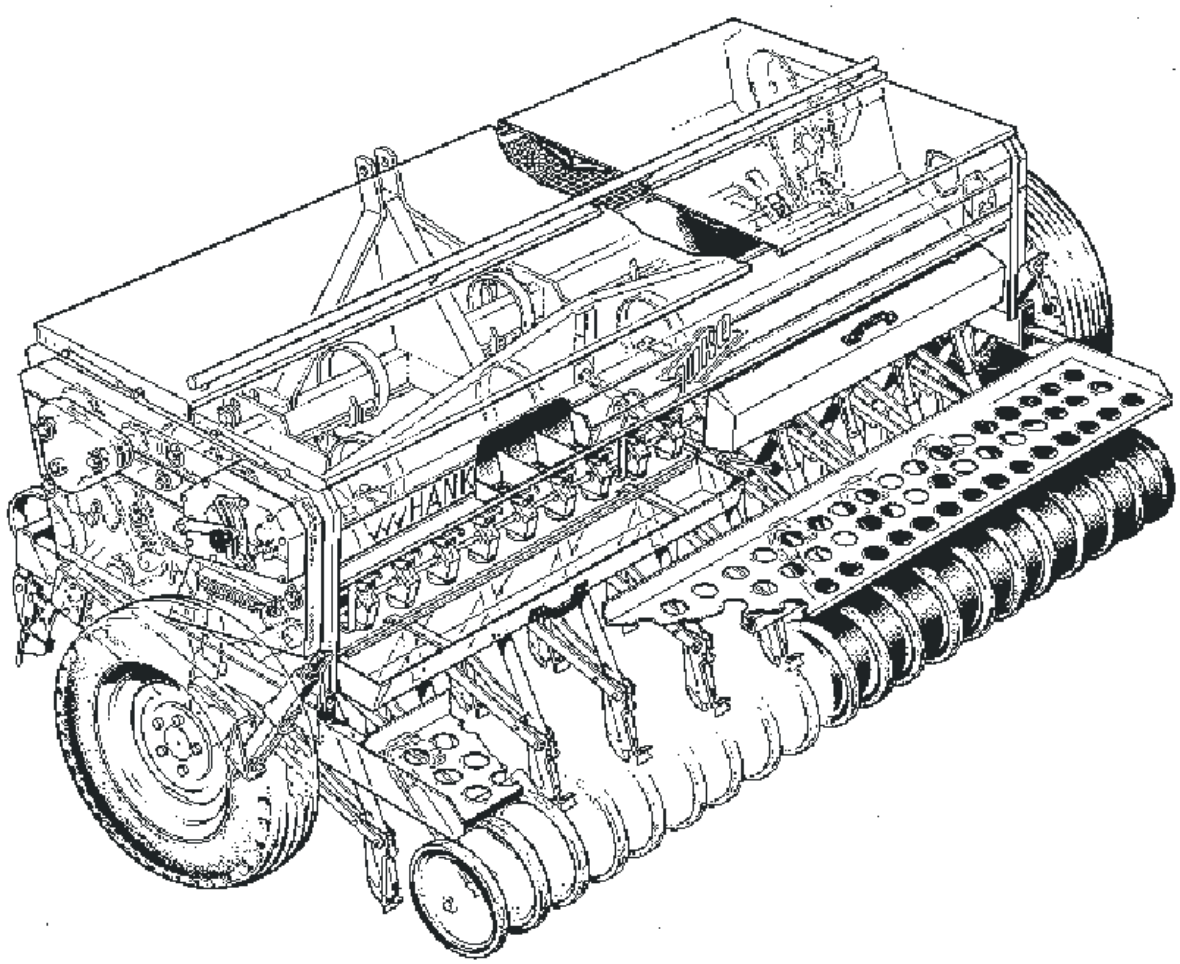
KONGSKILDE

Demeter Combiseed N25



Users manual and Spare part list

CONTENTS

How to use the Operating Instructions

These Operating Instructions are made for professional farmers. General skills and knowledge of farming and agricultural techonology are required to operate the combination placement drill.

The figure of a triangle draws your attention to a matter of extreme importance.

A triangle with an exclamation mark informs you of an important point concerning safety.

Use only original JUKO spare parts

The machinery and the Operating Instructions are subject to alterations by Kongskilde Juko Ltd.

1. INTRODUCTION AND SERIAL NUMBER PLATE

OY KONGSKILDE JUKO LTD is a Finnish factory making agricultural machinery and belongs to the KONGSKILDE company. Our production line includes

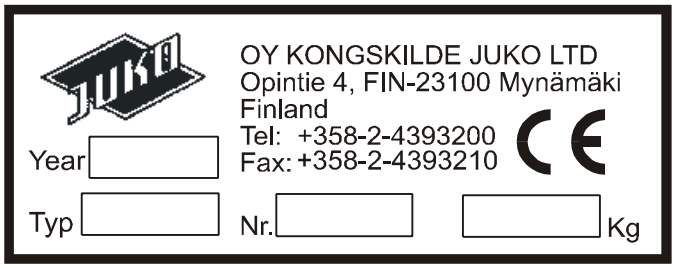
1. seed drills and combination placement drills
2. planters
3. potato harvesters
4. sugar beet combination placement drills
5. sugar beet harvesters
6. stone collecting machine

We would like to thank you for choosing a high quality JUKO machine. Please read the Instructions carefully before commencing work. The Instructions and Part List has been divided into sections shown in the Contents, which will help you to find the information you need. For the troublefree work of the machine as well as for the validity of the warranty, it is crucial to follow the checking and maintenance instructions described in the Operating Instructions.

Please pay careful attention to the advice, warnings and prohibitions concerning the operating of the machine. They are made to ensure your personal safety and proper operation of the machine. The most important instructions and warnings are printed in bold type.

If you have any questions or comments concerning JUKO machinery, please contact first the dealer, and if necessary, the manufacturer. In case you need information on maintenance and spare parts, please contact the dealer or directly the manufacturer, OY KONGSKILDE JUKO LTD, tel. + 358-02-4393 200, fax +358-02-4393 210.

After purchasing the machine, please fill in the following picture of the serial number plate with the information that is in the serial number plate of your machine. When contacting a JUKO dealer, please mention the type and serial number in order to avoid misunderstandings and delays.



We hope that your JUKO machine will prove an excellent tool and serve you for along time.

2. GENERAL INTRODUCTION OF THE DRILL

The aim of modern agricultural techonology is to reach the best possible yield of high quality with reasonable expenditure. Use of the combination placement drill improves the plant utilization of fertilizer, as this is placed in moist soil at the right distance from the seed. This enables the plant to start growing quickly and ensures the utilization of the short growing period.

The JUKO combination placement drill can be used for placing fertilizer simultaneously with the sowing of all kinds of cereals, oil producing crops, peas and beans, grass and clover seed in Nordic farming conditions. The drill has been especially designed for the demanding use of sowing large acreages. The JUKO combination placement drill has a strong structure and is made of high quality materials - it is built to last.

The JUKO combination placement drill is designed to fulfill the requirements of modern farming techniques. The OPTISEED rotation speed converter designed by JUKO ensures an optimal and even feeding of seeds and gives you every possibility to obtain a high quality yield. The feeding accuracy and evenness of the feeding equipment has been found excellent in many official tests.
There is a range of standard and optional equipment, which enable you to build your combination placement drill according to your individual needs. The equipments are the following:

Standard equipment:

Optiseed rotation speed converter
Cassette for seed unit, 3 speeds
Patented two-part feed tube
Suffolk coulters with a trailing stay to prevent blockage of the seed unit
S-tine coulters for fertilizer unit
Central coulter pressure adjustment
Individual coulter pressure adjustment with chains
Stainless fertilizer hopper bottom
Bottom cones for fertilizer and seed hoppers
Fertilizer sieve
Agitator shaft of the hopper seed unit
Calibration trays of the seed unit
Footboard
Electric area meter, 12 V

Optional equipment:

Wedge/disc type coulters on the seed unit
Fertilizer disc coulters
Ceramic fertilizer and seed coulters
Hopper extensions
Juko Control control equipment
Seed drill for clover and extra fertilizer
Remote control for the fertilizer unit
Seed sieve
Pressure roller unit (narrow and wide model)
Rear harrow

TECHNICAL SPECIFICATIONS:

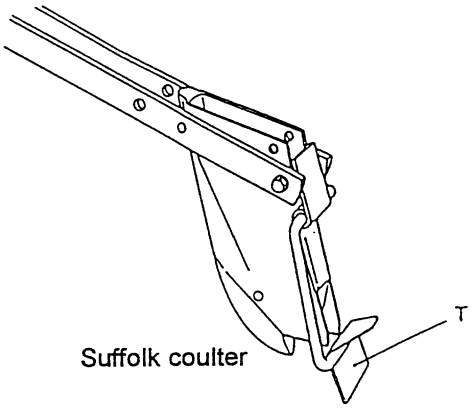
	N25
Working width	250 cm
Total width	326 cm
Transport width	242 cm
Numbers of coulters:	
-seed coulters	20 pcs
-fertilizer coulters	10 pcs
Seed hopper capacity	3451
-with hopper extension	4831
Fertilizer hopper capacity	5321
-with hopper extension	7191
Weights:	
-with empty hoppers and foot board	700 kg
-with full hoppers *	1.508 kg
Filling height:	
-from ground	112 cm
-from footboard	72 cm
Tyres:	10.0/75-15.3
Pressures:	2,5 bar

COULTER TYPES

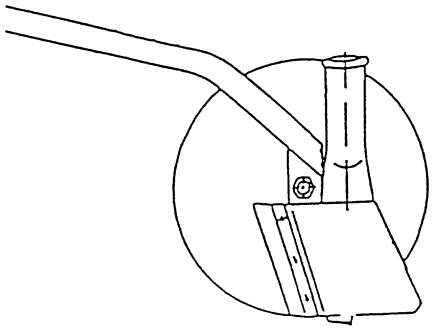
SEED COULTERS:

Suffolk coulter: The tip of the Suffolk coulter is of the trailing type and compacts the bottom of the seed furrow. The coulter is equipped with a trailing stay (T) to prevent blockage when lowering the drill down. The Suffolk coulter is an excellent coulter for general use.

Disc coulter: The Disc Coulter is suitable for light soil types.



Suffolk coulter

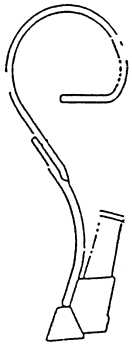


Disc coulter

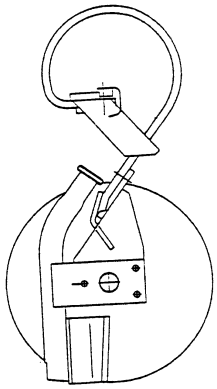
FERTILIZER COULTERS:

S-tine coulter: The S-tine coulter is suitable as a general coulter.

Fertilizer disc coulter: The Fertilizer coulter is suitable for light soil types.



S-tine coulter



Fertilizer disc coulter

3. SAFETY INSTRUCTIONS

When using the machine, make sure there is adequate safety distance around the machine.

The driver of the machine is responsible for damage caused by the machine to other people.

Before starting the machine, make sure that there are no people in the area where the machine will be used.

Avoid abrupt moves when using the machine.

When using the machine, always observe the functions of the machine, so that you can stop the machine immediately in case of malfunction or danger.

In an emergency, stop the tractor and the JUKO machine immediately to avoid additional damage and accidents.

It is forbidden to remove the covers and safety equipment when using the machine.

Always stop the machine and the tractor during maintenance.

Maintenance, adjustment and other work are forbidden when the machine or part of it is lifted up if the machine is not properly supported.

Carry out maintenance work on an even, firm surface to prevent the machine from moving or falling down.

NEVER GO UNDER AN UNSUPPORTED MACHINE!

Make sure the lightning and other conditions are sufficient when handling the machine.

SAFETY INSTRUCTIONS FOR COMBINATION PLACEMENT DRILLS

-Standing and sitting on top of the drill is strictly forbidden except when filling the hoppers.

- When the drill is moving, the minimum safety distance is three meters. Pay special attention to the drill with rowmarker, where the markers are automatically tied to lifts.

- During maintenance the tractor motor has to be stopped and the drill properly supported in order to prevent moving of the drill.

- When maintaining and/or cleaning the coulters under a drill that has been lifted up, the drill has to be mechanically supported in order to prevent it from moving.

DRILL NEVER GO UNDER AN UNSUPPORTED.

- Note that when driving on stony fields the combination placement drill can throw stones forward even as far as to the driver.

WARNINGS AND PROHIBITIONS

It is strictly forbidden to stand or sit on top of the drill when it is moving.

It is forbidden to go under an unsupported drill.

It is forbidden to fit double wheels on the drill. To get more carrying capacity, suitable Twin tyres can be used.

Do not let the drill move backwards when the coulters are on the ground.

Do not stand on hopper lids, as they can be slippery.

When filling from large bags, make sure the bag does not swing against the lids.

Do not use the drill to purposes other than fertilization, sowing and sowing with fertilizer.

Make sure that the drill is empty when transporting it on transport wheels.

OPERATING INSTRUCTIONS FOR RIMS

The manufacturer of the rims used in JUKO machines has given the following instructions for its products:

1. Rims

Rims are an important component that affect the safety and drivability of the vehicle. Rims must be free from defect and approved both for the tyre and the particular vehicle.
NOTE! Never make modifications or repairs in the rims.

There are several things that affect safety.
The responsibility for any alterations and repairs that are not in accordance with the instructions of the manufacturer fall on the person who carries out such alterations or repairs.

2. Fitting and removing tyres

Tyre fitting may only be done by a skilled professional who has the appropriate training and experience as well as the appropriate tools. Improper fitting can cause a damage that is a safety risk.

3. Retightening

The tightening screws and nuts of the rim should usually be tightened after the vehicle has been used for a while after the rims have been fitted. Follow the instructions given by the manufacturer of the vehicle.

4. Repairing tyres

A tyre should not be repaired while fitted on a rim, as inside checking of the tyre would be impossible. There is also a risk of tyre explosion.

4. TRANSPORTATION AND LIFTING OF THE MACHINE

Transportation on public roads

Check the headlights and reflectors before starting off.

Make sure that the light and the warning triangle for slow vehicle can be seen.

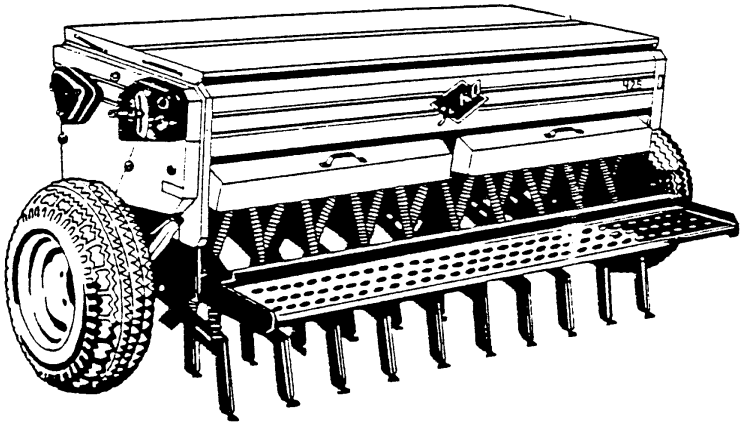
Make sure that the machine is empty of load and persons when transporting it on public roads.

Make sure that power transmission is set off when transporting the machine on public roads.

When transporting or moving the machine without using a tractor, the following instructions must be followed:

When lifting the machine, only marked points may be used as lifting points.

Lifting points are the bracket and links on the three-point lifting bar of the frame that are welded on the lug of the lifting cylinders on the sides of the hopper. Lifting links have been marked with a figure of lifting hook.



Lifting chains and belts have to be long enough so that they do not chafe or damage the machine.

Only approved and absolutely undamaged lifting machinery may be used in lifting the machine. The lifting machinery must be dimensioned for at least twice the weight given at the plate.

The person who carries out the lifting must ensure that no person may at any stage go or pass under the drill.

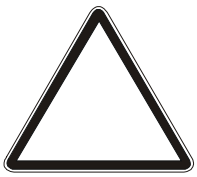
When moving the drill to the platform of a lorry, the provisions of road traffic legislation must be observed. Especially the total height of the load must be checked carefully. Also ensure that the load is properly tied on the platform.

When lifting the machine with a forklift or a similar vehicle, make sure the machine is not damaged.
This type of lifting is not recommended.

5. OPERATION

First read carefully the Operating Instructions and the Safety Instructions. The machine may not be used before reading **the instructions!**

Operation of a new machine:



NOTE! The machine has been tested and adjusted by JUKO for the testing on the factory. The adjustments are average adjustments. In order to obtain the best possible results, make the adjustments suitable for your own needs before using the machine.

In a new machine the parts settle in place only after a couple of hours' work. Therefore the tightness of all screws, nuts and chains must be checked after 1-2 hours of work.
The torque levels can be seen in Section 7.2.

Before further use for a new season:

CHECK:

- tyre pressure
- condition of roller chains; change if needed
- condition of bearings; change if needed
- functions of feeding equipment by making a few turns with the calibration crank both on the fertilizer and seed units
- springs of bottom flaps
- worn coulters; repair or change if necessary
- tightness of bearings of seed coulters; they should lower down by their own weight
- level of oil in Optiseed; add if necessary -tightness of screws, nuts and chains
- condition of hydraulic hoses and adaptors
- functioning of area meter
- lubrication and greasing of the machine
- sliding of the feed tubes within each other by lifting each seed coulter. If there is friction in the telescope, disconnect the outer tube from the top and spray with silicone to improve sliding
- functioning of the clutch

- Change broken parts if needed.
- Order spare parts well before the following season.
- When ordering spare parts, mention the model and serial number of the machine.

6. OPERATING INSTRUCTIONS

In order to guarantee safe operation of the machine, it must be used according to the Operating Instructions.

In operating the machine, the instructions as well as the prevailing conditions (temperature, moisture of the soil, etc.) must be taken into account. The adjustments are made on the basis of the conditions. Also make sure that the machine is ready for use (see Section 5.).

Read carefully the detailed operating instructions that follow.

6.1. MOUNTING THE DRILL TO THE TRACTOR

The drill is mounted on the tractor by the 3-point linkage and is fitted with category 2 linkage pins. The pins should be locked carefully and the side stabilisators of the draft links tightened.

The lowering speed of the tractor 3-point linkage should be adjusted to work slow enough to prevent too rapid lowering of the drill. If the lift are moved backwards on the draft links in order to provide more lift, the working position of the drill should be checked to ensure. that it can be lowered sufficiently to achieve correct sowing depth.

On some tractors with load control, a locking piece should be placed between the top link bracket and the lift frame to prevent the control mechanism to be damaged when using heavy machinery.

6.3. CONNECTING THE AREA METER

The drill is equipped with an electronic area meter. Hitch the area meter in a suitable place in the tractor cabin, where it easy to see it.

The meter has a accuracy of 0,1 are. For example the meter showing 10 is same as one are.

NOTE! Protected against wetness.

Connect the cable coming from the drill to the area meter. Connect the 7-point plug to the tractor.

NOTE! Keep the lights on when sowing.

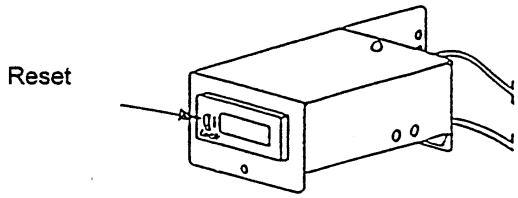


Fig. 2. Display of the Area Meter

When the LED-light in the area meter is lightened, the area meter is on.

NOTE! Keep the reset button down when you are working, only keep it up when you are resetting.

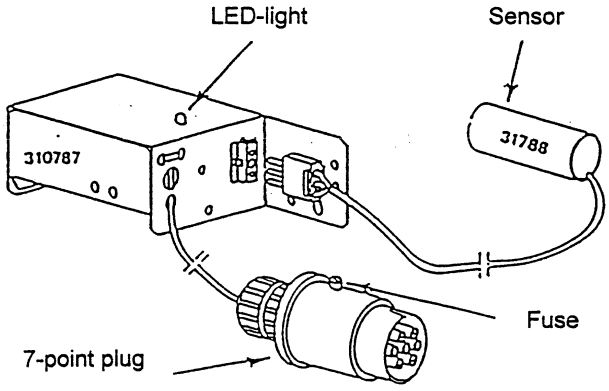


Fig. 4 The area meter

6.4. TRANSPORTING THE DRILL ON PUBLIC ROADS

When transporting the drill on public roads, all provisions of road traffic regulation as well as the special regulations of a slow vehicle must be observed.

If the warning triangle for slow vehicle and the head lights of the tractor are hidden behind the drill, they must be installed on the drill.

6.5. FILLING THE HOPPERS

There are different ways to fill the hoppers of the drill. The conditions and possibilities on the farm largely determine the method used.

The most commonly used methods:

1. Filling from small bags (e.g. 25 - 50 kg)

The bags can be stored on ground level, and lifted by hand and emptied into the hoppers. However, this is not to recommend, as it involves unnecessary work to lift the bags from the ground. By storing the bags on a platform or using a tractor trailer to bring the seed and fertilizer bags to the field, the filling is easy. The tractor with the drill is reversed close to the trailer (or lorry) placed at the edge of the field and the hoppers are filled standing on the footboard of the drill. The lifting height will then be very low. The trailer can also be used to take the bags to the part of the field to be sown.

2. Filling from large bags (e.g. 500 - 600 kg)

If a suitable crane or lifting device is available, the hoppers can be filled directly from the bags. Care should be taken not to work or pass under the lifted bag, as this can be dangerous. Also avoid to let the bag swing against the lid of the hopper as this can DAMAGE THE LID OR THE GAS SPRING OF THE LID. A safer way is to empty the large bags into a tractor trailer and use the methods suitable for bulk seed and fertilizer.

3. Filling with bulk seed and fertilizer

For handling of seed and fertilizer in bulk there are different ways. A high tipping trailer or a trailer with an auger are the best ways. A tractor with a front loader can also be used.

When filling the drill hoppers, care should be taken to prevent any foreign bodies, for instance pieces of paper or plastic bags, getting into the hopper. These can block the feeding units. The fertilizer sieve must be kept in place, especially if the fertilizer is lumpy or of inferior quality.

6.6. FEEDING SYSTEMS AND THEIR ADJUSTMENT

The feeding rates for seed and fertilizer are independently adjusted by changing the feed roller speed of rotation. Both the fertilizer and the seed unit have a stepless Optiseed rotation speed converter. In addition there is a cassette for the seed unit. This multiplies the ranges of settings by four and they can be chosen depending on the size of seed (Fig. 4).

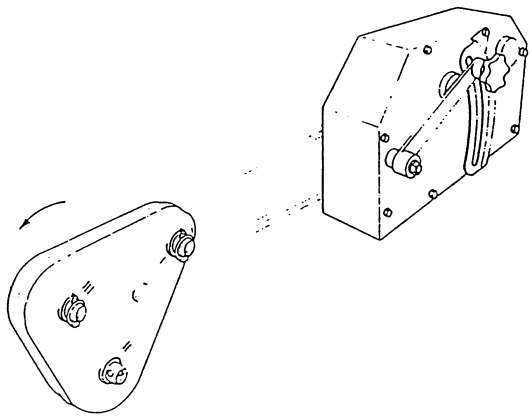


Fig. 4. Optiseed rotation speed converter and cassette for seed.

Both seed and fertilizer unit feeder cases have shutters and bottom flaps. The shutters regulate the flow of fertilizer and seed to the feed rollers. If needed, some of the shutters can be closed completely if for instance the whole width of the drill is not used for sowing or if only every second seed coulter is used.
The correct setting of the bottom flaps is important, as their distance to the feed roller influences the accuracy of feeding. The bottom flaps are spring loaded in case some foreigh body should pass between a bottom flap and a feed roller. This way damage to the feeder mechanism is prevented.

The settings for the feeder mechanisms are also given in calibration charts inside the fertilizer hopper lid.

6.7. SETTINGS FOR FERTILIZER

The fertilizer unit shutters (C) and bottom flaps (D) should be set as follows:

	Shutters, position	Bottom flaps, notch on arch segment
Granulated fertilizer	3	3
Urea	3	3

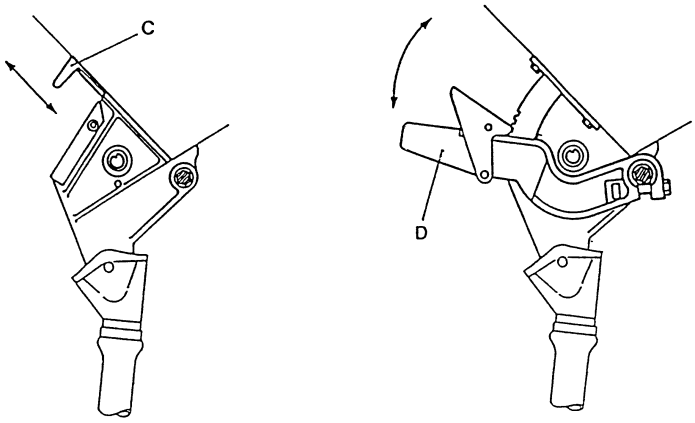


Fig. 5. Shutters and bottom flaps for the fertilizer unit.

The fertilizer quantity is adjusted from the Optiseed rotation speed converter on the RIGHT HAND SIDE of the drill. The feeding rates for normal granulated NPK fertilizer and for urea are given in the calibration chart. The chart is, however, intended only as a guidance, as the feed rates vary depending on for instance size of granule and moisture of the fertilizer used. A calibration test should therefore always be made before commencing the sowing.

6.8. SETTINGS FOR SEED

The seed unit shutters (E) and bottom flaps (F) should be set as follows:

	Shutters, position	Bottom flaps, notch on arch segment
Cereals	2	2
Small seed	2	2
Peas	2	4

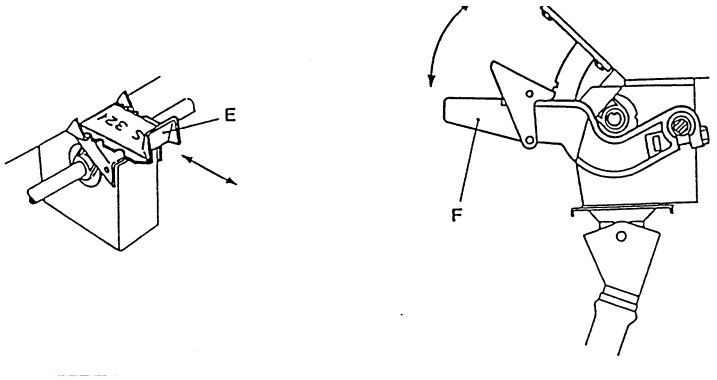


Fig. 6. Shutters and bottom flaps for the seed unit.

The seed rate is adjusted from the Optiseed rotation speed converter on the LEFT HAND SIDE of the drill.
The settings and cassette positions for the following seeds are given in the calibration chart: wheat, rye, oats, barley, peas, rape, clover and timothy. Before sowing, the feeding rates should always be checked by making a calibration test. This is necessary, as seed rates can vary depending on for instance type, origin, humidity and size of the seed.

6.9. CALIBRATION TEST

The feeding rates for both fertilizer and seed SHOULD ALWAYS BE CHECKED BY A CALIBRATION TEST. Fill the hoppers with seed and fertilizer. Check that the drill is in a horizontal position when standing on the ground.

The calibration test is carried out in the following way:

6.9.1. CALIBRATION TEST FOR SEED

A) Check that the setting for shutters, bottom flaps and cassette are the correct ones for the seed used. Adjust the lever on the Optiseed rotation speed converter according to the settings given in the calibration chart. Tighten the locking screw carefully.

B) The seed unit has two calibration trays (G). Release them from the locking position by lifting from the handle and pulling back at the same time. Then let them down and push forward under the feeder cases. If the seed coulter pressure is very high, it should be decreased to allow the calibration trays enough room for the forward movement.

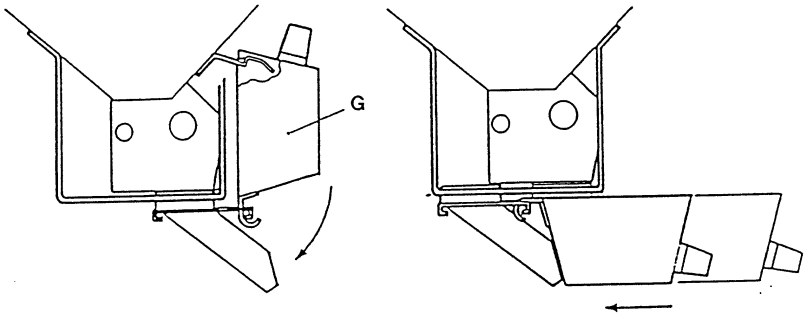


Fig. 7. Calibration trays

C) The two linch pins of the cassette are removed and the cassette is pulled out so much that it can be locked in the OUTER HOLE on the REAR AXLE using one of the linch pins. The calibration crank (to be found on the inner side of the hopper gable in front of the fertilizer hopper) is fastened to the FORWARD BUSH of the cassette and turned IN THE DIRECTION OF THE ARROW until the seed feeder units start to feed. Then the calibration trays are pulled back, removed and emptied back into the hopper.

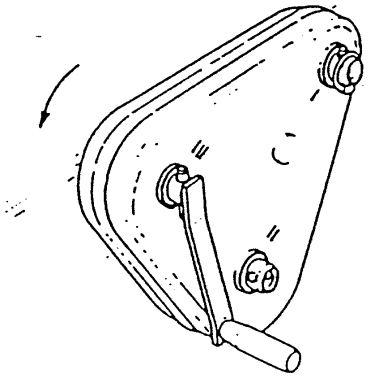


Fig. 8. Calibration test for seed.

D) The calibration trays are put back in calibration test position. The crank is turned the following number of turns to get the quantity for 1/100 hectare. Always turn in the direction indicated by the arrow.

N25 (2,5 m)	11,5

E) The calibration trays are removed and the seed collected in them is weighed. The quantity is then multiplied by 100 to get the quantity for 1 hectare. If it is not the desired quantity, the lever on the Optiseed care is adjusted using the calibration chart as guidance. The calibration test should then be repeated.

F) After completing the calibration test the calibration trays are lifted back in sowing position. Observe that THE CASSETTE MUST BE PUSHED BACK IN SOWING POSITION AND LOCKED with linch pins.

G) The calibration test for seed can also be made the following way:

1. Check that the settings for the shutters, bottom flaps and cassette are the correct ones. Adjust the lever on the Optiseed rotation speed converter according to the settings given in the calibration chart.

2. Fill the seed hopper.

3. Push the calibration trays under the feeder cases to lock them. Drive in the sowing position until the seed feeder units start to feed. Open the locks by pushing the calibration tray forward and pushing both locks down. Pull the tray out and empty it.

4. Put the calibration trays back to the calibration test position. Drive the machine in the sowing position 40 m. Remove the calibration trays and weigh the seed collected in them. Multiply the quantity by 100 to get the quantity for 1 hectare. If it is not the desired quantity, the lever on the Optioned care is adjusted using the calibration chart as guidance. The calibration test should then be repeated.

5. When the calibration test is carried out by driving, observe that there may be changes in the feed rates because of the shaking of the machine or the sliding/slipping of the wheels.

6.9.2. CALIBRATION TEST FOR FERTILIZER

A) Check that the settings for shutters and bottom flaps are the correct ones. Adjust the lever of the Optiseed rotation speed converter on the RIGHT HAND SIDE of the drill according to the settings given in the calibration chart. Tighten the locking screw carefully.

B) As there are no calibration trays for the fertilizer unit, lift the drill slightly off the ground and place a tarpaulin or plastic sheet under the fertilizer coulters to collect the fertilizer.

C) Remove the cassette on the LEFT HAND SIDE of the drill and fasten the calibration crank to the FRONT AXLE. Turn the crank IN THE DIRECTION INDICATED BY THE ARROW until all fertilizer feeder units start to feed. Pour the fertilizer from the tarpaulin back into the hopper and place the tarpaulin back in its place under the coulters.

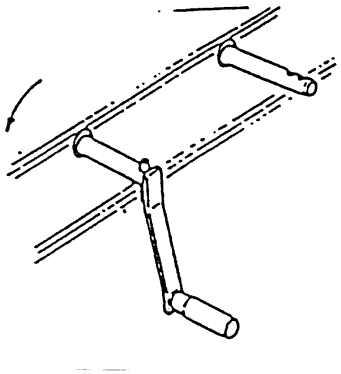


Fig. 9. Calibration test for fertilizer.

D) Turn the crank in the direction indicated by the arrow. The number of turns is the same as in the calibration test for seed (see above). This gives the quantity for 1/100 hectare.

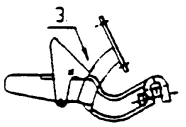
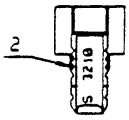
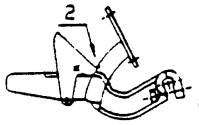
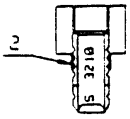
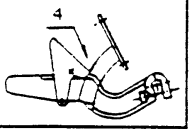
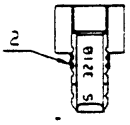
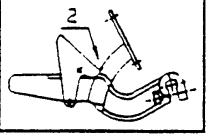
E) The collected fertilizer is weighed and multiplied by 100 to get the quantity for 1 hectare (if all coulters are used for the test). If it is not the required, the lever setting of the Optiseed unit on the RIGHT HAND SIDE of the drill is adjusted using the calibration chart as guidance. The calibration test should then be repeated. After completing the calibration test for fertilizer, the CASSETTE MUST ABSOLUTELY BE PUT BACK IN the sowing position.

NOTE! NEVER use the area meter for calibration purposes. Too low TYRE PRESSURE WILL INCREASE the feed rates, so it must be checked regularly.

The correct pressure is:

245 kPa (2,5 bar)

6.9.3
KIERTOKOETAULUKKO
VRIDPROVSTABELL
CALIBRATION CHART

	koneen kulkusuunta kör riktning driving direction kasetti kasette cassette	sulkulevy skjutlucka shutter	pohjaläppä bottenklaff bottom flap
Rakeinen NPK Granulerad NPK Granulated NPK UREA			
Vehnä, Vete, Wheat Ruis, Råg, Rye Ohra, Korn, Barley Kaura, Havre, Oats			
Herne, Ärter, Peas			
Timotei, Timotej, Timothy Apila, Klöver, Clover Rypsi, Ryps, Rape			

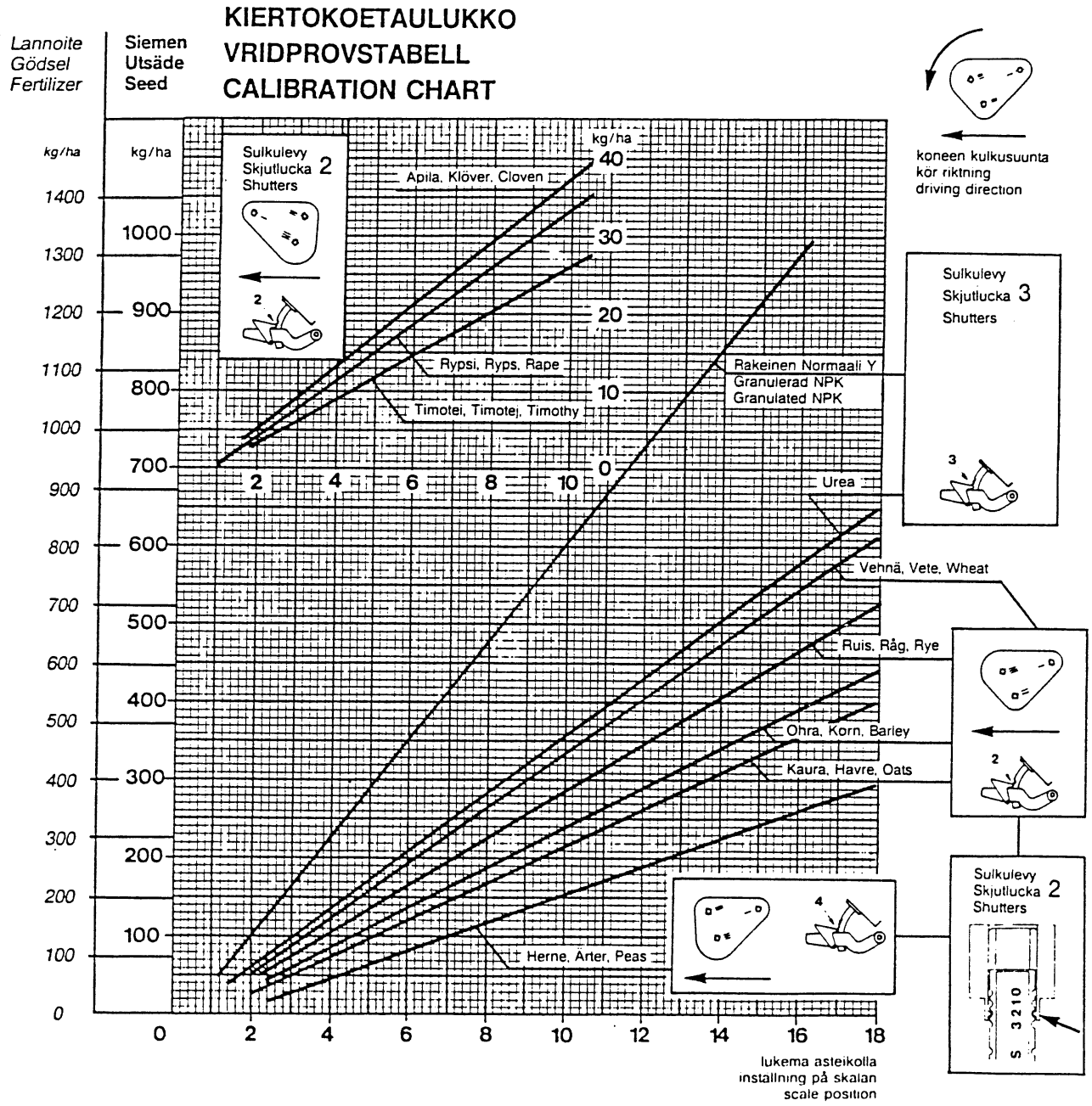
TARVITTAVAT KAMMEN KIERROKSET/AARI ERFORDERLIGT VARVTAL NUMBER OF CRANK TURNS	SIEMEN UTSÄDE SEED	LANNOITE GÖDSEL FERTILIZER
N25	11,5	11,5
H250, H2500	11,6	11,6
H3000	9,7	9,7
H4000	7,3	10,9
HT2500	11,7	11,7
HT3000	9,6	9,6
HT4000	7,3	10,8

CALIBRATION PROCEDURE FOR THE SEED UNIT

Remove the two linch pins locking the cassette. Pull out the cassette so much that it can be locked with a linch pin in the outer hole of the rear (cassette) axle. Use the calibration crank to turn the cassette from its forward bush in the direction indicated by arrow.

CALIBRATION PROCEDURE FOR THE FERTILIZER UNIT

Remove the cassette and turn the forward axle using the calibration crank in the direction indicated by arrow.


KIERTOKOETAULUKKO
VRIDPROVSTABELL
CALIBRATION CHART
Lannoite
Gödsel
Fertilizer
Siemen
Utsäde
Seed
kg/ha
kg/ha
Sulkulevy
Skjutlucka 2
Shutters
Apila, Klöver, Cloven
Rypsi, Ryps, Rape
Timotei, Timotej, Timothy
Rakeinen Normaali Y
Granulerad NPK
Granulated NPK
Urea
Vehnä, Vete, Wheat
Ruis, Råg, Rye
Ohra, Korn, Barley
Kaura, Havre, Oats
Herne, Ärter, Peas
koneen kulkusuunta
kör riktning
driving direction
Sulkulevy
Skjutlucka 3
Shutters
Sulkulevy
Skjutlucka 2
Shutters
S 3210
lukema asteikolla
inställning på skalan
scale position

6.10. PLACEMENT DEPTH FOR FERTILIZER

The placement depth for fertilizer is adjusted by lifting or lowering the land wheels of the drill. The setting screws (H) are situated in the rear corners of the drill. They are fitted with scales (J) to help adjusting both wheels at the same level. This is very important as it assures uniform placement depth for all fertilizer coulters. NOTE THAT THE SCALES DO NOT INDICATE PLACEMENT DEPTH, they only provide comparison when adjusting the wheel position.

Research shows that the fertilizer should be placed 2 - 3 cm below seed level. For cereals the placement depth is normally 7 - 8 cm. In the field the depth should be checked by digging out the fertilizer in the fertilizer row.

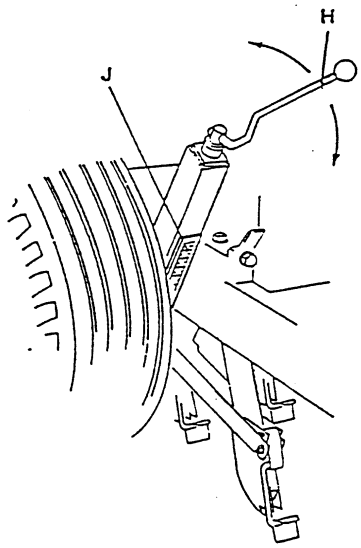


Fig. 10 a.
Placement depth adjustment.

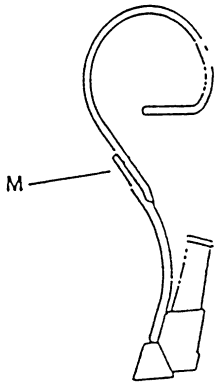


Fig. 10 b.
Removing the fertilizer coulters

Sowing without fertilizer coulters:

When sowing grass seed with the combination placement drill, using a cereal crop for protection, the cereal should be sown first and the fertilizer placed simultaneously. To sow the grass seed on the second run, the fertilizer coulters are removed by opening the nuts (M) and taking off the lower part of the coulters. Then the seed unit is set for grass seed.
If there is fertilizer in the fertilizer hopper, the shutters of the fertilizer unit should be closed. When after the drilling the coulters are mounted back on the drill, care should be taken to ensure that the front coulters and the rear coulters are in the correct place.

The tip of the fertilizer coulters:

When the tip of the fertilizer coulters is worn down to the level of the side plates, they can be repaired by welding a tip replacement under the original tip. The tip replacement is an optional extra (part number 35431).

6.11. SOWING DEPTH

The sowing depth can be adjusted by changing the tightness of the tension springs (N). There are two different ways to do this:

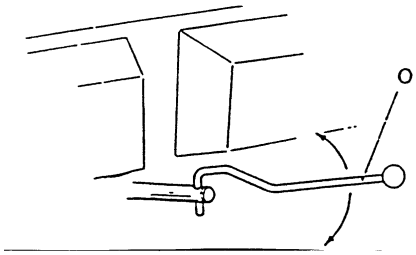


Fig. 11 a. Central coulter pressure adjustment.

1. CENTRAL ADJUSTMENT

The tension of all springs is centrally adjusted using the adjusting screw (O) located under and behind the seed hopper. When the screw is turned counter clockwise, the tension of all springs increases and the coulters go deeper. If the screw is turned clockwise the depth of the coulters decreases.

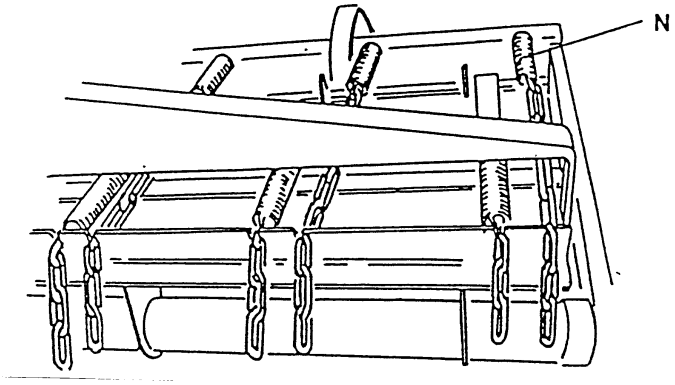


Fig. 11 b. Individual coulter pressure adjustment.

2. INDIVIDUAL COULTER PRESSURE ADJUSTMENT

The spring load of the coulters can be adjusted individually by tightening or loosening the adjusting chain of the springs. The coulter pressure for instance in the tractor wheel marks can this way be increased to achieve sufficient and even sowing depth.

The suitable sowing depth varies depending on soil, humidity and seed. For cereals the average sowing depth is 4 - 6 cm and for small seeds 2 - 4 cm. The aim should always be to place the seed in moist soil.

The general rule is that THE CULTIVATING DEPTH SHOULD BE THE SAME AS THE SOWING DEPTH. This way it is easy for the seed coulters to place the seed on the firm, moist soil in the border zone between cultivated and untouched soil. The sowing depth should always be checked by digging out the seeds in the seed row.

6.13. CHECKING THE FUNCTIONING OF THE DRILL

- The adhesive tape on the feed axle on the fertilizer unit can be used to see if the feeding is connected or disconnected.

- The area meter can be used to control the emptying of the hoppers. For instance, if you sow 500 kg of fertilizer per hectare and empty two large bags (1.200 kg) in the hoppers), one hopper will be enough for over 2 hectares.

- Blocking of fertilizer coulter can be checked through the window of the feed unit.

- Blocking of seed coulter can be checked by turning the calibration tray backwards to see into the funnels.

NOTE! The best way to avoid blocking of the coulters is to lower and lift the machine while moving forward.

NOTE! There is a shutter under the feed funnel that enables the lowering of the machine down when filling the hoppers.

NOTE! Do not let the drill move backwards when the coulters are down.

NEVER GO UNDER AN UNSUPPORTED DRILL!

6.14. GENERAL INSTRUCTIONS

- Always lift and lower the drill when it is moving forward. If this is not possible, for example in field comers, be careful that the coulters do not get blocked.

- Sowing can be done by driving around the field or by driving 3 - 4 rounds and then back and forth the straightest side. Both methods force you to turn the machine on a sown field. If you want to avoid this, the headlands can be sown last. Start sowing on a straight side and mark the headland width in the field. You can also estimate 2-4 width of the machine as headlands, where the drill can be easily turned. By sowing the headlands last you will have an even and untrampled sow.

- As the seed is placed on the border zone between cultivated and untouched soil, the field must be cultivated down to the sowing depth, and the cultivating soil must be even. This ensures successful sowing.

6.15. OTHER DRIVING INSTRUCTIONS

- The recommended sowing speed is 6-12km/h depending on the driving conditions.

NOTE! The driver is responsible for making sure that there are no people on top of the drill or at the danger zone when the drill is moving.

- Avoid sharp turns when the coulters are down.

- When reversing, always make sure there is enough ground clearance.

7. MAINTENANCE

Proper maintenance will ensure that your drill operates smoothly and without stoppages during the busy sowing season.

1. Before commencing work, check that all screws and nuts are tightened according to Chart 1. Especially on a new drill the screws and nuts should be checked and tightened after a few hours' work.

2. Check the tyre pressure and make sure they correspond to those given in the the Technical Specifications.

3. The tightness of the wheel bolts must be checked regularly (see Operating Instructions for rims in Section 2).

4. Check and lubricate all bearings regularly.

Check, tighten and lubricate all chains regularly.

More detailed instructions on lubrication points and hours between lubrication are given in the Maintenance Instructions that follow (see next page). .

Use high quality greases and oils for lubrication. Follow the recommendations and instructions for their use.

5. Check the frame and other constrictions visually before the season to eliminate further damage by broken parts.

6. Clean the drill carefully after each use. This increases the reliability and service life of the drill. The drill can be cleaned using water under high pressure, but special care should be taken to avoid directing the jet on electric instruments and other parts that may be damaged (e.g bearings).

7. After the cleaning, lubricate all parts that may rust lightly with oil and let the machine idle for a while to spread the lubricants and remove water.

8. Paint the metal parts that have been worn in use.

9. During maintenance, make sure that lubricants and other oils or greases do not end up in the environment.

MAINTENANCE INSTRUCTIONS

Proper maintenance and lubrication will ensure that your drill operates smoothly and without stoppages during the busy sowing season. On a new drill all screws and nuts should be checked and if necessary tightened after a few hours' work. The tyre pressure and the tightness of the wheel bolts should be checked regularly. Too low tyre pressure increases the feed rate. All roller chains should be checked from time to time and tightened if necessary.

Hours between lubrication can be seen in Chart 7.1. The chart gives the hours for normal work, in hard work the lubrication should be done more often.

Usually it is enough to pump once or twice through the grease nipple of the grease gun. JUKO machines have lubricated-for-life ball bearings, so they do not need much lubrication. Be careful when using a pneumatic grease gun, so that the bearing covers are not damaged.

The chains can be lubricated either with a brush or by immersing them in grease. Use a brush to grease parts that wear easily.

NOTE! The cassette does not need maintenance.

7.1. LUBRICATION CHART

Lubrication points	Number of nipples	Hours between lubrication
Fertilizer hopper:		
1. Feed shaft end bearing, right end of hopper	1	20
2. Intermediate shaft, both ends of hopper	2	40
3. Gear/sprocket right end of hopper	1	20
Seed hopper:		
4. Feed shaft end bearing, left end of hopper	1	40
Frame:		
5. Adjusting frame sprocket, left side	1	20
6. Adjusting frame bearings, right and left end	2	20
7. Seed coulter adjusting bar bearings, under the hopper, in the rear	4	40
8. Coulter pressure adjusting screw nuts, under the hopper, in the rear	2	40

The chart indicates lubrication points, number of nipples and hours between lubrication. High quality multipurpose grease should be used for lubrication. Care should be taken to ensure that the nozzle of the grease gun and the grease nipple on the drill are clean. Pump only once or twice, usually that is enough. Surplus grease is wiped off. Clogged and faulty nipples should be replaced.

The roller chains should be lubricated using clean SAE 20 lubrication oil. At the end of the sowing season, the chains should be removed and carefully cleaned with petrol. The chains should then be completely immersed in molte graphite grease. After this it is not necessary to lubricate the chains during the season.

7.2. TORQUE

If there are no other instructions elsewhere, use the following torque values when tightening screws. The torque values depend on the diameter and hardness of the screw (hardness is indicated in the head of the screw).

Torque Nm

Diameter mm	Hardness 8.8	10.9
5 mm	6	9
6 mm	11	17
8 mm	28	40
10 mm	55	80
12 mm	95	140
16 mm	235	350
20 mm	475	675
24 mm	825	1170
30 mm	1630	2320

7.3. TYRE PRESSURE

Pressure 10.0x15.3 245 kPa (2,5 bar)

7.4. OPTISEED ROTATION SPEED CONVERTER

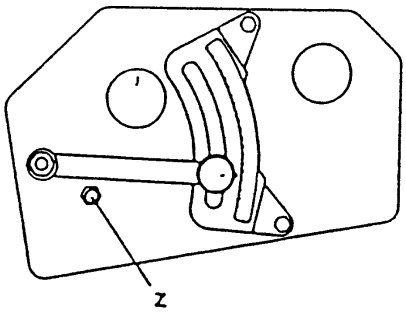


Fig. 12. Optiseed

The Optiseed rotation speed converters do not need much maintenance. Occasionally check that the oil level is close to the rim of the filling opening (Z). The oil should be changed after every 500 hours of use. Remove the old oil through the filling opening (Z) either by sucking or loosening the Optiseed and turning it. Tighten the plug again and fill new oil to the rim of the filling opening (Z), using gear oil SAE 90. The capacity is approximately 0,5 litre.
Possible repair should be done by the dealer or importer.

The screws (M8) that go through the cover of the Optiseed must be tightened carefully. The correct torque value is 1 kpm - 10 Nm.
Overtightening the screw can make the cover to crack.

7.6. FERTILIZER COULTERS

The tip of the coulters should be changed when the difference between the tip and the sideplates is less than 5 mm. Worn coulters are easily blocked.

There are two ways to do this:

1. Remove the worn triangle-shaped tip by opening the seams of the lower part of the fertilizer coulter and sideplates and welding there the new tip (spare part no. 35427).

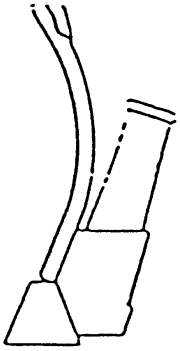


Fig. 13.

2. Weld the replacement tip (part. n:o 35431) right under the worn tip, when there is no need to remove the old tip. This method does not guarantee such durability for the coulters as in the first method, because welding heats up the replacement tip.

7.7. SEED COULTERS

Sharpen the tip of the seed coulters when the width of the tip bottom is over 5 mm. Change the tip when the width of the bottom is over 10 mm or when the distance between the bottom of the tip and the lower edge of the funnel is below 15 mm.

The rivet (17) of the tip can be removed either by drilling or with a special tool (300430). To rivet the tip back, use either a hammer or the same special tool (300430) by changing the head.

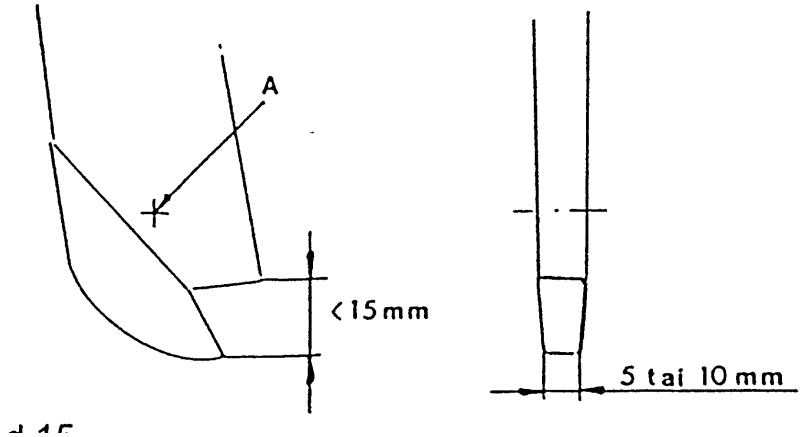
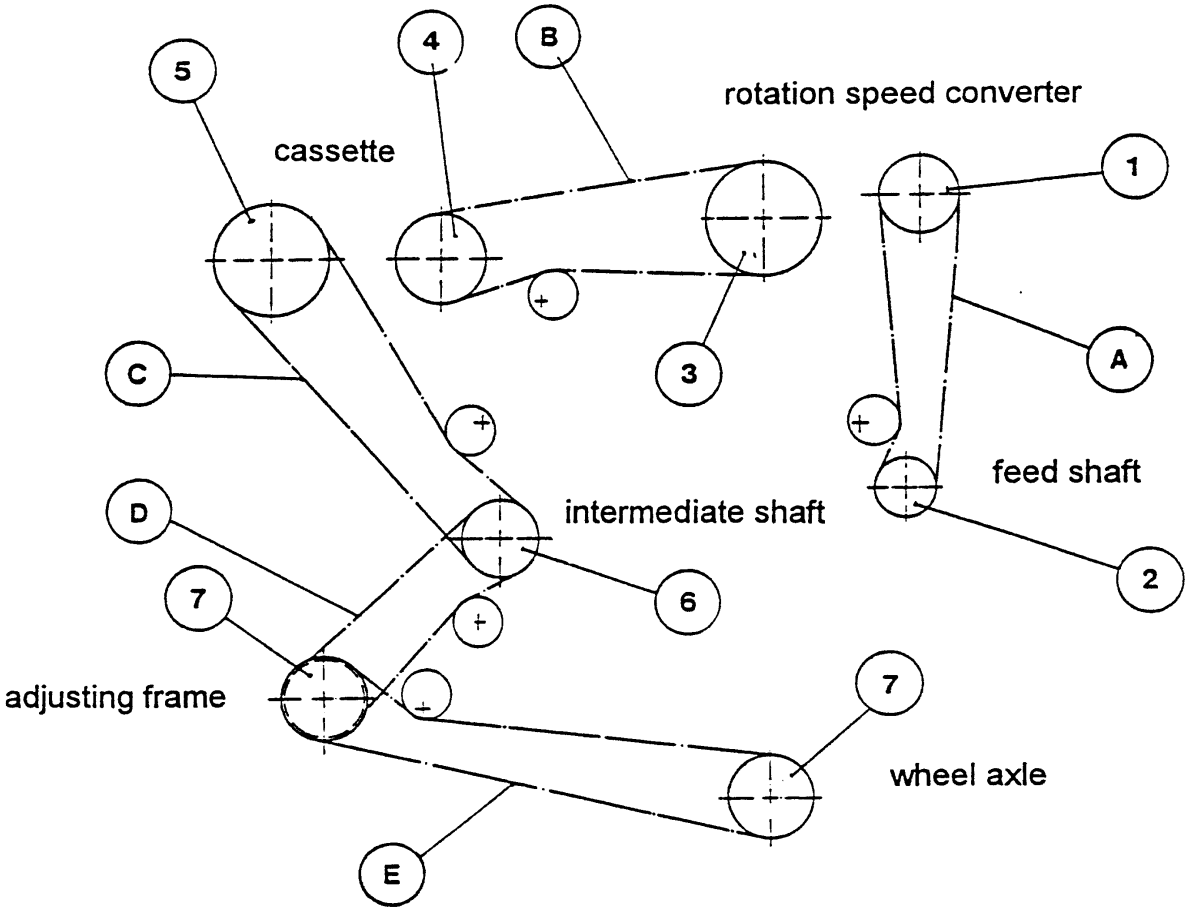
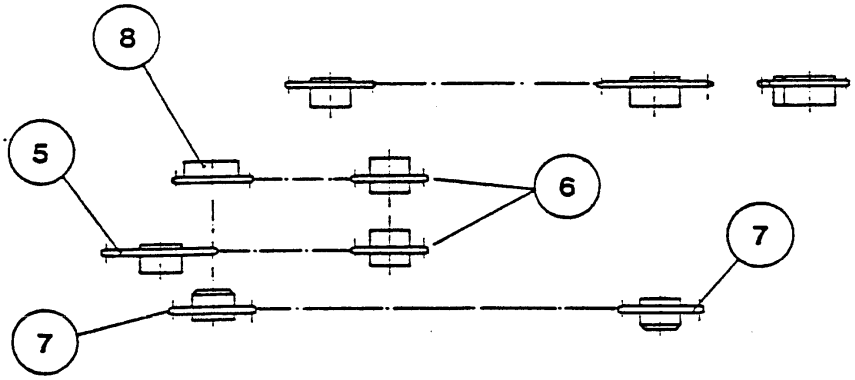


Fig. 14 and 15.

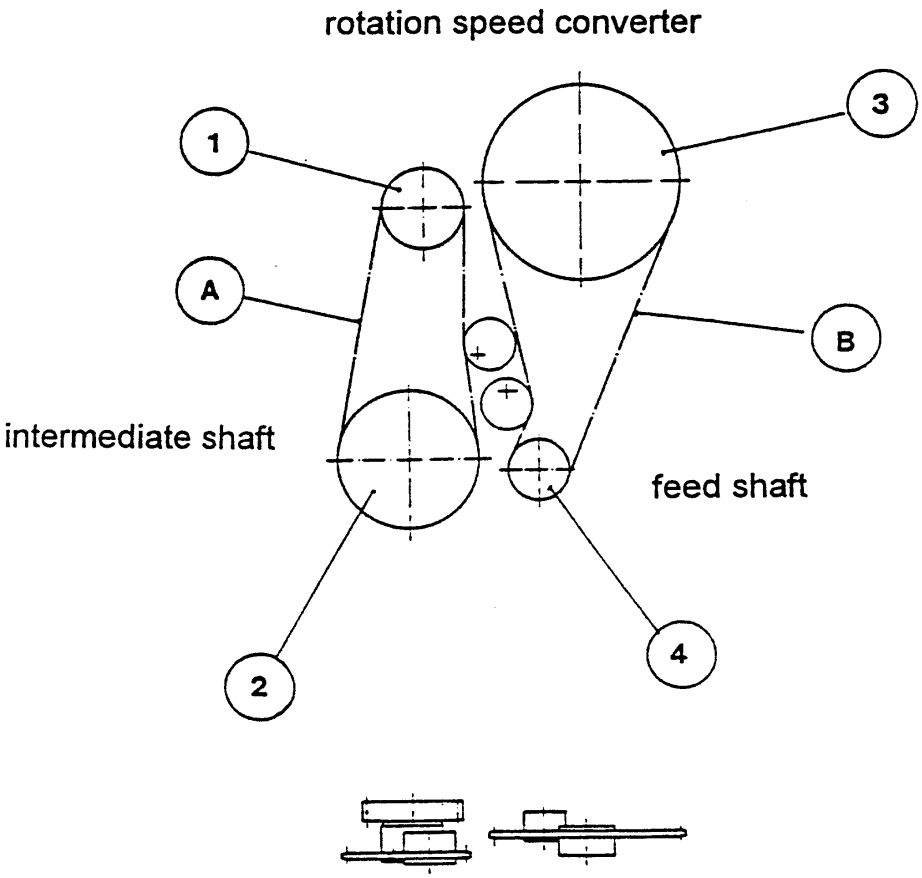
8. CHAIN TRANSMISSIONS FOR SEED (LEFT END)





Sprockets:			Roller chains:
1. 20524	Z=20	t=12,7	A. 1/2x5/16- 701.
2. 30238	Z=15	t=12,7	B. 1/2x5116- 86 1.
3. 30237	Z=30	t=12,7	C. 1/2x5/16- 891.
4. 31736	Z=24	t=12,7	D. 1/2x5/16- 59 1.
5. 30237	Z=30	t=12,7	E. 5/8x3/8- 671.
6. 32218	Z=20	t=12,7	
7. 31955	Z=17	t=15,875	
8. 31938	Z=21	t=12,7	

8. CHAIN TRANSMISSIONS FOR FERTILIZER (RIGHT END)



Sprockets:

1. 30238	Z=15	t=12,7
2. 32635	Z=36	t=12,7
3. 40258	Z=52	t=12,7
4. 30238	Z=15	t=12,7

Roller chains:

A. 1/2 X5/16- 69 l.
B. 1/2x5/16- 83 l.

9. STORING

GENERAL

Before storing the machine should be carefully cleaned, lubricated and adjusted according to the instructions.

The tension of all strings should be released.

Part of the cleaning can be made using water under high pressure, but care should be taken to avoid directing the jet directly on the bearings and other parts that may be damaged by the pressure.
All joints, chains etc. are maintained and lubricated.

Unpainted and uncovered metal parts that get worn out in use should be treated with oil for storing over the winter.

The drill should be stored under roof in a dry and dustless place. If this is not possible, the drill must be covered with a tarpaulin.

The drill must be emptied before storing.

STORING THE COMBINATION PLACEMENT DRILL

The combination placement drill should always be stored under roof in a dry place.
After the sowing season the drill must be EMPTIED and thoroughly CLEANED of fertilizer, seed and soil. The cones of the fertilizer hopper are removed and cleaned. The machine can be cleaned using water under high pressure, but care should be taken to avoid directing the jet on the Optiseed boxes and bearings. After cleaning the maintenance work explained in section 7 should be undertaken. It is also advisable to oil the coulter tips to prevent corrosion.The area meter display box should be kept in a dry place.
The drill should be checked before storing and any faults repaired well before the following season.

When ordering spare parts for the drill, always quote the serial number and type of the machine.

DISPOSAL, BREAKING UP AND RECYCLING

1. Disposal of hoses, oils as well as rubber and plastic parts should be carried out according to official regulations.
2. No special measures are needed to dispose of the metal parts.
3. Recycling of all material and parts is recommended.

TERMS OF WARRANTY

The manufacturer, Oy Kongskilde Juko Ltd, grants to its products warranty, which is valid under following terms:

I Warranty period is one year from the date of delivery to the final customer, however, This date of delivery should not be later than two years from the date of delivery from the manufacturer, or the following operated maximum acreages per one machine:

1. seed drills	200 ha
2. planters	100 ha
3. potato diggers	10 ha
4. potato harvesters	50 ha
5. sugar beet harvesters	75 ha/row
6. stone collecting machines	50 ha.

Which ever, year or acreage, comes first is applied.

II Warranty is valid also for spare parts which are supplied from Oy Kongskilde Juko Ltd or an authorized Juko dealer.

III Warranty covers material or manufacturing faults. In case an acceptable warranty, manufacturer will supply a new or an approvingly repaired part.

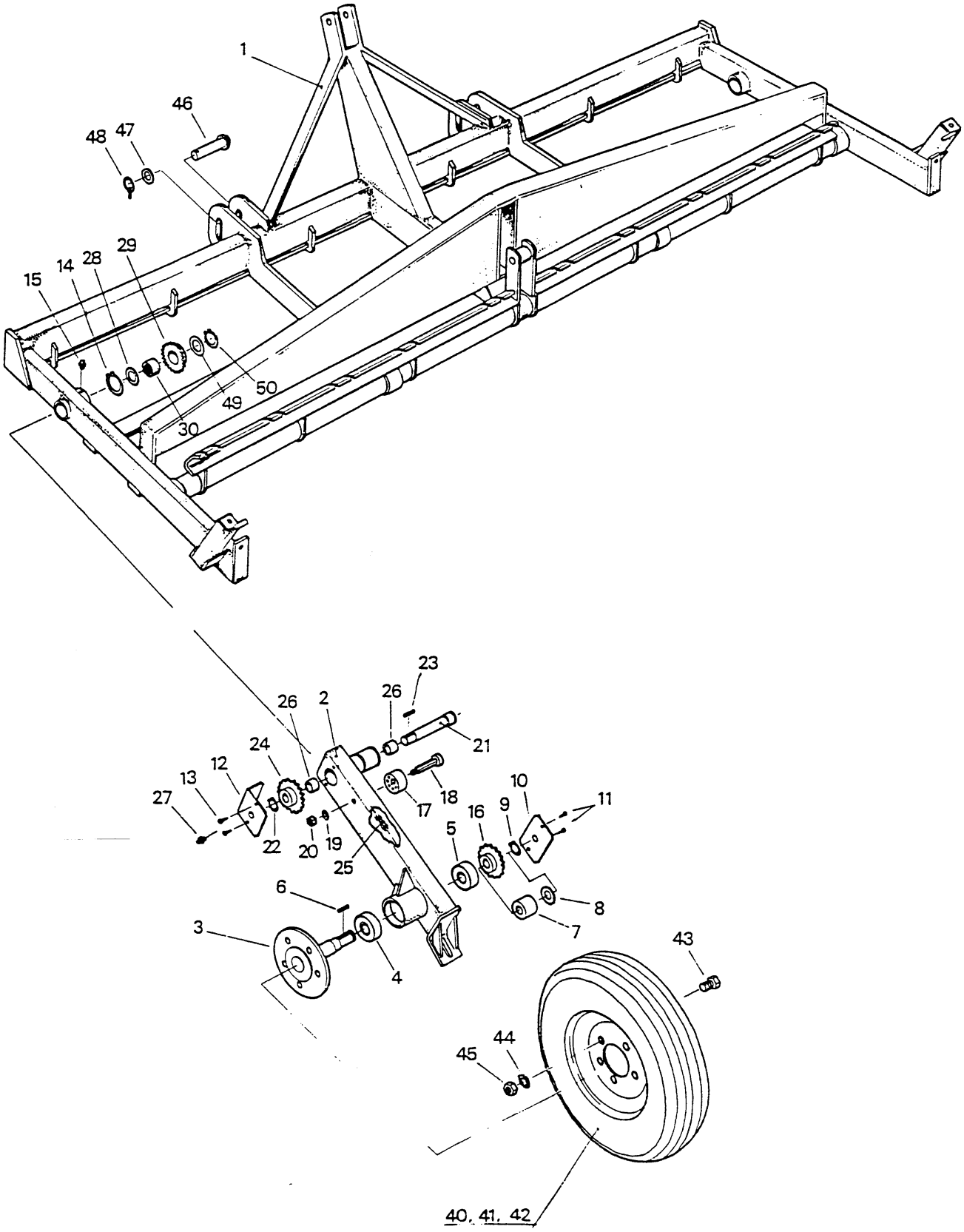
IV Warranty does not cover following:
- damages caused by careless handling or storaging
- damages caused by normal wearing
- parts which are worn normally
- undirect costs as standing costs, loss of income and loss of handled material caused by a failure covered by guarantee
- all kind of losses caused by parts which are supplied from elsewhere than Kongskilde Juko Ltd or authorized Juko dealer
- freight costs
- repairing or travel costs

V Oy Kongskilde Kongskilde Juko Ltd will compensate warranty if:
- damage has taken place in normal operation condition
- instructions given by manufacturer have been followed
- repairing work has been carried out by a person authorized by Kongskilde Juko Ltd or an authorized dealer of Kongskilde Juko Ltd
- while repairing, original Juko spare parts have been used

VI A Warranty claim
- all claims must be expressed to the dealer of the machine
- damaged parts must be delivered to the dealer at the same time
- a dealer will prepare a written warranty claim to the manufacturer and a damaged part must be sent to the manufacturer if requested
- a warranty claim must be done within 30 days after damage

11. OPTIONAL EQUIPMENT

X-8052	Juko Control-control equipment	1865
X-6018A	Rear harrow	1851
X-7021	Pressure rollers	1852
X-4001	Hopper extension	1810
X-5046	Additional hopper	1841
X-7022	Additional hopper, mounting kit.	1870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Item	Part.nr.	**FRAME**	Qty/unit
1	31922	Frame 2,5 m	1
2	31982	Adjusting frame, left	1
2	31981	Adjusting frame, right	1
3	31980	Wheel axle	1
4	53293	Ball bearing 6207 2 RS	2
5	31939	Ball bearing 6306 2 RS	2
6		Key 8x7x32, L.H. adjusting frame	1
7	53619	Spacer tube, R. H. adjusting frame	1
8	10572	Washer 25,5x35x1, R.H. adj. frame	1
9	53378	Circlip A 25x2 .	2
10	31933	Guard plate	2
11	40951	Slotted pan head tapping screw 5,5x13	4
12	31931	Guard	1
13	40951	Slotted pan head tapping screw 5,5x13	2
14	31937	Circlip A 50x3	2
15	30263	Grease nipple M 6	2
		For L.H. adjusting frame	
16	31992	Sprocket 17 T, P 15,875	1
17	31930	Chain tightener	1
x	31958	Ring (both sides of chain tightener)	2
18	31929	Axle	1
19	10462	Washer M 12	1
20	30968	Nut, hex M 12	1
21	31928	Axle	1
22	10525	Circlip A 25x1,2	1
23		Key 8x7x32	1
24	31955	Sprocket 17 T, P 15,875	1
25		Roller chain 5/8"x3/8" - 67 link	1
26	20718	Sleeve bearing PM 2520 DX	2
27	30263	Grease nipple M 6	1
28	31941	Washer 25,5x50x1 .	1
	310938	**SPROCKET, assy .**	**1**
29	31938	Sprocket 21 T, P 12,7	1
30	31735	Overrunning clutch FC35	1
	310983	**WHEEL, assy.**	
40	31983	Rim 9x15.3	2
41	31970	Tube 10.0/75 - 15.3	2
42	31971	Tyre 10.0/75 - 15.3	2
43	31984	Screw, hex M 20x45	12
44	52233	Spring washer M 20	12
45	20645	Nut, hex M 20	12
46	30911	Linkage pin	2
47	30930	Washer 31,5x50x4	2
48	40150	Linch pin D 9	2
49	30740	Washer 36,5x55x2	1
50	63535	Circlip A 35x1,5	1

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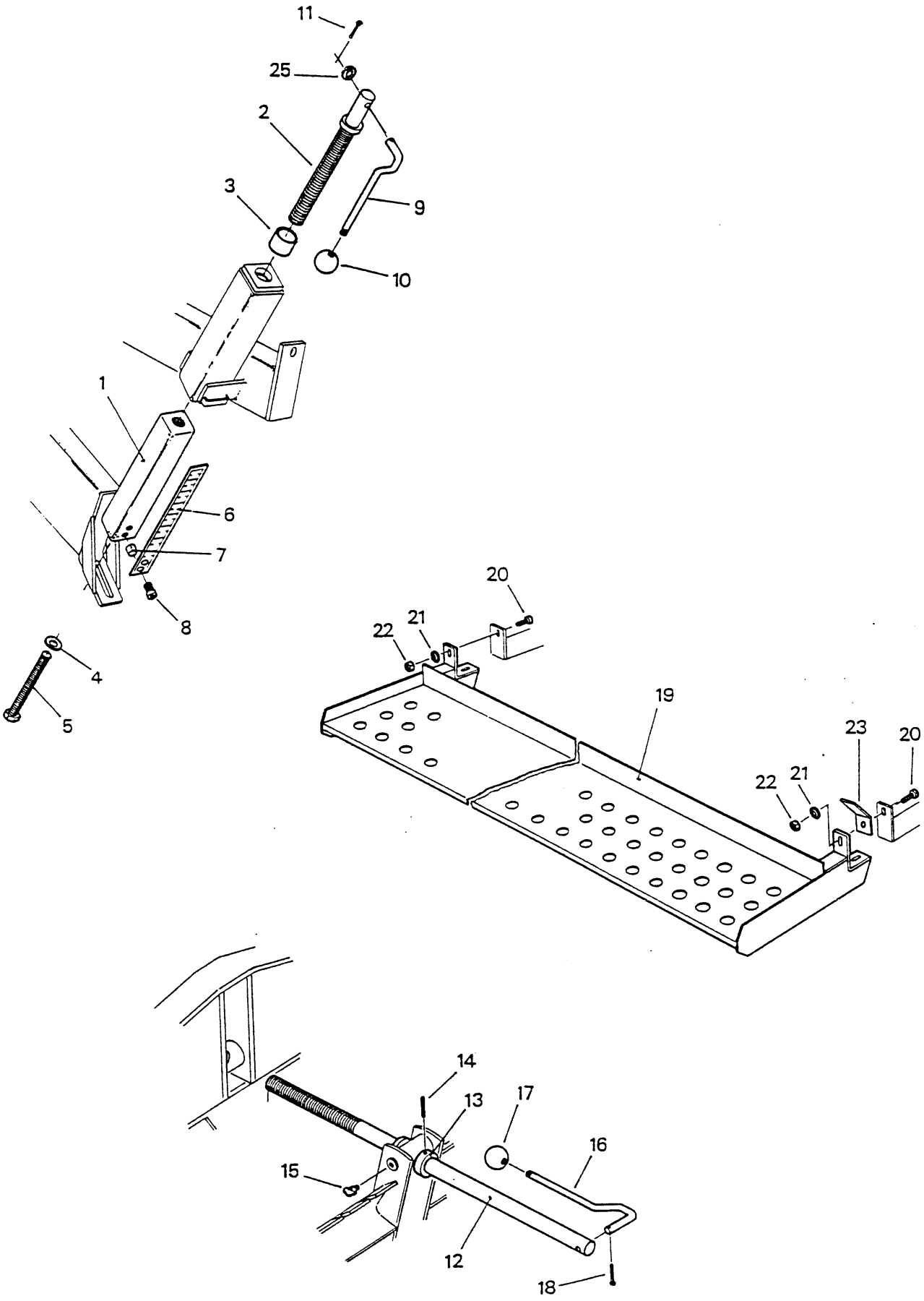
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Item	Part. nr.	**FRAME**	Qty/unit
1	31986	Adjusting tube	2
2	31936	Adjusting screw	2
3	31996	Bush	2
4	30887	Washer M 16 .	2
5	31977	Screw, hex. M 16x140	2
6	13113	Scale, depth adjustment	2
7	31979	Spacer ring	2
8	30948	Cross recessed raised cheese head screw M 8x16	2
	620201	**CRANK, assy**	
9	30558	Crank	2
10	20726	Knob	2
11	10463	Split cotter pin 3,2x16	2
12	31496	Adjusting screw	1
13	12103	Spacer ring	1
14	12238	Spring pin 5x36	1
15	30265	Grease nipple, angle 67° M 6	1
	620201	**CRANK, assy .**	**1**
16	30558	Crank	1
17	20726	Knob	1
18	10463	Split cotter pin 3,2x16	1
19	35906	Footboard 2,5 m	1
20	30522	Screw, hex M 12x35	2
21	10463	Washer M 12	2
22	30968	Nut, hex M 12	2
23	31952	Washer .	2
25	10607	Washer M 10 .	2

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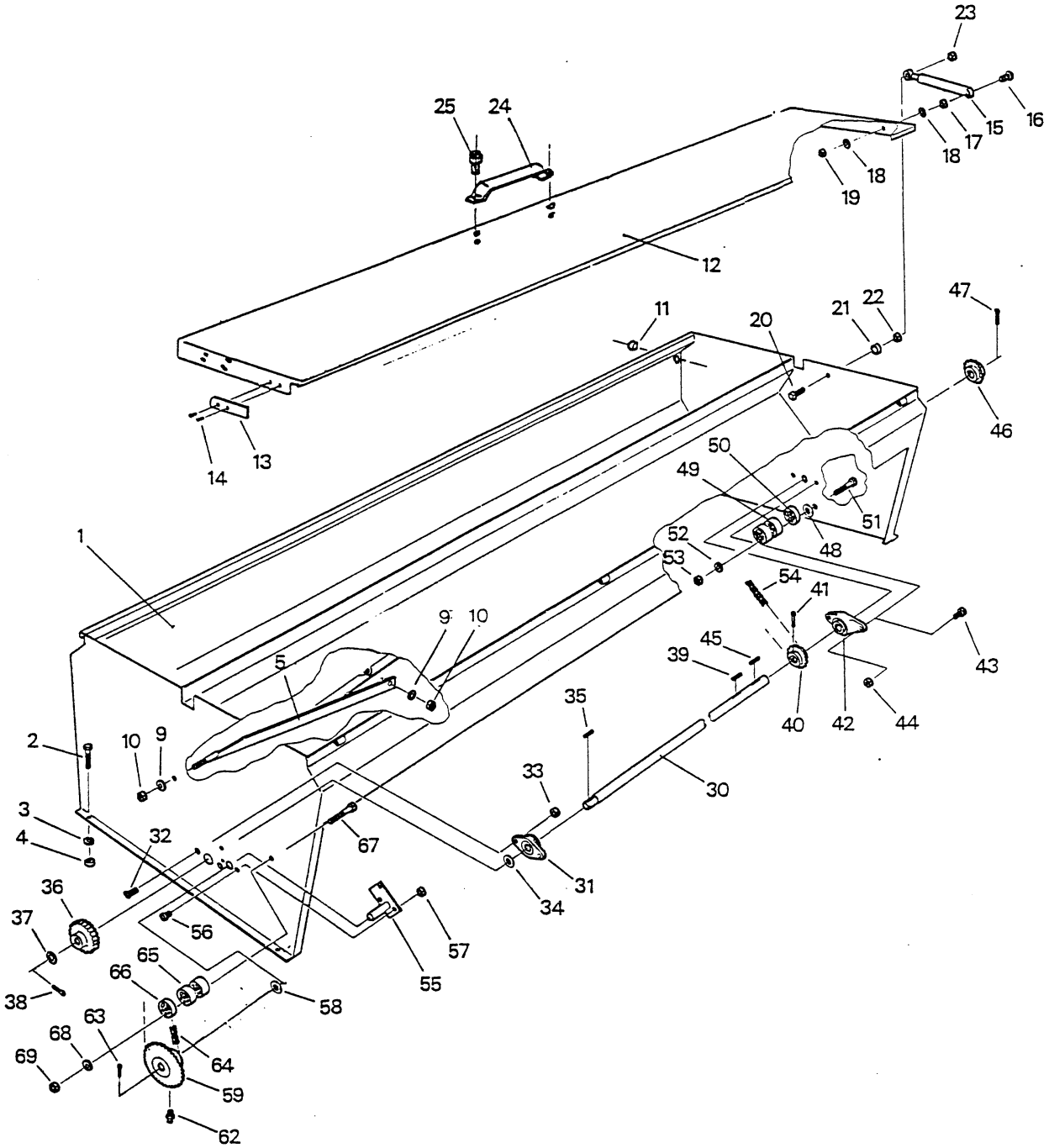
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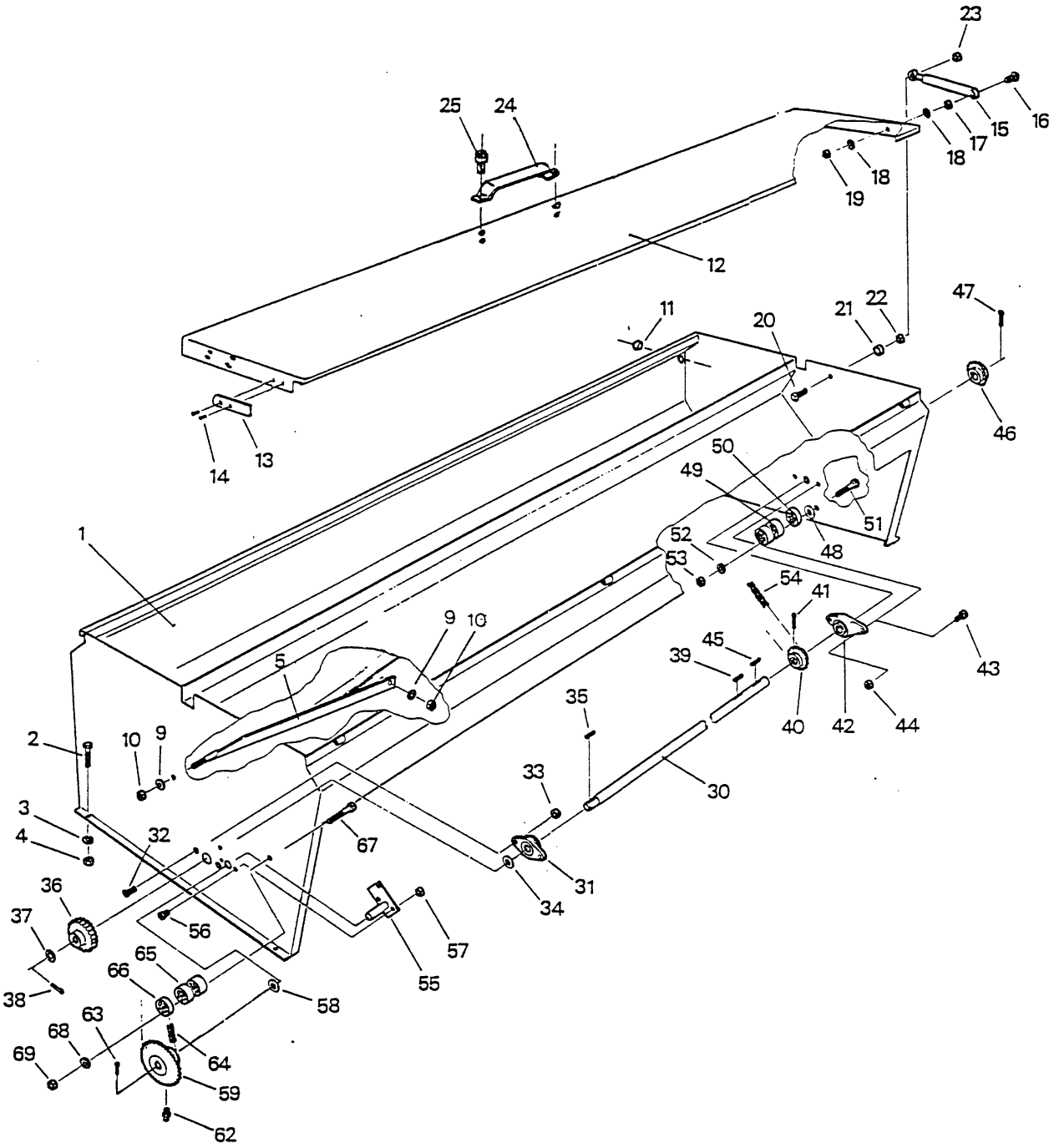
Item	Part.nr	**HOPPER, FERTILIZER PART**	Qty /unit
1	31293	Hopper, 2,5 m	1
x	32240	Cushion (rubber profile),hopper edge	2
x	95175	Nit 4.8x16	2
2	30955	Screw, hex. M 12 x 110, front corners	2
x	30962	Screw, hex. M 12 x 100, rear corners	2
3	10462	Washer M 12	4
4	30968	Hexagon nut M 12	4
5	32215	Tie bar	2
9	10462	Washer M 12	4
10	56448	Nut, locking M 12	4
11	40661	Plug DBI n:o 16	8
12	32619	Lid, 2,5 m	1
13	32621	Limiter	1
14	41606	Rivet 3,2 x 8	2
15	31946	Gas spring Suspa	2
x	35914	Vaijer D3-326+2	2
16	57537	Mushroom head square neck bolt M 8 x 25	2
17	30969	Nut, hex. M 8	2
18	10784	Washer M 8	4
19	57550	Nut, locking M 8	2
20	53410	Screw, hex. M 8 x 35	2
21	41603	Spacer ring .	2
22	30969	Nut, hex. M 8	2
23	57550	Nut, locking M 8	2
24	13239	Handle	3
25	95303	Rivet POP 4.3 x 16	12
30	32217	Shaft, 2,5 m	1
31	57187	Collar step bearing FYTB 25 TF .	1
32	32257	Cross recessed countersunk head screw M 10x30	2
x	10153	Spring washer M 10	2
33	10760	Nut, hex. M 10	2
34	56625	Washer 25,5 x 35 x	1
35		Key 6x6x30 .	1
36	20626	Gear 19 T	1
37	10933	Washer 20,5 x 35 x 2	1
38	10459	Split cotter pin 5 x 32	1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Item	Part.nr.	**HOPPER, FERTILIZER UNIT**	Qty/unit
39		Key 6x6x36	1
40	32218	Sprocket 20 T, P 12,7	1
41	10459	Split cotter pin 5x32	1
42	57187	Collar step bearing FYTB 25 TF	1
43	30958	Screw, hex. M 10 x 25	2
x	10153	Spring washer M 10	2
44	10760	Nut, hex. M 10	2
45		Key 6x6x36	1
46	32218	Sprocket 20 T, 12,7	1
47	10459	Split cotter pin 5 x 32	1
48	57192	Ring	1
49	31261	Chain tightener, length 28	2
50	31263	Chain tightener, length 16	1
51	31954	Mushroom head sqare neck bolt M 10 x100	1
52	10607	Washer M 10	1
53	10760	Nut, hex. M 10	1
54		Roller chain 1/2" x 5/16" - 59 link / adjusting frame - main shaft	1
55	31683	Intermediate axle	1
56	53363	Screw, hex. M 8 x 20	3
x	10784	Washer M 8	3
57	30969	Nut, hex. M 8	3
58	10613	Washer 20,5 x 35 x 2	1
59	**32635**	**SPROCKET/GEAR 36119 T, assy**	**1**
62	30263	Grease nipple M 6	1
63	10459	Split cotter pin 5 x 32	1
64		Roller chain I/2" x 5/16" - 70 link / intermediate axle - rotation speed converter	1
65	31261	Chain tightener, length 28	2
66	31263	Chain tightener, length 16	1
67	30287	Screw, locking M 10 x 90	1
68	10607	Washer M 10	2
69	10760	Nut, hex. M 10	1

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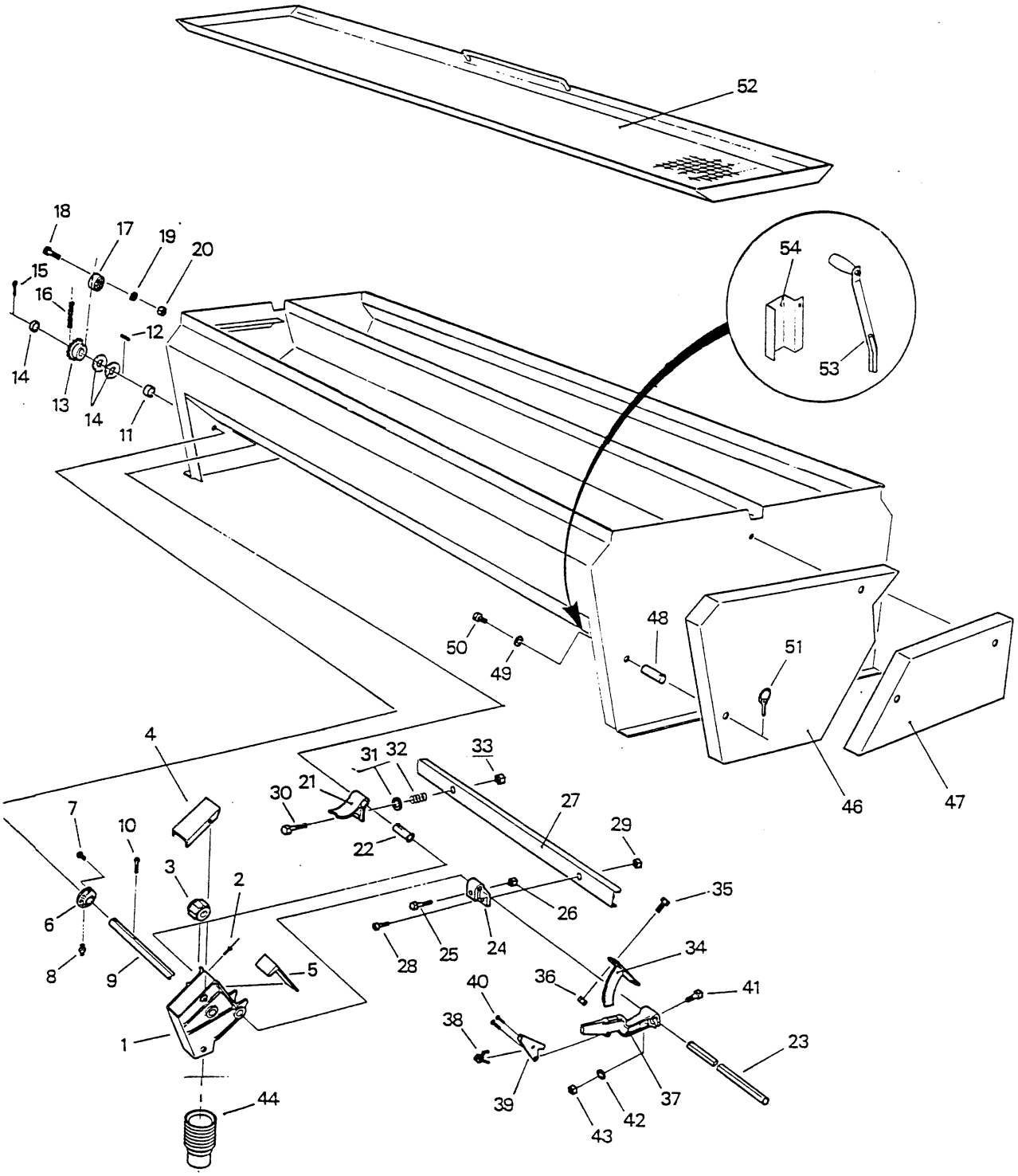
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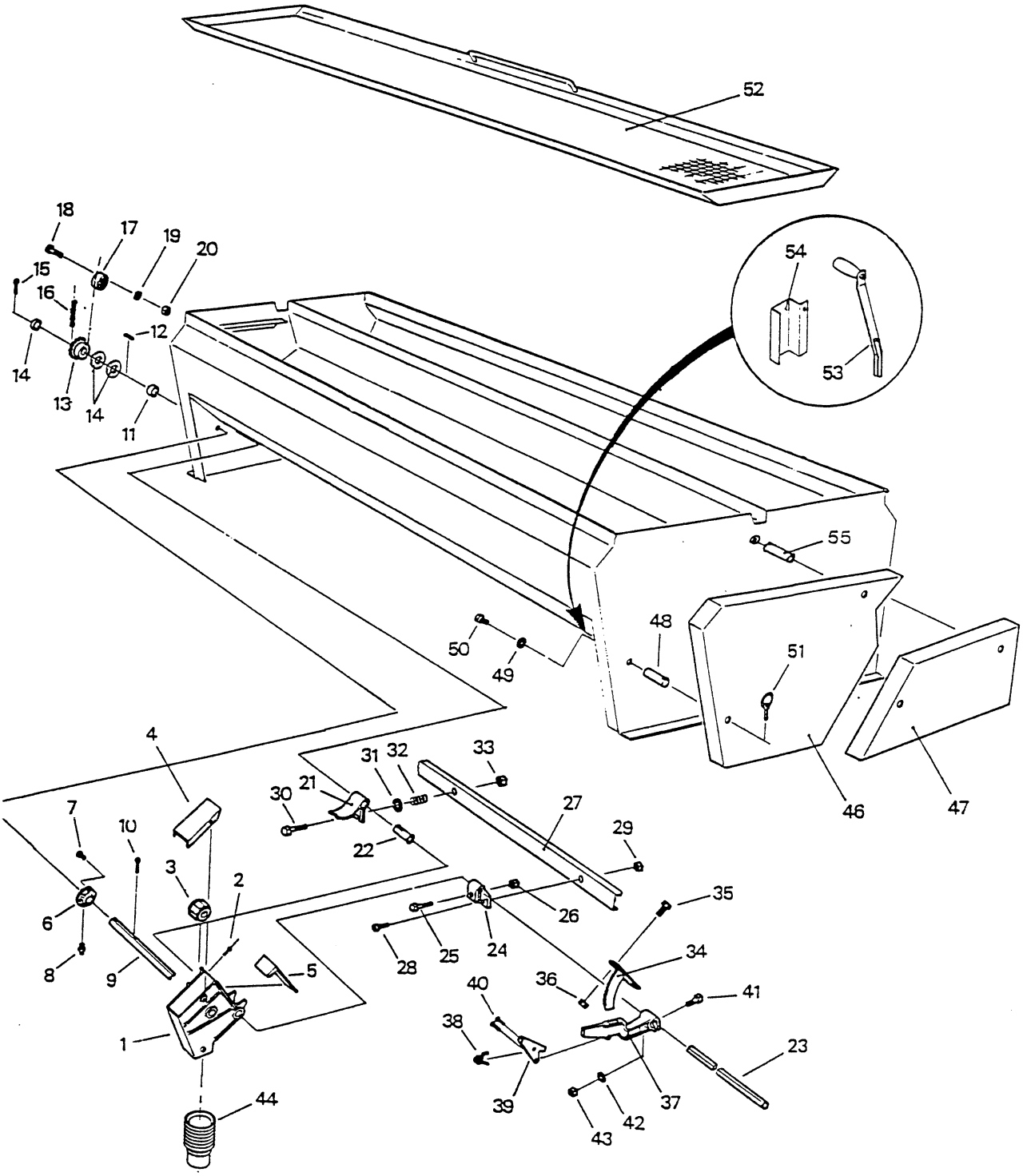
Item	Part.nr.	**HOPPER, FERTILIZER UNIT**	Qty/unit
1	31607	Feeder case	10
2	31213	Rivet, Pop 3,2x10	40
3	31699	Feed roller	10
4	30661	Lid	10
5	31657	Shutter	10
6	20621	Bearing	1
7	30948	Slotted cheese head screw M 8 x 16	3
8	30263	Grease nipple M 6	1
9	32620	Feed shaft, 2,5 m	1
x	10933	Washer 20,5 x 35 x I (placed between items 6 and 10)	1
10	10459	Split cotter pin 5 x 32	1
11	32262	Spacer ring	1
x	10933	Washer 20,5 x 35 x I (placed between items 11 and 13)	1
12		Key 6x6x30	1
13	30238	Sprocket 15 T, P 12,7	1
14	52424	Washer 20,5 x 30 x 2	1
15	53369	Screw 6x12	1
16		Roller chain 1/2" x 5/16" - 84 link / rotation speed converter - feed shaft	1
17	31261	Chain tightener, length 28	1
18	53953	Screw, hex M 10 x 70	1
19	10607	Washer M 10	1
20	10760	Nut, hex. M 10	1
21	31609	Bottom flap	10
27	31672	Bearing bush	10
23	32207	Shaft, bottom flaps, 2,5 m	1
24	31248	Bracket	5
25	66134	Hexagon bolt M 8 x 40	5
26	30969	Hexagon nut M 8	5
27	32616	Adjusting bar, bottom flaps, 2,5 m	1
28	30970	Cross recessed pan head screw M 8 x 20	5
29	30969	Nut, hex. M 8	5
30	30256	Sqare head bolt M 6 x 55	10
31	53503	Washer M 6	10
32	31616	Pressure spring, bottom flap	10
33	30270	Nut, hex. M 6	10
34	31684	Arched notch segment	1
35	30257	Gross recessed pan head screw M 6 x 16	2
x	53503	Washer M 6	2
36	30262	Nut, hex. M 6	2

Items marked x not shown.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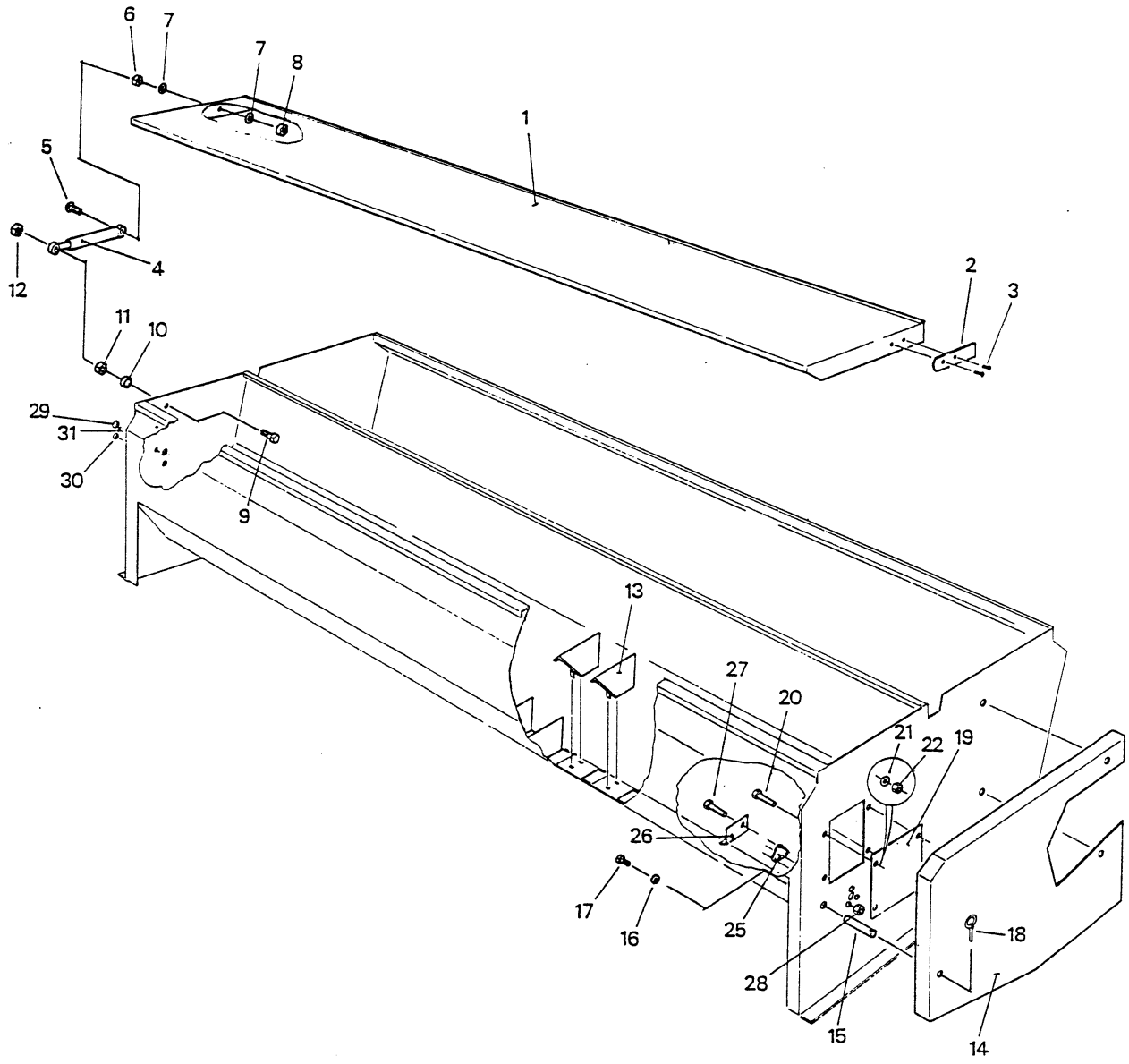
Item	Part.nr.	**HOPPER, FERTILIZER UNIT**	Qty/unit
	310203	**ADJUSTING LEVER, assy**	**1**
37	31203	Lever	1
38	10325	Spring	1
39	10220	Catch	1
40	10344	Ball-hearded rivet 5 x 20	2
41	31693	Hexagon bolt M 8 x 45	1
42	20554	Washer 10 x 30 x 2	1
43	30969	Nut, hex. M 8	1
44	32602	Fertilizer tube	10
46	**310945**	**CHAIN GUARD, assy.**	
x	31945	Chain guard	1
x	31960	Place	1
x	31213	Rivet, Pop 3,2 x 10	3
47	31944	Chain guard	1
48	31948	Pin	2
49	10784	Washer M 8	4
50	57535	Screw, hex. M 8 x 16	4
51	40150	Linch pin D 9	4
52	32636	Sieve	2
		Placed in front of the fertilizer hopper, on the inner side of the hopper end:	
53	310950	Calibration crank	1
54	31951	Bracket for calibration crank	1
x	41614	Bottom cone for hopper	4
x	53503	Washer M 6	4
x	41649	Nut, hex. M 6 AISI	4
55	31993	Tap	2

Items marked with X not shown.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Item	Part.nr.	**HOPPER, SEED UNIT**	Qty/unit
1	31295	Lid, 2,5 m	1
x	41202	Gushion plug Vienola 44041 MC, hopper edge	3
2	32225	Limiter	1
3	41606	Rivet, Pop 3,2 x 8	2
4	31946	Gas spring Suspa	2
x	41611	Head for gas spring A2/B2	
x	35914	Vaijer D3-326+2 .	2
5	57537	Mushroom head sqare neck bolt M 8 x 25	2
6	30969	Hexagon nut M 8	2
7	10784	Washer M 8	4
8	57550	Hexagon nut with nylon insert M 8	2
9	53410	Hexagon bolt M 8 x 35	2
10	41603	Spacer ring	2
11	30969	Hexagon nut M 8	2
12	57550	Hexagon nut with nylon insert M 8	2
13	31287	Bottom cone for hopper	19
14	31943	Chain guard	1
15	31947	Pin	3
16	10784	Washer M 8	3
17	57535	Hexagon bolt M 8 x 16	3
18	40150	Linch pin 0 9	3
19	32261	Cover	1
20	30951	Hexagon bolt M 10 x 16	4
21	10607	Washer M 10	4
22	10760	Hexagon nut M 10	4
27	30251	Cross recessed raised cheese head screw M 8 x 12	1
28	30969	Hexagon nut M 8	1
29	32260	Plug DBI n:o 42	1
30	31604	Plug DBI n:o 38	1
31	35231	Plug DBI n:o 10	1

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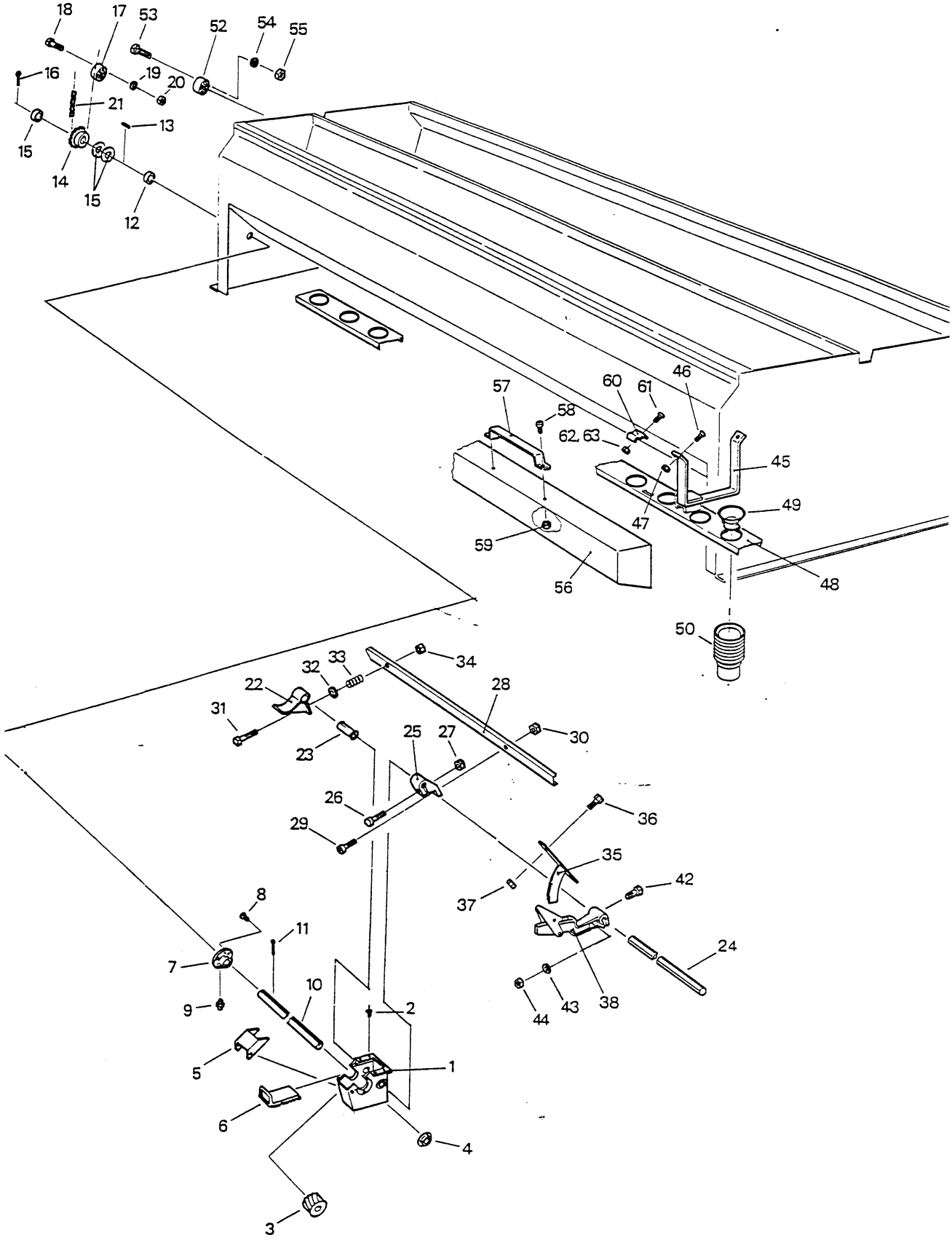
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Item Part.nr. **HOPPER, SEED UNIT** Qty/unit

1	31282	Feeder case NR.	20
2	31213	River, Pop 3,2 x 10	80
3	31245	Feed roller	20
4	31286	Bearing	40
5	31285	Lid	20
6	31284	Shutter	20
7	20621	Bearing	1
8	30948	Cross recessed raised cheese head screw M 8 x 16	3
9	30263	Grease nipple M 6	1
10	32221	Feed shaft 2,5 m	1
x	10933	Washer 20,5 x 35 x 1	1
11	10459	Split cotter pin 5 x 32	1
12	57214	Spacer ring 26,9/21,6-12	1
x	10933	Washer 20,5 x 35 x 1	1
13		Key 6x6x30 .	1
14	30238	Sprocket 15 T, P 12,7	1
15	52424	Washer 20,5 x 30 x 2	1
16	53369	Screw M6x12 .	1
17	31261	Chain tightener, length 28	1
x	31263	Chain tightener, length 16	1
18	30956	Screw, hex M 10 x 60	1
19	10607	Washer M 10	1
20	10760	Nut, hex. M 10	1
21		Roller chain 1/2" x 5/16" - 71 link / rotation speed converter - feed shaft	1
22	31283	Bottom flap	20
23	31668	Bearing bush	20
24	32207	Shaft, bottom flaps, 2,5 m	1
25	31248	Bracket	6
26	66134	Screw, hex. M 8 x 40	6
27	30969	Nut, hex. M 8	6
28	32208	Regulating shaft, bottom flaps, 2,5 m	1
29	30970	Cross recessed raised cheese head screw M 8 x 20	6
30	30969	Nut, hex. M 8	6
31	32447	Square head bolt M 6 x 50	20
32	53503	Washer M 6	20
33	31616	Pressure spring, bottom flap	20
34	30270	Nut, hex. M 6	20
35	32209	Arched notch segment	1
36	30257	Cross recessed raised cheese head screw M 6 x 16	2
x	53503	Washer M 6 .	2
37	30262	Nut, hex. M 6	2

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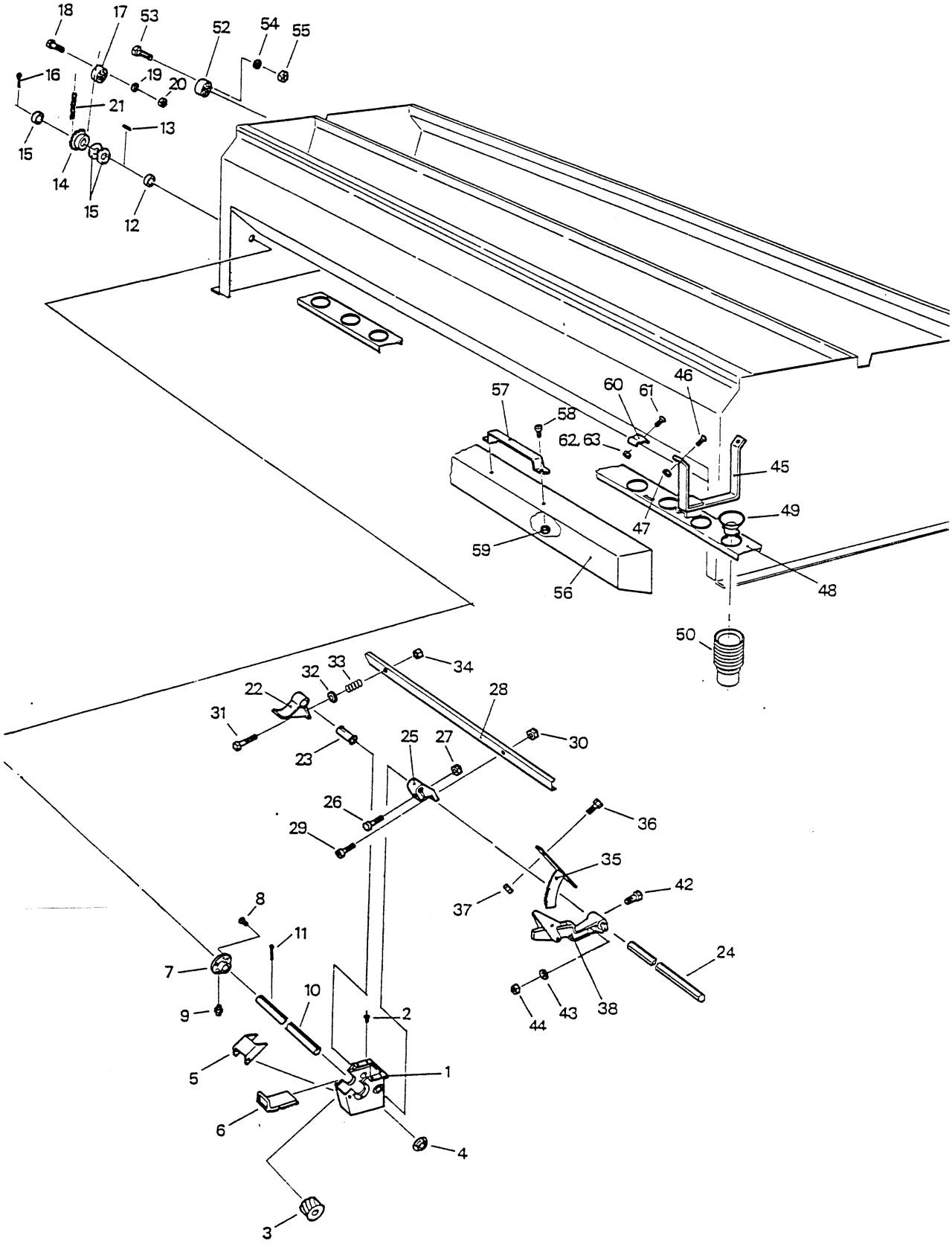
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Item	Part.nr.	**HOPPER, SEED PART**	Qty/unit
38	**320253**	**ADJUSTING LEVER, assy**	**1**
42	31693	Screw, hex. M 8 x 45	1
43	20554	Washer 10 x 30 x 2	1
44	30969	Nut, hex. M 8	1
45	32227	Console	4
46	57535	Screw, hex. M 8 x 16	8
x	10784	Washer M 8	8
47	30969	Nut, hex. M 8	8
x	32249	Locking plate	4
48	32264	Funnel cradle,	2
49	32263	Intermediate funnel	20
50	41240	Seed tube	20
50	41241	Seed tube	20
52	31261	Chain tightener, length 28	1
x	31263	Chain tightener. length 16	1
53	30956	Screw, hex. M 10 x 60	1
54	10607	Washer M 10	1
55	10760	Nut, hex. M 10	1
56	32212	Calibration tray	2
57	13239	Handle	2
58	30528	Cross recessed countersunk head screw M 5 x 16	8
59	10395	Nut, hex. M 5	8
60	32232	Retainer	4
61	30948	Cross recessed raised cheese head screw M 8 x 16	4
62	30969	Washer M 8	4
63	30969	Nut, hex. M 8	4
		Optional attachments:	
x	32265	Sieve for seed (1820)	

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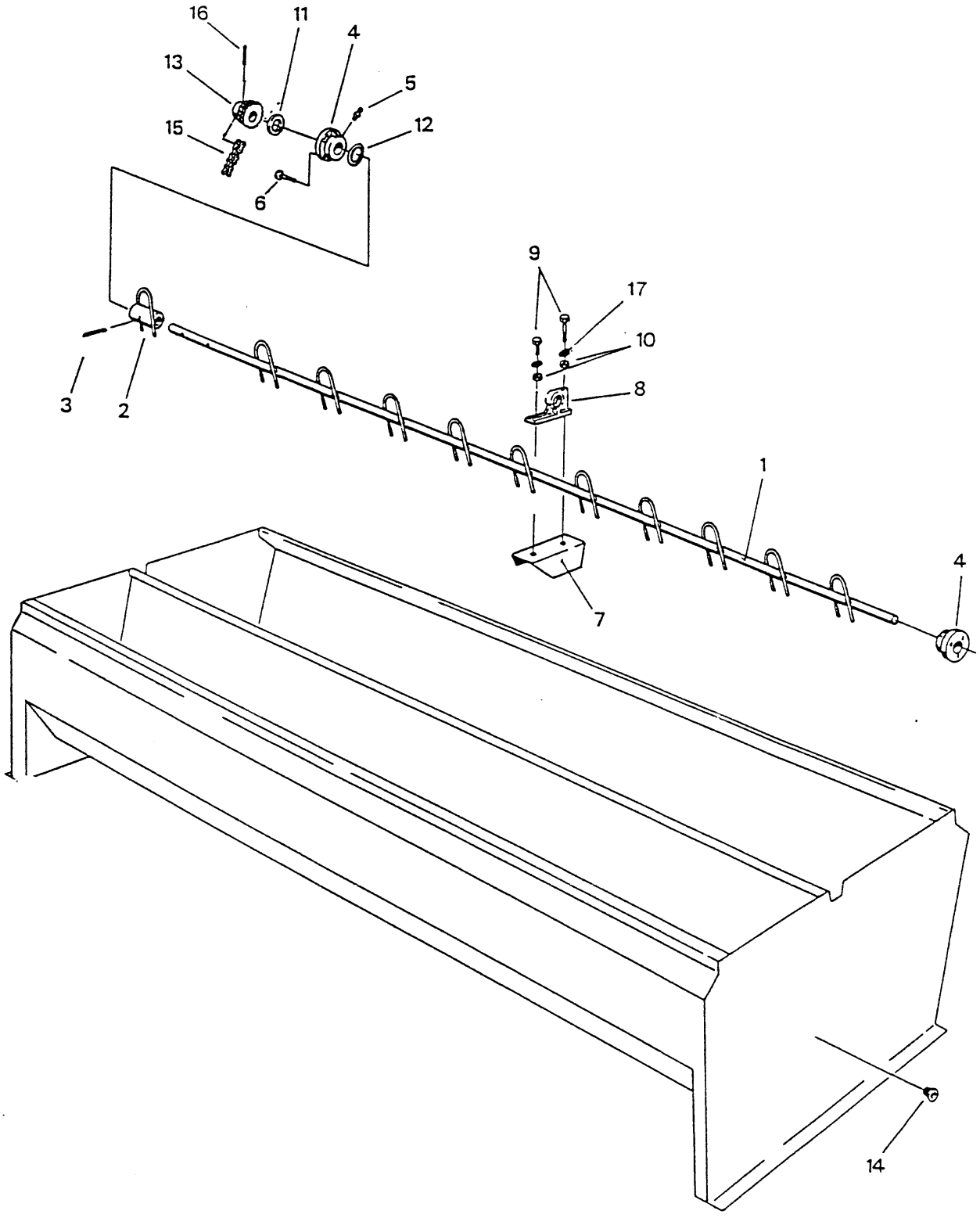
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Item Part.n:o **AGITATOR SHAFT**

			Qty/unit 2,5
1	31884	Shaft	1
2	31881	NR	1
3	20757	Cotter pin NR	2
4	20621	Bearing	2
5	30263	Lubricating nipple M 6	2
6	30948	Screw M 8x16	6
7	33540	Plate	1
8	31882	Bearing	1
9	31291	Screw, hex M 6x60	2
10	30261	Nut, locking M 6	2
11	31891	Ring	1
12	52424	Washer 20,5x30x2	2
13	31890	Double sprocket 15/15 T, t=12,7	1
14	35237	Cover plug DBI no 15	1
15		Roller chain t=1/2x5/16-34 links	1
16	53369	Screw M6x12	1
17	53503	Washer M 6	2
x	31261	Chain thigtener	2
x	42821	Screw, locking M 10x70	1
x	10153	Spring washer M 10	1
x	10760	Nut, hex M 10	1
x	21305	Bush	1
x	11927	Spring pin 5x50	1

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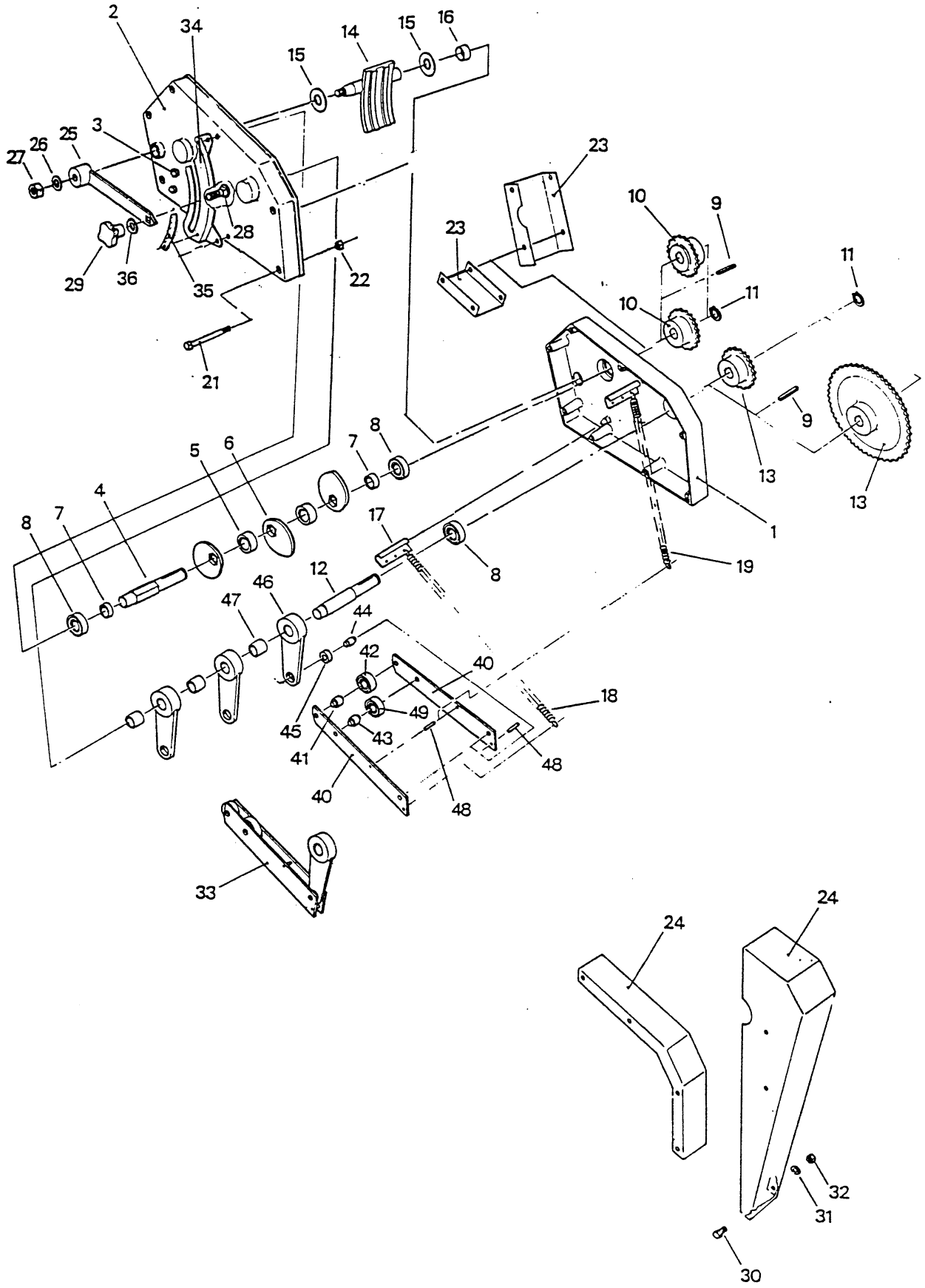
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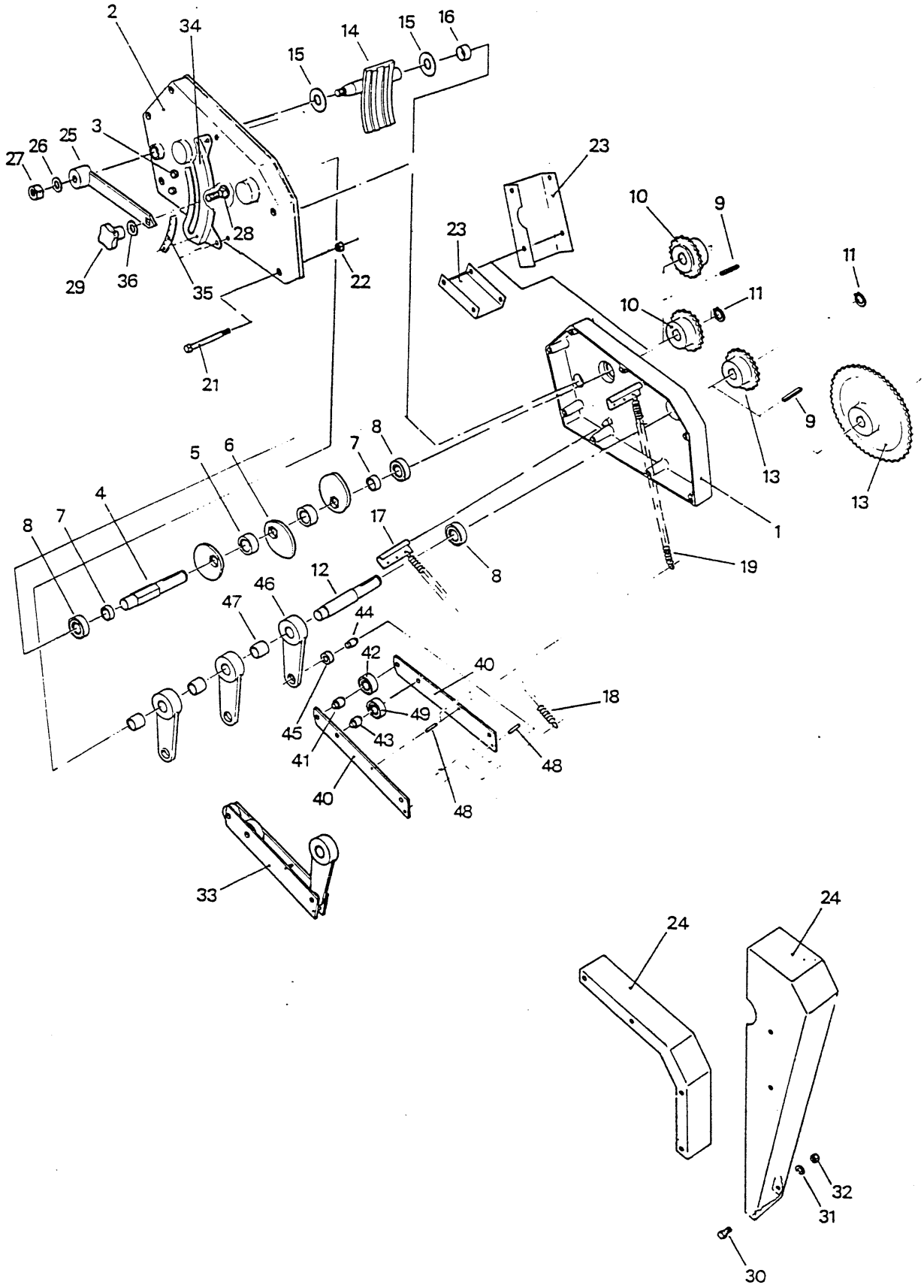
Item	Part.nr.	**ROTATION SPEED CONTERTER**	Qty/unit
	310765	**ROTATION SPEED CONVERTER, assy**	
1	31765	Casing (back part)	2
2	31764	Casing (front part)	2
3	31782	Hexagon socket screw plug R 1/4"	2
4	31707	Axle	2
5	31730	Spacer ring	4
6	31706	Cam disc	6
7	31738	Bush	4
8	55851	Ball bearing 6004-2RS	8
9		IRS	4
10	30237	Sprocket 30 T, P 12,7, for seed	1
10	30238	Sprocket 15 T, P 12,7, for fertilizer	1
11	10838	Circlip A 20 x 1,2	4
12	31708	Axle	2
13	20524	Sprocket 20 T, P 12,7, for seed	1
13	40258	Sprocket 52 T, P 12,7, for fertilizer	1
14	31701	Stop plate	2
15	20618	Washer 22 x 38 x 1,5	4
17	31742	Bracket, for spring (items 18 and 19)	4
18	31740	Tension spring 12-1,2-120-83	6
19	31741	Tension spring 12-1,2-70-41	6
21	31464	Screw, hex. M 8 x 80	12
21	60339	Screw, hex. M 8 x 90	4
22	30969	Nut, locking	16
23	31733	Bracket plate (small) / seed unit	1
23	31713	Bracket plate (large) / fertilizer unit	1
24	31714	Guard (small) / seed unit	1
24	31743	Guard (large) / fertilizer unit	1
25	32703	Indicator lever	2
26	10462	Washer M 12	2
27	30968	Nut, hex. M 12	2
28	57229	Screw, locking. M 12 x 40	2
29	31745	Star knob M 12	2
30	57535	Screw, hex. M 8 x 16	10
31	10784	Washer M 8	10
32	30969	Nut, hex. M 8	10
33	310718	Push red .	6
x	31810	O-ring OR 15,3x2,4 .	2

Items marked x not shown.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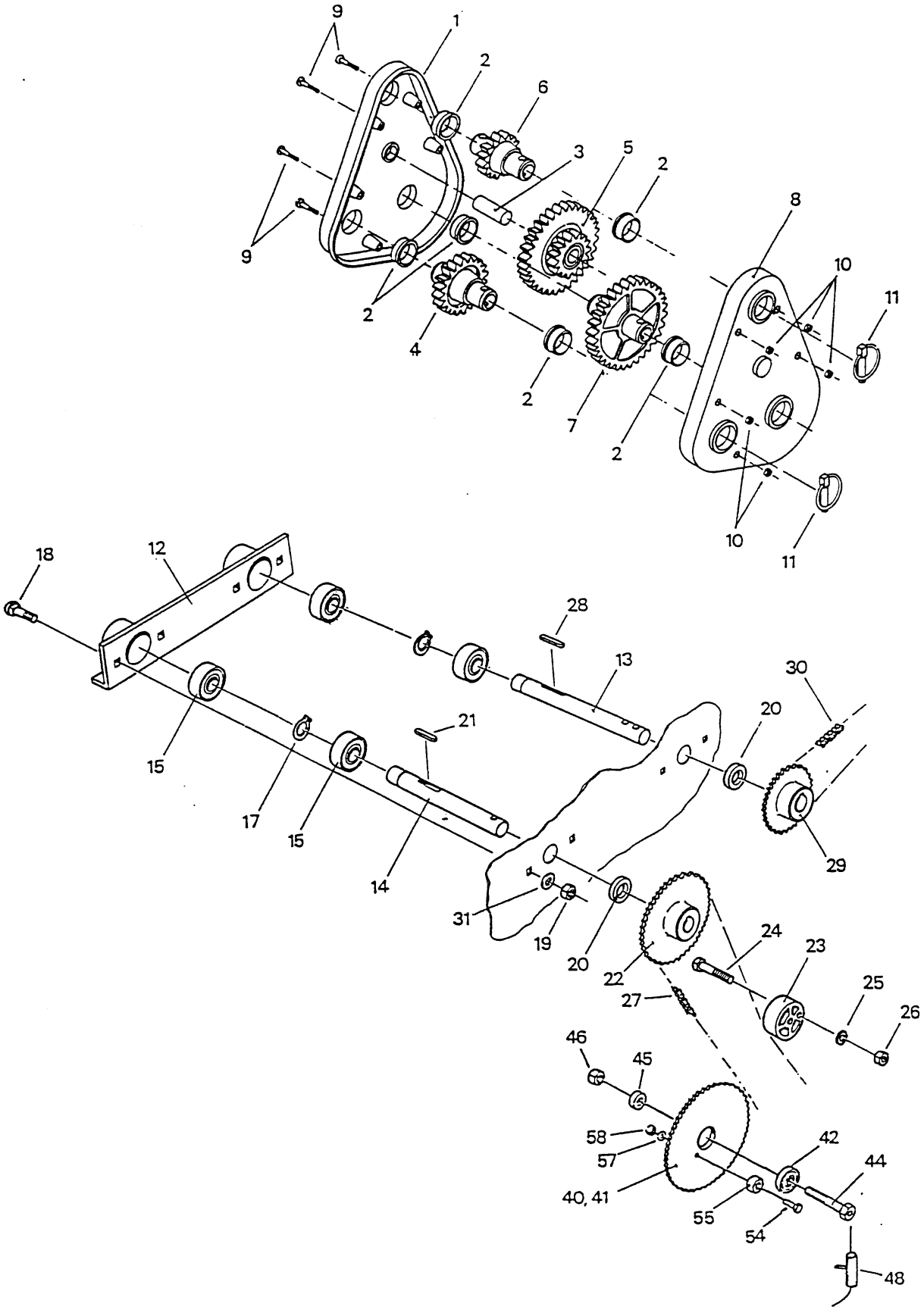
Item	Part.nr.	**ROTATION SPEED CONVERTER**	Qty/unit
34	31751	Adjusting plate	2
35	31703	Scale	2
36	30887	Washer M 16 .	2
	310718	**PUSH ROD, assy**	
40	31777	Side plate	2
41	31778	Axle	1
42	31779	Ball bearing 6300	1
43	31780	Axle	1
44	31781	Axle	1
45	31749	Ball bearing 608-2RS	1
46	31704	Overrunning clutch lever	1
47	31731	Overrunning clutch F6 25	1
48	61403	Spring pin 5-18	2
49	31769	Ball bearing 16005	1

Item marked x not shown.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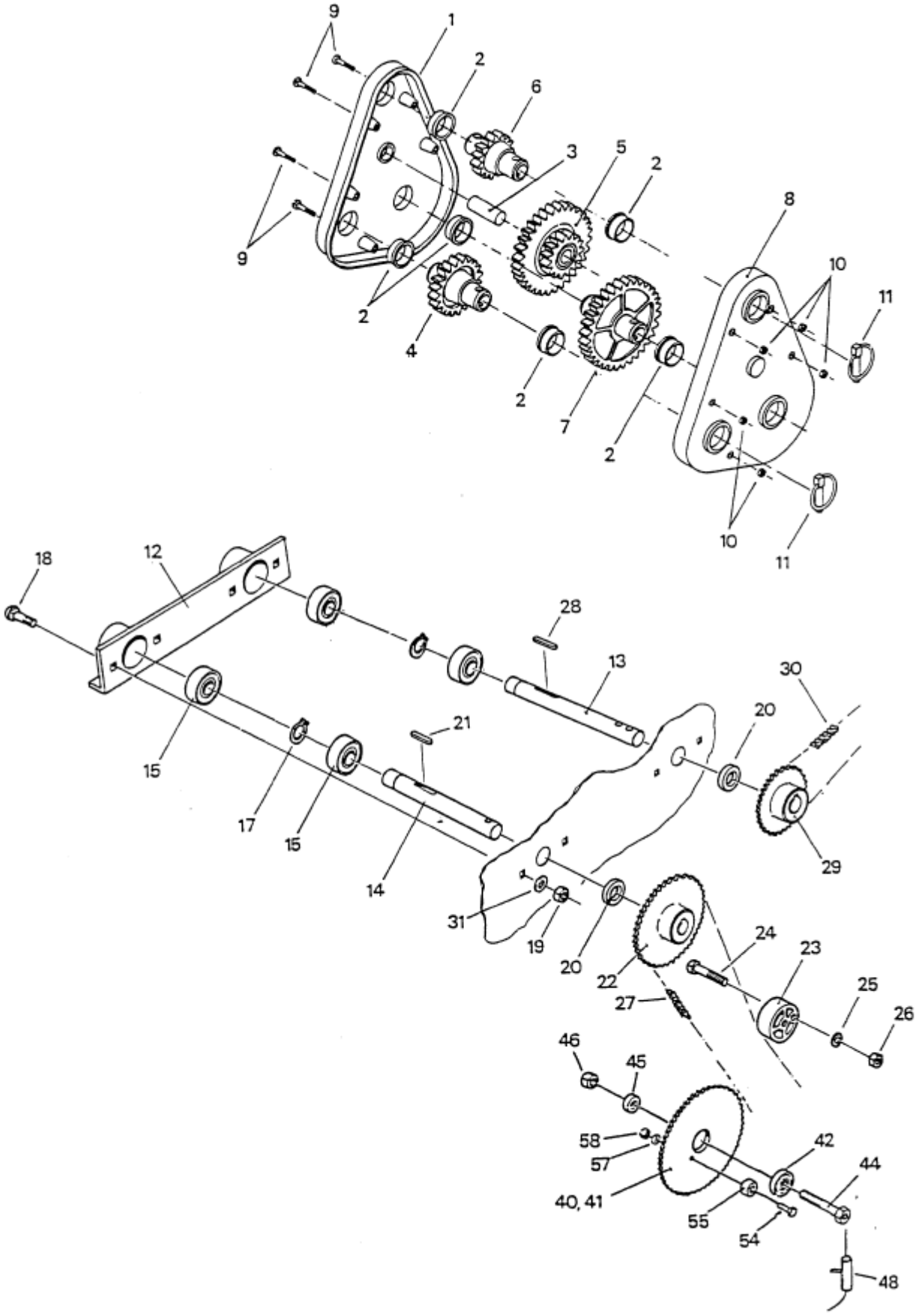
Item	Part.nr.	**CASSETTE AND INTERMEDIATE AXLE UNIT**	Qty/unit
	300328	**CASSETTE, assy**	**1**
1	30328	Housing	1
2	30335	Bearing bush	6
3	30334	Axle	1
4	30332	Cear 20 T	1
5	30330	Gear 32/15 T	1
6	30333	Gear 15 T	1
7	30331	Gear 32 T	1
8	30329	Lid/housing	1
9	30343	Hexagon socket head cap screw M 6 x 40	5
10	30262	Hexagon nut M 6	5
11	40150	Linch pin Ø 9	2
	310717	**INTERMEDIATE AXLE UNIT, assy**	**1**
12	31717	Housing/bearings	1
13	31734	Axle	1
14	31710	Axle	1
15	63223	Ball bearing 6206-2RS	4
17	10838	Circlip A 20 x 1,2	2
18	57538	Mushroom head square neck bolt M 10x 20	4
19	10760	Hexagon nut M 10	4
20	12217	Ring	2
21		Key 6 x 6 x 32	1
22	30237	Sprocket 30 T, P 12,7	1
23	31261	Chain tightener, lenght 28	1
24	57153	Hexagon bolt M 10 x 50	1
25	10607	Washer M 10	1
26	10760	Hexagon nut M 10	1
27		Roller chain 1/2" x 5/16” – 89 link	1
28		Key 6 x 6 x 32	1
29	31736	Sprocket 24 T, P 12,7	1
30		Roller chain 1/2" x 5/16” –85 link	1
31	10153	Spring washer M 10	4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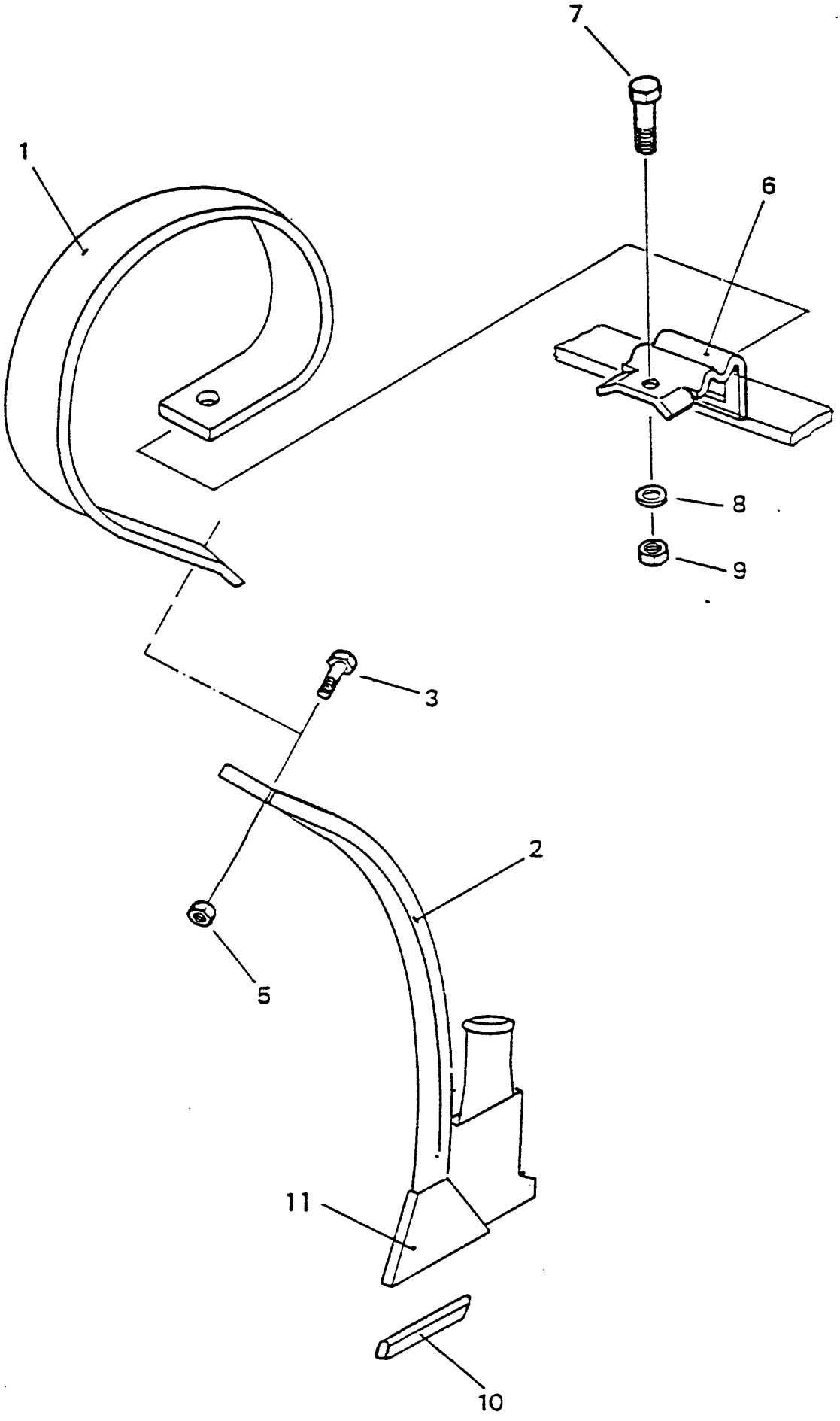
Item	Part.nr.	**AREA METER**	Qty/unit
	310716	**SPROCKET, assy**	**1**
41	31716	Sprocket 35 T, P 12,7	1
42	31729	Ball bearing 6201-2RS	1
44	32705	Bolt	1
45	31720	Bush	1
46	30968	Nut, hex M12	1
48	31788	Electric wire	1
x	32252	Pull remover	1
54	31799	Screw M 4x20	1
55	31770	Magnet	1
57	30753	Washer M 4	1
58	53282	Nut, hex. M 4	1
x	31761	Adhessive wire clamp	6
x	31762	Wire bundle tie	6
	310787	**AREA METER DISPLAY BOX H 7 AL 12 V OMRON, assy**	**1**
X	31797	Electric wire	1

Item marked with X not shown.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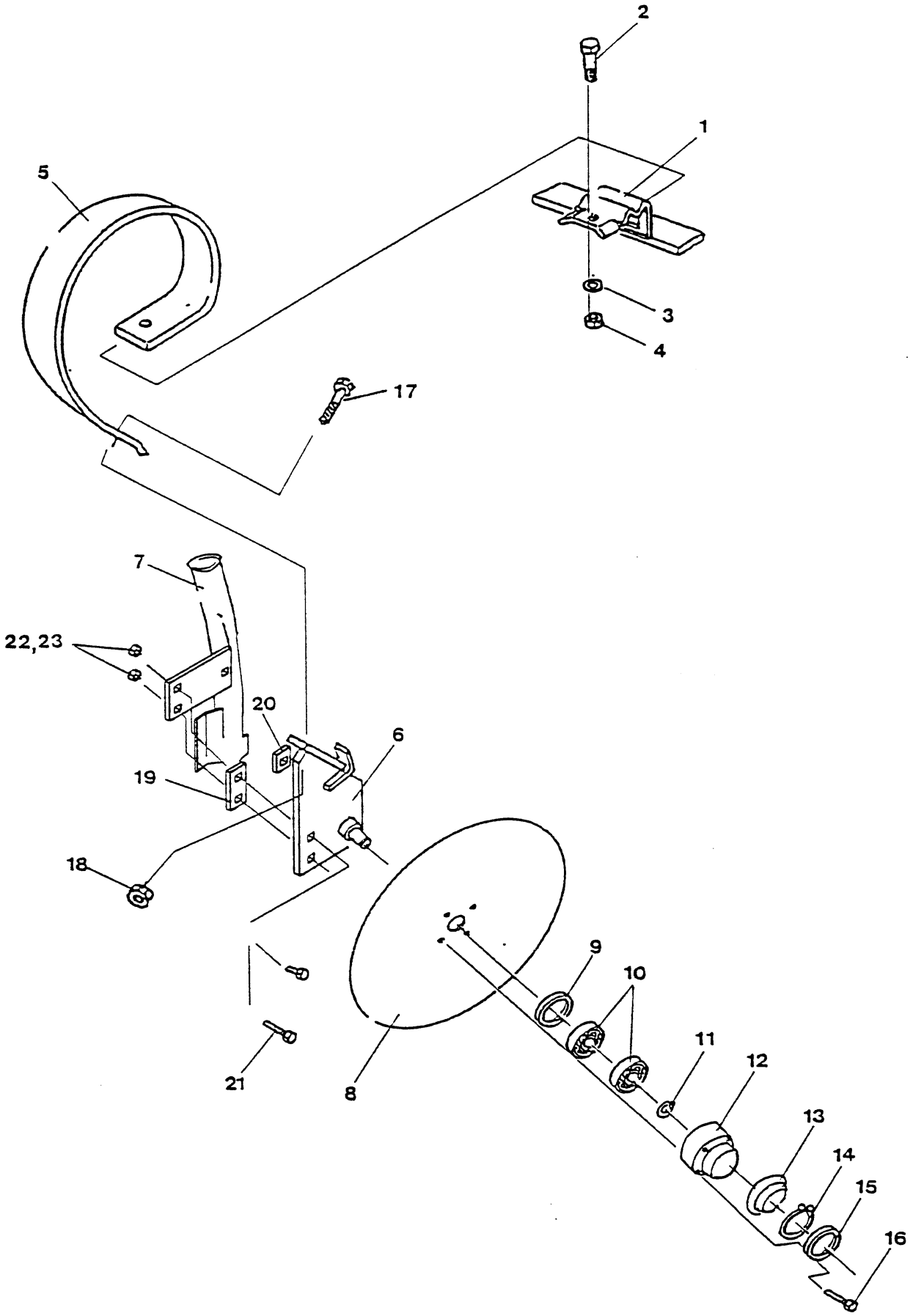
Item	Part.nr.	**FERTILIZER COULTER**	Qty./unit
	350424	Fertilizer coulter , front	5
	350423	Fertilizer coulter , rear	5
1	35422	Spring coulter .	10
2	35424	Coulter, lower part,front .	5
2	35423	Coulter, lower part,rear .	5
3	13429	Screw,hex. M10x40 10.9	10
5	10760	Nut,hex. M10	10
6	30998	Bracket .	10
7	31199	Screw,hex M12x50 .	10
8	10462	Washer M12 .	10
9	56448	Nut, locking M12 .	10
10	35431	Tip (replacement) .	10
11	35427	Wearing piece	10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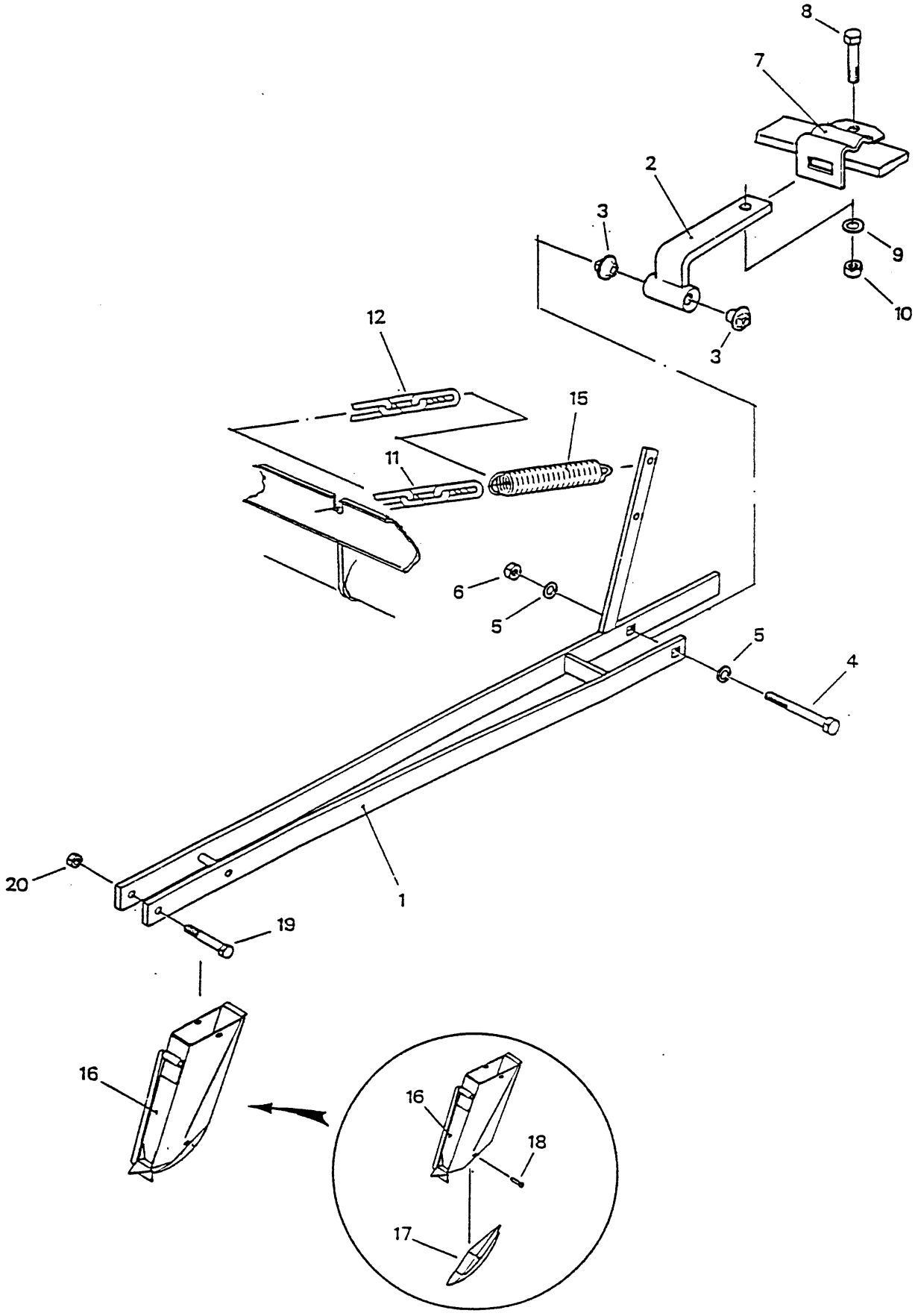
Item	Part.n:o	**FERTILIZER DISC COULTER**	Qty/unit 2,5
1	30998	Bracket .	10
2	31199	Screw, hex M12x50 .	10
3	10462	Washer M12 .	10
4	56448	Nut, locking M12 .	10
5	35422	Spring, coulter .	10
6	32478	Coulter boot, front .	5
x	32477	Coulter boot, rear .	5
7	32480	Funnel, front .	5
x	32479	Funnel, rear .	5
8	38409	Disc	10
9	52624	Z-lamell .	10
10	38410	Ball bearing 6304RS .	20
11	10719	Circlip A20x1,75	10
12	38407	Housing, bearing	10
13	56627	Cover .	10
14	52427	Circlip J52x2 .	10
15	10350	Washer, spring M8	10
16	30985	Screw, hex M8x25 .	40
17	13429	Screw, hex M10x40 .	10
18	10760	Nut, hex M10 .	10
19	32483	Rubber plate .	10
20	32484	Rubber plate .	10
21	58835	Screw, locking M10x40	30
22	10607	Washer M10 .	30
23	57379	Nut, locking M10 .	30

Items marked with x not shown.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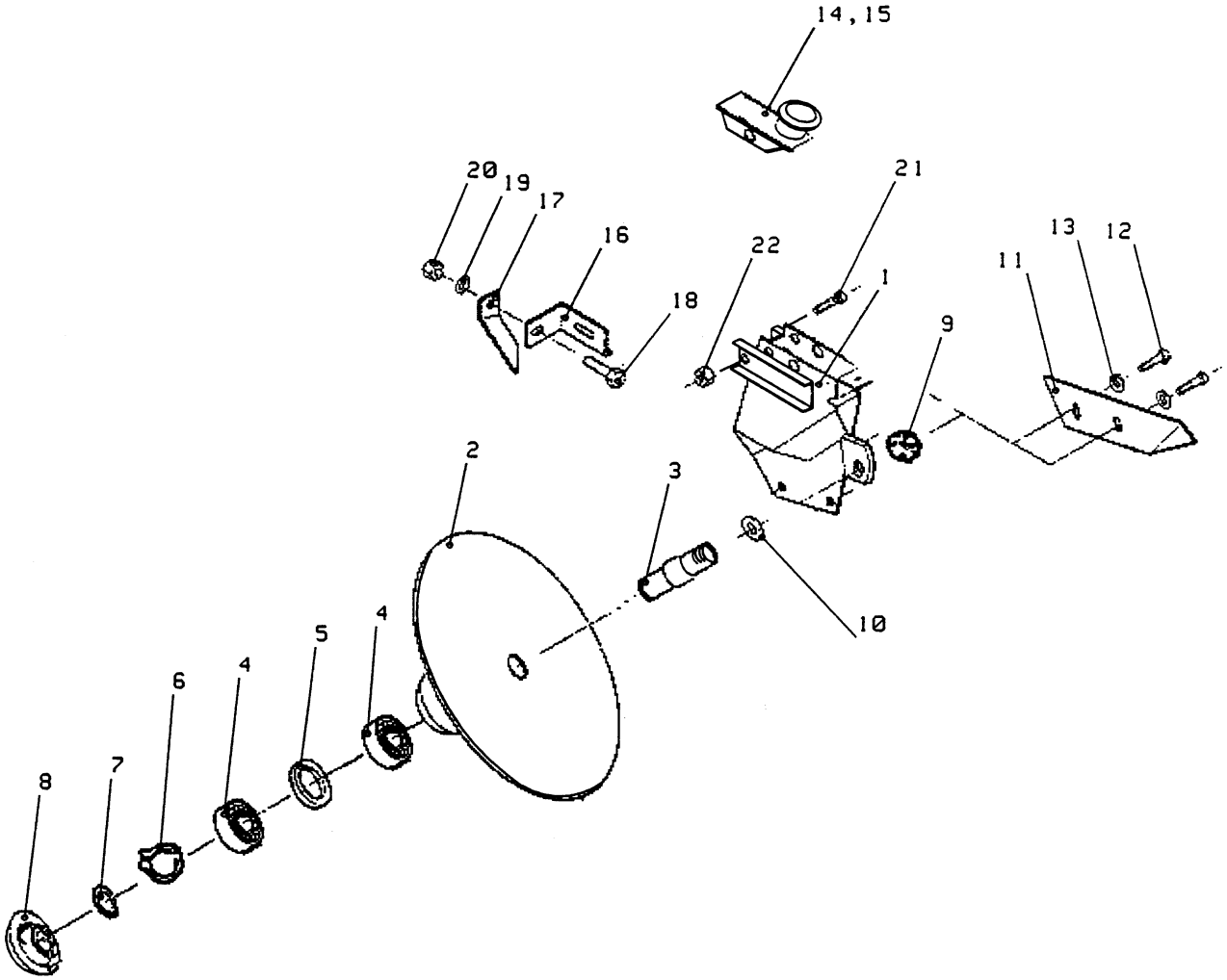
Item	Part.nr.	**SEED COULTER**	Qty./unit
1	31489	Arm, front coulter	10
1	31490	Arm, rear coulter	10
2	32401	Coulter bar	20
3	30474	Bearing	40
4	53362	Screw, hex M10x100	20
5	10607	Washer M10	40
6	57379	Nut, hex with nylon insert M10	20
7	31495	Bracket	20
8	31199	Screw, hex M12x50	20
9	10462	Washer M12	20
10	56448	Nut, hex with nylon insert M12	20
11	32464	Chain LH 4x16x6-7	10
12	32465	Chain LH 4x16x6-33	10
15	31499	Spring	20
16	**35430**	**SUFFOLK COULTER assembly**	**20**
17	31493	Tip	20
18	30429	Countersunk rivet 6x19	20
19	30252	Screw, hex M8x60	20
20	57550	Nut, hex with nylon insert M8	20
x	32451	Cover, front	10
x	32466	Cover, rear	10

Item marked x not shown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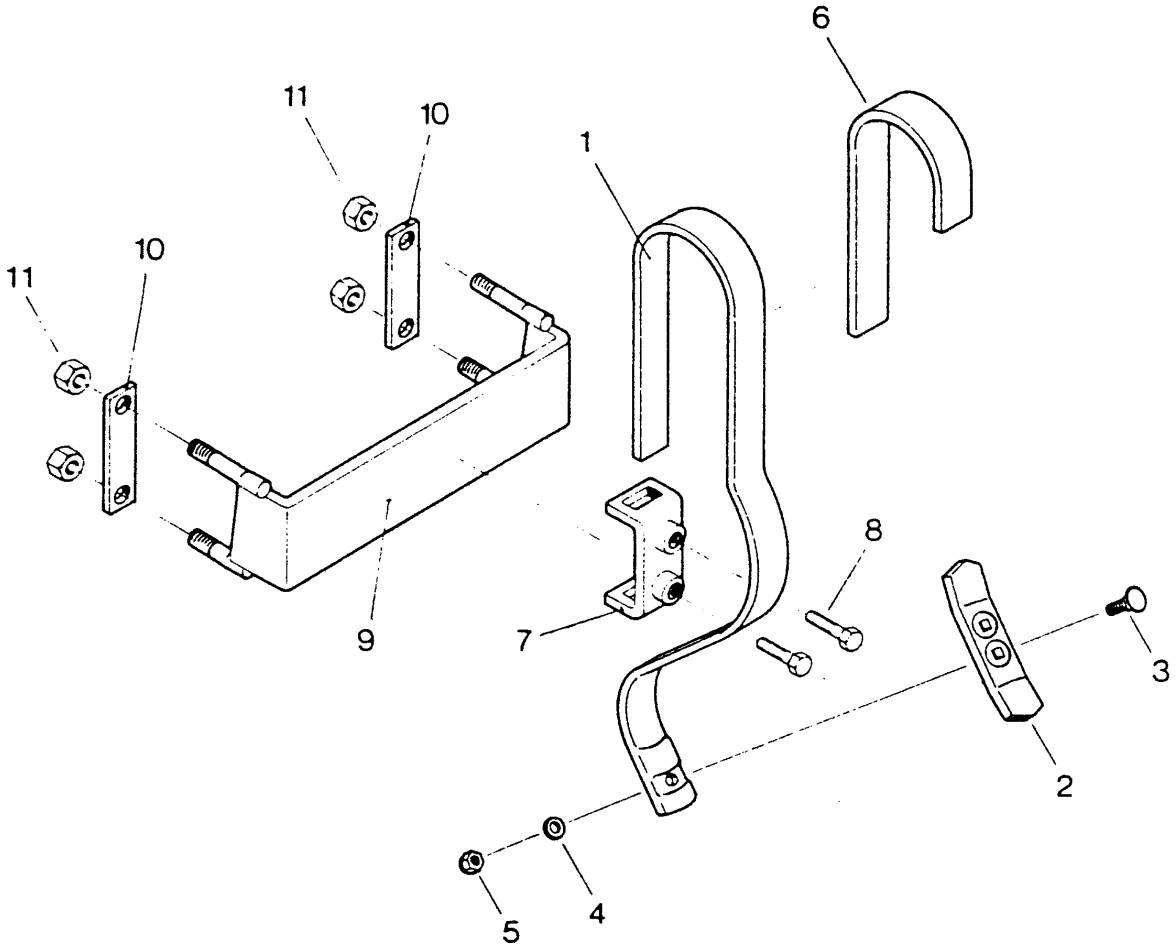
Item Part.nr. **WEDGE/DISC TYPE COULTER** Qty/unit

	320491	**WEDGE/DISC TYPE COULTER, rear, assy .**	**10**
	320492	**WEDGE/DISC TYPE COULTER, front, assy .**	**10**
1	32491	Funnel .	1
2	35434	Wedge/disc	1
3	35435	ashy	1
4	31729	Ball bearing 6201-2 RS	2
5	35441	Ring	1
6	35436	Circlip J 32x1,2	1
7	57374	Circlip A12x1 .	1
8	35437	RSV	1
9	30124	Nut, hex M 16 .	2
10	40151	Washer, spring M 16	1
11	32492	Scraper .	1
12	30255	Crosshead screw M 6x12	2
13	53503	Washer M 6 .	2
14	32451	Lid, rear	1
15	32466	Lid, front .	1
16	32493	Bracket .	1
17	32459	Scraper .	1
18	90667	Locking screw M 6x20	1
19	53503	Washer M 6 .	1
20	30261	Nut, hex M 6 .	1
21	58811	Screw, hex M 8x70 .	1
22	57550	Nut, hex M 8 .	1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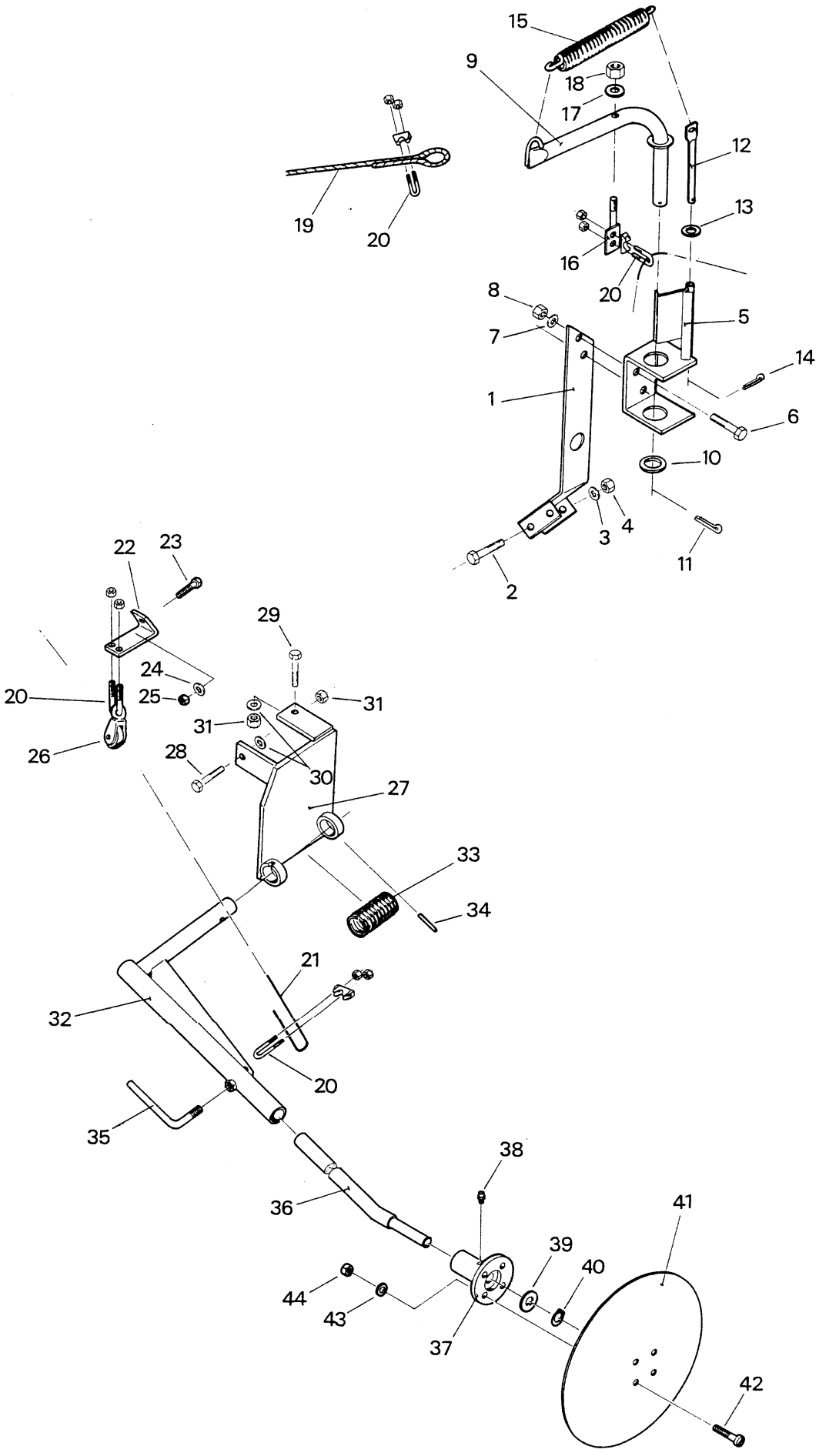
Item	Part.nr.	**TRACTOR WHEEL MARK ERADICATORS**	Qty/unit
	130822	**ERADICATOR TINE, assy .**	**2**
1	11845	Eradicator tine .	1
2	40448	Tip	1
3	58835	Flat countersunk square neck bolt M 10x40	1
4	10607	Washer M 10	1
5	57379	Nut, hex. M 10	1
6	13528	Assistor spring	1
7	33547	Bracket .	1
8	30952	Screw, hex. M 12x30	2
9	33548	Fixing ram .	1
10	33549	Fixing plate .	2
11	30968	Nut, hex. M 12	4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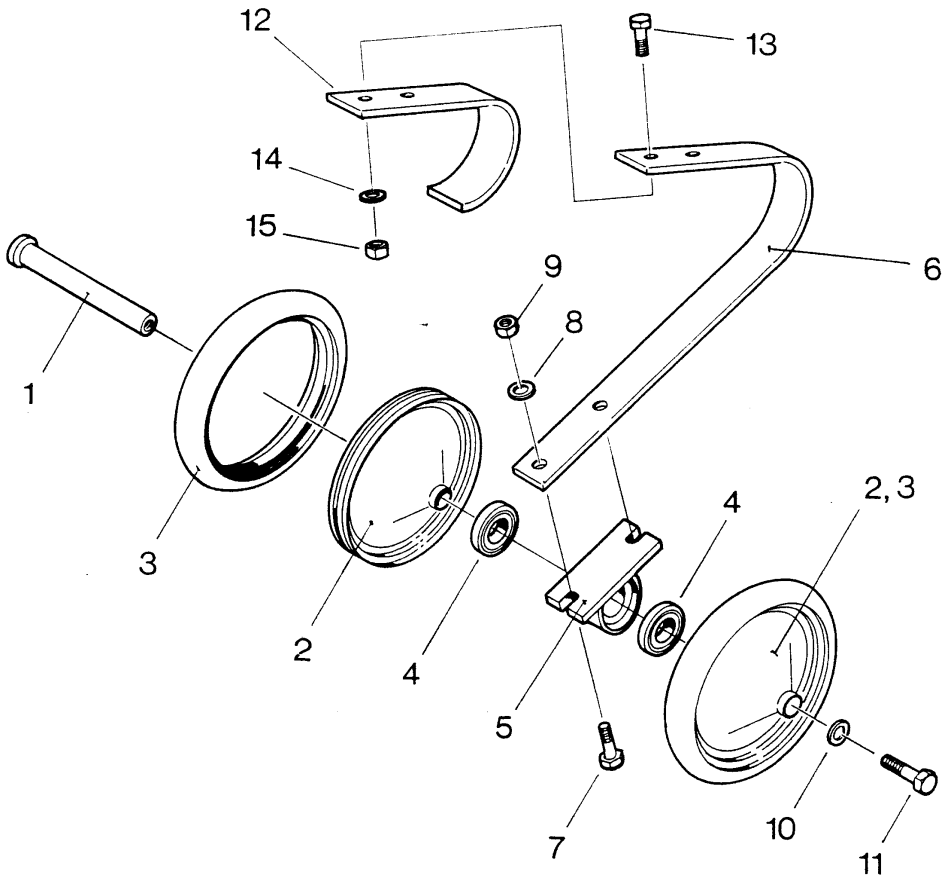
Item	Part.nr.	**ROW MARKERS**	Qty/unit
1	33526	Bracket, changing lever	1
2	30954	Hexagon bolt M 10x90	2
3	10607	Washer M 10	2
4	10760	Hexagon nut M 10	2
5	33580	Bracket	1
6	30952	Hexagon bolt M 12x30	2
7	10462	Washer M 12	2
8	30968	Hexagon nut M 12	2
9	33581	Bar	1
10	30754	Washer 36,5x55x1,5	1
11	30195	Cotter pin 5x50	1
12	33582	Fixing pin	1
13	53759	Washer 12,5x35x1,5	2
14	56241	Cotter pin 4x25	1
15	53710	Spring	1
16	33583	Adjusting screw	1
17	10462	Washer M 12	1
18	56448	Locking nut M 12	1
19	33584	Rope, D 10 L=2500	1
20	30196	Wire lock D 6,5	5
21	33532	Wire rope L=4300	1
22	33531	Bracket	2
23	30951	Hexagon bolt M 10x16	2
24	10607	Washer M 10	2
25	10760	Hexagon nut M. 0	2
26	13510	Pulley	1
27	33527	Bracket R.H	1
27	33528	Bracket L.H	1
28	57153	Hexagon bolt M 10x50	2
29	13526	Hexagon bolt M 10x120	2
30	10153	Washer spring M 10	4
31	10760	Hexagon nut 10	4
32	33529	Frame, row marker	2
33	10841	Spring	2
x	20406	Washer 30x40x2	2
34	10624	Split cotter pin 5x40	2
35	57360	Locking bolt	2
36	33530	Arm, row marker	2
37	31191	Hub	2
38	10761	Graese nipple M 8	2
39	31193	Washer 17,4x36x2	2
40	10719	Circlip A 20x1,75	2
41	10666	Disc	2
42	30970	Cross recessed cheese head screw M 8x20	8
43	10350	Spring washer M 8	8
44	30969	Hexagon nut M 8	8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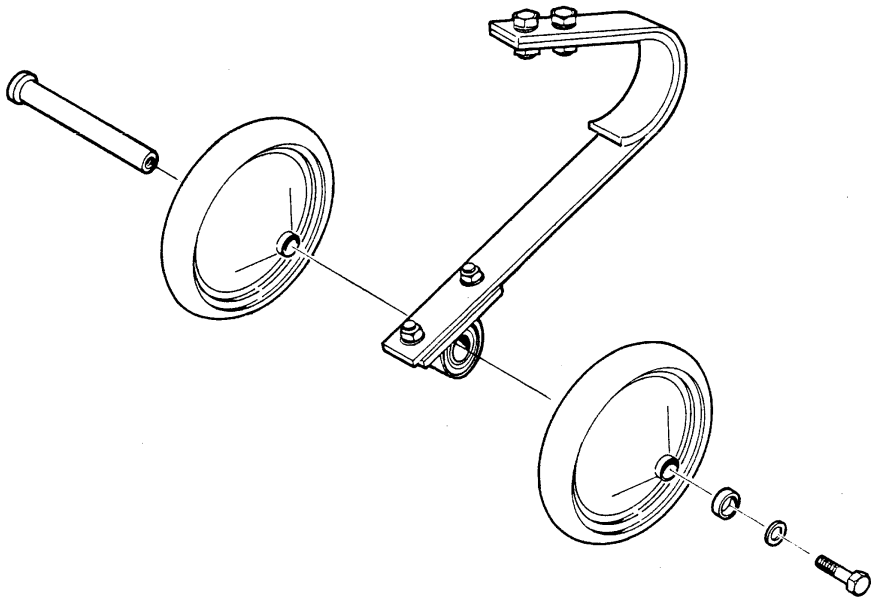

Viite Til.n:o	**JYRÄYKSIKKÖ**				Kpl/yksikkö	
Bild Best.nr			**TRYCKHJUL-**		Antal/enhet	
Item Part no			**SATS**	**PRESSURE ROLLER UNIT**	Qty/unit	
					2,0	2,5
	350551	JYRÄYKSIKKÖ, koottuna		TRYCKHJUL-SATS, kompl.	PRESSURE ROLLER UNIT, assy	4	5
1	35553	Akseli		Axel	Axle	2	2
2	35551	Vanne		Fälg	Rim	2	2
3	35550	Kumi		Gummi	Tyre	2	2
4	55175	Laakeri		Lager	Bearing	4	4
x	30263	Voitelunippa	M6	Smörjningsnippel	Nipple	2	2
5	35552	Pystylaakeri	SY25TF	Lager	Bearing	2	2
6	35548	Silmukkajousi		Ögglefjäder	Spring	1	1
7	30947	Kuusioruuvi	M10x35	Sexkantskruv	Screw, hex	4	4
8	10607	Aluslaatta	M10	Bricka	Washer	4	4
9	10760	Kuusiomutteri	M10	Sexkantmutter	Nut, hex	4	4
10	35554	Laatta	12,5x35x3	Bricka	Washer	2	2
11	30952	Kuusioruuvi	M12x30	Sexkantskruv	Screw, hex	2	2
12	35549	Tukijousi		Fjäder	Support.spring	2	2
13	58835	Lukkoruuvi	M10x40	Låsskruv	Lock screw	4	4
14	10607	Aluslaatta	M10	Bricka	Washer	4	4
15	10760	Kuusiomutteri	M10	Sexkantmutter	Nut, hex	4	4