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INSTRUCTION MANUAL SPARE PARTS CATALOGUE

WARRANTY



FLAIL SIDE MOWER LEOPARD RB 160/180/200

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Edition 03



CAUTION!

The safety regulations shall be observed while using the device and this manual shall be read prior to the machine operation.

The manual is a basic part of the machine equipment!

The manual shall be kept in a safe place and shall be available for user and an operator during the whole period of the machine operation.

If the manual is lost or destroyed, new manual shall be purchased in the machine retail outlet or at the manufacturer's office.

If the machine is sold or made available to other user, the manual and the declaration of conformity shall be attached to the machine.

The manufacturer reserves rights to this manual.

Any copying, processing the manual as a whole or its part with no consent of the manufacturer is forbidden.



Table of contents

1. Introduction	4
2. Occupational safety regulations.....	4
2.1 User safety.....	4
2.2. Safety signs are placed on a machine	8
2.3. Hazards while the grinder operation	9
3. Indicated use	9
4. Device description.....	11
4.1. Equipment and fittings	13
4.1.1. Basic equipment.....	13
4.1.2. Extra item	13
4.2. Technical specification.....	14
5. Device use	14
5.1. Aggregating – grinder assembly	15
6. Service and maintenance activities	16
6.1 Adjustment of belts tension	17
6.2 Replacement of knives, beaters	18
6.3 After operation service	19
6.4 Lubrication	21
6.5 Off-season service	21
6.6 Withdrawal from use, environment	21
7. Spare parts catalogue.....	21
8. Warranty	36

1. Introduction

The manual shall be carefully read prior to the grinder operations and all recommendations included in this manual shall be observed.



CAUTION!

This manual shall be read prior to the operation

The manual contains the description of hazards which can occur if the safety regulations are not observed while the operation and servicing of the grinder. The manual includes all precautions which shall be observed to minimize or avoid hazards.

The manual contains also the rules of proper operation of the grinder and informs what service action shall be made.

If any information included in the manual are incomprehensible, you are requested to turn to the manufacturer for explanation.



CAUTION!

This symbol indicates a hazard.

This warning symbol indicates important information about the hazard. You are requested to read the information carefully, observe the recommendations provided and exercise special care.

2. Occupational safety regulations

2.1 User safety

The grinders can be operated only by adults who familiarized with the contents of this manual and are qualified. The grinders shall be operated with special care and the following hints shall be observed:

- Observe general occupational health and safety regulations despite recommendations included in this manual.
- Observe warning symbols installed on the machine.
- People under the influence of alcohol or other narcotic drugs cannot operate the machine.
- Only an operator can drive the grinder, other people cannot stay inside or close to the machine.
- The grinder can be operated only by a qualified person who can drive a vehicle attached to it, according to the manufacturer's recommendations.
- A vehicle cabin to which a machine is attached is a workplace of an operator while working with the grinder.
- It should be remembered that a grinder has a lot of places which could injure a body (sharp edges, projecting construction elements etc.). Special care shall be kept while moving in the vicinity of mentioned critical places and personal protection equipment, such as the following, shall be worn:
 - protective clothes,
 - protective gloves,
 - protective shoes.
- Transport of people or items on the machine is forbidden.
- Outsiders who has not familiarized with the manual cannot operate the machine.
- An employee who operates the grinder shall have a first-aid kit and its instruction manual.
- While moving with attached vehicle, but a grinder in a standstill, safe transport height that is ~0,3m above the surface shall be maintained.
- Special care while driving on public roads shall be maintained and it is necessary to observe traffic regulations as well.
- Electric lighting shall be used in a whole vehicle while moving on public roads, checking its technical condition and visibility, and taking care of the cleanness. Triangular plate indicating low powered vehicles shall be installed on the machine or vehicle's back. It is necessary to take care of the cleanness and visibility of reflector lights and warning signs on the construction elements of the machine.
- Transport speed shall be adapted to the condition of roads and shall not exceed 20km/h.
- The vehicle and a grinder cannot be left on slopes or other terrain inclination with no protection against autogenous rolling. The grinder shall be positioned on a surface. The chocks shall be put under a vehicle's wheel.

- The grinder shall be adjusted for the operation while the assembly. The position can be adjusted from the operator's cabin, with no need to leave a cabin.
- All action connected with the preparation, assembly, disassembly or adjustment can be made only upon the driver shut-off, engine stop, stoppage of a vehicle and waiting until all movable elements of the machine shall be in a standstill.
- The condition of all temporary Hastings, screw connections shall be checked upon first hour of operation.
- The grinder shall be stored on a flat, leveled and hardened surface that is unavailable for outsiders and animals. A supporting flange shall be applied for stable position of a grinder.
- Special care shall be kept while assembly and disassembly of a grinder paying special attention to construction elements responsible for attaching behind a vehicle.
- The technical condition of a grinder and attached vehicle shall be verified prior to the operation. The unit, vehicle and grinder shall be maintained in a good technical condition. Worn and damaged parts shall be replaced immediately.
- The grinder shall be equipped with all protective covers (recommended by a manufacturer) against movable parts. The covers shall be complete and in good condition.
- It is necessary to read the manual, occupational safety regulations and recommendations on the servicing and adjustment prior to the operation.
- The grinder's weight mounted on a vehicle can influence on the maneuverability. Special care shall be kept in this case.
- The manual shall be kept with the machine. If the machine is lent it shall be in a good technical condition and with the manual.
- Attaching additional transport means to the grinder is forbidden.
- Check the machine operations and initial adjustment with no duty shall be made while the start-up.
- Assembly protection TUZ (three point suspension system) of a grinder bolts shall be done only with typical protections such as pins. Operation with other protection type is forbidden.
- Because of natural wear it is necessary to control the condition and completeness of cutting tools of the machine by observing recommendations described in a chapter „6. Service and maintenance activities”.
- The technical condition of the machine shall be checked while the reception and transport of the grinder.












- Staying under lifted grinder is forbidden as there is a hazard of getting caught by construction elements.
- Fingers and limbs cannot be inserted between construction elements of the machine while the adjustment.
- Vehicle operator who operates the grinder shall be careful as nobody can stay close to the machine while operations and adjustment and **be closer than 50m from the grinder**.
- While turning back, moving back or maneuver the machine the visibility shall be proper or qualified person shall assist in it.
- Service personnel cannot stay between a vehicle and the grinder with engine operational.
- The operation on inclined terrain exceeding 15% is not allowed.
- While the operation on slopes special care shall be exercised.
- While turns PTO drive shall be switched off (power take off shaft).
- The machine cannot be operated on public places such as parks and schools and on a stony terrain to avoid a hazard of throwing stones and other items.
- PTO revolutions cannot exceed 540rev/min while operation, and driving shall be adopted to required operation.
- The operation with damaged or incomplete telescopic jointed shaft is forbidden. The operation without covers of movable parts is especially forbidden.
- If the engine is operating it cannot be left unattended. If the drivers space (cabin) is left, the machine shall be positioned on the ground, a key taken out and the engine shut off and a hand-brake put on.
- Any unzipped or loose working clothes while the operation, assembly, disassembly and adjustment is forbidden. It shall be kept away from construction elements which can catch it.
- When the operation is completed it is advised to clean the grinder in a wash equipped with waste treatment or a clarifier to the waste neutralization.
- Storage of the machine shall be made in places protected against outsiders and Animals to eliminate a risk of accidental hurt, on a leveled, hardened and canopied surface.
- In the event of damage a transmission drive shall be immediately shut off.



A failure to observe the above rules can be a hazard to the operator and outsiders and can be a reason of grinder damage.

Any damage resulting out of a failure to observe these rules shall be covered by a user.

2.2. Safety signs are placed on a machine

Sign	Description	Location
	Caution! General warning sign - hazard	Machine cover Instruction manual
	Warning against side crush	Machine cover
	Read the manual	Instruction manual
	Use a cover	Machine cover Instruction manual
	Use protective suit	Machine cover Instruction manual
	Movable parts of machines	Machine cover
	Ban on removal of covers while the device operation	Machine cover
	Ban of staying in the vicinity of machine operation	Machine cover
	Ban on people transport on transportation devices	Machine cover
	Ban of moving device repair	Machine cover
	Ban of moving device lubrication	Machine cover

2.3. Hazards while the grinder operation

No.	Hazard	Hazard source (reason)	Protection devices against hazard
1	Overload of motion system (physical load)	Operation in a standing position, bowed – forced, walking, shifting	Reading the instruction manual, on-the-job training including the weight carrying standards while performing manual transport works, proper techniques of weights carrying, other person assistance, devices facilitating the transport i.e. lifting jack, hoisting winch
2	Fall at the same level (falter, slipping etc.)	Bumpy surface, disorder – laying and standing items, items on the passageways, slippery surfaces	Proper working shoes, plane surface, staying alerted, keeping it tidy, reading the instruction manual
3	Hitting fixe and projecting parts of the machine	Machine, its surrounding	Proper position of the machine, safe space for moving, proper organization of work, staying alerted, reading the instruction manual
4	Moving parts can hits you	Granulated plants, accidental parts of turf, stones thrown by the machine	Staying alerted, indicating hazardous area, Ban on moving while the machine is operating, staying at the distance less than 50m from the machine is forbidden, using personal protection means – protective helmet, goggles, reading the instruction manual
5	Sharp and dangerous edges	Projecting construction elements of the machine, using manual tools	Personal protection means – protective gloves, zipped working clothes, staying alerted
6	Belt transmission	Moving wheels and belts of the transmission, whirling telescopic joined shaft, no covers of movable parts	Ban on movement, approaching and adjusting machine operated, staying alerted, using covers for movable parts, reading the instruction manual
7	Weight of loaded standing machine	Improper assembly, aggregate, improper position of the machine, improper service, leasing loaded machine on the tractor	Staying alerted, using protective protection means – protective shoes, protective gloves, safe position of the machine, using other person assistance, using lifting jack, davits, reading the instruction manual
8	Microclimate – random Feather conditions	Work performed in random weather conditions	Proper working clothes, beverages, filter creams, rest, reading the instruction manual
9	Noise	Excessive revolutions of the machine, damaged, loose or vibrating parts	Operation with machine in a good technical condition, current inspections of the machine, proper revolutions of the machine, reading the instruction manual

3. Indicated use

Flail side mower is intended to do works connected with maintaining community infrastructure, greens and for work in orchards and in the agriculture. The machines are used for mowing, granulating scrubs, undeveloped grass, roads shoulders and granulating fine branches in orchards. It is also used for

meadow reclamation with the intention to leave the swath and destruction of remains left on fields upon cultivation. Beater mowers mow and granulate cut material at the same time and spread it evenly on mowed surface and it allows to get natural swath.

The machine is suspended on $70 \div 100$ KM tractors driver by PTO tractor with telescopic jointed shaft on machine PTO.

The machine is attached to the vehicle with three point suspension system.

Working element is vibrating shaft with rotational positioned teeth and beaters. The unit is driver from WPM through intersecting axis gear and belt transmission.

Meeting requirements on the machine operations, that is service and repairs according to the manufacturer's recommendations and its precise observation is the condition for operating it according to its intended use. The machine shall be used, operated and repaired only by personnel who familiarized with characteristic of the machine and occupational health and safety regulations.

The manufacturer has wide choice of agricultural machines. It also gives special advises in terms of proper equipment to meet user needs.



All obscurities concerning intended use of the devices hall are explained by turning to the machine manufacturer. Proper selection of a device and the conscious of its intended use shall increase the operation safety.

Using the machine for purposes other than accepted shall be understood as the misuse.

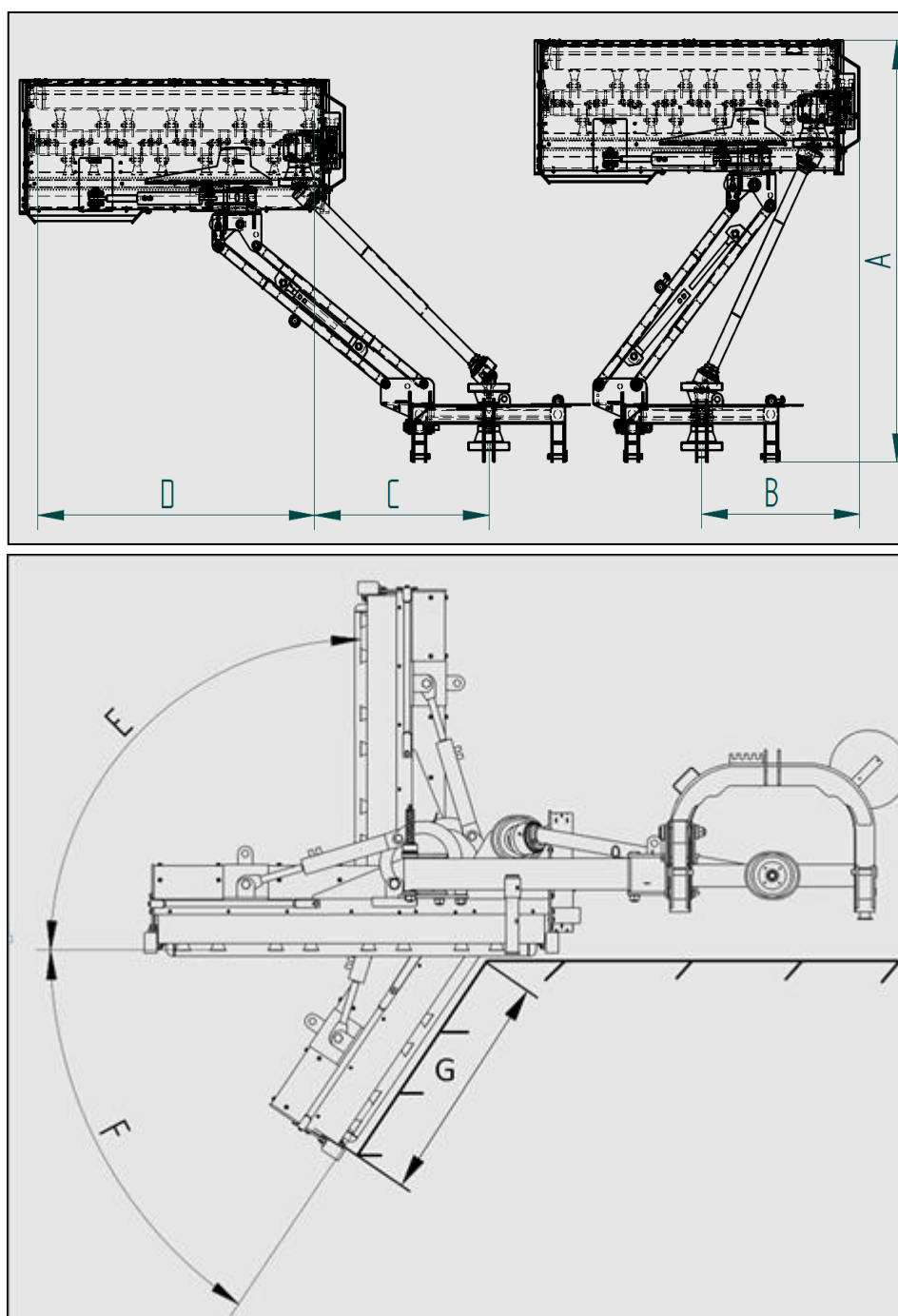
4. Device description



Fig.1 General view of the machine Leopard RB

The grinders of BB series are built with two main construction units. First unit is a **supporting structure with working chamber**, which is made of steel elements connected using welding method. The construction is compact and resistant. Second element is a **driving unit of a grinder**, which consists a shaft of power relay which transmit a torque directly from tractor shaft on direct shaft located in a machine. The next element is a wide-angle shaft transmitting a torque from direct shaft to a intersecting axis gear of the leverage 1:3. Both power take-off shafts are equipped with protective covers. It cannot be disassembled or any damaged parts cannot be used, besides the start of the machine with removed cover is not allowed. The next step is the transmission of a torque from toothed gear on the unit of working shaft. The belt transmission with the adjustment of the belt tension is used for this purpose. The belt transmission provides good shock absorption of the shock load both while the machine start and while meeting obstacles by beater or knife, in the form of a stone or other, it increase the life of toothed gear or other elements.

The machine is additionally equipped with driving shaft, which provides extra support and even distribution of machine weight while operation and the load of supporting structure is limited to a minimum. The control of working settings is carried out from an operator's cabin with 2 systems of power hydraulics (horizontal travelling, turn). It allows for very precise position of the machine while operation. The grinders have been equipped with curtains that protect against the throw of stones and hard items out of the grinder chamber.



TYPE	Dimensions						
	A[mm]	B[mm]	C[mm]	D[mm] Working width	E[°]	F[°]	G [mm] (if F=45°)
RB160	2600	1080	≈1150	1500	90	45	≈1000
RB180	2600	1080	≈1150	1700	90	45	≈1200
RB200	2600	1080	≈1150	1900	90	45	≈1400

Fig.2 Flail mower RB160/180/200 – working range, machine settings

4.1. Equipment and fittings

4.1.1. Basic equipment

The basic equipment of the grinder contains the following:

- Warning labels kit
- Warning signs („vehicles may pass it from left side”, „Road works”)
- Wide-angle relay shaft 830 Nm L1180 mm
- Relay shaft 620 Nm L 1010 mm
- Safety covers for driving shaft
- Stoppers for protecting suspension pins
- Base plate
- Drive shaft
- Instruction manual
- Warranty card



Warning plates, lights and triangle table for low powered trucks are basic equipment. It can be purchased for extra payment at the manufacturer or in a depot of agricultural equipment. Each user of the machine shall have proper plate for low powered trucks. Failure to install it for the transport can be a reason of accident. Machine user is responsible for any damage resulting from the accident.

4.1.2. Extra item

- Central connector for the tractor

Caution:

ALL ELEMENTS OF ADDITIONAL EQUIPMENT OF THE MACHINE ARE AVAILABLE AT THE MANUFACTURER'S STORAGE FOR EXTRA PAYMENT.

4.2. Technical specification

Table No. 1

TECHNICAL DATA GRINDER LEOPARD RB160/180/200

No.	Specification	J.m.	RB160	RB180	RB200
1.	Type Z-908	-	160	160	160
2.	Type of fittings		Suspended	Suspended	Suspended
3.	Width of granulation	[mm]	1600	1800	2000
4.	Power consumption, min.	[KM]	70*	85*	95*
5.	Amount of working drums	[pcs.]	1	1	1
6.	Amount of knives	[pcs.]	48	56	64
7.	Amount of beaters	[pcs.]	24	28	32
8.	Class of tractor catch	-	II	II	II
9.	Grinder settings for shipment	-	horizontally	horizontally	horizontally
10.	Rotational speed PTO of a tractor	[rev/m in]	540	540	540
11.	Efficiency	[ha/h]	1,2	1,35	1,5
12.	Range of machine operation	[°]	+90 -56	+90 -56	+90 -56
13.	Operating speed	[km/h]	8-10	8-10	8-10
14.	Transporting speed	[km/h]	20	20	20
15.	Service personnel	[pcs.]	1	1	1
16.	Dimensions				
	length	[mm]	2700	2700	2700
	width	[mm]	1820	2020	2220
	height	[mm]	1050	1050	1050
17.	Weight	[kg]	800	850	900

*value of declared power guarantees proper weight of a tractor providing the stability while operations on maximal reach of the grinder.

5. Device use

The manufacturer guarantees that the machine is in a good technical condition and was verified according to the procedures of quality control and is accepted for usage. The user is obliged to verify the machine upon reception.



Before the mower usage, it is necessary to check its technical condition, and especially the condition of cutting unit, driving system, hydraulic installation and covers.

5.1. Aggregating – grinder assembly



It is necessary to make sure that elements of a vehicle and machines are properly set to guarantee safe assembly and operation.
If any obscurities occur turn to the vehicle or machine manufacturer.

I. The assembly of the suspension system of the vehicle and machine.

The machine is suspended on three-point suspension system of a tractor, vehicle. To facilitate the aggregation bottom springs shall be installed at the height of approx. 350mm. Upon machine suspension, adjust the length of upper connector in a way that the position of side slippers is parallel to the surface. The chain of bottom springs of tractor suspension shall be adjusted to minimize side deflection of the machine.

Depending on the type of three-point suspension system it is necessary to care for original protection. Check the wear of connecting elements upon each assembly: pins and pivots. Replace a part if it is worn.

Pay special attention to verify if nobody is standing between while connecting the machine and the tractor.

II. The assembly of the driving shaft of the machine.

When the machine is installed on three-point suspension system, we install driving shaft telescopic and jointed shaft on tractor's PTO and machine's WPM and lift supports in upper position and protect bolts with pins.



Only original telescopic and jointed shaft with overrunning clutch (OC) shall be used, (620Nm, $L_{min}=1010mm$) marked with CE sign and roof shields PTO and WPM. When ends of telescopic jointed shaft is inserted on PTO and WPM the catch fastener shall be checked.

For power hydraulics only proper and tight cables finished with fitted connections shall be used.

III. Assembly of power hydraulics system

The grinder has two systems of hydraulic control. The machine is equipped with stub-pipes which shall be connected with hydraulic cables with stub-pipes of vehicle power system. Special attention shall be paid to ducting and cleanness of hydraulic connections.

Machine disassembly shall be made the other way round with special care for the safety while disassembly of mechanic system which separates the machine and the vehicle.

6. Service and maintenance activities

All activities connected with the machine operations can be made only by the vehicle's operator if he is authorized for this vehicle operation.

Prior to the connection of machine and tractor, the machine operator shall check technical condition of the machine and prepare it for trial start-up, for this purpose it is necessary to do the following:

- Read this manual and observe recommendations included in it.
- Learn the construction and understand the rule of machine operation.
- Inspect all elements of the machine for mechanical damages.
- Lubricate the machine according to recommendations.
- Check technical condition of pins of catching system and protective stoppers.
- Check the oil level in a transmission.
- Make visual inspection of transmission covers and condition of driving shafts covers

If all above activities were made and technical condition of the machine is good, it can be attached to the tractor.

- Position the machine for operation.
- Adjust the length of telescopic and jointed shaft for a tractor according to the shaft manual.
- Connect telescopic and jointed shaft for a tractor and grinder.
- Start a drive.

Start a drive of working shaft for 3 min. While this time check the following:

- Taps in driving system.
- Any vibrations in cutting unit.

CAUTION

Unlock of transporting lock while operations is necessary.

Lock pin shall be removed (item 2.18 on figure no. 9.) and put in specialty prepared holder and protect with pin.

Upon operation completion, position a grinder for transport (grinder body position vertically, max. assembler for a tractor) and protect again with lock bolt.

6.1 Adjustment of belts tension

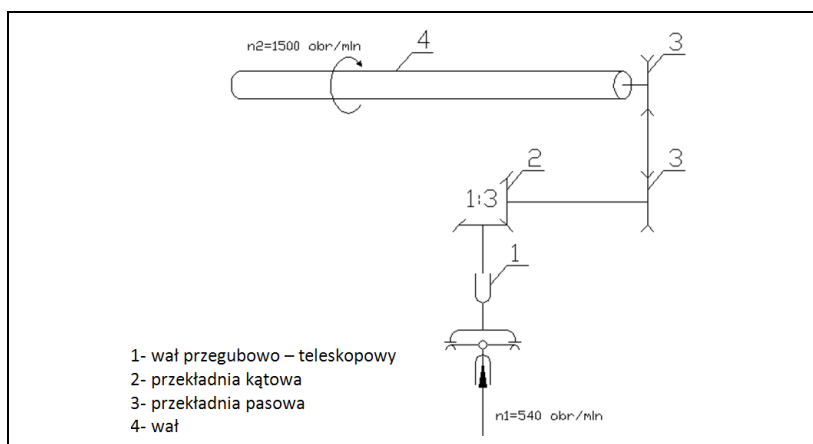


Fig.3 Drive diagram of Leopard grinder

The adjustment of driving belts tension of the grinder transmission is done with machine and engine switched off. See fig.4. Optimal tension of belts – with the 100N (10kgG) thrust, the belt bends 1,5-2,5cm. The following activities shall be done:

- I. Disassembly the cover of inspection glass (2) by unscrew a bolt (1),
- II. Loosen screw M14 (3) located inside of inspection glass with tabular spanner,
- III. Loosen a nut (4) and tighten a nut (5) afterwards thus increasing the tension,
- IV. Tighten a nut (4) for additional protection against loosening,
- V. Install a diaphragm (2) of inspection glass with screws and spring washers (1)

It is advise to remove main cover before and while the season (6) and perform precise inspection of mechanical condition of v-belts, wheels and tensioner, pay special attention to condition of working surfaces of belt and wheels. If any mechanical damage occurs it is recommended to replace damaged parts; besides, the tension of belts shall be checked (optimal tension of belts – at thrust 100N (10kgG) belt is bending 1,5-2,5cm), Belts shall be tensioned so that a slipper on a wheel does not exceed 1%. Insufficient tension is a reason of belts slipper, excessive decrease of belts life and excessive wear of bearings.

The belts tension while machine storage shall be reduced.

- VI. Upon adjustment and control works completion main cover shall be installed (6)

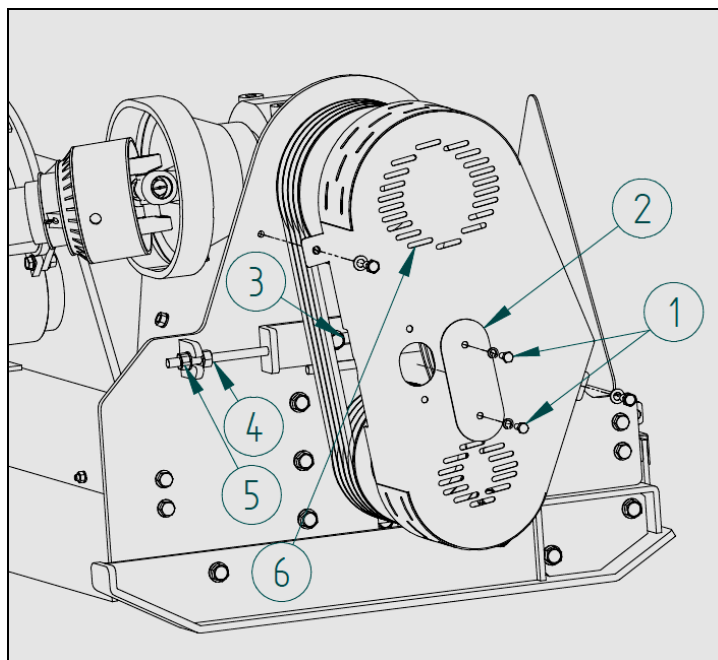


Fig.4. Adjustment of transmission belts tension

6.2 Replacement of knives, beaters

Depending on customer requirements, working shaft is equipped with proper equipment that is granulating tools - knives 2.16 (Z-908) or beaters 2.17 (Z-908) Fig.5.

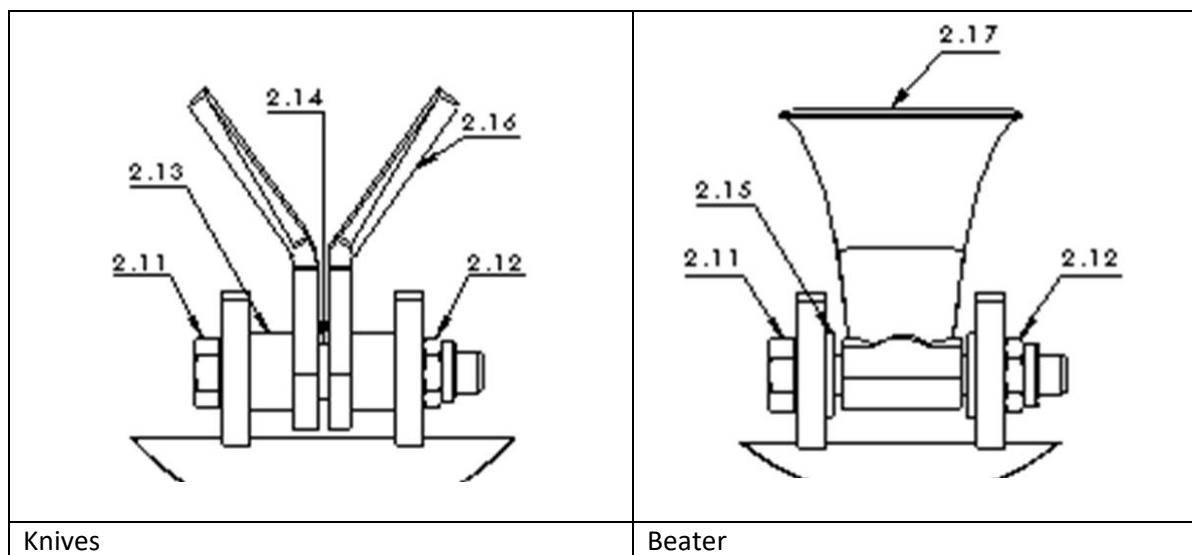


Fig. 5 Drawing of knives and beaters assembly



Granulating tools shall be replaced if any defects, visible wear, blunt of cutting edges, lack of knives or beaters or excessive loose of installed tools occur.

Table No. 2 **MAXIMAL CLEARANCES OF GRANULATING TOOLS**

Clearance	nominal [mm]		allowed [mm]	
	Knife	Beater	Knife	Beater
Axis transverse	0,2	0,3	0,5	0,6
Axis transverse	0,1	0,2	0,4	0,6

Granulating tools shall be replaced keeping in mind special safety regulations.

1. Only original and operable cutting parts shall be used
2. The replacement covers the whole set of tools. It shall be remembered that the distribution of vibrating weight must be even and wear of tools shall be regular as well.
3. Screw connections shall be replaced each time with tools keeping in mind that the class of screw resistance and locknut is 10.9.
4. While screw tightening it is necessary to pay attention to loose of cutting tool turn but with no excessive loose (beater or knife set) with regard to screw axis.

6.3 After operation service

The machine shall be cleaned and positioned on a even and hard surface after operation. The inspection of parts and elements connections shall be done. Damaged and worn parts shall be replaced. Check all screw connections and tighten loose connections according to table no. 3 – tightening torque value for screws and nuts.

Table no. 3

TIGHTENING TORQUE VALUE FOR SCREWS AND NUTS

Strenght	6.8	8.8	10.9	12.9
Metric thread	Torque [Nm]			
M5	4,5	5,9	8,7	10
M6	7,6	10	15	18
M8	18	25	36	43
M10	37	49	72	84
M12	64	85	125	145
M14	100	135	200	235
M16	160	210	310	365
M18	220	300	430	500
M20	310	425	610	710
M22	425	580	820	960
M24	535	730	1050	1220

All safety signs placed on the machine, triangle plate for low powered trucks shall be kept clean.

The oil level in axis gear shall be checked at least once a year. Gear oil of GL 4 80W90 specification shall be used. Replacement period is 550h.

It is also necessary to check the tension of transmission belts, damaged parts shall be replaced, the unit shall be adjusted according to the manual - 6.1 Adjustment of belts tension.

It is important to check the clearance of axis and shafts. If any clearance is noticed, bearings of axis or shaft shall be replaced (pairs) according to the spare parts catalogue. All bearings have rings protecting against ZZ soil.

6.4 Lubrication

For the purpose of providing proper operation, the machine shall be carefully lubricated, according to the lubrication diagram.

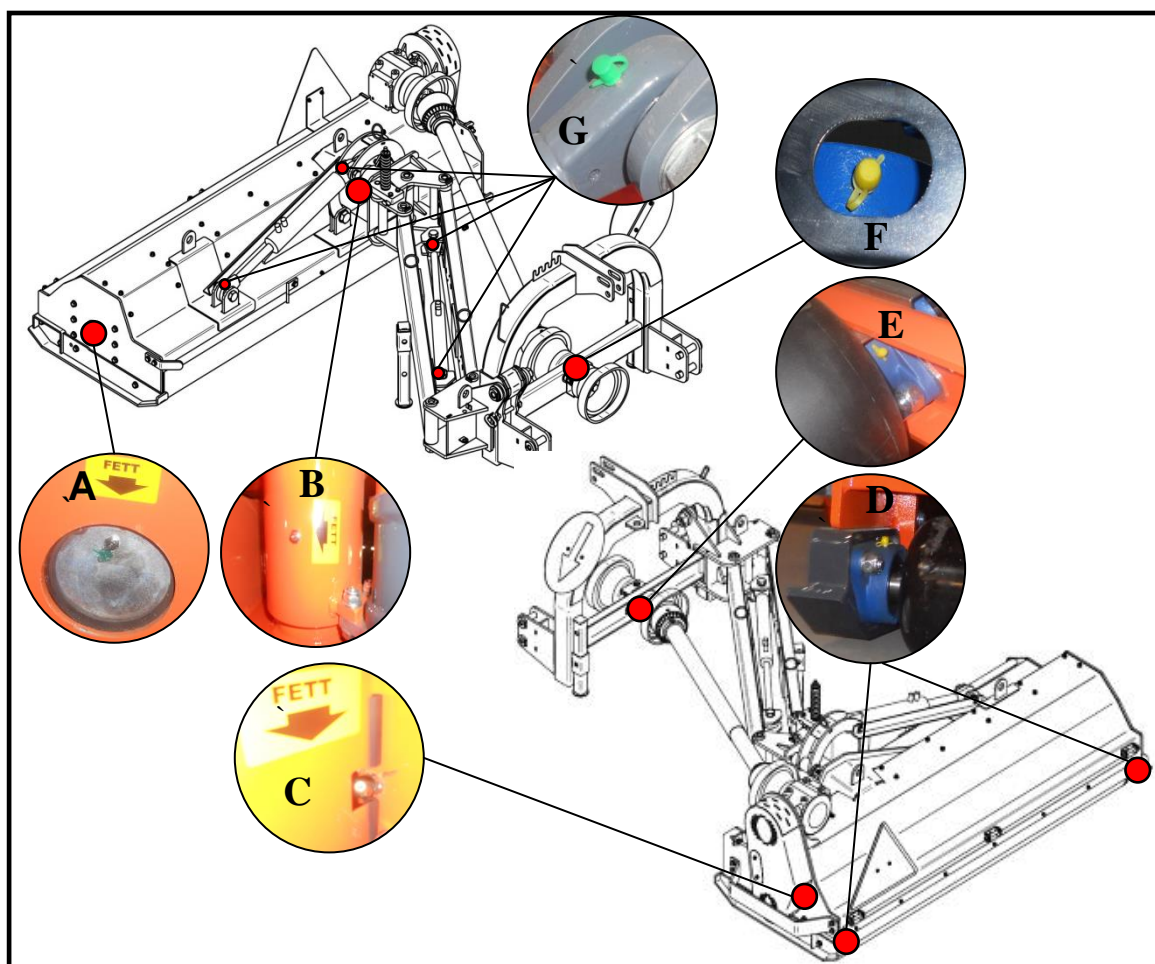


Fig. 6. Lubrication diagram

Table No. 4 Lubrication points

Item	Description	lubricating	Lubrication periods
------	-------------	-------------	---------------------



		agent	
A,C	Bearing of working shaft	ŁT43	daily, before operation
B	Turnover device	ŁT43	30h
D	Bearing of driving shaft	ŁT43	30h
E,F	Bearing of transmission shaft	ŁT43	daily
G	Self-aligning bearing of servo-motor fitting	ŁT43	30h
Lubrication of telescopic jointed shafts		ŁT43	according to manual attached to shafts
Oil replacement in a transmission		GL 4 80W90	550h
*Sleeves of grinder arms are equipped with maintenance free Igus slide bearings which do not require lubrication			

All points described in fig. 6 are equipped with ball grease fittings, it shall be filled with solid oil. Telescopic jointed shaft shall be lubricated upon disassembly of the machine according to the manual.

6.5 Off-season service

It covers all activities mentioned in the point: after operations service. Additionally, the machine shall be kept under the roof on even and hard surface. It is necessary to observe the tightness of varnish coat. If any defects are present, these places shall be filled through application of fresh layer of protective paint.

6.6 Withdrawal from use, environment

If the machine is worn and cannot be operated any more, it shall be withdrawn from use. It also concerns ongoing repairs and the replacement of damaged parts. For this purpose the machine shall be cleaned. Drain operating oils and send to disposal. Disassembly the machine and segregate parts according to the type of materials applied. Segregated parts shall be delivered to the scrap yard or disposal.

The machine is environment friendly. 97% of materials used for the production can be recycled. Worn parts of the machine shall be disposed according to local regulations of environmental protection. Throughout the whole period of operation it is necessary to try to avoid oil spill, which can contaminate environment.

7. Spare parts catalogue

METHOD OF SPARE PARTS PURCHASE

The order shall contain the following:



- purchaser address,
- precise shopping address (place of machine stay or reception method),
- payment conditions,
- serial no. of the grinder and manufacturing year (according to the plate on the machine),
- precise name of spare part,
- amount of parts ordered.



The spare parts shall be purchased in machines retail outlets or at the manufacturer. Only original parts of the manufacturer can guarantee safe and failure free operation of the device. The use of non-original parts or repairing damaged parts can be a reason of guarantee loss.

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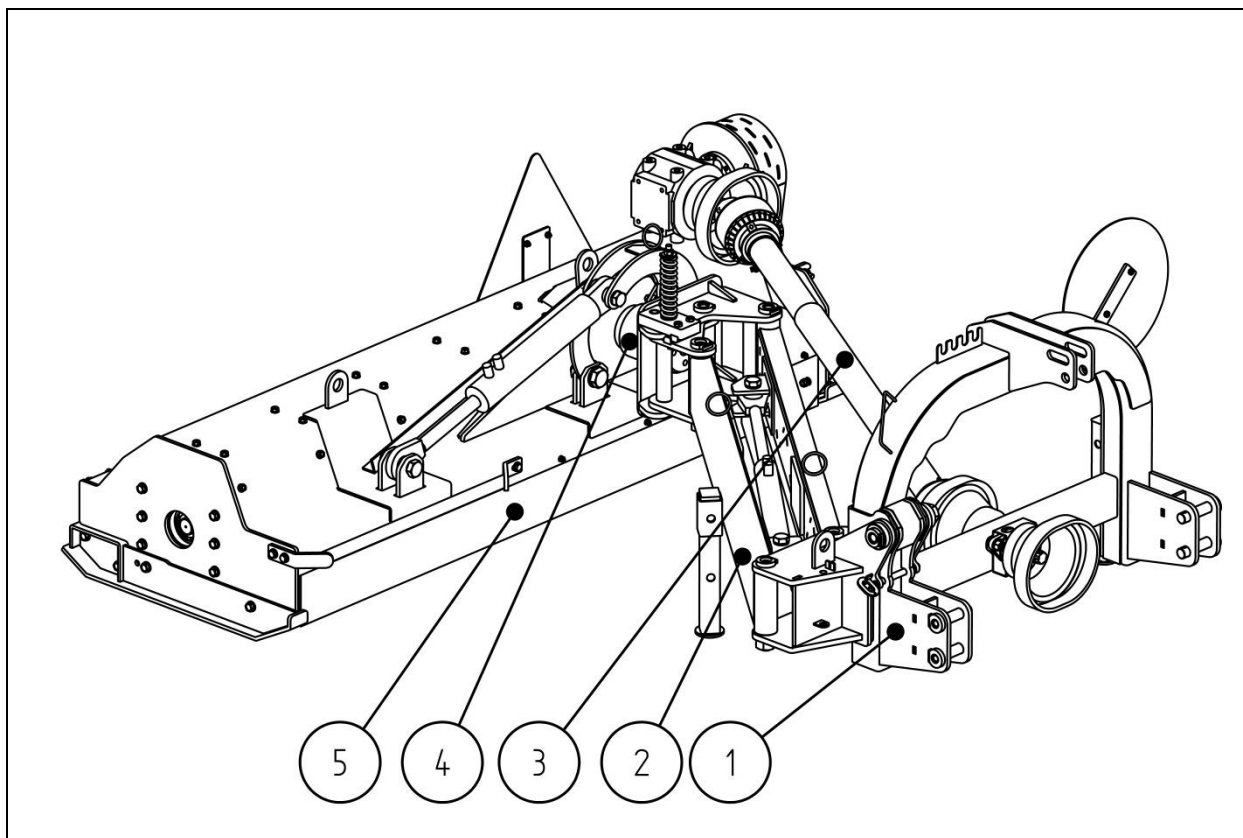


Fig. 7 Demonstrative view of a grinder LEOPARD RB160/180/200

Table No. 5 Distribution of the machine on parts

Item	Description	Figure no.
1	Unit of 3- point suspension	Fig. 8
2	Arms unit	Fig. 9
3	Drive unit	Fig. 10
4	Turning device and arms fitting	Fig. 11
5	Unit of grinder's working chamber	Fig.12
6	Hydraulic unit	Fig. 13

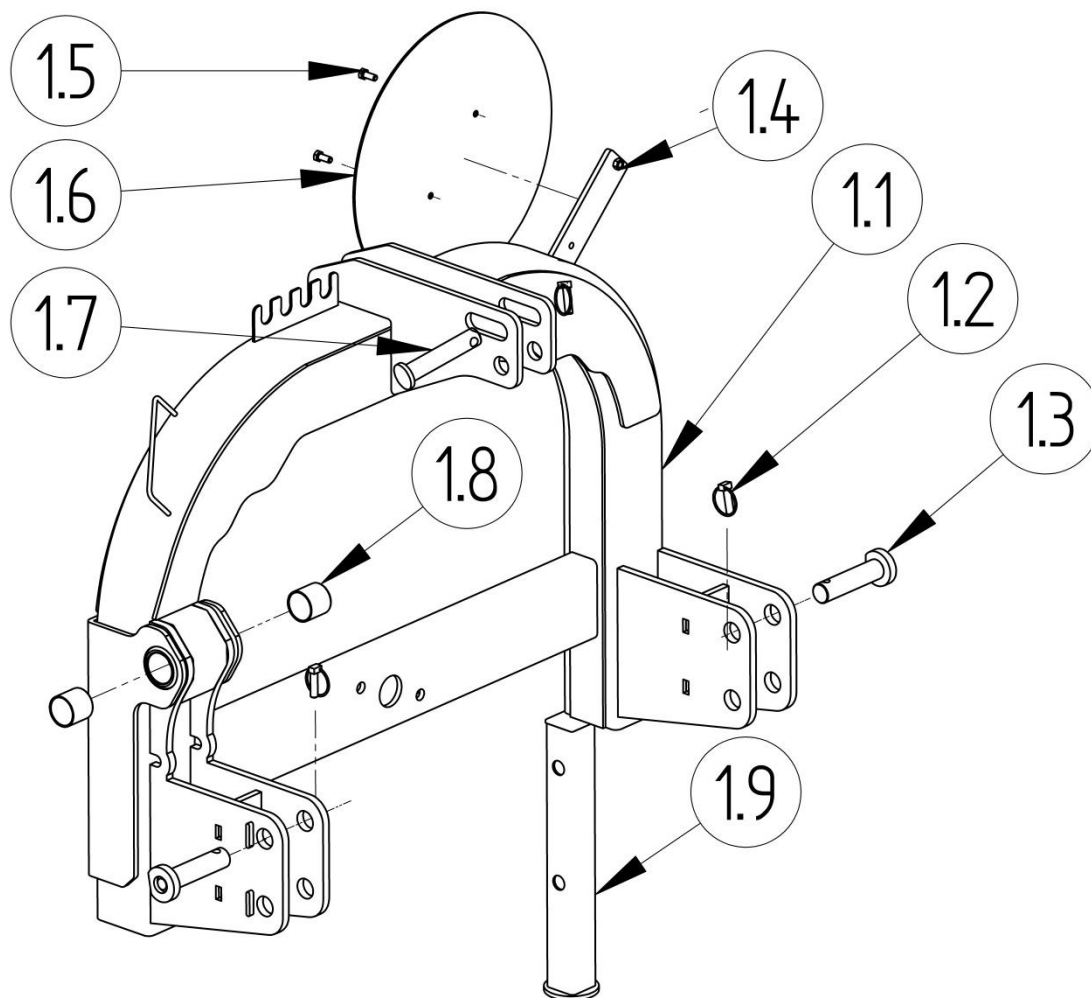


Fig. 8 Unit of 3- point suspension

Table No. 6 Unit of 3- point suspension

Item	Description	Index	Amount [pcs]
1.1	Suspension -corner	RB_PW_1070.00	1
1.2	All purpose stopper 42/37-038/1	01-0686	4
1.3	Boltof bottom catch	RB_PW_1072.00	2
1.4	M8 locker nut/washer ZW 8 OC	11-0040/11-0049	2/2
1.5	Screw M8x25 8.8 OC	11-0119	2
1.6	Turn left on the left side of the sign	15-0099/1	1

1.7	Bolt of upper catch	R_Ze_Sg.10	1
1.8	Sliding bearing	GSM4044-40	2
1.9	Base plate	RB_PW_1073.20	1

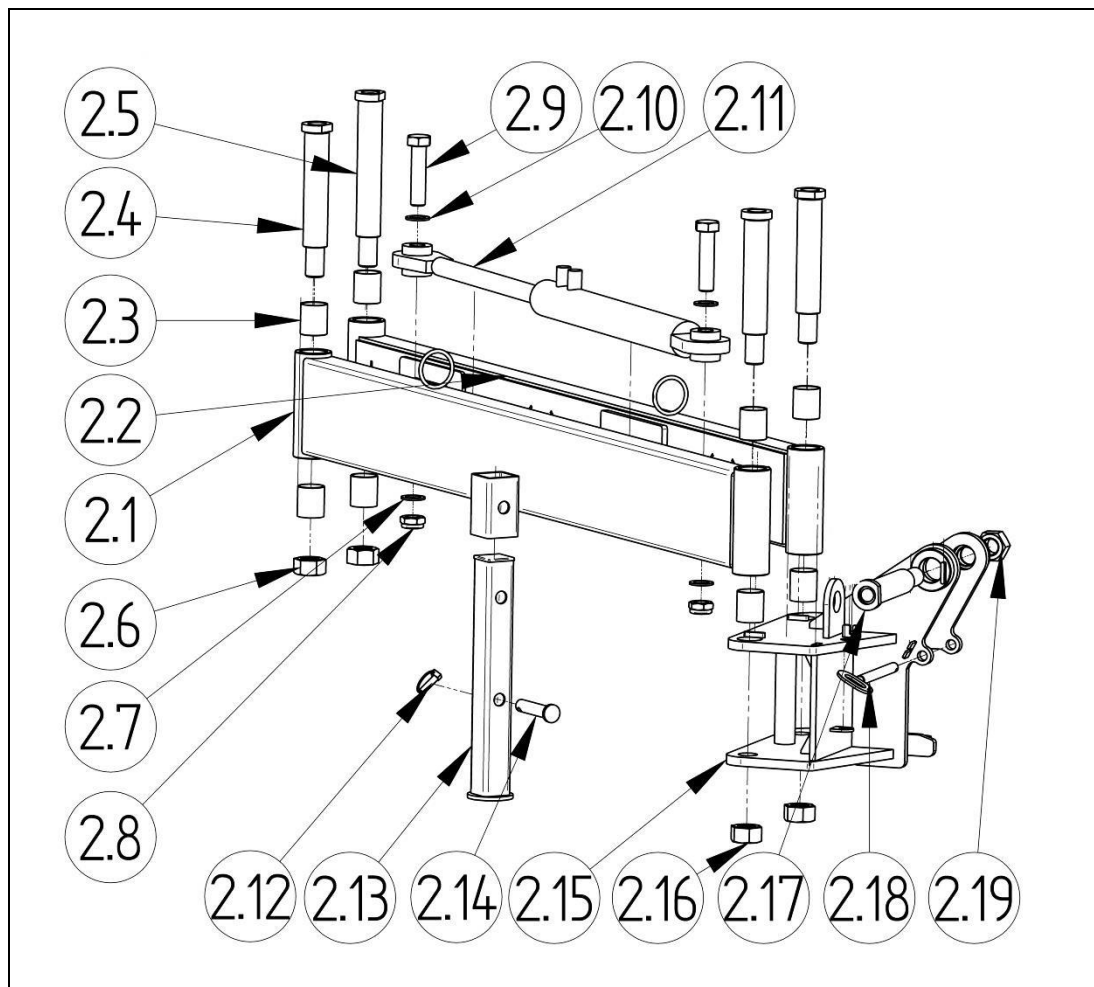


Fig. 9 Arms unit

Table No. 7 Arms unit

Item	Description	Index	Amount [pcs.]
2.1	Arm I	RB_PW_1056.00-1400	1
2.2	Arm II	RB_PW_1055.00-1400	1
2.3	Slide bearing GSM 4044-50	12-1172	8
2.4	Arm's pin	RB_PW_1075.20	3
2.5	Arm's pin	RB_PW_1075.30	1
2.6; 2.16; 2.19	Self-locking nut M30x2 OC	11-0243	5
2.7; 2.10	Flat washer ZW 25 OC	11-0094	4
2.8	Self-locking nut M24	11-0169/A	2
2.9	Screw M24 x110 8.8 OC	11-0114	2
2.11	Hydraulic servo-motor 50/30H355L	12-0943/A	1
2.12	All purpose plug 42/37-038/1	01-0686	4



2.13	Support base	RB_PW_1073.20	1
2.14	Support pin	R_Ze_Sg.10	1
2.15	Suspension cross	RB_PW_1058.00	1
2.17	Pin of suspension cross	RB_PW_1075.10	1
2.18	Safety pin for transport (including the lug and double BETA cotter pin)	RB_PW_1059.00 12-1121/A 14-0029/E	1 0,3m 1

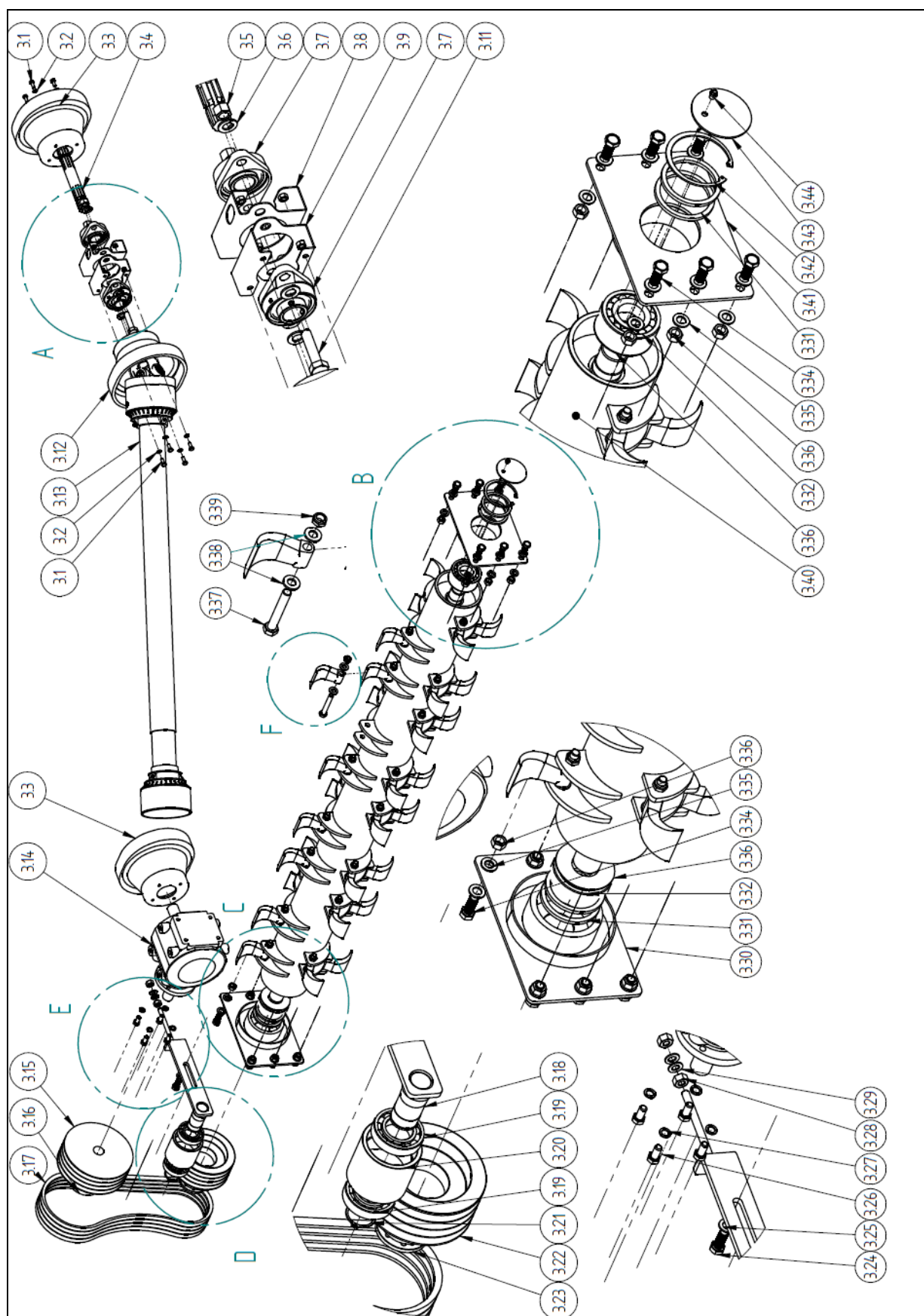


Fig. 10 Driving unit

Table No. 8 Driving unit

Item	Description	Index	Amount [pcs]
3.1	Screw M8 x20 8.8 OC	110096	12
3.2	Washer ZW 8 OC	11-0049	12
3.3; 3.12	Shaft cover	12-1176	3
3.4	Shaft – two-sided splines	12-1207	1
3.5	Self-locking nut M16	11-0143/1	2
3.6	Washer ZW 16 OC	11-0049	12
3.7	Bearing UCFL207 SNR	06-0407/A	2
3.8	Holder of shaft cover	RB_PW_1070.51	1
3.9	Holder of shaft cover	RB_PW_1070.54	1
3.11	Screw M16 x60 8.8 OC	110098	2
3.13	Hexagonal shaft of a transmitter 830 Nm	12-0295/RB	1
3.14	Transmission	12-1037	1
3.15	Belt pulley TB SPB 224/4	12-1101	1
3.16	Clutch TB 3020/33	12-1103	1
3.17	Transmission belt HB1400	07-0005/A	4
3.18	Tensioner belt	RB_PW_1074.00	1
3.19	Bearing 6209 RS	06-0219	2
3.20	Tensioner roll	RB_PW_1074.03	1
3.21	Protecting ring Z45	08-0120	1
3.22	Belt pulley Ø189	12-0945	1
3.23	Clutch clampex 225-45x80	12-0940	1
3.24	Screw M14x30 8.8 OC	11-0134/B	1
3.25	Washer ZW 14 OC	11-0171	1
3.26	Screw M12x40 8.8 OC	11-0078/A	4
3.27	Spring washer M12 OC	11-0054	4
3.28	Self-locking nut M12	11-0128	2
3.29	Washer ZW 12 OC	11-0125/B	2
3.30	Shaft bearing mounting	RB_PW_1020.30	1
3.31	Spacer	P_D_98 x 84_6mm	4
3.32	Bearing 1309	06-0070/M	2
3.34	Screw M14x35 8.8 OC	11-0134/B	12
3.35	Washer ZW 14 OC	11-0171	12
3.36	Self-locking washer M14	11-0186	12
3.37	Screw M14x90 10.9 (amount depends on the grinder type RB 160/180/200)	11-0005	24/28/32
3.38	Hammer RM 33 5151-221333(Ilość amount depends on the grinder type RB 160/180/200)	12/0937/A	24/28/32
3.39	Self-locking nut M14 (amount depends on the grinder type RB 160/180/200)	11-0186	24/28/32
3.40	Working shaft (amount depends on the grinder type RB 160/180/200)	RB_WR_160 1020.10 ver.b RB_WR_180 1020.10	1

		ver.b RB_WR_200 1020.10 ver.b	
3.41	Shaft bearing mounting	RB_PW_1020.40	1
3.42	Protective ring	08-0206	1
3.43	Stopper	100.3	1
3.44	Grease fitting M10	01-0276	1

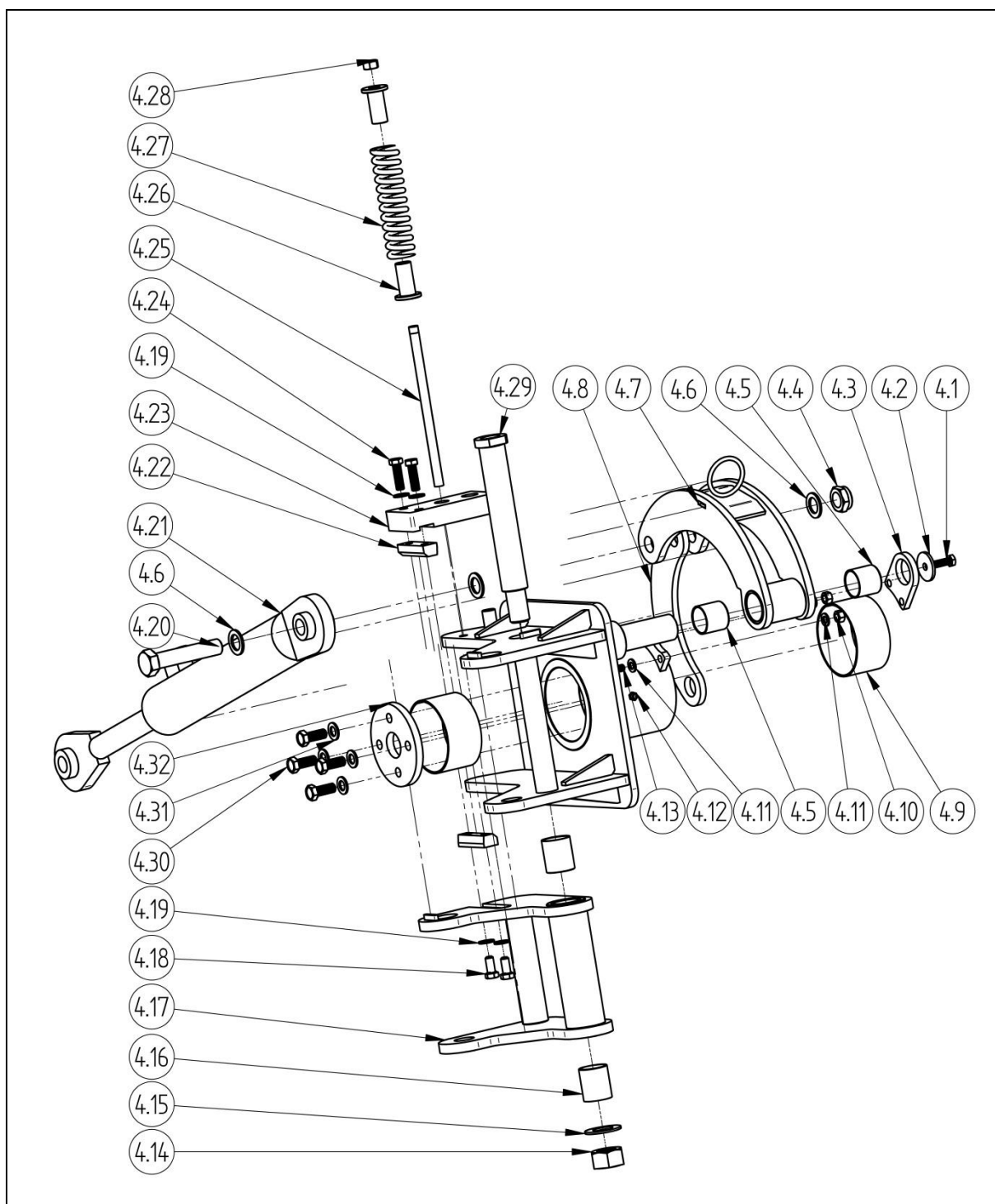


Fig. 11 Turnover device

Table No. 9 Turnover device unit

Item	Description	Index	Amount [pcs]
4.1	Screw M10x30 8.8 OC	11-0076/A	1
4.2	Washer	RB_PW_1052.02	1
4.3	Housing flange	RB_PW_1050.16	1
4.4	Self-locking nut M24	11-0169/A	1
4.5	Slide bearing Igus	GSM 4044-40	8
4.6	Flat washer ZW 25 OC	11-0094	3
4.7	Turn arm	RB_PW_1051.00	1
4.8	Tension member	RB_PW_1052.01	1
4.9	Slide bearing 110x60	12-1095	2
4.10	Self-locking nut M10	11-0127/A	2
4.11	Washer ZW 10 OC	11-0055/A	4
4.12	Grease fittings M10	01-0276	1
4.13	Screw M10x35 8.8 OC	11-0096	2
4.14	Self-locking nut M30x2 OC	11-0243	1
4.15	Washer ZW 30 OC	ZW 30	1
4.16	Slide bearing GSM 4044-50	12-1172	2
4.17	Arm coupling	RB_PW_1050.13	1
4.18	Screw M12x25 8.8 OC	11-0078/A	2
4.19	Washer ZW 12 OC	11-0055	4
4.20	Screw M24 X110 8.8 OC	11-0259/A	1
4.21	Hydraulic servo-motor 70/36 H285L	12-0943/B	1
4.22	Fuse block	KD_Bk_023.13	2
4.23	Safety device	RB_PW_1050.24	1
4.24	Screw M12x40 8.8 OC	11-0078/A	2
4.25	Winding rod M14 of a spring	KD_Bk_023.11	1
4.26	Spring foundation	RB_PW_1050.25	2
4.27	Fuse spring 5036/02-0.35 galvanized	15-0052	1
4.28	Nut M14	11-0078/A	2
4.29	Pin	RB_PW_1075.30	1
4.30	Screw M14x35 8.8 OC	11-0134/B	4
4.31	Washer ZW 14 OC	11-0171	4
4.32	Flange	RB_PW_1052.03	1



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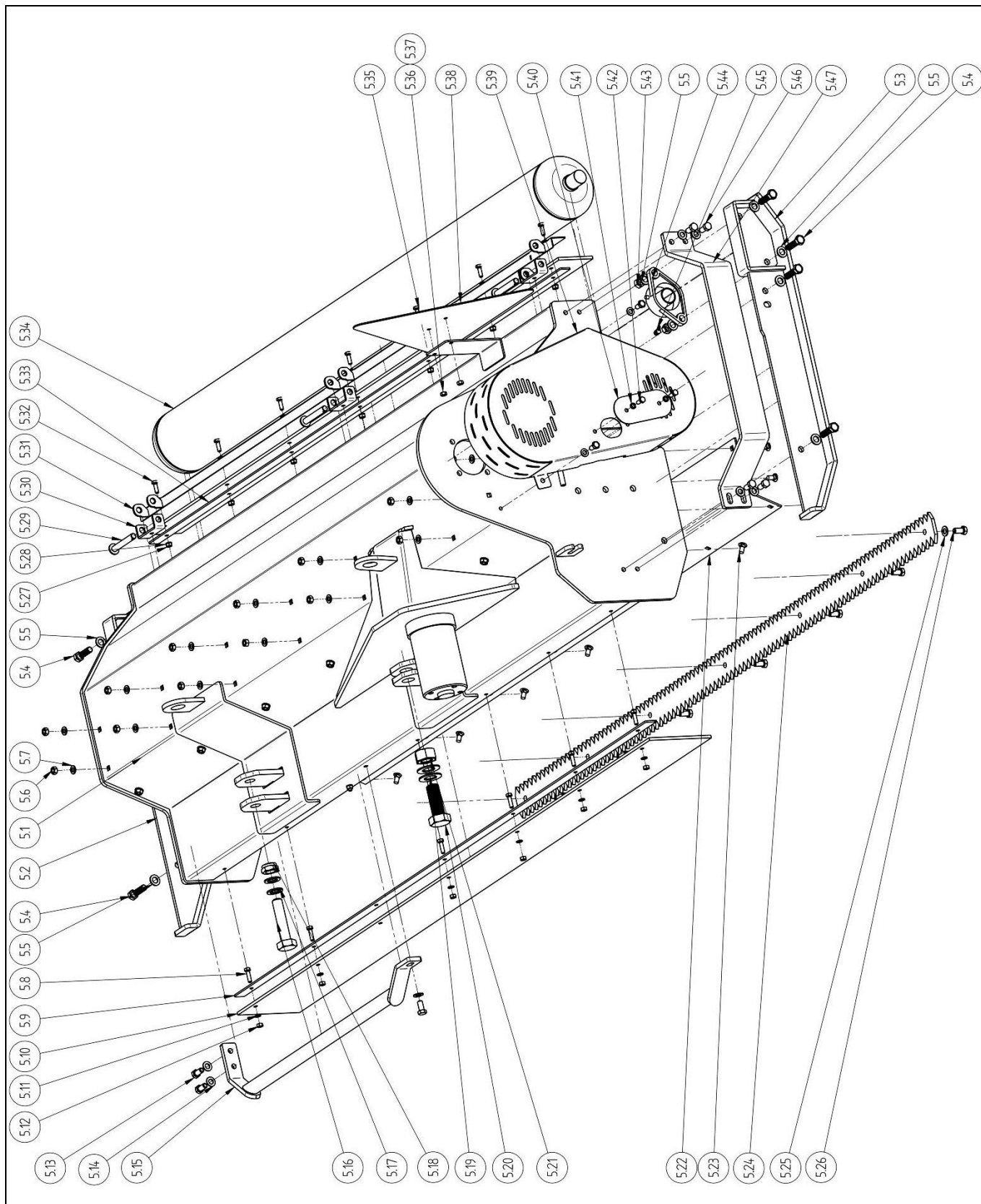


Fig. 12 Grinders working chamber unit

Table No. 10 Grinders working chamber unit

Item	Description	Index	Amount [pcs]
5.1	Body (body type depends on a model) RB160 RB180 RB200	RB_PW_1010.00-160 RB_PW_1010.00-180 RB_PW_1010.00-200	1
5.2	Right slipper	RB_PW_1060.00	1
5.3	Left slipper	RB_PW_1060.10	1
5.4	Screw M14x40 8.8 OC/ Screw M14x35 8.8 OC	/ 11-0134/B	4/4
5.5	Washer ZW 14 OC	11-0171	20
5.6	Acorn nut M10 RB160 RB180 RB200	11-0269	20 20 20
5.7	Washer ZW 10 OC	11-0055/A	20
5.8	Screw M8x25 8.8 OC	11-0119	7
5.9	Slat mounting front elastic curtain RB160 RB180 RB200	RB_PW_1040.05-160 RB_PW_1040.05-180 RB_PW_1040.05-200	1 1 1
5.10	Rubber cut-off wall (type of cut-off wall depends on a model) RB160 RB180 RB200	RB_PW_1040.03-160/12-1121 RB_PW_1040.03-180/12-1121 RB_PW_1040.03-200/12-1121/A	1 1 1
5.11	Washer ZW 8 OC	11-0049	14
5.12	Self-locking nut M8	11-0040	7
5.13	Screw M12x30 8.8 OC	11-0078/A	3
5.14	Washer ZW 12 OC	11-0055	3
5.15	Front bumper	RB_PW_1057.03	1
5.16	Screw M24 X110 8.8 OC	11-0114	1
5.17	Flat washer ZW 25 OC	11-0094	1
5.18	Self-locking nut M24	11-0169/A	1
5.19	Flat washer ZW 30 OC	ZW 30 OC	2
5.20	Screw M30x70 8.8 OC	11-0249	1
5.21	Self-locking nut M30	11-0243	1
5.22	Protective plate (type of a plate depends on a machine type) RB160 RB180 RB200	RB_PW_1010.05-160 RB_PW_1010.05-180 RB_PW_1010.05-200	1

5.23	Self-locking Screw M10x20(406) 8.8	11-0073/A	20
5.24	Toothed slat – comb (slat type depends on a machine type) RB160 RB180 RB200	RB_PW_1010.02-160 RB_PW_1010.02-180 RB_PW_1010.02-200	1
5.25	Spring washer M12 OC	11-0078/A	7
5.26	Screw M12x30 8.8 OC	11-0078/A	7
5.27	Self-locking nut M8	11-0040	7
5.28	Washer ZW 8 OC	11-0049	14
5.29	Pin of hinge with Split cotter 5x40	Ru_EKO_Kt_20 ver.B/11-0104/A	3
5.30	Hinge for curtain (including a screw M8x25 8.8 OC and spring washer M8)	RB_PW_1045.03	3
5.31	Angle section of back curtain (Curtain type depends on a machine type) RB160 RB180 RB200	RB_PW_1045.01-160 RB_PW_1045.01-180 RB_PW_1045.01-200	1
5.32	Screw M8x25 8.8 OC	11-0119	7
5.33	Slat mounting rear elastic curtain RB160 RB180 RB200	RB_PW_1040.05-160 RB_PW_1040.05-180 RB_PW_1040.05-200	1 1 1
5.34	Drive shaft (Shaft type depends on a machine type) RB160 RB180 RB200	RB_PW_1030.10-160 RB_PW_1030.10-180 RB_PW_1030.10-200	1
5.35	Screw M8x25 8.8 OC	11-0119	2
5.36	Washer ZW 8 OC	11-0049	2
5.37	Self-locking nut M8	11-0040	2
5.38	Warning sign „Road works”	15-0099/1	1
5.39	Cover of belt transmission	RB_PW_1065.00	1
5.40	Cover of inspection glass	RB_PW_1065.04	1
5.41	Washer ZW 8 OC	11-0049	2
5.42	Screw M8x25 8.8 OC	11-0119	2
5.43	Self-locking nut M14	11-0186	4
5.44	Bearing UCFL207 SNR	06-0407/A	2
5.45	Grease fitting M10 angular 45°	01-0274	1
5.46	Screw M12x30 8.8 OC + washer ZW12 OC	11-0078/A	4/4
5.47	Side bumper	RB_PW_1010.18	1

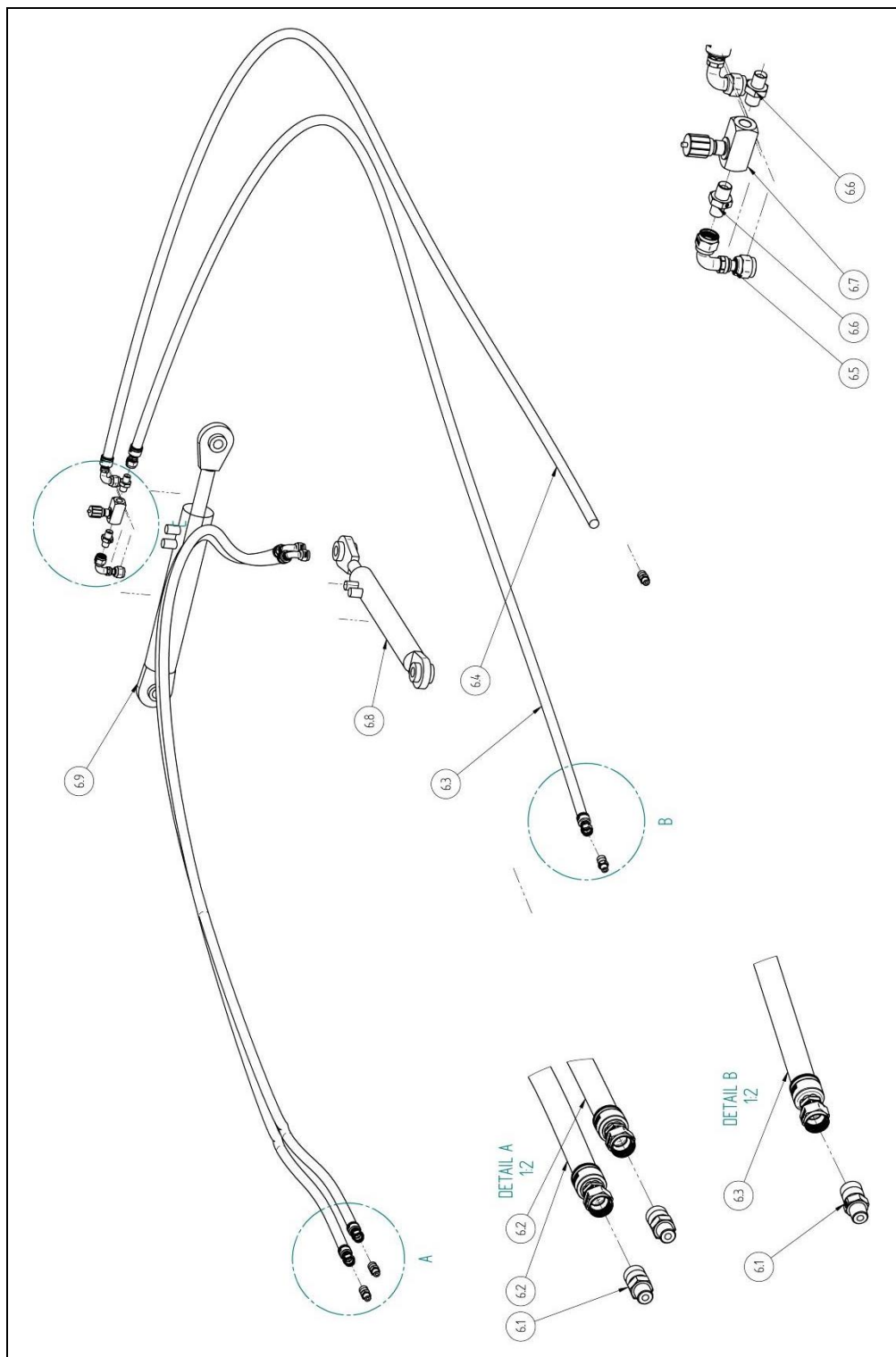


Fig. 13 Hydraulic unit



Table No. 11 Hydraulic unit

Item	Description	Index	Amount [pcs]
6.1	Hydraulic connection EURO M18x1,5	130126	4
6.2	Hydraulic cable P51/P52/211/10 L-3400	12-1113/A	2
6.3	Hydraulic cable P51/P51/211/10 L-4100	12-1112/A	1
6.4	Hydraulic cable P51/P52/211/10 L-4100	12-1112/B	1
6.5	Arc connection AA M18x1,5 12L	12-1202	1
6.6	Straight coupling Zn-140 G3/8	26-0066	2
6.7	Throttle valve VRFV90°	12-1198	1
6.8	Hydraulic servo-motor 50/30H355L	12-0943/A	1
6.9	Hydraulic servo-motor 70/36 H285L	12-0943/B	1
6.10	Cable guard – weaved cover DN40-set	15-0322/B	8m

8. Warranty

WARRANTY CARD



Serial no.	Type
Manufacturing year	KJ

Under this warranty a manufacturer is obliged to repair defects during the warranty periods which lasts 12 months starting from a sale date free of charge.

A manufacturer is free from any liability resulting from the warranty in the following cases:

- Mechanical damages of a machine upon its transfer to a user;
- Improper operations, maintenance, machine storage, and especially inconsistent with the manual;
- Repairing by unauthorized personnel without a consent of the manufacturer;
- Introducing construction changes without agreement of a manufacturer;
- Cracks of transmission cover because of shaft run-out;

The warranty card is valid if it has a seller's signature and date of sale confirmed by company's Stamp of commercial unit. Any crossing outs or corrections made by unauthorized persons are not allowed.

A duplicate of warranty card can be issued upon written request if a user submits a purchase proof.

If the event of baseless service calls to make warranty repairs, costs are covered by the user.

The user submits claims within 14 days starting from the date of a defect directly to the seller.

A manufacturer provides warranty service within 14 days starting from a notification date until repair date.

The warranty is prolonged for the repair time, counting from the notification day until the day when service is provided, if the defect allowed to use the machine.

The warranty does not cover hydraulic cables of the machine.

Date of sale: _____
(day, month, year)

(signature and stamp of sales retail outlet)

RECORD OF WARRANTY REPAIRS

Filled by a manufacturer

Claim submission date: _____

Scope of repairs and replaced parts: _____

Claim submission date: _____

Scope of repairs and replaced parts: _____



<p>_____</p> <p>_____</p> <p>_____</p> <p>Date of service provided: _____</p> <p>Warranty prolonged to: _____</p> <p>_____</p> <p>(signature and stamp of a service personnel)</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>Date of service provided: _____</p> <p>Warranty prolonged to: _____</p> <p>_____</p> <p>(signature and stamp of a service personnel)</p>
<p>Claim submission date: _____</p> <p>Scope of repairs and replaced parts: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Date of service provided: _____</p> <p>Warranty prolonged to: _____</p> <p>_____</p> <p>(signature and stamp of a service personnel)</p>	<p>Claim submission date: _____</p> <p>Scope of repairs and replaced parts: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Date of service provided: _____</p> <p>Warranty prolonged to: _____</p> <p>_____</p> <p>(signature and stamp of a service personnel)</p>

DECLARATION OF CONFORMITY

1. Product manufacturer:

TALEX Spółka z ograniczoną odpowiedzialnością
Spółka komandytowa
Ul. Dworcowa 9c
77-141 Borzytuchom

2. Product name:

Side flail mower LEOPARD RB145/160/180/200

Manufacturing year: Serial no.:

3. Product classification:

PKWiU 29.32.15-00.90
Machines and devices for the preparation of soil, remainings



4. Intended use and the scope of product use:

Side flail mower LEOPARD RB145/160/180/200

is used for works connected with maintaining municipal infrastructure, greens, for works in orchards, agriculture, granulation of bush, undeveloped greens, shoulders of roads and fine branches.

5. References:

UE regulations		Polish regulations	
Directive no.	Title	Document's name	No.
2006/42/WE	Machine directive	Ordinance of the Minister of Economy of 21 October 2006 concerning basic requirements for machines	Dz. U. 199/1228

Standard no.	Title
PN-EN ISO 12100-1:2005	Machines. Safety. Basic concept, general rules of designing. Part 1: Basic terminology, methodology
PN-EN ISO 12100:2011	Machines safety – General rules of designing – Risk assessment and risk mitigation
PN-EN 14121-1:2008	Machines safety – Risk assessment -- Part 1: Rules
PN-ISO 730-1:1996	Wheeled engineering tractors – Three-point rear suspension system -- Categories 1, 2, 3 i 4
PN-EN ISO 4254-1:2009	Farm machines – Safety -- Part 1: General requirements
PN-ISO 11684:1998	Tractors, farm and forest machines, moto-tools. Safety signs and pictographs of hazard. General provisions.
PN-ISO 3600:1998	Tractors, farm and forest machines, moto-tools – Instruction manual – Content and form
KJ manual	Quality control manual 2012/03 Edition 01
Painting manual	Painting manual, application of wet lacquered covers 2012/02 Edition 01
Welding manual	Welding instruction MIG/MAG 2012/01 Edition 01

Conformity with directives and standards requirements was stated on the basis of tests carried out by the company:

„FITMECH” Association of Engineers and Polish Mechanic Technicians in Słupsk.

The test was carried out by: M.A Eng. Zbigniew Myszkowski –SIMP Expert no. 9763/11

I declare with full liability that the product is consistent with the references mentioned in point 5.

Borzytuchom 02.01.2013
(place and date of issue)

Karol Jaworski
(first name, surname and signature of person authorized by the Manufacturer)



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