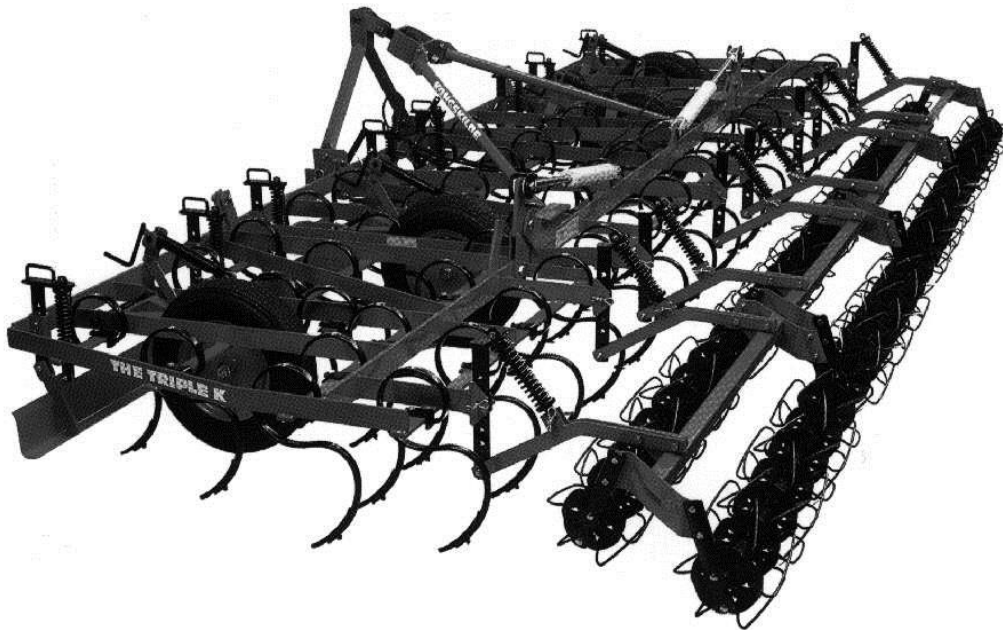




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VIBRO MASTER



Manual
Catalogue of spare parts

SEEDBEDCULTIVATOR.
“VIBRO MASTER”

2016, Edition 2

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1. General information

This manual refers to equipment of the cultivator and a recipient confirms its receipt with a signature.

The manual aims at familiarising a purchaser with intended use, construction of the cultivator as well as rules on its correct and safe exploitation.

Familiarisation with this manual and observance of recommendations included in it is the basic condition enabling obtainment of satisfactory results with failure-free and safe work of the cultivator.

Information especially important in view of safety of using and operating the cultivator is marked in the manual with a warning symbol together with appropriate description.

	<p>Danger warning symbol. This danger warning symbol indicates important information on dangers given in the manual. If you see this symbol, beware of a danger and carefully read appropriate information.</p>
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The terms used in the manual: left side, right side, front, back - refer to placement of an observer with face turned in line with the direction of the machine movement.

Each cultivator has a rating plate fixed firmly to the front part of the frame. Based on information included in it a user may identify the machine, which is necessary in case of ordering spare parts.

The plate includes for example such information as: name and address of the manufacturer, machine symbol, serial number, production year. This information needs to be entered into the following table and used in contact with the manufacturer or point of sale.

Name of the cultivator	Seedbed cultivator
Product symbol ^{1/}	U646/5, U646/6, U646/7, U646, U646/1, U646/2, U646/3,
Serial number	
Production date	
Address of the manufacturer	Kongskilde - Polska Spółka z o.o. Ul. Metalowa 15 99-300 Kutno Phone: (024) 3551515
Purchase date	
Address of the supplier ^{2/}	

^{1/}- tick appropriate,

^{2/}- refers to a point of sale (to be filled in by a seller).

In case of any possible difficulties with reparation of the equipment and for the purpose of obtaining additional information concerning rules on using and spare parts, please contact directly or by phone with the company

KONGSKILDE-POLSKA Spółka z o.o., or a point of sale of the machine. The company: KONGSKILDE - POLSKA IS ALWAYS READY TO HELP USERS OF OUR EQUIPMENT BY ADVISING AND BY MEANS OF TECHNICAL ASSISTANCE PROVIDED BY HIGHLY QUALIFIED STAFF MEMBERS. THE MACHINE HAS BEEN DESIGNED AND MADE TAKING INTO CONSIDERATION ALL REQUIREMENTS FOR ITS SAFE EXPLOITATION.

2. Rules on Safe Work

NOTE! - in order to avoid danger, before commencement of work with the cultivator, it is necessary to become familiarised with contents of this manual and to comply with the following guidelines:

- Operation and exploitation of the cultivator may be entrusted only to a person who has appropriate qualifications entitling to work with tractor agricultural cultivators and who has become familiarised with this manual.
- Before using the cultivator, it is necessary to pay attention to its technical condition, to the way of fastening particular mechanisms and especially working units as well as the system of connecting with a tractor.
- **IT IS NOT ALLOWED TO WORK WITH A MACHINE WHICH IS NOT IN WORKING ORDER**
- Loosened elements need to be **tightened up** and damaged elements need to be **replaced for new original parts**.
- Reparation activities may be performed by a person with appropriate qualifications.
- The cultivator needs to be coupled with a tractor of the class given by the manufacturer in this manual.
- In order to couple the cultivator with a tractor, it is necessary to use pivots and factory-made pins.
- While connecting and disconnecting the hydraulic installation of the cultivator with installation of a tractor, it is necessary to make sure that control levers on a tractor are in neutral position.
- Hydraulic installation of the cultivator has to be tight, any spillage of oil needs to be identified and damage has to be repaired.
- Working units of the cultivator may pose danger, but due to their functions they may not be covered. During work an operator has to make sure that nearby the working cultivator there are no outsiders. A safe distance from the working cultivator is 5 m.
- It is not allowed to move the cultivator back in working position (lowered).
- During performance of operation and reparation works the cultivator has to be lowered in resting position and it is necessary to turn off engine in a tractor.
- In order to repair or inspect loosened elements need to be fixed firmly again.
- **It is not allowed to transport people and objects on the cultivator not being its firm equipment.**
- The manufacturer is not responsible for damage arising from incorrect exploitation of the cultivator, exploitation of the cultivator inconsistently with intended use, use of spare parts other than factory-made, introduction of changes by a user in construction without consultation with the manufacturer.

- If inscriptions and signs on the cultivator become illegible or are destroyed, it is necessary to immediately replace them for new ones (order from the manufacturer or in a point of sale).

NOTE! - A failure to comply with the foregoing rules may lead to dangers for an operator and outsiders as well as to damage of the cultivator. For damage arising from this reason KONGSKILDE-Poland shall not be liable.

3. Intended use.

The seedbed cultivator U646/3 "VIBRO MASTER" is intended for pre-sowing cultivation of soil on fields after earlier ploughing.

The cultivator may work in the entire range of soils from light to hard, on even fields, without stones, with inclination of land up to 12°.

Exploitation of the cultivator for other purposes and in other field conditions shall be considered as exploitation inconsistent with intended use.

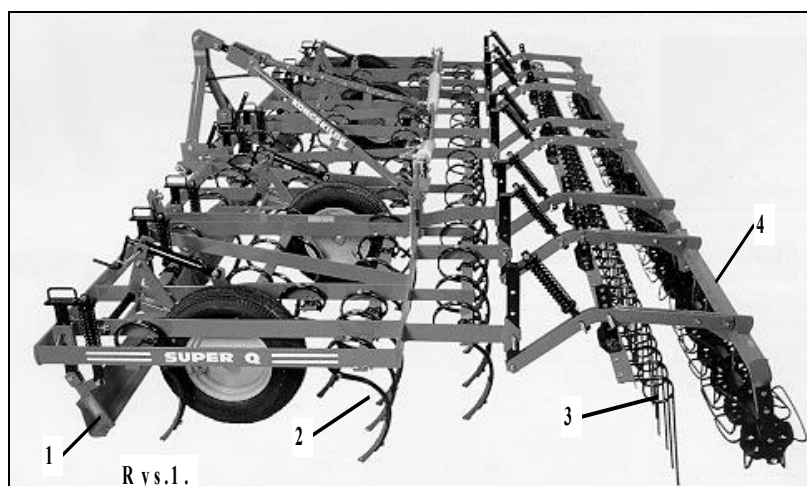
Work with the cultivator on a field which has not been ploughed may lead to damage of the machine and is inconsistent with its intended use.

Fulfilment of the requirements for making use of the machine, operation and reparation according to guidelines of the manufacturer as well as their strict observance form the condition of exploitation consistent with intended use.

For work with the cultivator it is required for a tractor to have pulling force of 30 kN, to be equipped with fully operable external hydraulics system and three-point suspension system of implements.

4. Construction and work of the cultivator.

The seedbed cultivator U646/3 "VIBRO MASTER" (fig. 1) is a machine suspended on a three-point suspension system of implements on a tractor.



Working units are fixed directly to the cultivator's frame. The working units include: levelling and crumbling slat (1), 4 rows of spring tines (2), single-row finger harrow (3), row of cage-mounted rollers (4).

While parting soil along entire width of the cultivator, the transverse levelling and crumbling slat levels surface of field and crumbles lumps of earth after earlier ploughing. The slat swings and

is fixed by means of spring clamp. Segmental construction of the slat makes it possible to match it precisely to any possible unevenness of land.

Spring scarifying tines of the SQ type are universal and may be used in the entire range of conditions of light and average soils. The tines are fixed to the frame in 4 rows and ended with a two-sided coulter with an option of shifting by 180° if blunted or damaged (fig. 2).

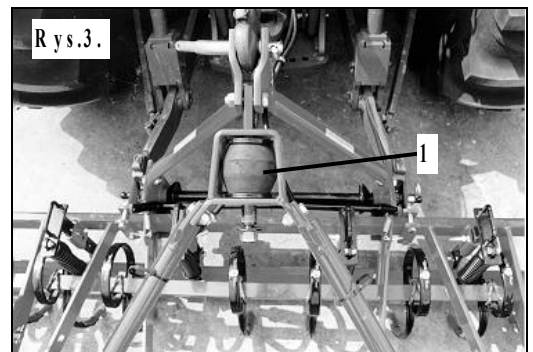
The single-row finger harrow together with the rod roller are fixed on swinging arms pressed by means of a set of springs. Fingers of the harrow part uneven surface of field scarified by tines of the cultivator and crumble lumps of earth pulled out on top. The row of the rod rollers slightly presses, crumbles remains of lumps and finally levels surface of field preparing it for sowing.



During work the frame of the cultivator is based on the bed on tired wheels used for adjusting depth of work of the scarifying tines. The wheels with wide low-pressure tires increase stability of adjustment setting in case of typical unevenness of field.

The three-point suspension system equipped with a beam of the quick coupler making it easier to connect and disconnect with a tractor.

The frame of the three-point suspension system is connected with back supports through the rubber shock-absorber decreasing dynamic influence of forces between the implement and tractor (1. Fig. 3).

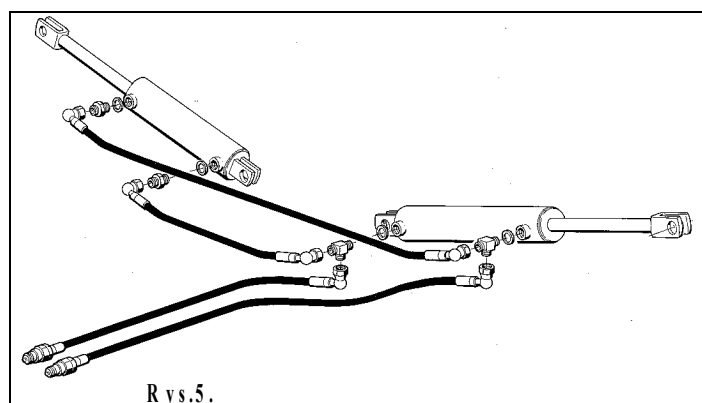


Due to considerable width of the cultivator the frame is divided and side sections of the working units are folded to the inside by means of hydraulic servo-motors. (1. Fig. 4).

4.1. Hydraulic system.

The hydraulic system of the cultivator consists of two two-sided servo-motors located crosswise on the frame and lead-in pressure ducts

The installation is supplied with oil from the system of external hydraulics of a tractor through 2 sockets of quick couplers. Servo-motors are controlled from a tractor's cabin while unfolding and folding the frames with side sections.



5. Equipment.

In a standard version the cultivator is equipped with:

- spring tines of the SQ type with reversible coulters,
- supporting wheels 165x15,
- beam of the quick coupler,
- rubber shock-absorber,
- hydraulic installation for folding side frames,
- manual with a catalogue of spare parts.

Additionally, upon a request of a Customer, the manufacturer may equip the cultivator with double coulters with blade gauge of 150 mm, duckfoot share with width of 70 m made of steel with increased endurance, double crumbling rod roller, scarifiers of traces of tractor's wheels.

6. Exploitation of the cultivator.

6.1. Preparation of the cultivator for work.

Preparation of the cultivator for work consists in checking the technical condition and in particular strength of connections of its elements. In case of identifying damage or wear of elements of the cultivator, it is necessary to replace them for new, loosened screws and nuts have to be tightened up. Check if pivots applied in adjustment systems have safety pins.



NOTE - All screws have to be tightened up after the first hour of work.

Lubrication places need to be filled with a lubricant as in table 1.

- Check if adjustment spindles of the scarifying sections turn without interruptions.
- Check the condition of hydraulic installation of the cultivator, in case of identifying leakiness it is necessary to locate a place of leakage, determine the reason and repair the failure.



NOTE! - Work with damaged hydraulic installation of the cultivator may lead to damage of the machine and danger for an operator.

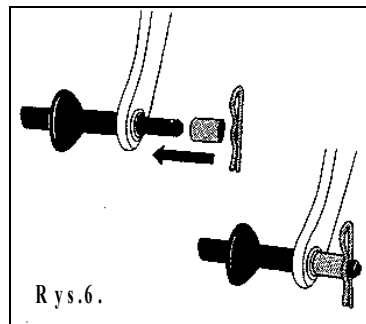
- Check pressure and condition of tyre of support wheels, top up low pressure.

6.2. Connection of the cultivator with a tractor.

NOTE! - The machine has to be coupled with a tractor on horizontal and even surface.

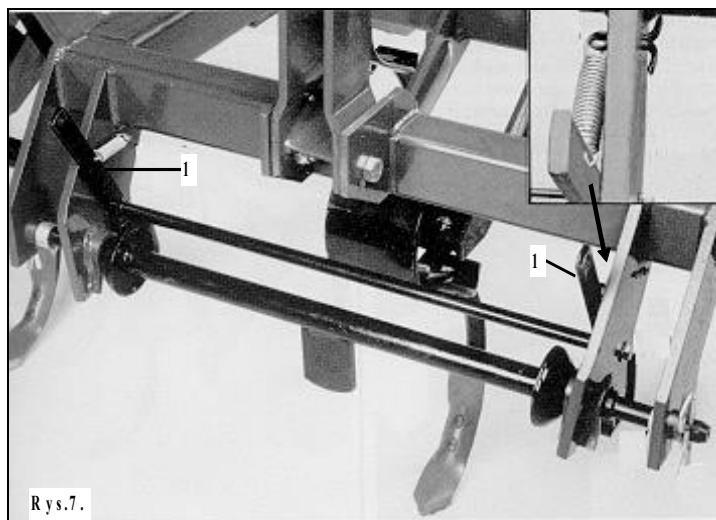
In order to connect the cultivator with a tractor it is necessary:

- to put a beam of the quick coupler on couplers of the jack in a tractor (Fig. 6) paying particular attention to correct fastening of the bushing and safety pin,
- to drive up with the back of the tractor to the cultivator so that the beam of the quick coupler will be directly under lower catches of the cultivator's frame,



WARNING! - During aggregation it is unacceptable for outsiders to be between a tractor and the machine.

- by lifting the beam carefully put it behind spring catches of the quick coupler. The beam is connected with the cultivator after the two spring catches are blocked (1. Fig. 7).



NOTE! - Work with a damaged catch protecting the quick coupler may result in automatic disconnection of the cultivator with a tractor and in an accident.

- after connection of lower couplers, lower the jack and put the upper coupling,

- connect the hydraulic ducts of the cultivator with sockets of external hydraulics on a tractor.

After disconnection of the cultivator, the activities have to be carried out in reverse order. Release of the beam of the quick coupler takes place after pulling away the left and right arms of the spring catch.

6.3. Preparation of the cultivator for work.

Appropriate adjustment of its working units is the basis for proper work with the cultivator. The adjustment needs to be carried out only after shifting the cultivator from transport position to working position.

6.3.1. Shifting of the cultivator into working position.

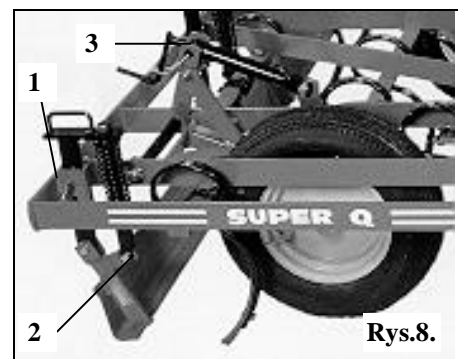
Shifting of the cultivator from transport position (folded side arms with sections) and the other way round is carried out by controlling the lever of the hydraulic separator in a tractor.

REMEMBER - Lifting and lowering the arms of side sections need to be carried out after earlier lowering the cultivator to working position and leaning the working units against the bed.

IMPORTANT - While unfolding the sections, it is necessary to make sure that within reach of unfolded arms there are no people and animals and surface of field is even. The arms need to be unfolded after stopping a tractor with released gear and pulled hand brake.

6.3.2. Setting of the levelling and crumbling slat.

Protrusion of the levelling and crumbling slats should consider depth of work of tines in the cultivator. For adjustment of protrusion of the slats combination of openings on the plough beam and handle is used (1. Fig. 8). Additionally, the crumbling work of the slat may be adjusted by changing the angle of its inclination using for this purpose two openings on the support (2). While fastening the plough beams in the handles, it is necessary to use only factory-made pivots and pins. It is also necessary to make sure that all segments of the slat along the entire width of the cultivator are identically set.



6.3.3. Adjustment of depth of work of the tines.

Depth of work of the tines in particular sections is adjusted by changing setting of support wheels. Turning the adjustment spindle (3. Fig. 8) leads to lifting or lowering the support wheel and respectively increasing or decreasing depth of work of the tines.

Before adjustment, it is necessary to appropriately level the frame of the cultivator. Inclination of the frame to the front or back may lead to different depth of work of the tines. Levelling of the frame needs to be carried out by lengthening or shortening the upper coupling.

During adjustment, it is necessary to pay attention to identical setting of depth of work of all sections.

6.3.4. Gauge of the tines.

In a standard version, gauge of the tines in scarifying sections is 67 mm. The tines are fastened on beams of the frame in places marked with "x" symbol. In case of replacement of the tines, new elements need to be fixed appropriately in marked places. Fastening screws have to be tightened up with 90 Nm moment.

6.4. WORK WITH THE CULTIVATOR.

In order to correctly perform work with the cultivator it is necessary to comply with the following rules:

- make sure that working units of the seedbed cultivator are in working order, rollers rotate without interruptions, tines are not bent and their coulters are properly sharp,
- check if the hydraulic system of the cultivator properly cooperates with the hydraulic system of a tractor,

During work, the cultivator should move in rectilinear motion with speed within 8÷12 km/h. Work with lower speed considerably decreases vibrations of the tines weakening their crumbling influence on soil.

Reversions need to be carried out after earlier lifting of the cultivator to the transport position. In case of slight changes in direction of movement of the cultivator e.g. while going round obstacles, unevenness of sides of field etc. the turning process cannot be too rapid, because as a result of influence of side forces there is a risk of damaging the working units.



NOTE! - Moving back and reversing with the lowered cultivator may result in its damage.

In case of blocking up working units (stone, floral remains, other foreign bodies on field), it is necessary to stop the cultivator, lift the cultivator over surface of field and lower it. If this does not result in automatic clean-up of the working units, repeat the activity several times or after lowering the cultivator to resting position turn off the engine in a tractor, pull the hand brake and remove the reason for the blocking up.

6.5. TRANSPORT DRIVES.

Due to its size the cultivator U643/3 “Vibro Master” is not admitted to traffic on public roads. While transporting the cultivator on a tractor (transport within a farm, access to field etc.), the side frames with sections have to be folded to transport position.

7. OPERATION and maintenance.

Each time after finished work, the entire cultivator needs to be cleaned from remains of plants, earthy dirt and it is necessary to check its technical condition.

Within an inspection carried out, it is necessary to pay particular attention to the condition of screw connections - tighten up loosened elements.

Blunt coulters of the tines in scarifying sections need to be rearranged (reversed by 180⁰) and damaged need to be replaced for new ones. These activities have to be carried out after lowering the cultivator to resting position and turning off the engine in a tractor.

Deformed or broken tines need to be replaced for new ones. Replacement of the tines may be easier by slightly (approx. 5 cm) lifting the cultivator above the ground with the reservation that the frame needs to be supported with supports protecting against any possible automatic lowering.

The activities have to be carried out after turning off the engine in a tractor and pulling the hand brake. After replacement of the tine, the fastening screws have to be tightened up with 90 Nm moment.

NOTE! - going under the cultivator during operation and reparation works is not allowed and may result in serious injury of the body.

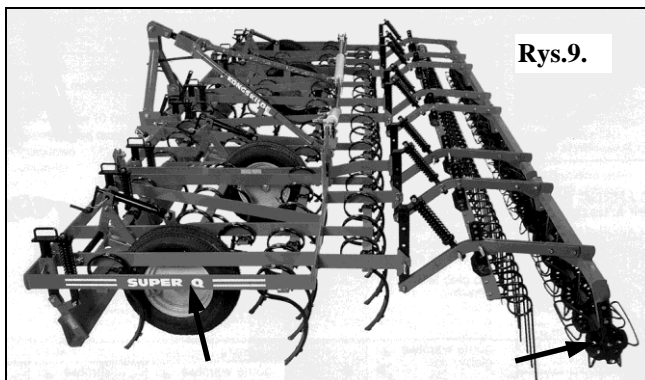
Check pressure and condition of tyre of the cultivator - top up low pressure.

Tighten up the hydraulic ducts after the first 10 hours of work. Damaged, leaking ducts are not suitable for reparation and need to be replaced for brand new.

Lubricate the cultivator in accordance with guidelines shown in table 1 and figure 9 (lubrication places are marked with a sticker - sub-point 11).

Table 1. Cultivator lubrication table.

Place (marked in fig. 9)	Frequency	Lubricant
Bearings of road wheels.	once a week	ŁT-4S3
Bearings of the sections of rod rollers.	every 8 h of work	ŁT-4S3



Before lubricating, the lubricating nipples need to be carefully cleaned up by wiping them with a clean cloth. A failure to do so usually results in contamination of the bearings with earth and shortening of their durability.

8. Storage of the cultivator.

Each time after the end of work, the cultivator needs to be carefully washed removing earth contamination. It is necessary to check the general condition of particular units of the cultivator and remove identified damage.

Before longer pause (e.g. winter) elements of the cultivator having direct contact with earth have to be maintained lubricating their surface with oil. Losses of lacquer coatings need to be completed.

Due to considerable size the cultivator is stored in transport position.

The hydraulic ducts need to be cleaned and it is necessary to put factory-made shields protecting against any possible dirt or dampness.

The cultivator has to be stored in a dry, airy place covered from atmospheric factors.

9. Disassembly.

Disassembly of the cultivator should be carried out by persons earlier familiarised with its construction. These activities need to be carried out after placing the cultivator in working position (unfolded side arms) on even and hard bed. In view of the scale of forces which may exceed 200 N, during disassembly of particular components (side arms, main frame, road wheels etc.) it is necessary to use lifting equipment.

Remember - lifting equipment used during disassembly may be operated only by a person with appropriate qualifications.

10. Liquidation.

Liquidation of the cultivator needs to be carried out after its earlier complete disassembly consisting in separation of rubber elements, elements of plastic, ferrous metals and non-ferrous metals. Rubber elements and elements of plastic (tyre, seals) need to be handed over for use (processing or utilisation) to entities with appropriate equipment.

The cement factory Strzelce Opolskie S.A. 47-100 Strzelce Opolskie ul. 1 Maja 50 deals with the use of rubber waste for energy purposes.

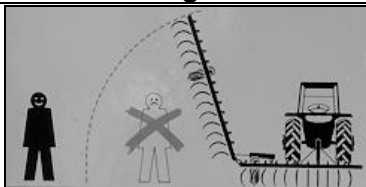



Remember - combustion of oils, plastics, rubber materials in devices not adjusted for this purpose results in contamination of the natural environment and infringes binding provisions.

Waste oils and lubricants need to be handed over through chains of CPN stations, collecting them or directly to "Rafineria Nafty Jedlicze S.A." 38-460 Jedlicze ul. T. Trzeciewskiego 14 where they are subject to processing for the purpose of their another use.

Waste metal elements need to be handed over as scrap.

11. Warning and informative graphics.

The cultivator is marked by the factory with the following graphics:

No.	Sign	Meaning	Placement
1.		Warning against going into the zone of lowering side arms of the cultivator	From both sides on the frame of the cultivator.
2.		Warning against lifting the arms of side sections in a way other than with the help of servo-motors of the cultivator supplied from hydraulic installation of a tractor	In front on the right and left sides on the frame.
3.	THE TRIPLE K SUPER Q	Name of the cultivator	On side surface of the frame
5.	KONGSKILDE	Name of the manufacturer	On back supports of the suspension system.
6.		Marking of lubrication places	See the lubrication table.
7.	 <p>COMPLY WITH OHS RULES GIVEN IN THE MANUAL IT IS NOT ALLOWED TO TRANSPORT PEOPLE IT IS NOT ALLOWED TO GO ON PUBLIC ROADS.</p>		In front and at the back on the frame
8.	NOTE! TIGHTEN UP ALL SCREWS AFTER THE FIRST HOUR OF WORK.		On side supports of the suspension system
9.	Trademark Kongskilde and inscription VIBRO MASTER		At the back and in front on the frame

REMEMBER - In case of destruction of or illegible entries, it is necessary to replace them.

New entries may be purchased in points of sale of the machines or directly in the manufacturer.

Good legibility of the warning entries favours safe work.

IN CASE OF REPLACEMENT OF COMPONENTS ON WHICH INFORMATIVE AND WARNING GRAPHICS HAS BEEN INCLUDED, IT IS NECESSARY TO COMPLETE RELEVANT MARKINGS.

12. Technical characteristics of the cultivator.

Table 2. Technical characteristics of the cultivator „VIBRO MASTER”, type „SGC” and „SQ”:

Specification	Unit of measure	Value						
		4.3 m	4.7 m	4.9 m	5.3 m	5.9 m	6.3 m	6.7 m
Symbol		4.3 m	4.7 m	4.9 m	5.3 m	5.9 m	6.3 m	6.7 m
Dimensions in transport position								
• length	m	2.80						
• width	m	2.60	3.00	2.60	3.00	3.00	3.40	3.40
• height	m	2.40						
Dimensions in working position								
• length	m	2.85						
• width	m	4.10	4.50	4.30	5.10	5.70	6.10	6.70
• height	m	1.11						
Working width	m	4.30	4.70	4.90	5.30	5.90	6.30	6.90
Weight	kg	676	710	730	765	817	913	1490
Operation	-							1
Power demand of a tractor	kW	60	62	66	73	80	85	100
Working units:								
• number of tines	pcs.	53	57	61	65	73	79	85
• type of tines	-	spring (Super Q)						
• end of tine	-	two-sided coulter						
• number of rows of working tines	pcs.	4						
• scale of tines	m	0.80						
• maximum depth of work	mm	80						
• diameter of levelling cage-mounted rollers	m	0.28						
Number of hydraulic servomotors	pcs.	2						
Tyre		165-15 4 PR						
Pressure in tyre	MPa	0.35						

NOTES

