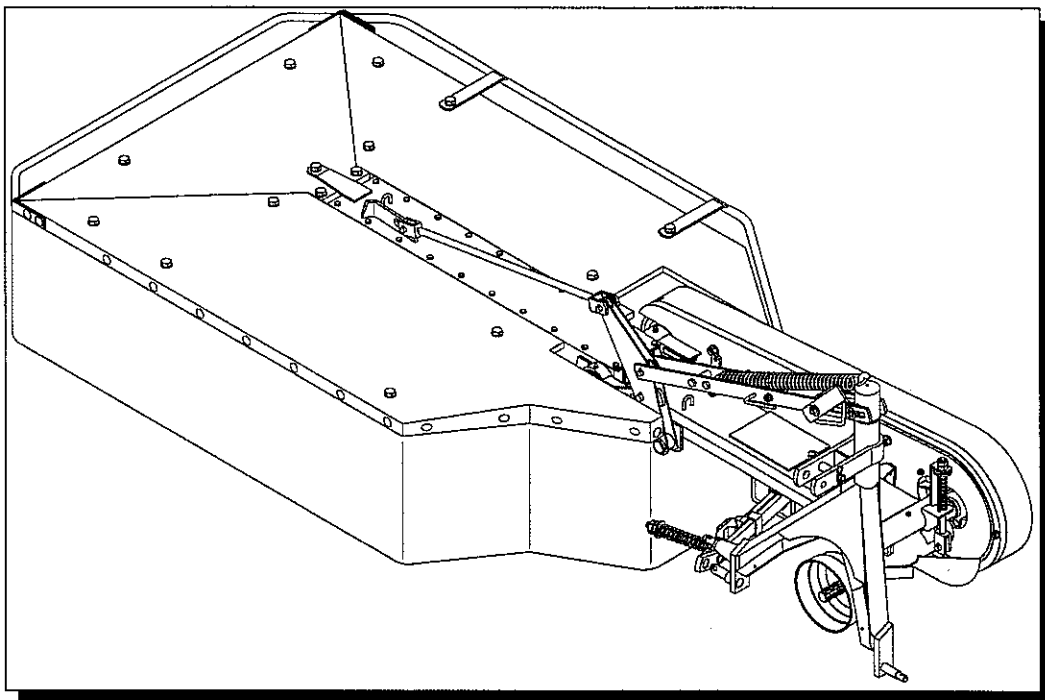


# Fransgård

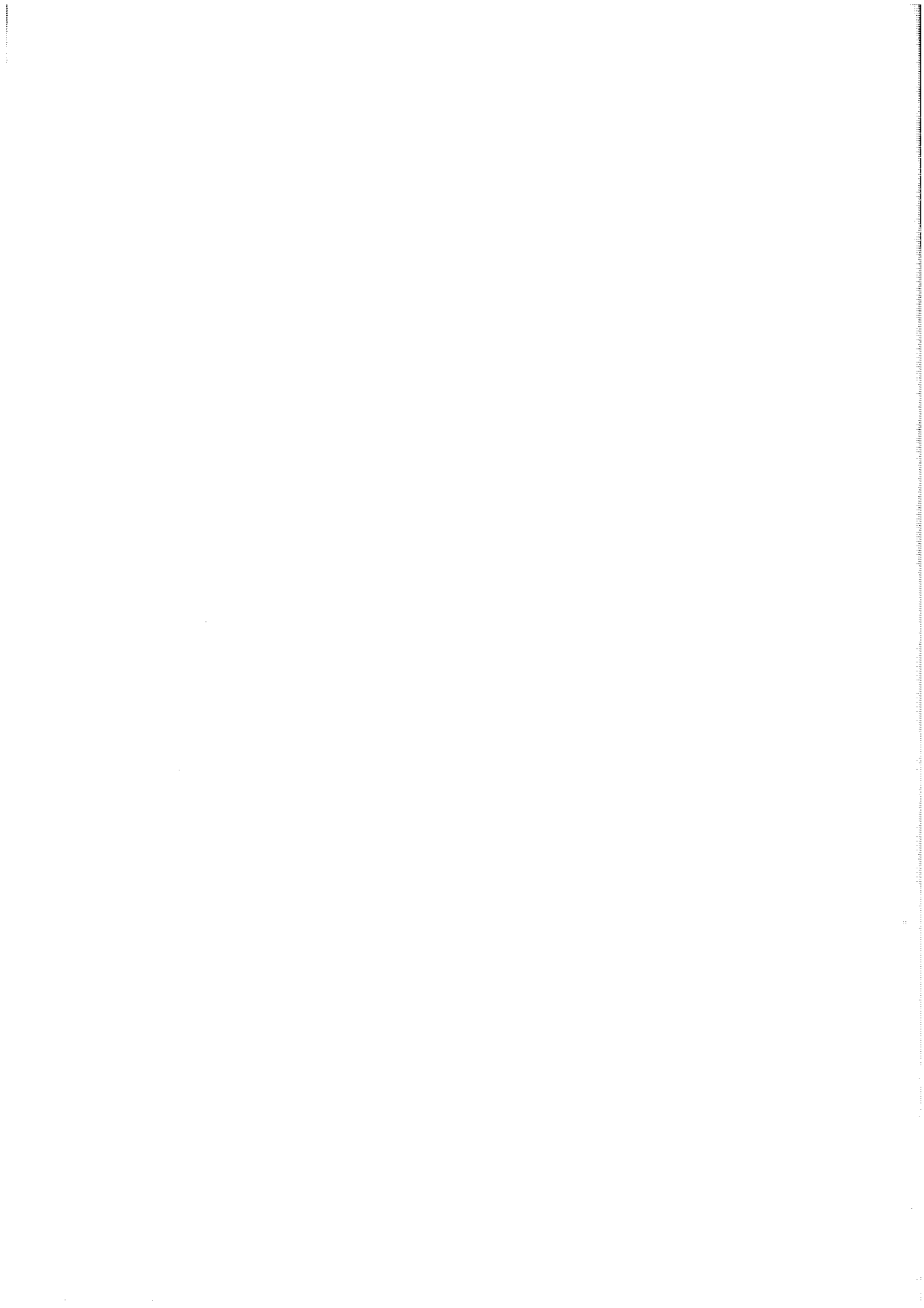
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## TR-165

### Rotary mower



From serial number : 130523



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Dear customer,  
you have become owner of a high-performance two-drum rotary mower TR-165. The following chapters will offer you the essentials relating to its work, its operation and maintenance. Please give these hints your full attention. You will be rewarded by the long service life and reliable performance of our product.

We wish to draw your attention in particular to the safety instructions protecting your person as well as other people against possible injury. Please read this instruction book well before launching the machine and keep it at hand for consulting it in the future. Only thus you can ensure long, safe and perfect operation of the machine and prevent accidents, while being entitled to enjoy the warranty of the manufacturer.

However, the manufacturer reserves the right to make any changes or adaptations that he considers necessary in the course of further improvements of this machine. These changes and adaptations do not entail any commitment of refurbishing machines that have already been shipped. In the light of these reasons the execution of your machine need not correspond with all details of figures in this operating instruction.

**The manufacturer will not indemnify any damage to property or health of persons caused by inobservance of these operating instructions or by violation of safety precautions or any other generally binding legal regulations.**

Unless the further text contains other specifications, the instructions of this guidebook are valid for all supplied modifications of the drum-type rotary mowers TR-165. For simplifying the instruction the following terms will be used :

- the word "machine" replaces the name "rotary mower TR-165".
- The word "set" replaces the expression "machine set tractor + rotary mower TR-165".

## WARNING SYMBOLS

Throughout the text of the instruction you will find symbols drawing your attention to the text adjacent to them. Wherever you see any of the following symbols, be alert and read the respective instruction with special care.



**ATTENTION!**

This warning safety symbol indicates important communications relating to safety and health protection during work. Pay particular attention to these operations, in order to prevent any accident involving your own person or others.

This safety informative symbol indicates important messages requiring very precise performance for preventing any damage of the machine or its environment. Neglecting this requirement may cause accidents and/or damage.



This warning symbol notifies the necessity to wait for full standstill of movable parts of the machine prior to its repair, maintenance or adjustment.



These safety symbols indicate the necessity of using appropriate protective devices (goggles, working gloves and shoes) when working with the machine, during upkeep and repairs.

## IDENTIFICATION OF MACHINE

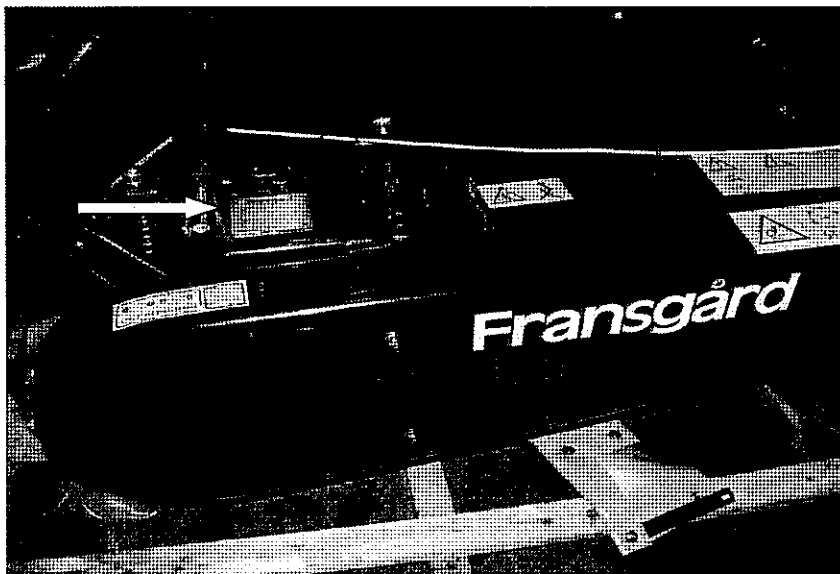
The machine is identified by its name plate and its serial number.

The name plate is placed on the frame of the machine and comprises the following data:

- name and address of manufacturer
- type of machine
- production year
- serial number
- mass of the machine
- the number of technical approval.
- the mark of compliance according to the Guideline 89/37/EF (only versions meeting the requirements for the designation with this mark)

<b>Fransgård</b>	
Fredbjergvej 132 . DK-9640 Farsø	
Type	TR-165
Kg	420
KW	25
Serie Nr.	
År	
Made in Denmark	CE
	114

Location of the name plate on the machine:



Please quote the identification data, i.e. the model, the serial number and production year, whenever you address the manufacturer with any technical questions concerning your machine. Please give them also when ordering spares.

## SHIPPED MODIFICATIONS

Rotary mower TR-165 = two-drum mounted rotary mower, working width 165 cm, the suspension, intended for coupling with tractors with three-point suspension category I or II, execution for exports.

## USAGE

The rotary mower TR-165 is intended for mowing thin haulm forage plants on level fields, without substantial incidence of stones. Its advantages are seen in its reliability and high performance even under very difficult conditions.

The machines should be coupled with tractors of 35-45 kW (see chapter "Technical characteristics"). The maximum accessible slope of the set is **12°** with front axle drive (4 wheel drive) tractors and **maximum 8°** with tractors without front axle drive.

The rotary mower TR-165 is intended exclusively for current farming purposes and may be used only in accordance with the instructions of the present manual. Its utilisation for other purposes is, such as cutting grass at road sides or on embankments is **out of question**.

## TECHNICAL DESCRIPTION

The rotary mower TR-165 is intended for coupling in the rear three-point suspension of the tractor. It comprises the following main assembly groups:

### Hitch

-serving for coupling the machine with the three-point-suspension of the tractor. The three-point hitch execution enables coupling of the machine in the three-point-suspension of the first and second category.

### Frame (2 in Fig. 1 )

The frame is the main carrying element of the machine. It has pivoted connection with the hitch and the mowing device.

### Machine drive

The torque of the rear p.t.o. shaft of the tractor is transmitted via the p.t.o. drive shaft, the countershaft and the V-belt transmission. The mowing drums are driven with bevel gears.

An idling clutch incorporated in the transmission protects the drive system of the machine and the tractor against overload due to inertia of the rotating masses of the mower drums in case of sudden drop of the engine speed. The machine have an idling clutch as a component part of the p.t.o. drive shaft.

The V-belts are automatically taut by a spring.

### Mowing device (3 in Fig. 1 )

The mowing device has two drums. The flange of each drum carries three pivoted knives on resilient holders. Disks attached under the drums support the machine during work and determine the height of the stubble. The central part of the disk can be replaced separately, when worn.

### Protective guard (4 in Fig.1 )

The machine is provided with protective guards for preventing any unintentional contact with its rotating parts and as a protection against flying stones or other objects that can be propelled by the rotary components. The V-belt transmission system has sheet metal guards, the mowing device has a steel sheet guard at the top and resilient and heavy-duty canvas at its circumference.

## TECHNICAL CHARACTERISTICS

Working width of the machine [mm]		1650
Dimensions of the machine	- width [mm]	3050/1840
	- length [mm]	1270/3070
	- height [mm]	1100
Mass [kg]		445
Number of working units - drums		2
Speed of drums [r;p.m.]		1820
Number of knives		6 (2x3)
Height of stubble [mm]		30
Capacity (according to working conditions, max.) [hectares per hour]		2, 1
Accessible slope[ °] *)		12/8
Working speed (according to working conditions, max.) [km per hour]		15
Power means -tractor, capacity [kW]		35 - 45
P .t.o. speed [r.p.m.]		540
Three point suspension category		I./II
Transport speed, max [km per hour]		15
P.t.o. drive shaft . **)		7 104061 CE 007096
Operator		tractor driver

\*) According tractor to be used

\*\*) According to actual modification

## NOISE OF THE MACHINE

The noise level of the machine was measured according to the respective document for testing methodology:

HM agricultural Inspectorate  
 Agricultural Machinery Noise  
 Legislation and guidance on methods of testing  
 (Annex to AIC 1986/117 REV)  
 February 1988  
 Health and Safety Executive

The applied proceedings complied with method No 4 described in the above document. In the absence of other statements, the test conditions were identical with conditions stipulated by the ISO 5131 standard.

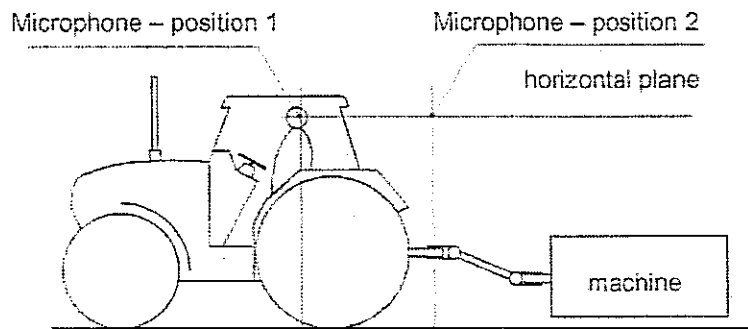
Over the whole testing period the machine set was standing on an area covered with grass and running with 540 r.p.m. of the p.t.o. shaft.

The capacity of the coupled tractor was 50 kW.

Measured data:

Cab window	Microphone 1 L (a) ekv		Microphone 2 L (a) ekv	
	opened	closed	opened	closed
tractor	74,5	73,9	80,5	79,5
tractor + TR 165	84,6	76,7	91,9	90,7

Measuring diagram:

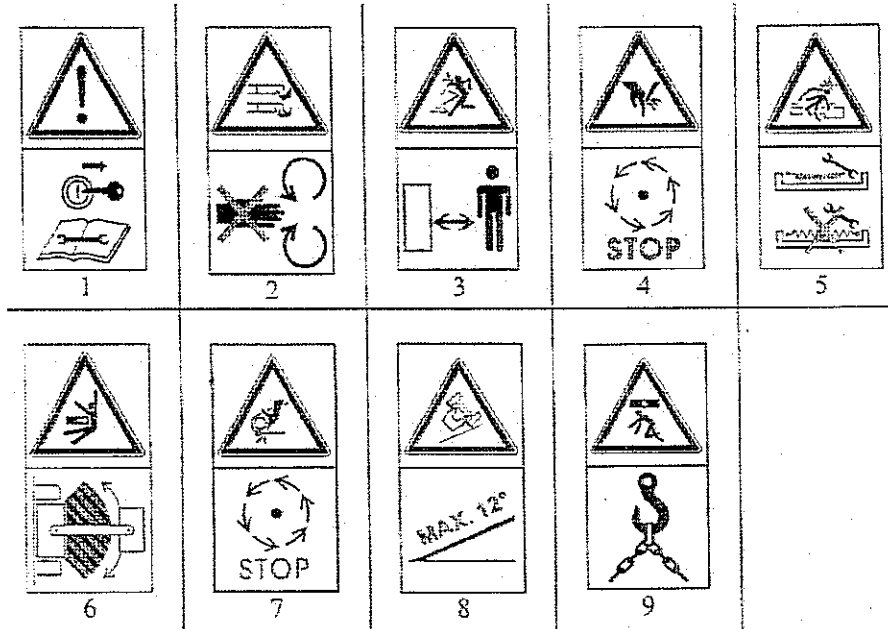




## WARNING LABELS

The warning labels indicate places with augmented risk of possible injury and remind the operator of operations to be performed or handling to be prevented for reducing or fully eliminating such risk. The meaning of the respective labels is explained in the following table.

The warning labels can be applied in vertical or horizontal arrangement. Their sense is not affected by such arrangement in any way. In case of damaging the label you can order a new one, using the code number in the table. Fig. 14 shows the emplacement of the labels on the machine.



Ser. No.	Message of warning label	Code
1.	Stop the engine and take out the switch key prior to unkeep and repair.	0282689
2.	Keep safe distance from the working elements as long as the engine is running.	0282700
3.	Keep safe distance as long as the engine is running.	0282700
4.	Do not touch any moving machine part. Wait for full standstill of all parts.	0282700
5.	The spring shall be installed and removed without any remaining tension.	0282172
6.	When converting the machine from working position to transport position and vice versa stay clearly off the involved area.	0282711
7.	Wait for full standstill of all moving parts of the machine before checking the V-belts.	0296736
8.	Never work on slopes exceeding 12°.	0301829
9.	Attach the hoisting device to marked spots only.	0302071

## OPERATING SAFETY INSTRUCTIONS

Observe the following basic rules for safe operation, in order to prevent injuries due to insufficient knowledge of the machine or inattentiveness of the operator



ATTENTION!

1. The machine may be operated by persons over 18 years of age who are physically and professionally capable to do so and offer evidence of having been instructed about the safety regulations and principles of safe work with no abuse to health, having learned the present instructions and knowing this machine. **Children or persons not familiar with the operating instructions are forbidden to operate this machine.**
  2. **It is forbidden to operate the machine under the effect of alcohol or other intoxicating drugs.**
  3. **It is forbidden to use the machine for any purpose other than specified by this instruction book.**
  4. Observe valid regulations for safe work with no abuse to health and all instructions of this handbook when operating the machine.
  5. Before starting to work check the technical condition of the machine and its functionality from the viewpoint of safety. Check the rotary parts of the machine for proper fixation and locking, especially the knives and the p.t.o. drive shafts. Check also the tightening of all screws and bolts of the machine.
- 
6. Carry out any checks, adjusting, upkeep, installation, repair and similar work exclusively on a standing machine with working elements at standstill. If the machine set is coupled with a tractor, switch off the engine of the tractor. Secure the machine set properly with wedges against rolling.
  7. Use always only the original p.t.o. drive shafts with immovable guards that are specified by the manufacturer of the machine.
  8. The p.t.o. drive shaft guards shall be secured against rotation by chains. Check their condition and their attachment regularly.
  9. It is **forbidden** to work with a damaged p.t.o. drive shaft or its damaged guard or defective fixing chains, either.
- 
- ATTENTION!
10. The machine shall always be provided with all covers and guards the condition of which ensures their protective purpose. Do not work without them by any means.
  11. **No other person may be in the radius of 50 metres** when the machine is being started and operated. If the operator notices a person in this dangerous area, he is obliged to switch off the machine and order the person out. The work may be continued only after that person will have left the dangerous zone.
- 
- ATTENTION!
12. Adjust the working speed to the existing working conditions. Mind that the maximum speed under ideal conditions is 15 km per hour. Adjust the driving speed also to the shape and slope of the field, to the humidity and cohesiveness of the surface.
  13. Avoid rapid changes of speed and direction when operating on a slope. Remember the **maximum slope accessibility for the machine set is 12° if the tractor has 4-wheel drive and not more than 8° for tractors without powered front axle.**
  14. It is not permitted to raise the speed of the p.t.o. drive shaft over 540 r.p.m. during operation.
  15. Do not operate the machine on fields where stones have been neither collected nor rolled into the soil (in particular when harvesting forage plants sown on arable land, such as clover, alfalfa etc.)



16. Due to the inertia masses of the working elements the machine continues to run out even after the drive has been switched off. Before approaching the machine and handling the same wait until all moving parts come to full standstill. The run-out time is about 2 minutes after switching off the drive.
17. The transport speed shall not exceed 15 km per hour .
18. In case of any sudden deterioration of health (sickness, tiredness etc.) that might cause reduced safety stop working and do not operate the machine
19. Upon terminating or interrupting work, during breaks or any time the operator leaves the machine the set shall be secured against spontaneous switching on, rolling or misuse by an authorised person. The machine should always be left on the ground.
20. The full scope of safety regulations and principles specified in the operation handbooks for the respective tractor apply for the machine set.
21. Do not forget the operator/user is liable for any accident or damage caused to other persons or their property by the operation of the machine.
22. This machine can cause even a serious injury due to inobservance of the safety instruction and/or inattentiveness during work.
23. During installation, coupling and uncoupling, repairs and maintenance of the machine use protective gloves, goggles and shoes.
24. Observe and meet the safety hints of the warning symbols provided at the risky parts of the machine. Their sense is explained in chapter "Warning labels".



#### TRANSPORT ON PUBLIC ROADS

1. The haulage of the machine over public roads is allowed in the prescribed transport position. Convert it to working position only after having arrived to the field. (See chapter "Preparation of machine for work").
2. The tractor shall be provided with weights to ensure that the load of the front axle with the machine in the specified working condition will achieve at least 19 percent of the machine set mass.
3. Any transport of persons and/or objects on the machine is forbidden.
4. The transport speed of the machine coupled with the respective tractor (see chapter "Technical characteristics") **shall not** exceed 15 km per hour.



**ATTENTION!**

#### FIRE SAFETY

1. Check and clean the area around the V-belts and the internal p.t.o. drive shafts at least after every 50 operation hours.
2. Check the rotating parts of the machine regularly, when harvesting crops that tend to get wrapped. Remove any wrapped-up material immediately.
3. Prior to welding operations clean the machine from debris and impurities that could catch fire.



**ATTENTION!**

## OPERATION OF MACHINE



**ATTENTION!**

**Prior to any handling or repair the mower shall be lowered to the ground or be properly supported, the tractor engine switched off and the set secured against rolling.**

After factory running in the V-belts have been released to prevent their damage during keeping at stock. Tension them according to the instructions in chapter "V-belts" prior to the first use.

### **Coupling the machine**

The machine should be attached to the rear three-point-suspension of the tractor. The machine can be attached to the suspension of category I or II. It is recommended to dismantle the suspension for coupling trailers from the tractor.

If you couple the machine into the suspension of category I, use pins 7 and 8 (pin diameter 22 mm), and pin 7a for suspension II (diameter 28 mm) and pin 8 onto which sleeve 9 from the accessories should be inserted (all in Fig. 1 ).

The third point shall be attached by connecting one end of the upper pull-rod 10 (Fig. 3) with the hole of the tractor bracket, the second in one of the holes in the bracket of the machine hitch. The machines have the upper two holes for category II, whereas the bottom hole serves for category I. You can use any combination of holes of the tractor and machine for connecting them. Please adjust the length of the upper pull-rod so as to ensure the flanges of the drums of the mower in working position to be either horizontal or slightly inclined forward. By no means the machine may be inclined to the rear in order to prevent forage loss due to double cut. Secure all three points with lock pins and adjust the right bottom pull-rod of the tractor suspension so as to allow simultaneous lifting of the mowing drums in working position.

Set the p.t.o. drive shaft between the p.t.o. of the tractor and the intake shaft of the machine. Check whether the securing pins have correctly meshed in the circumferential grooves of the p.t.o. shaft and the intake shaft. Attach the chains of the protective guard onto rigid parts of the tractor and the machine, however, leave sufficient play to compensate for mutual movements. The p.t.o. drive shaft that is part of standard delivery has a safety clutch and an idling clutch. **The p.t.o. drive shaft shall always be used with the idling clutch at the side of the machine** (Fig. 4).

**ATTENTION !**

The length of the shipped p.t.o. drive shaft has been selected for coupling the machine with tractors of the recommended performance and provided with a three-point-suspension of the respective category (considering international standards effective at the time of the machine manufacture). Nevertheless, it is recommendable, especially if you use an older tractor or a less current one, to check the maximum length of the shaft getting in and out during the first coupling of the machine. If necessary you can shorten the p.t.o. drive shaft (see instruction for its use) or you can use a longer p.t.o. drive shaft of the same performance and execution.

## Transport position

If the machine is in working position (Fig. 1 ), please proceed as follows to convert it to the transport position:



**ATTENTION!**

**If you are on sloping land, position the machine set so as to prevent unprompted or uncontrolled motion of the machine after unlocking the working position. Switch off the tractor engine and secure the set against unprompted rolling!**

- Remove the p .t.o. drive shaft 12 (Figs. 1 and 3) from the tractor and put it on the hook of the machine hitch
- Lift the machine by hydraulics to about 10 cm above the field
- Tilt bar 15 (Fig. 3) to its upper position against roller 16 (Fig. 3)
- Remove shock safety 14 from pin 17. Remove it always from the rear, i.e. from the side of the V-belt guard, due to safety considerations!
- Move the machine to transport position using tube 18 (Fig. 1) at the rear part of the case to handle it. Turn the machine, until the safety pin 19 (Fig. 5) on the machine frame will have snapped. Make sure pin 19 meshes correctly and over the whole length of its stroke.
- **Never enter the area between the machine and the tractor when converting the machine from transport position to working position.**



**ATTENTION!**

## Uncoupling the machine

It is recommended to use an even and reinforced surface for putting the machine aside. The procedure (uncoupling from the tractor) is as follows (the machine is in transport position):

Lower strut 2 a (Fig. 3) to its bottom position and secure it with lock pin. Lower the machine on the ground.

Uncouple the machine from the three-point-suspension links of the tractor.

## Preparation of machine for work

**ATTENTION !**

If the machine has been out of operation for more than a month, check the oil fills and lubricate the machine before re-starting operation (see also chapter "Lubrication of the machine").

Before driving to the field check the tightness of the V-belts, the condition and the completeness of guards and covers, of knives and knife holders, of the drums, the flanges and the disks. Try whether the drums and disks are freely pivot able.

Check (at least by sight) the overall condition of the machine -the tightening of screws, completeness of the machine and possible damage. Remove defects, if you find any. Carry out the actual preparation of the machine for work after having arrived to the field. Proceed as follows:

If you are on sloping land, position the machine set so as to prevent unprompted or uncontrolled motion of the machine after unlocking the working position.  
Switch off the tractor engine and secure the set against unprompted rolling!



**ATTENTION!**



**ATTENTION!**

- Lower the machine to about 10 cm above the ground
- Release the copying device by opening (tilting) bar 15 (Fig. 3)
- Release the lock pin of the transport position by pulling handle 22 (Fig. 5) at the rear part of the guard. Then slowly turn the machine forward down to stop 23 (Fig. 1) determining the working position of the mowing device. Adjust the stop so as to allow free insertion of the shock safety onto pin 17 (Fig. 1 and 3) of the hitch.
- **Never enter the area between the machine and the tractor when converting the machine from transport position to working position.**
- Put the shock safety onto pin 17 (Figs 1 and 3) and lock it. Insert the safety always **from the rear**, i.e. from the belt guard side, due to safety considerations!
- Connect the p.t.o. drive shaft 12 (Figs. 1 and 3) and attach it with chains to rigid parts of the tractor and the machine (further necessary data regarding the operation of the p.t.o. drive shaft see the separate operating instruction for the same).
- Lower the machine to the ground so as to have the frame in horizontal position or slightly inclining away from the tractor.

Perform further necessary interventions prescribed by the operating instruction for the tractor.

### Starting and stopping the machine

Start the machine slowly in working position, outside the crop and under low engine speed. When the machine rotates you can gradually increase the engine speed, until the rated working speed will have been achieved (the tractor p.t.o. has 540 r.p.m.).

**ATTENTION !**

It is recommended to set the above speed with the manual control lever of the injection pump, without any change during work. Due to inertia of rotating mass of the machine the gears are subject to stress impairing their life when the speed is changed

Stop the machine outside the crop, in working position, by switching off the p.t.o. Only now you may reduce the engine speed. After switching off the p.t.o. drive check (**by listening**) the correct operation of the idling clutch that is part of the transmission system and makes itself heard by regular loud ticking until all rotating parts of the machine are at full standstill. An unfunctional idling clutch results in high load of the transmission mechanisms of the machine and the tractor. That is why it must be immediately repaired. It is advisable to make use of an authorised service shop of the manufacturer for repairing the idling clutch integrated in the p.t.o. drive shaft.

### Mowing

Observe the following instructions with respect to safety and health protection during work:



**ATTENTION!**

- The operator is responsible for keeping any unauthorised person out of access to the machine set. Never leave the machine running in the absence of the operator.
- It is **forbidden** to work with the mower in groups or whenever there are any persons within a radius of **less than 50 m**. There is danger of serious (even fatal) accident.
- When harvesting along roads, buildings etc. select the direction of travel so as to prevent material from being propelled to spaces where it might cause any injury or damage.
- Before starting operation check the technical condition and functionality of the machine from the viewpoint of safety. Focus in particular upon the condition of protective guards, knives, knife pins and their nuts, discs and drums.
- Under unfavourable conditions of the climate, the weather and the particular field adjust both driving speed and manoeuvring to the conditions of the ground.

- When the work is over or has been interrupted, during breaks or when the operator is absent, the machine shall be secured against unprompted starting, rolling or misuse by unauthorised persons. Pay special attention to the presence of children. Leave the mower always resting on the ground.

As far as possible, with respect to the shape of the field and its surface, start mowing from the centre of the field and continue to the borders. This working procedure can minimise wildlife losses, while reducing impacts upon foreign objects (stones etc.) occurring especially at field borders.

Maintain the arms of the three-point-suspension in a position allowing the tow bar to stay horizontal during work. Working with lowered arms impairs copying of the field surface. Also the V-belt guard can be damaged and forage can get wrapped-up on the intake shaft of the machine.

Do not lift the machine in working position with connected p.t.o. drive shaft more than necessary, as the travel with lifted machine and switched on drive reduces the service life of the p.t.o. drive shaft.



The machine is protected with shock safety 14 (Fig. 1) against possible damage due to hitting a stationary obstacle. If the machine hits an obstacle by any part of the mower, the shock safety is released and the machine tilts backwards. In such case you should stop and reverse, until the shock safety engages again. Then switch off the tractor engine and after all moving parts of the machine are **at standstill** check the mower for possible damage (such as knives getting broken or bent). Repair possible defects, remove the obstacle or bypass it and continue working.



It can happen that you hit a stone that is pushed by the mowing device (it can be perceived according to ringing noise of the knives hitting the stone), stop immediately, switch off the machine drive and remove the stone only after the drums are at a **full standstill**. The pushing of stones in front of the mower can destruct the knives and damage the knife pins and the drums. Before restarting work check the condition of the drums, knives and knife holders.

Beware of endangering wildlife during work. In addition to the mentioned proceeding from the centre of the field towards the margins it is recommendable to use some of the universal deterring devices intended for being arranged on the tractor.

### Work on slopes

**There is no working on slopes exceeding 8° for a machine set having a tractor without front wheel drive and 12° is a limit for a machine set with a 4-wheel drive tractor.**



**ATTENTION!**

Be particularly cautious when working on slopes. Adjust the speed and the manoeuvring to the condition of the field and its surface (dry-wet). When mowing (driving) along the contour lines the machine should be at the side towards the slope; this improves the stability of the machine set and reduces its tendency to slip down the slope.

Reduce forward speed and do not lift the machine above the ground at headlands (when making turns). After having ended your work convert the machine to transport position only after having left the slope.

Observe also further limitations specified by the tractor manufacturer.

## Termination of work



### Switch off the tractor engine and secure the machine set against spontaneous rolling!

Clean the machine from rough impurities (e.g. by knocking off impurities sticking to the canvas etc.) and reset it to transport position as described above.

**ATTENTION!**

Carry out further necessary operations as described by the tractor operating instruction for this case.

## ADJUSTMENT, MAINTENANCE AND REPAIRS OF THE MACHINE



As regards safety and health protection during work, meet the following - instruction during upkeep:

**ATTENTION!**

- Any adjustment, upkeep or cleaning jobs and any trouble shooting may be carried out only after the engine has been switched off and the machine set secured against unprompted motion.
- When working on a lifted mower, make sure it is secured with appropriate supports.
- Use exclusively original spare parts for repairs, shipped either directly by the manufacturer or by the network of his dealers. If you replace any bolts or nuts, the new ones must fully comply with the quality and dimensions of the original ones.
- The figures in the catalogue of parts comprise the tightening torque of important threaded joints; these torque data should be observed during repairs.
- Always put (suspend) the lifting device in appropriate places provided with respective marks.
- If you check the machine run do not stand in the area in front of the rotating working elements, nor allow this to anybody.
- For any maintenance and repair use always protective' safety means (working gloves, goggles and shoes).
- Keep the whole machine clean, lubricate it regularly and perform the specified upkeep operations.
- Keep all warning decals, symbols, colour marks and inscriptions clean and visible. Renew the marks, if damaged, in accordance with the original execution.



## Knives



**Stop the tractor engine prior to any knife handling!**  
**Use exclusively original knives.**

**ATTENTION!**

The knives (Fig. 6 a) used in the TR-165 machines have both sided edges. When one side is blunted, the knife can be used for a disk or drum with opposite rotation sense. The knives on one drum shall be either worn to the same extent or be new, in order to prevent any disturbance of the dynamic balancing. If you find that there is a knife missing or broken on some drum, install new knives immediately.



Lever 24 (Fig. 7) from the machine accessories is useful for exchanging the knives. Set the lever against the bottom edge of the drum flange and using the pin of the holder press away the resilient holder at the bottom end of which the knife is attached on a pin. Remove a damaged or blunted knife and insert a new one. **Check whether the pin of the holder has returned to its original position and whether the knife can freely pivot on its pin.** This inspection is most important, since an improperly attached knife can flyaway when the machine starts rotating and cause an accident.

When replacing a knife remove rests of fodder around the pins, the knife holders and possibly also from the internal area between the drum flange and the disk.



Due to the friction between the knife and its pin the knife gets worn next to the pivoting hole. If you install a knife that has been already used check whether its hole is not worn more than permitted according to Fig. 6b or whether there are any cracks around it.



**ATTENTION!**

The rotary mower **shall not be provided with a knife damaged in any way.**

Next to the fixing hole the knife carries an embossed number code allowing the manufacturer to establish production data of the respective knife. Please quote this code whenever you may claim the service life or the workmanship of a knife.

### Knife holders



**ATTENTION!**

**Due to the friction between the knife and its pin the neck of the knife pin 25 (Fig. 8) gets worn in the course of some time. If the thickness of the neck has dropped under 10 mm, replace the knife pin, as there is imminent danger of its getting broken and of the knife being flung away.**

The holder shall also be replaced, if the pin of the holder gets loose (releasing of the riveted pin head) or if the border of the holder around the pin gets worn under the margin shown in Fig. 8.

Please check the condition of the knife holder and of the pin whenever you replace a knife.

When replacing a worn or damaged knife holder use the following sequence:

- Dismount the plate of disk 26 (Fig. 9) in the central part of the disk.
- Remove the support disk 27 (Fig. 9); it is preferable to use the stripping tool shipped by the manufacturer as extras (see chapter "Extras").
- Remove the worn knife holder 28 and put a new one in place. Tighten the nuts with 160+200 Nm and secure it by bending the washer.
- Use exclusively blameless original bolts and nuts for attaching the knife holders.

After a certain operation time the bottom side of the flanges of mowing drums get worn next to the mowing knives. If the wear is so intense as to causing danger of warping or rubbing through of the mowing drum flanges, the knife holders should be shifted so as to allow the knives to bear against an unworn part of the drum flange circumference.

- Remove the plate of disk 26, the support disk 27 and the knife holders 28 (Fig. 9), the same way as when replacing knife holders.
- Shift the drum on its bolts by one spacing (i.e. 40°) and return the knife holders, the support disk and the disk plate. Tighten the nuts of the knife holders with 160 +200 Nm torque and secure them by bending the washers.
- Use always perfect original bolts and nuts for installing knife pins

**ATTENTION !**

After having spaced the knife holders the mutual position of the knives and the knife holders according to Fig. 8 shall be maintained.

### Mower case

The case of the mowing device 27 is heavily strained during work. That is why cover 30 is very sturdy and fastened with a plurality of bolts 31 (everything in Fig. 9). These bolts shall always be properly tightened and none may be missing. Check their tightening in a new machine or not later than 8 operation hours after a repair and currently at least once a week. Tighten the bolts with 53+65 Nm torque.

If you are going to renew the seal strips at the case cover (e.g. following a repair), use exclusively the original seal that shall be glued to the same place as the original one.

## Support disk

The central area of support disks 27 (Fig. 9) gets worn during operation. After a certain time, depending upon the character of mown fields, consequently, the exchangeable plates 26, and later also the support disks can get worn through. That is why you should check the plates and the support disks now and then and replace them for new ones, if needed. You can dismount the plate after having screwed out four bolts with internal hexagonal head.

## Shock safety

If it happens (e.g. in very heavy crop) that the shock safety is actuated spontaneously, without any hindrance that the machine might contact, adjust the pressure of the safety spring by tightening nut 32 (Figs. 2 and 3). Please pay attention to avoid pushing the spring threads together down to stop. Accordingly, you are well advised to drive slowly under heavy conditions.

## V-belts

The V-belts are very strained component parts of the machine and that is why they require appropriate attention. Adapt the travel speed of the tractor to the working condition for preventing excessive load of the engine. Over loading the machine results in slipping V-belts and their quick warming up, the consequence of which is their reduced life. If one V-belt breaks, you shall always replace the whole set.

All V-belts of the machine are taut with a spring type tensioning device (Fig. 11) ensuring steady and sufficient tautness of the V-belts. The tautness of the V-belts is correct, if the distance ~ between indicator 33 and the support 34 is less than 3 mm. If this distance exceeds 3 mm, you should tighten the nut 35 of the tightening screw 36 until the indicator rests against the support. Then lock the nut.

The V-belts are getting loose especially during the first hours of operation. Please, pay special attention to them during that time.

You can check the condition and the tautness of V-belts by touch after having opened the lid on the V-belt guards.

**Wait always for full standstill of the working elements before opening the lid!**

## Stubble adjustment

The height adjustment can be achieved, at least to a certain extent, by changed inclination of the machine by shortening or lengthening the upper pull rod 11 (Fig. 3) of the three-point-suspension of the tractor. Shortening the pull rods results in shorter stubble, lengthening in higher stubble. **You may by no means allow backward inclination of the machine for preventing forage loss through double cut.**

## Bevel gears

**ATTENTION !**

All bevel gears used in the machine have spiral teeth and are produced in pairs. They can not be replaced one with one, but exclusively as a pair.

## Balancing the drums

**ATTENTION !**

With respect to the high working speed of the drums, even a minor disbalance causes vibrations that can result in major damage of the machine. That is why the drums are balanced in the factory. If there is a marked increase of vibrations during the operation, or if you notice some change in the noise of the machine, stop the work immediately and continue only after having determined and removed the cause.

In this place a number of very important issues should be pointed to, as the absolute precondition for maintaining good balance:

- it is forbidden to attach any additional elements not approved by the manufacturer to the drums.
- no repairs on the drums are permitted that could impair their balancing (patches, reinforcements).
- each disk/drum shall be provided with the mowing knives that are either new or equally and regularly worn.
- renew any damaged or worn drums immediately.
- the highest permissible speed of the p.t.o. is 540 r.p.m.

## EXTRAS

The dismantling of sliding (support) disks 27 (Fig. 9) is best carried out with a stripping tool that can be purchased from the manufacturer or from authorised dealers.



**ATTENTION!**



## LUBRICATION OF THE MACHINE

**When lubricating and checking/exchanging the oil fills use appropriate protective means -goggles, gloves, an apron etc., do not smoke, eat or drink, either. Wash your skin with non-irritating cleansing means and apply some reparation cream after the work.**

**When lubricating and checking/exchanging the oil fills switch off the tractor engine and secure the set against unprompted rolling by wed ges under the wheels. The machine shall rest on the ground.**

The lubrication points are marked on the machine by this symbol:



The machine should be lubricated according to table 2 and figure 12. The lubricants used by the manufacturer and the specification of their replacements, including environmentally friendly ones, are shown in Table 1.

Lubricate the p.t.o. drive shafts according to the operating instruction of the p.t.o. drive shaft attached in accessories.

**ATTENTION !**

The used lubricants are oil products and can pollute the environment if they get spilled. Be careful during operation and lubrication to avoid any pollution of the environment.

More detailed information regarding the effects of oil products on man, on hygiene, first aid, storage and disposal of used products and packages are printed on the package and the manufacturer/seller of lubricants will readily supply further information upon request.

## ACCESSORIES

See page 25 →.

## GUARANTEE

The general guarantee conditions are valid for this TR-165.

## ORDERING SPARE PARTS

During the guarantee period and later the spares are ensured by authorised dealers of Fransgård Maskinfabrik A/S. Please refer to the catalogue of parts when ordering them.

Please specify the type of the machine, the serial number, the year of production and the catalogue ordering No, i.e. the code).

## SERVICE

Service during and after the guarantee period is ensured by authorised dealers.

## LIMITED LIFE PARTS

For keeping you well informed let us add the list of quick wear parts:

Part	Code
Knife *)	21001
Knife holder	1 5036 401
Strike bar	0 2940 107
Disk plate	9 3910 001

\*) The spare part knives are delivered as 25 pcs sets.

The above parts are considered to be consumption material.

## DISPOSAL OF DISCARDED MACHINE AND PACKAGE MATERIAL

When the service life of the machine is over, its owner is obliged to dispose of it so as to allow any recyclable material to be re-used in accordance with legal regulations on waste that are effective in the respective country.

It is recommendable to make use of specialised companies in the field of waste processing and disposal when you are going to dispose of the machine. If you decide to do it yourselves, apply the following procedure:

1. Dismount all usable parts that are still applicable (lamps, catadioptrics, cables and other spare parts) clean and preserve them and store them for further utilisation.
2. Remove oil from all gearboxes, dismount all plastic and rubber parts etc. Observe all applicable laws on waste.
3. The stripped remainder of the machine should be sold to a centre for secondary usage of scrap.

Recommended disposal of the package:

Wood-secondary usage or burning as fuel.

Paper-secondary usage or burning as fuel.

Metal-recyclable material.

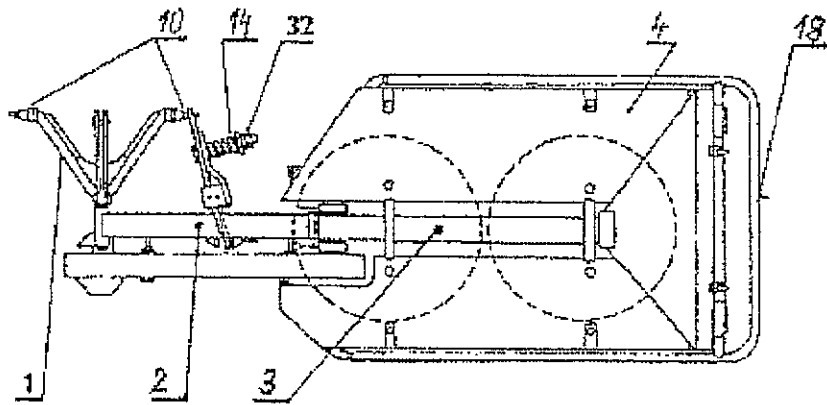
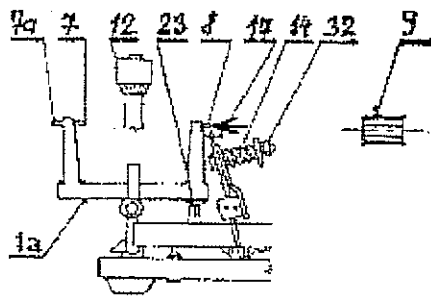
The other materials have the character of solid household waste and can be treated as such.

Table 1: Overview of lubricants and specification of re placements

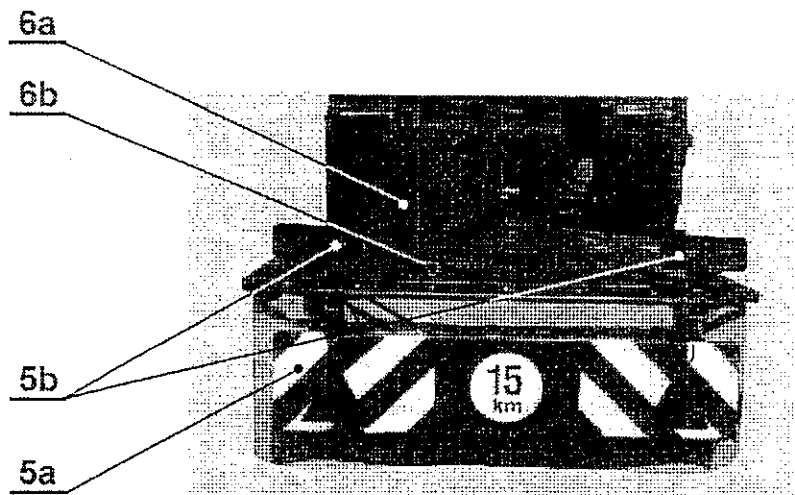
Lubricants and possible replacements		
Lubricant type	Original fill	Replacement
A	plastic grease MOGUL PZ 0 P	ISO-L-X ABEA 0 ISO 6743/9 K O E-20 DIN 51 502
B	plastic grease MOGUL L V 2 -3	ISO-L-X CCEA 2/3 ISO 6743/9 K2/3K-30 DIN51502
C	oil PARAMOL OD 4	ISO-L-AY 68 ISO 6743
Environmentally friendly replacements of the lubricants		
Lubricant type	Recommended ecological lubricant	Specification
A	-----	-----
B	plastic grease MOGUL EKO -L1	ISO-L-X CBEB 1 ISO 6743/9 KP 1 E-30 DIN 51 502
C	ecological oil BIPOL 40	

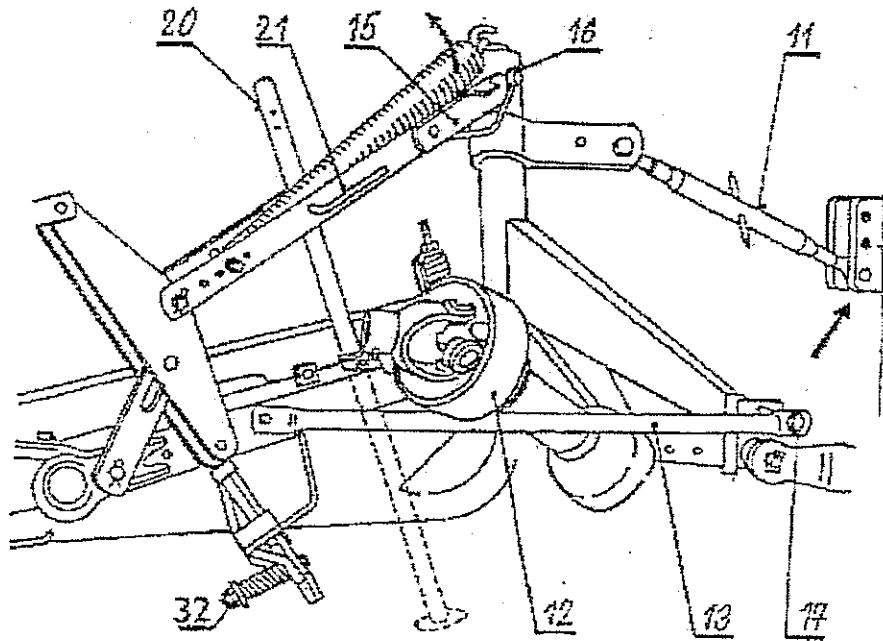
Table 2: Overview of lubrication spots

Ser.No	Lubrication point (Fig. 12)	Number of points	Lubricant type
Check daily			
M1	Idling clutch sleeve in pulley (A -hitch versions only)	1	B
M2	Lock pin of transport position	1	C
Every 50 working hours			
M3	Mower case pins	2	B
M4	Hitch tube	1	B
M5	Pull rods of shock safety	1	C
Every 500 working hours / 2 operation years			
M6	Mower case	1	A
<ul style="list-style-type: none"> <li>• Dismount protective guards and the cover of the mowing device, remove lubricating grease from the case and fill it with fresh grease. The volume is 5 kg.</li> <li>• When returning the cover tighten the bolts with 53 + 65 Nm torque and check their tightening not later than after 8 operation hours.</li> </ul>			

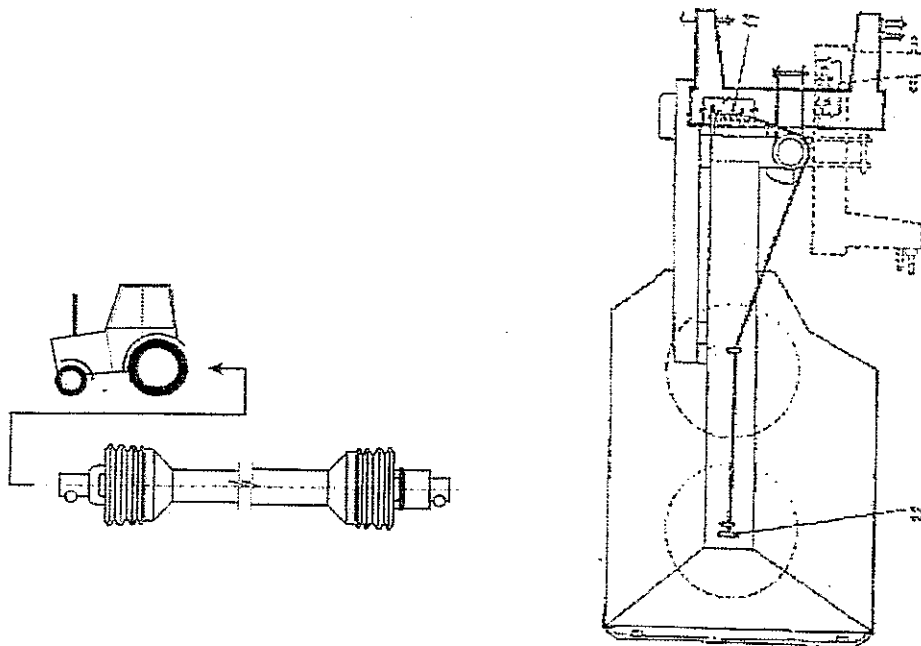


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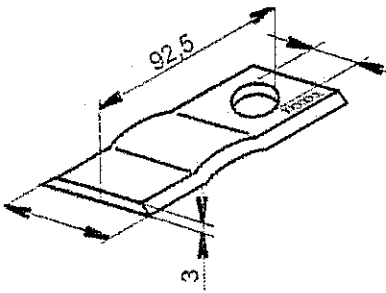


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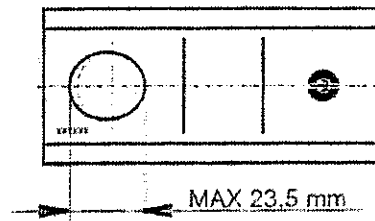


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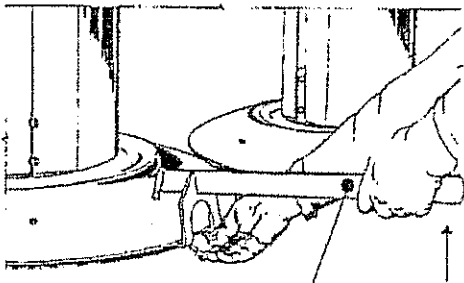
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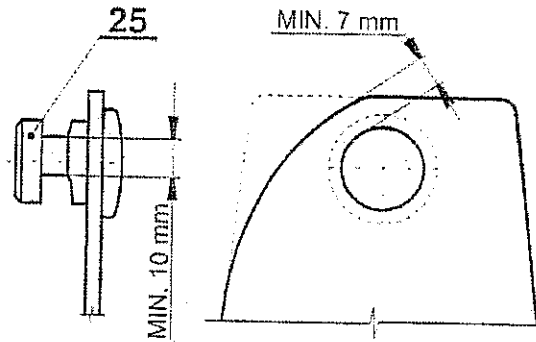
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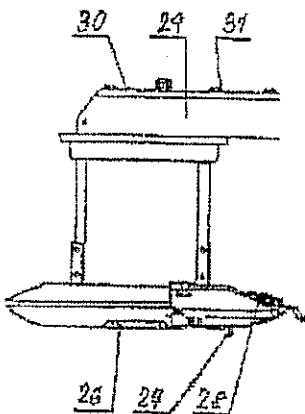
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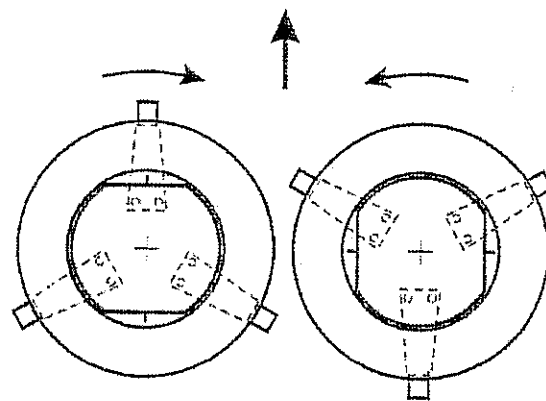
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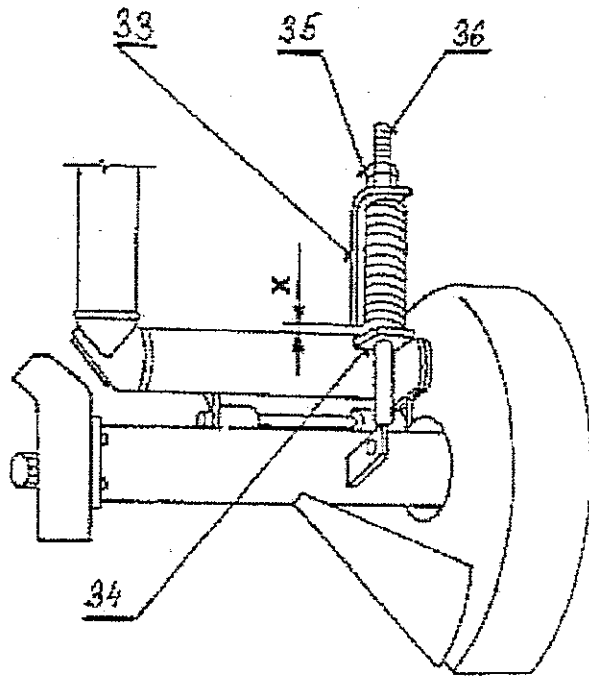


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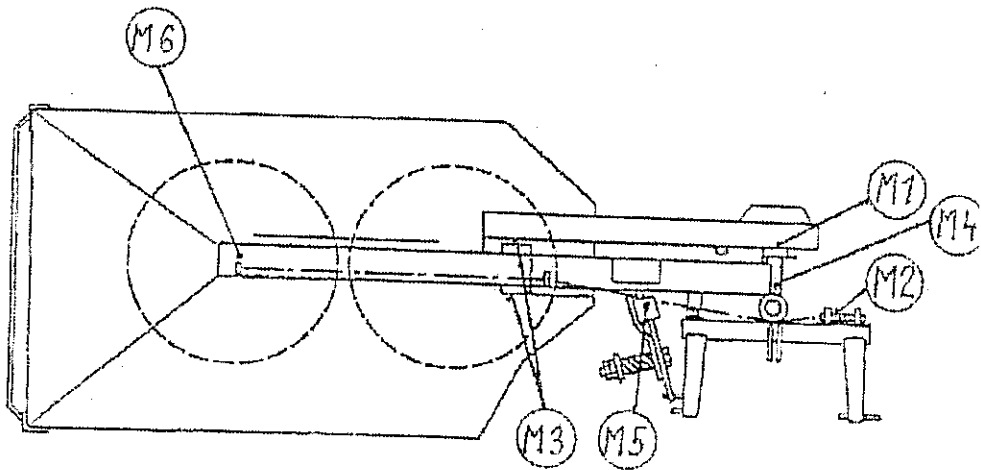


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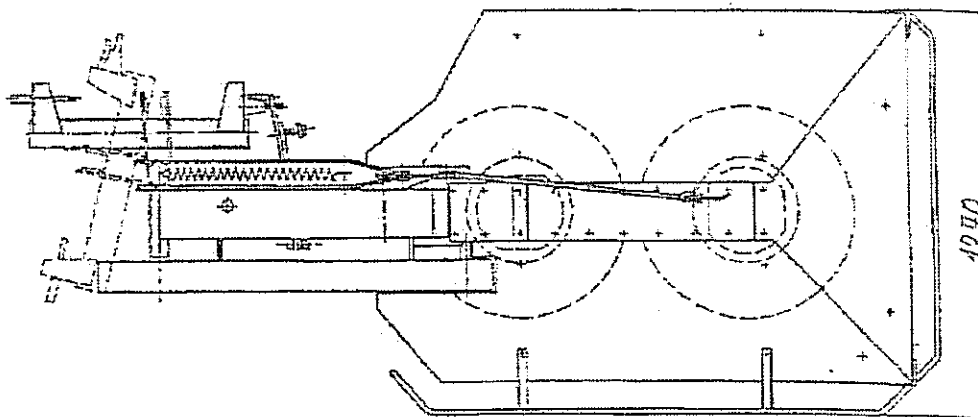
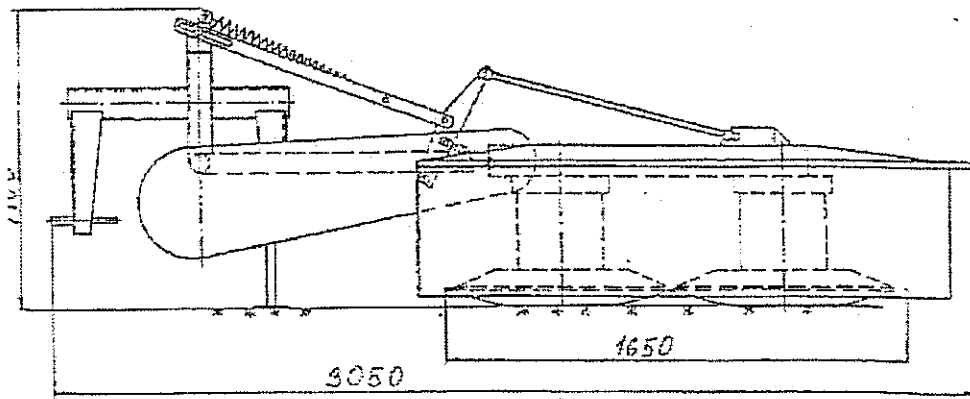


-11-



-12-

ROZMĚROVÉ SCHEMA STROJE ..  
DIMENSIONED DIAGRAM OF MACHINE  
LE SCHEMA DE DIMENSIONS DE LA MACHINE  
MABSCHEMA DER MACHINE



- 13 -



*For best performance ...*

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**Always quote:**

- *Machine Type*
- *Serial Number*
- *Part Number*

*Design improvements may alter some of the parts listed in this manual –  
the latest part will always be supplied when it is interchangeable with an earlier one.*

Parts marked " \* " are delivered as spare parts

### Instructions for ordering spare parts

TR-165		A		A
1	2	3	4	

**In the catalogue text means :**

- A - Designation of group ( exact, number )
- 1 - Position of part
- \* - Spare part designation
- 2 - Exact denomination of part, dimension
- 3 - Ordering number
- 4 - Number of pcs in one set

**! When ordering spare parts, please, always state :**

- Type of machine
- Part number ( column 3 )
- Name of part and number of pieces ( column 2,4 )

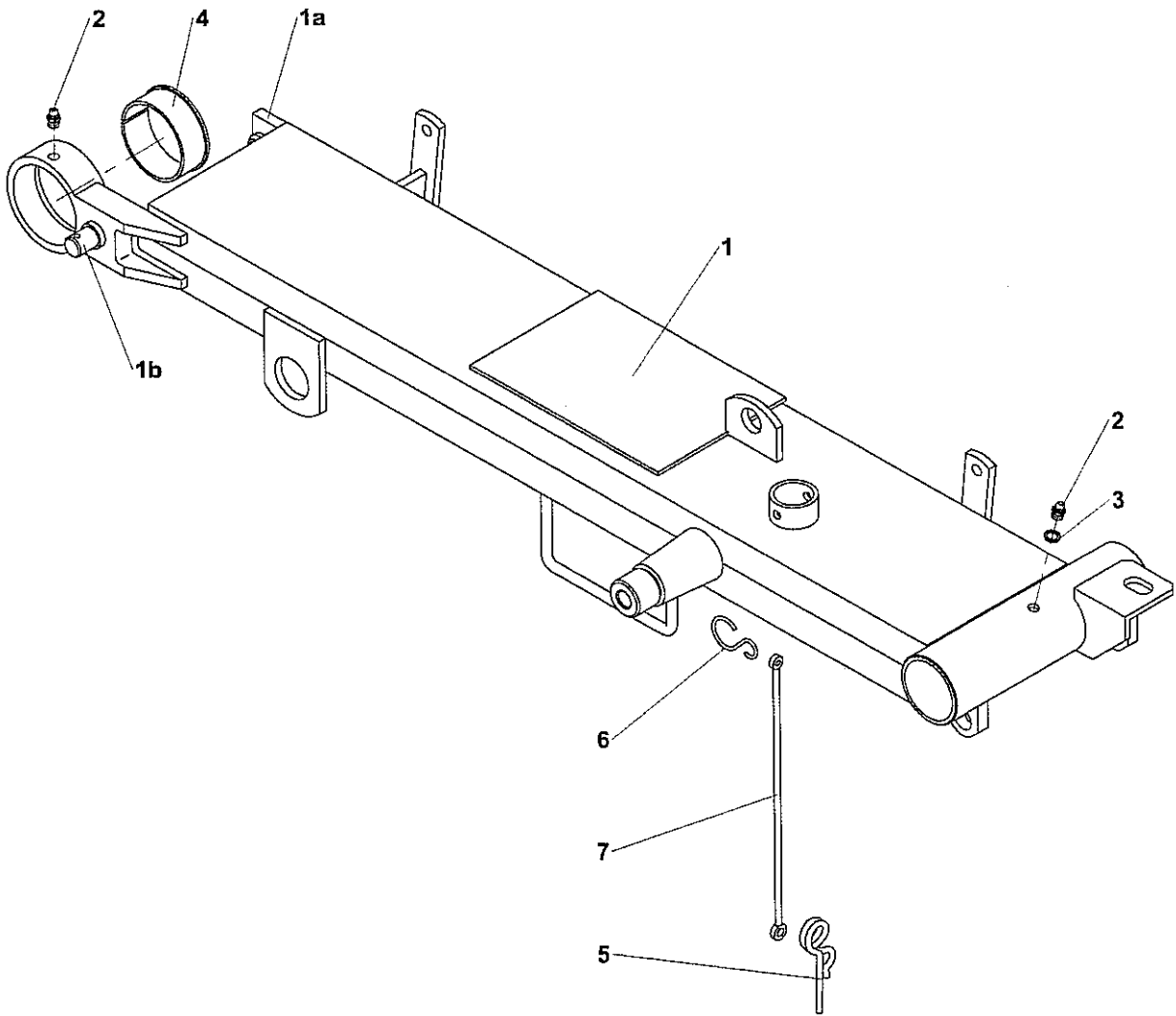
The manufacturers continuously improve their products on the basis of experience gained in the course of operation and of the up-to-date knowledge. They reserve, therefore, the right of modifying the machine as well as the respective documentation.

**Tightening torques of threaded joints**

1. All hexagonal nuts and hexagonal head bolts used in the machine shall tightened within the range of 90-100% of the torque given in the following table, if there is no specific indication in the respective wording or relating to the catalogue figures.
2. This table does not apply to hexagonal nuts with height less than 80% of the rated thread diameter.
3. 5.8 quality bolts and nuts may be used only for connections of minor importance.
4. For selflocking screws or nuts the value given in the table increases by 10%.
5. When using lubrication grease the value given in the table decreases by 10%.
6. Never use metal coated screws and nuts without applying grease.

Thread	Torque [Nm]		
	5.8	8.8	10.9
M6	5.9	10.3	14.7
M8	14.7	25.5	35.3
M10	28	50	69
M12	49	88	123
M14	79	137	194
M16	122	211	300
M18	169	290	412
M20	228	412	579
M22	326	559	785
M24	388	711	1000
M27	613	1050	1480
M30	785	1420	2210

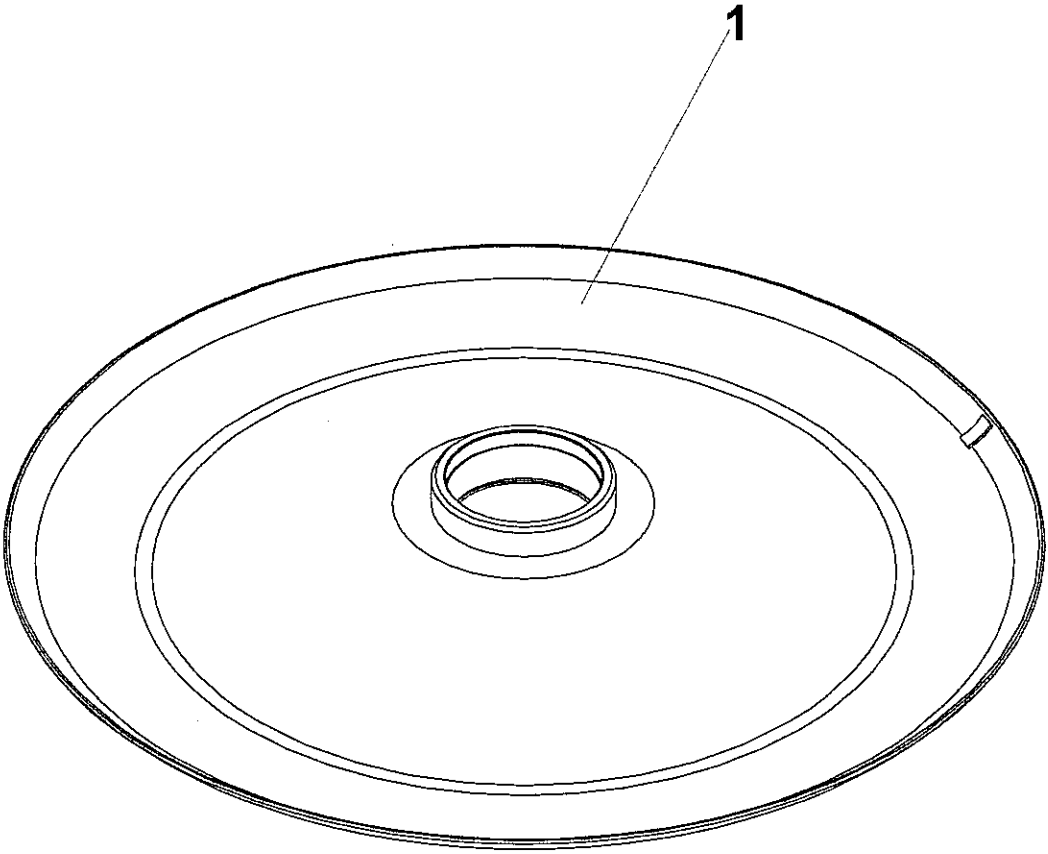
1



TR-165	Frame			1
1	2	3	4	

1-*7	Frame	9 5047 136	1
*1-*1b	Part of frame	9 5047 137	1
*1a	Holder IV	9 5000 037	1
*1b	Eye	9 9850 010	1
2	Head MK 10x1	0906224	2
3	Sealing ring 10x14	1026476	1
4	Casing II	1 9421 116	1
5	Strut security element	0242605	1
6	Wire hook	1 9344 046	1
7	Plastic wire 300	1 6847 023	1

2

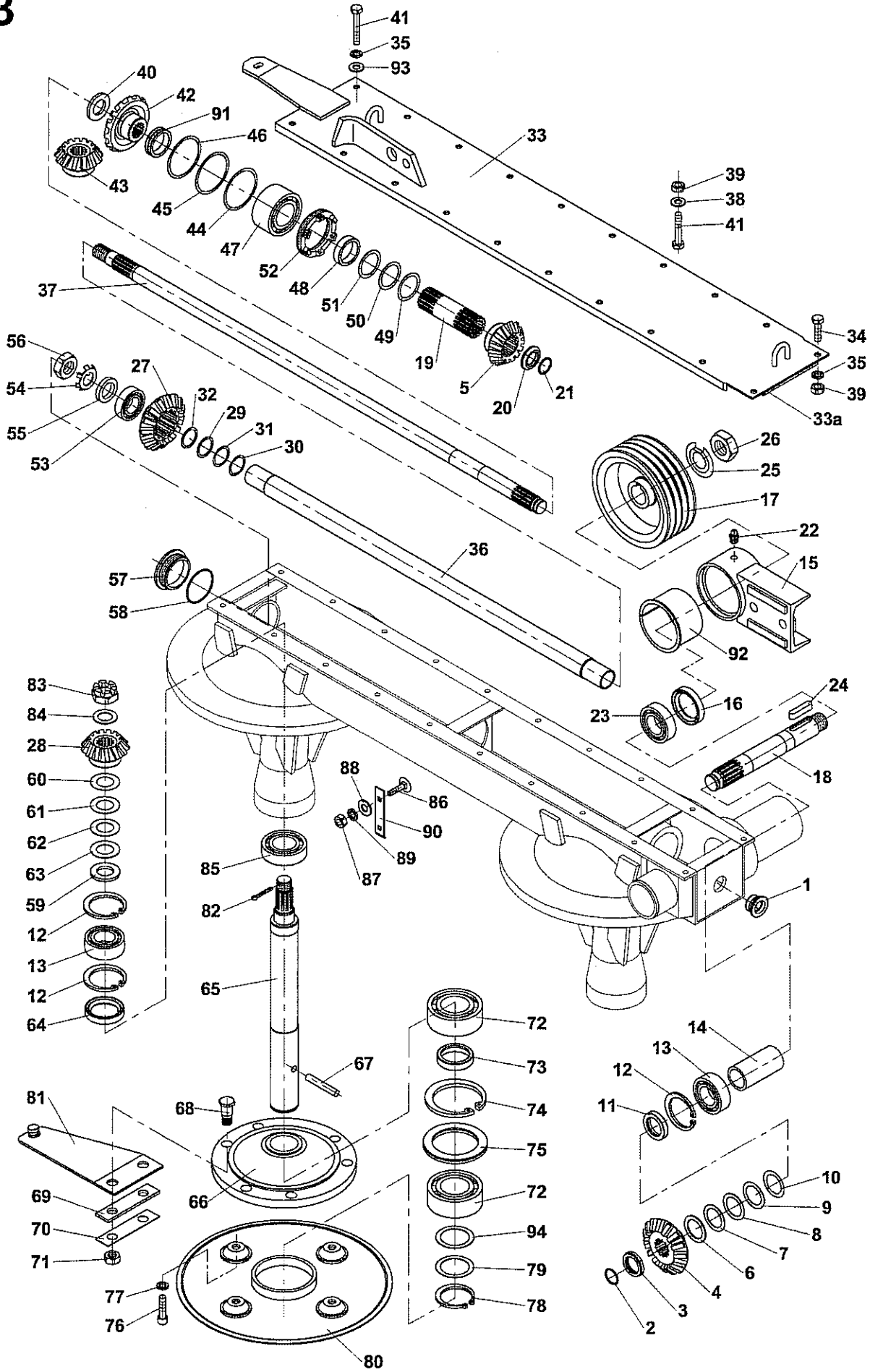


TR-165	Disk		2
1	2	3	4

1..... Disk ..... 9 8547 006..... 2

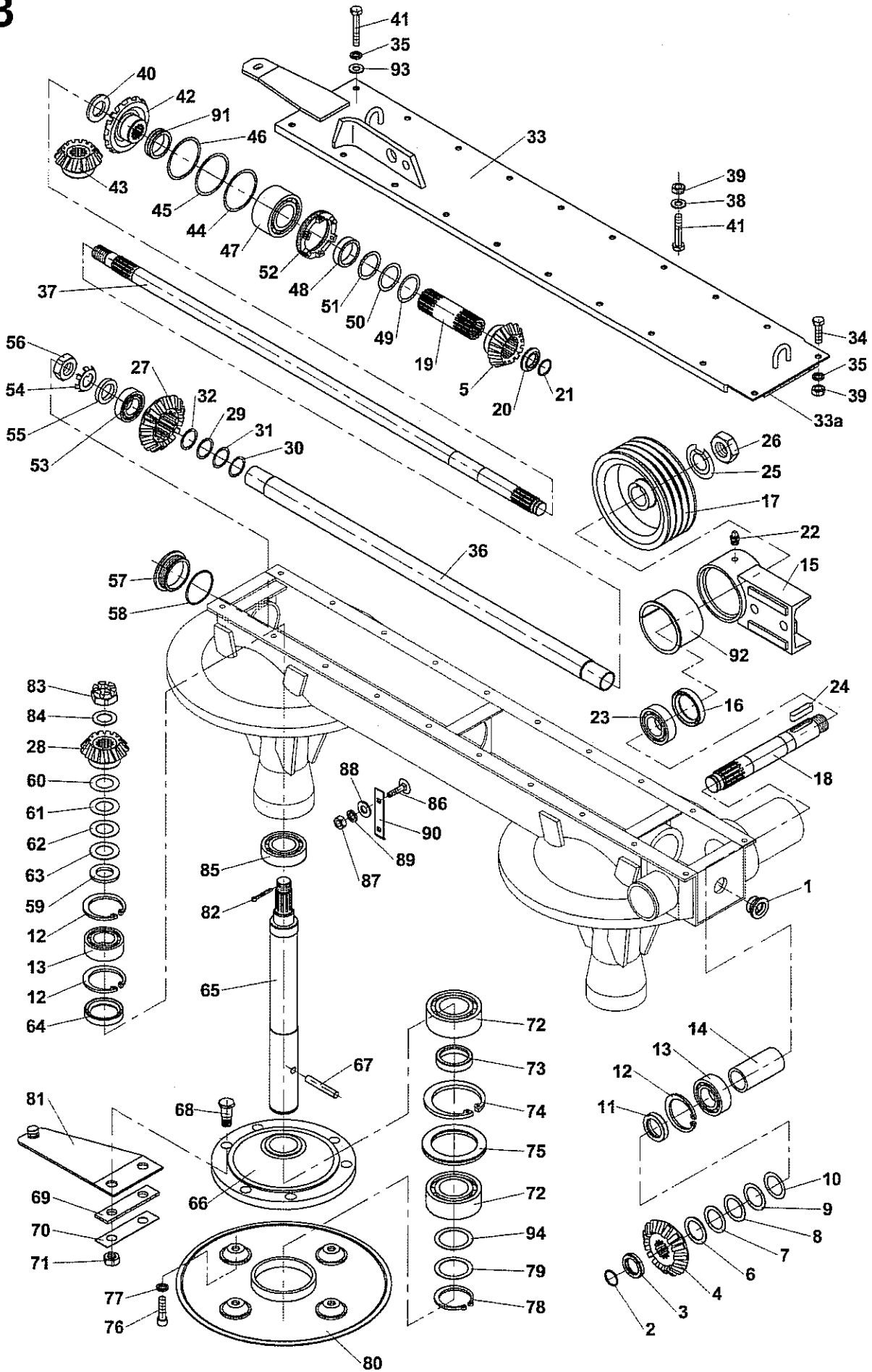


3



TR-165		Mower		3
1	2	3	4	
1-*94	Mower	9 5096 145		1
*1	Plug 0 6825 012	0355344		1
*2	Retaining ring 2	0776644		1
*3	Thrust ring	0 9520 743		1
*4-5	Bevel gear I	9 3125 005		1
4	Bevel gear z=23	0 3125 101		1
5	Bevel gear z=17	0 3125 097		1
*6	Washer	0 9220 029		1
*7	Washer I	0 9220 256		1
*8	Washer 0.8	0 9220 257		1
*9	Washer 0.5	0 9220 262		1
*10	Washer 0.2	0 9220 250		2
*11	Spacing ring	0 9520 782		1
12	Retaining ring 72	0712811		5
13	Bearing 3207	0251658		3
*14	Spacing tube	0 9520 745		1
*15	Arm 1	9 5036 498		1
16	Sealing ring Gufero	441771		1
*17	Pulley	1 3322 003		1
*18	Shaft	0 9312 128		1
*19	Casing	0 9520 755		1
*20	Thrust ring	0 9520 756		1
*21	Retaining ring 2	0776633		1
22	Head MK 10x1	0906224		1
23	Bearing 6207	0251867		1
*24	Spring 10h9x8x50	1 9532 833		1
*25	Retaining washer	1 9247 007		1
26	Nut M30x2-05-A3L	0729091		1
*27-28	Bevel gear II	9 3125 004		1
27	Bevel gear z=23	0 3125 099		1
28	Bevel gear z=17	0 3125 098		1
*29	Distance plate 0.2	0 9220 194		2
*30	Distance plate 0.5	0 9220 195		1
*31	Distance plate 0.8	0 9220 197		1
*32	Distance plate 1	0 9220 198		1
*33	Lid with sealing	9 5036 574		1
*33a	Casing sealing II	0 6230 105		2
34	Bolt M10x20-8.8-A3L	0026235		16
35	Washer 10 ODV	0613239		18
*36	Spacing tube	1 1247 025		1
*37	Shaft	1 3812 079		1
38	Washer 10.5	0614240		2
39	Nut M10-8-A3L	0614163		18
*40	Thrust ring	0 9520 757		1
41	Bolt M10x50-8.8-A3L	0474969		4
*42-43	Bevel gear III	9 3125 003		1
42	Bevel gear z=23	0 3125 100		1
43	Bevel gear z=17	0 3125 098		1
*44	Washer 0.2	0 9220 266		2
*45	Washer 0.5	0 9220 263		1
*46	Washer 0.8	0 9220 264		1
47	Bearing 3208	0251669		1
*48	Ring II	0 9520 842		1
*49	Washer 0.2	0 9220 260		2
*50	Washer 0.5	0 9220 259		1
*51	Washer 0.8	0 9220 258		1
*52	Nut	0 4952 040		1
53	Bearing 6305	0069168		1
*54	Retaining washer	0 9247 004		1
55	Washer 25	0027060		1
*56	Nut M24x1.5-8	0068398		1

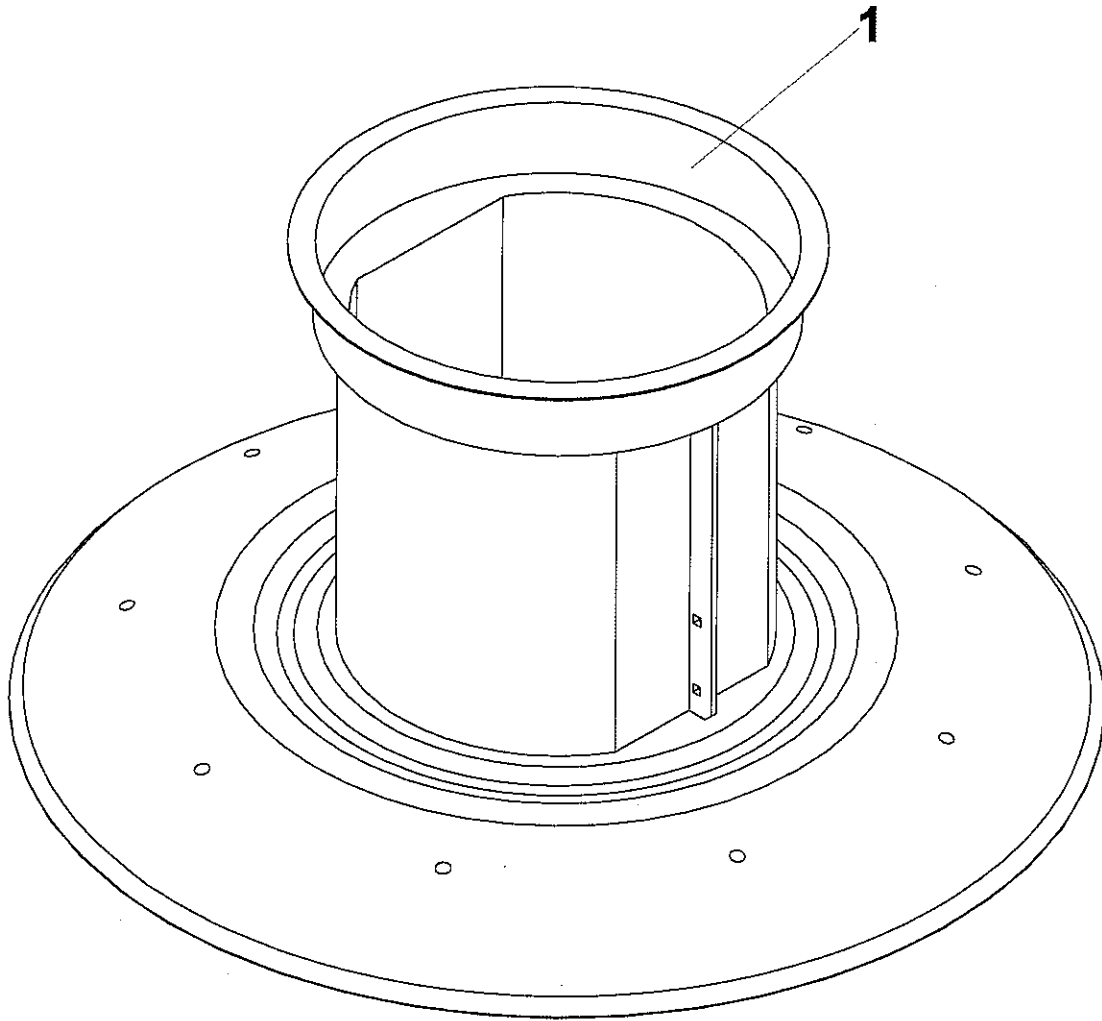
3



TR-165	Mower		3
1	2	3	4

*57	Lid	0 9867 056	1
58	Ring O 60x3	0418407	1
*59	Washer 5	0 9220 268	2
*60	Washer 0.2	0 9220 276	4
*61	Washer 0.5	0 9220 253	2
*62	Washer 0.8	0 9220 252	2
*63	Washer 1	0 9220 277	2
64	Sealing ring Gufero	0418198	2
*65-68	Drum shaft	9 5009 380	2
65	Shaft	1 3800 258	2
66	Hub II	1 4900 092	2
*67	Pin 12x70	0257433	2
68	Bolt M16x47 LIAB-304	0035893	12
*69	Washer	1 9230 157	6
*70	Washer	0 9230 152	6
71	Nut M16-8	0618431	12
72	Bearing 6310 2RS	0252043	4
*73	Spacing tube	1 1400 367	2
74	Retaining ring 110	0016401	2
*75	Ring	9 9520 001	2
76	Bolt M12x35 ODV 8.8	0460185	8
77	Washer 12 ODV	0013926	8
78	Retaining ring 50	0707971	2
*79	Washer	1 9220 009	2
*80	Disk plate	9 3910 001	2
*81	Knives holder	9 5036 401	6
82	Splint pin 5x45	0044286	2
*83	Nut M24x1.5 8.8	0624481	2
*84	Ring II	0 9220 267	2
85	Bearing 6210 2RS	0251977	2
86	Bolt M6x16-4.8-A2L	0071346	8
87	Nut M6-8-A2L	0068409	8
88	Washer 6.4	0612810	8
89	Washer 6 ODV	0613228	8
*90	Strike bar	0 2940 107	4
*91	Ring	0 9520 752	1
*92	Casing I 1 9421 115	0355388	1
93	Washer 11	0613382	2
94	Set of shims 50-61.8	9 9220 005	1

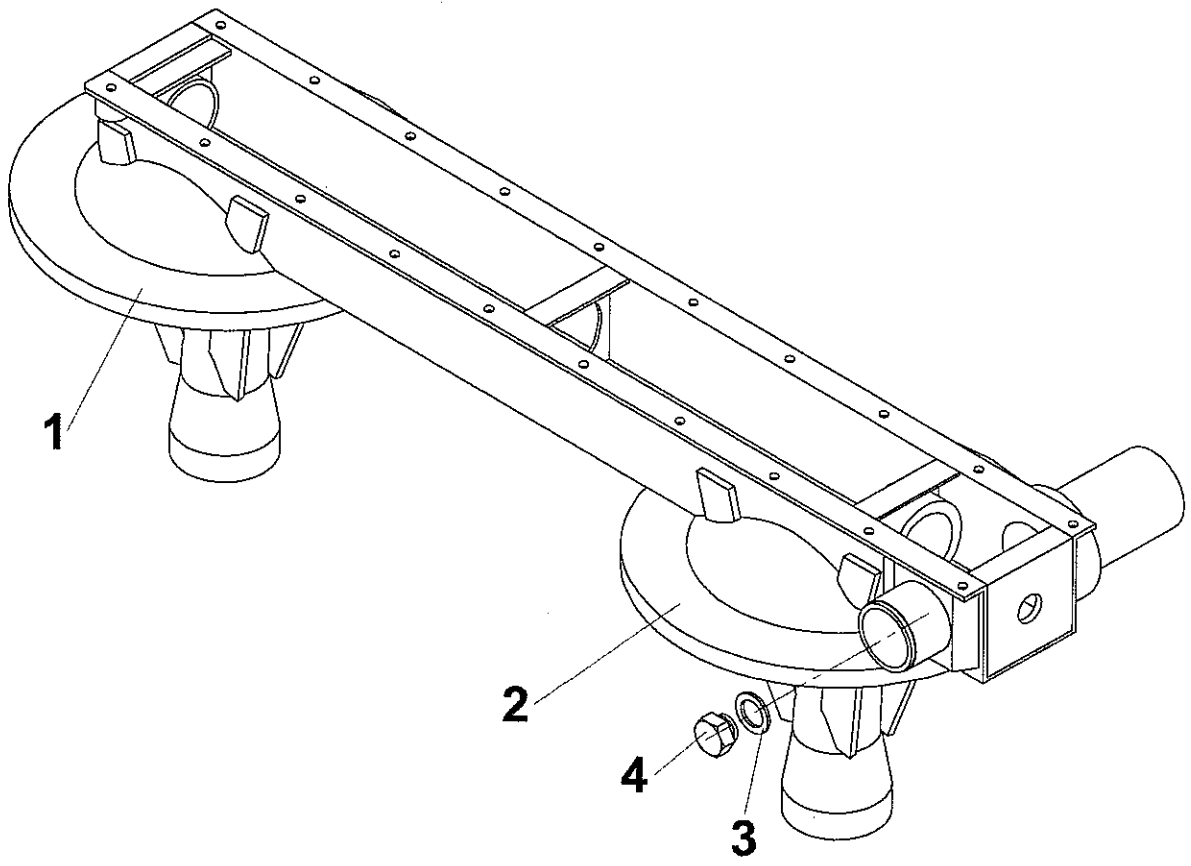
4



<b>TR-165</b>	<b>Drum</b>			<b>4</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	

\*1 ..... Buben..... 9 5037 141..... 2

5

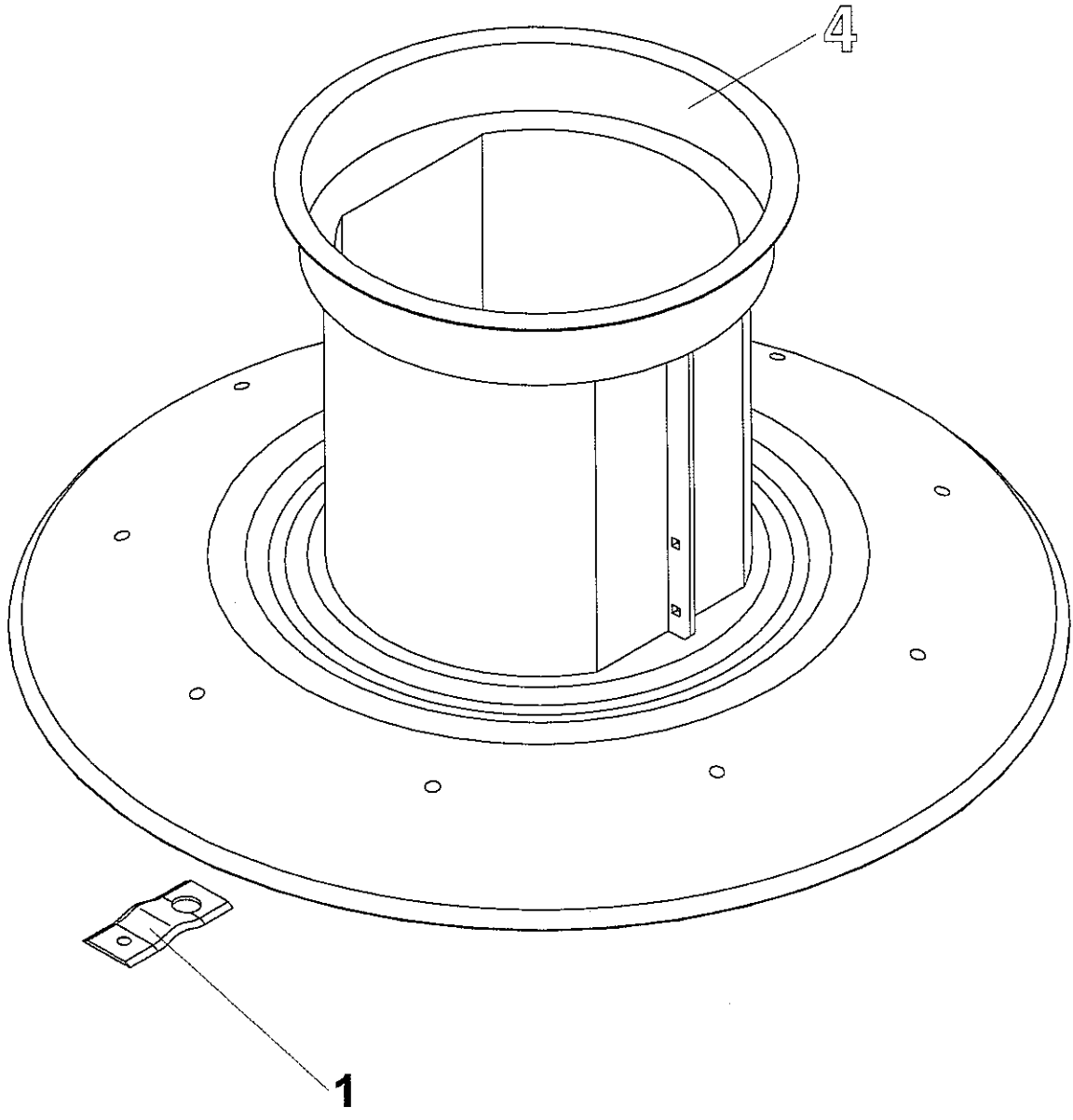


TR-165	Case, assembly			5
1	2	3	4	

*1-4	Case, assembly	9 5037 091	1
*1	Drum lid II	0 1947 010	1
*2	Drum lid III	0 1947 009	1
3	Sealing ring 30x38	0863093	1
4	Plug M30x1.5	0025773	1



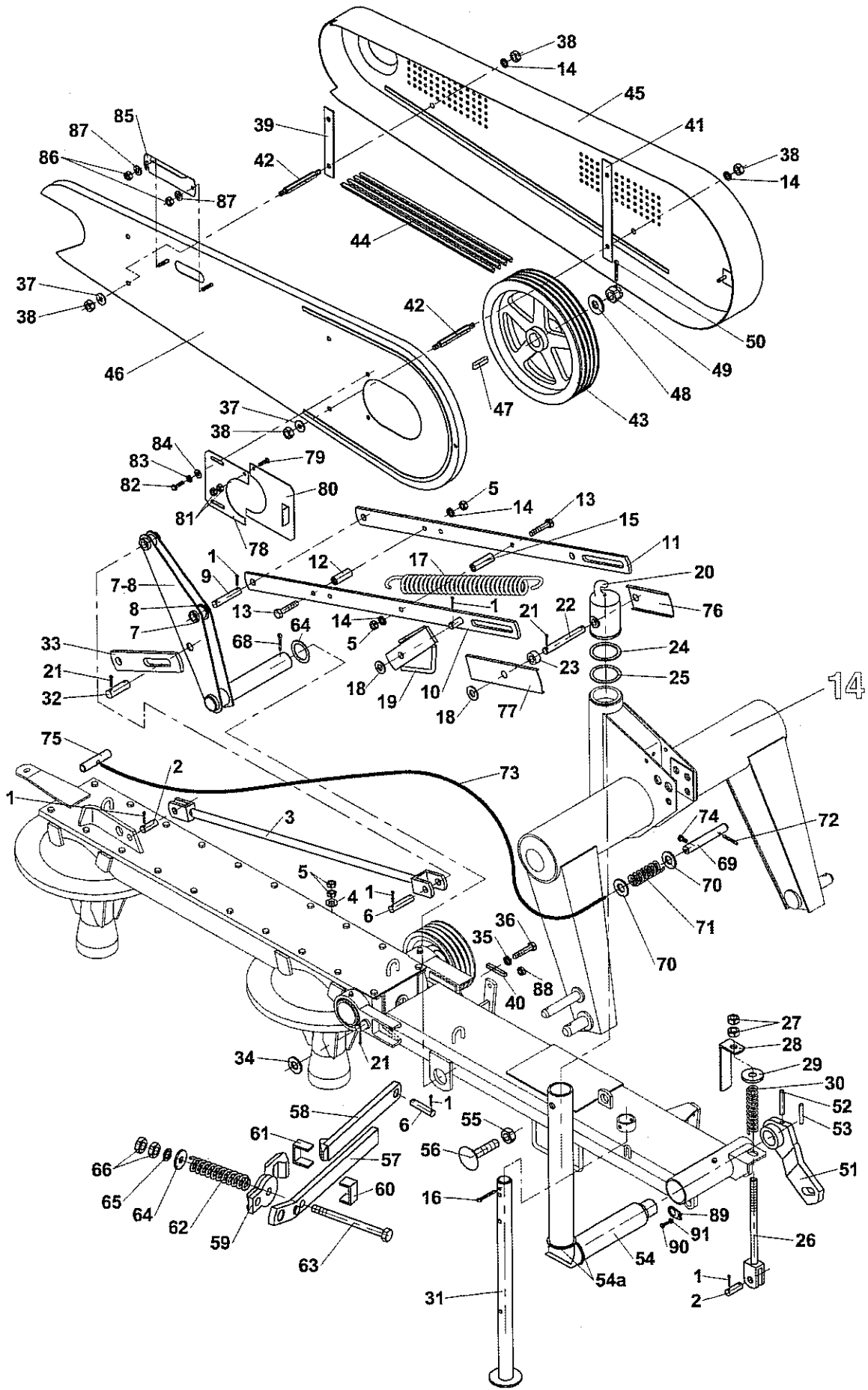
6



TR-165	<b>Mounting system of knives</b>			<b>6</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	

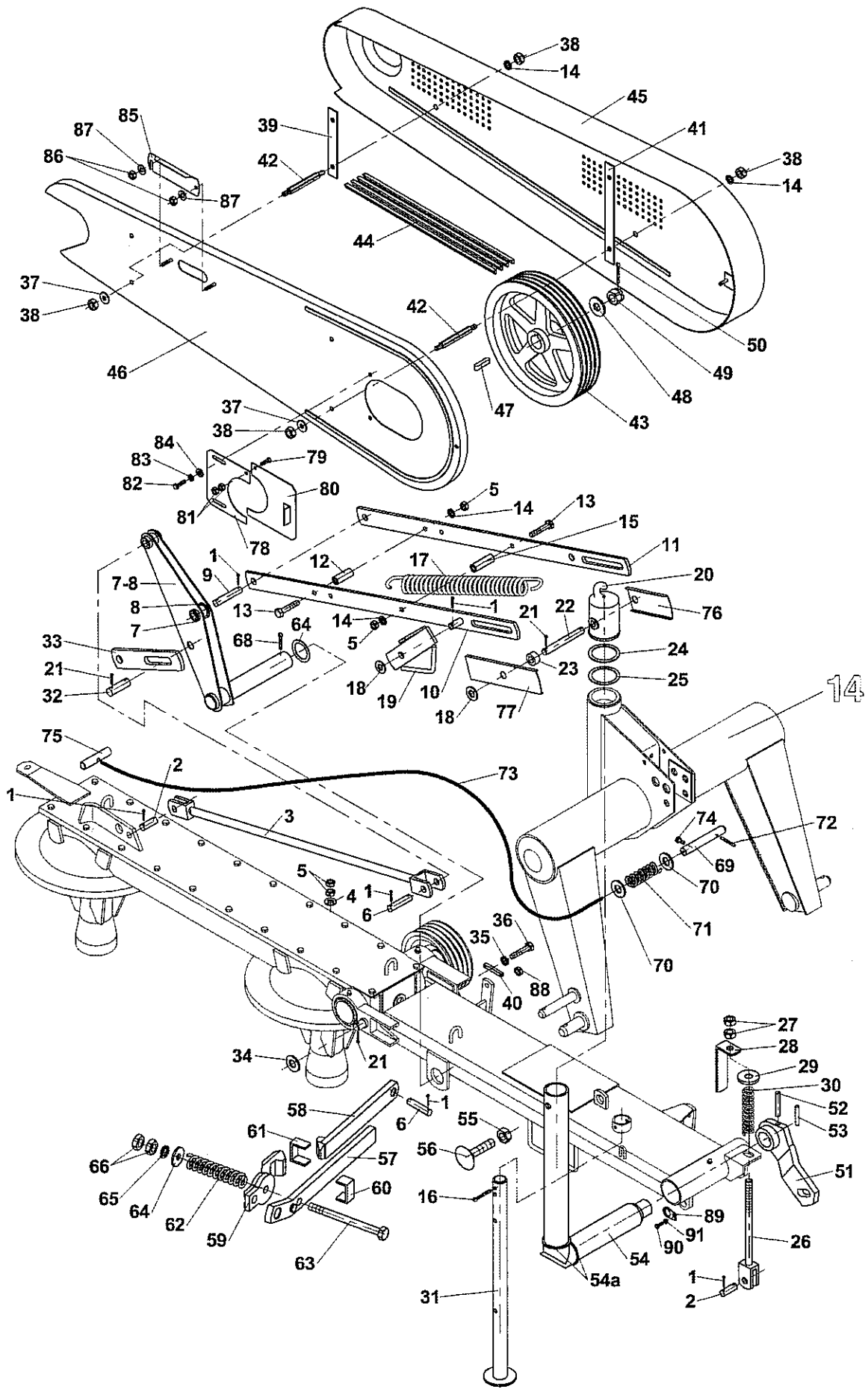
-..... Mounting system of knives..... 9 5049 104..... 1  
1..... Knife..... 21001..... 6

**Note:**  
**Knife 21001 has to ordered in set of 25 pcs.**



<b>TR-165</b>	<b>Mounting system</b>			<b>8</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	

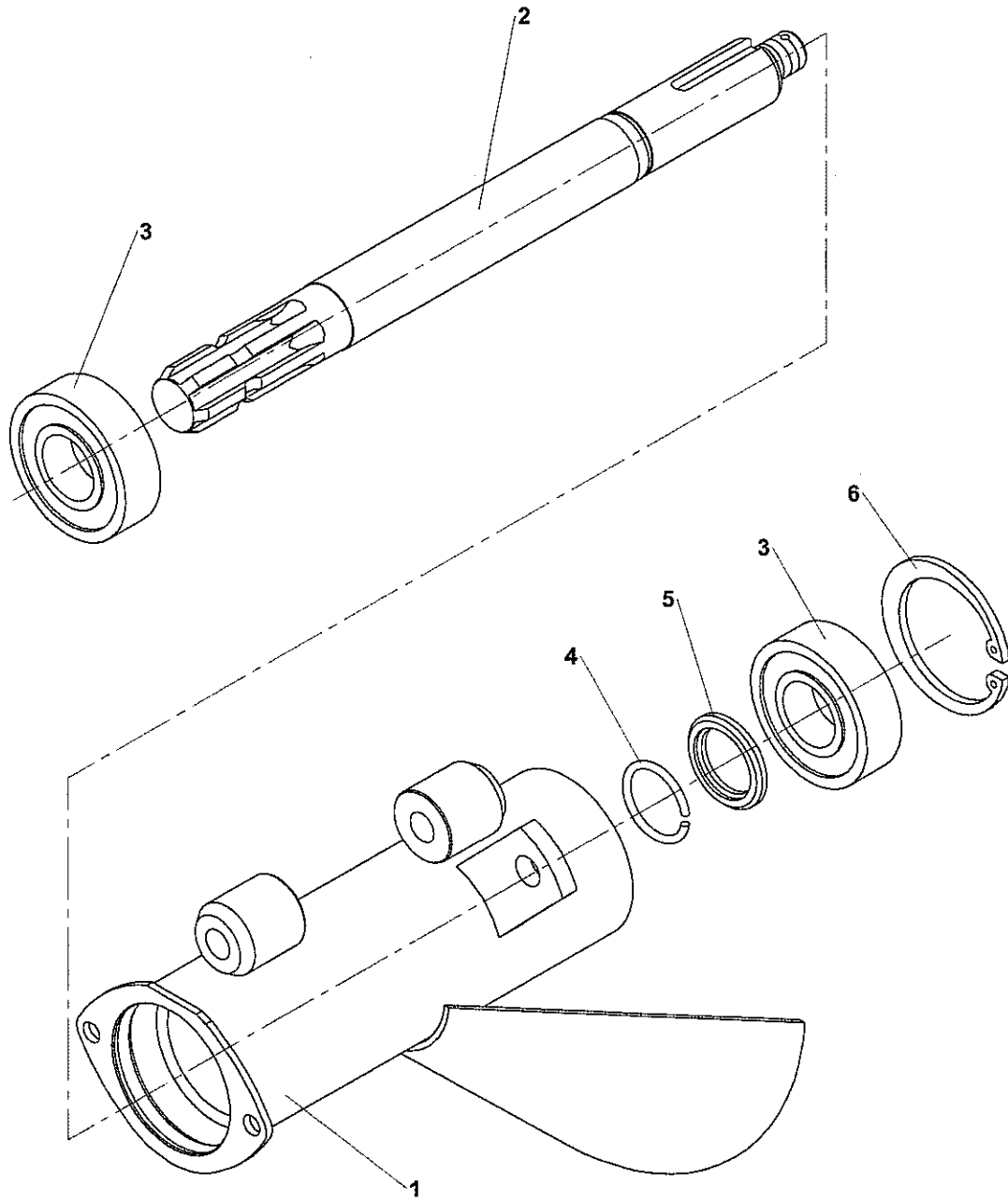
1-91.....	Mounting system .....	9 5009 146.....	1
1.....	Split pin 4x25.....	0613921.....	13
*2.....	Pin 16x45x34 .....	0 9310 806.....	2
*3.....	Pull rod .....	9 5036 391.....	1
4.....	Washer 11 .....	0613382.....	4
5.....	Nut M10 -8 -A3L.....	0614163.....	11
*6.....	Pin 16x70x59 .....	0 9310 809.....	2
*7-*8.....	Holder for lifting.....	9 5036 056.....	1
*7.....	Washer.....	1 9220 328.....	1
*8.....	Washer.....	1 9220 328.....	1
*9.....	Pin 16x85x72 .....	0 9310 810.....	1
*10.....	Pull rod assembly .....	9 5036 571.....	1
*11.....	Pull rod .....	1 1332 117.....	1
*12.....	Spacing tube .....	0 9520 263.....	1
13.....	Bolt M10x90-8.8-A3L.....	0036773.....	2
14.....	Washer 10 .....	0613239.....	9
15.....	Spacing tube .....	0 9520 767.....	1
16.....	Split pin 8x50 .....	0739871.....	1
*17.....	Tension spring .....	0 9746 221.....	1
18.....	Washer 17.....	0614262.....	3
*19.....	Lock .....	9 5036 079.....	1
*20.....	Hook.....	0 4953 012.....	1
21.....	Split pin 5x28.....	0613899.....	5
*22.....	Hook pin .....	0 9310 100.....	1
*23.....	Pulley .....	0 9520 269.....	1
*24.....	Thrust ring.....	1 9220 405.....	2
*25.....	Thrust ring.....	1 9220 404.....	2
*26.....	Tightening screw .....	9 9016 003.....	1
27.....	Nut M16 -6 -A3L.....	0614130.....	2
*28.....	Spring stop.....	1 1240 250.....	1
*29.....	Spring disk .....	0 2947 023.....	1
*30.....	Spring .....	1 0315 012.....	1
*30a.....	Spring .....	0786082.....	1
*31.....	Strut .....	9 5036 536.....	1
32.....	Pin 20x63x47 .....	0 9310 812.....	1
*33.....	Pull rod of the stop .....	0 5932 009.....	1
34.....	Washer 21 .....	0734591.....	1
35.....	Washer 16.....	0613272.....	2
36.....	Bolt M16x40-8.8-A3L.....	0074492.....	2
*37.....	Washer 11 .....	0613382.....	8
38.....	Nut M10 -8 -A3L .....	0614163.....	8
*39.....	Brace l.....	0 9230 150.....	1
40.....	Stop l.....	0 1560 022.....	1
*41.....	Brace .....	0 9230 149.....	1
*42.....	Bolt.....	0 6916 007.....	4
*43.....	Pulley .....	1 3300 048.....	1
*44.....	V - belt 12.5x3000La.....	21002.....	4
*45.....	Bett cover assy .....	9 5000 300.....	1
*46.....	Bett cover assy .....	9 8547 051.....	1
*47.....	Spring 10h9x8x56 .....	1 9532 834.....	1
*48.....	Washer.....	1 9220 249.....	1
49.....	Nut M20x1.5 5.8.....	0033121.....	1
50.....	Split pin 4x40 .....	0015906.....	1
*51.....	Pawl.....	1 0990 263.....	1
52.....	Pin 10x80-A-St.....	0290763.....	1
53.....	Pin 6x63-A-St.....	0273251.....	1
*.54-54a.....	Tube .....	9 5000 299.....	1
*54a.....	Thrust ring.....	0 9220 202.....	2
55.....	Nut M20 -6 -A3L.....	0113113.....	1
*56.....	Bolt assy.....	9 9016 120.....	1
*57-66 ..	Impact safety element .....	9 5037 077.....	1



TR-165	Mounting system			8
1	2	3	4	

*57	Holder of security element.....	9 5036 078.....	1
*58	Safety element II.....	9 5036 086.....	1
*59	Safety element .....	0 6952 015.....	1
*60	Yoke II. ....	0 1441 176.....	1
*61	Yoke I. ....	0 1441 175.....	1
*62	Spring .....	1 0990 161.....	1
*63	Bolt M16x190 .....	0266772.....	1
*64	Washer.....	0 9220 145.....	1
65	Washer 17 .....	0614262.....	1
66	Nut M16 -6 -A3L .....	0614130.....	2
*67	Washer.....	0 9220 278.....	1
68	Split pin 8x63 .....	0110583.....	1
*69	Pin .....	1 9320 011.....	1
*70	Washer 22 .....	0734591.....	2
*71	Spring .....	0112970.....	1
72	Pin 6x28 -A -St .....	0032472.....	1
*73	Wire .....	1 8010 109.....	1
74	Bolt M6x12-5.8-A2L .....	0023529.....	1
*75	Handle .....	1 6220 059.....	1
*76	Guard .....	1 1000 601 .....	1
*77	Guard .....	1 1000 623.....	1
*78-81	Guard of drive tube .....	9 8549 018.....	1
78	Sliding guard.....	1 1432 116.....	1
79	Bolt M6x20 5.8 .....	0051876.....	1
80	Right guard of drive.....	9 8540 121.....	1
81	Nut M6 -6 -A2L.....	0614097.....	2
82	Bolt M8x16-4.6-A2L.....	0474364.....	2
83	Washer 8 .....	0613250.....	2
84	Washer 8.4 .....	0612821.....	2
*85	Cover.....	1 1000 693.....	1
86	Nut M6 5.8.....	0254980.....	3
87	Washer 6.4.....	612810.....	2
*88	Insert .....	1 1400 047.....	1
*89	Safety element.....	1 1103 168.....	1
90	Bolt M6x25-5.8-A3L.....	0073194.....	1
91	Nut M6.....	0254980.....	1

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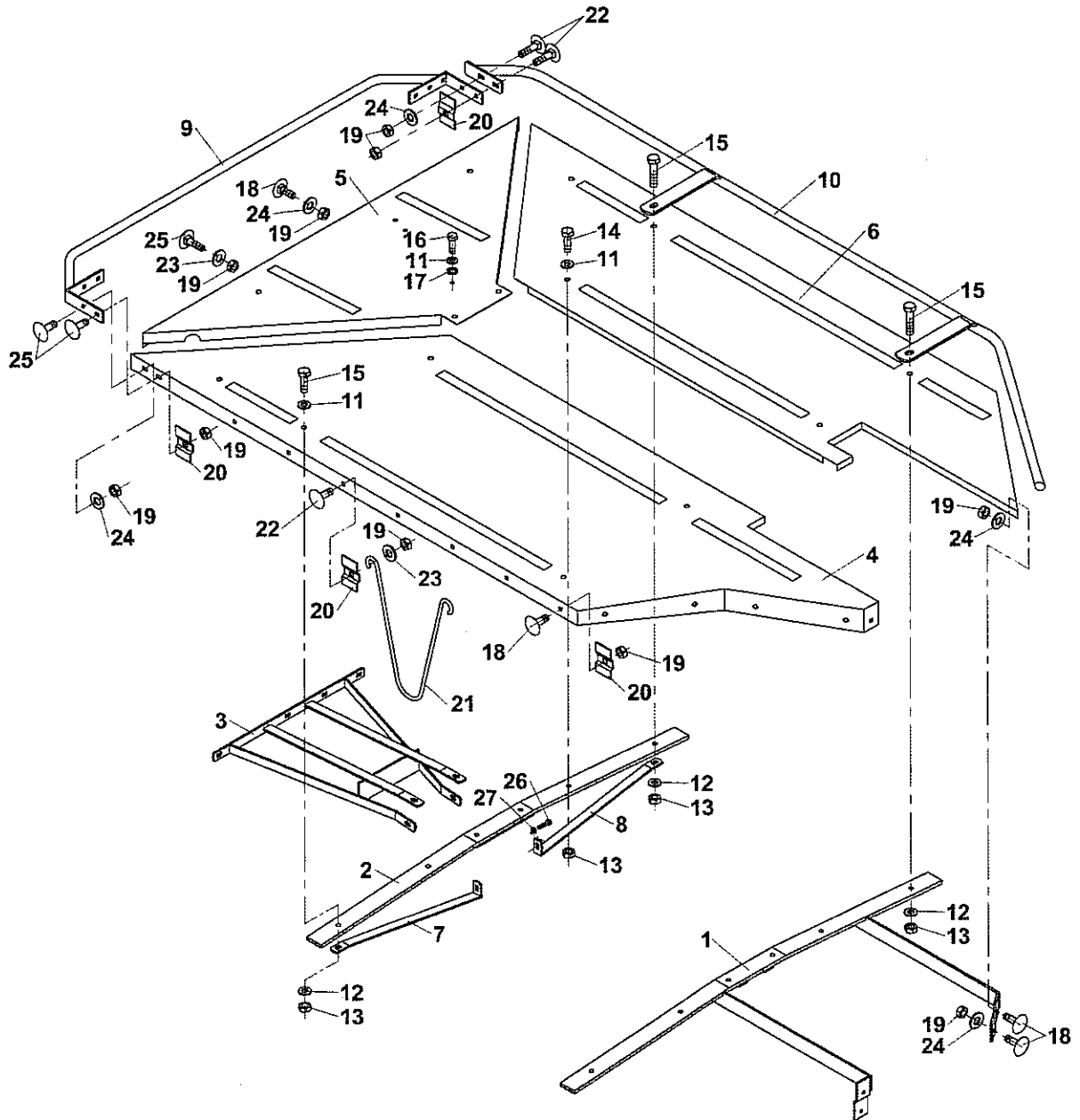


<b>TR-165</b>	<b>Main drive</b>			<b>10</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	

1-6.....	Main drive .....	9 5009 138.....	1
*1 .....	Drive tube assy .....	9 5000 273.....	1
*2 .....	Shaft.....	1 3800 116.....	1
3.....	Bearing 6307 C3 2RS.....	0296714.....	2
4.....	Retaining ring 35.....	0094688.....	1
*5 .....	Thrust ring.....	1 1520 017.....	1
6.....	Retaining ring 80 .....	0713031.....	1

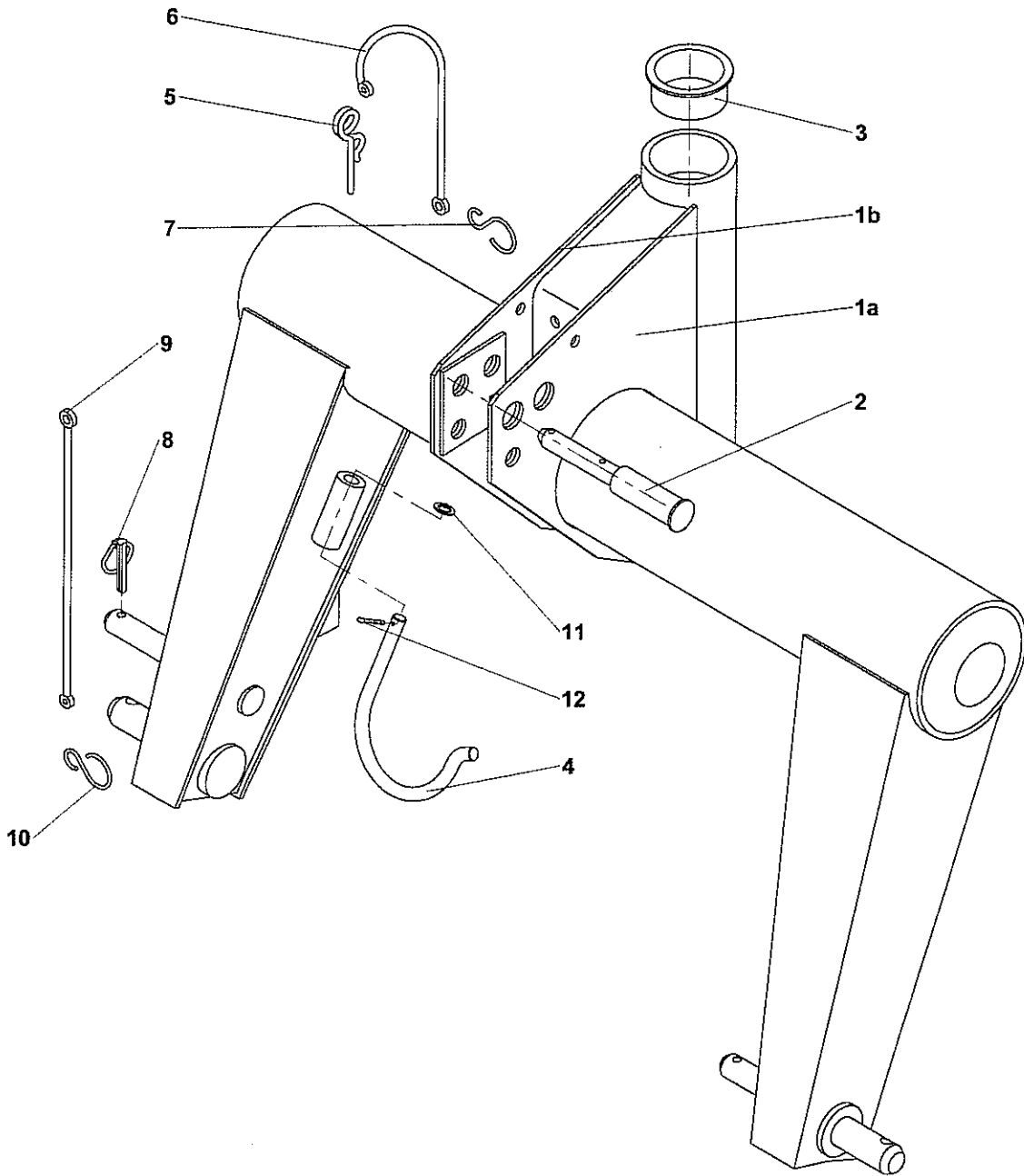


13



<b>TR-165</b>	<b>Protection guard</b>			<b>13</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	

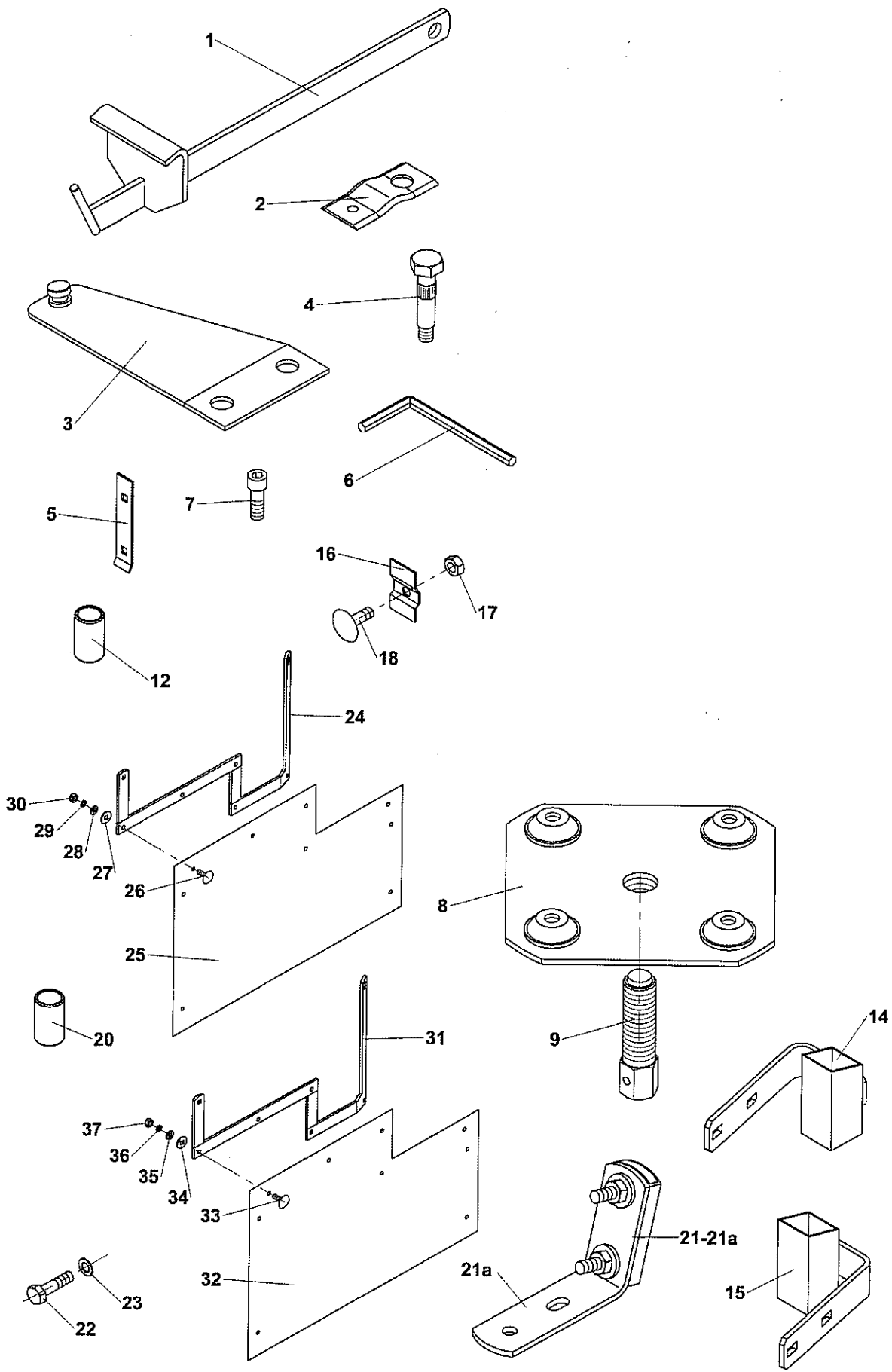
1-27.....	Protection guard .....	9 5009 348.....	1
*1 .....	Cover holder I.....	9 5000 855.....	1
*2 .....	Cover holder.....	9 5000 854.....	1
*3 .....	Support .....	9 5000 853.....	1
*4 .....	Right guard assy.....	9 8547 047.....	1
*5 .....	Side guard .....	1 8547 149.....	1
*6 .....	Left guard .....	1 1000 014.....	1
*7 .....	Front reinforcement.....	1 1103 656.....	1
*8 .....	Rear reinforcement.....	1 1103 657.....	1
*9 .....	Panel holder .....	9 5000 016.....	1
*10 .....	Protection frame .....	9 8646 114.....	1
11 .....	Washer 11 .....	0613382.....	9
12 .....	Washer 10.5.....	0614240.....	6
13 .....	Nut M10 8.8.....	0258093.....	8
14 .....	Bolt M10x30-5.8-A3L.....	0011275.....	5
15 .....	Bolt M10x40-5.8-A3L.....	0596431.....	3
16 .....	Bolt M10x25-5.8-A3L.....	0599511.....	1
17 .....	Washer 10 ODV .....	0613239.....	1
18 .....	Bolt M8x20-4.8-A2L.....	0594561.....	20
19 .....	Nut M8 8.8-A3L.....	0258082.....	38
*20 .....	Washer Zn 8C.....	1 9242 084.....	26
21 .....	Canvas holder 19245003 .....	0240009.....	5
22 .....	Bolt M8x30-4.8-A2L.....	0245806.....	10
23 .....	Washer 9 .....	0735251.....	10
24 .....	Washer 8.4.....	0612821.....	10
25 .....	Bolt M8x25-4.8-A2L.....	0079244.....	8
26 .....	Bolt M8x20-5.8-A2L.....	0037510.....	2
27 .....	Washer 8 ODV .....	0613250.....	2



TR-165	Hinge assy			14
1	2	3	4	

1-12.....	Hinge assy.....	5009 147.....	1
*1-*1b...	Hinge.....	5000 256.....	1
*1a .....	Side plate.....	1101 532.....	1
*1b .....	Side plate.....	1 1101 532.....	1
*2 .....	Pin .....	1 9311 204.....	1
*3 .....	Casing.....	0 6821 011.....	2
*4 .....	Hook.....	1 9344 031.....	1
5.....	Safety elemment 12.5 .....	0290532.....	1
*6 .....	Plastic wire 300.....	1 6847 023.....	1
*7 .....	Wire hook .....	1 9344 046.....	1
*8-*.10..	Safety elemment assembly .....	9 3799 074.....	1
*8 .....	Pin .....	0 9816 010.....	1
*9 .....	Plastic wire 300.....	1 6847 023.....	1
*10 .....	Wire hook .....	1 9344 046.....	1
11.....	Washer 13.....	0732611.....	1
12.....	Splint pin 3.2x20.....	0014069.....	1

# 17



TR-165	Accessories			17
1	2	3	4	

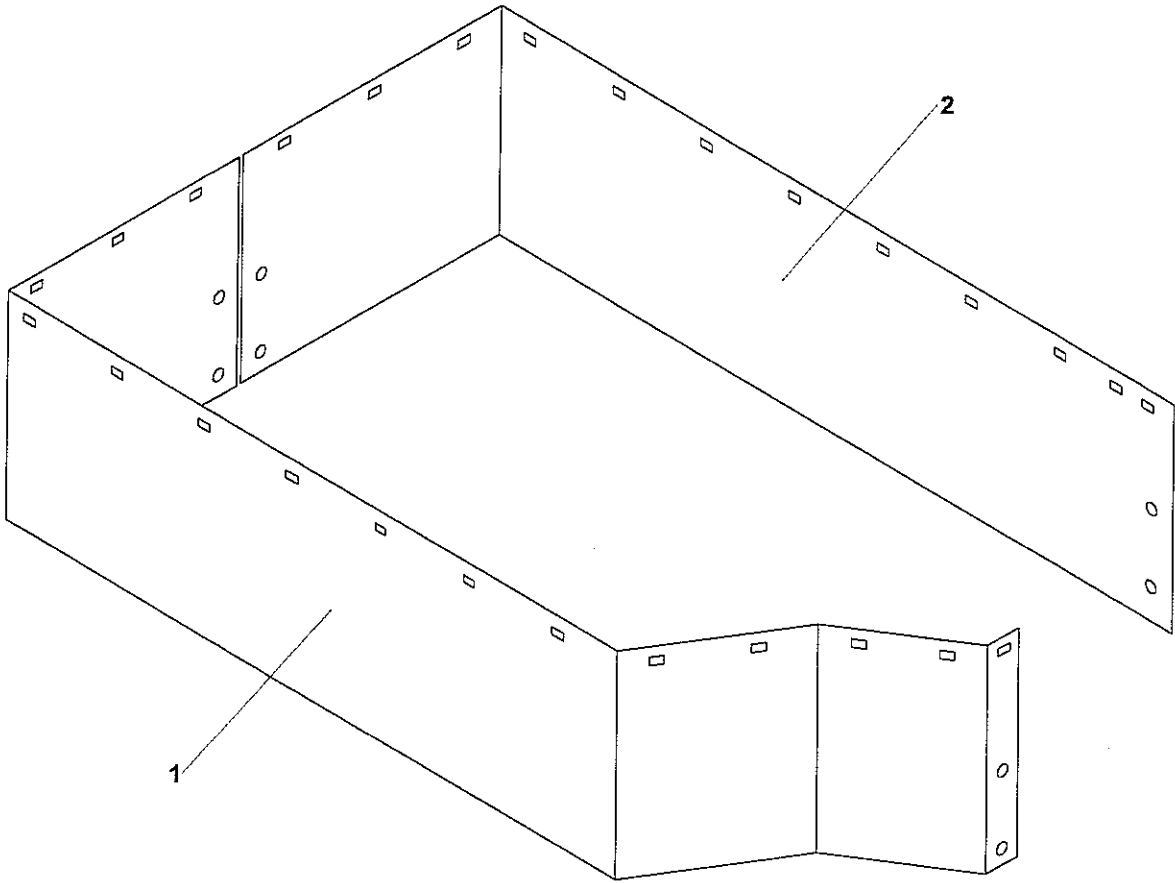
1-37.....	Accessories TR-165.....	9 8700 184	
.....	Accessories.....	9 8699 027	
*1 .....	Mounting lever .....	9 5036 404	
2.....	Knife.....	21001	
*3 .....	Knives holder .....	9 5036 401	
*4 .....	Bolt M16x47 LIAB-304 .....	0035893	
*5 .....	Strike bar .....	0 2940 107	
6.....	Wrench 10 .....	0015279	
7.....	Bolt M12x35 ODV 8.8 .....	0460185	
*8-*9....	Remover .....	9 8675 002	
8.....	Remover .....	9 8647 003	
*9 .....	Bolt .....	1 9016 004	
*14 .....	Holder assy I.....	9 5000 699	
*15 .....	Holder assy II.....	9 5000 700	
*16 .....	Washer.....	1 9242 084	
17.....	Nut M8.....	0258082	
18.....	Bolt M8x30 .....	0246806	
*20 .....	Casing.....	1 3920 240	
21-21a..	Holder .....	9 5009 294	
*21a .....	Lug .....	1 1102 788	
22.....	Bolt M8x20 8.8-A3C-6kT .....	0035893	
23.....	Washer 9.....	1 9242 084	
*24-30 ..	Holder with Canvas.....	9 2739 106.....	1
*24 .....	Canvas holder .....	9 2736 028.....	1
*25 .....	Canvas assembly.....	0246015.....	1
26.....	Bolt M6x20 .....	0109681.....	5
27.....	Washer 6.6.....	0087604.....	5
28.....	Washer 6.4.....	0612810.....	5
29.....	Washer 6 ODV .....	0613228.....	5
30.....	Nut M6 -6 -A2L.....	0614097.....	5
*31-37 ..	Holder with Canvas.....	9 5009 030.....	1
*31 .....	Canvas holder .....	9 2736 028.....	1
*32 .....	Canvas assembly.....	0267025.....	1
33.....	Bolt M6x20 .....	0109681.....	5
34.....	Washer 6.6.....	0087604.....	5
35.....	Washer 6.4.....	0612810.....	5
36.....	Washer 6 ODV .....	0613228.....	5
37.....	Nut M6 -6 -A2L.....	0614097.....	5

Items and quantities according to contract.

Note:

Knife 21001 has to ordered in set of 25 pcs.

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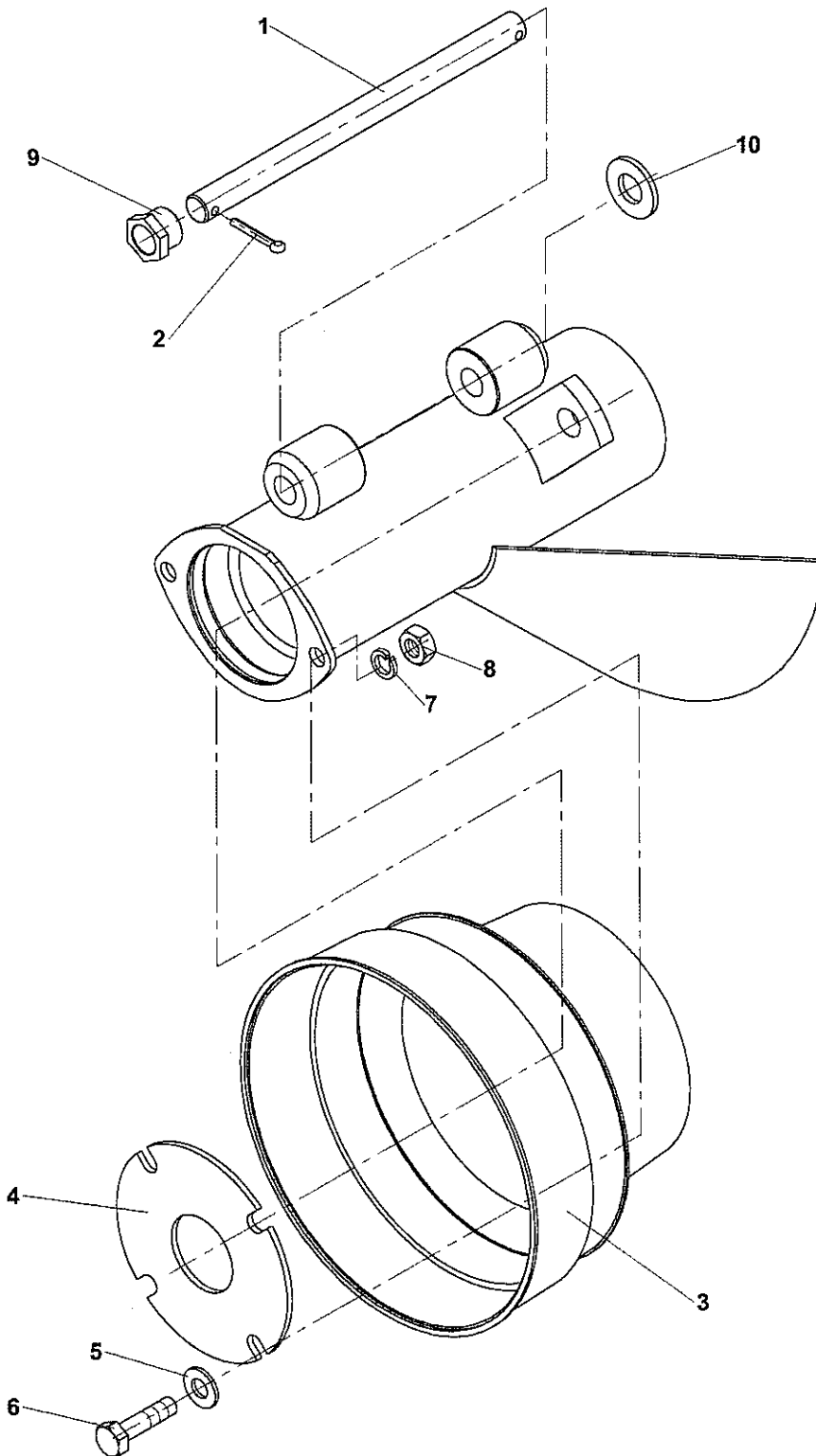


<b>TR-165</b>	<b>Canvas set yellou Germany 9 8699 487</b>		<b>18</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

1-2..... Canvas set yellou..... 376629..... 1  
..... Germany 9 8699 487  
\*1 ..... Canvas 9 5009 006 ..... 0258808..... 1  
\*2 ..... Canvas I 9 5009 007 ..... 0258819..... 1

**Note:** valid for modification 11, 20, 40, 33;





TR-165	Drive assy II			21
1	2	3	4	

1-10.....	Drive assy II.....	9 3897 116.....	1
*1 .....	Hinge pin .....	0 9310 105.....	1
2.....	Split pin 5x28 .....	0613899.....	2
*3 .....	Cover.....	1 0990 112.....	1
*4 .....	Washer .....	1 9232 032.....	1
5.....	Washer 10.5 .....	0614240.....	4
6.....	Bolt M10x25-4.6-A3L .....	0474408.....	4
7.....	Washer 10 .....	0643239.....	4
8.....	Nut M10-6-A3L.....	0612403.....	4
*9 .....	Casing.....	1 3926 116.....	1
10.....	Washer 17 .....	0614262.....	1