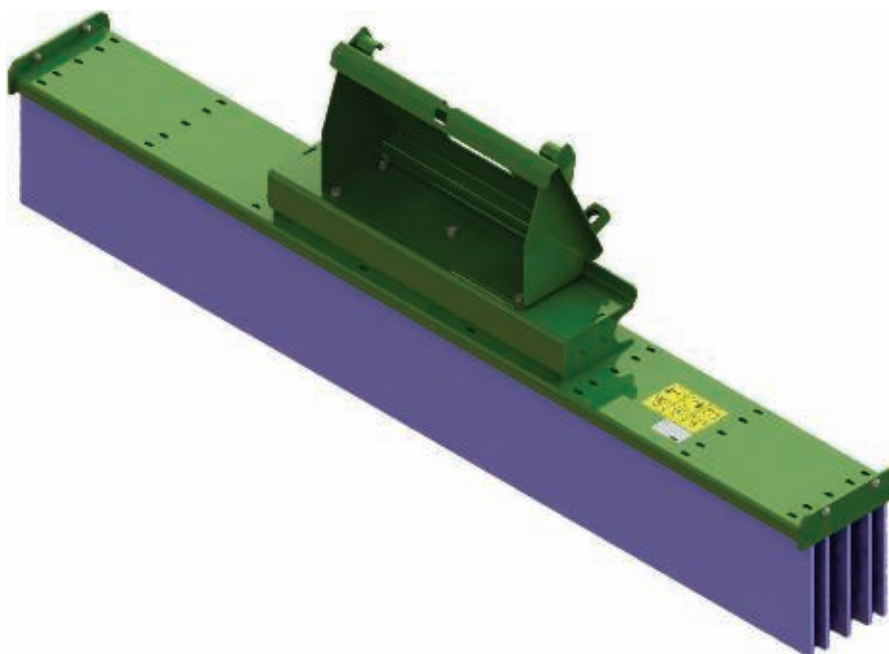




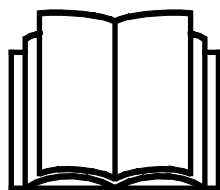
## Operator's Manual for Attachment



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### Push broom

Product number	1200 mm	A449770
	1500 mm	A437121
	2000 mm	A447153



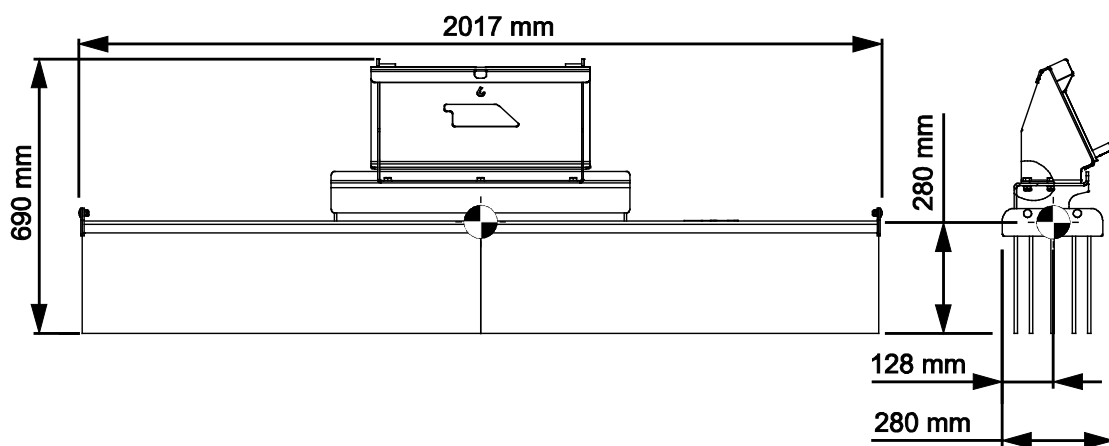
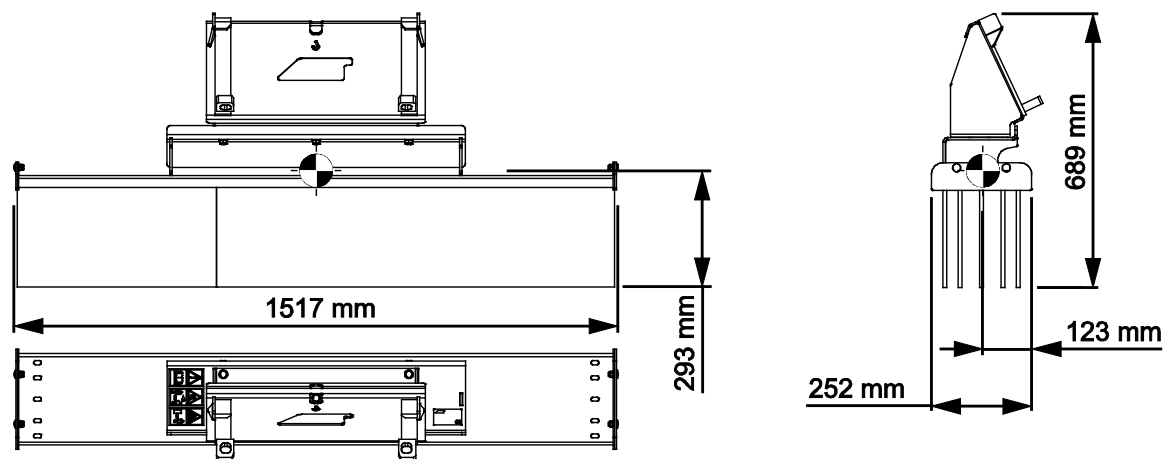
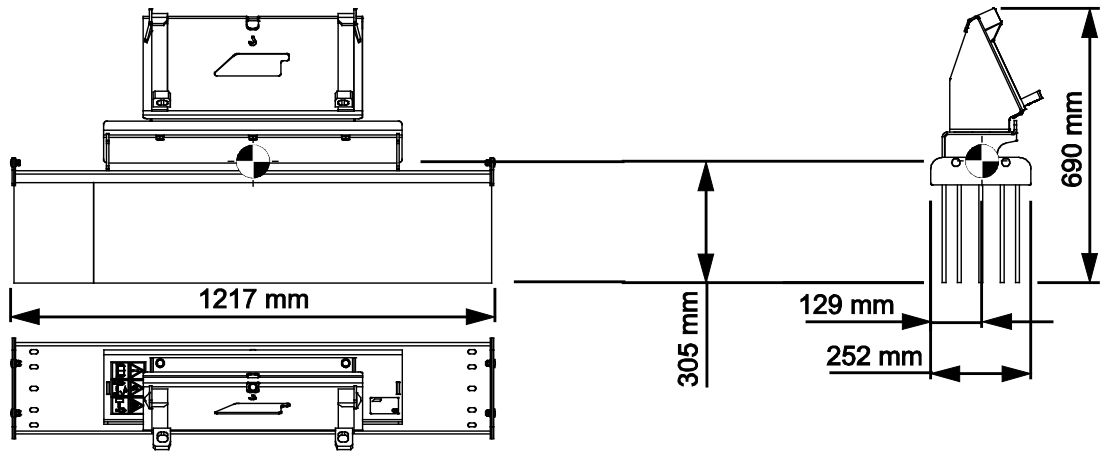
Please read this manual carefully before using the equipment, and follow all instructions.

Keep this manual for later reference.

Manufacturer:

**AVANT**<sup>®</sup>  
**AVANT TECNO OY**  
e-mail: [sales@avanttecno.com](mailto:sales@avanttecno.com)

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## I. Foreword

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Avant Tecno Oy would like to thank you for your purchase of this attachment for your Avant loader. It has been designed and manufactured based on years of experience on product development and manufacturing. By familiarizing yourself with this manual and following the instructions, you ascertain your safety and ensure the reliable operation and long service life of the equipment. Read the instructions carefully before starting to use the equipment or performing maintenance.

The purpose of this manual is to help you to:

- operate the equipment in a safe and efficient manner
- observe and prevent any hazardous situations
- keep the equipment intact and ensure a long service life

With these instructions, even an inexperienced user can use the attachment and loader safely. The manual includes important instructions for experienced AVANT operators as well. Ensure that all persons using the loader have received proper guidance and familiarised themselves with the manual of the loader, each attachment that are used, and all safety instructions before using the equipment. Using the equipment for other purposes or use in any other way than described in this manual is prohibited. Keep this manual at hand throughout the service life of the equipment. If you sell or transfer the equipment, be sure to hand over this manual to the new owner. If the manual is lost or damaged, you can request a new one from your Avant dealer or from the manufacturer.

In addition to the safety instructions included in this Operator's Manual, you must observe all occupational safety regulations, local laws, and other regulations concerning the use of the equipment. Particularly the regulations concerning the use of the equipment on public road areas must be observed. Contact your Avant dealer for more information about local requirements before you operate the loader on road areas.

Contact your local AVANT dealer for any questions, service, spare parts or about any problems that may occur with the operation of your machine.

This manual contains the original instructions in English. Due to continuous product development some of the details shown in this manual may differ from your equipment. Pictures may also depict optional equipment or features that are not currently available. We reserve the right to change the contents of the manual without notification. Copyright © 2021 Avant Tecno Oy. All rights reserved.

## Warning symbols used in this manual

The following warning symbols are used throughout this manual. They indicate factors that must be taken into account to reduce the risk of personal injury or damage to property:



### WARNING SAFETY ALERT SYMBOL

This symbol means: **“Warning, be alert! Your safety is involved!”**

Carefully read the message that follows, it warns of an immediate hazard that could cause serious personal injury.

The safety alert symbol by itself and with related safety statement indicates important safety messages throughout this Manual. It is used to draw attention to instructions involving your personal safety or the safety of others. When you see this symbol, be alert, your safety is involved, carefully read the message that follows, and inform other operators.

### DANGER

This signal word indicates a hazardous situation which, if not avoided, will cause death or serious injury.

### WARNING

This signal word indicates a potentially hazardous situation which, if not avoided, could cause serious injury or death.

### CAUTION

This signal word is used when minor injury could result if the instructions are not followed properly.

### NOTICE

This signal word indicates information about the correct operation and maintenance of the equipment.

Failure to observe the instructions accompanying the symbol can lead to equipment breakdown or other property damage.

## 2. Designed purpose of use

The AVANT Push broom is an attachment that is suitable for use with AVANT compact loaders that are shown in Table 1. The push broom is a simple general purpose brush without moving parts - it simply pushes the material in front of the broom. The broom is ideal for quick clearing of smaller areas. The broom is also very useful in paving work to push sand between bricks. The brush will last long in use, and the brush elements can be renewed as needed.

It is also possible to install the Push broom straight on the front of Avant Root grapple bucket, Silage grab or Timber grab without removing any hoses. With the brush you can clear the site from braches and woodchips, and there is no need to leave the driver's seat. It is possible to install side brushes, which are available as an option, to the Push broom. When operating the Push broom with AVANT Timber grab or Silage forks, optional adapter for silage fork or coupling bracket for timber grab is necessary.

The Push broom is not designed for any other use than what is specified in this manual and must not be used for any other purposes than what is intended for.

The attachment has been designed to require as little maintenance as possible. The operator can perform regular maintenance tasks. All repair work can't be performed by the operator, and demanding repair and maintenance operations are to be left for professional technicians. All maintenance work must be done using proper safety equipment. Spare parts must be identical with original specifications, which can be ensured by using only original spare parts. A separate spare parts catalogue may be available, consult your Avant dealer.

Familiarise yourself with the manual's instructions regarding service and maintenance. Please contact your AVANT dealer if you have additional questions about the operation or maintenance of the equipment, or if you require spare parts or maintenance services.

**Table 1 - Push broom - Compatibility with Avant loaders**

Model		220 225 225LPG	313S 320S	419 420 423	520 523 R20 525LPG R28 528 530	630 R35 635 640 645i 650i	735 745 750 755i 760i	850 860i	e5 e6
A449770	1200 mm	•	•	•	(•)	(•)	(•)	(•)	(•)
A437121	1500 mm	•	•	•	•	•	•	•	•
A447153	2000 mm	•	•	•	•	•	•	•	•

It is recommended to use the attachment only with loaders marked with • in Table 1. When using with models marked with (•), full performance may not be achieved. Various width options are available to best suite each task and loader model. For compatibility with a model not shown in table, contact your Avant dealer.

## 3. Safety instructions for using the attachment

Please bear in mind that safety is the result of several factors. The loader-attachment combination is highly powerful and improper or careless use or maintenance may cause serious personal injury or property damage. Due to this, all operators must carefully familiarise themselves about correct use and the operator's manuals of both the loader and the attachment before starting operation. Do not use the attachment if you have not completely familiarised yourself with its operation and the related hazards.



**Misuse, careless use, or using an attachment that is in poor condition may cause risk of serious injuries.** Familiarise yourself with the controls of the loader, correct coupling procedure, and the correct way to operate the attachment at a safe area. Study especially how to stop the equipment in a safe manner. Read all safety precautions carefully.

### *Read all safety instructions carefully before handling the attachment*



- When attaching an attachment to the loader, **ensure that the locking pins of the loader's quick attach plate are in the lower position and that they have locked the attachment to the loader.** Never lift or move an unlocked attachment.
- This attachment is designed to be used by one operator at a time. Do not let others near the danger area of the equipment when it is in use.
- Always transport the attachment as low as possible to keep the centre of gravity low, and keep the telescopic boom retracted during driving.
- **Risk of crushing - Never go or allow anyone else to go under the loader boom or attachment.** The stability of the loader may change when leaving the driver's seat, leading to tipping over of the machine. Always remember that the boom may lower unexpectedly due to loss of stability, mechanical fault, or if another person operates the controls of the loader, leading to crushing hazard. The loader is not intended to be left to keep a load elevated for longer periods. Lower the attachment firmly on the ground before leaving the driver's seat and never allow anyone to be under the boom or attachment.
- **Risk of impact from sudden stop - Never operate at high speed unless you can be sure that there are no obstacles at the working area.** The loader may stop suddenly if it hits an obstacle. Check the operating area and remove or mark any obstacle that could be hit with the broom. Always use seat belt and drive with caution.
- **Risk of suffocation - Never operate the loader indoors or at poorly ventilated areas.** Ensure that ventilation is sufficient when operating indoors. Do not operate the loader in closed spaces regardless of the engine or fuel type. Exhaust gases may concentrate to hazardous levels.
- Pay attention to the surroundings and any other persons and machines moving in the vicinity. Pay attention to the contours of the terrain and other hazards, such as branches and trees that can reach to the driver's area, loose rocks, and slippery surfaces.
- Never use the attachment to lift or to transport persons or as any kind of work platform even temporarily.
- Make sure to use only an attachment that is in good condition. Check the attachment thoroughly in regular intervals. Do not modify the attachment in a manner that would affect its safety. It is prohibited to drill holes on the attachment, and welding or other means of fixing hooks or other objects on the attachment is strictly prohibited.



- Shut down the loader and place the attachment to a safe position as shown in Safe stopping procedure before any cleaning, maintenance, or adjustments.
- Use the equipment only for its intended purpose. Other use may create unnecessary safety risks, and the equipment may get damaged.
- Make sure that the loader is equipped with necessary safety components, and that they are in working condition. Seat belt must be used. If there are specific hazards related to the operating area, use appropriate safety equipment.
- Also read the safety instructions and correct use of the loader from the operator's manual of the loader.

***Additional safety instructions when operating the Push broom with Avant Root grapple bucket, Silage forks or Timber grab***



- **Risk of misuse - Always read the operator's manual of all machines that you will use.** Keep all operator's manuals available for all users. Do not use the equipment if you do not have all manuals available. Contact your Avant dealer for new copies of manuals.
- **Sudden movements can cause the loader to tip over - Operate the controls of the loader in a slow and calm manner.** Be careful when lifting load to high level or lifting load from high. Avoid sudden changes in speed or direction to maintain balance of the loader especially when handling heavy loads. Drive slowly and carefully especially on inclined terrain or slippery surfaces.
- **Risk of tipping over - Keep loads close to ground while driving.** Carrying heavy loads can shift the centre of gravity of the loader and lead to tipping over of the loader. For the best stability always transport loads as low and close to the loader as possible, with the telescopic boom completely retracted, to keep the centre of gravity low.
- Watch out for the strong grapple. Keep hands and feet away from moving parts, and make sure that the attachment can't move before going near it.
- Always keep a safe distance of at least two metres between the attachment and any persons.
- Keep the loader articulation in straight position when handling heavy loads. When turning the articulation, the loader may tilt forward.
- Make sure that the surface can bear the total load. Also follow the correct tyre pressure settings.
- Observe maximum load indicated in the operator's manual of the loader. Be especially careful when the load sensor indicator is activated, if your loader is fitted with a load sensor system.





**Risk of crushing - Going under the loader boom or an attachment can cause serious injury or death.** Never go under the loader boom and prevent others from getting near lifted boom or attachment. Going under a raised attachment or loader boom is dangerous, as the boom may lower due to loss of stability, mechanical fault or when other person operates the controls of the loader. Lower the attachment firmly on the ground to a safe position before leaving the driver's seat.

Keep in mind that the loader boom can be lowered or tilted even if the engine has been shut down (crushing hazard). The loader is not intended to be left to keep a load elevated for longer periods. Always lower the attachment to a safe position before leaving the driver's seat.



## 3.1 Personal protective equipment

**Remember to wear proper personal protective equipment:**



- The noise level at the driver's seat may exceed 85 dB(A) depending on loader model and operating cycle. Extended exposure to loud noise can cause hearing impairment. Wear hearing protection while working with the loader.



- Wear protective gloves.



- Wear safety boots whenever working with the loader.



- At some operating areas using the attachment may cause spreading of dust. Protect yourself from dust with a respirator mask.

## 3.2 Safe shutdown procedure

**Safe position of the attachment, before going near the loader boom:**



**Always set the attachment to a safe position before going near the attachment.**

Safe position will prevent unintentional movements of the attachment and the loader boom. Note that the attachment can move even if the engine of the loader is turned off.

Safe stopping procedure:

- Lower the boom completely down and lower the attachment flat on the ground.
- Shut down the loader engine and lock the parking brake.
- Prevent starting of the machine, remove ignition key.

## 4. Technical specifications

**Table 2 - Push broom - Specifications**

Product number	A449770	A437121	A447153
Installation:	Can be installed to Avant quick coupling plate or onto Root grapple bucket, Log grab or Silage forks		
Total length:	252 mm	252 mm	252 mm
Total width:	1 217 mm	1 517 mm	2 017 mm
Working width:	1 200 mm	1 500 mm	2 000 mm
Weight:	60 kg	69 kg	83 kg
Compatible AVANT loaders:	See Table 1, Designed purpose of use		
<b>Options</b>			
Side brush (2 pcs)	A447166		
Adapter for silage fork	A447080		
Coupling bracket for timber grab	A449113		

### 4.1 Safety labels and main components of the attachment

Listed below are the labels and markings on the attachment. They must be visible and readable on the equipment. Replace any unclear or missing label. New labels are available via your retailer or contact information provided on the cover.



**Make sure all warning decals are readable.** The warning labels contain important safety information and they help to identify and remember the hazards related to the equipment. Replace damaged or missing warning labels with new ones.



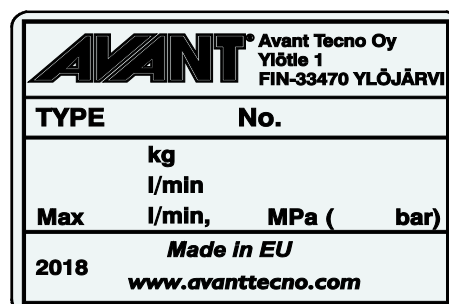
A46771



A46772



A46799

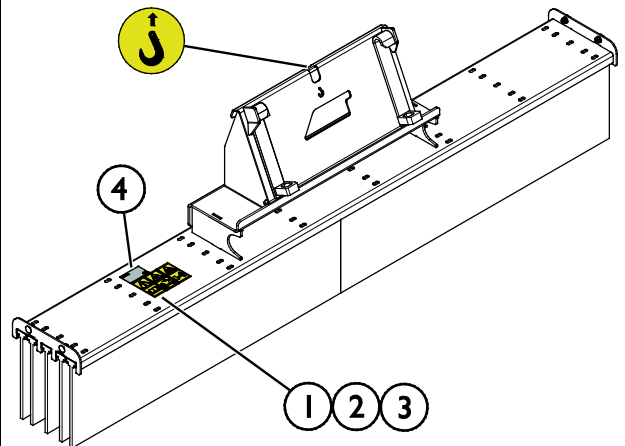


Attachment identification plate A449778 / A437491 / A447155

**To apply a new label:** Clean the surface thoroughly to remove all grease. Allow it to dry completely. Peel off the protective film of the label and press firmly to apply. Take care not to touch the glue of the label.

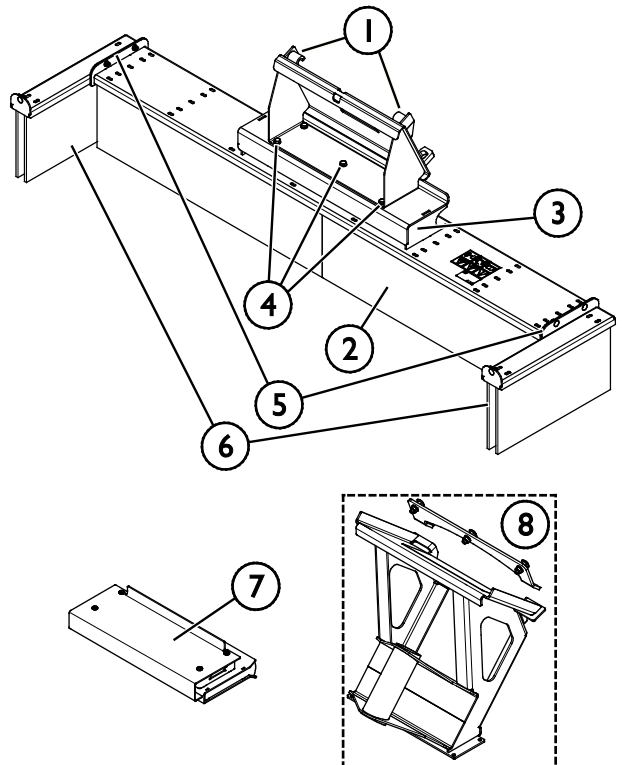
**Table 3 - Decal locations and warning messages**

	Decal	Warning message
1	A46771	Misuse hazard - Read instructions before use.
2	A46772	Crushing hazard - Do not go under a raised attachment; stay away from raised equipment.
3	A46799	Beware of thrown objects; keep a safe distance from the equipment (at least 2 metres).
4	A449778 / A437491 / A447155	Attachment identification plate



**Table 4 - Push broom - Main components**

1	Standard coupling adapter with Avant quick coupling brackets
2	Brush
3	Fastening frame for coupling adapters
4	Bolts (5 pcs) for coupling adapters
5	Locking plate for brush elements (2 pcs)
6	Side brush (2 pcs) (Option)
7	Adapter for silage fork (Option)
8	Coupling bracket for timber grab (Option)



## 5. Attaching the attachment

Attaching the attachment to the loader is quick and easy, but it must be done carefully. The attachment is mounted to the loader boom by using the quick coupling plate on the loader boom and the counterpart on the attachment.

If the attachment is not locked to the loader, it may fall from the loader and cause a hazardous situation. Never drive with the loader and never lift the loader boom if the attachment has not been fully locked. To prevent hazardous situations, always follow the coupling procedure shown below. Also remember the safety instructions shown in this manual.



**Crushing risk - Make sure that an unlocked attachment will not move or fall over.**

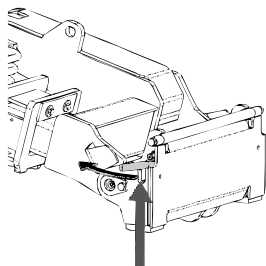
Do not stay in the area between the attachment and the loader. Mount the attachment only on level surface.

Never move or lift an attachment that has not been locked.

### 5.1.1 Installing the front brush

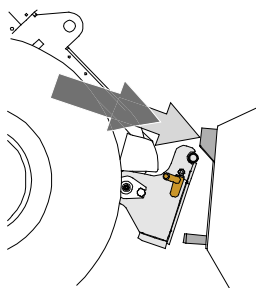
**Avant quick coupling system:**

#### Step 1:



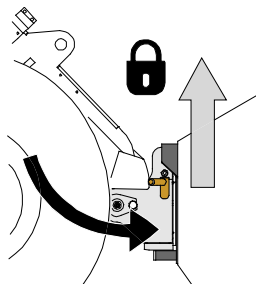
- Lift the locking pins of the quick coupling plate of the loader up, and turn them backwards into the slot, so that they are locked in the upper position.
- If your loader is equipped with a hydraulic attachment locking system, see additional instructions about the use of the locking system from the operator's manual of the loader.
- Make sure that the hydraulic hoses are positioned so that they will not get in between the coupling plate of the loader and the attachment, and that they will not get squeezed or chafed against sharp edges.

#### Step 2:



- Turn the quick coupling plate hydraulically to an obliquely forward position.
- Drive the loader onto the attachment. If your loader is equipped with a telescopic boom, you can use it to reach to the coupling brackets of the attachment.
- Align the upper pins of the loader's quick coupling plate so that they are under the corresponding brackets of the attachment.

#### Step 3:



- Lift the boom slightly – pull the boom control lever backward to lift the attachment just off the ground.
- Turn the boom control lever left to turn the bottom section of the quick coupling plate of the loader onto the attachment.
- Lock the locking pins manually or lock the hydraulic locking.
- **Always check the locking of both locking pins.**



## WARNING

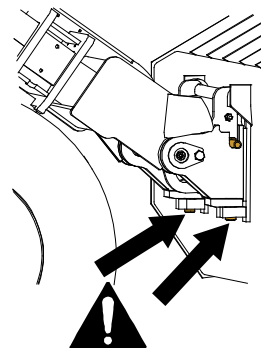
**Risk of crushing - Avoid tipping over the attachment.** Excessive tilting or lifting of an unlocked attachment increases the risk of tipping the attachment over. Do not use the automatic locking of the locking pins when the attachment is lifted more than one meter from the ground. If the locking pins do not return to the normal position when tilting, do not tilt or raise the attachment any more. Lower the attachment on the ground and secure the locking manually.



## WARNING

### **Risk of falling objects - Prevent dropping of attachment.**

An attachment that has not been completely locked to the loader may fall on the boom or towards the operator, or fall under the loader during driving, causing loss of control of the loader. Never move or lift an attachment that has not been locked. Before moving or lifting the attachment, make sure that the locking pins are in the lower position and come through the fasteners on the attachment on both sides.



## WARNING

**Make sure the loader is compatible with the attachment.** Stability of the loader, possible overload of the attachment, and compatibility of loader control systems must be ensured in addition to mechanical compatibility of the attachment. If you use the attachment with a loader that is not fit to be used with the attachment model you have, risks include tipping over, damage to attachment due to overload, and risks related to uncontrolled motion of attachment and its parts. If your loader is not listed in Table 1 on page 6, ask your Avant dealer before using this attachment.

## 6. Operating the attachment

Check the attachment and the operating environment once more before starting to work, and that all obstacles have been removed from the operating area. Quick inspection of the equipment and the operating area before use are parts of ensuring safety and the best performance of the equipment.



**Avoid running over persons - Check surroundings before driving.** Always look in the direction the loader is moving. Before reversing, always ensure that bystanders, especially children, are at a safe distance to avoid back-over accidents.

### 6.1 Checks before use

- Use only when all pins are locked and secured in place.
- Check the general condition of the attachment and the loader.
- When mounting an attachment onto the tilt adapter, note that the locking pins must always be secured manually.
- Ensure that bystanders are at a safe distance when operating the equipment. Do not let anyone to enter danger area of the boom or to stay directly in front of the loader. Also make sure that it is safe to reverse with the loader. Never assume that bystanders will remain where you last saw them; especially children are often attracted to the moving equipment.
- Operate the attachment and the controls of the loader only when seated on the driver's seat. Ensure that the loader and the attachment are used in a safe manner and as intended. Do not allow children to operate the equipment.
- Never operate the loader or attachments while under the influence of alcohol, drugs, medication that may impair judgement or cause drowsiness, or if not otherwise medically fit to operate the equipment.
- Remember correct working methods and avoid leaving the driver's seat unnecessarily. Practise the use of the attachment and the controls of the loader in a safe area. If you are unfamiliar with the particular loader model, it is recommended to practise its use without any attachments.

### 6.2 Operator qualification

Anyone who intends to use the attachment must:

- Know the intended use of the attachment.
- Know how to use the loader safely in different operating conditions.
- Read and always follow the instructions concerning the use of the attachment in this operator's manual.
- Have this manual and the operator's manual of the loader available.
- Ensure that the loader and the attachment are used in a safe manner and as intended.
- Never allow children to operate the equipment.
- Never operate the loader or attachments while under the influence of alcohol, drugs, medication that may impair judgement or cause drowsiness, or if not otherwise medically fit to operate the equipment.
- Complete any possible mandatory training required by the employer before use.

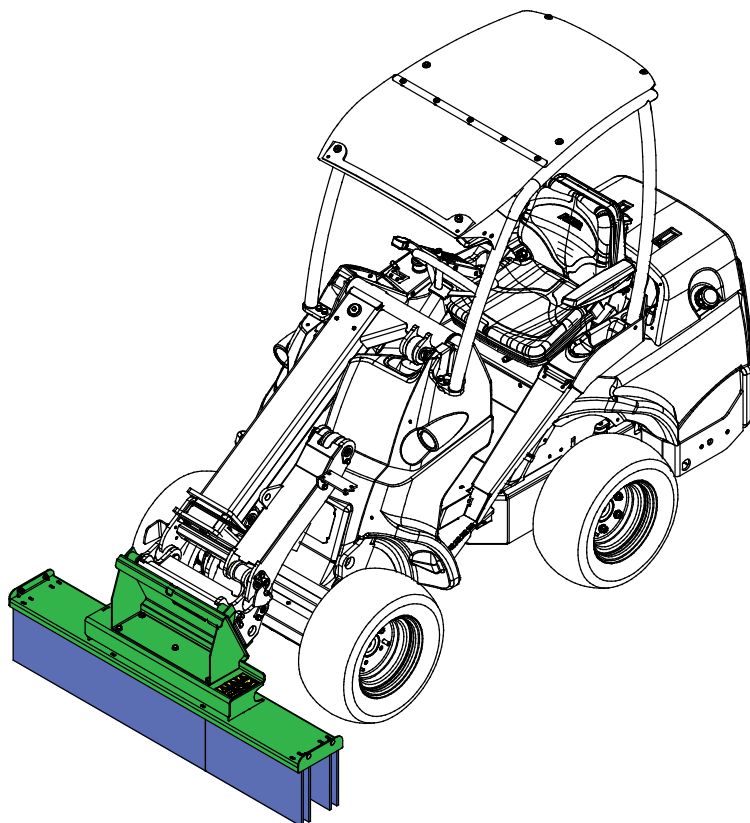
## 6.3 Operating the Push broom

### *Adjusting the attachment to correct working position*

The correct position of the Push broom depends of the material being moved and surface type.

The broom works in the most efficient way, when the quick coupling bracket is set to slightly forward tilted position and when light load is applied on it, as shown in the adjacent figure.

When a suitable position is adjusted, lift the loader boom by operating the boom control lever only longitudinally. In this way, the correct position is maintained, when lowering the attachment.



### *Operating speed*

Set the loader speed according to the surface being handled and operating conditions. Moderate loader speed is usually enough to brush up the surface.

### *Performance*

It is possible to remove brush elements when more intensity is necessary during operation. Removing the middle elements, for example, leaves more space for braches, and other objects. See the adjacent figure, and see page 27.

#### **NOTICE**

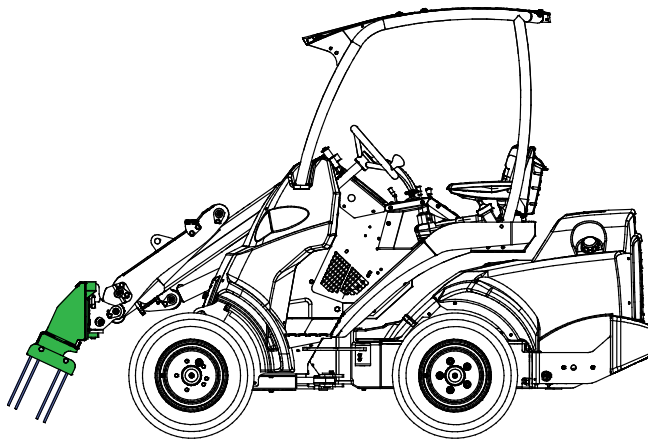
Avoid pressing the brush too much to avoid damaging and quick wearing of the bristles. Do not press the broom so that the front end of the loader would lighten significantly. Pressing the brush too much also degrades the brushing performance.

#### **NOTICE**

Do not leave the brush against the ground when it is attached to the loader. The weight of the boom could cause permanent bending of the bristles. Remove the brush from the loader for storage.

### 6.3.1 Transport position

Lift the push broom off the ground before transport drive. Keep the loader stable. Always transport the attachment as low and close to the ground as possible. Keep the telescopic boom retracted during drive.



**WARNING**

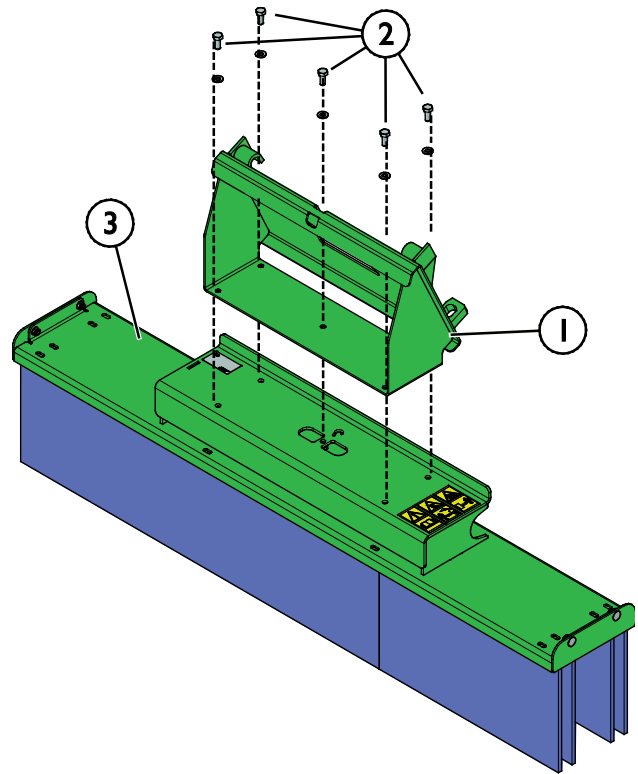
Keep the loader stable. Always transport the attachment as low and close to the ground as possible. Keep the telescopic boom retracted during transport drive.



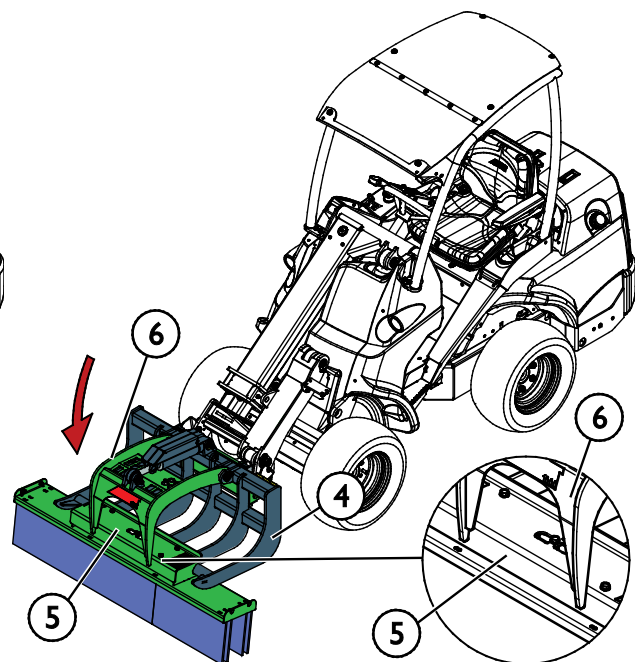
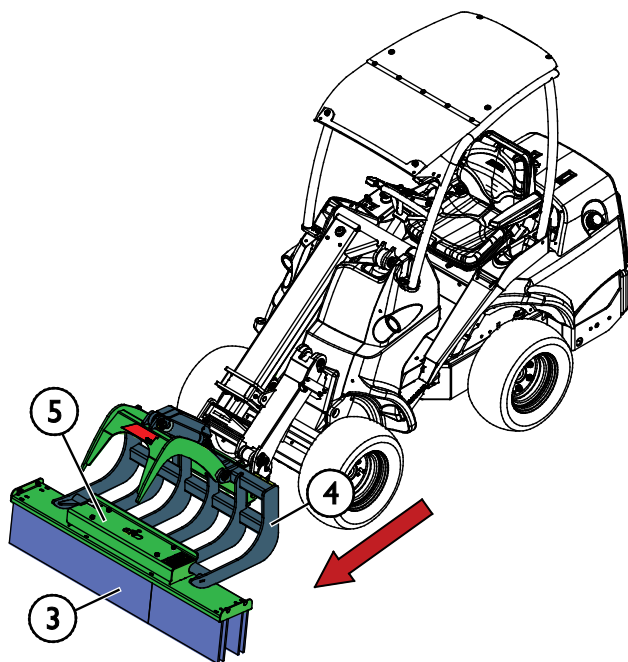
## 6.3.2 Operating the Push broom with Root grapple bucket

### Starting to operate the Push broom with Root grapple bucket

1. Undo the fixing bolts (2) and remove the frame (1) from the Push broom (3).



2. Drive the loader that is equipped with Avant Root grapple bucket (4) next to the Push broom (3). Slide the forks of the Root grapple bucket (4) into the quick coupling housing (5) of the Push broom (3) as indicated in the figure below.
3. Lock the attachment by lowering the grapple (6) on the quick coupling housing (5) as indicated in the figure below.



**WARNING**

**Risk of serious personal injuries - Ensure that there are no other persons near the operating area.** Do not allow others closer than 2 metres from the grab, to the boom danger area, or directly in front or back of the loader. Move carefully and calmly near persons or farm animals. Also make sure that it is safe to reverse with the loader.

Work can be started when the root grapple bucket has been mounted and the hydraulic fittings connected according to the instructions. Check the attachment once more before starting work.

- Check that hydraulic hoses will not get pinned or stretched in any position of the attachment or the loader boom.
- Remember correct working methods and avoid unnecessary descending from the loader.

#### ***Using the Push broom with root grapple bucket***

When operating the Push broom while it is mounted to the Root grapple bucket, operate in similar way as when using the broom separately. Tilt the attachment carefully, as small adjustments may put too much pressure onto the broom.

### **6.4 Operating the Push broom with other attachments**

Work can be started when the Avant Silage forks or Timber grab has been mounted. Check the attachment once more before starting work.

- Check that hydraulic hoses will not get pinned or stretched in any position of the attachment or the loader boom.
- Remember correct working methods and avoid unnecessary descending from the loader.

**WARNING**

**Risk of crushing - The sharp tines of the attachment and its grapple can cause serious injuries.** Make sure that there are no other persons at the operating area and keep a safe distance to persons or farm animals. Lower the grapple before driving with the loader. Stop the loader following the safe stopping procedure before going near the attachment.

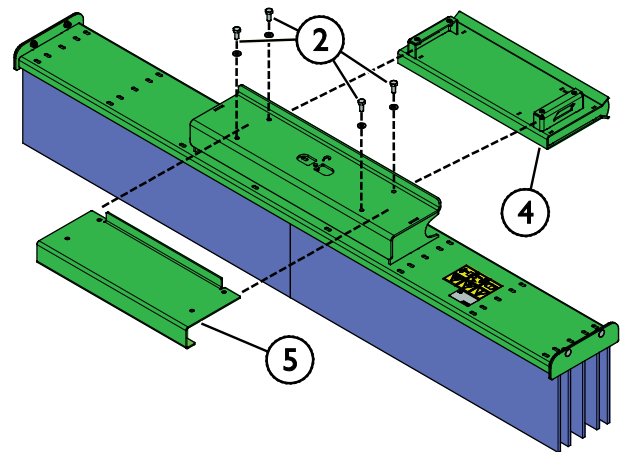
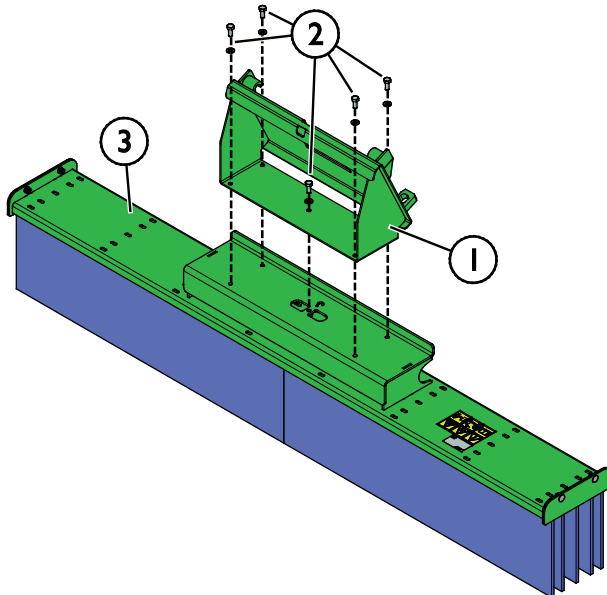


## 6.4.1 Operating the Push broom with silage grab

### Starting to operate the Push broom with Silage grab

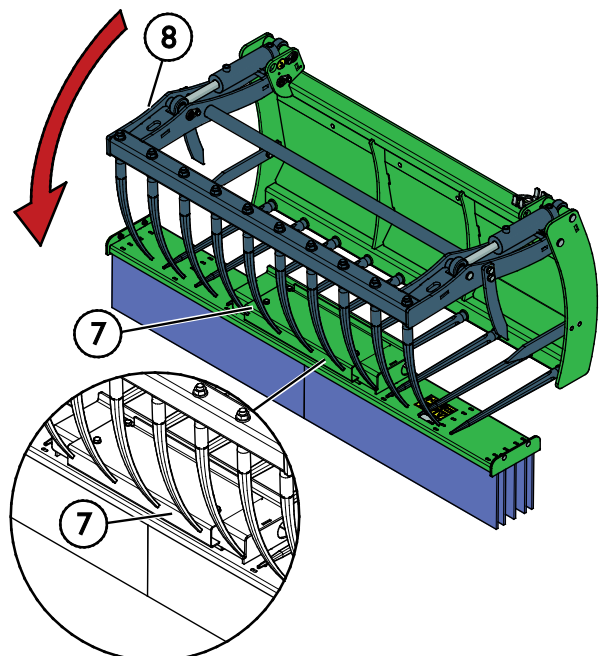
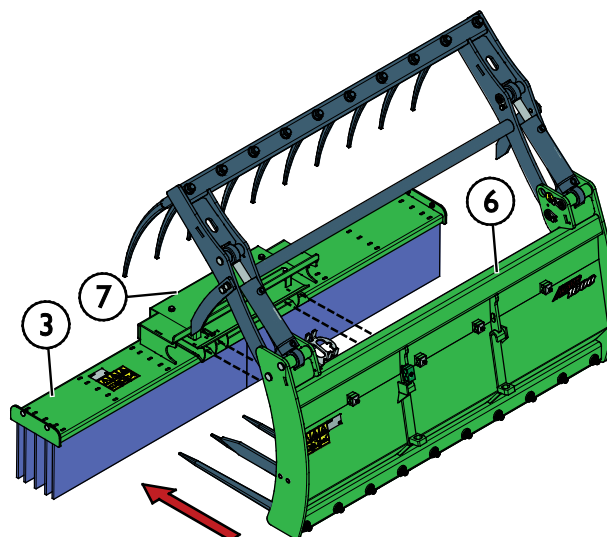
Install the optional silage fork adapter by using existing fixing points.

1. Undo the fixing bolts [5 pcs] (2) and remove the standard coupling adapter (1) from the Push broom (3).
2. Fit the lower frame (4) of the silage fork coupling adapter inside the Push broom housing, and the upper frame (5) on the Push broom adapter as shown in the figure below. Use existing fixing bolts [4 pcs] (2) to fasten the coupling adapter.



3. Drive the loader that is equipped with Silage grab (6) close to the coupling adapter of the Push broom (3). Slide the forks of the Silage grab (6) into the adapter (7) of the Push broom (3) as indicated in the figure below.
4. Lock the attachment by lowering the grapple (8) on the quick coupling adapter (7) as indicated in the figure below.

The adapter (7) is marked with XL sign. Use the slot marked with XL sign for XL silage grabs.



### **Using the Push broom with Silage grab**

When operating the Push broom while it is mounted to the Silage grab, operate in similar way as when using the broom separately. Tilt the attachment carefully, as small adjustments may pressurize the broom too much.

The AVANT Push broom is an attachment that is suitable for use with AVANT Silage grabs that are shown in Table 5.

**Table 5 - Push broom - Compatibility with Avant Silage grabs**

<b>Push brooms</b>		<b>Silage grabs</b>				<b>XL Silage grabs</b>		
		A428328	A36299	A36313	A36319	A441007	A440998	A440586
		800 mm	900 mm	1050 mm	1300 mm	1300 mm	1450 mm	1600 mm
A449770	1200 mm	•	•	•	(•)	(•)	(•)	(•)
A437121	1500 mm	•	•	•	•	•	•	(•)
A447153	2000 mm	•	•	•	•	•	•	•

It is recommended to use the Silage grabs only with Push brooms marked with • in Table 1. When using with models marked with (•), the width of the Silage grab exceeds the width of the Push broom and full performance may not be achieved.

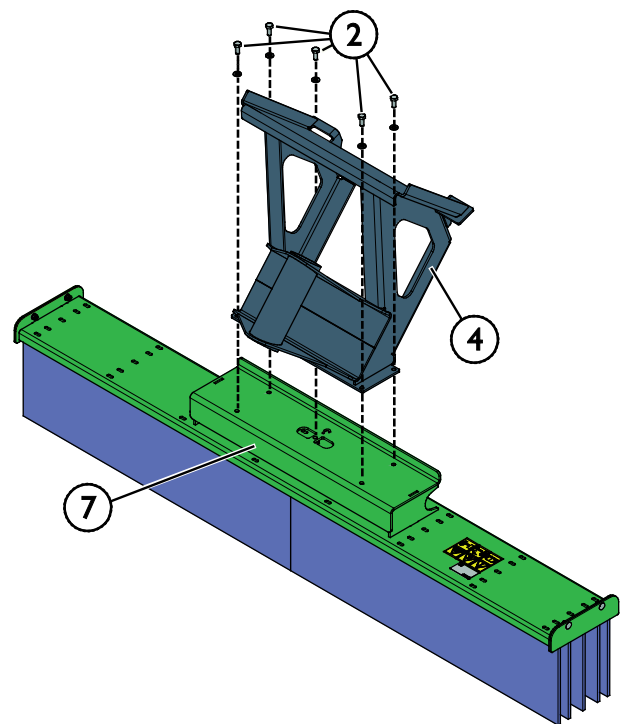
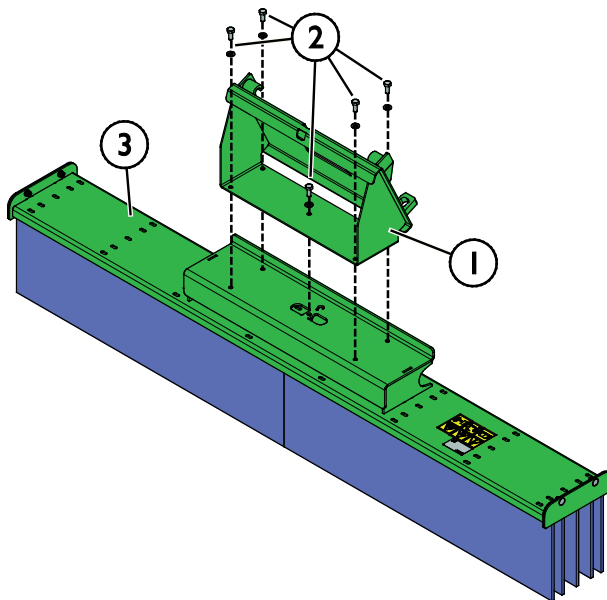
## 6.4.2 Operating the Push broom with Timber grab

The optional coupling bracket makes it possible to use the Avant Timber grabs A37457 and A37456 with all Avant Push brooms widths.

### Starting to operate the Push broom with Timber grab

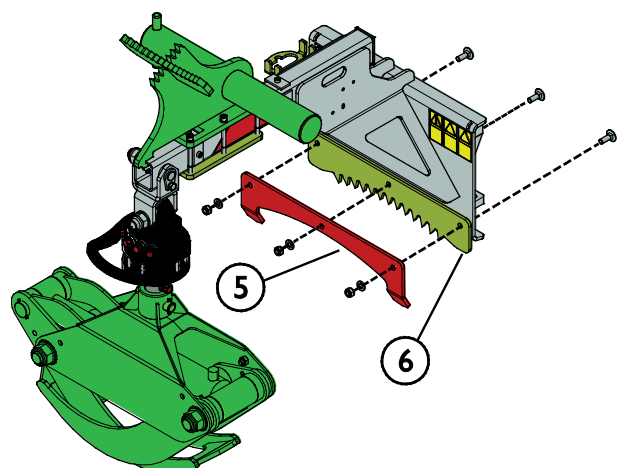
Install the optional coupling bracket by using existing fixing points.

1. Undo the fixing bolts (2) and remove the adapter (1) from the Push broom (3).
2. Install the frame (4) of the coupling bracket on the Push broom adapter (7) as shown in the figure below. Use existing fixing bolts (2) to fasten the option.



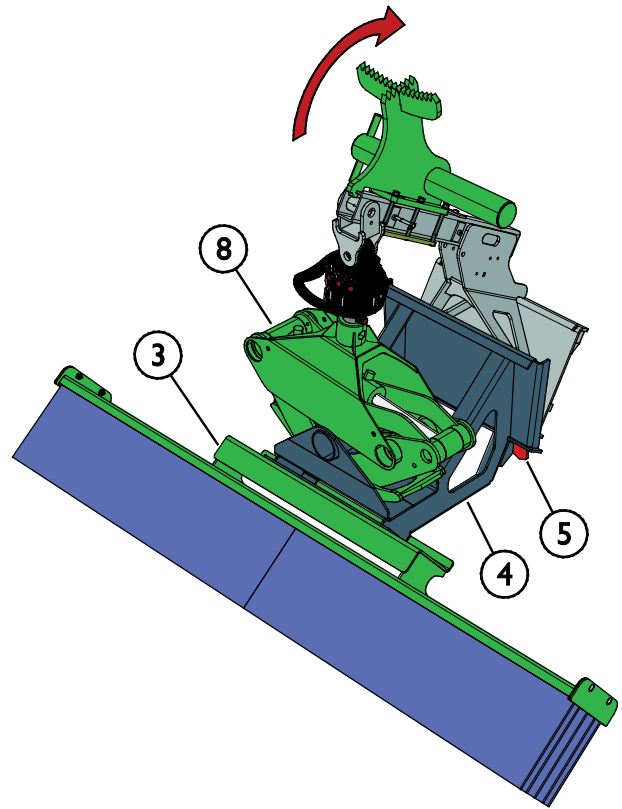
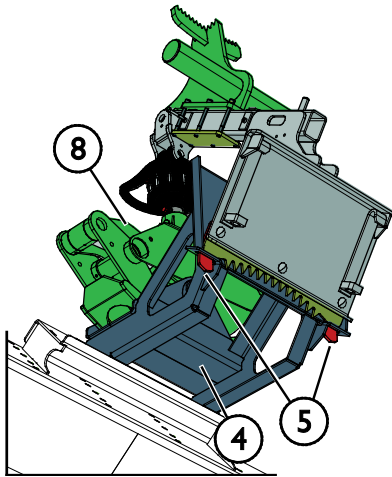
3. Fix the lock plate (5) of the coupling bracket on the tooth rim (6) of the Timber grab as shown in the adjacent figure. Use longer fastening screws that are included in the option delivery.

Make sure that the claws of the lock plate (5) are pointing towards the loader.



4. Drive the loader that is equipped with Timber grab (8) next to the Push broom (3) and open the grapple.
5. Tilt the timber grab slightly upwards as indicated with an arrow in the adjacent figure. The claws of the lock plate (5) must be against the flat surface of the coupling bracket (4). Grab the tube of the coupling bracket (4) with the grapple of the Timber grab (8).

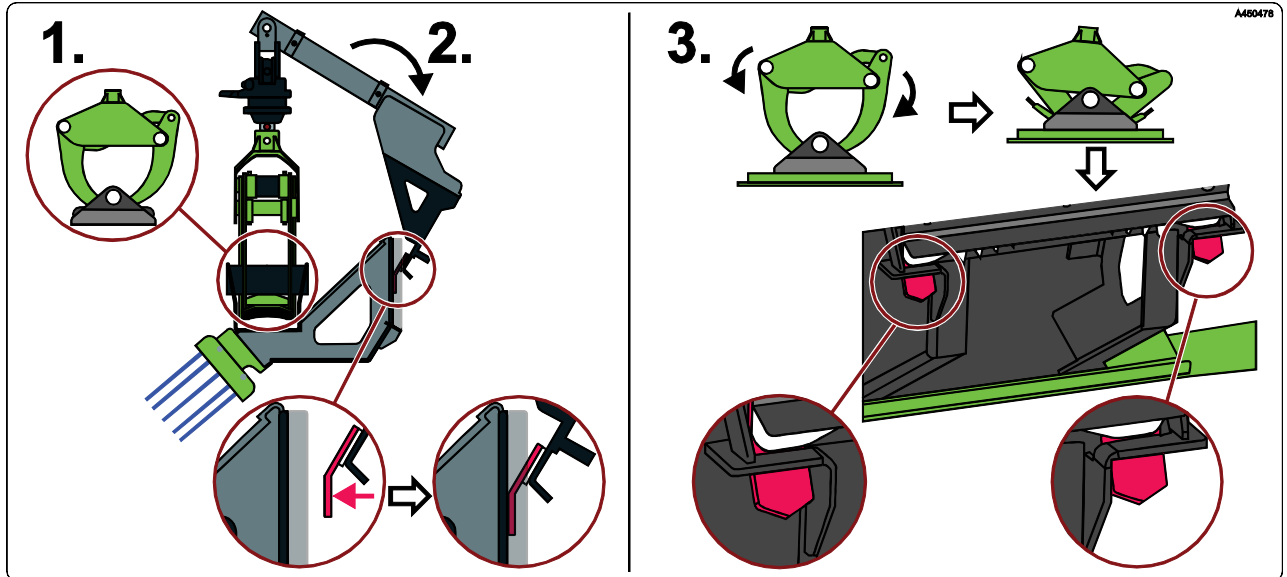
Close the grapple of the timber grab (8) completely, and the claws of the lock plate (5) will be locked into the slots of the coupling bracket (4) as shown in the adjacent figures.



6. The attachment is ready for operation when the claws are aligned and the grapple is fully closed.

## Installation principle

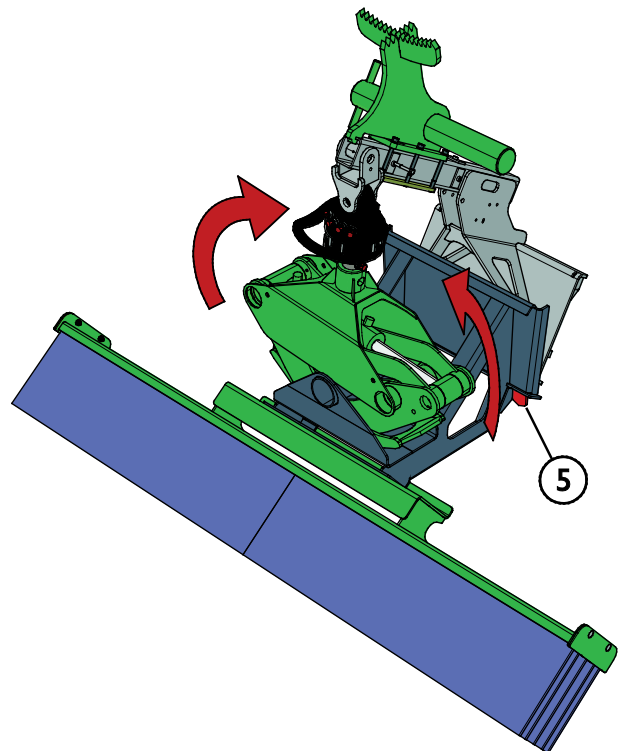
- 1 Before grabbing the push broom with a timber grab, the claws of the lock plate must be against the flat surface of the coupling bracket.
- 2 Grabbing the tube of the coupling bracket with the grapple of the timber grab aligns the lock plate with the coupling plate.
- 3 The claws of the lock plate are locked into the slots of the coupling bracket by closing the grapple of the timber grab.



## Uncoupling the Push broom from the Timber grab

1. Tilt the frame of the Timber grab back to the upright position, and open the grapple slightly until the claws of the lock plate (5) are off the slots of the coupling bracket.

Do not lift the attachment too high during uncoupling in order to avoid dropping of the attachment.



2. Lower the Push broom on the ground in a controlled way.



**WARNING**

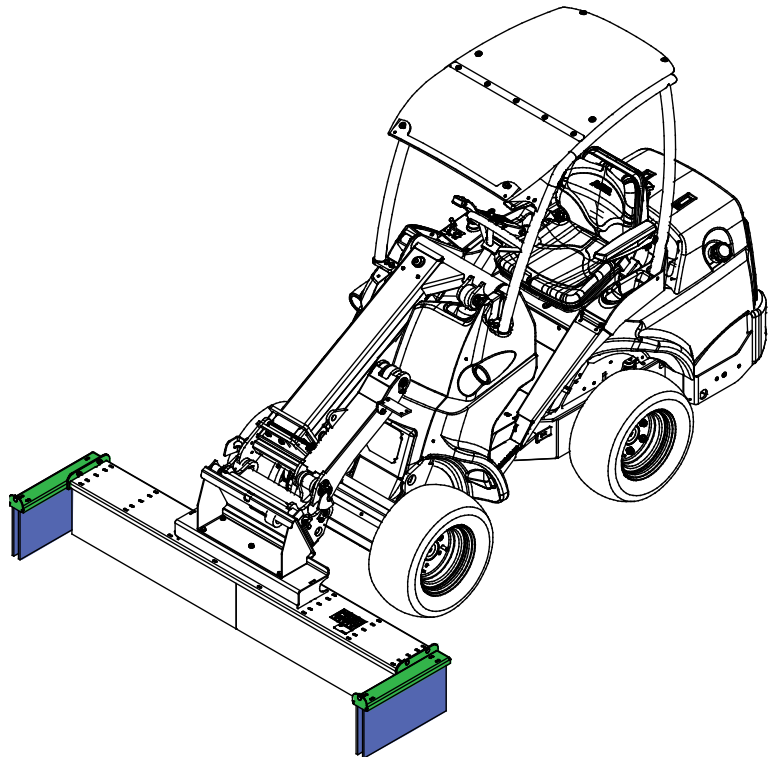
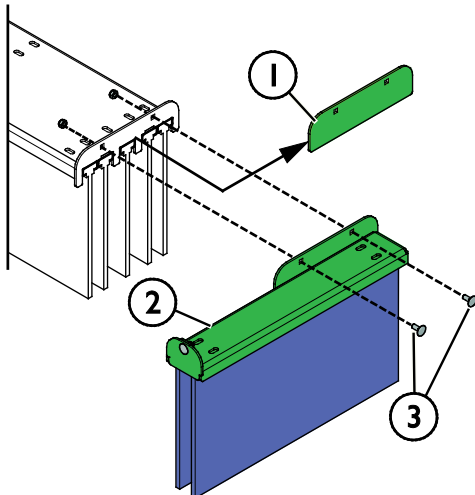
**Risk of serious personal injuries and material damage - Never open the grapple during operation.** When the grapple is opened during brushing operation the teeth of the tooth plate can not keep the tension any longer and the Push broom might fall off unexpectedly causing damage. Always stop the loader according to the safe stopping procedure before separating the Push broom from the Timber grab.

### 6.4.3 Side brushes

The Push broom can be equipped with side brush option.

The side brushes (2 pcs) are fixed at the ends of the main brush as shown in the adjacent figures.

1. Remove the standard end plate (1).
2. Fix the side brush (2) at the end of the main brush with existing screws (3).



### 6.5 Working on uneven ground

Extra caution is needed when using the equipment on inclined terrains and slopes. Drive slowly especially on inclined, uneven, or slippery surfaces, and avoid sudden changes in speed or direction. Operate the controls of the loader with careful and smooth movements. Watch out for ditches, holes on the ground, and other obstacles, as hitting an obstacle may cause the loader to tip over.

Maximum lifting capacity can not be achieved on inclined terrain. On horizontally tilted terrain the load must not be lifted high. The loader frame articulation should be kept straight when lifting heavy loads; turning the load during lifting operation will affect the stability of the loader and may lead to overturning of the machine.

### 6.6 Operating with a tilt adapter

When you work on slightly inclined terrains, a tilt adapter is an useful option. The tilt adapter is fitted in between the attachment and the quick coupling plate of the loader. The adapter allows the attachment to be tilted sideways. The possible tilt adapter options at the time of print of this manual are  $\pm 12.5^\circ$  (model A34148),  $\pm 45^\circ$  (model A36505) or  $\pm 360^\circ$  (model A424406). Read the instructions provided with the tilt adapter and in the operator's manual of the loader. More information about the tilt adapters is available from your AVANT retailer or from the AVANT web pages at [www.avantteco.com](http://www.avantteco.com).



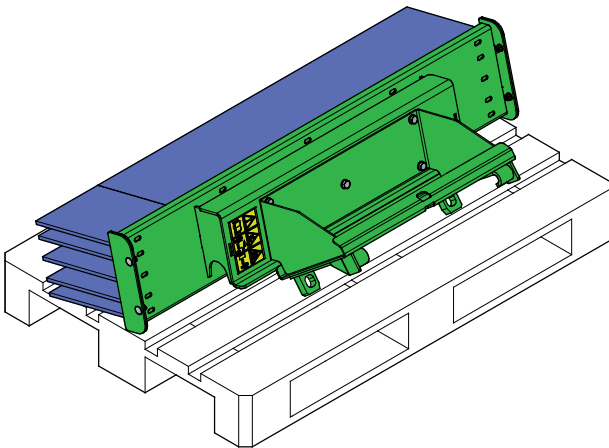
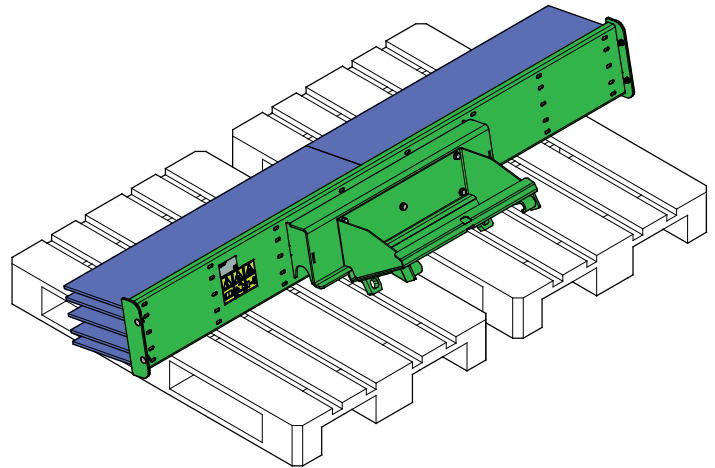
## 6.7 Storing the attachment

Uncouple and store the attachment on level ground. The best way to store the attachment is a place where it is protected from direct sunlight, rain, and extreme temperatures.

To prevent the bristles from bending, it is important to ensure that the brush is stored correctly. If the attachment is left in a way that all the weight is applied on the brush, the bristles may bend permanently and the performance of the attachment will decrease.

- Avoid leaving the attachment laying directly on the ground. Place it on blocks of wood or on a pallet, for example. A larger pallet or two pallets may be necessary to ensure the stability of the attachment during storage.
- Make sure that the attachment is secured against all movements during storage.
- Never climb on the attachment.

For longer storage periods touch up the paint where needed to prevent rust damage.



## 7. Maintenance and Service

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The attachment has been designed to be as maintenance free as possible. Continuous maintenance includes regular cleaning and lubrication, and monitoring the condition of the attachment. Because of the crushing hazard caused by lowering machine parts, all maintenance work must be done when moving parts have been lowered down completely and the attachment is lowered flat against the ground.



**Risk of crushing - Never go under lifted attachment.** Make sure the attachment is properly supported during all maintenance work. Never go under a lifted attachment. The loader boom may lower unexpectedly during maintenance causing serious injuries from crushing or impact even when the loader engine is not running. All maintenance and service must be performed when the attachment has been lowered down to a safe position.

### 7.1 Cleaning the attachment

Clean the attachment regularly to prevent accumulation of dirt which is more difficult to remove. A pressure washer and mild detergent can be used for cleaning. Do not use strong solvents, and do not spray directly at the hydraulic components, or at the labels on the attachment.

### 7.2 Inspection of metal structures

Also the metal structures of the attachment must be inspected regularly. Check visually for damages and inspect the quick attach brackets and their surrounding area carefully. The attachment must not be used if it is deformed, cracked, or torn.

Welding repairs are only allowed to be carried out by professional welders. When welding, only methods and additives suited for steel used in attachment must be used. For more information about repairs contact your nearest service point.

### 7.3 Lubrication

There are no specific lubrication points on the attachment. The attachment is maintenance free, except for cleaning, monitoring its condition, and occasional paint retouch if needed.

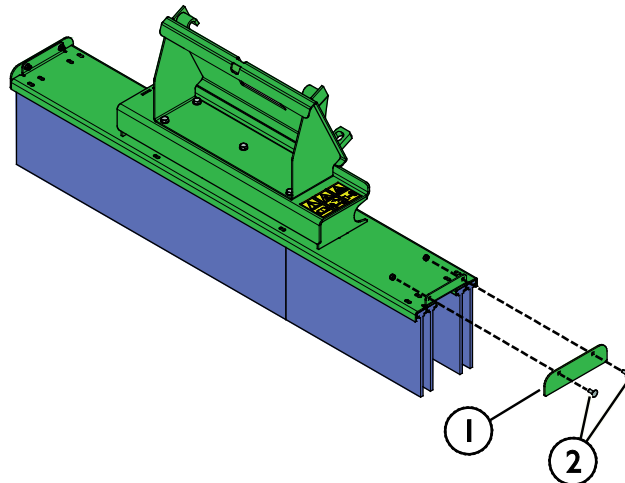
## 7.4 Brush

The material of the bristles is polypropylene and in normal operating conditions the brush has a good wear resistance capability. As the brush wears down it loses its effectiveness and an excessively worn brush may be replaced.

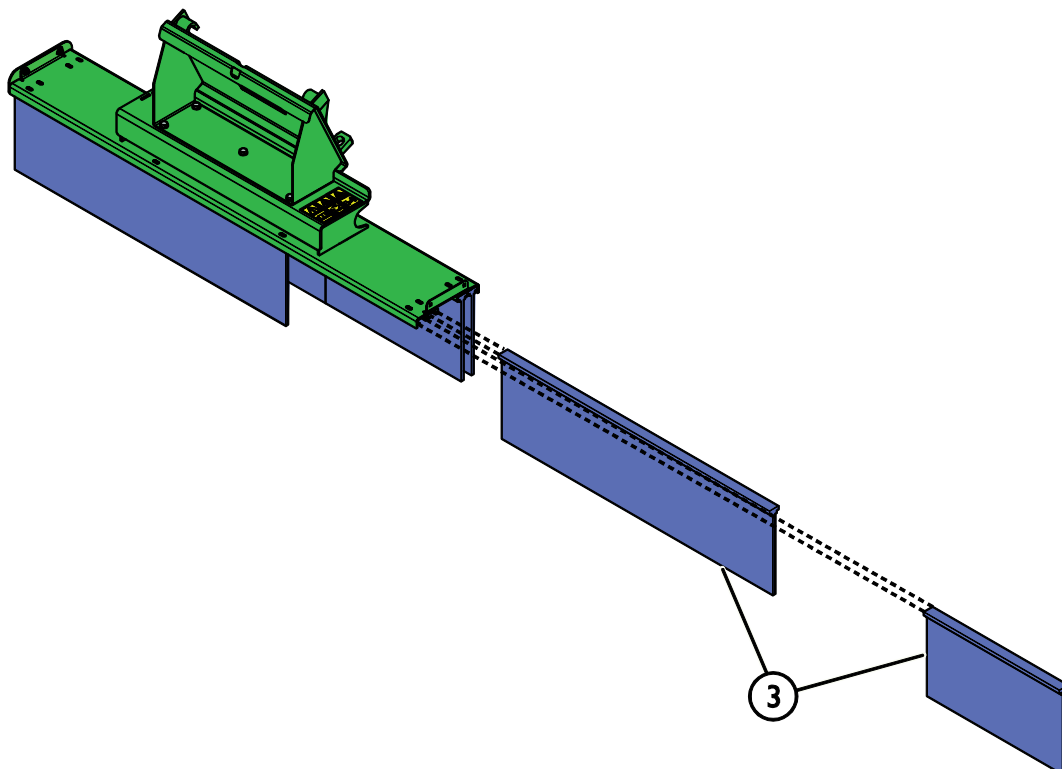
### 7.4.1 Brush elements

Replace the brush elements as follows:

1. Undo the fastening screws (2) and remove the locking plate (1) as shown in the adjacent figure.



2. Replace all necessary elements (3) and reassemble the Push broom in reverse order. Overlap the elements of unequal length in order to avoid aligning the seams as shown in the figure below.



## **7.5 End of life disposal**

When the attachment is at the end of its useful life recycle and dispose of the attachment properly. Dismantle the attachment and separate the different materials, such as plastic, steel, and rubber, for example. Handle them by following the current local regulations. Never leave any material in the environment.

Recycle each material by delivering them to a proper collecting place. Let a waste management company do the recycling, if possible.

## 8. Warranty terms

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Avant Tecno Oy grants a warranty of one year (12 months) from the date of purchase for the attachment it manufactures.

**The warranty covers repair costs as follows:**

- Work costs are covered, if the repair is not performed at the factory.
- The factory replaces any defective components or consumables.

The factory may reimburse the price of components purchased by the customer in special cases that have been agreed in advance.

**The warranty does not cover:**

- Normal maintenance work or parts and consumables required for it.
- Damages caused by unusual operating conditions or ways of use, negligence, structural changes made without the consent of Avant Tecno Oy, use of non-original parts or lack of maintenance.
- Consequences of a defect, such as interruption of work or other possible additional damages.
- Travel and/or freight costs caused by the repair.



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