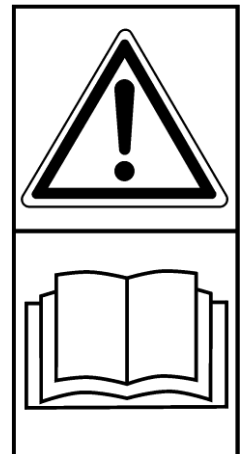
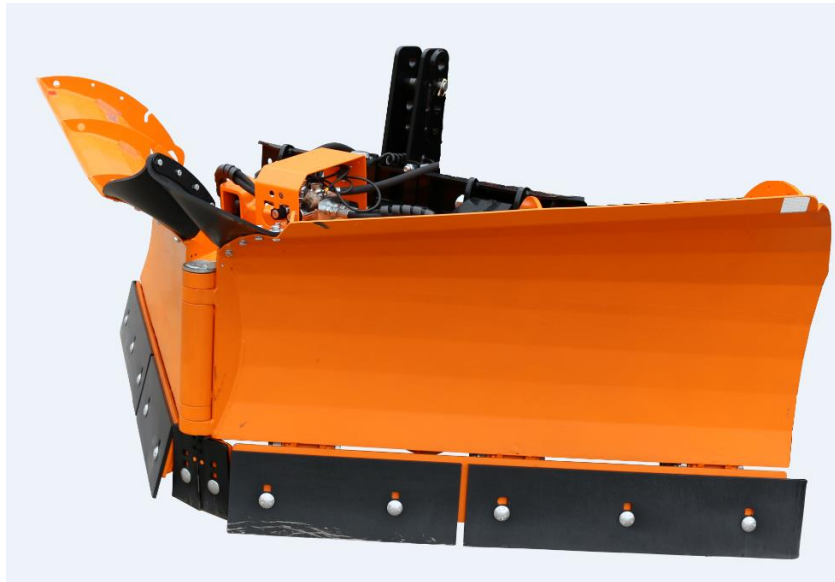




Instruction Manual and Maintenance Directions

VPX Plough



Important!
Read the Instruction Manual
thoroughly before use



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SAFETY SYMBOLS

NOTE! You will find this general warning symbol throughout this Instruction Manual to make you aware of safety instructions concerning yourself, your employees and other persons coming into contact with the equipment. Neglecting these instructions may lead to serious injury and even death.

This symbol has the following meaning:



WARNING!
LOOK OUT!
YOU ARE IN DANGER!

Warning Labels

Be aware of the warning words **WARNING!** and **NOTE!** in safety texts. These words have been chosen based on the following guidelines:



WARNING! Warns of dangerous situations which, unless avoided, could lead to serious injury or even death. This also includes dangers that can occur when protective equipment and/or protective screens are removed. Warning labels can also be used to warn of hazardous use.



NOTE! Highlight risky situations where slight or minor injuries can result if they are not avoided. Used also to warn of machine damage that can arise if the directions are not followed.

Dear Customer!

Thank you for choosing a TREJON OPTIMAL product – we hope you will be pleased.

Reading this manual and following its recommendations will ensure you get the longest possible service life and efficient use of the VPX plough.

We have produced this manual to give you a good overview of how the plough works as well as the safety and maintenance directions that must be followed when working with it.

If any questions should arise when using the plough or reading this manual, you are always welcome to contact us.

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SE-911 35 Vännäsby
Sweden

Tel: + 46 (0)935 399 00
E-mail: info@trejon.se
Website: www.trejon.se

Dear Dealer,

In order for the warranty to come into force and for all legal requirements to be met, we would like you to complete the warranty certificate together with the customer and to register at www.trejon.se

The warranty will come into force on the same day as the plough is transferred to the customer.

Delivery inspection checklist:



Check for any transport damage. Report to carriers	
Inspect the tool thoroughly before use and make sure all packaging has been removed. Dispose of all packing materials in an environmentally responsible manner.	
Check that the delivery is complete in accordance with the machine order/packing note.	
Make sure the machine has been lubricated as described under "Service and Maintenance".	
Check tightness of all screw unions, see table for tightening torques in Service and maintenance (Section 4).	
Perform function test	
With the assistance of the Instruction Manual, run through and explain commissioning, use and maintenance of the plough and accessories to the customer.	
Complete the proof of transfer together with the customer and register at trejon.se	
Instruction Manual handed over to customer.	

Enter the serial number of the plough in the field on the right	S/N:
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Read through the entire Instruction Manual and understand its contents before using the VPX folding snow plough.

1 Introduction

1.1 General

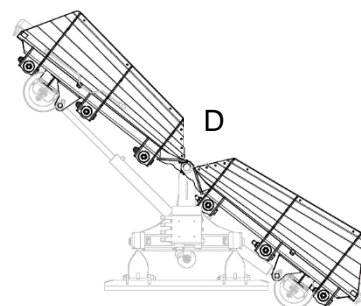
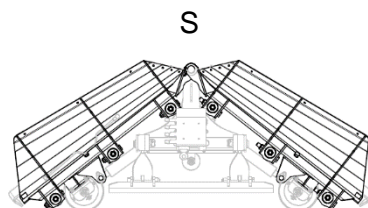
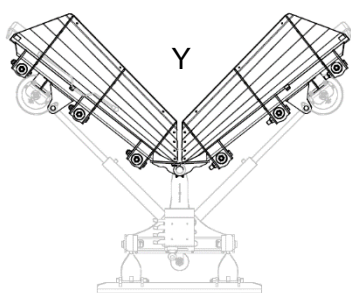
Before starting to use the plough, you are strongly recommended to carefully read through the manual and safety instructions.

The user must be familiar with the VPX folding snow plough in order to guarantee safe usage.

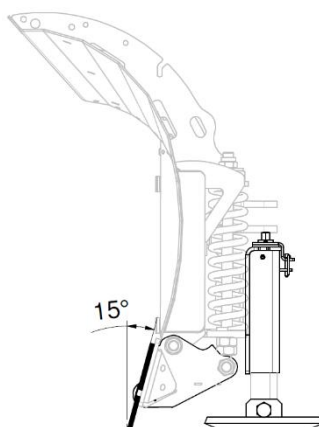
1.2 Description of VPX snow plough

The VPX folding snow plough's wings can be adjusted $\pm 38^\circ$. This means that the plough can be used both as a diagonal blade and as a folding snow plough.

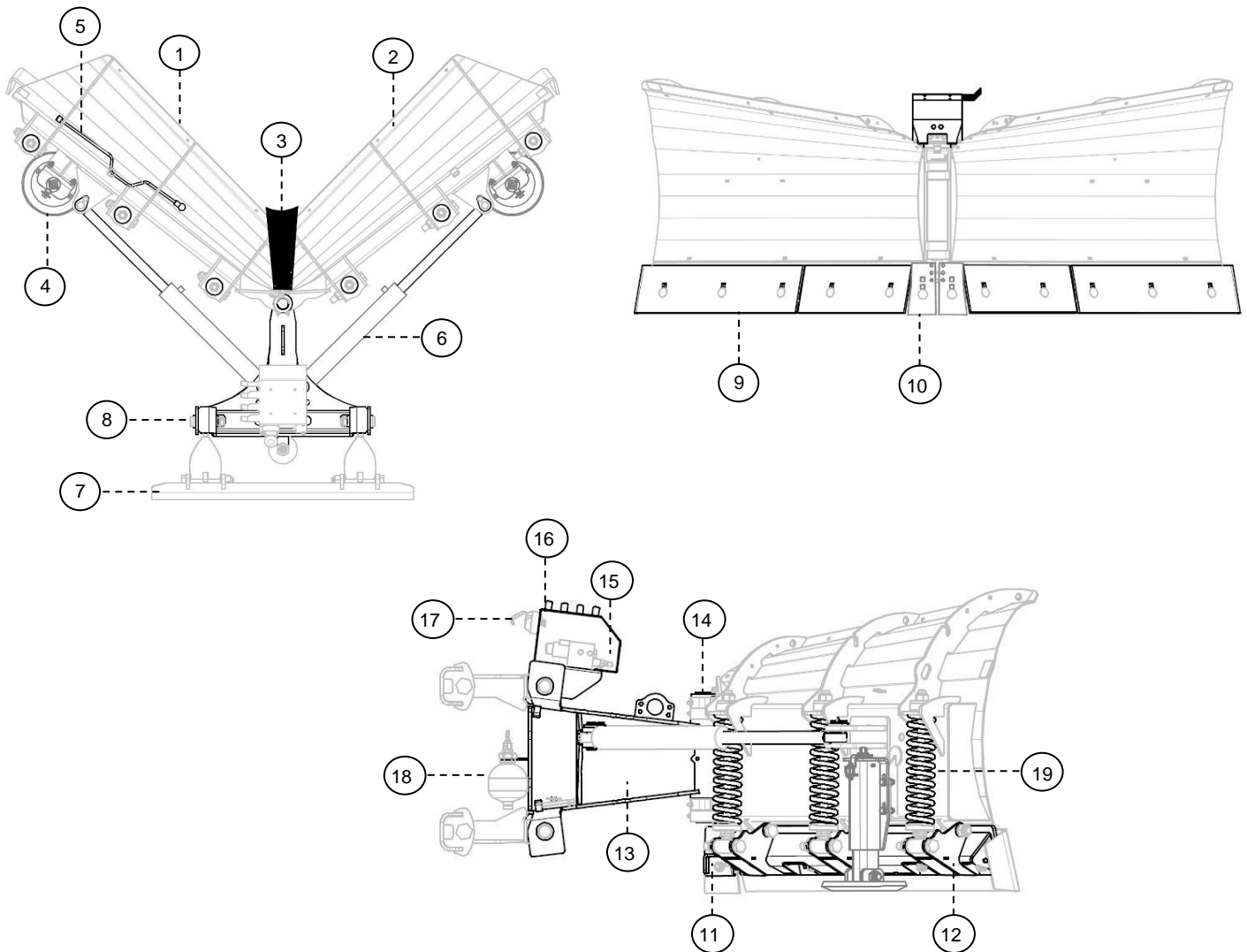
The plough is intended to be connected to an existing attachment for agricultural tractors, loaders and compact tractors. The TREJON OPTIMAL VPX folding snow plough can be equipped with quick-coupling attachments for most tractors. The plough is equipped with a diagonal valve as standard. This makes it possible to operate each wing independently or both wings together diagonally. The folding plough can be set in 3 different positions, depending on the type of work to be performed. Y-CONFIGURATION for pavements, S-POINTED CONFIGURATION for conventional road ploughing, street junctions and other areas where you can collect up and remove the snow, D-DIAGONAL CONFIGURATION for clearing snow from car parks, streets, etc.



The VPX cutting blade works as standard with a 15° positive cutting angle. This provides an efficient and clean cut, even at high speeds.

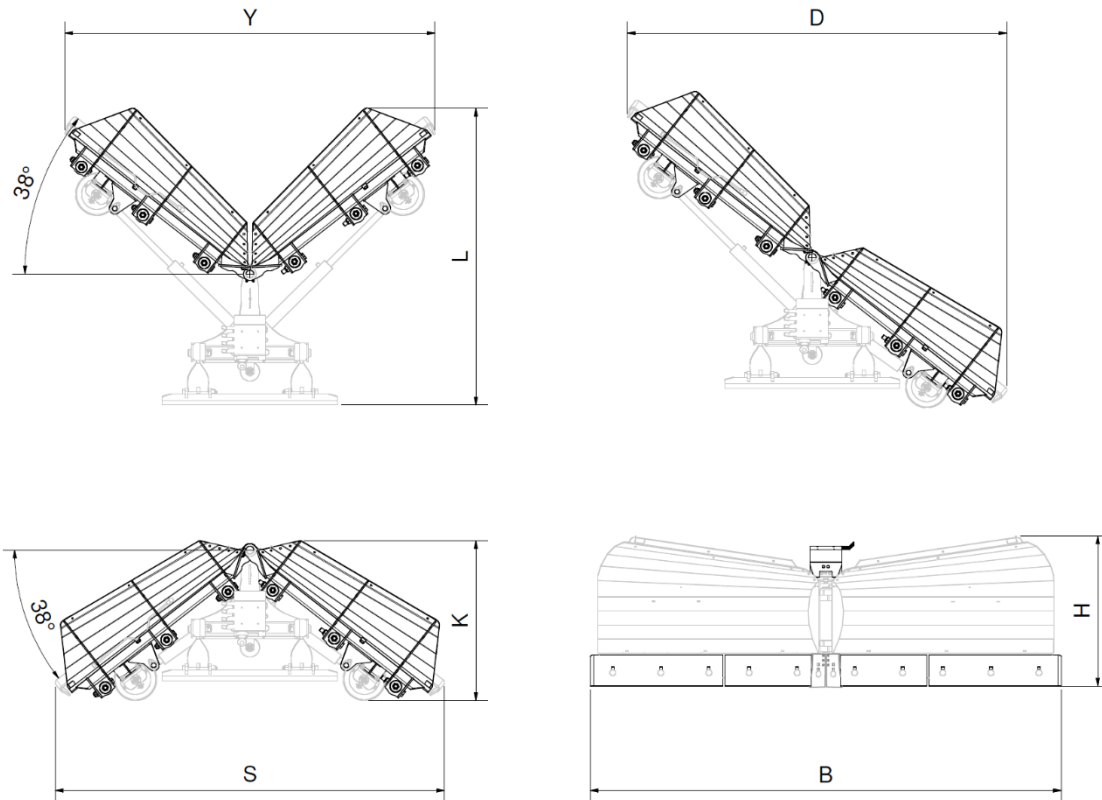


1.3 Detailed description



1. Left wing	11. Centre steel holder
2. Right wing	12. Steel holder
3. Rubber membrane	13. Centre frame
4. Support plate	14. Pin (centre frame)
5. Crank (support plate)	15. Hydraulic valve (diagonal valve)
6. Cylinder	15.1 Hydraulic valve (VPX180 6/2 valve)
7. Attachment / floating mode	16. Protective cover (Hydraulic valve)
8. Pin	17. 7-pole connector for spiral cable
9. Cutting edge	18. Pressure accumulator (EJ VPX180)
10. Centre steel	19. Spring

1.4 Technical specifications



All measurements in the table are for VPX ploughs equipped with a standard (smooth) cutting edge.

Model	Dimensions	VPX180	VPX260	VPX290	VPX330	VPX370
Operating weight of the device carrier max ¹ [ton]		3	5	7	14	14
Total width [mm]	B	1860	2700	2990	3280	3700
Width, D-configuration [mm]	D	1550	2140	2410	2740	3120
Height [mm]	H	700	930	950	1050	1130
Width, S-configuration [mm]	S	1580	2280	2470	2700	3050
Length, S-configuration [mm]	K	810	910	1015	1110	1280
Width, Y-configuration [mm]	Y	1510	2130	2350	2580	2880
Length, Y-configuration [mm]	L	1390	1810	1885	2040	2230
Blade angle [°]		±38°	±38°	±38°	±38°	±38°
Weight [kg]		450	600	660	750	910
Operation		Hydr./Elec.	Hydr./Elec.	Hydr./Elec.	Hydr./Elec.	Hydr./Elec.
El. Voltage ² [V]		12	12	12	12	24
Hydraulic connection		G ¹ / ₂ " Faster male (x2)	G ¹ / ₂ " Faster male (x2)	G ¹ / ₂ " Faster male (x2)	G ¹ / ₂ " Faster male (x2)	G ³ / ₄ " TEMA female (x2)

¹ - Device carrier weight in combination with the forward speed is of great importance in the event of a collision

² - As standard, the plough is supplied for the voltage indicated in the table. If a different voltage is required, contact Trejon or read section 5 – Accessories.

1.5 Attachment with floating mode function

The floating mode attachment is movable for vertical pivoting and twisting (horizontal) (see figures 1, 2 and 3 below for a description of the movement capacity).

It is important to position the floating mode attachment so that it can move freely up and down. Lower the plough to the ground. Lower the attachment to its end position (see Figure 2) and then lift the attachment approximately 70-80 mm. In this position (floating mode), the plough is able to follow the surface optimally.

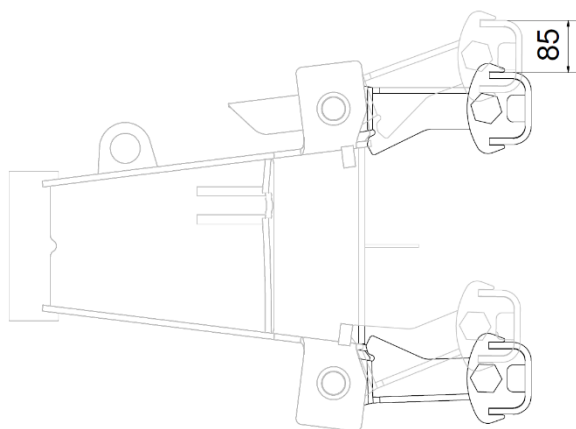


Figure 1 – Vertical movement, up

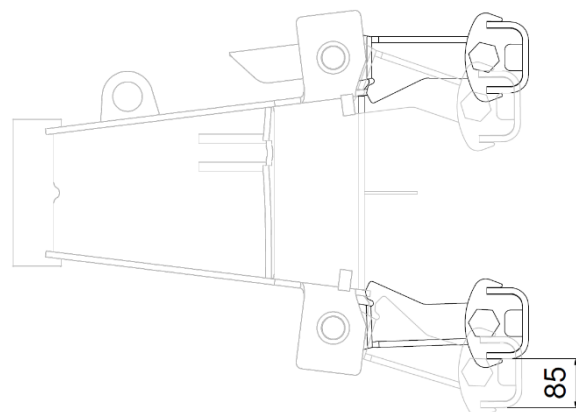


Figure 2 – Vertical movement, down

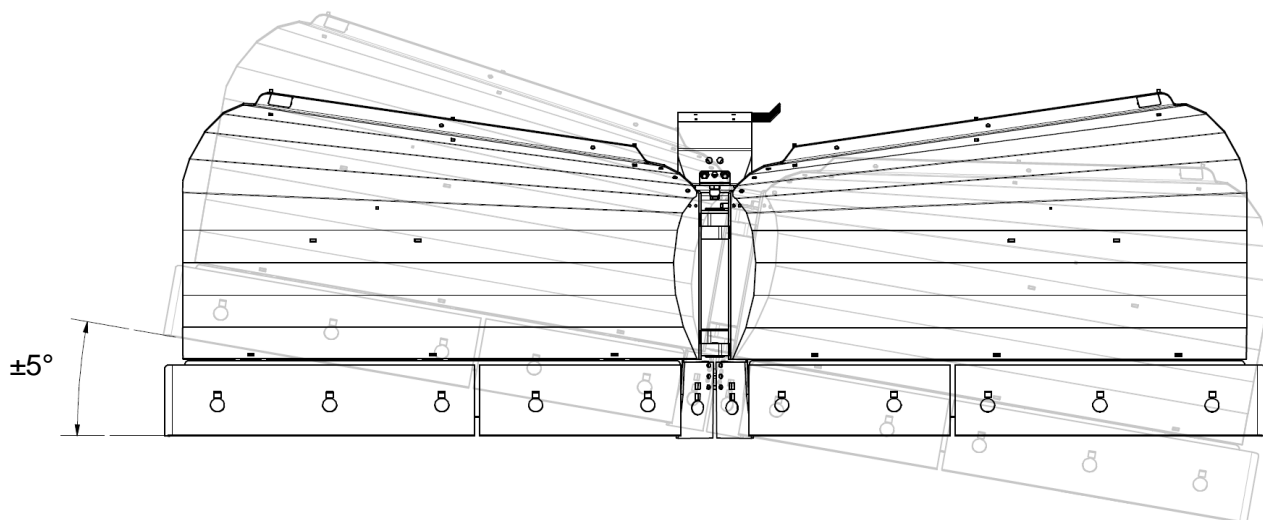


Figure 3 – Rotation

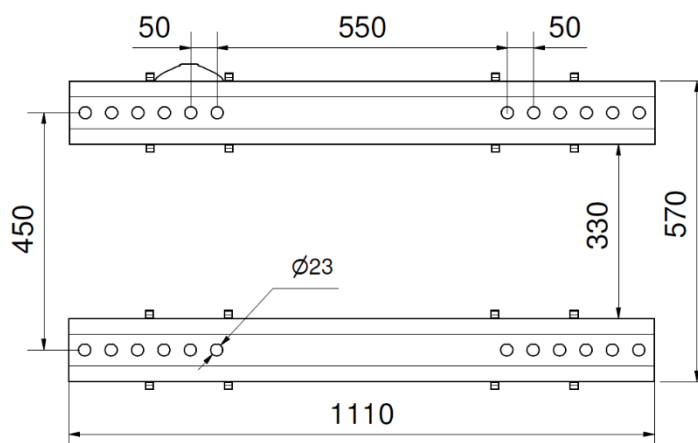


Figure 4 – Hole pattern

1.6 Connection

The type of attachment / hook (1) for the machinery's loader (3) or suspension must always be specified when ordering a VPX folding snow plough. It is important to use the correct tightening torque: **M20 (420 Nm)** and **M16 (215 Nm)** for all bolts (4) when installing the attachment / hook (1) on the plough's floating bracket (2).

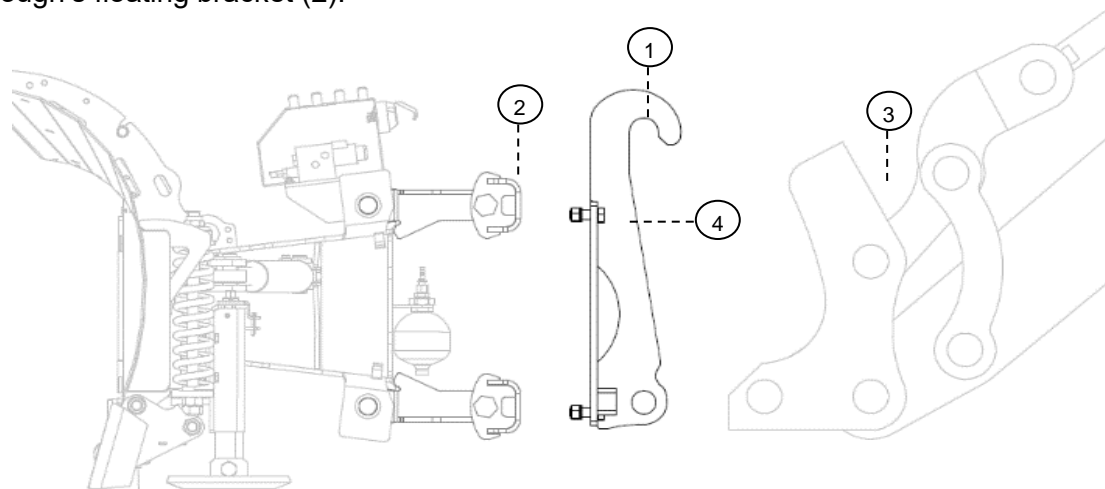


Figure 5



Warning!

Loose or poorly tightened bolts can cause the plough to come loose and cause material damage and/or personal injury!

1.7 Blank attachment

There are many different machines. In those cases where the Trejon does NOT have a ready-made attachment, customers can weld these onto a blank plate themselves. There is a ready-made kit for this, **art. no. 84005** – see Figure 6. Customers can weld attachment hooks for the load carrier themselves. For mounting on a VPX plough, read section 1.6.



Warning!

It is the person who welds/manufactures the attachment who is responsible for any incorrectly performed welding/manufacturing that may result in future injuries or accidents.

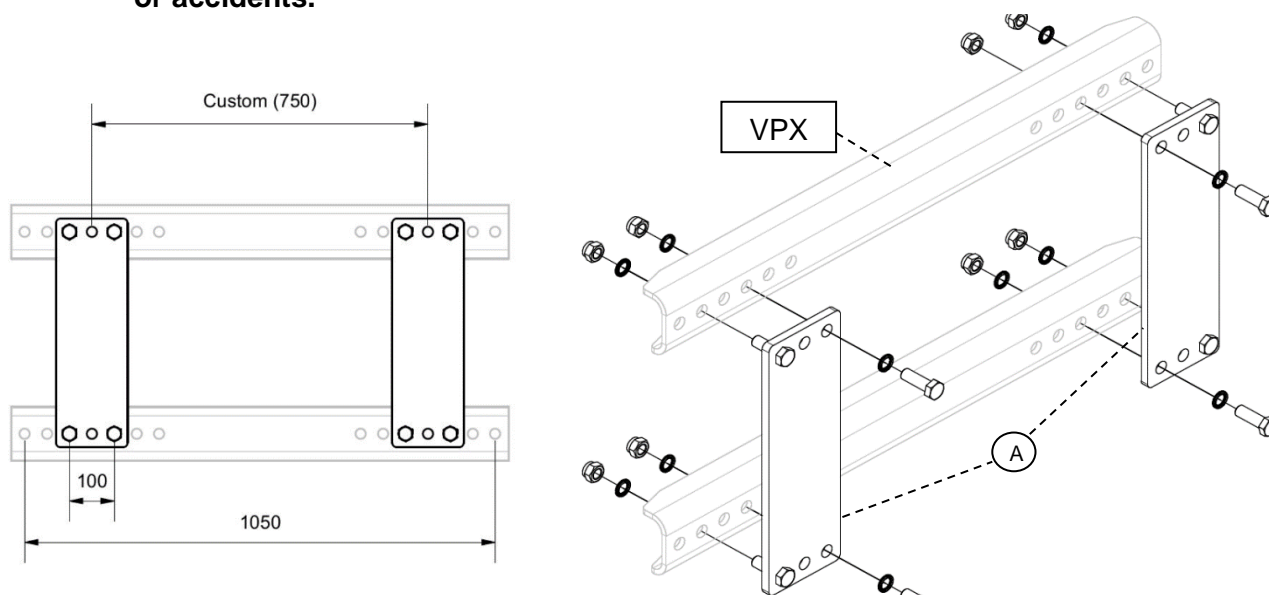


Figure 6

1.8 Trejon Attachment – Table

The VPX plough can be equipped with various attachments. The following table lists Trejon's art. nos. for the most viable alternatives. All these are suitable for the VPX plough's floating mode attachment.

Model	Kit art. no.	C-C [mm] (internal)	Figure	Location of stop lug (ST)	Other
Volvo BM	450010	960	7.1	Outside	-
3-point Cat. 2-3N	440109	825	7.2	-	Wider (W) side facing inwards
Trima	450075	650	7.3	-	Wider (W) side facing inwards
Euro	450084	995	7.4	Outside	-
Zettel 502	60565	860	7.5	Inside	-
Zettel 402	60131	650	7.6	Inside	-
3-point Cat. 1-2N-2	84009	683	7.7	-	Cat. 1-2N.
3-point Cat. 1-2N-2	84009	825	7.8	-	Cat. 2

It is important to maintain the C-C dimensions (see Fig. 7.1...7.8) when installing the attachments. The location of the stop lug (ST) is also an important part of the installation.

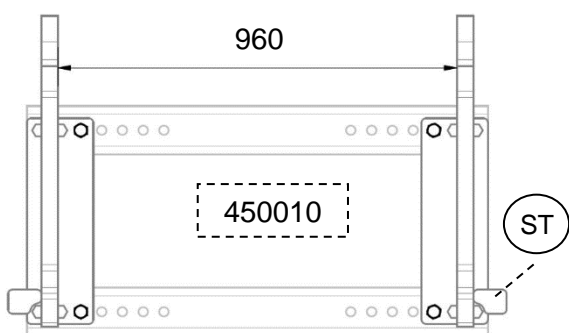


Figure 7.1

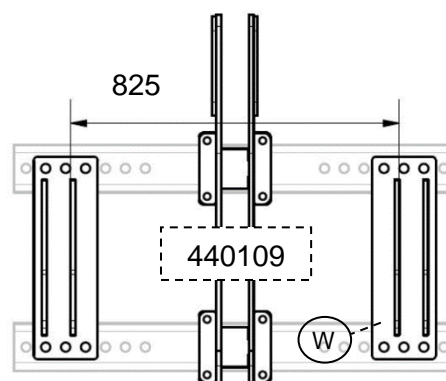


Figure 7.2

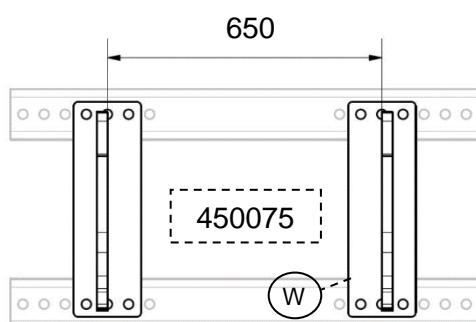


Figure 7.3

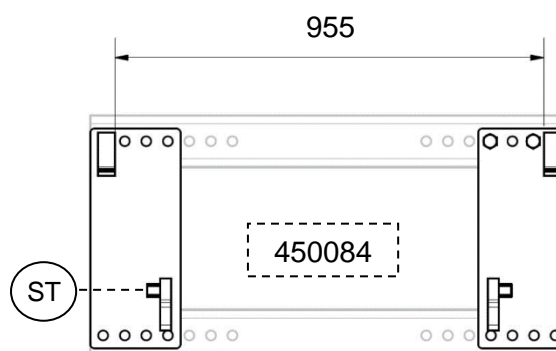


Figure 7.4

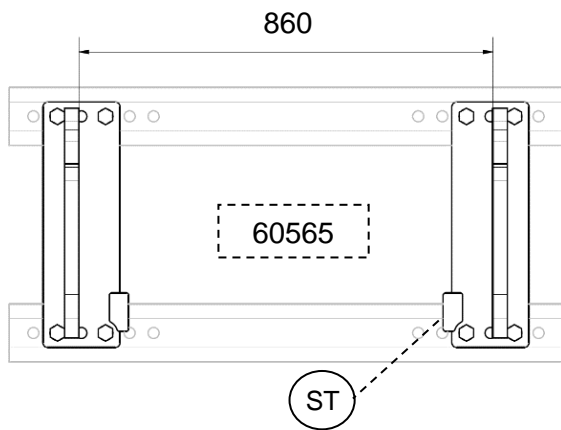


Figure 7.5

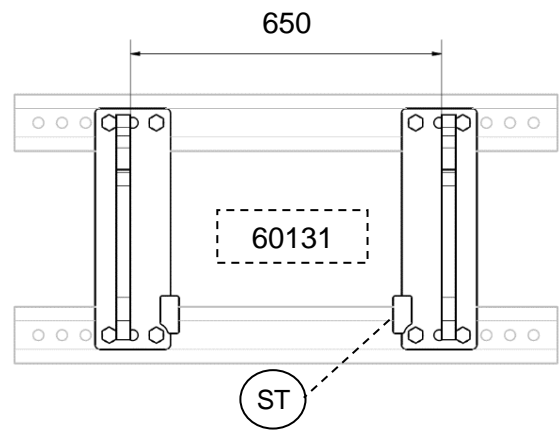


Figure 7.6

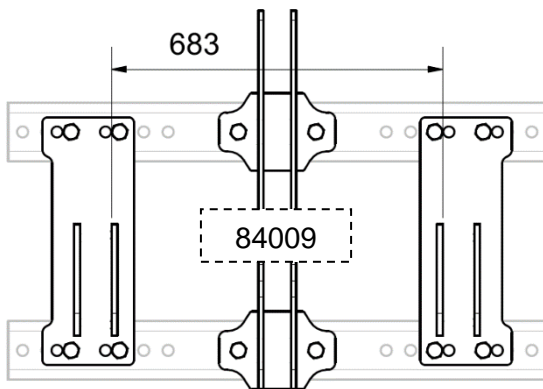


Figure 7.7

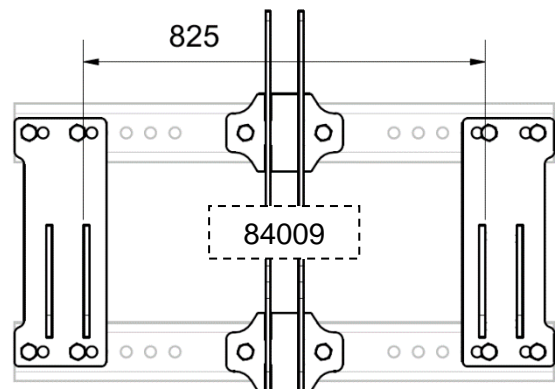


Figure 7.8

1.9 Support plates

The VPX folding snow plough is equipped with two support plates, which can be adjusted using a crank (size NV19) to the desired position. Remove the ring pin (1) and lock plate (2) from the adjustment screw (3) before carrying out height adjustment – see Figure 8. Use the crank (4) for height adjustment $360^\circ = 5 \text{ mm}$ – see Figure 9. Restore the lock plate (2) and cotter pin (1) to lock the adjustment screw (3) following height adjustment – see Figure 10.

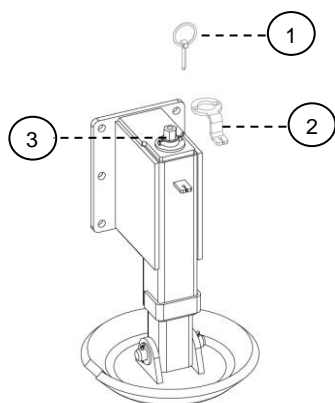


Figure 8

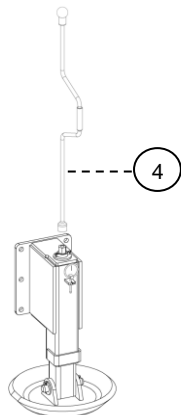


Figure 9

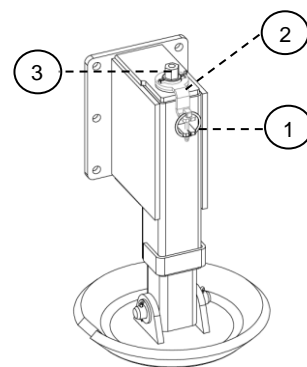


Figure 10

When ploughing for the first time or when the roadway is soft, it can be an advantage to raise the folding snow plough ($X \geq 0$) (see Figure 11). This is done to prevent unnecessary wear on the cutting blade and to avoid cutting up gravel.

After ploughing a few times or once the roadway has frozen and become hard, you are recommended lower the folding plough by adjusting the support plates upwards to the same level ($X = 0$) as the cutting edge (see Figure 12). Better ploughing results are achieved once this has been done.



NOTE!

Always replace damaged or worn support plates in time – Trejon art. no. 144636. If the plate comes loose, the support leg will also be damaged. This is NOT covered by any warranty.

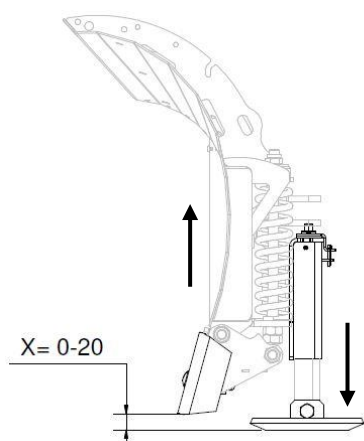


Figure 11

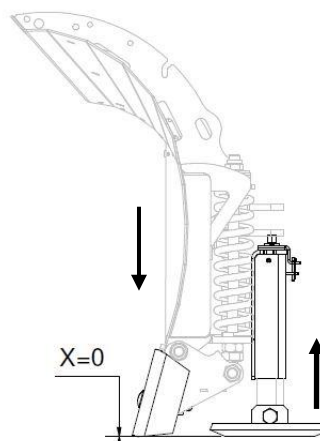


Figure 12



NOTE!

Make sure that the support plates are the same height on both sides. Damage due to incorrect adjustment is NOT covered by any warranty.

1.10 Cutting edge

The VPX plough is equipped with the following cutting edges (A, B, C – see Figure 13). The cutting edges are sprung (F) and reversible. The outer cutting edges (a) have a bent edge which reduces the risk of becoming stuck in obstacles.

The sprung cutting edges reduce damage in the event of a collision. Standard cutting edges can be reversed by switching from left to right.

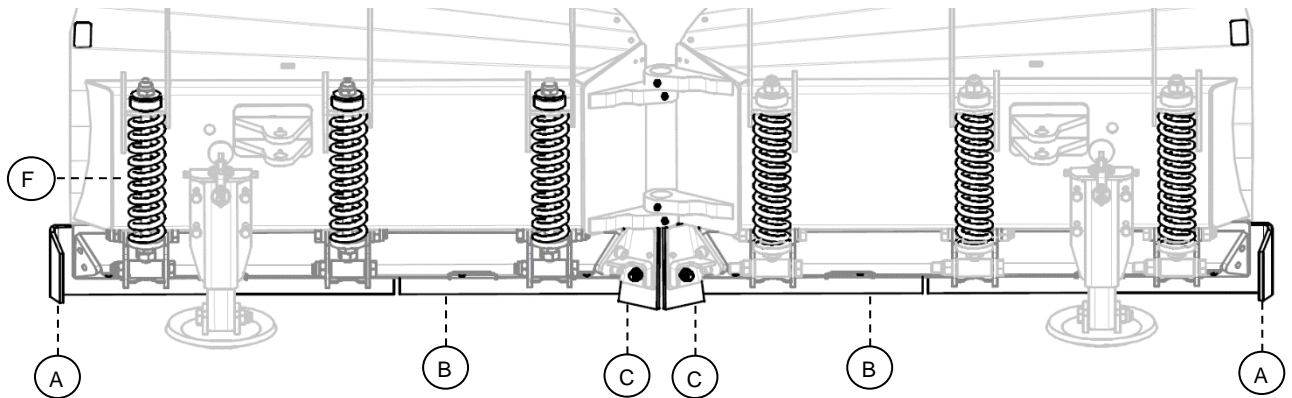


Figure 13

It is important to check wear and tear on the cutting edges daily. There are many factors that affect this. These factors include ploughing speed, substrate, cutting angle, support plates and adjustment of the floating mode. It is therefore important to maintain the distance $W \geq 10 \text{ mm}$ between the lower edge of the cutting edges (1) and the lower edge of the steel holder (2) (see Figure 14).

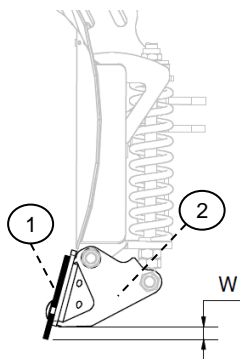


Figure 14

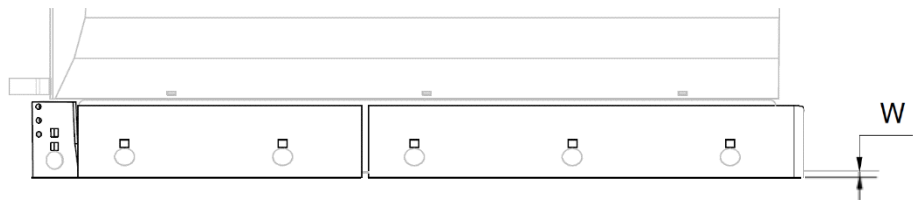


Figure 15

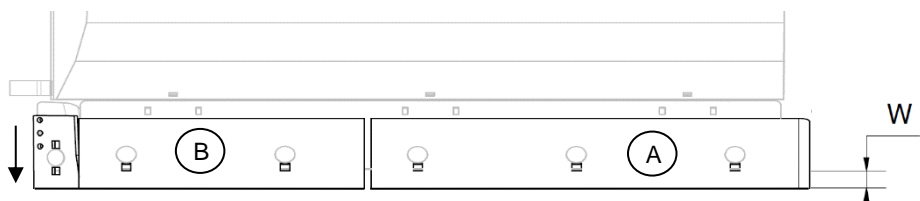


Figure 16

When the wear is significant and the distance $W \leq 10 \text{ mm}$ (see Figure 15), it is time to move all the cutting edges downwards (see Figure 16). When this position is also worn, the cutting edges (B) are turned or shifted (from left to right and vice versa); this applies to the cutting edges with bent ends (A).

It is important that the cutting edges do not protrude downwards more than 60 mm, i.e. $W \text{ max.} = 60 \text{ mm}$.

Two extra centre cutting edges (C) are supplied with each VPX folding snow plough. They are located on the right-hand side of the centre frame – (see Figure 17).

You are recommended to order new centre cutting edges, **art. no. 85708**, as soon as the last pair has been installed on the plough.

In the event of a heavy collision, the bolts will act as shear bolts in order to reduce the risk of damage to the plough. Reassemble with the right type of bolts and always with new Nordlock washers. See also section 4.4. This is NOT covered by any warranty.

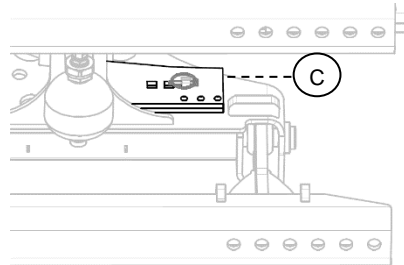


Figure 17

NOTE!



Trejon Optimal cutting edges are made of the highest quality steel to provide a low overall cost. The cutting edges are wear components and their service life CANNOT be determined. The cutting edges are NOT covered by any warranty.



NOTE!

Damage due to the use of other cutting edges is NOT covered by any warranty.



NOTE!

Replace the cutting edges when they have become worn.

1.11 Cutting angle – adjustment

The default cutting angle is 15° ($Z = 420$ mm) (VPX180 is $Z = 360$ mm) see Figure 18. In general, cutting angles only need to be adjusted after the springs have been replaced – see section 1.12.

Dimension Z – see Figure 18 – can be used as a control measure. By tightening the nut (M) in the upper part of the spring rod (P), the cutting angle is smaller – for cutting angle 0° , $Z = 390$ mm. Loosening the nut (M) makes the angle larger.

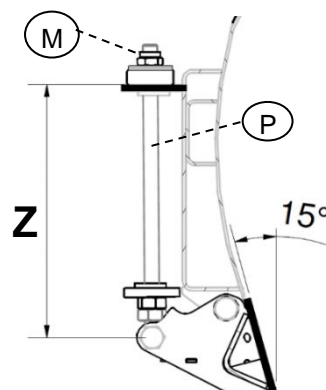


Figure 18

1.12 Springs – pretensioning of cutting edges – adjustment



NOTE!

If the pretension of the cutting edges is too high, there is a risk of accidents and of the device breaking. Sprung cutting edges are a safety arrangement, and they are intended to make ploughing safe. If any of the springs has become deformed or broken off, we recommend that all the springs on the blade be replaced, art. no. 200595; VPX180 art. no. 2019016.

The default pretension, i.e. spring Y dimension, is 330 mm (VPX180 – 270 mm) – see Figure 19.

To increase the pretension, adjust Y dimension as follows:

- 1) Loosen nuts M1 and M2 in the lower part of the spring – see Figure 19
- 2) Tighten nut M1 upwards two turns at a time and test operate. Repeat until the tension is just right – see Figure 20
- 3) Tighten nut M2 against nut M1 to lock the spring – see Figure 21

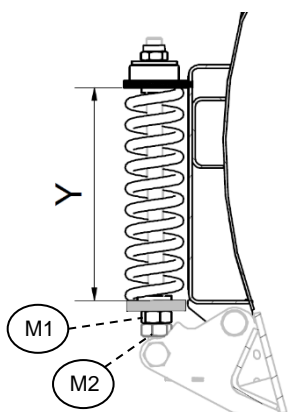


Figure 19

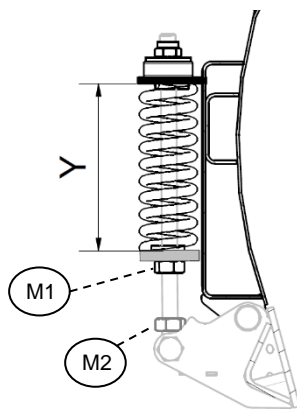


Figure 20

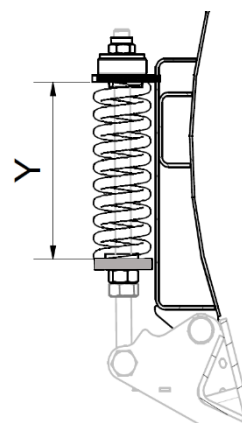


Figure 21



NOTE!

If the pretension of the cutting edge is too low, the cutting edge constantly gives way, the ploughing results are poor, the plough jumps and causes unnecessary noise.

To decrease the pretension, adjust Y dimension as follows:

- 4) Loosen nuts M1 and M2 in the lower part of the spring – see Figure 21
- 5) Tighten nut M2 downwards – see Figure 20
- 6) Tighten nut M1 downwards two turns at a time and test operate. Repeat until the tension is just right – see Figure 20
- 7) Tighten the lower nut M2 against nut M1 to lock the spring – see Figure 19

2 Safety Instructions

2.1 Safety Regulations

Read the manual. All machine operators should read and understand the entire contents of this manual and the safety regulations so there is no uncertainty as to the use of the machine/tool before it is taken into service. Get in touch with your dealer if you have any questions. Use of the machine is strictly forbidden if the operator is not aware of the risks involved in conjunction with the use of the machine and cannot act correctly if a risk situation should arise.

Read, observe and understand the meaning of all safety, operating, warning and positioning decals on the machine and in the manual.

Actions may occur when using this equipment that cannot be prevented in its design or with the use of mechanical protection.

Unfortunately, human carelessness may cancel the function of our integrated safety features. Accordingly, the prevention of accidents and operating safety features are dependent on the responsible use of the equipment and its integrated safety features. Only trained personnel should use this equipment.

The machine is intended for snow clearing only.

Operation. Learn and practise the machine's working methods and controls before it is used.

Coupling the Machine. Connect the machine in the correct manner and keep away from the area between the tractor and the machine when coupling. Make sure the equipment is correctly mounted, adjusted and in working order.

Safe Work Area. Keep unauthorized persons, especially children, away from the working zone of the machine or when it is being repaired.

Be aware of the risk of injury from material that may be ejected by the machine while work is in progress.

Ensure all **warning and operating decals** are in good condition and affixed in the correct manner, and replace them if necessary. Write the model and serial number when ordering.

Moving Parts. Keep arms, legs and other body parts as well as clothing away from any moving parts of the machine.

Lifting and lowering of the machine.

Be careful when lifting and lowering the machine/machine part.

Stability. The machine must not be operated with a tractor that does not weigh enough over the front/rear axle, such that the steering and stability of the tractor are affected. Mount ballast weights if necessary, see tractor instruction manual.

Operating the Machine. Take great care when working on uneven ground conditions, close to ditches and fences, look out for hidden dangers and adapt your working rate.

Do not reverse with the plough down (the wrong way)

Great care should be observed when working on steep slopes:

Try to drive in the same direction as the incline and not across it.

Avoid fast starts and heavy braking when driving the machine up and down inclines.

If it is absolutely necessary to drive across steep inclines then reduce your speed and watch out for unevenness, avoid sudden turns and be aware of the shift in centre of gravity that occurs when lifting mounted tools.

Hold onto the steering wheel tightly if the tractor should overturn.

Operating at Night. The work area must be illuminated when working in the dark.

Driver. Operators who are tired, intoxicated, drugged or under the influence in any other way so that they cannot control their movements must not use the machine.

The machine may only be operated by one person sitting in the tractor, no passengers are allowed.

It is prohibited for people without authorisation to use the machine.

Personal protective equipment. Protective equipment such as helmets, protective goggles, protective shoes and gloves are recommended for personnel during assembly, operation, adjustment and maintenance.

Protective Cab. The machine should only be driven by a tractor equipped with an approved protective cab. Keep doors and windows close while working.

All moving parts, including engine, must be stationary and the handbrake applied before the tractor driver leaves the cab. When travelling on ice-covered water the roof hatch must be kept open.

When travelling on ice-covered water the roof hatch must be kept open.

Maintenance. Inspect, adjust and maintain the machine according to the directions.

Regular Inspection. Inspect the entire machine regularly. Locate any loose, worn and damaged components and leaks.

Safety During Maintenance and Service. The machine must be standing on firm, even ground for maintenance and adjustment.

The tractor engine must be shut off, all moving parts stationary, the machine lowered to the ground and the handbrake applied during all cleaning, inspection, adjustment, maintenance and repair work.

Clean the machine thoroughly before repair and storage.

Bearing and hydraulic components should not be cleaned with high-pressure jets.

If excessively high pressure is used for general cleaning, this may damage the paint.

After cleaning, the machine must be lubricated according to the lubrication schedule and a short test run carried out.

Vibration. If any vibration should occur in the machine, it must be shut down immediately and the cause located. Change any damaged parts.

Emergency stop. Stop the machine immediately if it should hit an obstruction. Shut off the engine, remove the key, check for and repair any damage before recommencing work.

Make yourself aware of how emergency stops work on the tractor and the tool, and be prepared of how they work in an emergency situation.

Hydraulic hoses. Hydraulic hoses on the machine contain oil at very high pressure. Do not touch hoses and hydraulic components if the system is pressurised. In case of leaks, oil at high pressure may penetrate the skin and cause serious injury. In the event of an accident, contact a doctor immediately.

Check the condition of hydraulic hoses daily with respect to damage. Chafed and leaking hoses should be replaced immediately with new that meet the manufacturer's technical requirements. When changing tractor, always check the length of hoses. Hoses that are too long or too short may be damaged.

The use of incorrect hydraulic hoses that do not meet with specifications is strictly forbidden. Hoses can become hot while in operation, with the risk of burn injuries. Do not loosen hoses while the oil is hot, wait for it to cool down.

Welding. Protect bearings, hydraulics and electronic components if welding is being carried out. Before welding commences, electronic components must be disconnected and the welder's ground clamp placed as close to the welding site as possible.

Electrical Lines. Take great care when working close to electrical lines, maintain a safe distance with good margin.

If an accident should occur such that the plough comes into contact with live lines:

- Keep calm, act rationally so as not to worsen the situation and do not touch any metal parts.
- Warn people in the vicinity and make sure they stay outside the risk zone.

Spare Parts. Use only original spare parts on the machine.

If you should have any questions concerning the machine or its function, please get in touch with your dealer or Trejon AB.

2.2 Safety symbols

The symbol on the right shows the following:

	<p>Warning! Study the instruction manual carefully before use, so that the user knows the machine well.</p>	
	<p>Warning! Crush risk! Do not stand between machine, machine parts and tractor when coupling. Always brake the tractor, turn off the engine and remove the ignition key when leaving the cab during coupling or decoupling operations.</p>	
	<p>Indicated lifting point.</p>	
	<p>Machine name plate with CE marking. This includes the model designation, the machine's serial number, weight and year of manufacture.</p>	<p>Trejon AB Företagsvägen 9 SE-911 35 VÄNNÄSBY SWEDEN www.trejon.se</p> <p>Model: Serial nr: Weight: Model Year: Prod. Year: Total Weight:</p>

3 Using the machine

3.1 Assembly

The VPX folding snow plough is tied to a pallet on delivery.

When the plough is to be lifted from the pallet, this can be done in two ways.

- 1) Directly to the tractor attachment, after first having installed the attachment system (read Chapter 1.6)
- 2) With lifting gear such as a chain. The lifting gear is attached to the plough wings' openings (1) and to the lifting eye (2) at the point of the plough. The lifting gear must be able to cope with a minimum load of 1500 kg. Make sure the lifting chain is long enough to prevent DAMAGE to the sides of the wings!

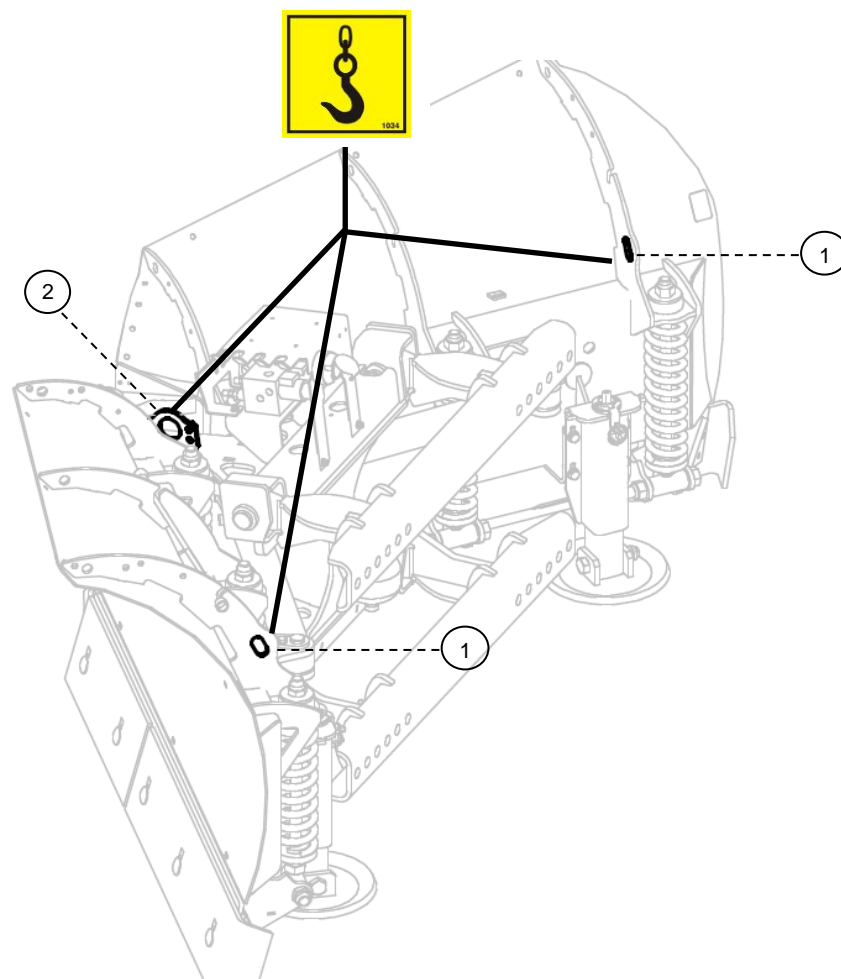


Figure 22: Lifting instructions



NOTE! ENSURE NO-ONE IS INSIDE THE RISK AREA WHEN LIFTING.

3.2 Coupling the plough to the machine

The VPX folding snow plough's attachment is suitable for the tool system specified when ordering the VPX folding plough.

Check that the vehicle is suitable for installing the plough. The plough is attached to the tractor's or loading machine's front lift/boom.

- 1) Connect the VPX folding snow plough to the tractor's existing attachment in the same way as specified in the tractor's operating instructions.
- 2) Turn off the tractor's engine and apply the parking brake.
- 3) Check that the tractor's hydraulic system is depressurised. The hydraulic hoses must be routed so that they are not damaged by the movement of the plough.
- 4) Connect the hydraulic hoses to the tractor's double-acting outlet.
- 5) Check that the plough is free from the tractor when coupling the plough.

During installation, always check that the nipples and the oil are clean, and that the hoses are intact. When installing for the first time, take extra care to ensure that the plough's components do not collide with the tractor during movement. **The warranty does not cover damage caused by incorrect installation.**

3.3 Hydraulics



NOTE!

Modifications to the plough's hydraulic system and its connections will result in damage to the plough in the event of collisions with solid objects.

The VPX folding snow plough is equipped with two hydraulic hoses (starting from gates marked A and B on the valve's hydraulic block) that are to be connected to double-acting hydraulic outlets on the machine.

If there is any uncertainty regarding the connection of the hydraulics, consult the relevant tractor supplier.

The hydraulic valve on the plough has a built-in shock function which means that, if the hydraulic pressure in the positive side of the cylinder rises above the set pressure, the valve opens and releases to the negative side of the cylinder and to the pressure accumulator.

The plough is equipped with a hydraulic valve as standard (known as a diagonal valve). This makes it possible to operate the wings independently or both wings at the same time in parallel. With the diagonal valve, the plough can be used in the same versatile way as a traditional diagonal blade.

The hydraulic valve has built-in shock valves. The hydraulic valve is connected to a pressure accumulator, which reduces the risk of damage in the event of collisions with obstacles.

The diagonal valve is supplied with solenoid coils adapted for either 12V or 24V.

The VPX folding snow plough is operated via a double-acting hydraulic outlet from the tractor's hydraulics or the 3rd or 4th hydraulic function on the loader.

The plough is equipped with two electric valves, which control the plough's hydraulic functions. Electric valves are operated via a control box in the tractor's cab.

3.4 Hydraulic connection diagram

3.4.1 Diagonal valve

The hydraulic valve is labelled with various markings – see Figure 23.

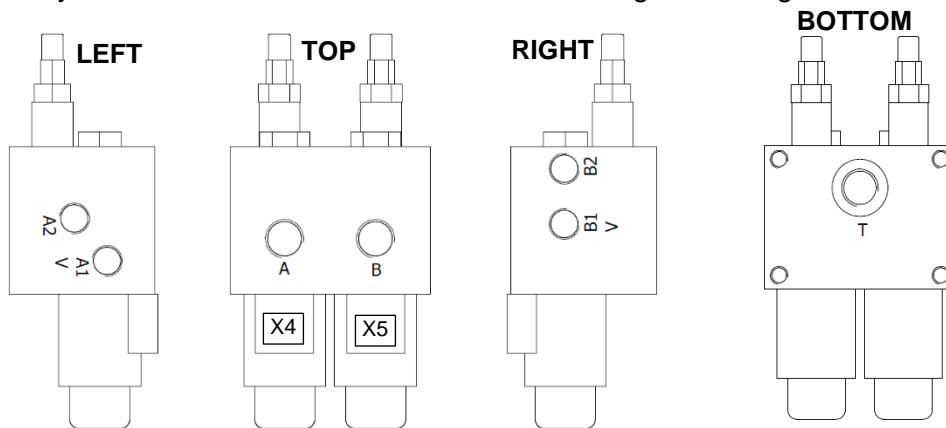


Figure 23

Connect (hoses) ports A and B to the machine's double-acting outlet.

As standard, the VPX plough's hydraulic valve gates (A1, A2, B1, B2 and T) are connected to the pressure accumulator, right and left cylinders as shown below – see Figure 24.

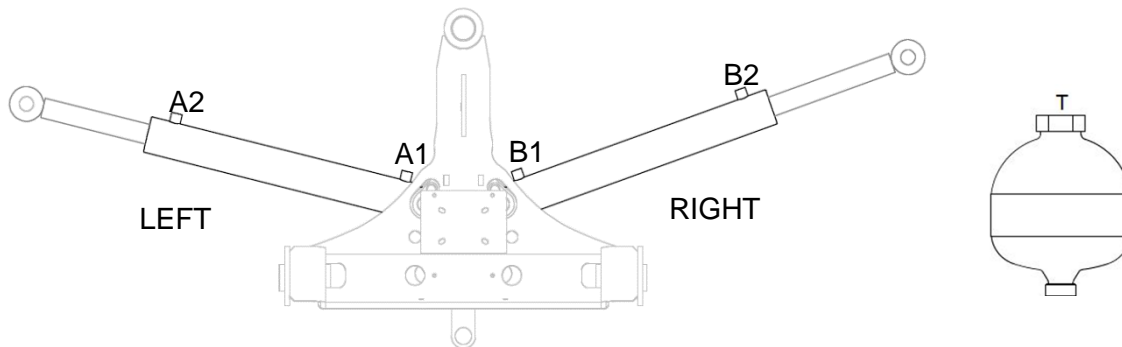


Figure 24

3.4.2 Diagonal valve with 4-Hose – option (Chapter 5)

If you wish to operate the plough with two double-acting hydraulic outlets (known as 4-hose), the following connection is recommended:

Install two 3/8" T-connections (ext-ext-int) on the plough's hydraulic valve ports (A2, A1V). Connect the plough's two hoses that operate the left wing (A1 & A2) to T-connections – see Figure 25. Acquire 2 hydraulic hoses to connect (+) and (-) to a double-acting hydraulic outlet on the tractor/loader.

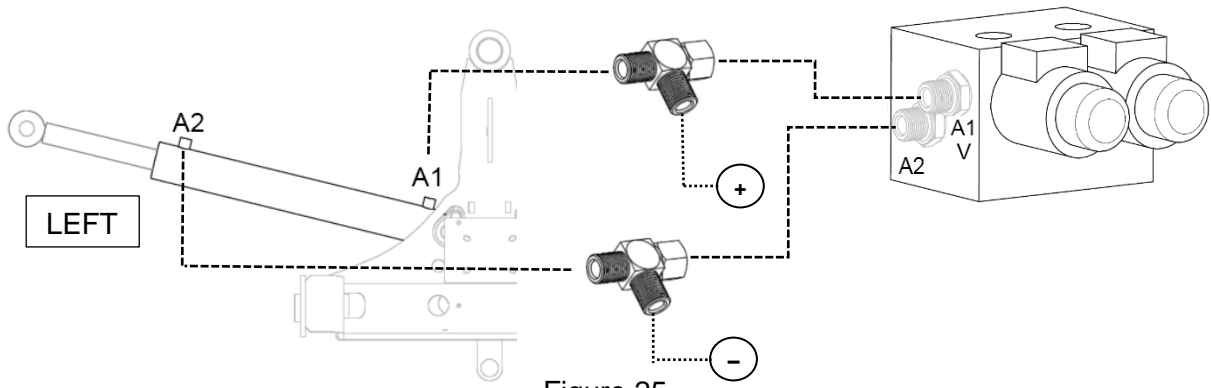


Figure 25

With this connection, the left wing will be operated with a double-acting hydraulic function and the right wing with a double-acting hydraulic function.

If the machine has an electrical function on the loader arm, this can be used to switch easily between the right wing and the diagonal function. There is normally no need to install the supplied control box here, rather you can use the machine's original mounted switch.

The diagonal function is activated by energising coil X4.

For detailed connection, see Chapter 3.5.1.

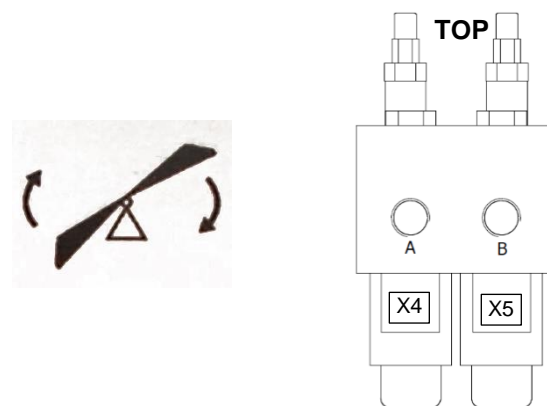


Figure 26

3.4.3 Valve 6-2

The VPX180 and VPX220 are supplied with 6-2 valves as standard. The hydraulic valve is used to switch between the right and left wings.

The valve has the following markings – see Figure 27.

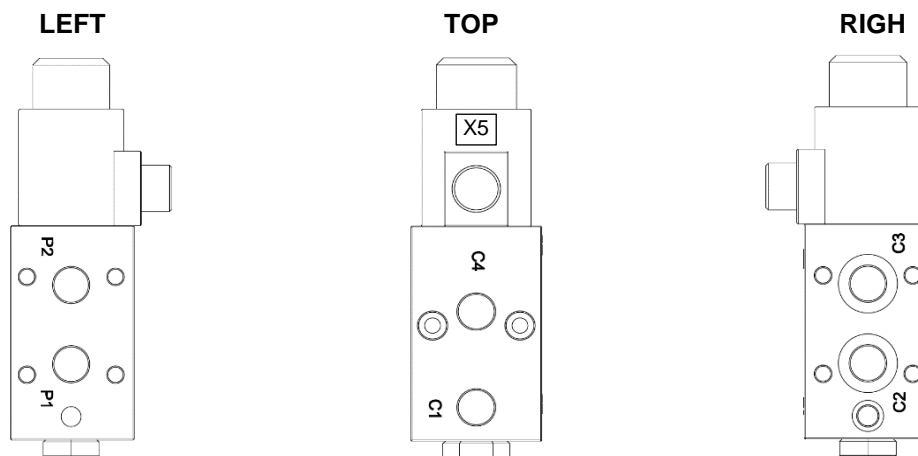
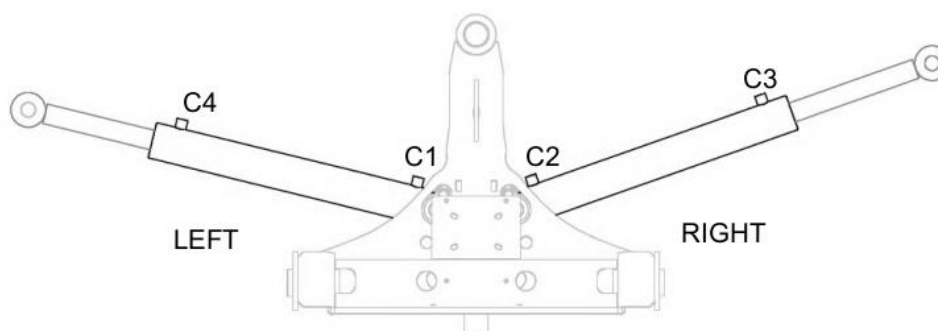


Figure 27

Connect the machine’s double-acting outlets to ports P1 and P2 on the valve.

The VPX180-220 plough’s hydraulic valve is connected as shown below – see Figure 28.



The 6-2 valve’s ports (C1, C2, C3, and C4) are connected with the right and left cylinders.

Figure 28

VPX180 and VPX220 can be updated with a diagonal valve (more information in section 5 – Accessories).

3.4.4 Plough steering – installation



NOTE!

Always check that the operating voltage (12V or 24V) on the diagonal valve's solenoid coils corresponds with the tractor's operating voltage before starting.



Warning!

Remove the key from the ignition switch before starting to connect electrical components.



Warning!

Never connect connectors to the tractor's/load carrier's electric socket during installation.

The VPX plough is supplied with the control box (art. no. 330008) with 3-pole connectors (DIN 9680). Cabling (art. no. 330007) with 2 x Hirschmann connectors (marked X4 and X5) is already connected to the hydraulic valve, for VPX180; VPX220 only X5. 2 x Deutsch connectors (marked X6 and X7) are plugged (additional information in section 5 – accessories). Spiral cable 3.5 m, 7-pole, male-male (art. no. TKBL0895) is used to connect/disconnect electricity between the tractor and the VPX plough.

1. Install the control box (A) in a safe and easily accessible location in the tractor's cab. Ensure that cables are not exposed to any crush risk.
2. Screw together attachment (B) with 7-pole connector (C).
3. Select a suitable location on the machine's boom to install the attachment (B). Route and attach the cables securely on the loader/tractor. Ensure that cables are not exposed to any crush risk.
4. After the plough has been coupled, connect the spiral cable (D) between the 7-pole connector (C) and (E).
5. **Finally**, connect the control box's 3-pole connector (F) to the power outlet in the tractor's cab.

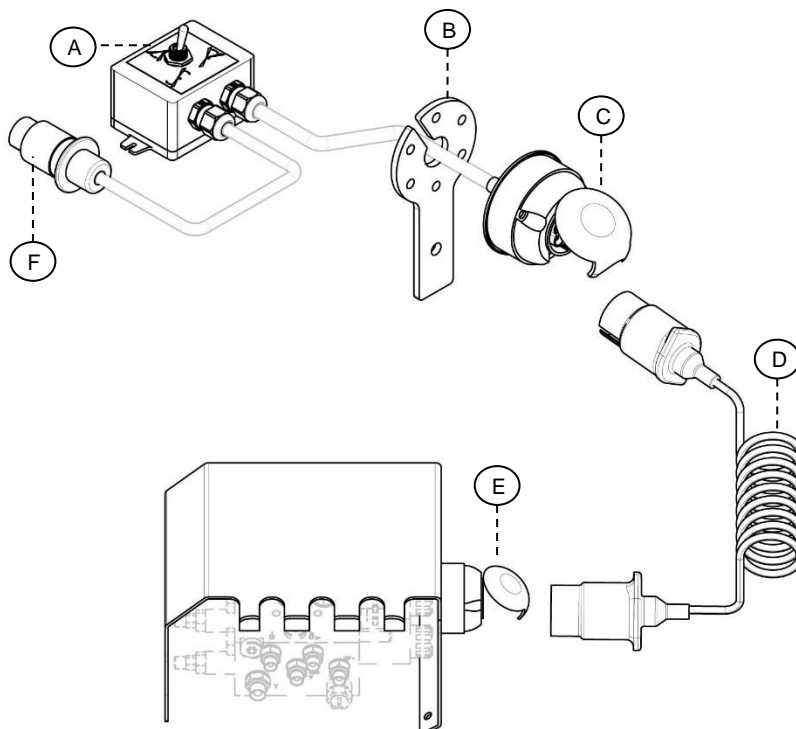


Figure 29

3.5 Control box – function description

3.5.1 Diagonal valve

The VPX plough is supplied with a control box (**art. no. 330008**). The control box's toggle switch (V) – see Figure 30 – can be set in three different positions: right, left or centre.

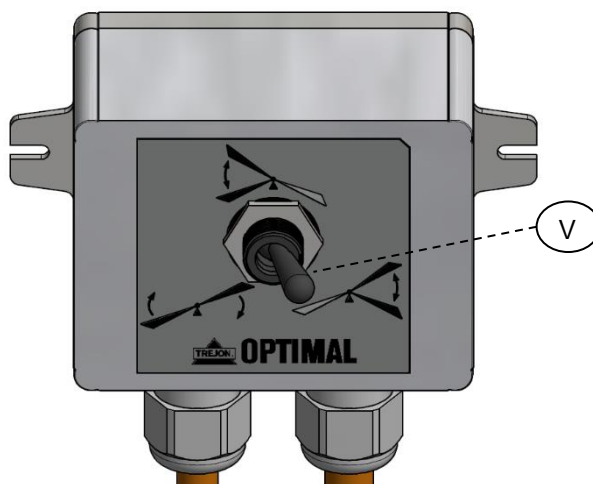


Figure 30

Depending on the position of the toggle switch, the plough is operated as follows with the double-acting hydraulic outlet on the tractor – see the table below:

Symbol	Toggle switch (V) position	VPX function	Hirschmann connectors, LED
	Right	Right wing active (no valve affected)	X4(A) – off X5(B) – off
	Middle	Left wing active (B-valve active)	X4(A) – off X5(B) – on
	Left	Diagonal configuration – left and right wings move simultaneously in the opposite direction (A-valve active)	X4(A) – on X5(B) – off

Table: Control box – Symbols and functions

3.5.2 Valve 6-2 (VPX180; VPX220)

The VPX180; VPX220 plough is supplied with a control box (**art. no. 330008**). The control box's toggle switch (V) – see Figure 31 – can be set in three different positions: right, left or centre.

This control box is the same as for VPX ploughs equipped with a diagonal valve. This means that if you choose the optional diagonal valve (art. no. 2019007) for the VPX180-VPX220, NO new control box is needed.

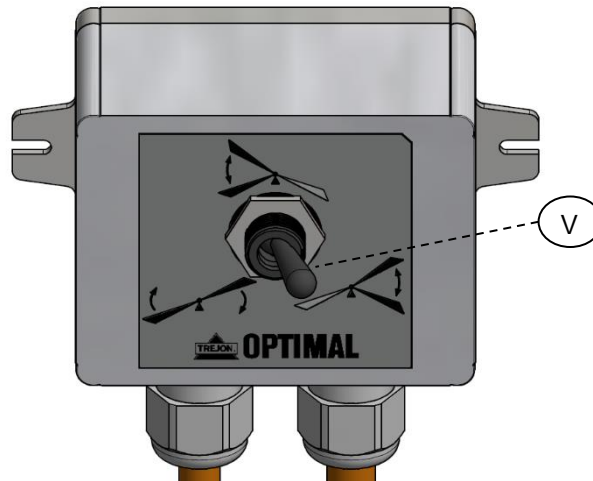


Figure 31

Depending on the position of the toggle switch, the plough is operated as follows with the double-acting hydraulic outlet on the tractor – see the table below:

Symbol	Toggle switch (V) position	VPX180 function	Hirschmann connectors, LED
	Right	Right wing active (ports C2 and C3)	X5 – off
	Middle	Left wing active (ports C1 and C4)	X5 – on
	Left	Right wing active Diagonal function MISSING!	X5 – off

Table: Control box – Symbols and functions for VPX180 and VPX220 with 6-2 valve

3.6 Wiring diagram

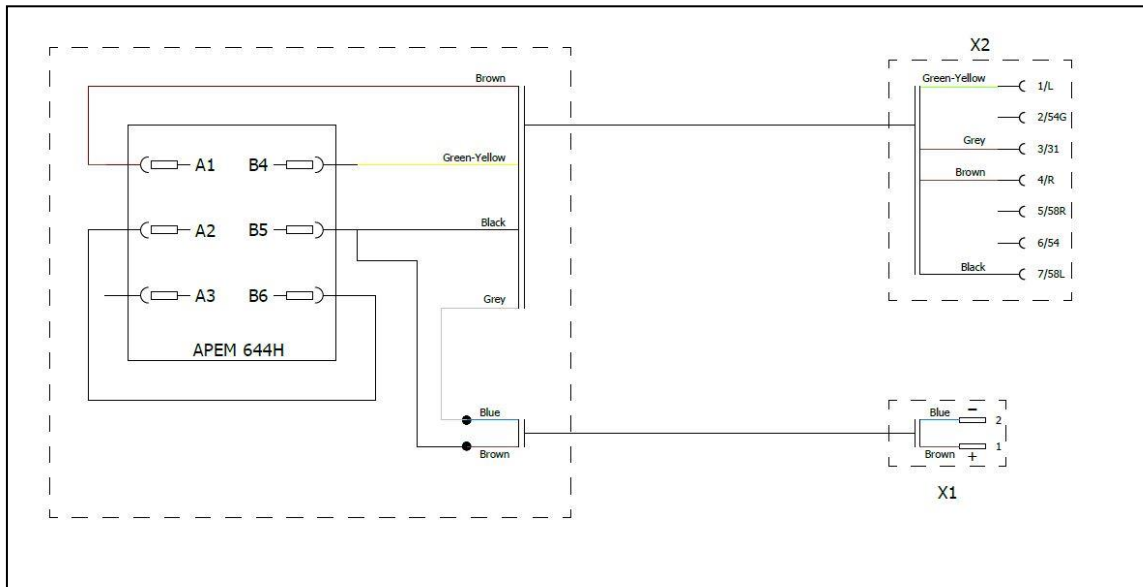


Figure 32: Wiring diagram – Control box art. no. **330008**

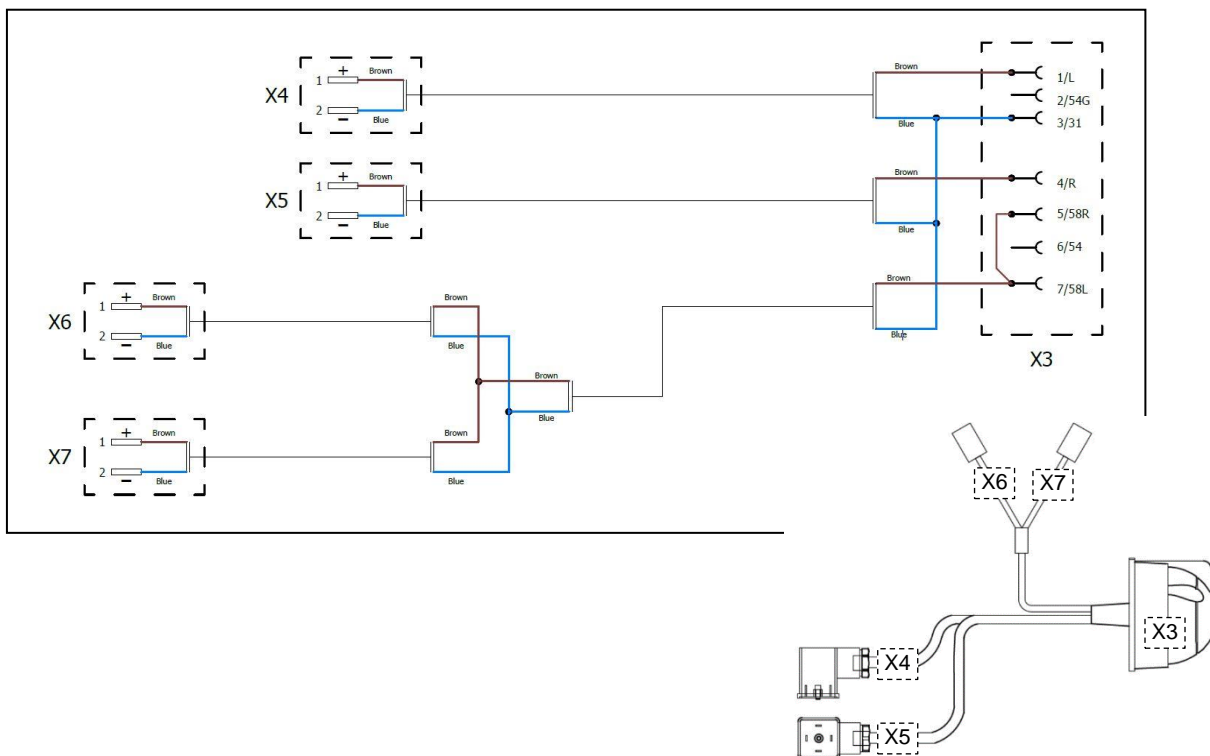


Figure 33: Wiring diagram – Wiring art. no. **330007**

3.7 Operating the Machine

The TREJON OPTIMAL VPX folding snow plough is designed for snow clearing.



NOTE!

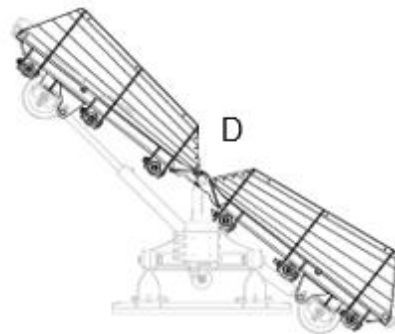
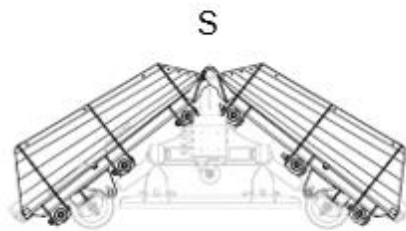
DO NOT USE FLOATING MODE ON THE MACHINE'S LOADER OR FRONT LIFT!



NOTE!

DO NOT REVERSE WITH THE PLOUGH DOWN!!

- 1) In some cases, when the plough is placed in the S-POINTED or D-DIAGONAL CONFIGURATION (see the image below), there is a risk of the plough's wings colliding with the tractor's chassis or wheels. The driver needs to pay attention and prevent such dangerous incidents.



- 2) In the case of D-DIAGONAL CONFIGURATION, the shorter cylinder must not be fully retracted (when the plough wings are fully retracted, the accumulator and the shock valves do not function).
- 3) Avoid driving into posts, railings, etc.; the plough is equipped with a shock valve that releases oil from the positive side of the cylinder to the negative side. Collisions entail an increased load on the plough.
- 4) When the cylinder reaches its "mechanical bottom position", the collision protection stops working and there is consequently an increased risk of damage to the plough.
- 5) Watch out for curbs and traffic islands. The plough is equipped with "pavement steel" as standard, which reduces the risk of damage.
- 6) Do not press the plough downwards, as this will put strain on and wear the plough excessively.

3.8 Please check the following before use:

- 1) That the equipment has been correctly installed
- 2) That all locking pins are in place
- 3) That the hydraulic hoses are correctly connected
- 4) That the hydraulic hoses are intact
- 5) That the equipment is not leaking oil

3.9 Operating instructions

That all functions are working correctly and that the support feet are set to the correct height in relation to the substrate and other conditions.

Operating instructions:

- 1) S-POINTED CONFIGURATION for conventional road ploughing and snow clearing on streets and similar. This position is recommended when there are large amounts of snow, for example when opening up a new road.
- 2) Y-CONFIGURATION for pavements, street junctions, etc., where you can collect up and remove the snow.
- 3) D-DIAGONAL CONFIGURATION for snow clearing on roads, streets, car parks and similar.
- 4) Using the control box in the cab, the operator selects which plough wing(s) is to be operated with the hydraulic fluid flow from the double-acting outlet.
- 5) The VPX folding snow plough is equipped with two support feet, which can be adjusted with a crank to the desired height (one turn moves the feet 5 mm). Make sure these are clean and can move freely. Support plates must be flat when the plough is lowered to prevent damage to the attachment.
- 6) During the first ploughing session of the year, the support plates should ideally be lowered so that the cutting edges do not tear up too much gravel (see Figure 11, section 1.9). During the season, the support plates should be kept at the same level as the cutting edges (see Figure 12, section 1.9).
- 7) When ploughing on public roads, traffic rules and regulations must be followed. Note that stones and other objects may be ejected during ploughing. Adapt your speed to the vehicle and other traffic.

3.10 Road transport



Warning!
Take great care during road transport.



Warning!
Lift the plough to a sufficient height and check the condition of the plough prior to road transport. Reduce your speed if there are bumps in the road. Too high a speed can damage the plough.

3.11 Disconnection of the plough

- 1) Lower the plough onto a flat surface so that it rests on the support plates.
- 2) Turn off the tractor, apply the parking brake
- 3) Relieve the load on the hydraulic system so that it is depressurised.
- 4) Disconnect the hydraulic hoses and protect the couplings with plugs. Anchor these in the holder.
- 5) Disconnect the spiral cable.
- 6) Loosen the plough's attachment.
- 7) Reverse the tractor away.

If the plough is to remain unused for an extended period, clean it and lubricate all lubrication points, see section 4.4.

4 Service and Maintenance



Warning!

When some form of cleaning, maintenance, repair or service is to be carried out on the plough, make sure the plough has been lowered to the ground and the tractor engine turned off. Remove the key from the ignition switch. Make sure there is nobody in the vicinity who could be injured.



Warning!

Never rely entirely on the tractor's lifting device, but support the tool properly on axle stands or similar so that it cannot fall down. Always use protective equipment such as goggles and gloves when carrying out maintenance. This is important when working with cutting edges, for example.

4.1 General

Carefully maintain the machine in order to obtain a cost-efficient operation, long service life and retained machine value. Use only effective hand tools. Keep the machine clean under the chassis for good functionality and to prevent corrosion. Never use high-pressure jets when cleaning bearings, electronics and hydraulic components. After cleaning, lubricate the machine according to the lubrication schedule and test run for a brief period.

Use the table below to see the correct tightening torques for screw unions on the machine.

Diameter	Quality 8.8		Quality 10.9	
	Nm	lb.ft.	Nm	lb.ft.
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	215	155	305	225
M18	295	217	420	309
M20	420	302	590	438
M22	520	380	730	535
M24	670	490	940	690

Increase tightening torque by 5 % when a lock nut is used.

Table – Tightening torques for screw unions

4.2 Maintenance schedule

After the first 4 hours of operation:

- Check and if necessary retighten screw joints on the machine.

After the first 8 hours of operation:

- Perform the 8 hours service and maintenance according to the schedule below.

Service point	Interval	*Action	Lubricant	Remark
Attachment, Screw unions	Initially 4h, then every 8h	C/A		M20 – 420 Nm; M16 – 215 Nm (see section 1.6)
Screw unions	Initially 4h, then every 40h	C/A		See the table in section 4.1
Support plates	Initially 4h, then every 8h	C/A	NLGI 2 grease	Refer to sections 1.9 and 4.5
Cutting edge	8h	C/A		Check wear, replace if necessary (see section 1.10)
Centre steel holder	8h	C/A		Check position, refer to section 4.4
Hydraulic hoses	8h	K		Check wear, replace if necessary (see section 3.4)
Lubrication points	40h	K	NLGI 2 grease	Refer to section 4.5
Spring	40h	C/A		See section 1.12
Cylinders	40h	K	NLGI 2 grease	Refer to section 4.5
Storage of steel holders	After each season	K	NLGI 2 grease	Check M24 bolts, refer to section 4.4

*Action codes: A=Adjust, C=Check, Cl=Clean, R=Replace

Use NLGI 2 grease with EP features of good quality and which can withstand low temperatures for lubrication. Do not use graphite grease on ball bearings. Compressed air driven grease guns must not be used to lubricate sealed bearing as the seal may come loose or be damaged. Clean the grease nipples before applying the grease gun.

These intervals apply to normal operation, continuous operation requires more frequent lubrication. Always lubricate after cleaning with water.

4.3 Before season start

Go through all the above points – see section 4.2. If the machine is serviced well, it will have a considerably longer service life and more carefree use.

4.4 At End of Season

As a minimum, the user is recommended to implement those measures that are mentioned in section 4.2. after the ploughing season.

The plough must be thoroughly cleaned and then lubricated and serviced. Replace worn or damaged parts. When the machine is dry, you are recommended to apply a thin coat of oil in those places where the paint has been worn away.

The piston rods on the hydraulic cylinders must be cleaned and oiled, and then retracted so that the plough is set in S-POINTED CONFIGURATION (see section 1.1) to prevent rust damage.

The machine should ideally be stored under cover in a dry area.

It is important to check the steel holder (A) and its bolts (E). If these are damaged, they should be replaced; when this happens, they need to be lubricated (see Figure 34)

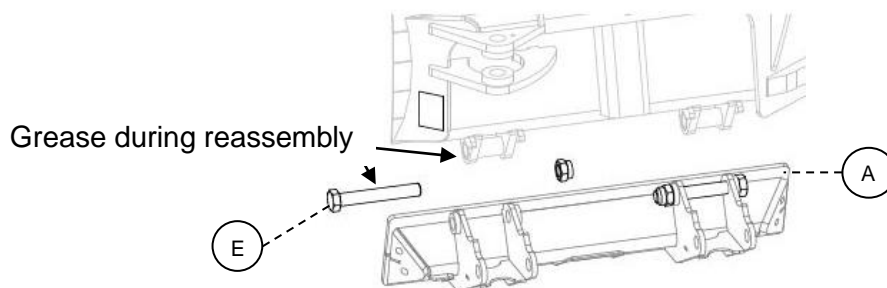
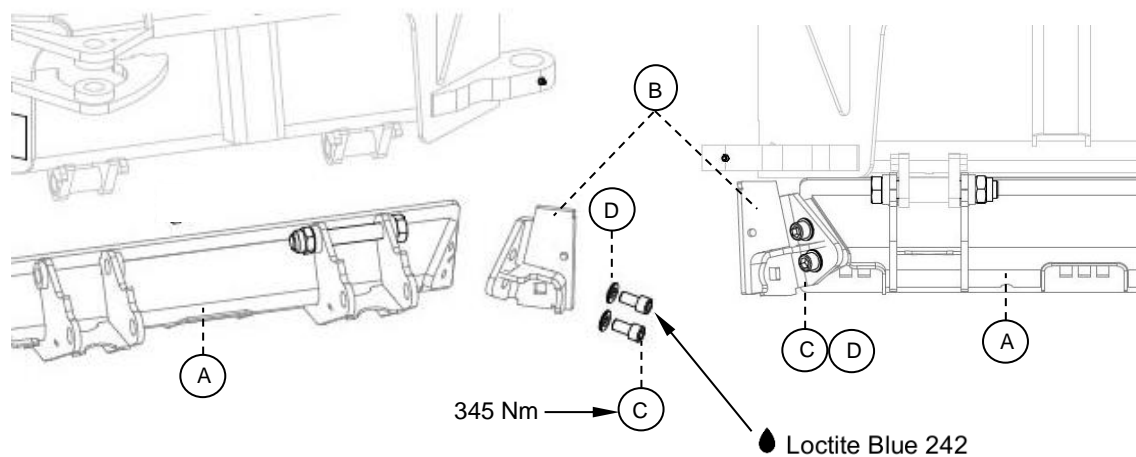


Figure 34

On the plough's steel holder (A), there is also a steel holder (B) for the central cutting edges (refer to section 1.10).

Check position and wear. In the event of a heavy collision, the bolts (C) will act as shear bolts. Reassemble (see Figure 35) with the right type of bolts (C) art. no. **SOP780053** and always with new Nordlock washers (D) art. no. **NL16SP** with the correct tightening torque. The use of **Loctite Blue 242** or equivalent is also recommended.



Figure

4.5 Lubrication points – location

Nipples marked (X) in Figures 1, 2 and 3 must be lubricated at 40 operating hour intervals or weekly. Pump the grease into the bearing until it comes out at the side of the layer, wiping off the excess.

Rotate the joints (if possible) 180° and repeat. This ensures good distribution of the lubricant.

Some known brands of grease that can be used:

Shell - **SRS 4000**; Esso - **Thermo 30150**; Statoil - **Grease Way CAH92**; Hydro Texaco – **Hydex EP2**

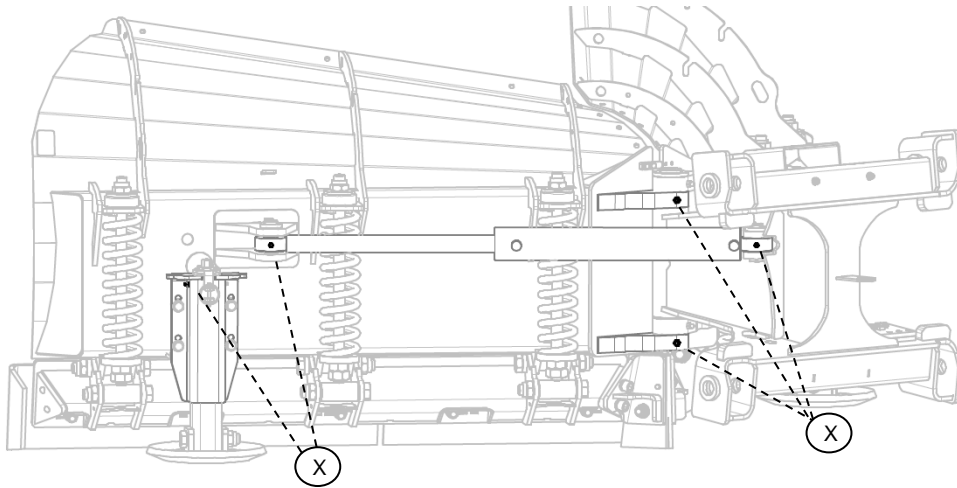


Figure 36: VPX left-hand side

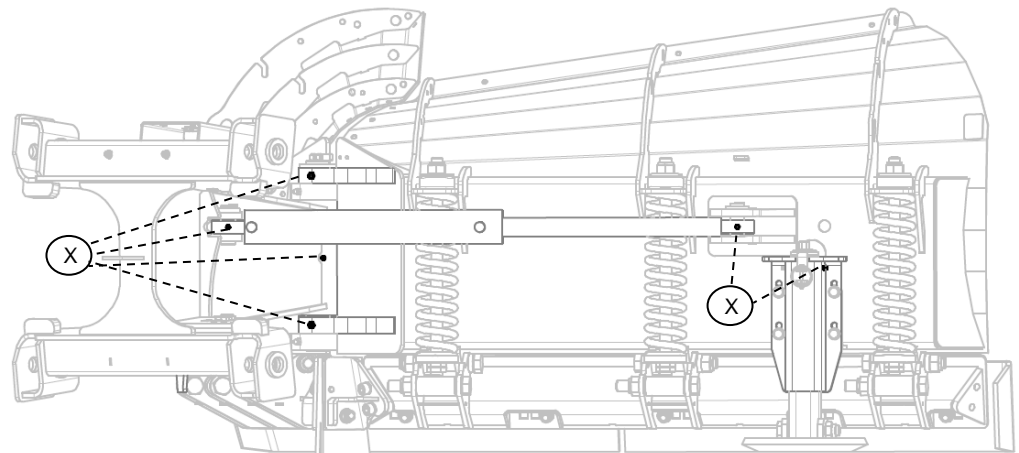


Figure 37: VPX right-hand side

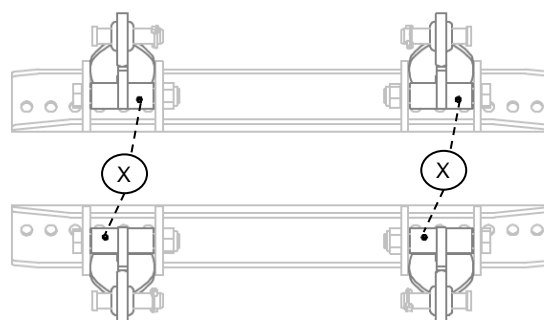


Figure 38: VPX floating mode attachment

5 Accessories

The table below presents a list of accessories for the VPX plough. Check www.trejon.se or contact Trejon for the most up-to-date range of accessories.

Art. no.	Description
D15-12	12V Solenoid – 1 pc.
D15-24	24V Solenoid – 1 pc.
320182*	LED Lighting kit
440141*	Radio control kit
2019007	Diagonal valve kit for VPX180-VPX220
2020081	Wear rubber VPX180 complete kit
2020082	Wear rubber VPX260 complete kit
2020083	Wear rubber VPX290 complete kit
2020084	Wear rubber VPX330 complete kit
2020085	Wear rubber VPX370 complete kit
433075	Support wheel kit for VPX330; VPX370 – (pivoting)
2020050	Separate operation left wing kit, FASTER G1/2 – (4-hose VPX)
2020051	Separate operation left wing kit, TEMA G3/4 - (4-hose VPX)

* - use Deutsch connectors marked **X6** or **X7** for connection.

Radio control 440141

This function is suitable when the plough has to be moved quickly from one machine to another. In this case, current is only required up to the plough's 7-pole connector. If the tractor has a 7-pole connector in the front, it is sufficient to connect the spiral cable between these two and to turn on the driving lights on the tractor.



6 Spare Parts

6.1 Use original spare parts

You are faced with the choice of “original” and “copy”!
The choice often depends on the price. A “cheap” purchase can often end up being expensive.

Some reasons for choosing TREJON’s original spare parts:

- Quality and fit
- Reliable function
- Longer life and thereby better economy
- Guaranteed availability through TREJON’s sales partners

TREJON original spare parts and accessories are designed especially for these machines. The fitting and/or use of non-original spare parts and accessories can negatively change the technical features of your machine. The manufacturer’s warranty will not apply to any damage caused by the use of non-original spare parts or accessories.

The warranty does not apply to arbitrary modifications that have been made to the machine.



Get in touch with the dealership where you bought your machine when ordering spares or other service.

When ordering spares, always specify the correct model, type and serial number found on the name plate on the chassis.



EC Declaration

according to the Machinery Directive 2006/42/EC

We **TREJON FÖRSÄLJNING AB**
 (tenderer's name).....

SE – 911 35 Vännäsby, Företagsvägen 9

(Full Company Address - In case of affiliated partners with registered office within the EC, the manufacturer's company name and address are also stated)

declare with sole responsibility that the following product,

TREJON OPTIMAL folding snow ploughs

VPX180; VPX260; VPX290; VPX330; VPX370

.....
 (make, type)

to which this certificate applies, complies with the current basic safety and health protection regulations in accordance with the Machinery Directive 2006/42/EC,
 (if applicable)
 and also meets the requirements of other applicable EC standards.

— — —

 (title and / or number and publication date of other EC standards)

(if applicable)

The following norm(s) and/or standard(s) and/or technical specification(s) have provided the basis for the professional introduction of the safety and health regulations set out in the EC standards:

EN ISO 12100-1: 2010 EN ISO 12100-2: 2010

.....
 (title and/or number as well as publication date of standard(s) and/or technical specification(s))



Henrik Johansson
CEO

Vännäsby, 1 September 2020

.....
 Issued (place/date)

.....
 (Name, position and signature of authorised employee)

Guarantee- /assignment certificate

- Guarantee terms** - Valid between retailer (Trejon AB dealer) and machine purchaser.
- General about guarantee** - In order to obtain valid guarantee terms set forth below, and the specific guarantee terms set by each provider. These are attached to the user manual for each machine, as appropriate.
- Validity of guarantee** - The guarantee is 12 months from date of purchase.
In some cases, the guarantee can be limited by running time.
- The guarantee covers** - Damaged parts, which have broken down because of defective production operations of materials in course of normal use of the machine.
- Only the labor cost for replacement of defective warranted part.
- The guarantee does not cover** - Transport costs applicable to the machine or the parts.
- Travel costs.
- Any resulting costs incurred as a result of damage to the machine.
- If the machine has been modified by the owner.
- Damage due to normal wear and tear of the machine – Not related to manufacturing defects, poor service, user inexperience or use of spare parts that are not original.
- Excessive or inappropriate use of the machine.
- The guarantee is not applicable to parts which are subject to wear, for example hoses, sealing, oil, belts, batteries, chains, knives, glass panes etc.
- The guarantee period for replaced parts during the guarantee period expires with the machine's guarantee.
- Normal adjustments, maintenance or supervision
- Guarantee procedures** - Contact place of purchase as soon as any damage or malfunction is detected.
Do not use the machine if the damage can be worse.
- Guarantee repairs must be performed by Trejon AB approved workshop.
- ATTENTION!** The guarantee shall enter into force provided that the machine **GUARANTEE/ ASSIGNMENT CERTIFICATE** has been fully completed and signed by both parties (archived by the seller), and recorded on the Trejon web portal no later than 14 days from date of sale (the seller is responsible for this happening).

Assignment certificate:

Machine Buyer shall confirm with his signature that he had received manual containing operating instructions, and received information about the operating, security and maintenance requirements described in this and made the final inspection of the machine.



PLEASE FILL IN!

Product: _____	Serialno. _____
Salesman: _____	Company: _____
Signature of salesman: _____	Date of purchase: _____
Name of buyer: _____	Telephone: _____
E-mail: _____	
Address: _____	Zipcode: _____
City: _____	Country: _____
Date: _____	Signature of buyer: _____

We store personal data, see our privacy policy: <https://www.trejon.se/enu/Dataskyddspolicy/>

TREJON AB reserves the right to modify or improve shown models with technical or commercial motivations without the requirement to carry out the same modifications on machines already delivered. Illustrations in this Instruction Manual do not necessarily show the machine that has been delivered.

Technical information, dimensions and weights are not binding. All misprints reserved.

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