Flail Mower
KDK 300
Operation Manual

IMPORTANT

READ THESE INSTRUCTIONS BEFORE

INSTALLING AND USING THIS IMPLEMENT

Important Safety information

Safety at all times

Thoroughly read and understand the instructions given in this manual before operation. Refer to the "Safety Decal", read all instructions noted on them.

Do not allow anyone to operate this equipment who has not fully read and comprehended this manual and who has not been properly trained in the safe operation of the equipment.

- Operator should be familiar with all functions of the unit.
- Operate implement from the driver's seat only.
- Make sure all guards and shields are in place and secured before operating the implement.
- Do not leave tractor or implement unattended with engine running.
- Dismounting from a moving tractor could cause serious injury or death.
- Do not stand between tractor and implement during hitching.
- Keep hands, feet, and clothing away from power-driven parts.
- Wear snug fitting clothing to avoid entanglement with moving parts.
- Watch out for wires, trees, etc., when raising implement. Make sure all persons are clear of working area.
- Turning tractor too tight may cause implement to ride up on wheels. This could result in injury or equipment damage.

Look For The Safety Alert Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

Be aware of signal words

A signal word designates a degree or level of hazard seriousness. The signal words are:

DANGER

Indicates an imminently hazardous situation which, if not avoids, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purpose, cannot be guarded.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may

also be used to alert against unsafe practices.

For you protection

- Thoroughly read and understand the “safety label” section, read all instructions noted on them.

Shutdown and storage

- Lower machine to ground, put tractor in park, turn off engine, and remove the ignition key.
- Detach and store implements in a area where children normally do not play. Secure implement by using blocks and supports.

Use safety lights and devices

- Slow moving tractors, self-propelled equipment, and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.
- Flashing warning lights and turn signals are recommended whenever driving on public roads. Use lights and devices provided with implement.

Transport machinery safely

- Comply with state and local laws.
- Maximum transport speed for implement is 20 mph. Do not exceed. Never travel at a speed which does not allow adequate control of steering and stopping. Some rough terrain require a slower speed.
- Sudden braking can cause a towed load to swerve and upset. Reduce speed if towed load is not equipped with brakes.
- Use the following maximum speed - tow load weight ratios as a guideline:
  20 mph when weight is less than or equal to the weight of tractor.
  10 mph when weight is double the weight of tractor.
- IMPORTANT: Do not tow a load that is more than double the weight of tractor.

Keep riders off machinery

- Riders obstruct of operator’s view, they could be struck by foreign objects or thrown from the machine.
- Never allow children to operate equipment.

Practice safe maintenance

- Understand procedure before doing work. Use proper tools and equipment. refer to Operator’s Manual for additional information.
- Work in a clean dry area.
- Lower the implement to the ground, put tractor in park, turn off engine, and remove key before performing maintenance.
- Allow implement to cool completely.
- Do not grease or oil implement while it is operation.
- Inspect all parts. Make sure parts are in good condition and installed properly.
- Remove buildup of grease, oil or debris.
- Remove all tools and unused parts from implement before operation.

Prepare for emergencies

- Be prepared if a fire starts.
- Keep a fist aid kit and fire extinguisher handy.
- Keep emergency numbers for doctor, ambulance, hospital and fire department near phone.

Wear protective equipment

- Protective clothing and equipment should be worn.
- Wear clothing and equipment appropriate for the job. Avoid loose fitting clothing.
- Prolonged exposure to loud noise can cause hearing impairment or hearing loss. Wear suitable hearing protection such as earmuffs or earplugs.
- Operating equipment safely requires the full attention of the operator. Avoid wearing radio headphones while operating machinery.

Avoid high pressure fluids hazard

- Escaping fluid under pressure can penetrate the skin causing serious injury.
- Avoid the hazard by relieving pressure before disconnecting hydraulic lines.
- Use a piece of paper or cardboard, not body parts, to check for suspected leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
- If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be treated within a few hours or gangrene may result.

Safety Labels

Your Flail Mower comes equipped with all safety labels in place. They were designed to help you safely operate your implement. Read and follow their directions.

1. Keep all safety labels clean and legible.

2. Replace all damaged or missing labels. To order new labels go to your nearest Jonova dealer or visit our dealer locator at AgroJonova.com.

3. Some new equipment installed during repair requires safety labels to be affixed to the replaced component as specified by Jonova. When ordering new components make sure the correct safety labels are included in the request.

Introduction

Jonova welcomes you to the growing family of new product owners. This implement has been designed with care and built by skilled workers using quality materials. Proper assembly, maintenance, and safe operating practices will help you get years of satisfactory use from the machine.

Application

The Flail Mowers are designed for three-point hitch or Quick-Hitch System mounting. These Flail Mowers are ideal for ripping, leveling, finish grading, and backfilling applications at feedlots, outdoor arenas, building sites, and maintenance operations on farm and ranch lanes or roadways.

Using This Manual

- This Operator’s Manual is designed to help familiarize you with safety, assembly, operation, adjustments,

troubleshooting, and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.

- The information contained within this manual was current at the time of printing. Some parts may change slightly to assure you of the best performance.
- To order a new Operator's or Parts Manual contact your authorized dealer. Manuals can also be printed from the Jonova Service & Support Center by your dealer.

Terminology

" Right" or "Left" as used in this manual is determined by facing the direction the machine will operate while in use unless otherwise stated.

Definitions

Note : A special point of information that the operator must be aware of before continuing.
Important : A special point of information related to its preceding topic. The intention is that this information should be read and noted before continuing.

Owner Assistance

The Warranty Registration card should be filled out by the dealer at the time of purchase. This information is necessary to provide you with quality customer service. If customer service or repair parts are required contact a dealer. A dealer has trained personnel, repair parts and equipment needed to service the machine. The parts on your machine have been specially designed and should only be replaced with genuine parts.

Serial Number Plate

For prompt service always use the serial number and model number when ordering parts from your dealer. Be sure to include your serial and model numbers in correspondence also.

Section 1: Assembly and Set-up

Assembly

Refer to the parts illustration.

Tractor Hook-Up

1. Be certain that tractor draw bar will not interfere. Move draw bar ahead or remove if required. Draw bar should also be checked for clearance when unit is being raised for the first time.
2. Align lower link arms of tractor to hitch clevises on mower. Insert lower hitch pins into lower ball swivels and attach linch pins.
3. Attach tractor top link to upper floating hitch on mower with pin supplied. Secure with lock pin.
4. Adjust tractor top link in or out to place upper hitch pin vertically above or slightly behind lower hitch pins to allow mower flotation. The mower should be run with the back 15 degrees lower than the front.

Driveline Installation

1. Slide driveline end with extended safety cone over splined shaft of gearbox and secure with attaching

device.

2. Slide driveline over tractor's splined PTO shaft and secure with locking device of driveline.
3. Driveline should now be moved back and forth to insure that it is secure on the PTO shaft of the tractor and mower gearbox.
4. Attach chain from the driveline shield to one of the upper hitch braces to ensure that the shield does not rotate.
5. Should driveline require shortening:
   a. Hold the half-shafts next to each other in the shortest working position and mark them.
   b. Shorten inner and outer guard tubes equally.
   c. Shorten inner and outer sliding profiles by the same length as the guard tubes.
   d. Proper overlap is a minimum of one-half the length of each tube, with both tubes being of equal length.
   e. Round off all sharp edges and remove burrs. Grease sliding profiles.

CAUTION

Tractor PTO shield and all mower guards must be in place at all times during operation!

Section 2: Operating Instructions

Transporting

NOTE: Always disengage PTO before raising mower to transport position.

1. When raising the mower to transport position, be sure that driveline does not contact tractor or mower. Adjust and set the tractor's 3-point hitch lift height so that the driveline does not contact mower deck in the fully raised position.
2. Be sure to reduce tractor ground speed when turning, leaving enough clearance so that the mower does not contact obstacles such as buildings, trees or fences.
3. Select a safe ground travel speed when transporting from one area to another. When traveling on roadways, transport in such a way that faster moving vehicles may pass safely.
4. When traveling over rough or hilly terrain, shift tractor to a lower gear.

CAUTION

When traveling on public roads, whether at night or during the day, use accessory lights and devices for adequate warning to operators of other vehicles. Comply with all Federal, State, and local laws.

Mowing Instructions

1. Clear area to be mowed of objects and debris that might be picked up and thrown by the mower blades.
2. Grass is best cut when it is dry. Mowing wet grass can cause plugging resulting in grass clumps behind the mower.
3. Grass should be mowed frequently as shorter clippings deteriorate faster.
4. If mowing extremely tall grass, it is best to raise cutting height and mow the area, then lower cutting height and mow a second time at the desired height.

Operating Instructions

Proper servicing and adjustments are the key to the long life of any machine. With careful and systematic
inspection of the mower, costly maintenance, time and repair can be avoided.

Before beginning to mow, the following inspection should be performed:

1. Check oil level in gearbox.
2. Check that all plugs in gearbox have been replaced and tightened properly.
3. Be sure all mower knives, bolts and nuts are tight.
4. Be certain all guards and shields are in place and secure.
5. Grease driveline shaft and all other grease fittings.
6. Clear area to be mowed of rocks, branches and other foreign objects.
7. Lower mower to ground. Set tractor throttle at approximately 1/4 open. Engage PTO to start blades rotating.
8. Operate with 540 rpm PTO tractor.
9. At first begin mowing at a slow forward speed and shift up until the desired speed is achieved - maintaining 540 PTO rpm.
10. Mower knives will cut better at a faster blade speed than at reduced throttle.
11. After mowing the first 50 feet, stop and check to see that the mower is adjusted properly.
12. Do not make sharp turns or attempt to back up while mower is on the ground.
13. Do not engage PTO with mower in the fully raised position. Do not engage PTO at full throttle.

Section 3: Adjustments

Leveling the Mower

NOTE: Tractor and mower should be on level ground.

Leveling can be adjusted at the tractor's 3-point arms and center link.

Cutting Height Adjustment

The machines cutting height depends upon the position of the rear roller.

1. Remove the bolts that fix the roller on both sides.
2. Lift or lower both sides of roller in equal measurements.
3. Replace bolts and re-tighten.

3-Point Hitch Adjustments

The 3-point hitch system on this mower has been designed for front to back flotation when mowing on uneven terrain. Adjust tractor's top center link to place the upper hitch pin vertically above or slightly behind the lower hitch pins. The mower should be run with the back 15 degrees lower than the front.

The hitch can also be adjusted from side to side by turning the adjustment handle. Turn handle until you have achieved your desired location.

 **CAUTION**

Engage parking brake, shut off tractor, remove key and disengage PTO before making any height adjustments!

Belt Tension

 **CAUTION**

Belt drive system under roller tension; use care to avoid bodily harm!

The Belt tension should be checked after the first 20 hours of use. And then every 40 hours of use.

1. Tension on the belt can be adjusted with the belt tension bolt. Turn the bolt until desired tension is achieved. When the belt has the correct tension the gearbox should be adjusted so that the gearbox extension is running straight (parallel) with the flail mower. Loosen bolts at the bottom of the gearbox and move gearbox until gearbox extension is running straight.
2. Excessive tension on the belt may lead to premature failure of belt and drive components.

 **CAUTION**

Excessive tension on the belt may lead to premature failure of belt and drive components. Excessive tension on the belt may also lead to a safety hazard to the operator or bystanders.

Section 4: Maintenance and Lubrication

Maintenance

Proper servicing and adjustment is the key to the long life of any farm implement. With careful and systematic inspection, you can avoid costly maintenance, time and repair.

 **CAUTION**

For safety reasons, each maintenance operation must be performed with tractor PTO disengaged, mower lowered completely to ground and tractor engine shut off with ignition key removed.

- After using the mower for several hours, check all bolts to be sure they are tight and check drive belt tension.
- Replace any worn, damaged or illegible safety decals by obtaining new decals from dealer.

Knife Replacement

IMPORTANT: Make sure that the knife is the same length as the others on the mower. This will keep the rotor rotation balanced.

1. Remove bolt and nut.
2. Remove old knife.
3. Install new knife and existing bolt.
4. Secure with nut.

V-Belt Installation

 **CAUTION**

Belt drive system under spring tension; use care to avoid bodily harm!

1. Remove belt guard fender and belt cover.

2. Disengage belt tension by loosening belt tension bolt until belt can be removed.
3. With tension relieved from belt remove old belt from pulleys.
4. Tighten belt tension bolt.
5. Reinstall belt guard and belt guard fender.

Storage

At the end of the working season or when the mower will not be used for a long period, it is good practice to clean off any dirt or grease that may have accumulated on the mower and any of moving parts.

1. Clean as necessary.
2. Check knives for wear and replace if necessary.
3. Inspect mower for loose, damaged or worn parts and adjust or replace as needed.
4. Store unit inside if possible for longer life.
5. Repaint parts where paint is worn or scratched to prevent rust.
6. Replace all damaged or missing decals.

Lubrication

Driveline Shaft U-Joints

Type of Lubrication: Multi-purpose Grease

Roller Bearing (Both Ends)

Type of Lubrication: Multi-purpose Grease

Cutter Rotor Bearing (Both Ends)

Type of Lubrication: Multi-purpose Grease

Gearbox

Type of Lubrication: SAE 90W Gear Lube

Check oil level in gearbox by removing the plug located on the right-hand side. Oil should be level with bottom of plug hole. Add oil if necessary by removing top fill plug and side plug. Add oil until it flows from side plug hole.

Do not overfill!

IMPORTANT: Mower should be level when checking oil in gearbox!

Driveline Profiles

Type of Lubrication: Multi-purpose Grease

Section 5: Specifications & Capacities

Model	KDK300
Structure Weight	1230KG
Working Width	3000mm
PTO Turning Speed	540r/min
Number Of Flails	Hammer: 26
Tractor HP	85-120hp

Section 6: Troubleshooting

Problem	Solution
CAUTION Do not try to clean rear discharge area when mower is running. Bodily harm may occur!	
Belt slipping	Unplug and clean mower deck.
	Remove belt guard shields and clean sheaves.
	Replace belt.
Patches of uncut	Mow at full throttle (540 PTO rpm), check PTO speed and tractor engine.

grass	Shift transmission to a lower gear.
	Tighten belts.
	Replace missing knives.
Excessive vibration	Replace knives.
	Replace drive belt.
	Replace pulleys or align.
	Remove belt guard shields & clean debris from belt area & sheaves.
Gearbox noisy	Check lubricant level.
Knives scalping grass	Raise cutting height by adjusting roller.
	Change mowing pattern.
	Reduce speed turns.
Uneven cut	Shift to a lower gear.
	Level mower.
	Replace missing knives.
Tractor loaded down by mower	Mow at full throttle (540 PTO rpm).
	Shift to a lower gear.
	Clean mower.

Section 7: Appendix

Bolt Torque

The tables shown below give correct torque values for various bolts and cap screws. Tighten all bolts to the torques specified unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter	Bolt Torque					
	SAE 2		SAE 5		SAE 8	
	N.m	lb-ft	N.m	lb-ft	N.m	lb-ft
1/4”	8	6	12	9	17	12
5/16”	13	10	25	19	36	27
3/8”	27	20	45	33	63	45
7/16”	41	30	72	53	100	75
1/2”	61	45	110	80	155	115
9/16”	95	60	155	115	200	165
5/8”	128	95	215	160	305	220
3/4”	225	165	390	290	540	400
7/8”	230	170	570	420	880	650

METRIC TORQUE SPECIFICATIONS

Bolt Diameter	Bolt Torque

	8.8		10.9	
	N.m	lb-ft	N.m	lb-ft
M3	0.5	0.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	744
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710

Torque figures indicated above are valid for non-greased or non-oiled threads and heads otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

Warranty

Jonova warrants to the original purchaser that this product will be free from defects in material and workmanship beginning on the date of purchase by the end user according to the following schedule when used as intended and under normal service and conditions for personal use.

Overall Unit and Driveline: One year Parts

Gearbox: One year on all components.

Blades and Belts: Considered wear items.

This warranty is limited to the replacement of any defective part by manufacturer and the installation by the dealer of any such replacement part, and does not cover common wear items such as blades, belts, tines, etc. Jonova reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

This warranty does not apply to any part or product which in Jonova's judgment shall have been misused or damaged by accident or lack of normal maintenance or care, or which has been repaired or altered in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product not designed. Misuse also specifically includes failure to properly maintain oil levels, grease points, and driveline shafts.

Claims under this warranty must be made to the dealer which originally sold the product and all warranty adjustments must be made through such dealer. Jonova reserves the right to make changes in materials or design of the product at any time without notices.

This warranty shall not be interpreted to render Jonova liable for damages of any kind, direct, consequential, or contingent to property. Furthermore, Jonova shall not be liable for damages resulting from any cause beyond its reasonable control. This warranty does not extend to loss of crops, any expense or loss for labor, supplies, rental machinery or for any other reason.

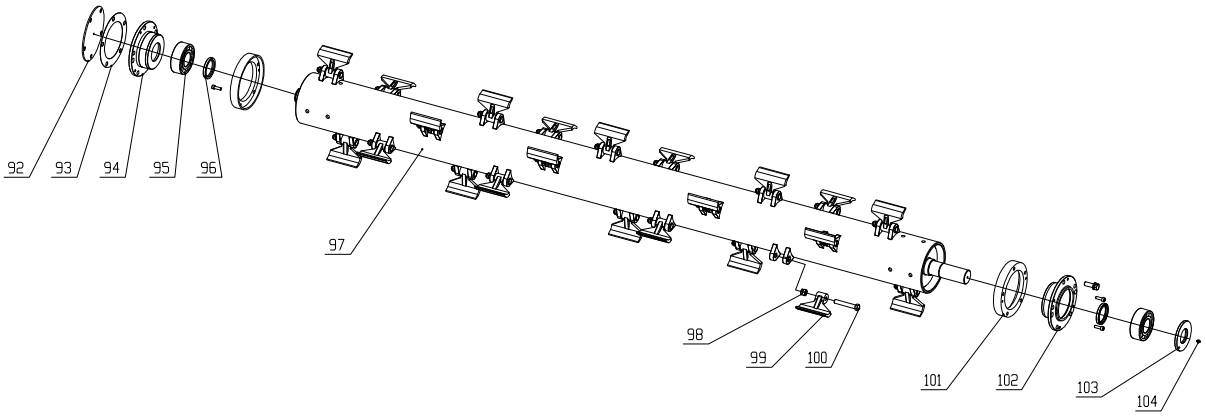
No other warranty of any kind whatsoever, express or implied, is made with respect to this sale; and all implied

warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

Section 8: Parts illustration

KDK Flail Mower Assembly

KDK Flail Mower Parts List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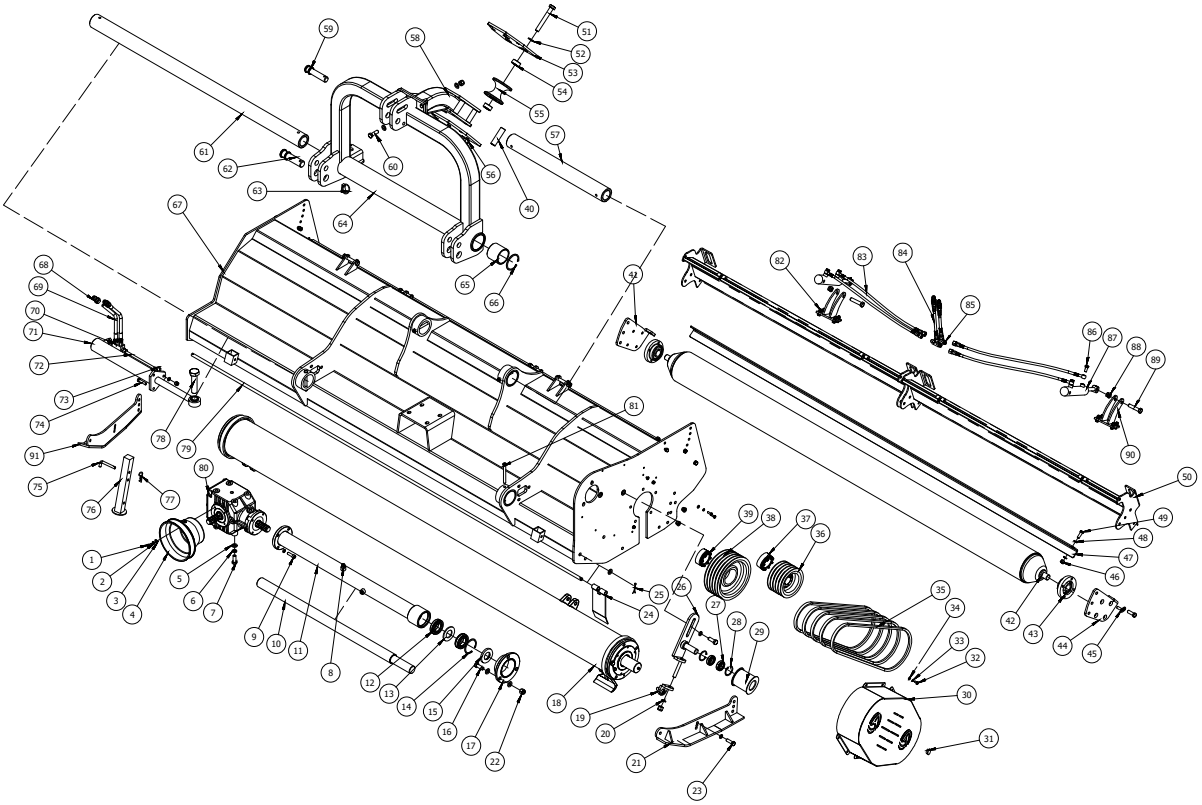
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No.	Code	Description	Qty
1	GB/T5783	Bolt M10*15	4
2	GB/T97.1	Washer 10	12
3	GB/T93.1	spring washer10	4
4	EFGC175.39	PTO cover	1
5	GB/T96	enlarge washer 14	7
6	GB/T93.1	spring washer 14	4
7	GB/T5783	Bolt M14*35	4
8		Breathe bolt	1
9	GB/T70.1	Bolt M10*30	4
10	KDK300.15.3	shaft	1
11	KDK300.15.1	shaft cover weldment	1
12	GB/T276-1994	bearings 6210-1RS	2
13	KDK300.15.2	bushing	1
14	GB/T893.1	circlip 90	1
15	GB/T13871	oil seal FB50*90*10	1
16	GB/T5783	Bolt M14*45	3
17	**KDK300.7**	**bushing**	**1**
18	**KDK300.12**	**rotor weldment**	**1**
19	**KDK300.10**	**tension plate**	**1**
20	GB/T97.1	washer 16	20
21	**KDK300.6**	**skid (R)**	**1**
22	GB/T889.1	Lock Nut M14	19
23	GB/T5783	Bolt M14*40	12
24	**KDK300.30**	**Fender**	**30**
25	GB/T91-2000	cotter pin	2
26	**KDK300.9.1**	**tension plate**	**1**
27	GB/T276-1994	bearing 6006-2RS	2
28	GB/T893.1-1994	circlip 55	2
29	KDK300.26	tension roller	1
30	**KDK300.8**	**belt cover weldment**	**1**
31		cover rubber	1
32	GB/T5783	Bolt M8*20	8
33	GB/T93.1	spring washer8	8
34	GB/T97.1	washer 8	8
35	GB12732	belt SP1524	5
36	**KDK300.25**	**small pulley**	**1**

37	JB/T7934Z3	power lock	1
38	**KDK300.24**	**big pulley**	**1**
39	JB/T7934Z3	power lock	1
40	KDK300.3.3	bushing	1
41	**KDK300.17**	**connection plate for roller(R)**	**1**
42	**KDK300.11**	**rear roller weldment**	**1**
43		UC207 bearing	2
44	**KDK300.16**	**connection plate for roller (L)**	**1**
45	GB/T2673	bolt M12*30	8
46	GB/T889.1	Locking nut M12	14
47	**KDK300.20**	**scraper**	**1**
48	GB/T97.1	washer 12	14
49	GB/T5783	Bolt M12*40	6
50	**KDK300.4**	**rear door weldment**	**2**
51	KDK300.3.4	shaft pin	3
52	GB/T97.1	washer 20	6
53	KDK300.3.5	roller connection	2
54	GB/T276-1994	bearing 61904-2RS	6
55	KDK300.3.2	roller	3
56	GB/T889.1	lock nut M24	1
57	**KDK300.28**	**short rail**	**1**
58	KDK300.3.1	connection weldment	1
59	**KDK300.2.2**	up pin shaft	1
60	GB/T5783	Bolt M16*55	11
61	**KDK300.27**	**long rail**	**1**
62	**KDK300.2.4**	down pin	2
63		cotter pin	3
64	**KDK300.2.1**	**3-point-linkage**	**1**
65	**KDK300.2.3**	nylon sleeve	2
66	GB/T893.1-1986	circlip 92	2
67	**KDK300.1**	**mower deck weldment**	**1**
68	GB5862	couples	4
69	KDK300.33-1	oil pipe 1	2
70		valve	1
71	KDK300.31	cylinder	1
72		**Φ16 ball joint oil pipe**	**2**
73	GB/T3750.3-83	Bolt M16*1.5*35	2
74	GB/T5783	Bolt M12*50	4

75	1G135.00.107	stand foot pin	2
76	**KDK300.23**	**stand foot weldment**	**2**
77		R Pin	2
78	GB/T5782	BoltM24*110	1
79	**KDK300.22**	**bar for fender**	**1**
80		gearbox	1
81	GB/T5782	Bolt M12*130	4
82	GB/T5783	Bolt M10*30	8
83	KDK300.33-2	oil pipe 2	4
84	KDK300.33-4	Oil pipe 3	2
85	KDK300.33-3	couple connection	2
86	GB3750.3-83	Bolt M12*1.5*30	4
87	KDK300.29	cylinder for rear door	2
88	GB/T889.1	Lock Nut M16	9
89	GB/T5782	Bolt M16*75	2
90	**KDK300.32**	**mounting plate for cylinder**	**2**
91	**KDK300.5**	**skid (L)**	**1**
92	**KDK300.18**	**cover weldment**	**1**
93	**KDK300.19**	**rubber**	**1**
94	**KDK300.14**	**bearing seat (R)**	**1**
95	GB281	bearing 2312	2
96	GB13871-94	oil seal FB50*90*10	2
97	KDK300.12-1	rotor weldment	1
98	GB/T889.2	lock nut M16*1.5	26
99	AGF140.201	hammer	26
100	GB/T5785	Bolt M16*1.5*100	26
101	**KDK300.21**	**ring for grass**	**1**
102	**KDK300.13**	**bearing seat (L)**	**1**
103	GB13871-94	oil seal FB60*130*10	1
104	JB/T7940.1-1995	grease nipple	4