballasting and the actual axle loads with the following formulas:

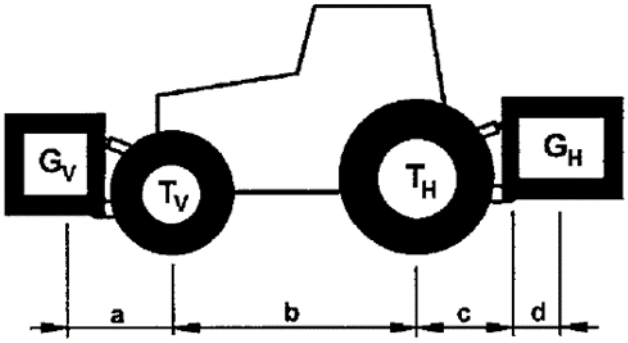


Figure 36

Information:

T_L Unladen weight of the tractor

T_V Front axle weight of the unladen tractor

T_H Rear axle load of the unladen tractor

G_H Total weight of the rear-mounted implement

G_V Total weight of the front-mounted implement

a Distance from the front-mounted implement's center of gravity to mid front axle

b Wheelbase of the tractor

c Distance from the middle of the rear axle to the center of the lower link ball

d Distance from the center of the lower link ball to the center of gravity of the rear-mounted implement (d = 97 cm)

WEIGHT CALCULATIONS

1. Calculating the minimum front ballasting on rear-mounted implements $G_{V\ min}$:

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

Enter this result in the table under point 12.3.

2. Calculating the minimum rear ballasting on front-mounted implements G_H min:

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

Enter this result in the table under Point 12.3 as well.

3. Calculating the actual front axle load $T_{v\ tat}$:

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

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

In the table under point 12.3, now enter the calculated, actual front axle load and the permissible front axle load that is specified in the tractor's operating manual.

4. Calculating the actual total weight G_{tat}:

If the required minimum rear ballasting (GH min) is not achieved with the rear-mounted implement (GH), then the weight of the rear-mounted implement must be increased to the weight of the rear minimum ballasting!

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

In the table under 12.3, now enter the calculated total weight and the permissible total weight that is specified in the tractor's operating manual.

5. Calculating the actual rear axle load $T_{H\ tat}$:

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

In the table on page 12.3, enter the calculated, actual rear axle load and the permissible rear axle load that is specified in the tractor's operating manual.

6. Tire load:
Enter double the value (two tires) of the permissible tire load (for example, see the tire manufacturer's documents) in the table under point 12.3.

CAUTION!
The minimum ballasting must be installed on the tractor in the form of a mounted implement or ballast weight!
The calculated values must not exceed the permissible values!

12.3 TABLE OF WEIGHT RATIOS

	Actual value according to calculation		Permissible value according to operating manual		Doubled permissible tire load (2 tires)
Front/rear minimum ballasting	kg				
Total weight	kg	≤	kg	≤	kg
Front axle load	kg	≤	kg	≤	kg
Rear axle load	kg	≤	kg	≤	kg

The minimum ballasting must be installed on the tractor in the form of a mounted implement or ballast weight!
The calculated values must not exceed the permissible values!

13 LIGHTING CIRCUIT DIAGRAM

Legend:

R	Right
1	Connector, 12 V, 7-pin
2	Right tail light
2.1	Turn signal
2.2	Tail light
2.3	Brake light
L	Left
3	Left tail light
3.1	Brake light
3.2	Tail light
3.3	Turn signal

Connector and cable pin assignment:

No.	Name	Color	Function
1	L	Yellow	Left turn signal
2	54 g	---	---
3	31	White	Ground
4	R	Green	Right turn signal
5	58R	Brown	Right tail light
6	54	Red	Brake light
7	58L	Black	Left tail light

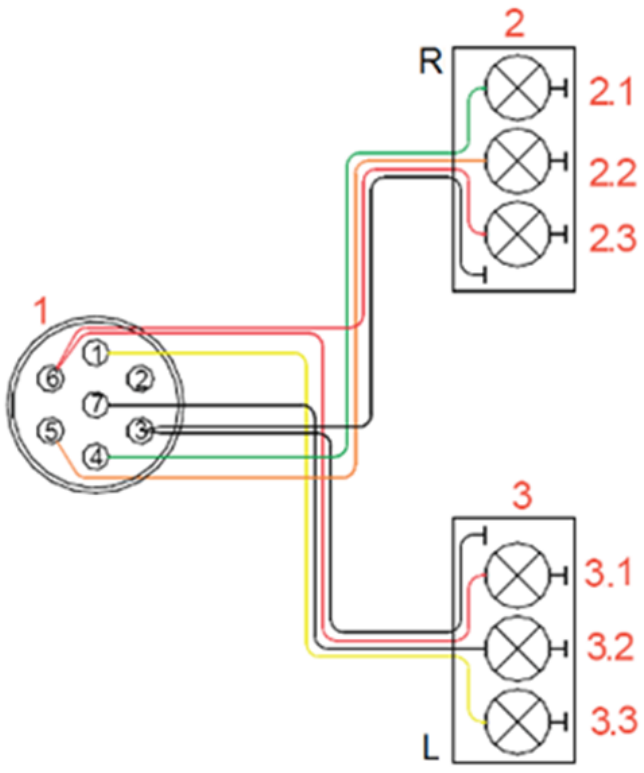


Figure 37: Circuit diagram

14 DECOMMISSIONING, STORAGE, AND DISPOSAL

14.1 DECOMMISSIONING THE IMPLEMENT

To ensure that the implement retains its full functionality, even during a longer period of non-operation, it is important to take precautions for storage: Comply with the information in point 7.2 in this regard.

14.2 STORING THE IMPLEMENT

- The implement must be stored in a dry and weather-protected location, so that it does not lose its functionality, even during a longer storage period.
- The implement must be parked in compliance with point 7.2.
- Prevent the implement from rolling off unintentionally.
- Do not place or store anything on the implement.
- The implement must always be parked and stored in a secure area, to prevent unauthorized operation.

14.3 DISPOSAL

The implement must be disposed of in accordance with local waste disposal regulations for machines.

15 CROPPING TIPS FOR USE OF THE TINED WEEDER PRO

The effect of the Tined Weeder Pro is mainly based on burying, tearing out the weeds, and crumbling the soil surface. Moreover, it also stimulates tillering in cereals. Relative to cultivators, the tined weeder has two great advantages: It operates in a row-independent manner, and it has a very high area efficiency.

There is an extremely close correlation between seeding depth and surface structure of the seedbed and success when harrowing against weeds. However, sowing too shallow excludes the possibility of any harrowing at pre-emergence. However, weeding can be performed again afterwards once the plants have firmly rooted themselves in the soil. At sowing depths of 3-4 cm, harrowing can also be performed at pre-emergence if the working depth is correspondingly shallower. However, the germinating seed must not be touched in the soil by the weeder tines when this work is being performed.

Generally, the important thing during the course of cultivation is to use the weeder to eliminate weeds in the white thread stage or cotyledon stage and at the same time protect the crops to the greatest extent possible. The best method for this depends to great extent on the soil, plant, and weather conditions. You can quickly find the best method that works independent of the location by adjusting the working depth and the variation of the working speed. As a basic adjustment on the weeder, the tine ends must be set approximately perpendicular to the ground surface (see chapter 7.5 Working position and adjusting the working depth).
Warning indications of over-intense weeding are increased numbers of uprooted, buried or broken-off cultivated plants. Minor crop losses can be compensated by slightly increasing the seed rate in advance by approx. +10%. In this process, the final crop density should not drop below the values required for crop cultivation after all work operations have been completed.

Other effects of working your areas with the Tined Weeder Pro, such as

- Soil aeration,
- Regulating the water balance,
- Working in the seeds for nurse crops and
- Promoting tillering in cereals

play a crucial role in creating a good yield of crops.

Summary for efficient and successful harrow use:

- Important prerequisites are a level seedbed, sufficiently deep seed placement, uniform germination, loose soil surface, few tracks, and suitable weather conditions.
- You CANNOT compensate for neglecting to use the harrow.
- Harrowing does not have a lasting effect => multiple coordinated work operations are required.
- Optimum harrowing borders on the limits of crop tolerance; in case of doubt, count the crop losses.
- Factor in crop losses when sowing.
- The harrow's weed-control effect is already achieved in part at a lower vehicle speed (1 to 2 km/h and faster).
- The optimum harrow adjustment can take a lot of time.

Only the potential of harrow use is described here. The success of harrowing is ultimately brought about by the craftsmanship skills of the user.

16 ACCESSORIES

The accessories must be mounted by qualified personnel / a qualified workshop. The customer/dealer must ensure that the accessories are attached in accordance with standards.

16.1 WARNING SIGNS AND LIGHTING

For the Tined Weeder Pro, warning signs with lighting are available as accessories. These are required when you want to drive with the Tined Weeder Pro on public roads.

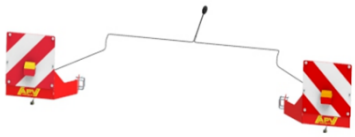


Figure 38

Order number:

- 07014-2-501: Standard lighting
- 07026-2-006: LED lighting VS
- 07014-2-693: Accessories kit – VS front + /ear lighting

16.2 MOUNTING KIT: HOLDER FOR PNEUMATIC SEEDER

This holder is used to mount a pneumatic seeder PS 120 M1 – PS 500 M2 on the Tined Weeder Pro. Please note that it must be mounted in compliance with the standards.

Figure 39

Order number:
07014-2-385: Accessories kit – PS holder

16.3 ACCESSORIES KIT: DISPERSION PLATE HOLDERS

This is used to mount the dispersion plates on the Tined Weeder Pro.

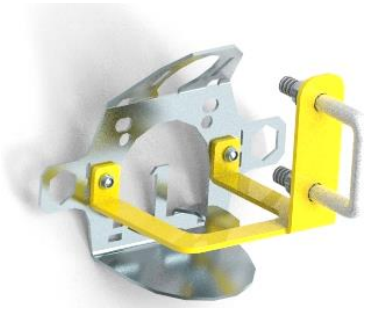


Figure 40

Order number:

- 07032-2-029: Accessories kit – dispersion plates for VS 470 (contains 8 dispersion plate holders)
- 07018-2-033: Accessories kit – dispersion plates for VS 600 M1 (contains 8 dispersion plate holders)
- 07019-2-011: Accessories kit – dispersion plates for VS 750 M1 (contains 16 dispersion plate holders)
- 07020-2-035: Accessories kit – dispersion plates for VS 900 M1 (contains 16 dispersion plate holders)
- 07014-2-298: Accessories kit – dispersion plates for VS 1200 M1 (contains 16 dispersion plate holders)

16.4 PLATFORM KIT FOR THE TINED WEEDER PRO

A suitable platform kit is available as an accessory for easier maintenance of the pneumatic seeder PS 120 M1 to PS 500 M2.
Please note that it must be mounted in compliance with the standards.

Figure 41

Order number:

- 07014-2-386: Platform kit – VS without rear feeler wheels
- 07014-2-387: Platform kit – VS rear with rear feeler wheels

16.5 ACCESSORIES KIT LINKAGE SENSOR TOP LINK MX

In combination with a pneumatic seeder, this sensor can be used to automatically stop the seeding shaft when lifting out the implement at headlands.

Figure 42

Order number:
00410-2-169

16.6 MOUNTING KIT: GPSA SENSOR

In combination with a pneumatic seeder, this sensor can be used for speed-dependent seed application.

Figure 43

Order number:
06001-2-064

16.7 MOUNTING KIT: WHEEL SENSOR FOR TINED WEEDER PRO

In the combination with a pneumatic seeder, this sensor can be used for speed-dependent seed application or to stop the seeding shaft of a pneumatic seeder when lifting the implement at headlands.

Figure 44

Order number:
07000-2-059

16.8 REAR FEELER WHEELS

To improve guidance of the harrow along the ground, height-adjustable feeler wheels can be used at the rear. The feeler wheels are mounted on a crossbeam and thus they can be variably adjusted to the track width.

Figure 45

Order number:

- 07014-2-384: Accessories kit – rear feeler wheels
- 07014-2-565: Accessories kit – inside rear feeler wheels

16.9 CARBIDE TINES

A carbide plate, 60 mm in length, which significantly reduces tine wear, is soldered onto the engagement end of the tine.

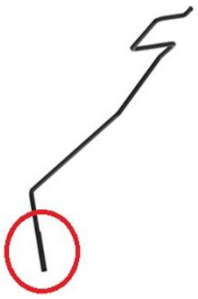


Figure 46

Order number:

- 07032-2-023: Accessories kit – carbide tines for VS 470 M1
- 07018-2-034: Accessories kit – carbide tines for VS 600 M1
- 07019-2-012: Accessories kit – carbide tines for VS 750 M1
- 07020-2-036: Accessories kit – carbide tines for VS 900 M1
- 07014-2-299: Accessories kit – carbide tines for VS 1200 M1

16.10 MANUAL TINE LIFTING

With manual tine lift-out, individual tines can be lifted out (see Figure 47), e.g. to avoid working in rows where the crops are already taller. As a result, the tine weeder is optimally adjusted for bed cultivation.
Either the entire harrow can be equipped or any number of tine lift-out elements can be selected. To activate tine lift-out, lift the tine and simply slide the plate towards the tine.

Figure 47

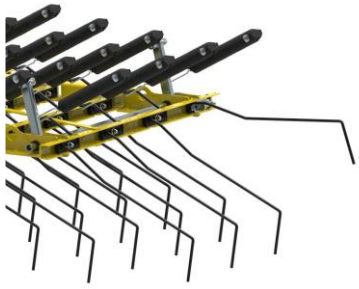


Figure 48

Order number:

- 07032-2-025: Accessories kit – tine lift-out for VS 470 M1
- 07018-2-047: Accessories kit – tine lift-out for VS 600 M1
- 07019-2-015: Accessories kit – tine lift-out for VS 750 M1
- 07020-2-049: Accessories kit – tine lift-out for VS 900 M1
- 07014-2-363: Accessories kit – tine lift-out for VS 1200 M1
- 07014-2-351: Individual tine lifting

16.11 ACCESSORIES KIT: LOWER LINK EXTENSION

The lower link extension is attached to the lower links of the implement by means of a pin; it enables higher lift-out of the implement at headlands.

Please note: Use of the lower link extension increases the transport height of the implement by up to 20 cm.

Order number:
07014-2-558

Figure 49

16.12 ACCESSORIES KIT: ADDITIONAL WEIGHTS

For extremely hard soil conditions, the additional weights can be installed on the outer side frame of the VS 1200 to improve harrowing results.

Order number:
07014-2-567

Figure 50

16.13 PROTECTIVE STICKERS FOR PS500 HOPPER

When a PS500 is mounted on the VS 1200, the protective stickers are required to protect the hopper from damage in road transport.

Order number:
07014-2-646

Figure 51

16.14 ACCESSORIES KIT: ONE-SIDE FOLDING

With an additional double-acting hydraulic control unit, the implement can be folded on one side.

Order number:

- 07014-2-632: One-side folding for VS 470, VS 600, VS 750
- 07018-2-087: One-side folding for VS 900, VS 1200

Figure 52

16.15 ACCESSORIES KIT: V-FOLDING

With an additional double-acting hydraulic control unit, the implement can be folded in a V-shape. This can be beneficial at headlands as the side frames can then be lifted more quickly off the ground, thus preventing impacts.

Figure 53

Order number:
07014-2-582

16.16 REAR FEELER WHEELS FOR SIDE FRAMES

Additional rear feeler wheels are available for the side frames of the Tined Weeder Pro.
Each feeler wheel holder has a turning device with which the feeler wheel can be swiveled to the rear. This enables a road transport width of less than 3 m.

Note: The rear feeler wheels for the side frames must be folded to the rear with the turning device before road transport!

Figure 54

Order number:

- 07014-2-565: Can be used for VS470, VS 600, VS 750, VS 900, and for the first side frame of the VS 1200
- 07014-2-566: Can be used for the second side frame of the VS1200

16.17 PRECISION PRELOAD TECHNOLOGY WITH LINEAR MOTION FLOW DIVIDER

The linear motion flow divider optimizes the preload precision compared to the standard preload.

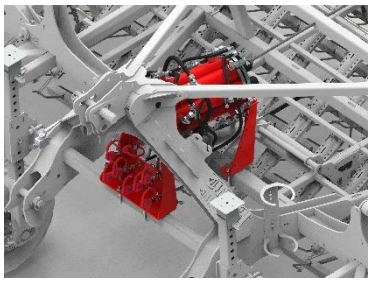


Figure 55

Caution:
For implements with linear motion flow divider, it is not possible to shut off the hydraulic tine adjustment in the individual tine sections.
For the combination of the VS 1200 M1 with a mounted pneumatic seeder, there is a risk of collision if the tines are preloaded.
This can result in material damage to the tines and bearing points.
NEVER fold the implement when the tines are preloaded.
NEVER preload the tines when the implement is folded.

Order number:

- 07020-2-101: Linear motion flow divider VS 900 M1
- 07014-2-853: Linear motion flow divider VS 1200 M1

17 SPARE PARTS

You have the option of ordering your desired spare parts directly through our online spare parts catalog. To do so, scan the QR code with your smartphone – you will be taken directly to our online spare parts catalogue. Please have your product number / serial number on hand.

You can also access our online spare parts catalog 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 3 for contact data) is also happy to assist you.

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NOTES

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