

SUBSOILER

OPERATOR'S MANUAL

SVH

Models
SVH-1 SVH-5/3 SVH-9/5



Part No.
4350-2135-01

INTRODUCTION

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction the implement will travel when going forward.

4350-2135-01 (Rev. 17/10/12)





TO OUR CUSTOMERS:

Congratulations for acquiring a Bison® product.

We are confident in your excellent decision to purchase Bison® equipment, and are honored to have you as our valued customer.

Your dealership shall make the technical pre-delivery of your equipment, and a trained technician shall provide you maintenance and operation instructions contained in this manual. Get in contact with your dealership representative if you have questions regarding your equipment or need specialized help.

We recommend that you read this manual before operating the equipment. Therefore, the time you take to learn about all maintenance features, adjustments and recommendations will result in the long, efficient life of your equipment.

This equipment is covered by a warranty duration provided by your Bison® authorized dealer at the purchase or technical delivery of same.

Bison® is a Brand of Tecnomec Agrícola, S.A. de C.V., Aguascalientes, México.

GENERAL INDEX

| | |
|----------------|----------------------------|
| !!..... | INTRODUCTION |
| 01..... | GENERAL INFORMATION |
| 06..... | SPECIFICATIONS |
| 07..... | SAFETY RULES |
| 11..... | OPERATION |
| 14..... | MAINTENANCE |
| 16..... | TROUBLESHOOTING |
| 17..... | ASSEMBLY |
| 26..... | PARTS INDEX |
| 36..... | BOLT TORQUE CHART |
| 39..... | WARRANTY |

GENERAL INFORMATION

OPERATOR'S MANUAL

If this manual is lost or destroyed
a new copy can be requested to:

TECNOMEC AGRICOLA S.A. DE C.V.
Carr. a Paso Blanco, Km 2 No. 400
Col. Vista Hermosa, Jesús María
Aguascalientes, México. C.P. 20905
Tel. 01 (449) 922 47 66, 922 47 60
Fax 01 (449) 922 47 67

SVH Subsoilers are designed to work safely, however, please note the following considerations:

Read this manual thoroughly for information on the proper operation and maintenance of your Subsoiler.

Note the serial number at the end of the warranty section to aid in the recovery of the machine in the event of theft. Keep this manual in a safe place. It should not be kept on the machine.

The cautious operator is the best guarantee against any accident, as improper operation of these machines can cause serious injury or even death.

Make sure that there are no people near the equipment before starting the subsoiling work.

Be cautious when making adjustments and avoid accidents when handling Subsoiler components.

To achieve a more efficient and higher quality subsoiling, it is important to read and follow the adjustment and operation instructions of your Subsoiler, since a properly adjusted implement saves time, labor and fuel.

After each day, clean and inspect your Subsoiler for possible faults.

GENERAL INFORMATION

Tecnomec Agrícola offers original spare parts, thru authorized dealers.

Our trained personnel, is well versed on methods to service to your equipment. If you need additional information or custom assistance please contact your Bison authorized dealership or directly to TECNOMEC AGRÍCOLA S.A. DE C.V.

YOUR AUTHORIZED DISTRIBUTOR TECNOMEC AGRÍCOLA, S.A. DE C.V.

IT IS THE POLICY OF TECNOMEC AGRICOLA TO CONTINUOUSLY IMPROVE ITS PRODUCTS AND RESERVES THE RIGHT TO MAKE CHANGES TO ITS SPECIFICATIONS OR DESIGN WITHOUT INCURRING IN THE OBLIGATION TO APPLY THEM TO UNITS ALREADY SOLD.

CURRENT MODELS MAY VARY IN SOME DETAILS GIVEN CONTINUOUS IMPROVEMENT TO WHICH OUR PRODUCTS ARE SUBMITTED.

*Some pictures show equipment that is not necessarily included as part of the standard machine.



LISTS OF INSPECTION

PRE-DELIVERY INSPECTION MADE BY BISON DEALERSHIP

After the Subsoiler has been completely adjusted, check it and make sure it is ready for proper operation before delivering it to the customer. The following list is a reminder of the items to inspect. Check each item if it has been found satisfactory or after the proper adjustments have been made.

- Make sure that the Subsoiler has been properly assembled.
- Verify that the bolts, nut and set screws are tight.
- Verify that the shanks have been installed to the customer's desired rotation width.
- Clean the Subsoiler and touch up any places where the paint is lifted or scratched.
- Make sure all decals are properly positioned and undamaged.
- Ensure that the machine carries the options that the customer requires.

Date of Assembly_____Name and Signature of Technician_____

LISTS OF INSPECTION

DELIVERY BY BISON DEALERSHIP

The following list is an important information reminder to be transmitted directly to the Client at the moment of the delivery of the Subsoiler.

Check that each point was duly explained to the client.

- Point out to the Client that useful life of this or any other machine is dependant of proper lubrication as described on its Operator's Manual. Hand your Client the Operator's Manual and fully explain all operations, lubrication and maintenance adjustments.
- Explain the importance of a proper and safe operation of the machine. Stress the importance of labels as those prevent the operator from hazards due to unsafe operation procedures and conditions.
- Notify the client of accessories or options available.
- When Subsoiler is transported on roads or highways during the day or the night, adjust lights or safety devices to alert operators of other vehicles. Recommend your client to check local official transit regulations.
- Show the client how to mount the machine.
- Notify your client of serial number of its Subsoiler on the space provided at the end of this operator's Manual.
- Complete Delivery and warranty forms, listing serial number of machine.
- Give details on the warranty. Make a format for execution by the Client and dealership.
- Machinery is being delivered ready to use and the Client has been informed about its operation and care.

Date of Delivery _____ Name and Signature _____

OWNER REGISTRATION

Name _____

City _____

State _____

Serial number _____

Model number _____

Purchase date _____

LISTS OF INSPECTION

POST-SALES INSPECTION

It's advised that the following items are constantly checked during first hours of operation.

- Fully check the machinery and certify there are no damaged parts. Repair or change if necessary. All guards shall be in place.
- Check there are no loose or missing screws. If possible, operate Subsoiler to check proper operation.
- Check during Subsoiler operation that there is no interference between hoses and mobile parts that can be damaged.
- Check the operator's manual in full with your client and highlight importance of a regular and proper lubrication as well as safety precautions.

Inspection Date _____ Name and Signature _____

MORNING OPERATION INSPECTION

Lube all points in need of daily lubrication and those that require lubrication at a recommended time.

- Ensure all screws are complete and parts tight.
- Check that mounting components are safe.

SEASONAL INSPECTION

- Check general state of Subsoiler (normal wear and tear, no bumps, no leaks in ducts, etc.)
- Ensure that proper lubrication has been made.
- Ensure that the proper operating adjustments are made.

SUBSOILER SVH SERIES SPECIFICATIONS

| AVAILABLE ATTACHMENTS | SVH-1 | SVH-5-3 | SVH-9-5 |
|-----------------------|-------|---------|---------|
| 1 Soil pulverizer | No | Yes | Yes |
| 2 Multi-tiller points | No | Yes | Yes |

| SPECIFICATIONS | SVH-1 | SVH-5-3 | SVH-9-5 |
|----------------------------|-----------------------|-------------------|-------------------|
| Number of shanks | 1 | 3 | 5 |
| Shank width in | 1 1/4 | 1 1/4 | 1 1/4 |
| Number of shank positions | Fixed Position | 5 | 9 |
| Maximum penetration in | 18 | 18 | 18 |
| Work depthness in | 14 | 14 | 14 |
| Working width in | 25 | 73 | 94 1/4 |
| Required power hp | 25-45 | 65-90 | 100-125 |
| Parking stand | Standard | Standard | Standard |
| Hitch | 3 - point cat. I & II | 3 - point cat. II | 3 - point cat. II |
| Approximate weight lbs | 220 | 672 | 1119 |
| Distance between shanks in | | 19 1/2 & 23 1/2 | 15 & 18 1/2 |

* Tecnomec Agrícola, S.A. de C.V. reserves the right to make any changes deemed necessary to the specifications without prior notice.

* Some pictures may include options that are not a part of the standard equipment.

SAFETY RULES

SAFETY RULES

This is the safety-alert symbol which means ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED! This safety alert symbol indicates important safety messages in this manual. When you see this symbol, carefully read the message below and be alert to the possibility of personal injury or death.



DISTINGUISH SAFETY MESSAGES

Whenever you see the words and symbols shown ahead and used in this manual, you **MUST** consider the instructions as they are related to personal safety.

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in DEATH or SERIOUS INJURY.

WARNING: Indicates a potentially dangerous situation, if not avoided, could result in DEATH or SERIOUS INJURY.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, could result in MINOR INJURIES.



OBSERVE THE SAFETY MESSAGES

Before operating this equipment carefully read all safety messages in this manual and on your machine safety signs.

It is YOUR responsibility to read and comprehend the safety section on this manual. Remember that YOU are key in following safety messages. Good safety practices not only protect you, but those who are nearby. Study all aspects of this manual and make them part of your safety program. Note that this section of security is only created for this type of equipment. Put into practice other procedures and above all usual precautions, REMEMBER THAT SAFETY IS YOUR RESPONSIBILITY. YOU CAN AVOID SERIOUS INJURY OR DEATH. This security section is meant to highlight some of the basic safety situations that may occur during normal operation and maintenance of this equipment, suggesting possible ways to handle these situations. This section does NOT replace the safety procedures that appear in other sections of this manual.



NOTE: This handbook covers general security practices for this equipment.

SAFETY RULES

PASSENGERS ARE NOT ALLOWED IN THE MACHINE

Only allow the operator on the machine. Riders on machine are subject to injury such as being struck by foreign objects and being thrown off of the machine. Riders also obstruct the operators view resulting in the machine being operated in an unsafe manner.



BE PREPARED IN CASE OF EMERGENCY

Due to the flammable nature of many substances, there should be a fire extinguisher within reach of the operator.

Have on hand a first-aid kit for minor cuts and scratches.
Keep the local emergency numbers near you.



WEAR APPROPRIATE CLOTHING

Avoid wearing loose fitting clothing, use proper safety equipment according to the type of work. The safe operation of the equipment requires full attention of the operator. Do not use headphones to listen to the radio when traveling on roads.

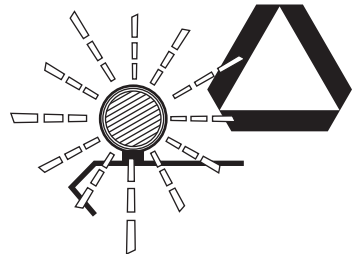


USE SAFETY LIGHTS AND ACCESSORIES

Slow moving vehicles, tractors, trailed or suspended equipment can pose a risk when being transported or towed on a highway because they are difficult to see, especially at night. Avoid injury or even death that can result from a collision with other vehicles.

It is recommended to use safety lights and accessories when driving on public roads. To improve visibility, use all lights available on the tractor. The additional installation of rotating warning lights is recommended. Check that the signaling devices are in good condition.

Replace lost or damaged safety attachments, warning devices immediately.



SAFETY RULES

SAFE MAINTENANCE

Familiarize yourself with the maintenance procedures before performing the work. The work area must be clean and dry.

Do not carry out any greasing, repair or adjustment work with the engine running.

Keep hands, feet and clothing away from moving parts at all times. Put all controls in neutral to relieve pressure. Lower all equipment to the ground. Stop the engine. Remove the ignition key and wait for the engine to cool.

Carefully support all machine parts being lifted for maintenance work.

All components must be in good condition and correctly installed. Repair damage immediately. Replace any worn or broken parts. Keep all machine components clean of grease, oil and accumulated dirt.



CORRECT USE OF SEAT BELTS

Do not use a seat belt when working with a machine that is not equipped with a rollover protector.

Transport the Subsoiler at a maximum of 10 mph. Reduce speed when traveling over rough terrain.

Always drive at a speed that allows you to have adequate steering and brake control.



SAFETY RULES

SAFETY WHEN OPERATING UNDERGROUND

Never ride or allow others to ride on the Subsoiler.

Move anyone away from the shanks when the equipment is in operation.

Never stand in the way of the shanks when servicing, as this could cause an accident.

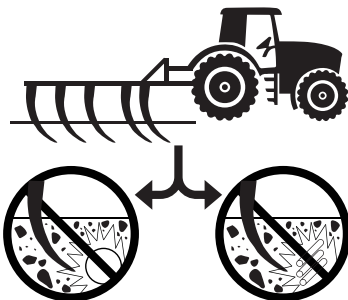
Always lower the Subsoiler to the ground when not in use.

Install front counterweights for optimum tractor stability.



AVOID OBSTRUCTING ELECTRICAL, GAS OR WATER LINES

Contact local government companies to determine the location of electric, gas or water lines.



OPERATION

TRACTOR PREPARATION

REQUIRED POWER

For recommended tractor power refer to the specifications table in the specifications section. (page 06).

REAR COUNTERWEIGHTS

When additional weight is required or instead of liquid weight, cast iron counterweights can be bolted to the rear tires.

Use rear counterweights to stabilize the tractor on uneven terrain or hillsides, and to eliminate excessive tire slippage. Counterweights should not be added to the point of completely eliminating skidding.

Tractor tires should be inflated to the pressure recommended in your operator's manual.



FRONT COUNTERWEIGHTS

Add weight, if necessary, to the front of the tractor for stability.

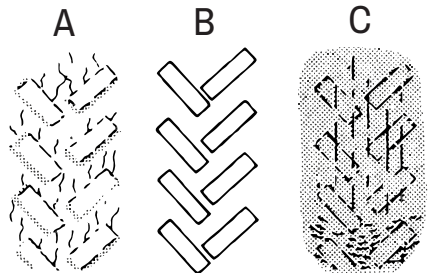
To improve tractor handling, remove front weights when they are not needed.

Refer to the tractor operator's manual for adding front weight.

Observe rear wheel tracks. When the tractor is operating at optimum load, the ground between the tire treads should be broken or sectioned (A).

If too much counterweight has been added, the track marks will be crisp and clear (B).

If too little counterweight has been added, the track marks will be almost blurred (C). Refer to the tractor operator's manual.



OPERATION

SUBSOILER HITCHING TO TRACTOR

▲ CAUTION: To avoid personal injury or machine damage when an implement is hitched, place the tractor transmission in the park position and check for interference along the hitch.

Do not stand between the tractor and implement. The sides of the tractor and implement are the only access for connecting and disconnecting the hitch points.

Slowly back the tractor into the Subsoiler, making sure that the hitch points are aligned.

2. Place the transmission in park position.
3. Shut off the tractor engine.
4. Remove the pins from the Subsoiler side and center hitches.
5. Align the tractor lift arms with the side hitches and install the bolts.
6. Hitch the third point arm to the hitch plates and install the bolt.
7. Start the tractor engine.
8. Slowly move the swing axle position control lever to raise the implement. Check that there is no difference.
9. Lower the implement to ground level, place the transmission in park position and proceed to level the Subsoiler by adjusting both lift arms to the same length.
10. Finally adjust the third point arm (lengthen or shorten) as required to achieve longitudinal leveling of the Subsoiler.

TRANSPORTING SUBSOIL SAFELY

▲ CAUTION: The Subsoiler should not be transported at a speed greater than 10 mph, in order to prevent accidents.

Higher speeds may result in loss of control of the tractor if any of the outside rudders contact any uneven ground surface.

Always drive at a speed that allows you to have adequate steering and brake control.

When transporting the Subsoiler on a road or highway at night or during the day, use lights and devices for adequate warning to operators of other vehicles. In this regard, check your local government regulations for proper use. A machine that is not properly illuminated could cause an accident, which could result in serious injury or death to you or others.

1. To obtain more lift from the Underlayment when transporting, shorten the lift joints and center arm to their minimum length, or hook the lift arms into the lower holes in the hitch plates.
2. Place in transport position (upward) the rudders.

OPERATION

LATERAL SUBSOILER LEVELING

Lateral leveling is controlled by the tractor lift arms.

Make sure that the main body of the Subsoiler is parallel to the ground so that all tiller arms rotate to the same depth.

After the tiller arms have penetrated the ground and you have set the working depth, stop the tractor and stand behind the Subsoiler to confirm that the main body is parallel to the ground.

If the main body is not parallel to the ground, raise the implement and adjust the tractor hitch arms until the Subsoiler is level.

LONGITUDINAL LEVELING OF THE SUBSOILER

Longitudinal leveling is controlled by the tractor's center hitch arm.

To determine if the Subsoiler is level longitudinally, observe the main body while working under load. Make sure that all rudders are at the same level.

It is more efficient to work the Subsoiler when all shanks are level.

If the main body is not level longitudinally raise the Subsoiler and adjust it by lengthening or shortening the third point arm.

MAINTENANCE

LUBRICATION

⚠ CAUTION: Do not clean, lubricate or adjust the machine when in motion.

IMPORTANT: The recommended periods are based on normal operating conditions. In severe or non-normal conditions, more frequent lubrication will be necessary.

IMPORTANT: Clean the grease fittings before using the grease gun. Replace any missing or broken grease fittings immediately.

Lubricate the lump braker roller bearings before each day's work. Apply grease until it comes out of the gasket. Rotate the roller 2 or 3 times.

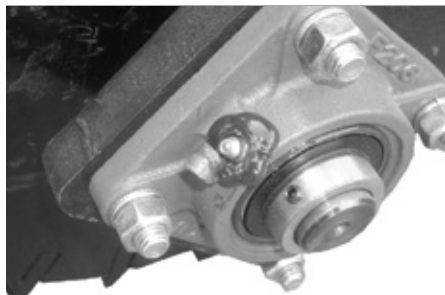
This process will extend the life of the bearings.

CORRECT USE OF SEAT BELTS

Do not use a seat belt when working with a machine that is not equipped with a rollover protector.

Transport the Subsoiler at a maximum of 10 mph. Reduce speed when traveling over rough terrain.

Always drive at a speed that allows you to have adequate steering and brake control.



GREASE

Choose the most suitable type of grease according to the NLGI consistency and the temperatures that may occur in the interval until the next grease change.

You can use greases that meet the following standard: NLGI consistency classification GC-LB.

Alternative and synthetic lubricants

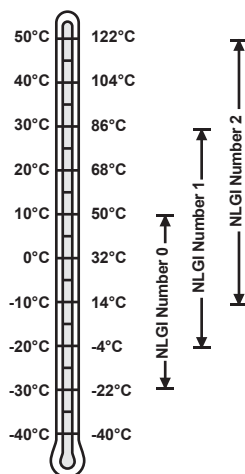
Conditions in certain geographical areas may require the use of special lubricants or lubrication techniques not listed in the operator's manual.

Some lubricants may not be available in the area. In this case, consult your distributor, who will provide you with the most up-to-date information and recommendations.

Lubricant Storage

Your equipment can operate at maximum efficiency only if you use clean lubricant.

Use clean containers to handle all lubricants and store them in an area protected from dust and moisture.



MAINTENANCE

FUSIBLE SCREW

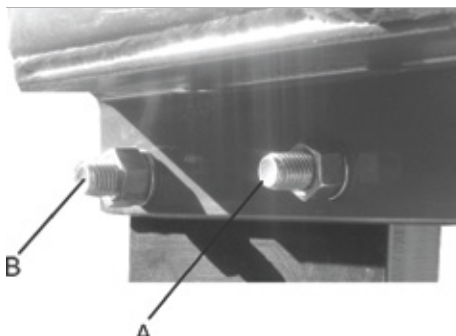
The SVH-1 Subsoiler tiller is equipped with a fusible safety screw (A).

This bolt will break if the tiller accidentally runs into rocks, logs, roots, etc.

This protects the Subsoiler and the tractor from possible serious damage.

⚠CAUTION: To avoid accidents, do not attempt to remove a broken fusible link if the tiller is in a horizontal position (tip up). With extreme caution, place the tiller in the vertical (normal) position before replacing the fusible safety plug.

IMPORTANT: The fusible safety bolt (A) must be replaced with a grade 5 fusible safety bolt, do not use any other hardness grade. After replacing the fusible safety bolt, retighten the rudder bolt (B) according to the bolt tightening specifications table on page 36.

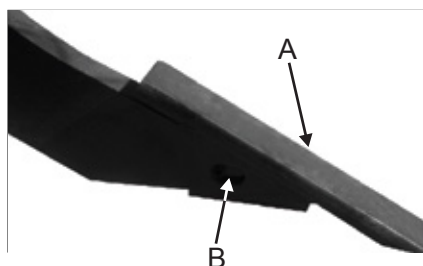


REPLACEMENT OF THE TIPS

The replaceable scarifier tip (A) on the shanks (Shoe) allows you to replace it with a new one when a tip has been damaged, broken or worn.

To replace a tip, drive the pinch pin (B) out from between the tip and the rudder with a 10 mm (3/8") pin punch. Do not use a tapered punch.

Remove the damaged tip and install a new tip on the chisel. Place the pinch bolt through the new tip and shank.



KEEP THE SUBSOILER AVAILABLE

Thoroughly clean the Subsoiler before storing it. Protect shanks and scarifying tips from corrosion by applying a light coat of oil or grease.

Apply a good anti-corrosive when storing the Subsoiler for the next season.

After storage: Clean accumulated dust from moving parts to prevent abrasion and excessive wear. Inspect the Subsoiler thoroughly. Check for loose parts and adjust if necessary.

TROUBLESHOOTING

| FAILURE | CAUSE | SOLUTION |
|---|---|---|
| Low penetration. | Improper adjustment of the tractor hydraulics. | Set the load and depth control to the maximum position. |
| | The frame is not level at the low rear end. | Shorten the central arm. |
| | Nicked or broken tips. | Sharpen nicked tips or replace them with new ones. |
| Excessive breakage of fusible bolts (MF-S1) | Too many stones along the terrain. | Reduce the operating depth. |
| | Improper use of screws. | Verify that the screws are of the same type as indicated in the parts catalog in case they have been replaced |
| | Very deep work in very hard soils. | Reduce the operating depth. |
| Inadequate penetration of scarifying tips | Some tips worn and some sharpened. | Sharpen the nicked tips. |
| | The tips are not at the same height. | Check the tip assembly on the rudder so that they are all at the same height. |
| Subsoiler does not follow tractor in a straight line | Improper adjustment of the tractor side arms. | Refer to the tractor operator's manual for adjusting the lift arms and center arm. |
| | The scarifying tips are not properly spaced. | Adjust the rudders so that they are equally spaced. |
| | Use of the tractor without sufficient power and/or ability to mount the weight necessary to stabilize the operation of the machine. | Refer to the section on PREPARING THE TRACTOR. Check the minimum horsepower required for each model. |

ASSEMBLY

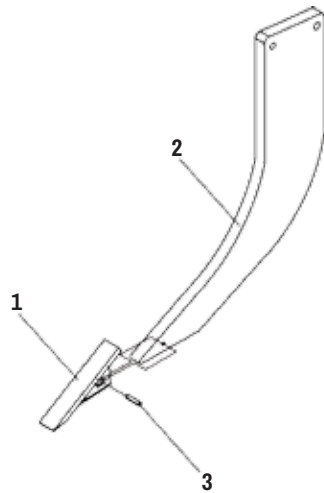
SUBSOILER SVH-1

1.- Assemble the scarifying tips (Shoes) (1) on the shank (2). Secure them with a pressure pin (3).

1.- Shoe

2.- Shank

3.- 7/16 x 2" push pin



2.- Assemble the shank and scarifier tip assembly onto the subsoiler body support brackets (4). Insert the bolt (5) through the front hole of the shank (2), secure with the lock washer (6) and nut (7). Install through the shank hole the bolt (8) and secure it with the lock washer (9) and nut (10). Tighten the bolts according to the torques indicated in the bolt tightening specifications table on page 36.

4.- Subsoiler body.

5.- 5/8 x 3-1/2 grade 5 hex bolt.

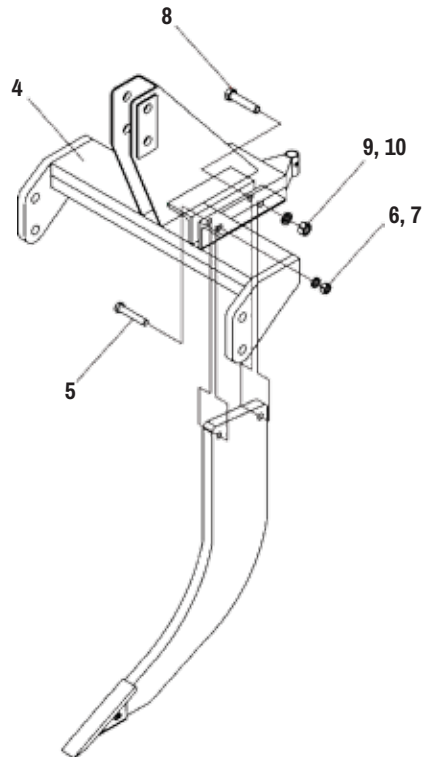
6.- 5/8" lock washer.

7.- 5/8" nut.

8.- Hex. bolt 3/4 x 3-1/2 grade 5.

9.- 3/4" lock washer.

10.- 3/4" nut.



ASSEMBLY

3.- Place the Stopper (11) in the stopper holder bushing of the Subsoiler Body (4). Use the Stopper Bolt (12) and a R-Lock (13) to secure them. Place the Third Point Bolt (14) over the center hitch of the Subsoiler Body (4) and secure with an agricultural latch (15). Insert the Bottom Bolt (16) into the side attachments. Tighten them with the lock washer (17) and the nut (18), attach the agricultural lock (15) to each one.

4.- Subsoiler body

11.- Parking stand

12.- Stand pin

13.- 1/8 of diameter R bolt

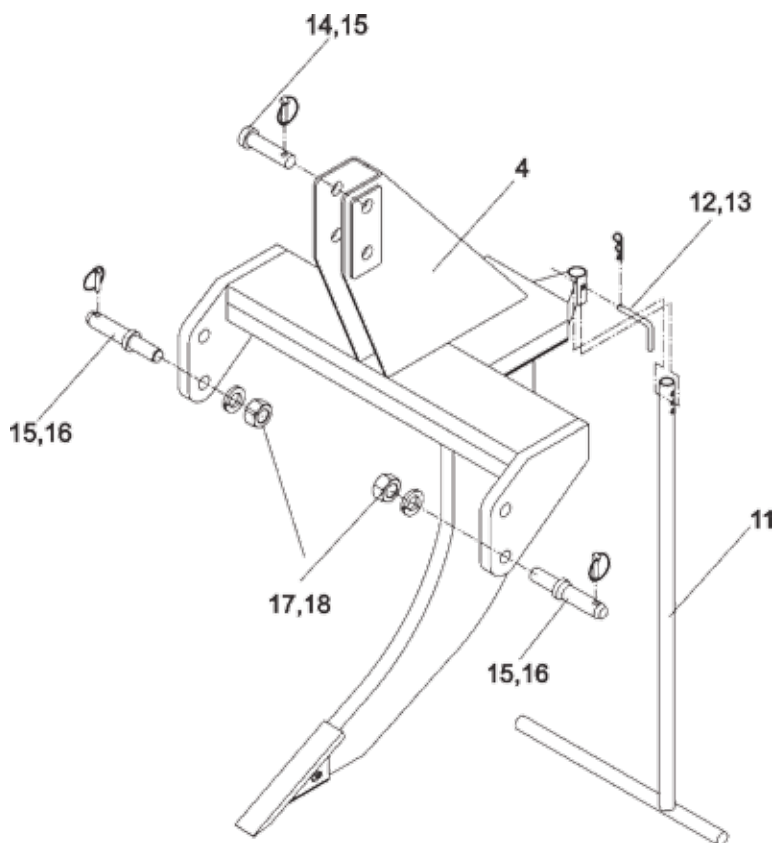
14.- Bolt of the third point

15.- 3/8" agricultural latch

16.- Lower linkage hitch pin

17.- 1" lock washer

18.- 1" nut

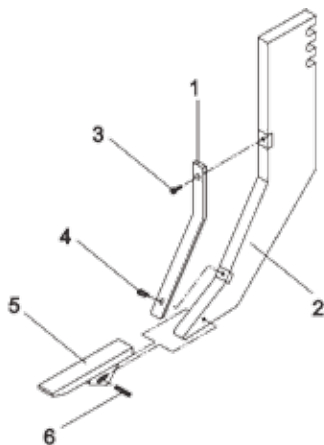


ASSEMBLY

SUBSOILER SVH-5/3 AND SVH-9/5

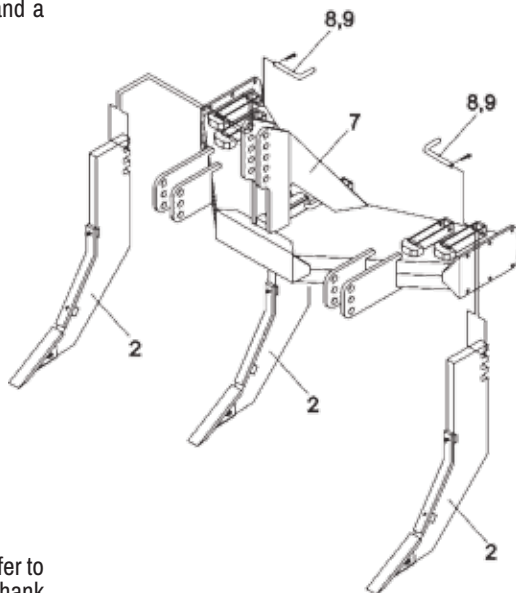
Assemble the shank components: Attach the wear plate (1) to the shank (2), use the clamp (3) on the upper hole and the clamp (4) on the lower hole. Insert the scarifying tip (shoe) (5) in the shank (2), secure both parts with the pressure pin (6).

- 1.- Wear plate
- 2.- Shank
- 3.- 3/8 x 1" allen clamp
- 4.- 3/8 x 3/4" allen clamp
- 5.- Scarifying tip
- 6.- 7/16 x 2" x 2" pinch pin



Place the shank assembly and reamer tip into the shank boxes of the aircraft (7). Adjust the shank height (2) as required by selecting one of the notch adjusters. Install the shank retaining bolt (8) and a ratchet lock (9).

- 2.- Shank
- 7.- Aircraft
- 8.- Shank retaining bolt
- 9.- 1/8" R-Lock



NOTE: Start by attaching the center shank. Refer to the illustration on page 21 to verify the shank assembly sequence for your Subsoiler model.

OPERATION

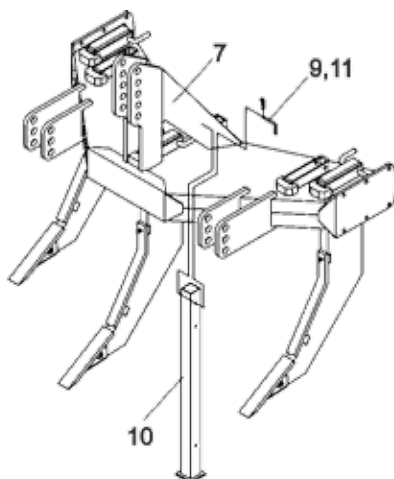
3.- Insert the parking stand (10) through the PTR of the Aircraft stopper (7). Secure it with the stop bolt (11) and an R lock (9).

7.- Aircraft

9.- 1/8" R-Lock

10.- Parking stand

11.- Stand bolt



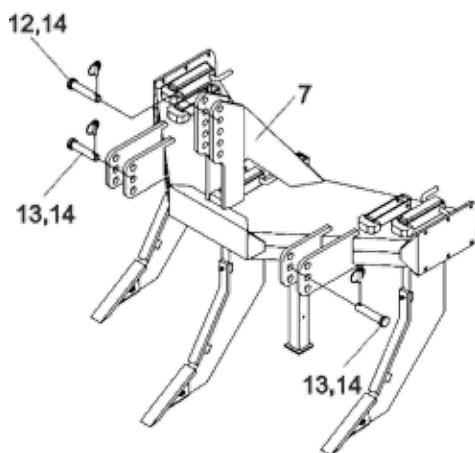
4.- Insert the third point pin (12) on the central coupling of the plane (7) and the arm pin (13) on the side couplings of the plane. Secure them with the agricultural lock (14).

7.- Aircraft

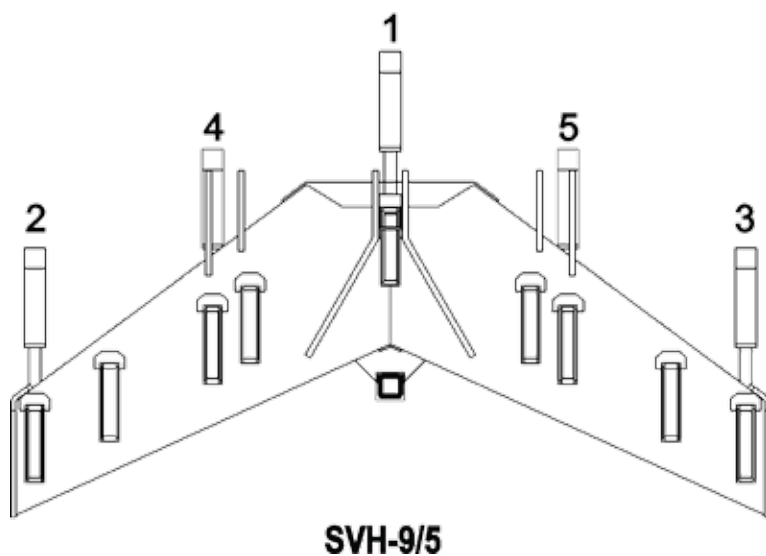
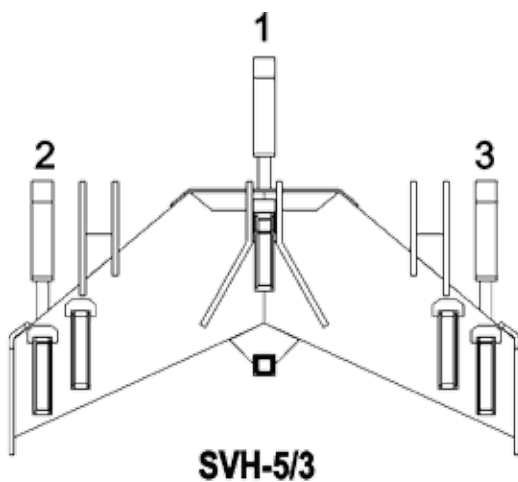
12.- Bolt for third point

13.- Bolt for arms

14.- 3/8" agricultural lock



ASSEMBLY SHANK ASSEMBLY SEQUENCE



NOTE: Start by installing the center shank. Continue with the outer shanks and finish with the intermediate shanks.

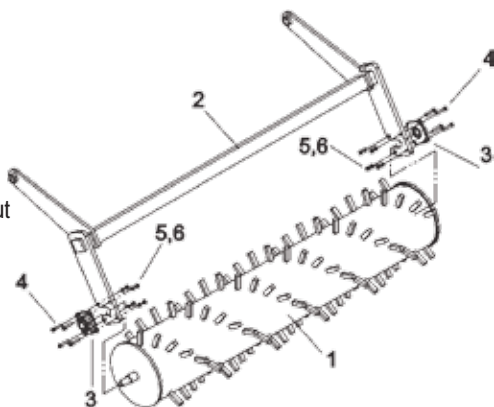
ASSEMBLY

NOTE: Accessories are not included with the equipment. They are sold separately.

If you purchased one of the RD-SVHJ53 or RD-SVHJ75 Lump Braker Rollers with your equipment purchase, assemble them as follows:

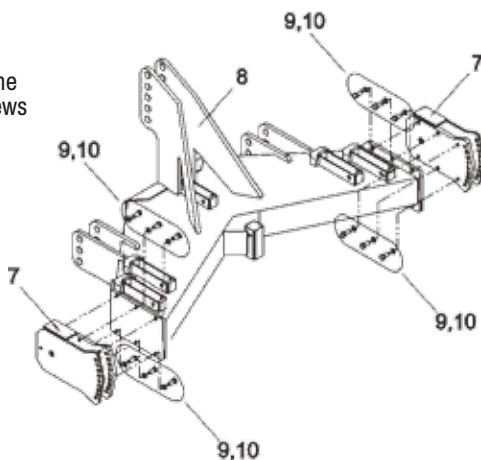
Assemble the Roller (1) on the notches of the Roller Holder Arm (2). Insert the bearings (3) into the pins of the Roller (1). Tighten the assembly with the screw (4), the lock washer (5) and the nut (6).

- 1.- Roller
- 2.- Roller holder arm
- 3.- Bearing UCF-206-18
- 4.- Hex. bolt 7/16 x 2 grade 5
- 5.- 7/16" lock washer
- 6.- 7/16" nut



2.- Install the Roller Support (7) to the sides of the Aircraft (8) of the subfloor. Fasten using the screws (9) and lock washers (10).

- 7.- Roller support
- 8.- Aircraft
- 9.- Hex. bolt 1/2 x 1 grade 5
- 10.- 1/2" lockwasher



ASSEMBLY

3.- Assemble the Roller Holder Arm (2) on the Roller Support (7). Use the fixing bolt (11) and secure the assembly with the screw (12), nut (13) and washer (10).

2.- Roller holder arm

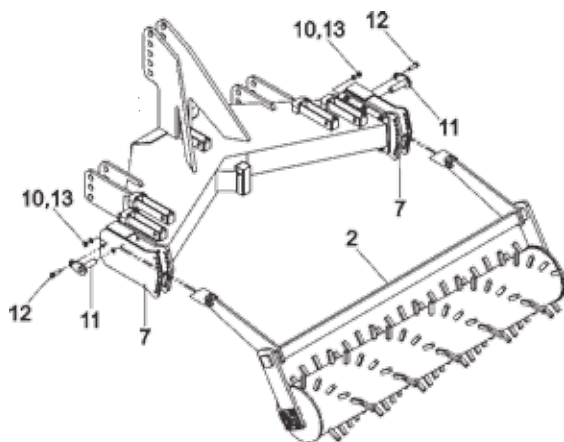
7.- Roller support

10.- 1/2" lock washer

11.- Fixing bolt

12.- 1/2 x 1-1/2 degree hex. bolt machine

13.- 1/2" nut

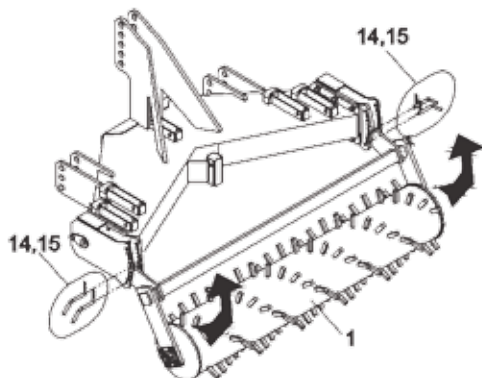


4.- Adjust the pressure of the Roller (1) with which it is required to work. To do this, use the bolts (14) and secure them with R locks (15).

1.- Lump braker roller

14.- Fixing bolt

15.- 1/8 of diameter R latches



ASSEMBLY

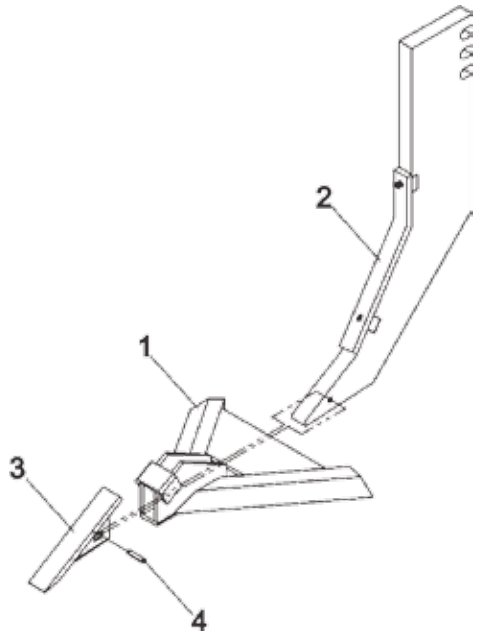
You can also purchase Conservation Tillage Tips to increase the tilling capacity of your Subsoiler. If you have purchased this accessory, assemble it as follows:

1.- Insert the Multi-till Body (1) into the Tip of the Tiller (2). Attach the scarifying tip (Shoe) (3) to the tip of the tiller and tighten both parts with the pin (4).

- 1.- Multi-arc body
- 2.- Shank
- 3.-Scarifying tip (Shoe)
- 4.- 7/16 x 2" push pin

A list of kit components can be found in the Parts section of this manual.

NOTE: Accessories are not included in the kit. They are sold separately.





PARTS INDEX

SUBOILER

SVH-1

SVH-5/3

SVH-9/5

27..... **PARTS CATALOGUE SVH-1**

28..... **PARTS LIST SVH-1**

29..... **PARTS CATALOGUE SVH-5/3**

30..... **PARTS LIST SVH-5/3**

31..... **PARTS CATALOGUE SVH-9/5**

32..... **PARTS LIST SVH-9/5**

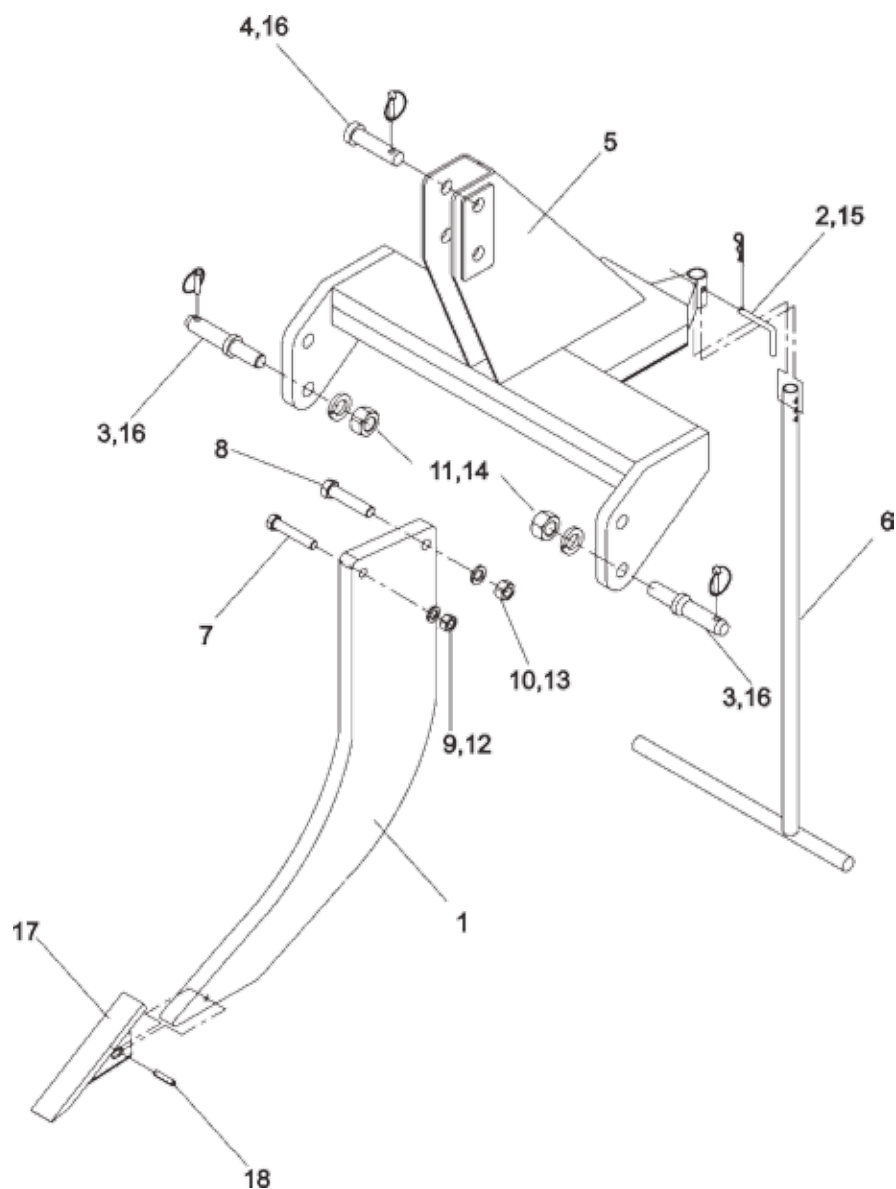
ACCESSORIES

33..... **PARTS CATALOG RD-SVHJ53, LUMP BREAKER ROLLER FOR MODEL SVH-5/3 AND RD-SVHJ75, LUMP BREAKER ROLLER FOR MODEL SVH-9/5 FOR SVH-5/3 MODEL AND RD-SVHJ75, LUMP BREAKER ROLLER FOR SVH-9/5 MODEL**

34..... **PARTS LIST RD-SVHJ53, LUMP BREAKER ROLLER F/MODEL SVH-5/3 AND RD-SVHJ75, LUMP BREAKER ROLLER F/MODEL SVH-9/5 SVH-5/3 AND RD-SVHJ75, LUMP BREAKER ROLLER F/MODEL SVH-9/5**

35..... **CATALOG AND PARTS LIST MA-SVHD3, CONSERVATION TILLAGE TIPS FOR SVHD3 MODELS CONSERVATION FOR SVH MODELS**

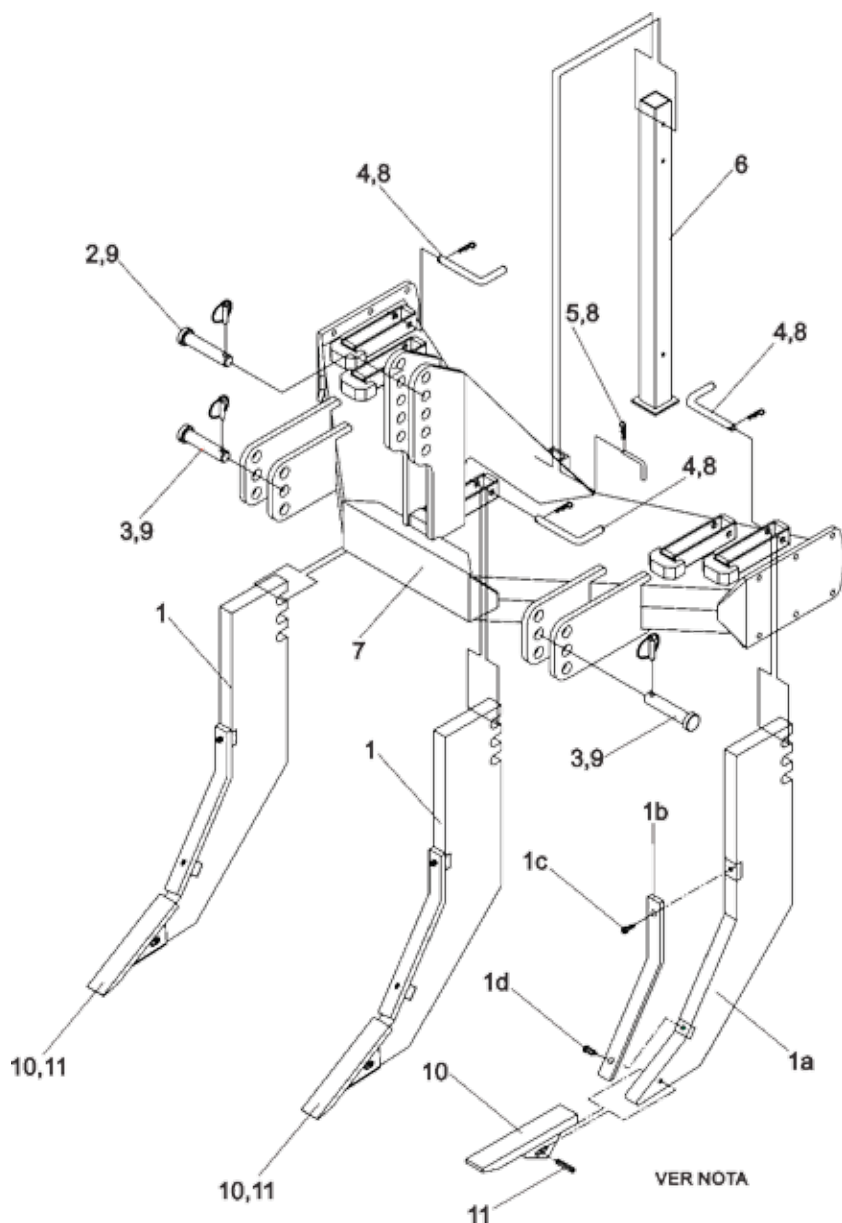
PARTS CATALOG SVH-1, SUBSOILER 1 FIXED END WITH FUSIBLE SCREW



PARTS CATALOG SVH-1, SUBSOILER 1 FIXED END WITH FUSIBLE SCREW

| REF. | PART | DESCRIPTION | QTY. |
|------|--------------|----------------------------------|------|
| 1 | SU01010001C | SHANK | 1 |
| 2 | SU01010002C | PARKING STAND PIN | 1 |
| 3 | SU01010003C | PIN | 2 |
| 4 | SU01010004C | THREE POINT PIN | 1 |
| 5 | SU01010100W | SUBSOILER MAIN FRAME | 1 |
| 6 | SU01010300W | PARKING STAND | 1 |
| 7 | 4210-5388-01 | HEX BOLT 5/8 X 3 1/2 - 11 UNC G5 | 1 |
| 8 | 4210-5464-01 | HEX BOLT 3/4 X 3 1/2 - 10 UNC G5 | 1 |
| 9 | 4220-1012-01 | HEX NUT 5/8 - 11 UNC | 1 |
| 10 | 4220-1014-01 | HEX NUT 3/4 - 10 UNC | 1 |
| 11 | 4220-1018-01 | NUT 1 - 8 UNC | 2 |
| 12 | 4250-1028-01 | LOCK WASHER 5/8 | 1 |
| 13 | 4250-1032-01 | LOCK WASHER 3/4 | 1 |
| 14 | 4250-1040-01 | LOCK WASHER 1 | 2 |
| 15 | 4270-1004-01 | KEEPER PIN | 1 |
| 16 | 4270-2040-01 | KLIK PIN | 3 |
| 17 | 4370-3520-00 | SUBSOILER POINT | 1 |
| 18 | 4390-2201-00 | ROLL PIN | 1 |

PARTS CATALOG SVH-5/3, SUBSOILER 3 SHANKS 5 POSITIONS



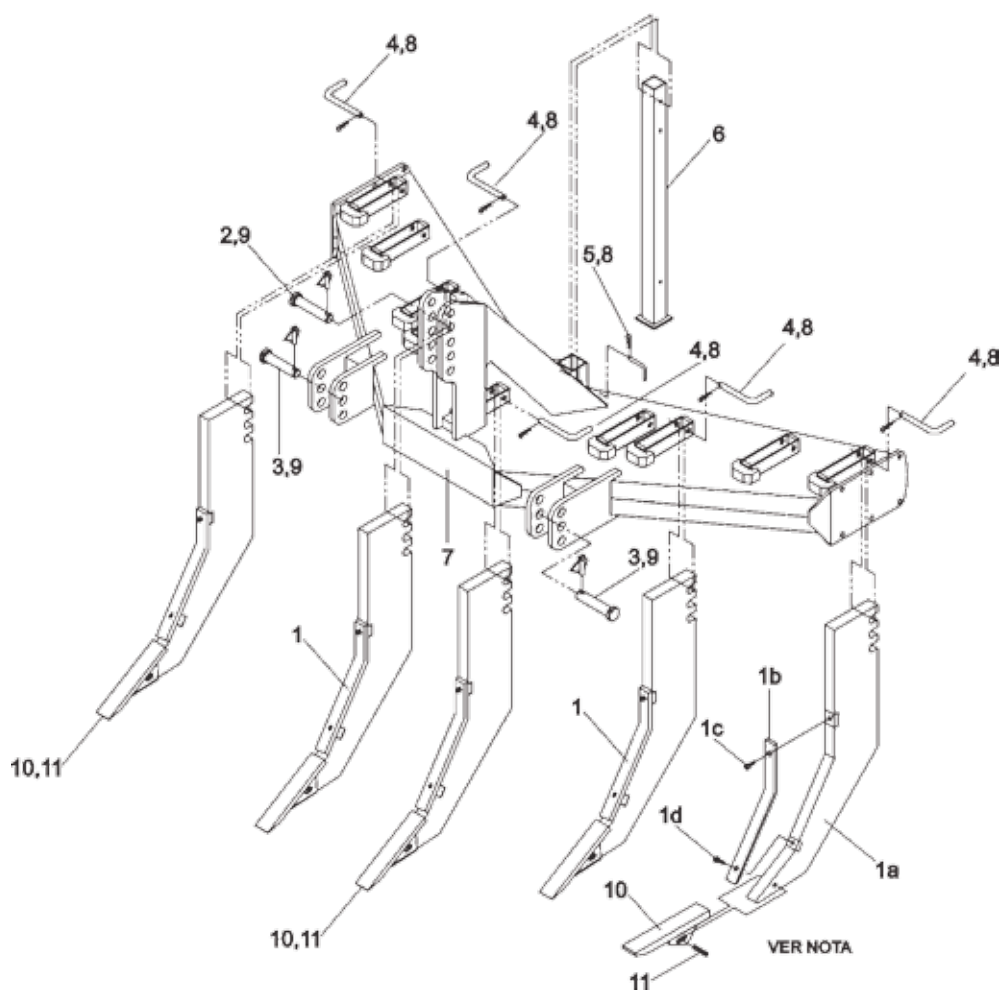
NOTE: Shank components (1) can also be purchased as spare parts.

PARTS LIST SVH-5/3, SUBSOILER 3 SHANKS 5 POSITIONS

| REF. | PART | DESCRIPTION | QTY. |
|------|--------------|--------------------|------|
| 1 | RS01011100A | SHANK FOR SVH | 3 |
| 2 | SD01030001C | THREE POINT PIN | 1 |
| 3 | SD01030002C | PIN | 2 |
| 4 | SU03030001C | RETAINING PIN | 3 |
| 5 | SU01010002C | PARKING STAND PIN | 1 |
| 6 | SU03030300W | PARKING STAND | 1 |
| 7 | SU03040100W | MAIN FRAME FOR SVH | 1 |
| 8 | 4270-1004-01 | KEEPER PIN | 4 |
| 9 | 4270-2040-01 | KLIK PIN | 3 |
| 10 | 4370-3520-00 | SUBSOILER POINT | 3 |
| 11 | 4390-2201-00 | ROLL PIN | 3 |

| REF. | PART | DESCRIPTION | QTY. |
|------|--------------|--------------------------------------|------|
| 1a | RS01011101W | ASSEMBLY OF SHANK | 1 |
| 1b | RS01011105C | WEAR STRIP | 1 |
| 1c | 4210-1468-30 | ALLEN SCREW 3/8 X 1 - 16 UNC GMAQ. | 1 |
| 1d | 4210-1466-30 | ALLEN SCREW 3/8 X 3/4 - 16 UNC GMAQ. | 1 |

PARTS CATALOG SVH-9/5, SUBSOILER 5 RUDDERS 9 POSITIONS



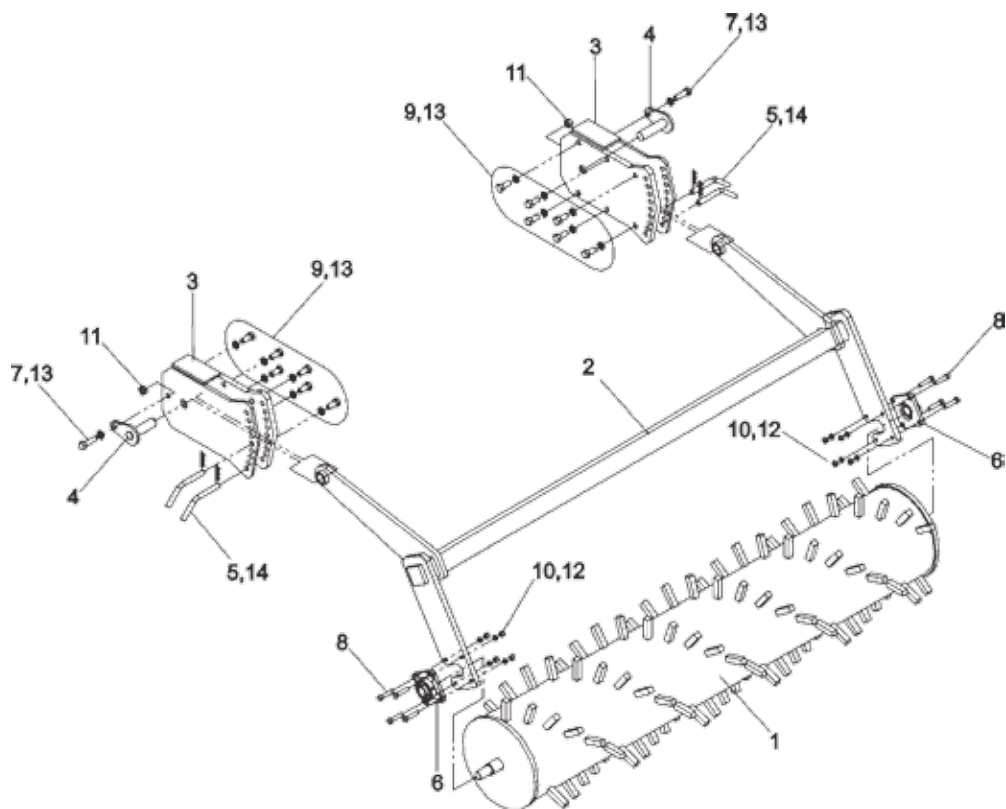
NOTE: Shank components (1) can also be purchased as spare parts.

PARTS LIST SVH-9/5, SUBSOILER 5 RUDDERS 9 POSITIONS

| REF. | PART | DESCRIPTION | QTY. |
|------|--------------|--------------------|------|
| 1 | RS01011100A | SHANK FOR SVH | 5 |
| 2 | SD01030001C | THREE POINT PIN | 1 |
| 3 | SD01030002C | PIN | 2 |
| 4 | SU03030001C | RETAINING PIN | 5 |
| 5 | SU05010002C | STAND PIN | 1 |
| 6 | SU05010200W | PARKING STAND | 1 |
| 7 | SU05020100W | MAIN FRAME FOR SVH | 1 |
| 8 | 4270-1004-01 | KEEPER PIN | 6 |
| 9 | 4270-2040-01 | KLIK PIN | 3 |
| 10 | 4370-3520-00 | SUBSOILER POINT | 5 |
| 11 | 4390-2201-00 | ROLL PIN | 5 |

| REF. | PART | DESCRIPTION | QTY. |
|------|--------------|--------------------------------------|------|
| 1a | RS01011101W | ASSEMBLY OF SHANK | 1 |
| 1b | RS01011105C | WEAR STRIP | 1 |
| 1c | 4210-1468-30 | ALLEN SCREW 3/8 X 1 - 16 UNC GMAQ. | 1 |
| 1d | 4210-1466-30 | ALLEN SCREW 3/8 X 3/4 - 16 UNC GMAQ. | 1 |

ACCESSORIES **PARTS CATALOG LUMP BREAKER ROLLER** **FOR MODEL SVH-5/3, LUMP BREAKER ROLLER** **FOR MODEL SVH-9/5**



NOTE: Accessories are not included with the equipment. They are sold separately.

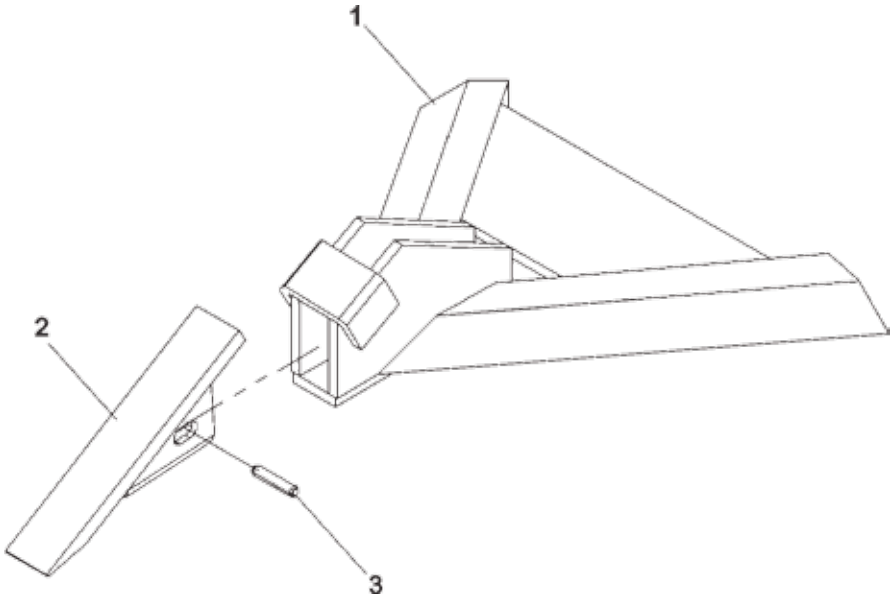
ACCESSORIES

PARTS LIST LUMP BREAKER ROLLER

FOR MODEL SVH-5/3, LUMP BREAKER ROLLER FOR MODEL SVH-9/5

| REF. | PART | DESCRIPTION | CANTIDAD | CANTIDAD |
|------|--------------|-------------------------------------|-----------|-----------|
| | | | RD-SVHJ53 | RD-SVHJ75 |
| 1 | SU99020100W | LUMP BRAKER ROLLER | 1 | 0 |
| 1 | SU99030100W | LUMP BRAKER ROLLER | 0 | 1 |
| 2 | SU99020200W | ROLLER ARM 5-3 | 1 | 0 |
| 2 | SU99030200W | ROLLER ARM 9-5 | 0 | 1 |
| 3 | SU99030300W | ROLLER SUPPORT | 2 | 2 |
| 4 | SU99030400W | PIN | 2 | 2 |
| 5 | SU99030001C | PIN | 4 | 4 |
| 6 | 4150-2012-30 | BEARING UCF-206-18 DE 1 1/8 | 2 | 2 |
| 7 | 4210-1256-01 | HEX BOLT 1/2 X 1 1/2 - 13 UNC GMAQ. | 2 | 2 |
| 8 | 4210-5202-01 | HEX BOLT 7/16 X 2 - 14 UNC G5 | 8 | 8 |
| 9 | 4210-5252-01 | HEX BOLT 1/2 X 1 - 13 UNC G5 | 12 | 12 |
| 10 | 4220-1006-01 | NUT 7/16 - 14 UNC | 8 | 8 |
| 11 | 4220-1008-01 | NUT 1/2 - 13 UNC | 2 | 2 |
| 12 | 4250-1022-01 | LOCK WASHER 7/16 | 8 | 8 |
| 13 | 4250-1024-01 | LOCK WASHER 1/2 | 14 | 14 |
| 14 | 4270-1004-01 | KEEPER PIN | 4 | 4 |




**ACCESSORIES
CATALOG AND PARTS LIST
CONSERVATION TILLAGE FOR SVH MODELS**



| REF. | PART | DESCRIPTION | QTY. |
|------|--------------|-----------------|------|
| 1 | SU99060100W | MAIN FRAME | 1 |
| 2 | 4370-3520-00 | SUBSOILER POINT | 1 |
| 3 | 4390-2201-00 | ROLL PIN | 1 |

TORQUE SCREW SPECIFICATION

TIGHTENING SETTINGS OF NON-METRIC BOLTS (IN.)

| PIN SIZE | GRADE “2” | | GRADE “5” | | GRADE “8” | |
|---|-----------|-------|-----------|-------|-----------|-------|
| | Nm | LB-FT | Nm | LB-FT | Nm | LB-FT |
| 5/16-18 | 15 | 11 | 24 | 17 | 33 | 25 |
| 3/8-16 | 27 | 27 | 42 | 31 | 59 | 44 |
| 7/16-14 | 43 | 32 | 67 | 49 | 95 | 70 |
| 1/2-13 | 66 | 49 | 105 | 76 | 145 | 105 |
| 9/16-12 | 95 | 70 | 150 | 110 | 210 | 155 |
| 5/8-11 | 130 | 97 | 205 | 150 | 285 | 210 |
| 3/4-10 | 235 | 170 | 360 | 265 | 510 | 375 |
| 7/8-9 | 225 | 165 | 585 | 430 | 820 | 605 |
| 1-8 | 340 | 250 | 875 | 645 | 1230 | 910 |
| Standard pin ID. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Grade “2” No Marks</p> </div> <div style="text-align: center;">  <p>Grade “5” 3 Marks</p> </div> <div style="text-align: center;">  <p>Grade “8” 6 Marks</p> </div> </div> | | | | | | |

GENERAL INFORMATION

Screws torque values.

Always replace bolts with others of the same grade. Metric screws have the class number marked on the head.

Tighten the screws according to the table, unless otherwise indicated in operators manual. Do not over tighten the screws, as this could cause failure during operation.

Note: DO NOT use these values if a different torque value for a specific application is specified. The values given are for general use. Periodically check the tightening of the screws.

TORQUE SCREW SPECIFICATIONS TIGHTENING SETTINGS OF METRIC BOLTS

| BOLT SIZE | 5.8 GRADE | | 8.8 GRADE | | 10.9 GRADE | |
|--|-----------|-------|-----------|-------|------------|-------|
| | Nm | LB-FT | Nm | LB-FT | Nm | LB-FT |
| M 5 x 0.8 | 4 | 3 | 6 | 5 | 9 | 7 |
| M 6 x 1 | 7 | 5 | 11 | 8 | 15 | 11 |
| M 8 x 1.25 | 14 | 12 | 26 | 19 | 36 | 27 |
| M 10 x 1.5 | 33 | 24 | 52 | 39 | 72 | 53 |
| M 12 x 1.75 | 58 | 42 | 91 | 67 | 125 | 93 |
| M 14 x 2 | 92 | 68 | 145 | 105 | 200 | 150 |
| M 16 x 2 | 145 | 105 | 225 | 165 | 315 | 230 |
| M 18 x 2.5 | 195 | 145 | 310 | 320 | 405 | 300 |
| M 20 x 2.5 | 280 | 205 | 440 | 325 | 610 | 450 |
| M 24 x 3 | 480 | 355 | 760 | 560 | 1050 | 780 |
| Identify the metric bolts by grade which is marked on the head of the bolt or nut. Higher numbers indicate a higher resistance. | | | | | | |

GENERAL INFORMATION

Screws torque values.

Always replace bolts with others of the same grade. Metric screws have the class number marked on the head.

Tighten the screws according to the table, unless otherwise indicated in operators manual. Do not over tighten the screws, as this could cause failure during operation.

Note: DO NOT use these values if a different torque value for a specific application is specified. The values given are for general use. Periodically check the tightening of the screws.

THEFT PREVENTION

RECORD PRODUCT IDENTIFICATION NUMBER (P.I.N.)

Serial Number Plate for your Subsoiler is located on the front of the chassis.

Record the serial number in the space corresponding box on the safeguards section.

Mark the machine with your own numeration system.

Record Product Identification Number (PIN) of the machine and main components. Include numbers (PIN) in all insurance documents, financing and warranty.

Your dealer will need this information for a quick and efficient service when you order parts.

IMPORTANT: Each time it is necessary to order spare parts for your Subsoiler, it is important to provide the 10 characters Serial number. It is imperative comply this requirement.



| | |
|---|--|
|  | TECNOMEC AGRICOLA, S.A. DE C.V. Carr. a Paso Blanco Km. 2 #400 Col. Vista Hermosa C.P. 20900 Jesús Ma., Aguascalientes, MEX. Tel. (52) (449) 922 47 66 / 92-BISON Fax (52) (449) 922 47 67 |
| | SERIE No: <input type="text"/> |
| MODEL: <input type="text"/> | |

WARRANTY

Please enter information below and save for future reference.

| | | | |
|---------------------------|-------|-----------------------|--------------------|
| AUTHORIZED DEALER: | _____ | SALESMAN NAME: | _____ |
| MACHINE MODEL: | _____ | SERIAL NUMBER: | _____ |
| END CUSTOMER NAME: | _____ | PURCHASE DATE: | ____ / ____ / ____ |
| | _____ | TEL: | (____) _____ |
| ADDRESS: | _____ | EMAIL: | _____ |

A. GENERAL PROVISIONS - The warranties described below are provided by Tecnomec Agrícola, S.A. de C.V. (TECNOMECE) to the original purchasers of new agricultural products from TECNOMECE or authorized dealers for a period of one (1) year under **agricultural use**. Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or the expiration of the applicable new equipment warranty period, whichever occurs later. Under these warranties, TECNOMECE will repair or replace, at its discretion, any covered part which is found to be defective in material or workmanship during the applicable warranty term. Warranty service must be performed by an authorized BISON dealer, which will use only new or remanufactured parts or components furnished by TECNOMECE.

Warranty service will be performed without charge to the purchaser for parts or labor. The purchaser will be responsible, however, for any service call and/or transportation of product to and from the dealer's or service center's place of business, for any premium charged for overtime labor requested by the purchaser, and for any service and/or maintenance not directly related to any defect covered under the warranties below. At TECNOMECE's request, dealer will be responsible for returning the parts to TECNOMECE for evaluation.

B. WHAT IS WARRANTED - All parts of any new TECNOMECE product. TECNOMECE makes no warranty, express or implied, with respect to engines, batteries, tires or other parts or accessories not manufactured by TECNOMECE. Warranties for these items, if any, are provided separately by their respective manufacturers.

Each warranty term begins on the date of product delivery to the purchaser.

C. WHAT IS NOT WARRANTED TECNOMECE IS NOT RESPONSIBLE FOR THE FOLLOWING : (1) **Used Products**; (2) **Any product** that has been altered, modified, or used in connection with attachments in ways not approved by TECNOMECE; (3) **Depreciation or damage** caused by normal wear, lack of reasonable and proper maintenance, failure to follow the product's OPERATOR MANUAL instructions, misuse, lack of proper protection during storage, or accident; (4) **Normal maintenance parts and service**, including, but not limited to, oil filters, coolants and conditioners, cutting parts, belts, brake and clutch linings.

Incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, TECNOMECE specifically disclaims responsibility for any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

D. SECURING WARRANTY SERVICE - To secure warranty services, **the purchaser must (1) report** the product defect to an authorized dealer and request repair within the applicable warranty term, (2) present evidence of the warranty start date, and (3) make the product available to the dealer or service center within 45 days.

E. NO IMPLIED WARRANTY OR OTHER REMEDY - AGRICULTURAL PRODUCTS - **Where permitted by law, neither TECNOMECE nor any company affiliated with it makes any warranties, representations, or promises, express or implied as to the quality or performance, or freedom from defect of its agricultural products other than those set forth above, and NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE. IN NO EVENT WILL THE DEALER, TECNOMECE OR ANY COMPANY AFFILIATED WITH TECNOMECE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

The only remedies the purchaser has in connection with the breach of performance of any warranty on TECNOMECE agricultural products are those set forth above.

F. NO WARRANTY MODIFICATION - No agent, representative, authorized dealer, **distributor, service center**, serviceperson, salesperson, other than an officer from TECNOMECE is authorized to alter, modify, or enlarge this Warranty.

G. If further information is desired, contact your selling dealer or the **nearest branch office of TECNOMECE**

H. This Warranty is effective only if the warranty registration is electronically submitted to TECNOMECE by dealer within ten (10) days of retail purchase date.

For warranty services contact your BISON selling dealer.

NOTES

**PART No.
4350-2135-01**



© 2016 Tecnomec Agrícola, S.A. de C.V. Rights reserved

