

Order No. 9900.00.61GB01

Operating Instruction

Folding Power Harrows

VKE 600 K

VKE 400 K - 500 K, 800K





Operating Instruction

ROTARY HARROW V K E / K (Folding)

Before use

Ensure operators have read, and are familiar with, the instructions contained in this manual, and the rotary harrow is not operated by untrained persons. The rotary harrow is a power-take-off driven implement for soil preparation and is designed for normal agricultural work. Use the rotary harrow only for the purpose for which it was designed and tested and in accordance with the instructions contained in this handbook.

Warning. Warranty will be invalid if the machine is improperly used, the indicated HP limits (Chart 1) are exceeded, or non-genuine parts are fitted.



Only authorized and skilled Rabe dealer technicians, national distributors or our own factory service engineers are allowed to undertake repairs under warranty.

Safety precautions

Warning. Make certain that all guards, covers, warning labels and safety devices are correctly fitted and operative. Ensure that the machine is standing on firm, level ground with the parking stand in lowered position and the work area is clear of bystanders.



Safety Guards

According to U K legal safety standards the rotary harrow is equipped with special front, rear and side guards which are not shown in this manual. The rear roller on these machines acts as part of the guard. If for any reason it is operated without the roller, an extension to the original rear guard must be fitted.

Technical specifications
(Alterations reserved)

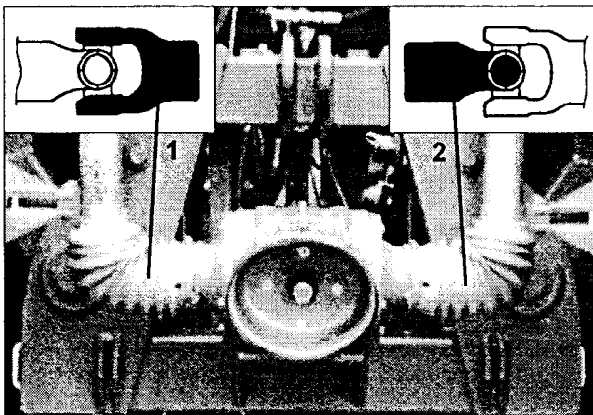
Model VKE	Work. width	Weight (kg)	Up to kW / HP
400 K	400 cm	2870	192 / 260
500 K	500 cm	3260	
600 K	600 cm	3650	

Transport width appr. 275 cm

Noise level at PTO standard revs:
with closed cap - appr: 1,5 dB (A)
with open rear window:
appr: 7,5 dB (A)

Drive shaft balance (Fig. 1)

Make sure that in folded -up position of the rotary harrow both drive shaft yokes (1 Fig. 1+ 2) are at 90° 's to each other to maintain the balance of the shafts. This is specially important when the shafts are installed.



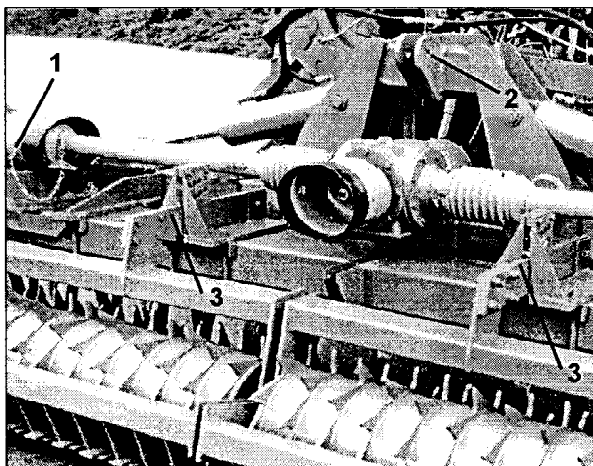
1

Timing of Tines

The tines of the last inner rotor unit on each half of the rotary harrow must be positioned at 90° to the tines on the opposite rotor unit.

Loading & Lifting instructions (Fig.2)

Lift machine for loading only in the non-folded position. Fix top link pin at rear side of the headstock (2 Fig. 2) and use as hook for lifting gear. When fitted with a seed drill toolbar use in addition the arms for the packer roller (2 Fig. 3) as extra hook.



2



Preparing for work

Position lower link arms of the tractor at the same height and then connect rotary harrow.

Fit the top link and secure also the link arms with lynch pins. Then the PTO drive shaft can be fitted to the tractor. Adjust movement of lower link arms so that they are fixed in raised position and only have little play in working position.

In work the tractor top links should be positioned only slightly up towards the headstock of rotary harrow.

The lower link arms of the tractor and the top link should be almost parallel to ensure quiet running of PTO shaft.

Hydraulic couplings

The two hoses should be connected to the double acting spool valve in order

Folding in = Raise

Folding out = Lower

The parking stand (8 Fig. 1) must also be lifted.

P T O- Shaft (Fig.4)

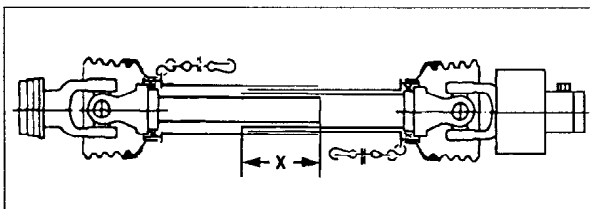
Make sure the Walterscheid QS lock fits tightly on the PTO- Shaft. The QS lock is fully engaged if collar can be rotated freely.

Use only the original supplied PTO-drive shaft and observe the detailed instructions in this manual and also the instructions attached to the PTO shaft.

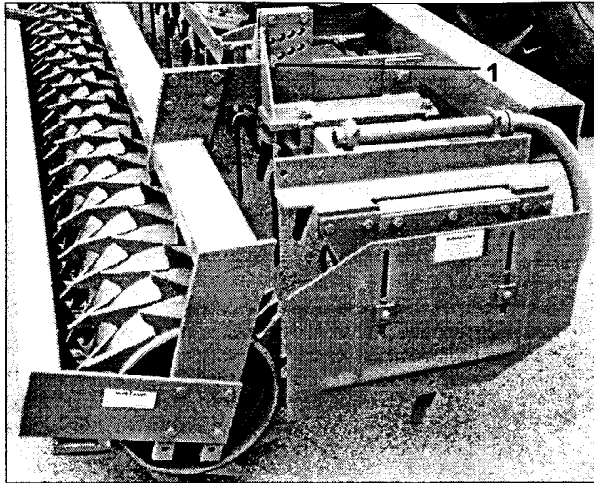
To adjust the length, hold the half-shafts next to each other in the shortest and longest working position and mark them. Shorten if necessary by cutting off the guard tubes and sliding profiles on each half-shaft by the same length.

With the rotary harrow in lowered position (at max. working depth) the minimum overlap of the sliding profiles must be at least 200 mm (4 Fig. X).

Round off all sharp edges and remove burrs. Grease sliding profiles.



4



5

Folding- in of rotary harrow.

Disengage PTO-Shaft first !
 Lift rotary harrow and engage depth adj. pin of packer roller (5 Fig. 1) in bottom position.
 Fold- in rotary harrow and the transport lock will engage automatically.
 Close valves on both ends of the hydr. hoses.
 Ensure sufficient ground clearance during transport.

Working position (Fig. 7)

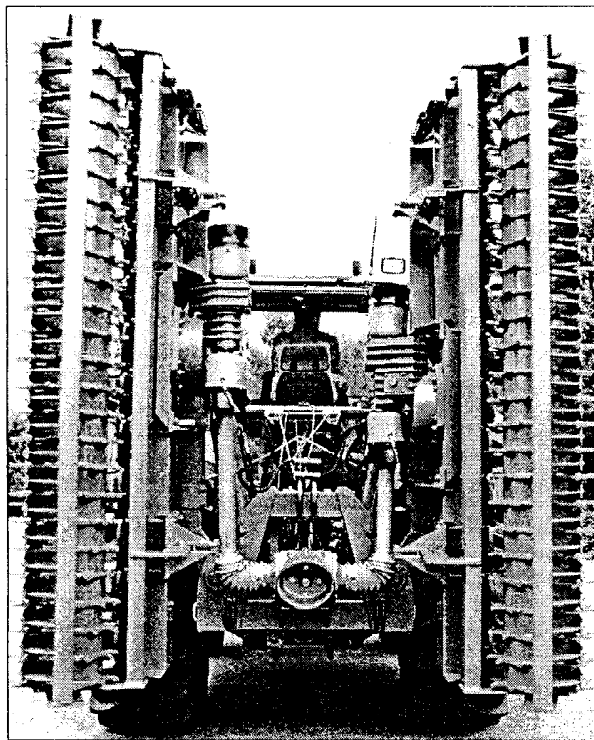
Open transport valves.
 Disengage transport lock (7 Fig. 1) by pulling rope. Operate spool valve for folding- out until hydr. cylinders are fully extended.

Level position (Fig. 8)

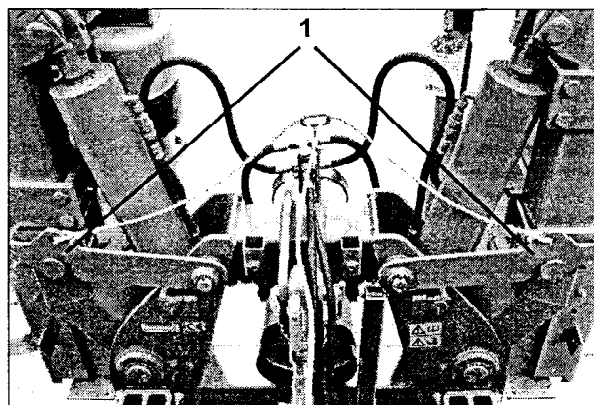
To adjust both power harrow sections horizontally in a level position the ball ends of the hydraulic cylinders can be adjusted (8 Fig. 2) accordingly.
 Re-position the depth adj. pin for the packer roller (5 Fig. 1).

Parking (Fig. 8)

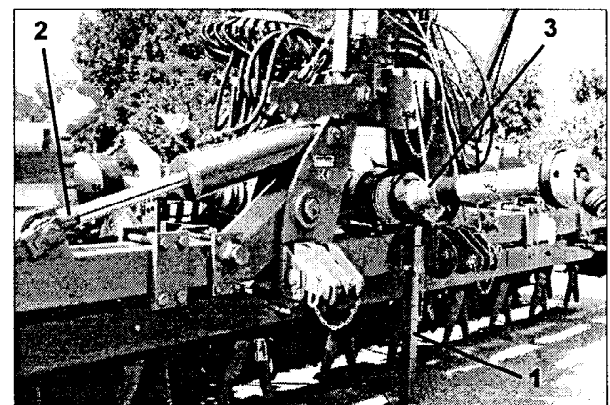
The rotary harrow must be parked only in working position with the parking stand on the ground (8 Fig. 1).
 There is a holder (8 Fig. 3) provided for the PTO- shaft to rest.



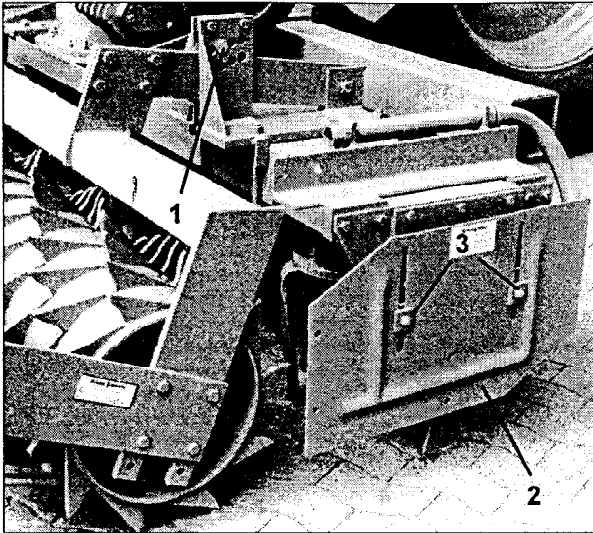
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8



9

Operation

Engage or disengage the PTO shaft only if the rotary harrow is not lifted higher than 10 - 20 cm above the ground.

Ensure that:

- Sufficient front wheel weights are fitted to compensate the rear mounted implement.
- The selected PTO. speed of tractor is in accordance with the permitted 1000 rpm. of the rotary harrow.
- The PTO. drive shaft tubes and sliding profiles do not separate at the longest working length, or jam at its shortest.

Adjust tractor linkage to level the rotary harrow laterally and longitudinally.

The length of the toplink determines whether the input shaft of the gearbox is in a level position horizontal wise to avoid strain on gearbox.

Depth Control & Side Plates (Fig. 9)

The tillage depth is regulated by the pin adjustment (9 Fig. 1).

The side plates (9 Fig. 2) prevent soil ridges and must be adjusted according to the working depth. Before lifting the side plates up or down, loosen bolts (9 Fig. 3). The side plates should be allowed to penetrate the soil **1 cm** max.

Tractor spool valves

Operate hydraulic lift in '**Float Position**'. Also the spool valves for the folding position. Only if more levelling action is required the '**Neutral Position**' can be chosen with the hydr. folding cylinders fully extended.

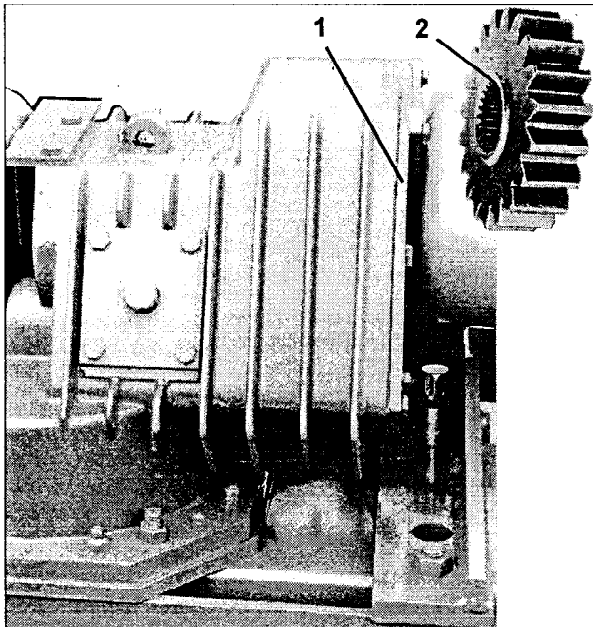
Rotor speed

By varying the rotor speed and/or the forward speed of the tractor, the optimum soil tilth can be achieved to produce a perfect seedbed in one pass. The lowest possible recommended speed should be used to achieve a satisfactory tilth.

Caution. High rotor speed causes higher wear on knifetines. The forward speed of the tractor must not exceed approx. 8 km/h (5 mph). Both outer gearboxes must have same rotor speed.

Gear set options

VKE models are fitted standard with a pair of blue 15/20 change gears (15 teeth on input shaft). By means of fitting the pair of change gears vice versa a different rotor speed can be chosen or another set of gears must be obtained and fitted.



11

Gears*			Rotor rpm
No. of teeth		Colour	
12	23	Yellow	151
23	12		----
14	21	Red	193
21	14		433
15	20	Green	217
20	15		385
16	19	Blue	243
19	16		343
17	18	White	273
18	17		306

* Bold print: Gear on input shaft

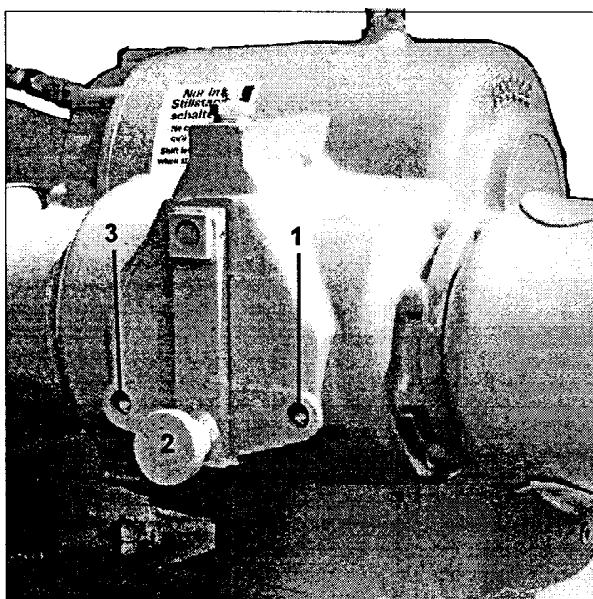
Exchange of Change Gears (Fig. 11)

Remove the cover plate (11 Fig. 1) taking care not to damage the gasket nor the shaft seal. Fit gears with the figure (indicating the nos. of teeth) which is stamped on gear pointing to the gearbox cover plate.

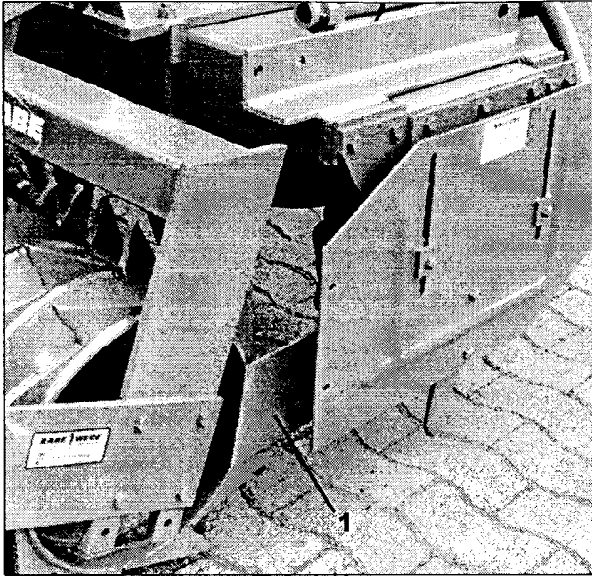
The shoulder on the gears must point inwards to the gearbox housing (11 Fig. 2). The number of teeth of both gears must count always 35 in total.

Note:

Whenever the PTO- shafts are fitted to the outer gearboxes take care of correct timing of tines !



12



13

Timing of Tines

The tines of the last inner rotor unit on each half of the rotary harrow must be positioned at 90° to the tines on the opposite rotor unit.

Lever Change gearbox

The gearbox provides the selection of 3 speeds.

Select the same gear setting for both gearboxes.

Warning.

Shift gears only when the rotary harrow is stopped and rotors are not moving.

Speed options and rotor rpm (Fig.12)

PTO rpm	Lever position	Rotor rpm
1000	1	258
	2	343
	3	408

Rear PTO Through Drive

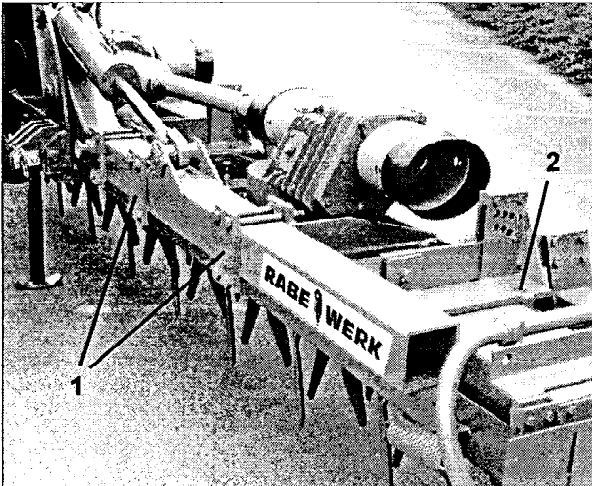
The speed of the PTO through shaft is equal to the tractor's PTO speed and is always engaged.

Soil deflectors (Fig. 13)

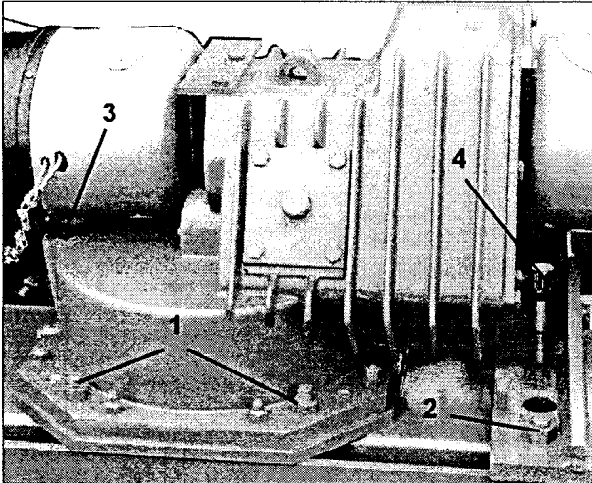
They are optional available and are designed to prevent ridging on light soil.

Clod Bar

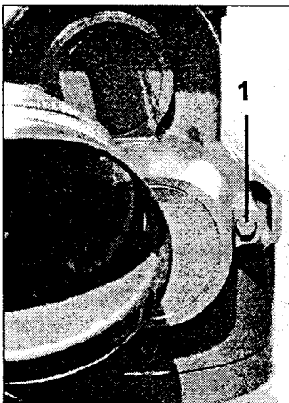
Two adjusters are limiting the working depth. Do not adjust the clod bar too deep that soil is bulldozed in front. Clear clodbar out of work in stoney conditions to avoid bending of clodbar, also tine fractures.



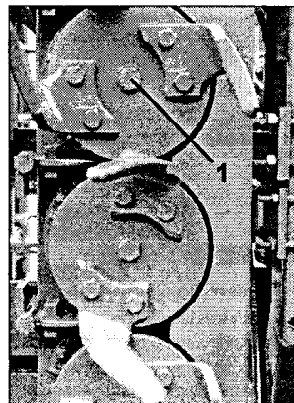
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18



19

Maintenance (16 - 19)

After the first working hour, check and re-tighten all hardware.

Torque:

The use of a torque wrench is recommended.

Fixing bolts of tines: 380 Nm.

Clamping bolts (16 Fig. 1)

M 20/8.8: 425 Nm

(17 Fig. 1)

M 16/8.8 210 Nm

(16 + 17 Fig 2)

M 20/10.9 450 NM

Traction bolts (19 Fig. 1): 610 Nm.

Check oil level daily and re-fill if necessary up to top (max.) mark on dipstick. But do not screw dipstick in. Dip- in only.

Standard gearbox: Dipstick (17 Fig 3).

Lever change gearbox:

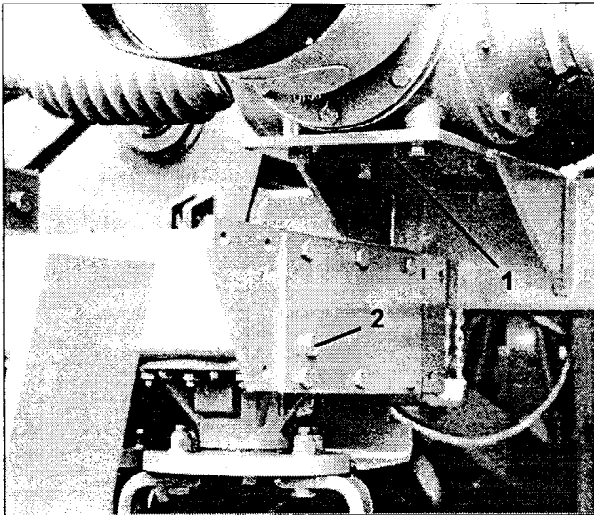
Up to level of plug (18 Fig. 1)

Trough: Dipstick (17 Fig. 4).

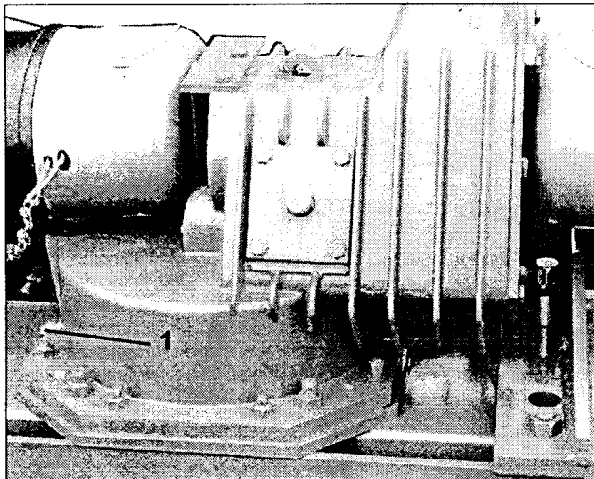
Central gearbox: Up to level of plug

Grease all grease nipples on packer roller or PTO. drive shaft. Adjust scrapers on toothed packer roller close to the roller, if required. Ensure when tightening bolts that all scrapers remain adjacent to the roller.

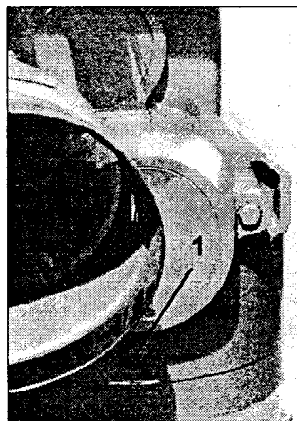
The toothed roller should be cleaned and coated with oil after use.



20



21



22

Oil Change (Fig. 20 -22)

- * **Standard gearbox,**
- * **Lever change gearbox,**
- * **Central gearbox.**

On new machine the first oil change must be carried out after approx. 50 hours of work: Afterwards every 500 hours or every 2nd year. Drain oil while it is still hot and machine is in folded- in position.

The drainplug is provided on
 Standard gearboxes: (21 Fig. 1)
 Lever change gearbox: (22 Fig. 1)
 Central gearbox: (20 Fig.1)

Gear through

The gear transmission in the gear trough is running with the same 90 grade gearbox oil as the central gearbox. Please take care of correct specifications (non-foamy!) as stated in the following chart.

First oil change after approx. 500 h !
 Afterwards every 1000 h or every 3rd year.

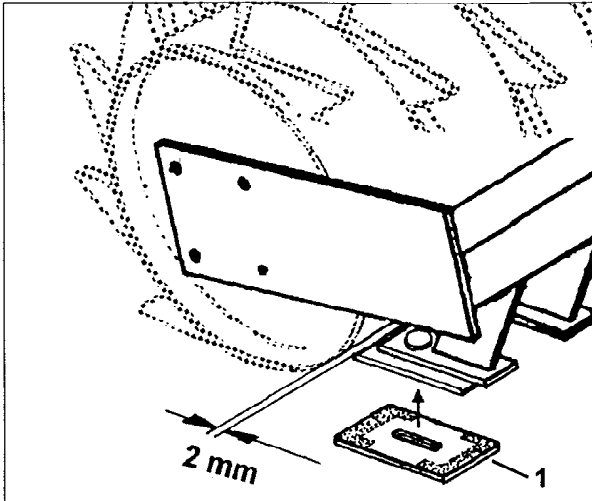
The drain plug (20 Fig. 2) is part of a magnet which must be removed and cleaned after the initial 50 operation hours. Thereafter once a season.

Re- filling of oil takes place through dipstick/ breather plug.

Oil in gearboxes and troughs

Hypoid gearbox oil
 SAE 90 (API-GL-5/ MIL-L-2105 D)

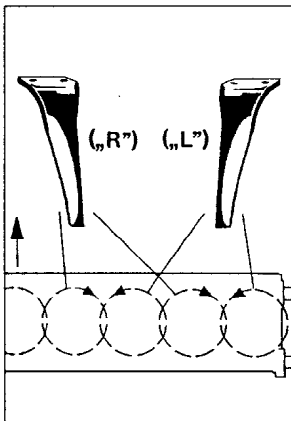
Gearbox	Liter		
Central	3,5 l		
Standard	each 7 l		
Lever change	each 6,5 l		
Through	4 m	5 m	6 m
for each half	15 l	19 l	23 l



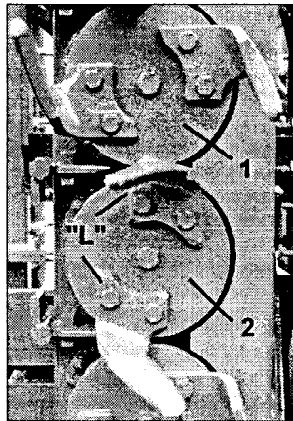
24

Toothed Packer Roller (Fig.24)

The scrapers must be re-adjusted from time to time. But do not adjust scrapers tight against the roller. The use of hardcoated scrapers is strongly recommended in sticky soil where blocking is a continuous problem. Hardcoated scrapers (24 Fig. 1) have to be fitted with the hardcoated side facing up with a clearance of apprx 2 mm to the roller.



25



26

Replacement of tines (Fig. 25-26)

Worn, bent or broken knife tines should be replaced immediately.

When correctly fitted the tines are dragging rearwards in the direction of rotation (Fig. 25).

The left hand turning rotors (26 Fig. 1) are fitted with two left hand tines, so as the right hand turning rotors (26 Fig. 2) with right hand tines.

Left hand blades can be recognised by the "L" stamped in the blade.

Torque: 380 Nm



EG-Konformitätserklärung

im Sinne der EG-Richtlinie 89/392/EWG, Anhang II A

Wir

RABEWERK GmbH+Co.

Am Rabewerk, D-49152 Bad Essen

erklären hiermit, daß die Bauart von

Kreiselegge VKE ... K (klappbar)

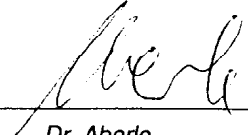
in der gelieferten Ausführung folgenden einschlägigen Bestimmungen entspricht:

EG-Richtlinie Maschinen 89/392/EWG
geändert durch 93/44/EWG und 93/68/EWG, Anhang I

Angewendete harmonisierte Normen:

EN 292-1 und EN 292-2

Bad Essen, den 13. 10 92



Dr. Aberle,
Geschäftsführung Technik



Friedrich Gerdom,
Konstruktionsleiter