



# **Drum Mower**

## **BDR-135, BDR-165 & BDR-185**



## **Operator's Manual**

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**TO THE DEALER:**

Assembly and proper installation of this product is the responsibility of the Tar River dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Owner's/Operator's Manual are completed before releasing equipment to the owner.

**TO THE OWNER:**

Read this manual before operating your Tar River equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your selling dealer. The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment. For service, your authorized Tar River dealer has trained mechanics, genuine Tar River service parts, and the necessary tools and equipment to handle all your needs. Use only genuine Tar River service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation.

Record your implement model and serial number in the space provide below. Your dealer will need this information to give you prompt, efficient service.

**Model Number:** \_\_\_\_\_

**Serial Number:** \_\_\_\_\_

**Date Purchased:** \_\_\_\_\_

## TO THE DEALER: Part 1 of 2

Assembly and proper installation of this product is the responsibility of the Belco Resources Dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery List and Owners Check List in the Owner's/Operator's Manual are completed before releasing equipment to the owner.



**NOTE: The machine must be inspected thoroughly by the dealer prior to delivery of machine to owner. Place a check mark in the box beside each item checked. Contact Belco Resources Equipment of any damages, issues or shortages to the machine.**

### Pre-Delivery Checklist - Dealer

- Gearbox oil level
- Check all fluids, hydraulic, gear oil, etc.
- Grease fittings properly lubricated
- Guards, shields, attachments securely fastened
- All hardware tightened
- Condition and tension of V-belts (if applicable)
- Blades properly installed, blade hardware tightened to proper torque specifications
- PTO attached to the machine (if applicable)
- All decals are clean, legible and in proper location
- Operator's Manual on machine

Model #: \_\_\_\_\_ Serial #: \_\_\_\_\_

Inspected by (Initials): \_\_\_\_\_ Date: \_\_\_\_\_



## TO THE DEALER: Part 2 of 2

Dealer is to review the following items to the owner. Place a check mark in the box beside each item reviewed.

### Checklist - Owner

- Correct attachment of machine to tractor
- Safe operation of the machine
- Importance of regular lubrication, maintenance and inspection
- Troubleshooting
- Replacing broken or worn parts (importance of using only OEM parts)
- Servicing the machine
- Storage
- Warranty
- Encourage owner to read and understand the Operator’s Manual before operating the machine
- Encourage owner to fill out the “Warranty Registration”, online [warranty@br-equipment.com](mailto:warranty@br-equipment.com)

<b>Purchase Date:</b> _____	<b>Delivery Date:</b> _____
<b>Model #:</b> _____	<b>Serial #:</b> _____
<b>Dealer Signature</b> _____	<b>Date:</b> _____
<b>Customer Signature</b> _____	<b>Date:</b> _____

### TO THE OWNER:

Read this manual before operating your Belco Resources equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your selling dealer. The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the machine as specified. Observe all safety information in this manual and safety decals on the equipment. For service, your authorized Belco Resources dealer has trained mechanics, genuine Belco Resources service parts, and the necessary tools and equipment to handle all your needs. Use only genuine Belco Resources service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation.

# Table of Contents

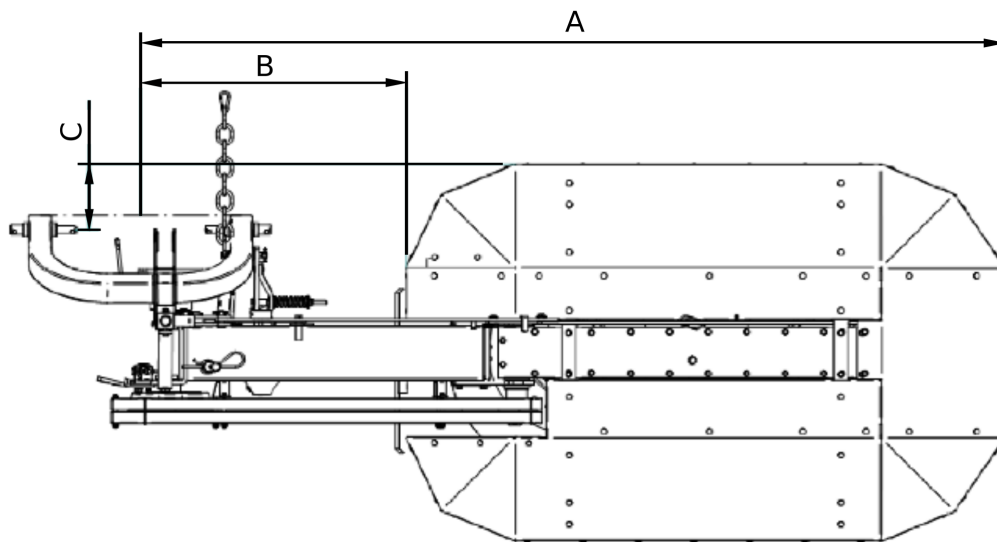
Introduction .....	7-8
Safety .....	9
Safety Signal Words .....	9
General Safety Guidelines .....	10
Safety Decal Care .....	10
Before Operation .....	11
During Operation .....	12
Highway And Transport Operations .....	13-14
Assembly Instructions.....	15-23
General Information.....	24-25
Operational Service.....	26-27
Transport.....	28-31
PTO Driveline Instructions.....	32-35
Operation.....	36-39
Maintenance.....	40-46
Trouble Shooting.....	47
Torque Specifications .....	48
Parts Breakdown .....	49-75
Warranty .....	77

# Introduction

Thank you for purchasing your Tar River Implements Drum Mower. Tar River Implements Drum Mowers have very few moving parts, are low maintenance and have a heavy built A-frame. The Tar River Drum Mower is a great economic alternative to the Disc and Sickle bar mowers while still giving a good cut. The BDR Series Drum Mower can mow at high speeds and offers reliable mowing in all conditions, easily cutting through tall and thick grasses. Available in 3 popular sizes, Tar River Implements Drum Mowers has a perfect fit for your small hay operation.

## Technical Specifications

	BRD-135	BDR-165	BDR-185
# of Drums	2	2	2
Blades Per Drum	2	3	3
Category Hitch	Cat. 1	Cat. 1 & 2	Cat. 1 & 2
Working Width	4'5"	5'5"	6'1"
Min. Recommended Tractor Weight	2,100 lbs.	2,600 lbs.	3,900 lbs.
Lift	Manual	Manual	Manual
Min HP	20	28	35
PTO	540 RPM	540 RPM	540 RPM
Weight (lbs.)	661 lbs.	794 lbs.	893 lbs.



	BRD-135	BDR-165	BDR-185
Dim. A	93"	110"	122"
Dim. B	30"	34"	38"
Dim. C	5"	7.5"	9.5"

# Introduction

Thank you for purchasing your Tar River Drum Mower. This Operator's Manual is available with every machine for the purpose of introducing the user to the design, maintenance, and adjustment of the mower. It will also warn against any possible threats. The Operator's Manual includes information regarding the adjustment and transport on the public roads.



Following the instructions carefully will ensure many years of damage-free and safe operation and will result in decreasing of the operational costs of the machine.

If you have any questions after reading this manual, please contact the Sales Representative or the Sales and Marketing Department.

To emphasize the importance of the information and the warnings of possible hazards, the following warning symbol with a description has been used:



If you see this symbol, be aware of a threat, carefully read the appropriate information and inform other operators about it.

The warranty proceedings rules and the rules resulting from them are written in the warranty card, which is an integral part of the Operator's Manual. The Operator's Manual is part of the basic equipment of the machine and it should be kept for future use.



The mower has a name plate placed on the middle frame with basic machine identification information.

## PRODUCT PURPOSE

The purpose of the Drum Mower is to be used in farming to mow the low stem green fodder (alfalfa grass, etc.) in the fields and meadows.

Operating the mower in alternate conditions will be considered a misuse. Strict compliance with the requirements for the use of the machine as well as its servicing and repairs by the manufacturer is a prerequisite for the intended use.

The machine should be used, operated, and maintained only by persons who are familiarized with its specifics as well as with the work safety proceedings rules.

The provisions regarding preventing accidents and all basic work safety and hygiene rules as well as the traffic regulations must always be observed.

Any changes made to the machine without the consent of the manufacturer will exempt the manufacturer from the responsibility for any possible damages resulting from them.

# Important Safety Information

## Safety

It is important that you read the entire manual and to become familiar with this product before you begin using it. This product is designed for certain applications only. The manufacturer cannot be responsible for issues arising from modification. We strongly recommend this product not be modified and /or used for any application other than that for which it is designed. If you have any questions relative to a particular application, DO NOT use the product until you have first contacted us to determine if it can or should be performed on the product.

Read and understand this manual and all safety signs before operating and maintaining . Review the safety instructions and precautions annually.

## Safety Signal Words

**TAKE NOTE! This safety alert symbol found though out this manual is used to call you attention to instructions involving you personal safety and the safety of others. Failure to follow these instructions can result in injury or death.**



**This symbol means:  
Attention!  
Become alert!  
Your safety is involved!**

Note the use of the signal words, **DANGER, WARNING and CAUTION** with the safety messages. The appropriate signal word for each has been selected using the following guidelines:



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



**WARNING:** Indicates a potentially hazardous situation that, 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 that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

# Important Safety Information

## General Safety Guidelines

Safety of the operator is one of the main concerns in designing and developing a new piece of equipment. Designers and manufacturers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury, study the following precautions and insist those working with you, or for you, follow them.

Replace any **DANGER, WARNING, CAUTION** or instruction safety decal that is not readable or is missing. Location of such decals are indicated in this manual. Do not attempt to operate this equipment under the influence of drugs or alcohol.

Review the safety instructions with all users annually.

This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible adult familiar with farm machinery and trained in this equipment's operations. **Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works.**

To prevent injury of death, use a tractor equipped with a Roll Over Protection System (ROPS). Do not paint over, remove or deface any signs or warning decals on your equipment. Observe all safety signs and practice the instructions on them.

Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - **Don't try it!**



### Safety Decal Care

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or have become illegible.
- Replaced parts that displayed a safety sign should also display the current safety sign.
- Safety signs are available from your Distributor or Dealer Parts Department or the factory.

## Important Safety Information

### How to install Safety Signs:

- Be sure that the installation area is clean and dry.
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.



### Before Operation

- Carefully study and understand this manual.
- Do not wear loose-fitting clothing, which may catch in moving parts.
- Always wear protective clothing and substantial shoes.
- Assure that all tires are inflated evenly.
- Give the unit a visual inspection for any loose bolts, worn parts or cracked welds, and make necessary repairs. Follow the maintenance safety instructions included with this manual.
- Be sure that there are no tools lying on or in the equipment.
- Do not use the unit until you are sure that the area is clear, especially of children and animals.
- Don't hurry the learning process or take the unit for granted. Ease into it and become familiar with your new equipment.
- Practice operation of your equipment and its attachments. Completely familiarize yourself and other operators with its operation before using.
- Use a tractor equipped with a Roll Over Protection System (ROPS) and fasten your seat belt prior to starting engine.
- The manufacturer does not recommend usage of tractor with ROPS removed.
- Move tractor wheels to the widest recommended settings to increase stability.
- Securely attach to towing unit. Use a high strength, appropriately sized hitch pin with a mechanical retainer and attach safety chain.
- Do not allow anyone to stand between the tongue or hitch and the towing vehicle when backing up to the equipment.
- Do not use the unit until you are sure that the area is clear, especially of children and animals.

## Important Safety Information



### During Operation

- Children should not be allowed on the machine.
- Clear the area of small children and bystanders before moving the implement.
- If using a towing unit, securely attach implement by using a hardened 3/4" pin, a metal retainer, and safety chains if required. Shift towing unit to a lower gear before going down steep downgrades, thus using the engine as a retarding force. Keep towing vehicle in gear at all times. Slow down for corners and rough terrain.
- Make sure you are in compliance with all local and state regulations regarding transporting equipment on public roads and highways. Lights and slow moving signs must be clean and visible by overtaking or oncoming traffic when machine is transported.
- Beware of bystanders, **particularly children!** Always look around to make sure that it is safe to start the engine of the towing vehicle or move the unit. This is particularly important with higher noise levels and quiet cabs, as you may not hear people shouting.
- **NO PASSENGERS ALLOWED!** Do not carry passengers anywhere on, or in, the tractor or equipment, except as required for operation.
- Keep hands and clothing clear of moving parts.
- Do not clean, lubricate or adjust your equipment while it is moving.
- When halting operation, even periodically, set the tractor or towing vehicle brakes, disengage the PTO, shut off the engine and **remove the ignition key.**
- Be especially observant of the operating area and terrain. Watch for holes, rocks or hidden hazards. Always inspect the area prior to operation.
- **DO NOT** operate near the edge of drop-offs or banks.
- **DO NOT** operate on steep slopes as overturns may result.
- Operate up and down (not across) intermediate slopes. Avoid sudden starts and stops.

## Important Safety Information



### Highway and Transport Operations

- Adopt safe driving practices.
- Keep the brake pedals latched together at all times. **Never use independent braking with machine in tow as loss of control and/or upset of unit can result.**
- Always drive at a safe speed relative to local conditions and ensure that your speed is low enough for an emergency stop to be safe and secure. Keep speed at a minimum.
- Reduce speed prior to turns to avoid the risk of overturning.
- Avoid sudden uphill turns on steep slopes.
- Always keep the tractor or towing vehicle in gear to provide engine braking when going downhill. Do not coast.
- Do not drink and drive!
- Comply with state and local laws governing highway safety and movement of farm machinery on public roads.
- Use approved accessory lighting, flags and necessary warning devices to protect operators of other vehicles on the highway during daylight and nighttime transport. Various safety lights and devices are available from your dealer.
- The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway and marking requirements.
- When driving the tractor and equipment on the road or highway under 40 kph (20 mph) at night or during the day, use the amber warning lights and a slow moving vehicle (SMV) identification emblem.
- Plan your route to avoid heavy traffic.
- Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
- Be observant of bridge loading ratings. Do not cross bridges rated at lower than the gross weight at which you are operating.
- Watch for obstructions overhead and to the side while transporting.
- Always operate in a position to provide maximum visibility at all times. Make allowances for increased length and weight of the equipment when making turns, stopping the unit, etc.
- Pick the most level route when transporting across fields. Avoid the edges of ditches or gullies and steep hillsides.
- Be extra careful when working in inclines.

## Important Safety Information



### Highway and Transport Operations

- Maneuver the tractor or towing vehicle at safe speeds.
- Avoid overhead wires or other obstacles. Contact with overhead lines could cause serious injury or death.
- Avoid loose fill, rocks and holes, they can be dangerous for equipment operation or movement.
- Allow for unit length when making turns,
- Operate the towing vehicle from the operator's seat only.
- Never stand alongside of unit with engine running or attempt to start engine and/or operate machine while standing alongside of unit.
- Never leave running equipment attachments unattended.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation.  
Correct all problems. Follow the maintenance safety procedures.

## Assembly Instructions

**Step 1:** Prepare the necessary tools: Drill/driver, PH2 bit, hammer, pliers, Philips screwdriver, chisel, combination wrenches:

M13 - 2 pcs.

M17 - 2 pcs.

M19 - 2 pcs.

M24 - 1 pc.

M30 - 1 pc.



**Step 2.** Remove the (16) screws on the top of the crate with the PH2 bit.



**Step 3.** After removing the top of the crate, 1) remove the top cover, 2) the PTO shaft, 3) the 3pt. hitch and 4) the stand from the crate.

# Assembly Instructions

**Step 3.** After removing the top of the crate, 1) remove the top cover, 2) the PTO shaft, 3) the 3pt. hitch and 4) the stand from the crate.



1. Top Cover



2. PTO Shaft



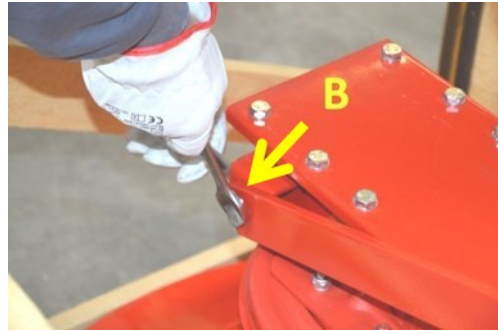
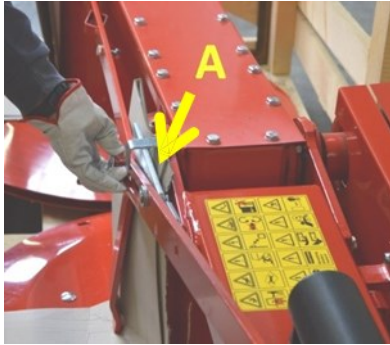
3. 3 Pt. hitch



4. Stand

## Assembly Instructions

**Step 4.** Disconnect the metal tie-rods by pulling the cotter pin from the pivot (A). Attach the rear rod to the main frame of the mower. To do this, remove bolt (B), tighten bolt (C) replace and tighten bolt (B).

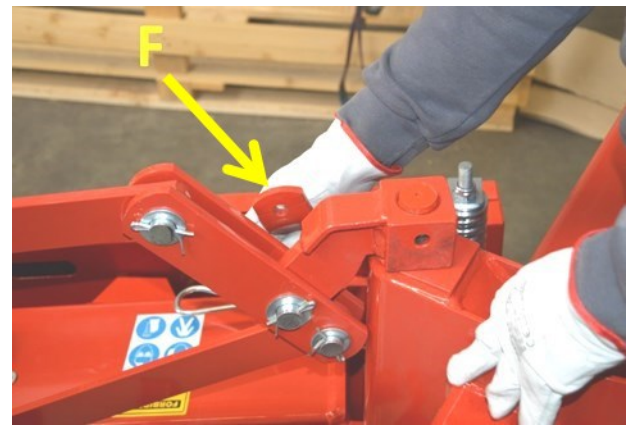
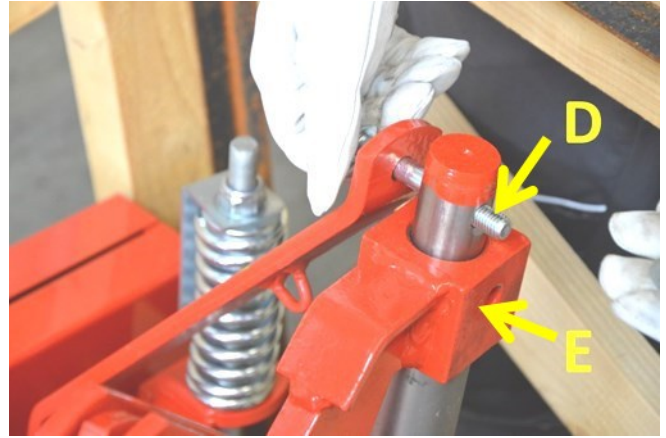


**Step 5.** Raise the machine up with the help of a device with lifting capacity greater than the mower weight (indicated on the serial plate). For this purpose, use transport belts, slings, ropes or chains. Take care to keep the center of gravity of the machine. Before lowering the mower outside of the box, install the Stand.



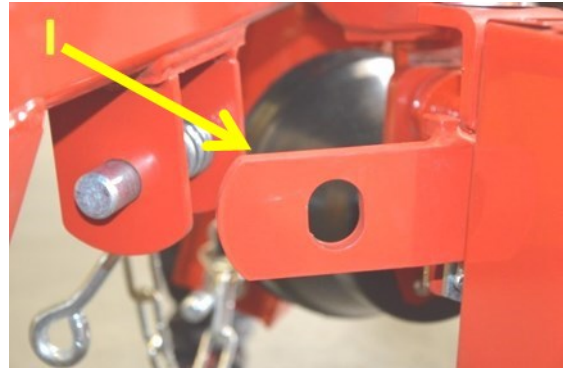
## Assembly Instructions

**Step 6.** Remove the (D) pin, remove the head (E), put on the frame and the head back on. Install the (F) joint and tighten the bolts firmly.

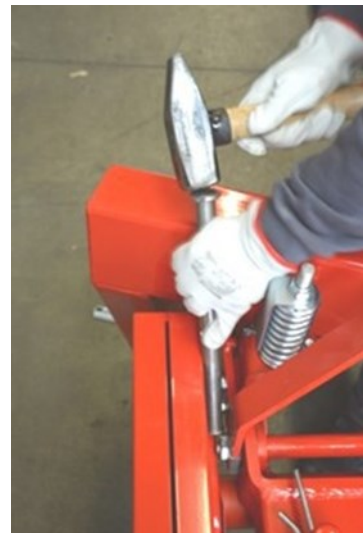


## Assembly Instructions

**Step 7.** Unscrew the securing bolt (G) and loosen the (H) bolt of (I) clamp so that the lock pin blocking the suspension frame fits over the hole. Tighten the bolts (G) and (H).

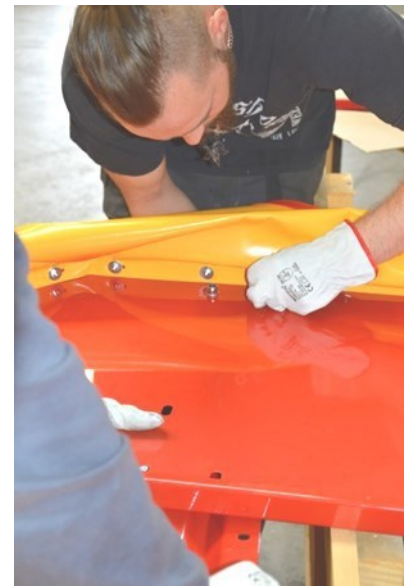


**Step 8.** Tighten the joint axis nut firmly and secure it by bending the washer.



## Assembly Instructions

**Step 9.** Using the wooden crate, place the left and right cover on it. When assembling the rear cover and the reinforcements pay attention to the correct alignment of the holes.



# Assembly Instructions

**Step 9 Continued.**



**Step 10** Remove the bolts (J) and (K) and the bolt (B).



## Assembly Instructions

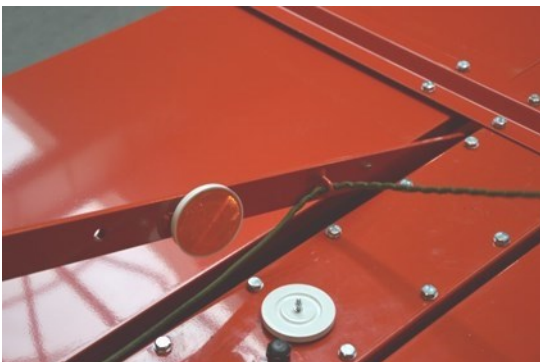
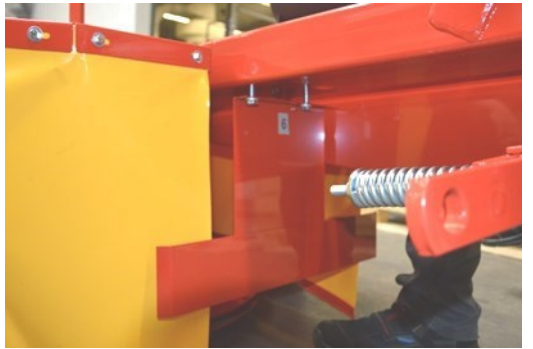
**Step 11.** Place the cover on the mower, keeping an even distance from the frame on both sides.



**Step 12.** Bolt on the (J), (K) and (B) bolts and then install the front cover.



**Step 13.** Attach the rope to the pin and pass it through the holes on the mower. Place the plastic handle at the end of the rope and make a knot as shown below. Finally, install the reflectors.



## Assembly Instructions

**Step 14.** The V-belts are only pre-tensioned, they must be tensioned before the machine is used for the first time. After tensioning, the distance from the bottom of the tensioner to the top (as shown) should be in the range of 4-5 inches. After driving approximately 1300 feet, the operator should check the tension again through the inspection hole in the cover and adjust if necessary.



## General Information

### Sales Information

The technical condition and the equipment of the mower should be checked at the time of purchase.

It should be required from the equipment dealer to carefully fill out the Warranty Registration Form. Failure to provide the date of purchase or the dealer's information might cause the buyer to suffer disapproval of any possible complaints.

### Equipment and Spare Parts

The mower includes the following basic equipment:

The Operator's Manual, Parts Breakdown and Warranty Registration Form: 1pc.

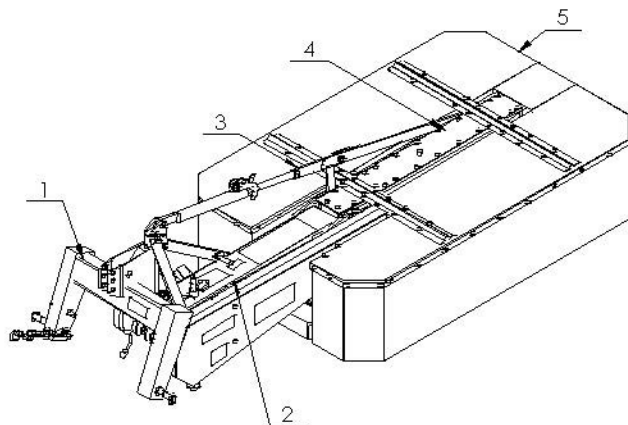
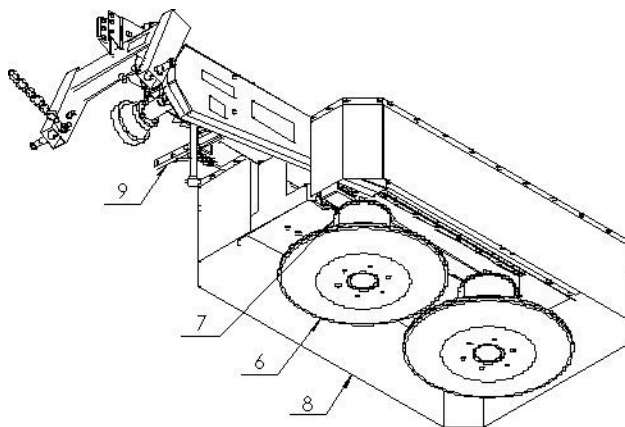
Blade Changing Tool: 1 pc.

Blades (packed): 12 pcs.

### Design and Operation

The design of the mower:

1. Suspension
2. Central beam
3. Push rods, hydraulic cylinders (depending on the version)
4. Main frame
5. Shield system
6. Stump jumper
7. Operating drums
8. Protective shield
9. Lock



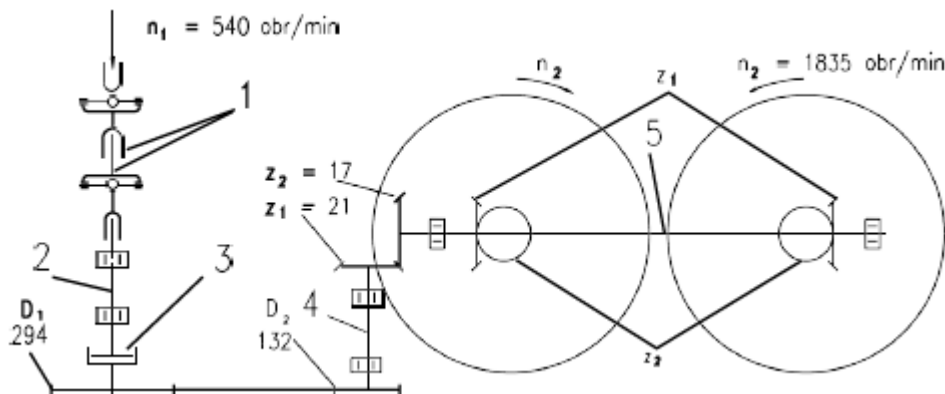
## General Information

The suspension system frame (1) is used to connect the mower with the tractor. The main frame (4) is connected pivotally with the suspension frame through the central beam (2). The cutting system is made of two operating drums (7) with blades attached rotationally in their lower part. The drums rest on the stump jumpers (8) when in the operating position, which adjust to the ground contours.

Changing the position of the mower from the transport position to the operating position and backwards is made possible through the pivotal connection of the of the suspension system frame with the central beam. The guards and shield (8) protect the machine operator and other people from any hard object, which might be thrown out from under by the operating drums (7).

The spring fuse prevents damages of the mower when the cutting system moves onto an obstacle; the operating drums are powered by the tractor's PTO. The drums along with the blades rotate in opposite directions cutting the forage and forming it into windrows.

The one-way slip clutch allows for free movement of the drums after disengaging the engine and protects the drive elements from any damage.



### Description of Mower's Power Drive

- 1 – PTO shaft
- 2 – head drive shaft
- 3 – slip one-way clutch
- 4 – drive shaft of the main frame

## Operational Service

You may start operating the machine only after having carefully read the Operator's Manual.

Prior to connecting the rotary mower to the recommended tractors, they should be properly prepared.

- Check the physical condition of the machine and perform daily maintenance work in accordance with the operator's manual of the tractor.
- Tilt or disassemble the elements of the connection and attachment system of the tractor, which may interfere or cause collisions with the PTO shaft.



**Warning:** Disassembling these elements will protect against any damage to the PTO shaft while bringing down the suspension system to the lower end position

- Assemble the tractor's power take-off shaft shield
- The recommended tractors should be equipped with the front axle weights

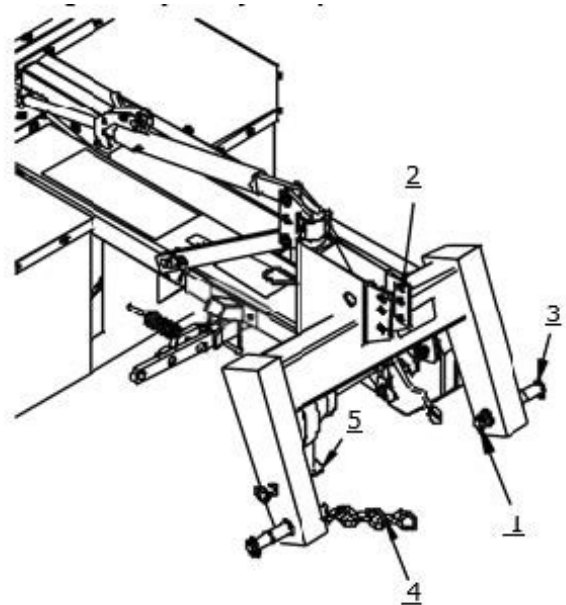


**Warning:** Using a different than recommended tractor for the mower (e.g., of a lower pulling power) or ones that are not equipped with the required front axle weights may cause loss of the steering control of the tractor's front wheels.

### Connecting the Mower with the Tractor:

The mower should be connected to the tractor using the three-point suspension system. The mower should be in the transport position.

1. Bottom pin of the suspension frame
2. Holes in the suspension yoke
3. Plug
4. Chain
5. Support



Please be careful while connecting the machine with the tractor.

## Operational Service

### Instructions to connect the mower to the tractor:

1. Insert the bottom push rods of the tractor (Drawing #4, point 1) in the suspension frame pins (first the left one, then the right one) and secure them with cotter pins (Drawing # 4, point 3).
2. Slide the end of the upper connector between the yoke plates using the holes, then connect it with a bolt and secure it with a cotter pin.
3. Lift the mower to relieve the support (Drawing # 4, point 5)
4. Lift the support and support it with a cotter pin.
5. Tighten the chain (Drawing # 4, point 4) that is limiting the side tilting of the tractor's suspension system.

### Assembly of the PTO Shaft

The drum mower should be equipped with an efficient PTO shaft with a guard, safety sign or the CE marking as well as the technical specifications in accordance with the technical guidelines.

Using a PTO shaft with parameters different than those recommended by the manufacturer of the machine may over-load the shaft, damage it or result in pulling both parts apart while lifting the machine and so create hazard for the operators and the environment.

While assembling the PTO shaft, you should make sure, that the external pipe of the cover is on the side of the tractor.

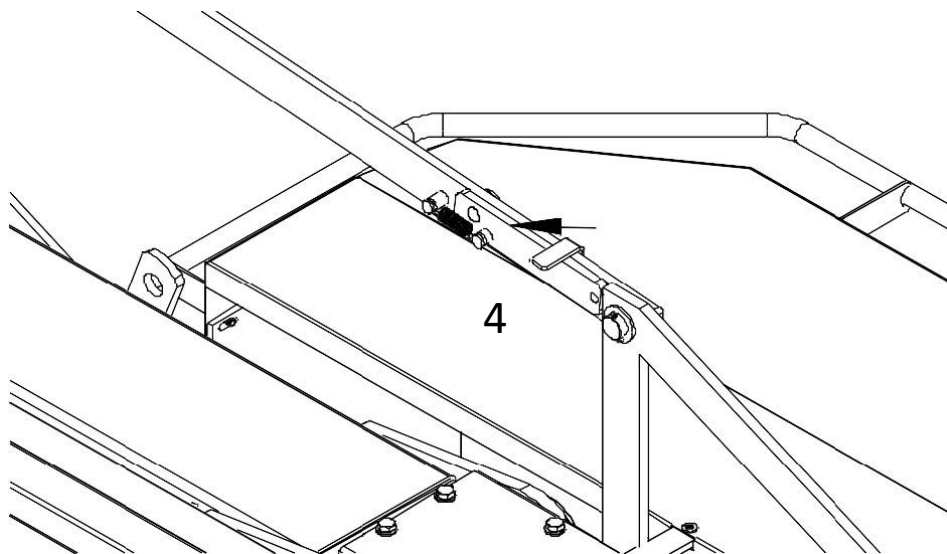
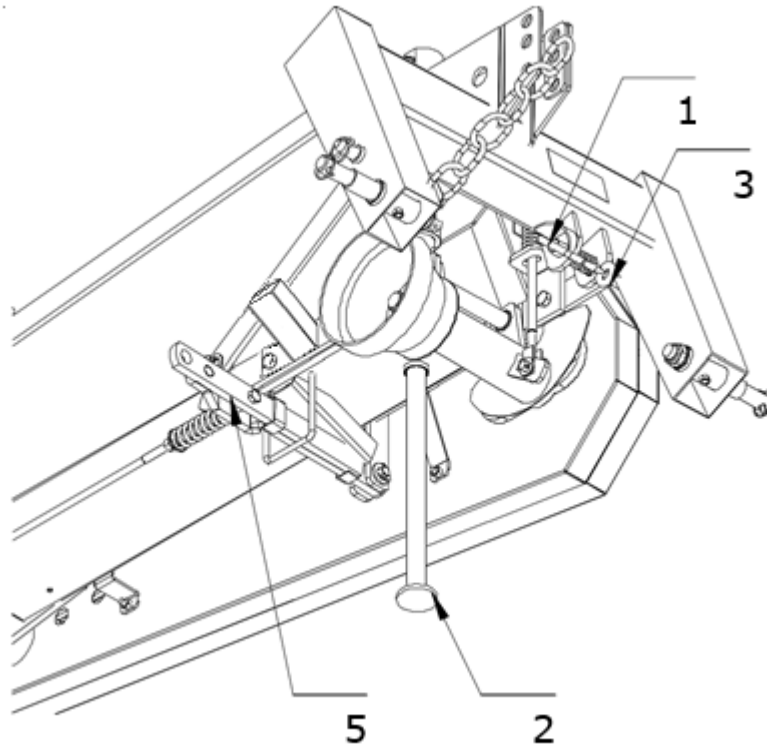
### Instructions to install the shaft:

- Lower the mower down to the ground, turn off the engine and take out the key from the ignition.
- Insert the female tube end yoke to the power input of the machine and the power take-off of the tractor and secure it from sliding out with rivets.
- Check whether the rivets secure the ends of the shaft from sliding out during operation.
- Install the chains of the shaft cover; one to the cover of the tractor's power take-off, and the other to the cover of the machine's power input.

**WARNING** using a damaged PTO shaft, without the cover or a damaged cover, and without the additional cover on the side of the tractor's power take-off and the machine's power input creates immediate hazard of an accident.

# Transport

Adjusting the Mower to the transport position and transport:



## Transport



**Warning: Be careful when changing the mower's position from the transport position to the operating position and vice versa.**

### It is prohibited to reposition the mower:

- On an uneven surface and in a visible slope area.
- When it is lifted high (as in the transport position), and when the suspension frame of the mower is not appropriately level.
- In the presence of bystanders within the mower's turning range.
- Failure to comply with these recommendations may result in risks associated with rapid and automatic rotation of the mower on the suspension. Such rotation may occur after the securing elements pull free (point 1 rivets, point 4 gears).

### Instructions to change the position of the mower to the transport position, the following must be done:

- Set the unit (the mower and the tractor) on an even and horizontal surface.
- Lower the mower so the stump jumpers rest on the ground.
- Disengage the PTO, the tractor's engine, and take out the key from the ignition and allow for the mower's elements to come to a complete stop.
- Disassemble the PTO shaft.
- Level the mower with the right lift arm brace so the suspension frame pins are on the same level above the ground.
- Remove the fuse (Position 5 in the drawing on the previous page) from the bottom suspension frame pin.
- In the mowers with the push rod system (Position 4 in the drawing on the previous page) move the gear to the lower position.
- Lift the mower with the tractor's hydraulic lifting unit so the stump jumpers are just above the ground.
- Lift the support (Position 2 in the drawing on the previous page) to the upper level and secure it with a cotter pin.
- Move the mower by hand all the way back along the tractor making sure that the king pin of the lock (Position 1 on the previous page) goes into the king pin opening (Position 3 on the previous page) with a loose line.
- Lift the mower with the hydraulic system to the vertical position then move the lever of the ball valve mounted on the actuator into the locked position.
- SPECIAL NOTE: The BDR-135 model does not have the parts shown in #1 and #3 on the preceding page. It must be disconnected at the fuse #5 from the frame it was attached to, swung back to the transport position, and then locked using the lock bar supplied on the mower.

## Transport

### During the transport:

- Lift the mower with the hydraulic lifting unit to the upper position to ensure the space between the stump jumper of the cutting drum and the ground of at least 40cm (15-3/4”), tighten the side chains of the tractor’s bottom push rods so the machine does not swing to the sides.
- Always make sure that the ball valve is locked during transport.
- Furthermore:
- Check the securing elements
- Install the warning plate with lights and the plate for slow-moving vehicles.
- Pay attention to the mower overlap over the tractor during the turns or relapses.

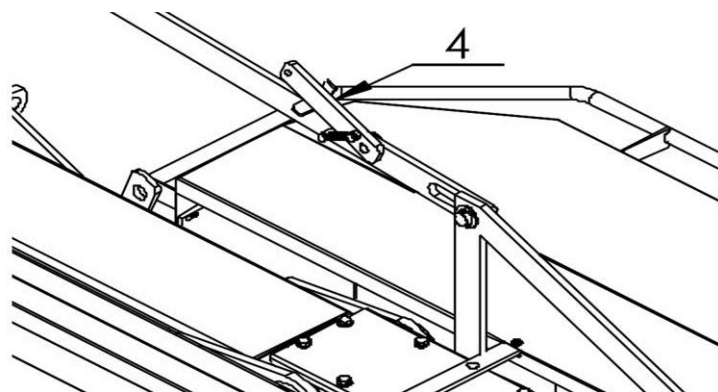
### Adjusting the Mower to the Operating Position:

- Reposition the mower from the transport position to the operating position prior to starting the operation. To do that, the following must be done:
- Place the mower and the tractor on an even, horizontal surface.
- On a mower with hydraulics installed move the ball valve lever to the open position. Then lower the mower to the horizontal position. The mower should stay in that position throughout the entire time of operating the mower. Be extra careful when lowering the mower from the vertical to the horizontal position. Be sure the area is clean and free from obstructions.
- On the mower without hydraulics (i.e., a manual system), the lever should be moved to the upper position (Position 4 in the drawing below), and then lower the mower to just above the ground.
- Stand behind the machine (shown in the top drawing on the following page in the X spot) and pull the line causing the latch to slide out (Position 1 in the bottom drawing on the following page) from the opening (Position 3), take the mower by the cutting system’s cover and turn it to the operating position.
- Put the fuse in (Position 1) the upper suspension frame pin (Position 2) and secure it with a cotter (Position 3).

Proper positioning of the mower in the operating position ensures a safe and high quality and efficiency operation.

The PTO shaft may be connected to the tractor only during the time of the mower’s operation, but during transport or maintenance works it should be disassembled.

### Lever Operating Position



# Transport

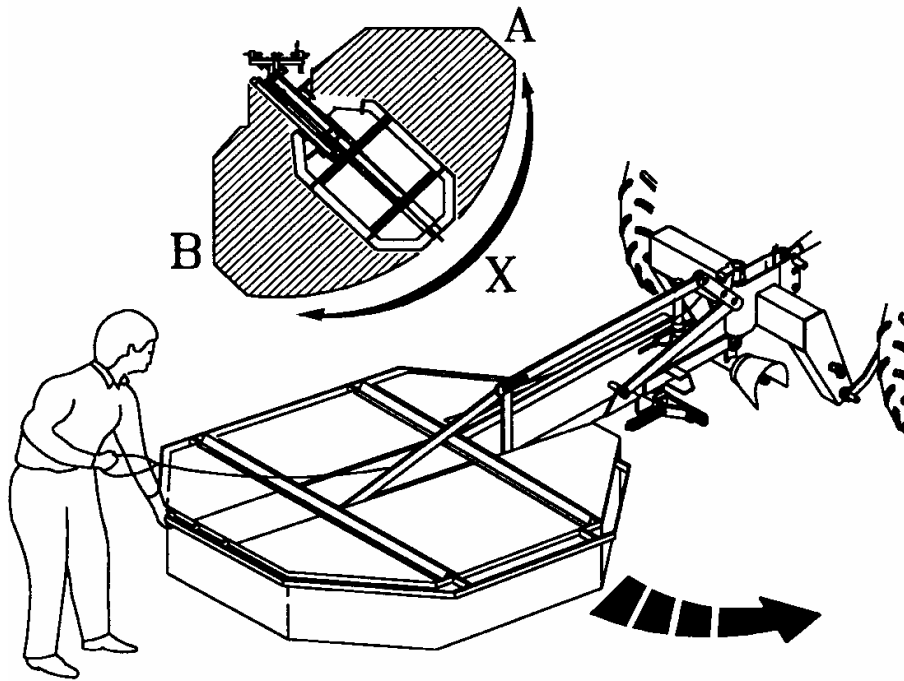
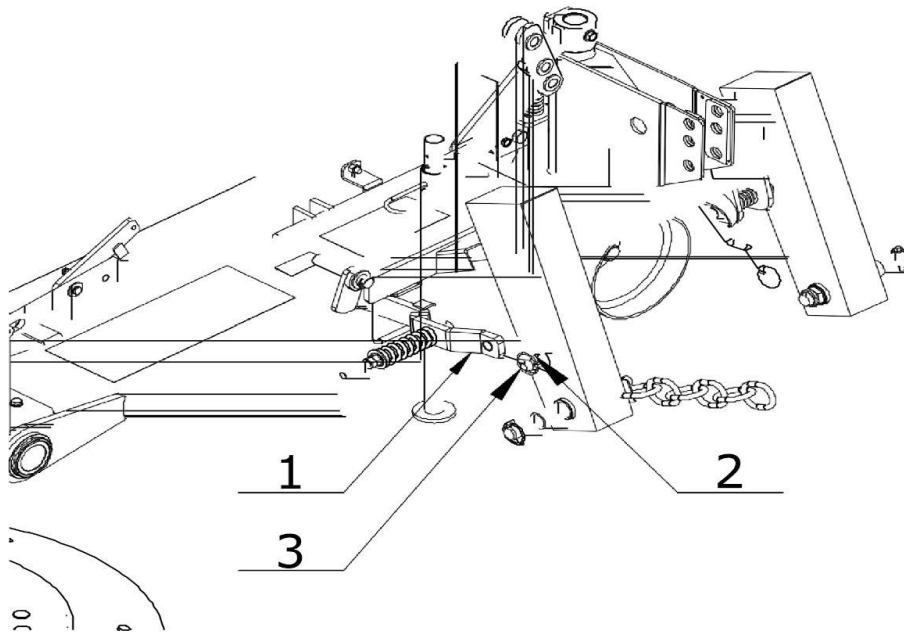


Fig. 7

Changing the mower's position from the transport position to the operating position and vice versa.



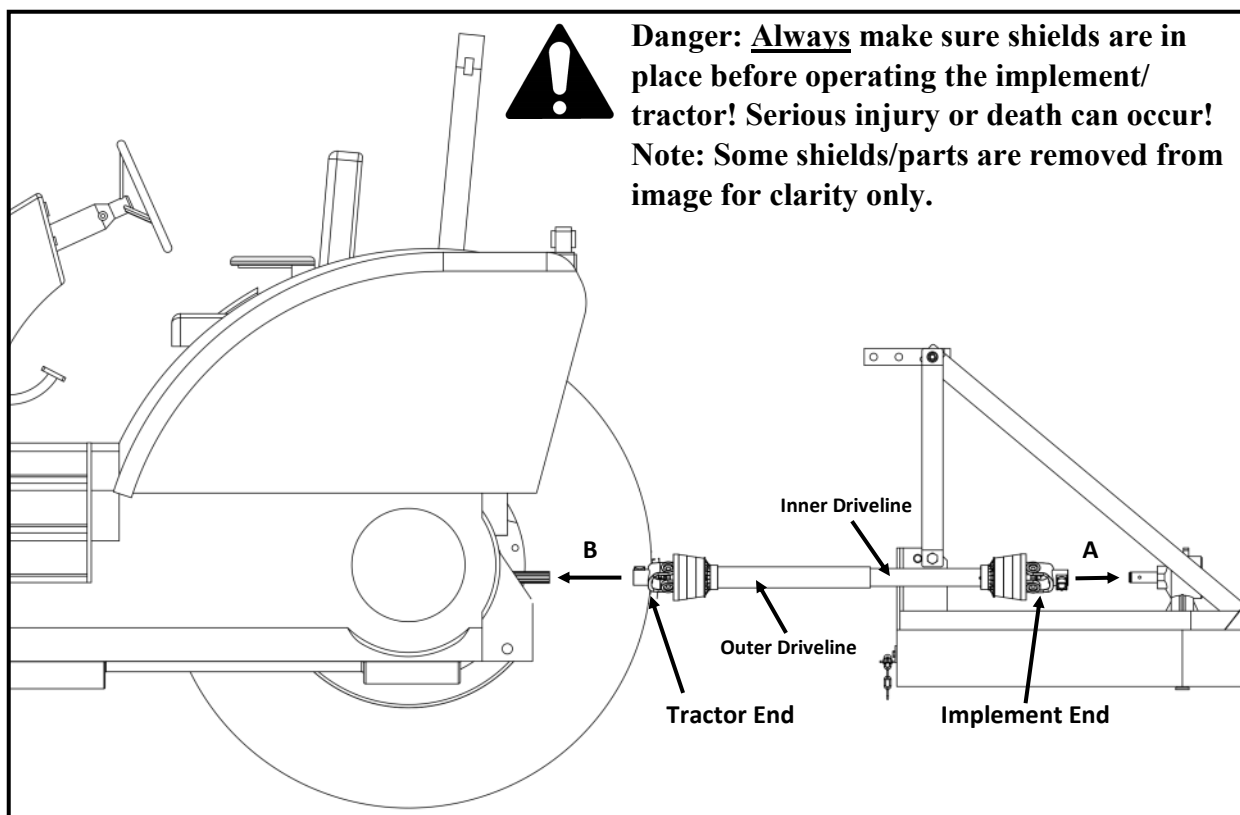
Changing the mower's position to the operating position.

Fig. 8

## PTO Driveline Instructions

### Instructions for Installing a PTO Driveline:

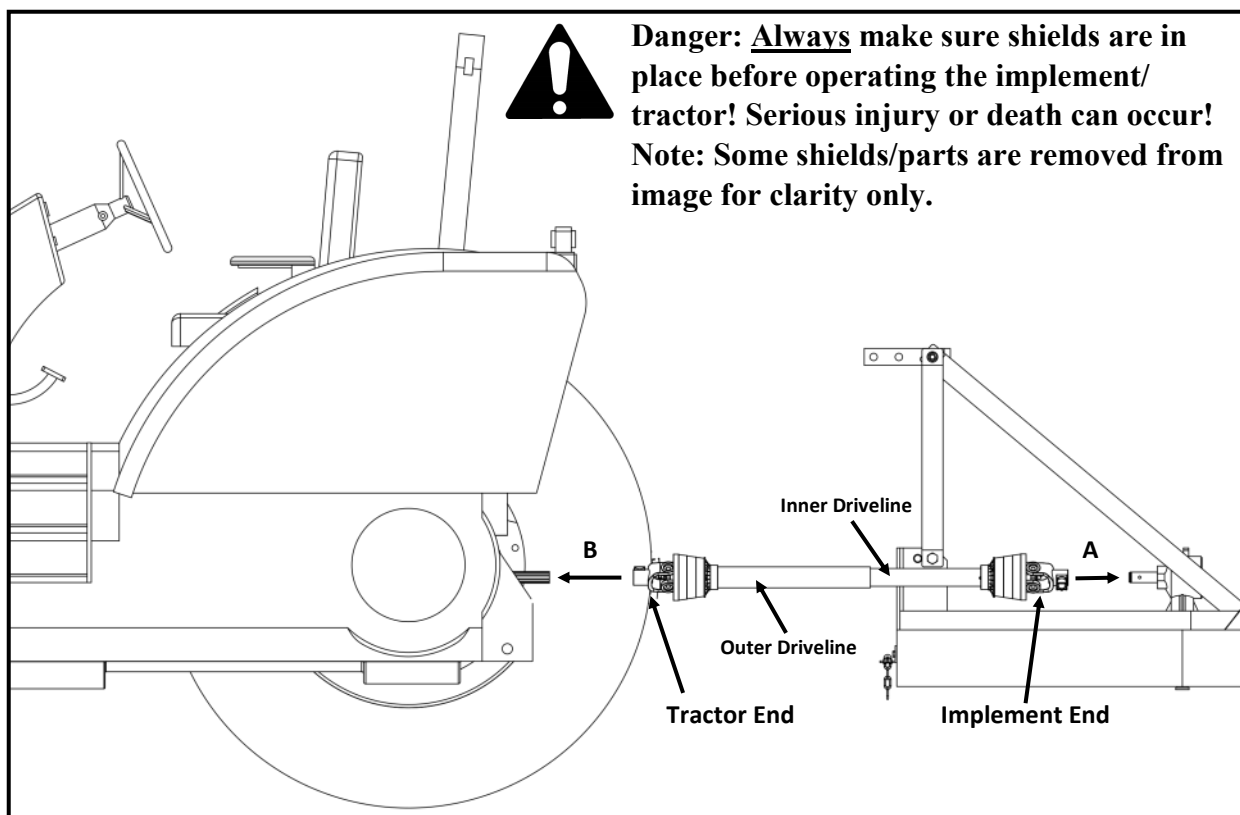
1. Begin by parking the tractor and implement on a level, solid surface. Attach the implement to the tractor's hitch arms, upper and lower. Adjust the tractor's 3-point hitch so that the tractor's output shaft is level with the implement's input shaft.
2. Leave the tractor in gear, shut off the tractor engine, remove the key and set the park brake. Block the implement to prevent it from falling over or shifting.
3. Slide the inner yoke of the PTO shaft 'A' (implement end) onto the input shaft of the implement. Make sure the yoke is securely locked in place.
4. Slide the outer yoke of the PTO shaft 'B' (tractor end) onto the tractor input shaft. Make sure the yoke is securely locked in place.
5. Because of differences in tractor 3-point arms and implements, it may be necessary to shorten the PTO Driveline. See next page for **"Instructions for Shortening a PTO Driveline"**.
6. Check that the PTO Driveline yokes are securely attached to the tractor and implement before operating. PTO Drivelines not attached properly can cause serious injury or death!
7. If your PTO Driveline shields are equipped with chains, secure the chain to the tractor and or implement to prevent the shield from rotating.
8. Before starting tractor and engaging the PTO Driveline, make certain there are no people or animals between tractor and implement. Rotating PTO Drivelines can cause serious injury or death!



## PTO Driveline Instructions

### Instructions for Installing a PTO Driveline:

1. Begin by parking the tractor and implement on a level, solid surface. Attach the implement to the tractor's hitch arms, upper and lower. Adjust the tractor's 3-point hitch so that the tractor's output shaft is level with the implement's input shaft.
2. Leave the tractor in gear, shut off the tractor engine, remove the key and set the park brake. Block the implement to prevent it from falling over or shifting.
3. Slide the inner yoke of the PTO shaft 'A' (implement end) onto the input shaft of the implement. Make sure the yoke is securely locked in place.
4. Slide the outer yoke of the PTO shaft 'B' (tractor end) onto the tractor input shaft. Make sure the yoke is securely locked in place.
5. Because of differences in tractor 3-point arms and implements, it may be necessary to shorten the PTO Driveline. See next page for **"Instructions for Shortening a PTO Driveline"**.
6. Check that the PTO Driveline yokes are securely attached to the tractor and implement before operating. PTO Drivelines not attached properly can cause serious injury or death!
7. If your PTO Driveline shields are equipped with chains, secure the chain to the tractor and or implement to prevent the shield from rotating.
8. Before starting tractor and engaging the PTO Driveline, make certain there are no people or animals between tractor and implement. Rotating PTO Drivelines can cause serious injury or death!



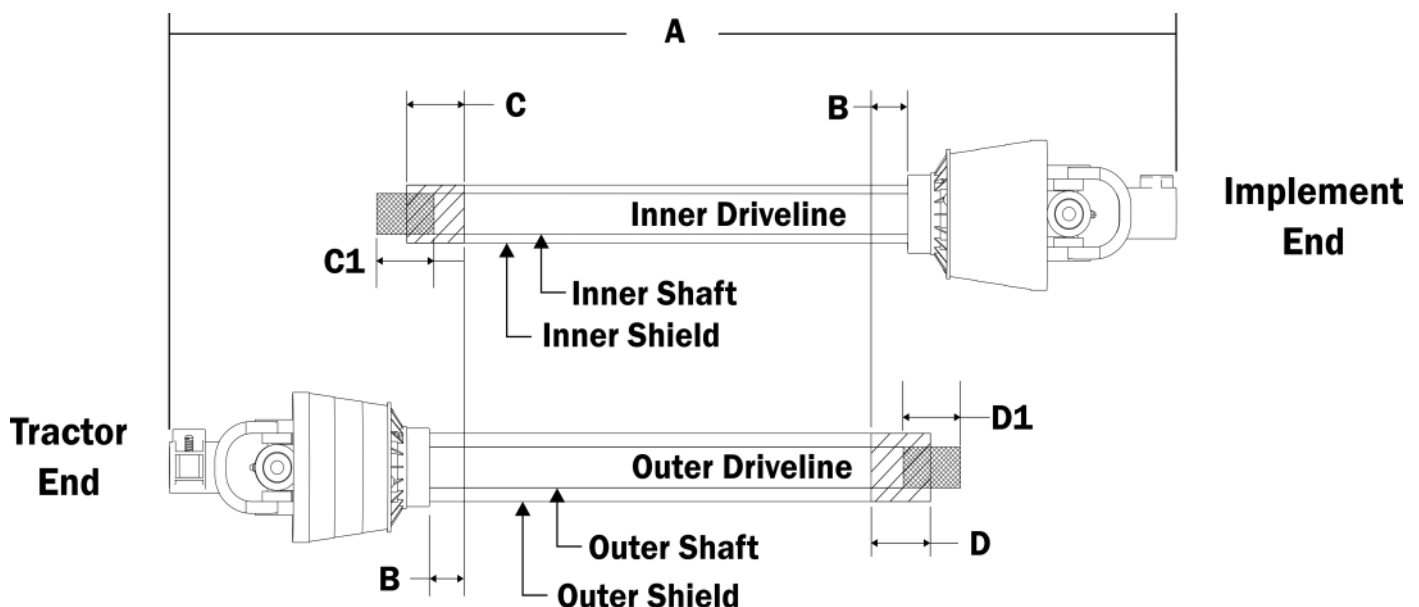
## PTO Driveline Instructions

### Instructions for Shortening a PTO Driveline:



**Note:** If you are not confident modifying the PTO Driveline, you should contact a Qualified Professional.

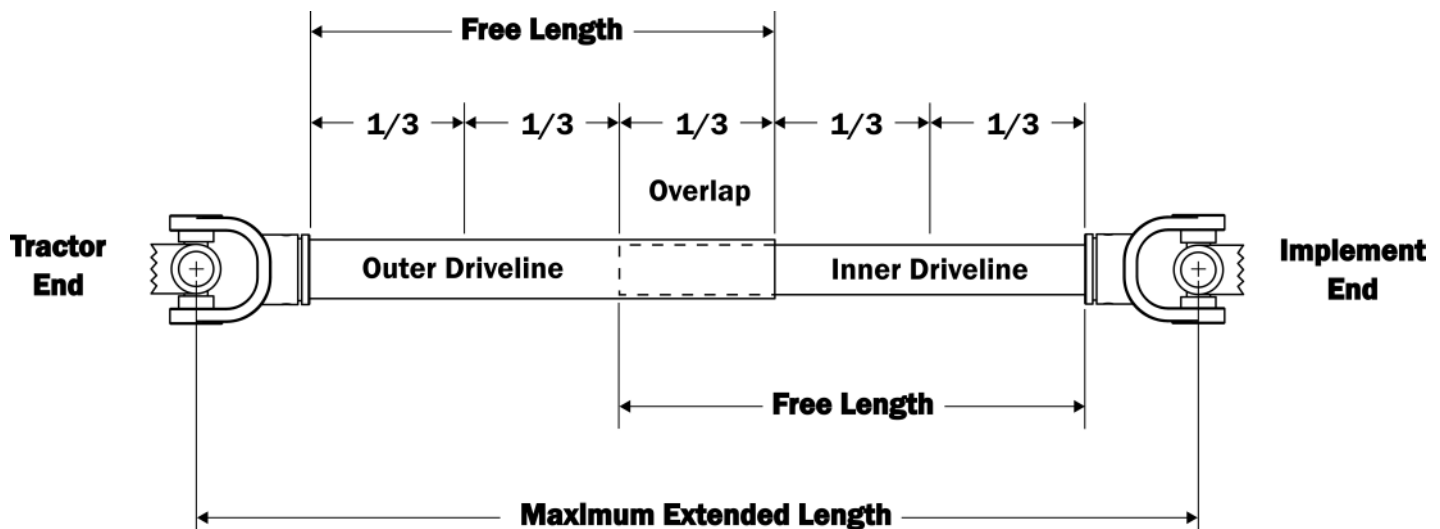
1. Separate the inner and outer PTO Drivelines. Leave separated at this time.
2. Attach the outer PTO Driveline to the tractor implement input shaft and inner PTO driveline to the implement input shaft.
3. With the drivelines parallel to one another, measure 1" (dim. 'B') back from the outer PTO Driveline shield (see fig. 2) and make a mark on the inner PTO Driveline.
4. Measure 1" (dim 'B') back from the inner PTO Driveline shield (see fig. 2) and make a mark on the outer PTO Driveline.
5. Remove the drivelines from the tractor and implement.
6. Measure from the end of the inner shield to the scribed mark (dim. "C"). Cut the inner shield at that mark. Cut the same amount off the inner shaft (dim. "C1").
7. Measure from the end of the outer shield to the scribed mark (dim. "D"). Cut the outer shield at that mark. Cut the same amount off the inner shaft (dim. "D1").
8. Clean off all burrs from both drivelines.
9. Refer to "Checking PTO Driveline Extended Length" section next.



## PTO Driveline Instructions

### Checking PTO Driveline Extended Length:

1. Apply multi-purpose grease to the outside of the inner driveline section. Assemble the outer and inner drivelines.
2. When fully extended, the maximum allowable length must have a minimum overlap of  $\frac{1}{3}$  the free length of the inner and outer sections. Measure and record the maximum extended length for future reference.
3. Attach the outer PTO Driveline to the tractor implement input shaft and inner PTO driveline to the implement input shaft.
4. Pull both yoke ends to make sure they are properly seated on the input shafts. **Warning:** If the drive lines are not properly seated, they can separate from the tractor or implement, causing extensive damage and possibly serious injury or death.
5. Raise and lower the implement to determine the maximum extended length. Make sure the maximum extended length does not exceed the maximum length determined from step 2.



**Danger:** Always make sure shields are in place before operating the implement/tractor! Serious injury or death can occur!

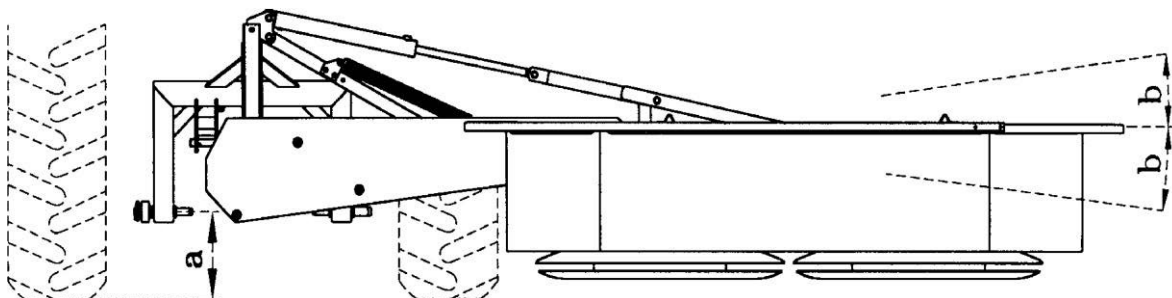
**Note:** Some shields/parts are removed from image for clarity

# Operation

## Adjusting the Mower

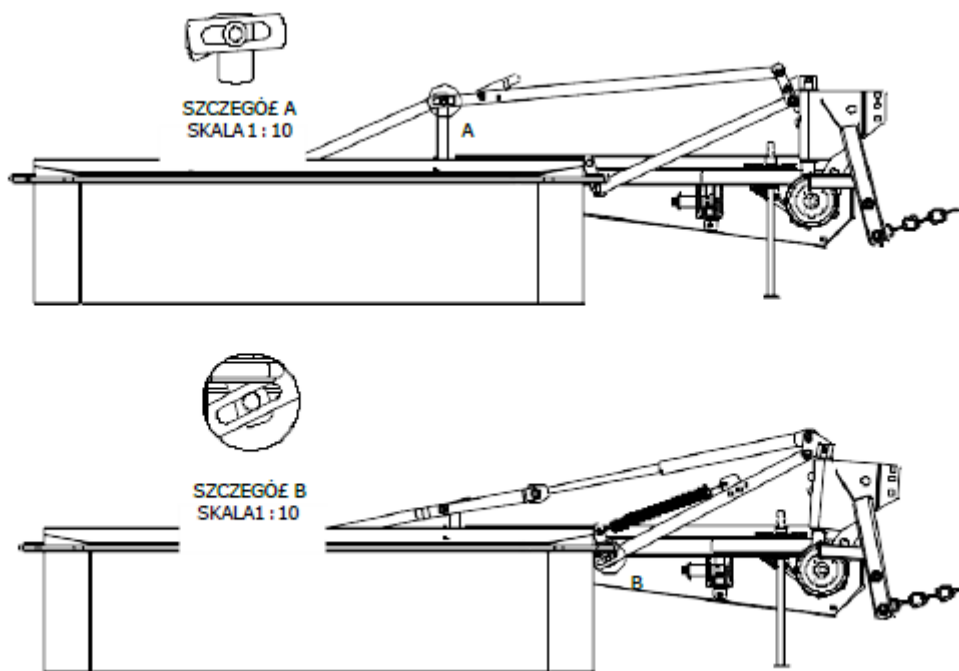
### Determining the length of the upper connector.

After repositioning the mower to the operating position, the stump jumpers should be positioned parallel to the ground and the suspension frame should be positioned at such a height so the distance “a” is about 11 inches and the pin is in the middle of the longitudinal opening of the push rod (Drawing 2). Adjustments should be made with the help of the upper connector and the tractor’s right lift arm brace. To ensure the proper operation for the mower, the suspension frame should be supported by a chain connected with the clevis fastener or its bracket.



Proper operating mode of the mower.

Fig. 9



The proper alignment of the cotter pin on the engagement rod.

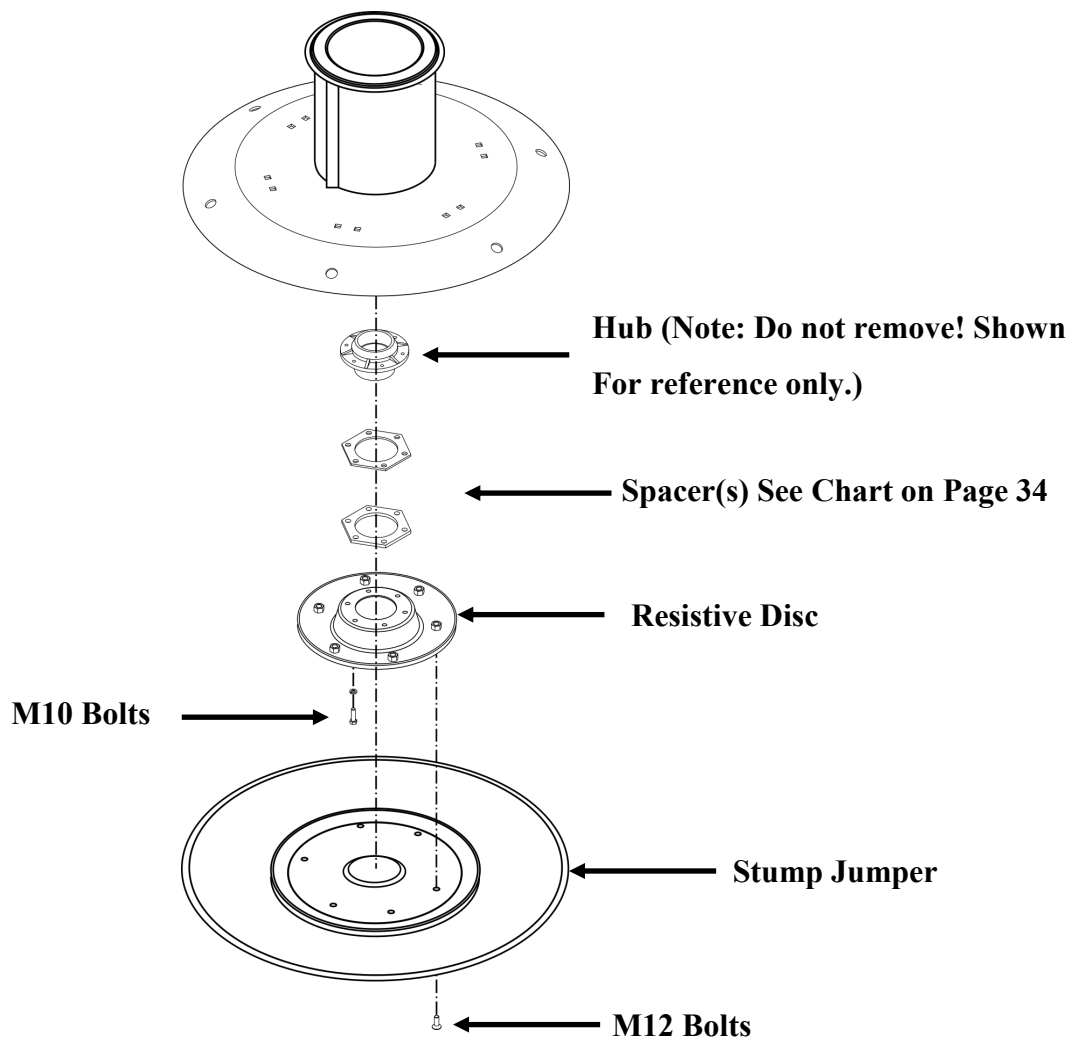
Fig. 10

The mower may be positioned at any cut height 32 mm (low), 40 mm, or 44 mm (high). The mower is set to the middle height of cut. A spacer ring (Position 3 in Drawing 3) may be used to adjust it, which is installed on the operating drums between the stump jumper’s hub (Position 7 in Drawing 3) and the resistance disk (Position 6 in Drawing 3).

# Operation

## Adjusting the height of cut.

1. To make height adjustments the following must be done:
2. Position the mower to the transport position and lift it to the upper position.
3. Set the tractor's handbrake and disengage the tractor's engine.
4. Secure the mower from falling with a chain and an additional support placed under one of the stump jumper disks.
5. Remove the M12 bolts securing the stump jumper to the machine.
6. Remove the M10 bolts securing the Resistive Disc to the machine.
7. Add or remove Spacer(s) to adjust the cut height. Refer to Chart on page 34 for correct spacers.
8. Re-assemble in the reverse order.
9. Repeat the above steps for the other Discs.



# Operation

Model	Cutting Height in MM		Spacers Req'd.
<b>BDR-135</b>	Min.	32	None
	Standard	36	1 - 4mm spacer
	Max	48	2 - 8mm spacers
<b>BDR-165</b>	Min.	36	1 - 4mm spacer
	Standard	40	1 - 8mm spacer
	Max	48	2 - 8mm spacers
<b>BDR-185</b>	Min.	32	1 - 4mm spacer
	Standard	40	1 - 4mm & 1 - 8mm spacer
	Max	44	2 - 8mm spacers

## Operation

### Operating the Mower:

The fields and meadows to be mowed should be free from any obstructions and debris, which may damage the mower.

The shields of the mower must be positioned downwards during operating of the machine. The mower's drive should be turned on slowly, after reaching 540 RPM of the power take-off, then operation may be started. The speed should be adjusted to the terrain conditions and the type of grass to be mowed. For the time of idle drive, the drive of the mower should be turned off and then the mower should be lifted upwards.

The mower should not be used on uneven ground and fields full of stones because of the risk of damaging the blades, blade holders, and other mower parts, in addition to the damage that may be done from objects being thrown out from under the deck (stones, broken blades, etc.).



Warning: The operating drums and blades still rotate for a certain amount of time even after the power take off drive is turned off. Prior to making any adjustments on the mower, turn off the drive and the engine of the tractor, pull out the key from the ignition, and allow for the operating drums and the blades to come to a complete stop.



Warning: It is prohibited to operate the mower in the presence of bystanders within an area less than 165 ft.

In case the mower hits an obstacle, the fuse allows for the cutting system to tilt. The fuse resets when the tractor is moved back a bit. The length of the safety device "A" (Fig. 12) tightening spring, should be 160mm (6-1/4"). If it is too tight, it may block the safety device and damage the mower when it hits an obstacle.

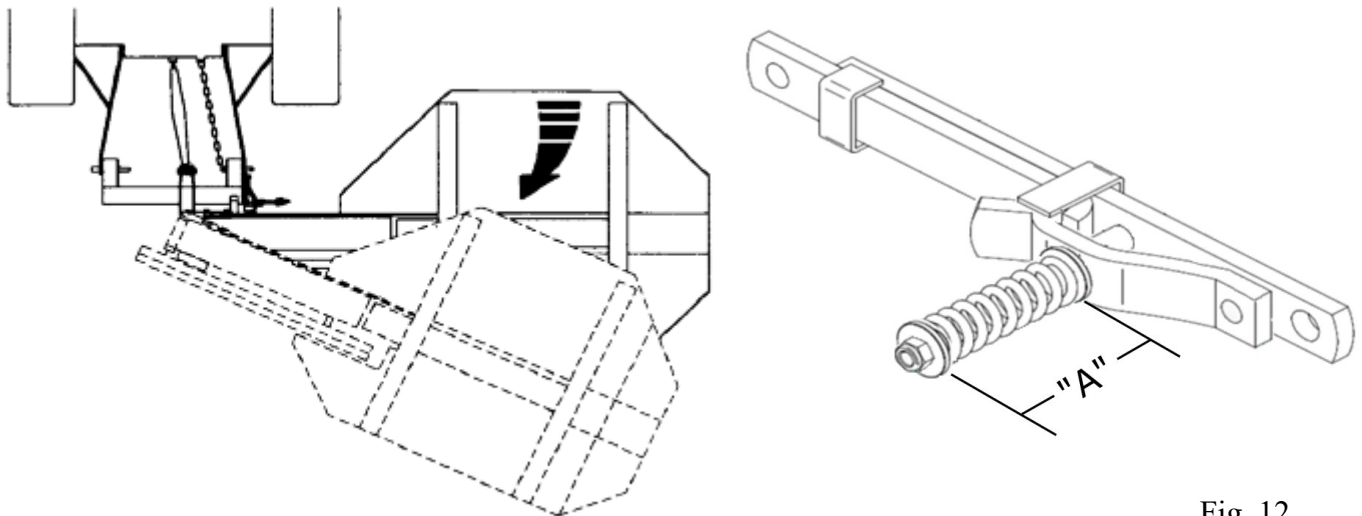


Fig. 12

**Securing the mower after driving into an obstacle.**

## Maintenance

**Attention: Because of the possibility of damage to the mower, NEVER:**

- Exceed the tractor's PTO 600 RPM.
- Lift the mower while the drive is engaged, and the drums are rotating.
- Mow while backing up (this will cause machine to fail!)

### Resting Position

- The mower in the resting position is completely separated from the tractor's suspension system. The mower is repositioned from the transport position to the resting position.
- The following should be done for that purpose:
- With the three-point suspension system, the support of the mower should be lowered and secured with a cotter.
- Lower the mower and rest it on the stump jumper discs and the support.
- Disengage the engine and pull out the key from the ignition and set the brakes.
- Disconnect the pivotal end of the tractor's upper connector from the suspension frame yoke. Take down the tractor's push rod ball joint from the suspension frame pins.

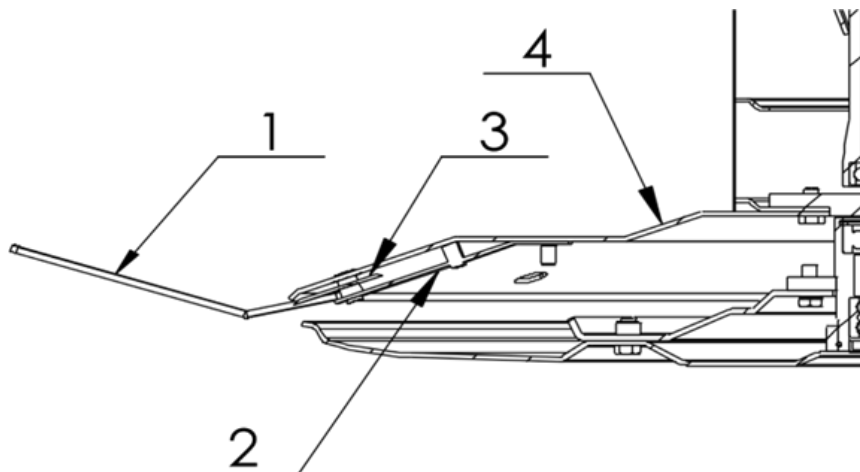
### TECHNICAL MAINTENANCE OF THE MOWER

#### Changing the Blades

- To install or disassemble the blades on the operating disc, a special blade changing tool should be used, which is included in the basic equipment of the mower.



**Danger:** Due to the sharp edges of the blades, protective gloves should be used in disassembling the blades.



# Maintenance

## Installing the blades:

- The blade should be lifted (Position 3 in the drawing above)
- The wrench key (Position 1 in the drawing above) should be inserted in the space between the operating disc the holder of the blade (Position 2 in the drawing above).
- Tilt the blade holder down so its pin slides out of the disc's socket lifting the wrench key up. • Put the blade onto the pin of the holder, making sure that the pin of the holder is in the disc's opening.



**IMPORTANT:** The holder's pin should be in the middle of the disc's opening to properly install the blades. Failure to install the blades properly may result in serious hazard to the operator and the bystanders.

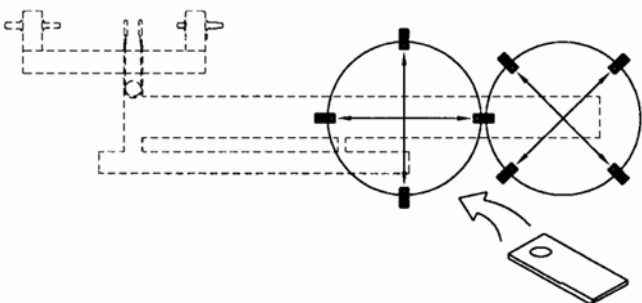
**WARNING:** In case any blades become damaged or worn out, it is vital to change the whole set of blades to new ones. If the blades are only worn on one side they may be reinstalled on the opposite disc since it rotates in the opposite direction, provided they are not damaged.

When changing the blade holders, special attention should be paid to their positional relationship between the individual discs.



### Arrangement of the Blades:

**NOTE:** *Only certified blades should be used.*



## Maintenance

### Instruction: Adjusting V-Belt tension Drum mowers

It is important to check the Drum Mower belt tension before operating Drum Mower. The V-belts are stretched with a spring tensioner as shown in See Fig. 1 below. Tightening the nut will increase pressure on the V-belts, loosening the nut will decrease tension. The initial adjustment of the spring nut should be 1" to 1-1/4" as in Fig. 1. Further adjustment may be required to obtain optimal operating tension. Loose belts can jump off pulleys causing damage to belts and or the Drum Mower.

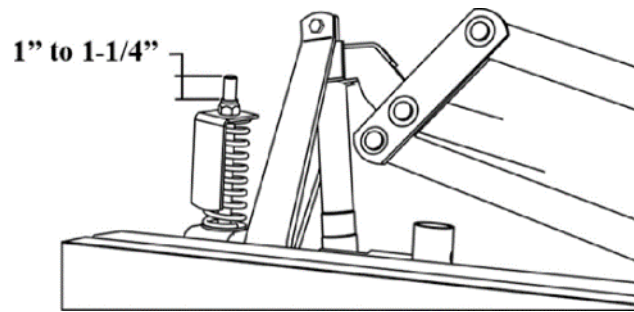


Fig. 1 Spring tensioner

Check the tension by pressing down on the V-belts. The V-belts should deflect approximately 1/8" as shown in Fig. 2.

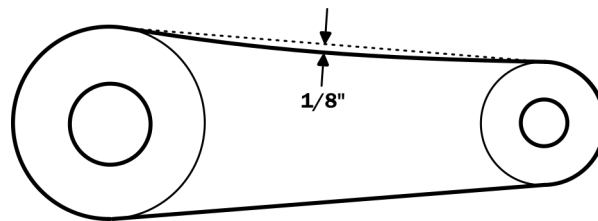


Fig. 2 Belt tension

Once initial belt tension is adjusted, run the Drum Mower for 15 minutes, stop tractor, shut off engine and check the belt tension. **Never check V-belts with tractor running!** If necessary, adjust tension, run an additional 15 minutes and re-check. This will ensure that the belts are properly stretched and seated.

Note: If a V-belt is damaged, it is advisable to replace the whole set. Use the OEM specified V-belts for optimal performance.

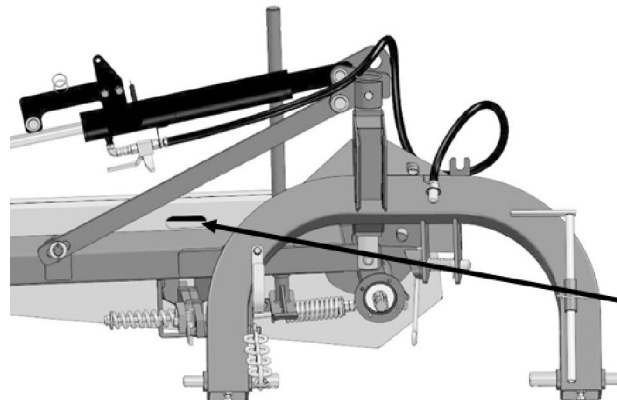


Fig. 3 Belt inspection opening

# Maintenance

## Everyday Maintenance

Following operation, clean the mower from any plant residues or dirt and check its technical condition every day.

- Inspect the components and their connections.
- All loosened bolt connections should be tightened, and the worn out or damaged parts should be replaced with new original spare parts.
- Pay attention to the cutting system; the worn or damaged blades, holders should be replaced as whole sets to new ones.
- Check the tension of the V-belts
- Lubricate the mower and the PTO shaft in accordance with the lubricating instructions. See page 19.

## Post-Season Maintenance

When the operating season is over, the following must be done:

- Thoroughly wash the mower.
- Perform a detailed technical inspection of parts and components.
- The worn out or damaged parts should be replaced with new ones.
- Loosen up the V-belts.
- Perform post seasonal servicing on the mower
- Places with a damaged paint layer should be repainted.
- Secure the operational surfaces with worn paint layer with a corrosion protection product. • Change the transmission oil (main frame), lubricate the machine in accordance with the lubricating instructions.

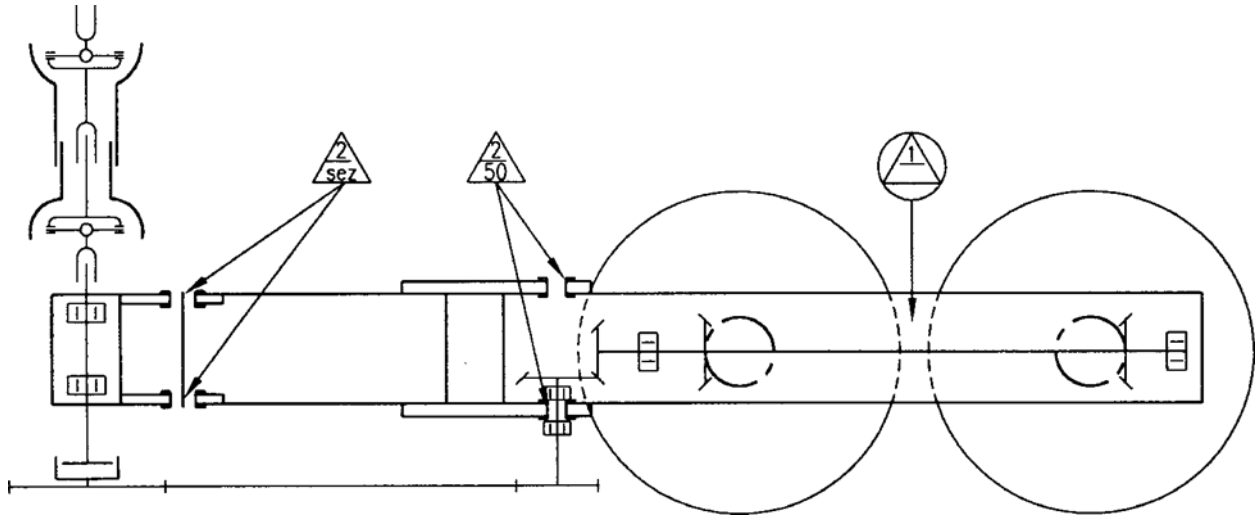
## Lubrication Instructions

Perform the following maintenance activities:

Gear Box:

- Check the oil level every 10 hours with the help of a clean rod inserted in the vent opening. The level of the oil should be 20-30mm from the bottom of the gear box. In case the oil level is low, the cause of the leakage should be repaired, and then the oil should be filled to the required level. There should be 5 liters of oil in the gear box.

## Maintenance



### Instructions for lubricating the mower.

The greasing points indicated by triangles should be greased with a machine oil with the help of a lubricator.

The PTO shaft should be lubricated in accordance with the shaft manufacturer's requirements.



**Remember:** The higher quality and viscosity 90 wt. gear oil should be used or alternately 140 wt. gear oil.

### Storing

The mower should be stored in a dry, hardened surface and roofed place that is of limited accessibility to people and animals.

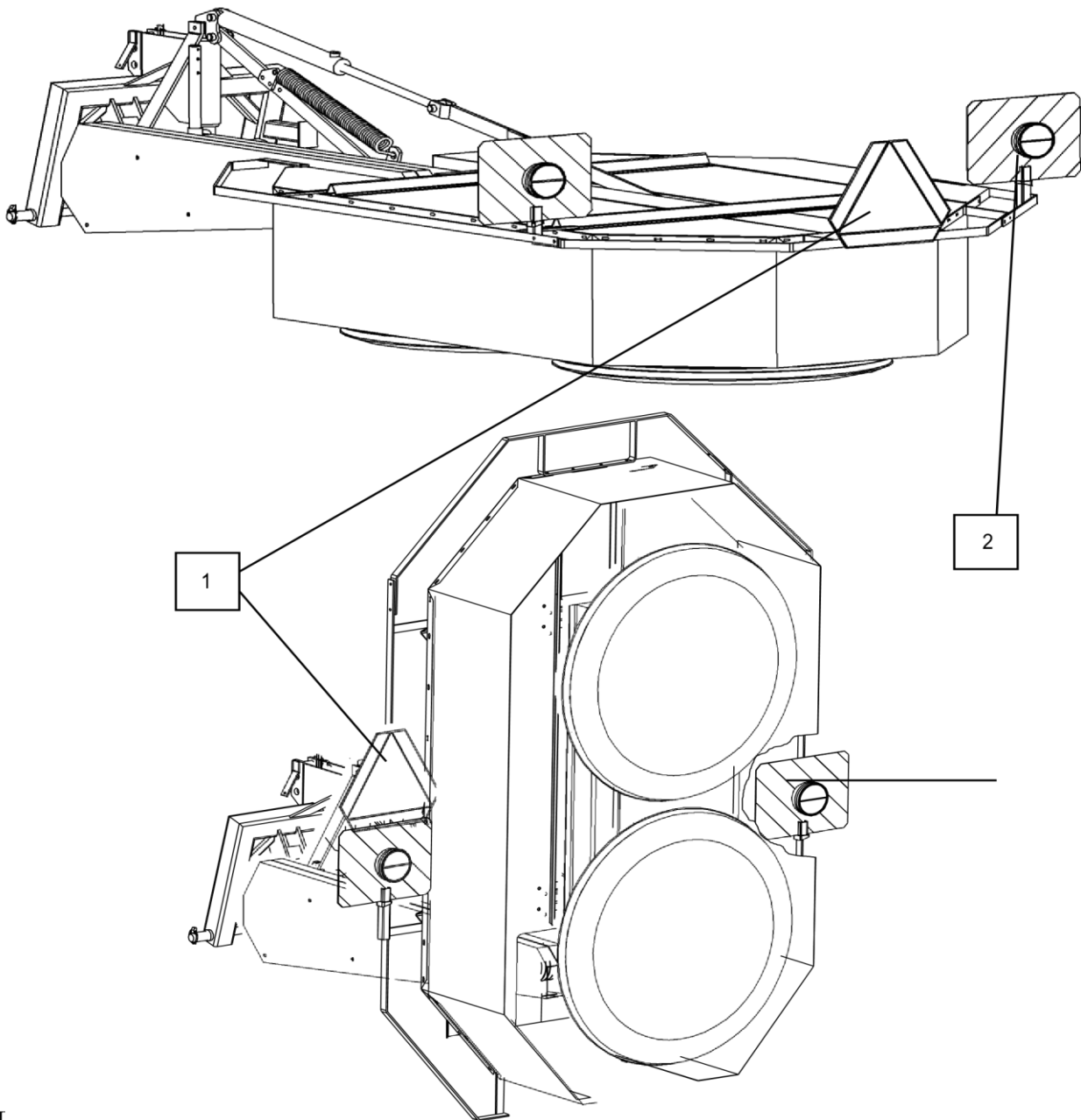
In case the mower is exposed to adverse weather conditions, it is necessary to perform maintenance and lubricating on the machine.

Check the stability of the mower after placing it in the storage place. Positioning the mower on a soft and uneven surface may be hazardous.

# Maintenance

## Transport Lights

The mower should always be positioned horizontally or vertically in the driving direction (behind the tractor).



I

During transport, the machine must be equipped with the triangle safety sign (1) and a portable warning light device (2) consisting of two rectangular plates painted with white and red stripes, to which composite tubes are assembled with side position lights, stop lights, and turn signals. During transport of the mower in an upright position, the shields cannot cover the warning lights. If so, the shields should be pressed closer to the upper metal covers and tied up with a twine in several places.

# Maintenance

## Assembly of the Mower

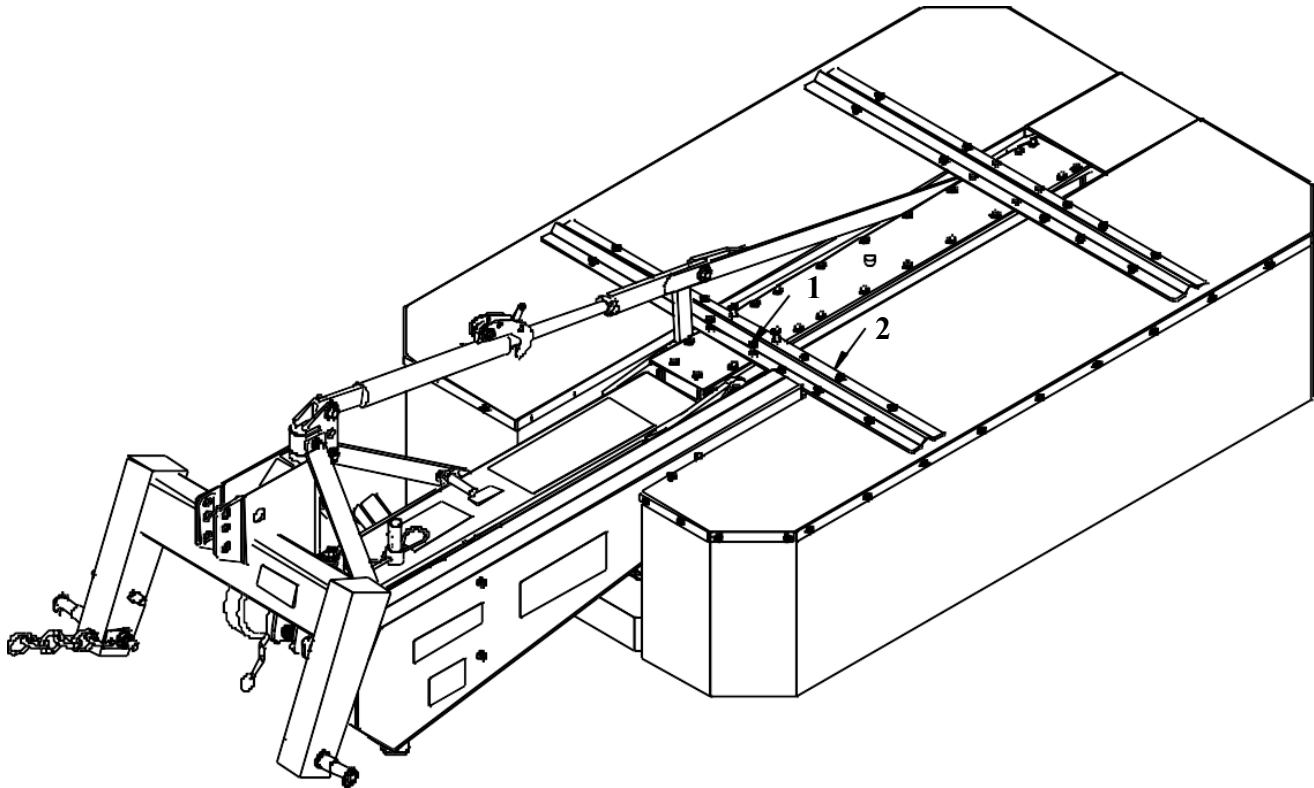
The manufacturer delivers a mower with the cutting system's cover that is not assembled. The responsibility to install the covers is on the side of the purchaser.



**Warning:** Operating the mower with the cutting system's cover not installed or damaged or with the shield lifted is hazardous to the operator and

The cover should be installed in the following way:

- Unscrew the bolts M10x25 (Position 1 of the drawing below).
- Screw in the brackets with the rest of the covers of the upper frame (Position 2 of the drawing below).



## Dismantling, Utilization, and the Methods of Utilization.

Protect your hands (body) from injuries and harmful effects of lubricants and oils. Use protective gloves and tools in good technical condition. The parts of the machine which may reposition or turn during the disassembling should be appropriately secured.



The worn out or damaged parts obtained during repairs (dismantling) should be stored in a separate place of limited access to people and animals. The worn parts should be taken to the recycle center. The worn items made of plastic material should be taken to a place for the disposal of chemicals.

The abandoned parts of the machine or spilled oil may result in accidents and cause environmental pollution and violate the rules.

## Troubleshooting

<b>PROBLEMS</b>	<b>REASONS</b>	<b>SOLUTIONS</b>
Increased vibrations of the mower	Unevenly worn out or damaged elements of the cutting system	The worn elements should be replaced with whole new sets.
Bad cut and clogging of the cutting system	Dull or damaged blades	Dull or damaged blades should be replaced with whole sets of new blades.  Blades dull on one side should be installed on the disc with the opposite direction of rotation.
Sliding belts	The belts need to be tightened.  Wet belts  Worn out belts  Belts with different lengths	Check and adjust the tension of the belts  Avoid mowing in rain.  Replace the belts with new sets of belts.  Use one brand of belts with the same dimensions.
During a normal operation, the cutting system tilts to the back caused by the fuse.	The fuse spring may be damaged or need adjusted.	Check and adjust the tension of the spring, replace if damaged.
	Uneven surface, e.g., hardened molehills	Decrease the speed of driving, tilt the cutting system to the back.

# Torque Specifications

Torque Specifications for Common Bolt Sizes															
Inches		Bolt Head Identification						Metric		Bolt Head Identification					
Bolt size (inches)	Thread pitch	Grade 2		Grade 5		Grade 8		Bolt size (metric)	Thread pitch	Class 5.8		Class 8.8		Class 10.9	
		N.m	ft-lb	N.m	ft-lb	N.m	ft-lb			N.m	ft-lb	N.m	ft-lb	N.m	ft-lb
1/4"	20	7	5	11	8	16	12	M5	0.08	4	3	6	4	9	7
1/4"	28	8	6	13	10	19	14	M6	1	6	4	10	7	15	11
5/16"	18	15	11	24	17	33	25	M8	1.25	16	12	25	18	36	27
5/16"	24	17	13	26	19	37	27	M8	1	17	13	26	19	38	28
3/8"	16	27	20	42	31	59	44	M10	1.5	31	23	48	35	71	52
3/8"	24	31	23	47	35	67	49	M10	1.25	33	24	51	38	75	55
7/16"	14	43	32	67	49	95	70	M10	1	35	26	53	39	78	58
7/16"	20	48	36	75	55	106	78	M12	1.75	54	40	84	62	123	91
1/2"	13	66	48	102	75	144	106	M12	1.5	56	41	87	64	128	94
1/2"	20	75	55	115	85	163	120	M12	1.25	59	44	90	66	133	98
9/16"	12	95	70	147	109	208	154	M14	2	84	62	133	98	195	144
9/16"	18	106	79	164	121	232	171	M14	1.5	94	69	142	105	209	154
5/8"	11	132	97	203	150	287	212	M16	2	131	97	206	152	302	223
5/8"	18	149	110	230	170	325	240	M16	1.5	141	104	218	161	320	236
3/4"	10	233	172	361	266	509	376	M18	2.5	181	133	295	218	421	310
3/4"	16	261	192	403	297	569	420	M18	2	196	145	311	229	443	327
7/8"	9	226	167	582	430	822	606	M18	1.5	203	150	327	241	465	343
7/8"	14	249	184	642	473	906	668	M20	2.5	256	189	415	306	592	437
1"	8	339	250	873	644	1232	909	M20	1.5	288	212	454	335	646	476
1"	12	371	273	955	704	1348	995	M22	2.5	344	254	567	418	807	595
1-1/8"	7	480	354	1077	794	1746	1288	M22	1.5	381	281	613	452	873	644
1-1/8"	12	539	397	1208	891	1958	1445	M24	3	444	327	714	526	1017	750
1-1/4"	7	677	500	1519	1120	2463	1817	M24	2	488	360	769	567	1095	808
1-1/4"	12	750	553	1682	1241	2728	2012	M27	3	656	484	1050	774	1496	1103
1-3/8"	6	888	655	1992	1469	3230	2382	M27	2	719	530	1119	825	1594	1176
1-3/8"	12	1011	746	2268	1673	3677	2712	M30	3.5	906	668	1420	1047	2033	1499
1-1/2"	6	1179	869	2643	1949	4286	3161	M30	2	1000	738	1600	1180	2250	1659
1-1/2"	12	1326	978	2974	2194	4823	3557	M36	4	1534	1131	2482	1830	3535	2607

**Notes:**

This chart is an approximate estimate of torque values.

Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for Metric hardware.

Make sure that fastener threads are clean and that you properly start thread engagement.



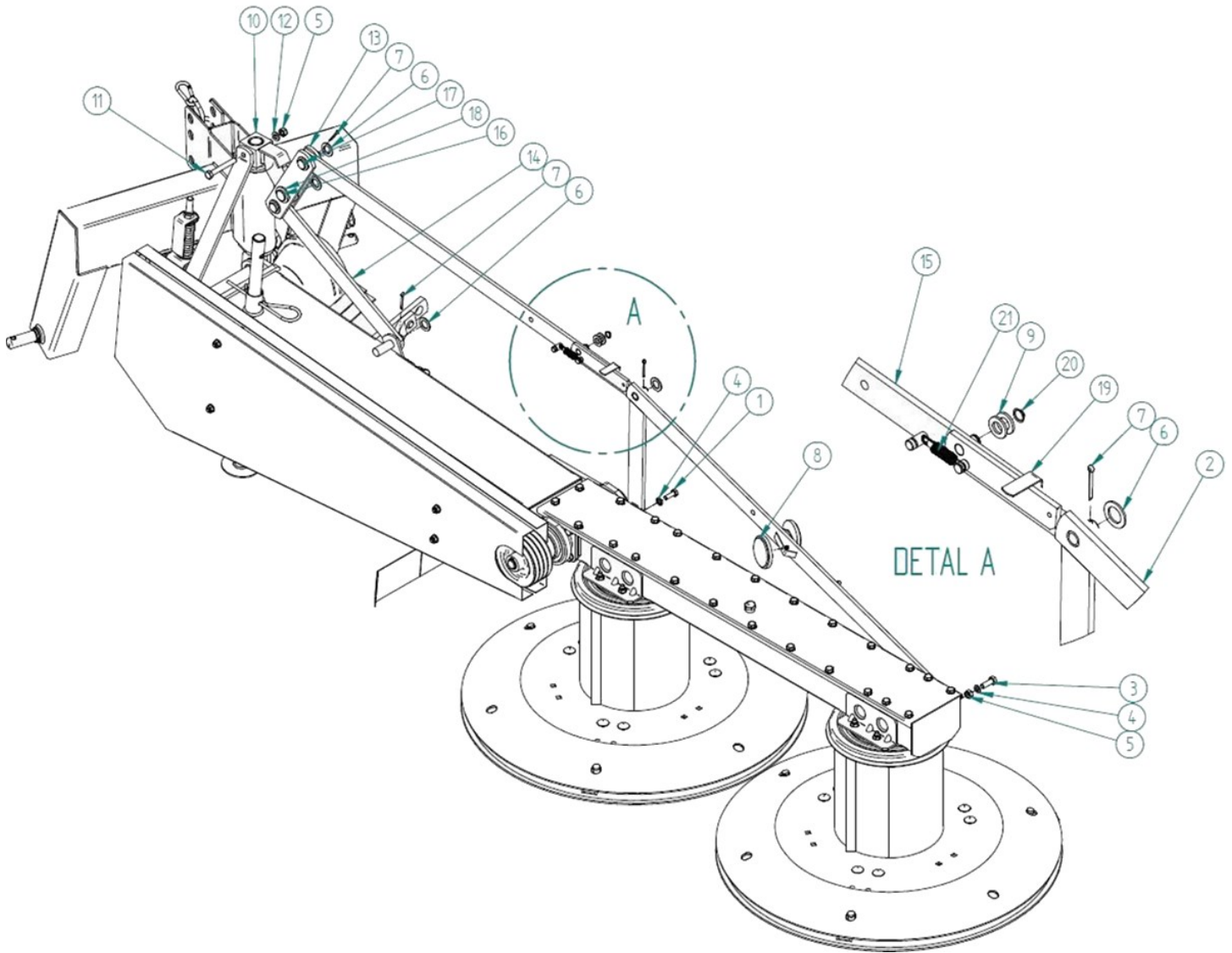
# **Drum Mower**

## **BDR-135, BDR-165 & BDR-185**



### **Part's Manual**

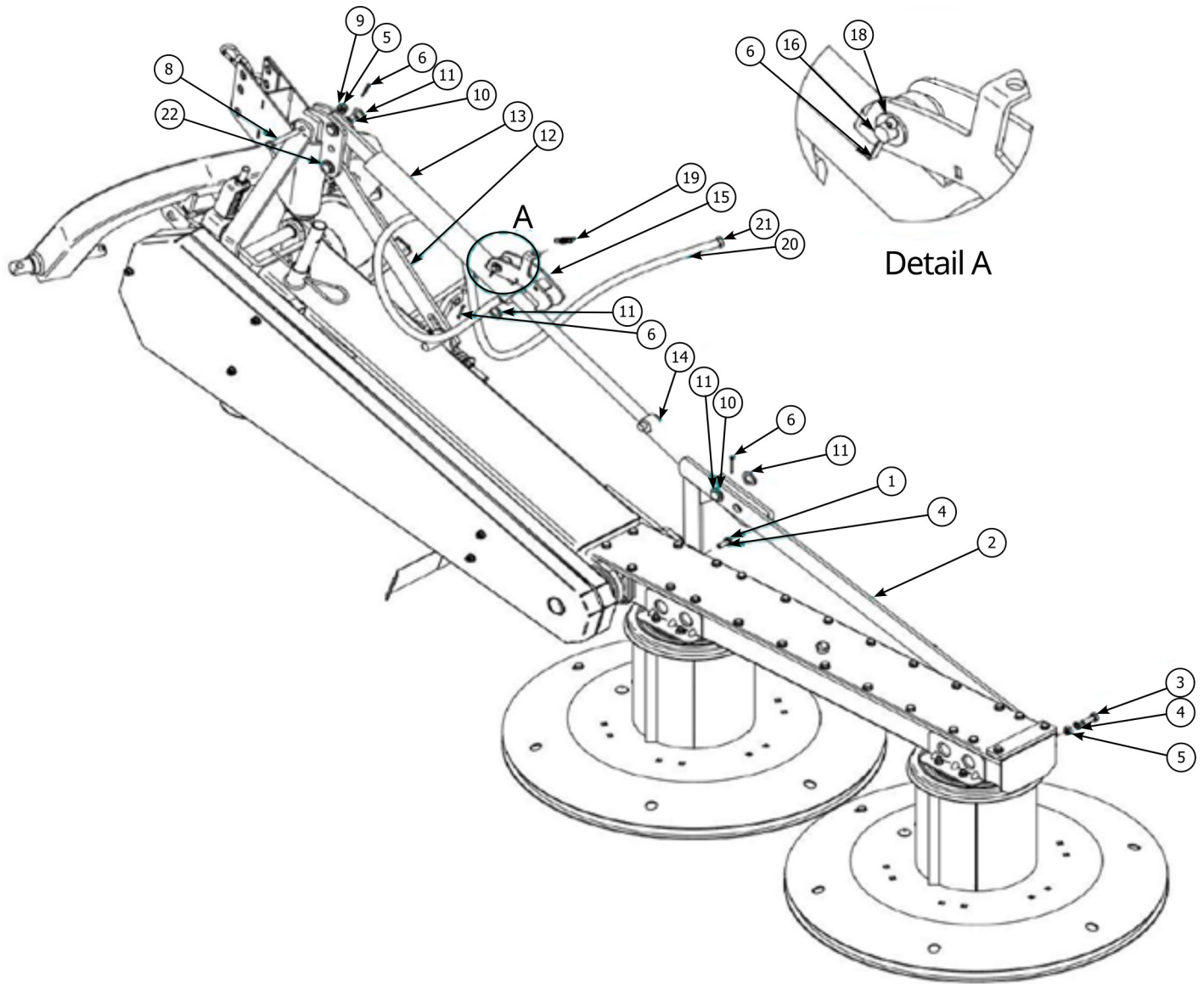
# Standard Version With Rods BDR-135, 165



## Standard Version With Rods BDR-135, 165

Item	Part #	Description	Qty.
1	BM1217530	Bolt HH M12 x 1.75 x 30 8.8 Galv.	1
2	DM10110-85	Frame Rod - BDR-185	1
	DM10235	Main Frame Push Rod BDR-165	1
3	BM1217530	Bolt HH M12 x 1.75 x 35 8.8 Galv.	1
4	LW12	Lock Washer - M12 Galv.	2
5	NM12175	Self-locking Nut - M12	2
6	FW22	Flat Washer - M22	6
7	CP5x40	Cotter Pin - M5 x 40 Galv.	5
8	DM050031	Orange Safety Reflector	2
9	FW16	Flat Washer - M16 Galv.	1
10	DM20083M	Forged Head	1
11	BM1217590	Bolt- M12x 1.75 x 90 8.8 Half Thread Galv.	1
12	FW12	Flat Washer- M12	1
13	DM20103	Rod Connector	2
14	DM20096A	Diagonal Arm, A-beam	1
15	DM20070-85	Front Push Rod; BDR-185	1
	DM20070-65	Front Push Rod; BDR-135, BDR-165	1
16	DM83002	Mower Pin - M25 x 55 Galv.	1
17	DM150074	Mower Pin - M22 x 55 Galv.	2
18	FW25	Flat Washer - M25	2
19	DM20220	Locking bar	1
20	SRE-16	Snap Ring, External - M16	1
21	DM20526	Interlock Spring Galv.	1

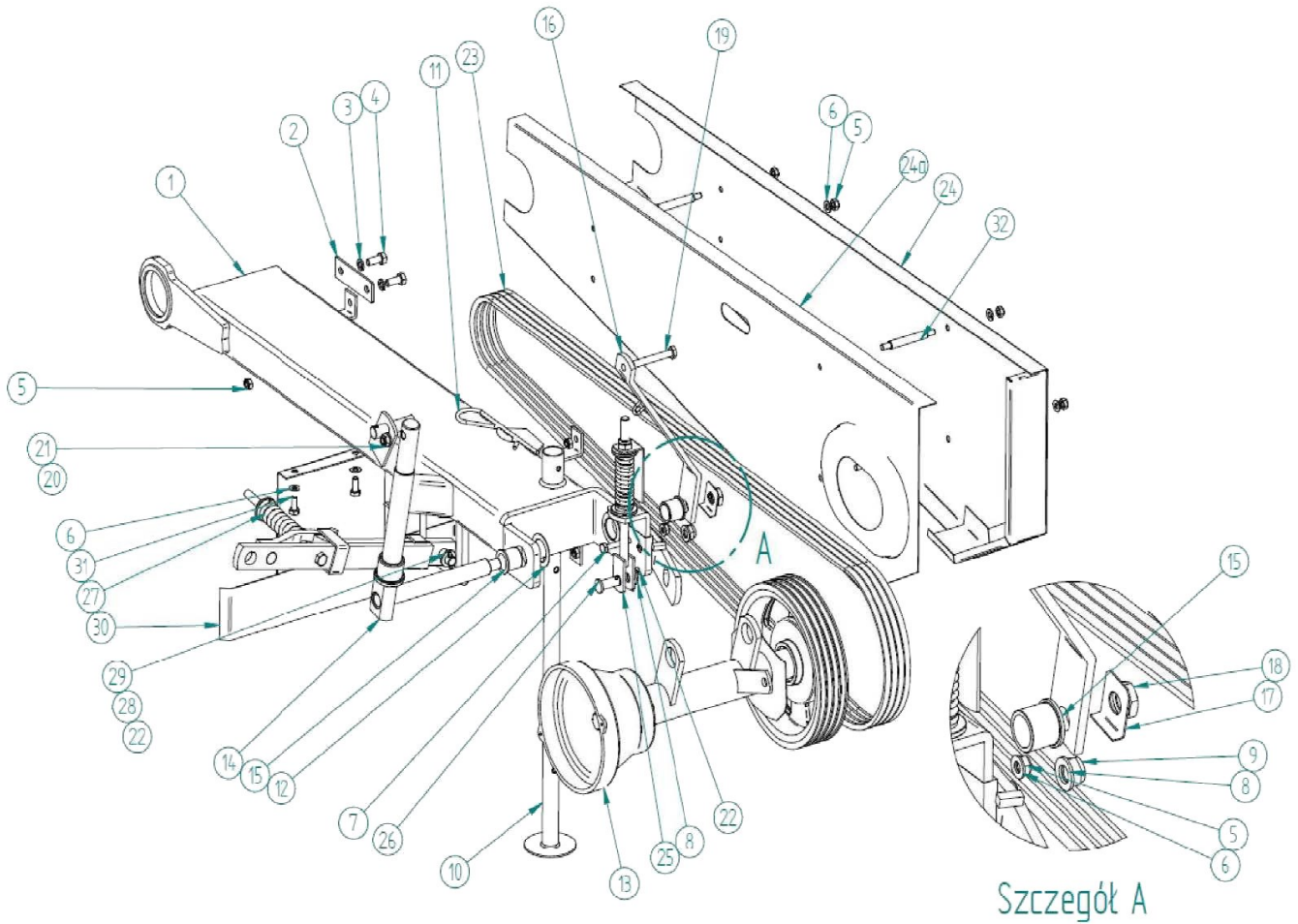
# Hydraulics - BDR-135, 165, 185



## Hydraulics - BDR-135, 165, 185

Item	Part #	Description	Qty.
1	BM121535FT 8.8	Bolt HH M12-1.5x35 full thread 8.8	1
2	DM40001	Scythe-connector-hydraulic, BDR-135	1
	DM40002	Scythe-connector-hydraulic, BDR-165	1
	DM40018	Rod Assembly - hydraulic, BDR-165 (optional)	1
	DM40003	Scythe-connector-hydraulic, BDR-185	1
3	BM121535FT 8.8	Bolt HH M12-1.5x35 full thread 8.8	1
4	LW22	Spring washer 12 galv.	2
5	LN1215	Self-lock nut M 12	2
6	DM40004	Lynch pin 5*40 galv.	5
7	DM40005	Hydraulic head	1
8	BM121590	Bolt M12*90 - 8.8 galv. n. thread	1
9	FW12	Simple washer 12 galv.	1
10	DM40006	Mower pin galv., BDR-135	2
	DM40007	Mower pin galv., BDR-165, 185	2
11	FW22	Simple washer 22 galv.	7
12	DM40008	Diagonal arm, BDR-135	1
	DM40009	Diagonal arm, BDR-165, 185	1
13	DM40010	Hydraulic cylinder	1
14	DM40011	Threaded extension	1
15	DM40012	Cylinder closure	1
16	DM40013	Pin Ø14	1
17			
18	FW14	Simple washer 14 galv.	1
19	DM40014	Interlock spring 5042/02-052/0 galv.	1
20	DM40015	Cable P51/P52 M18x1.5/M16x1.5 2 SC L- 2500	1
21	DM40016	Hydraulic valve plug Euro M18-1.5	1
22	DM40017	Pivot pin	1

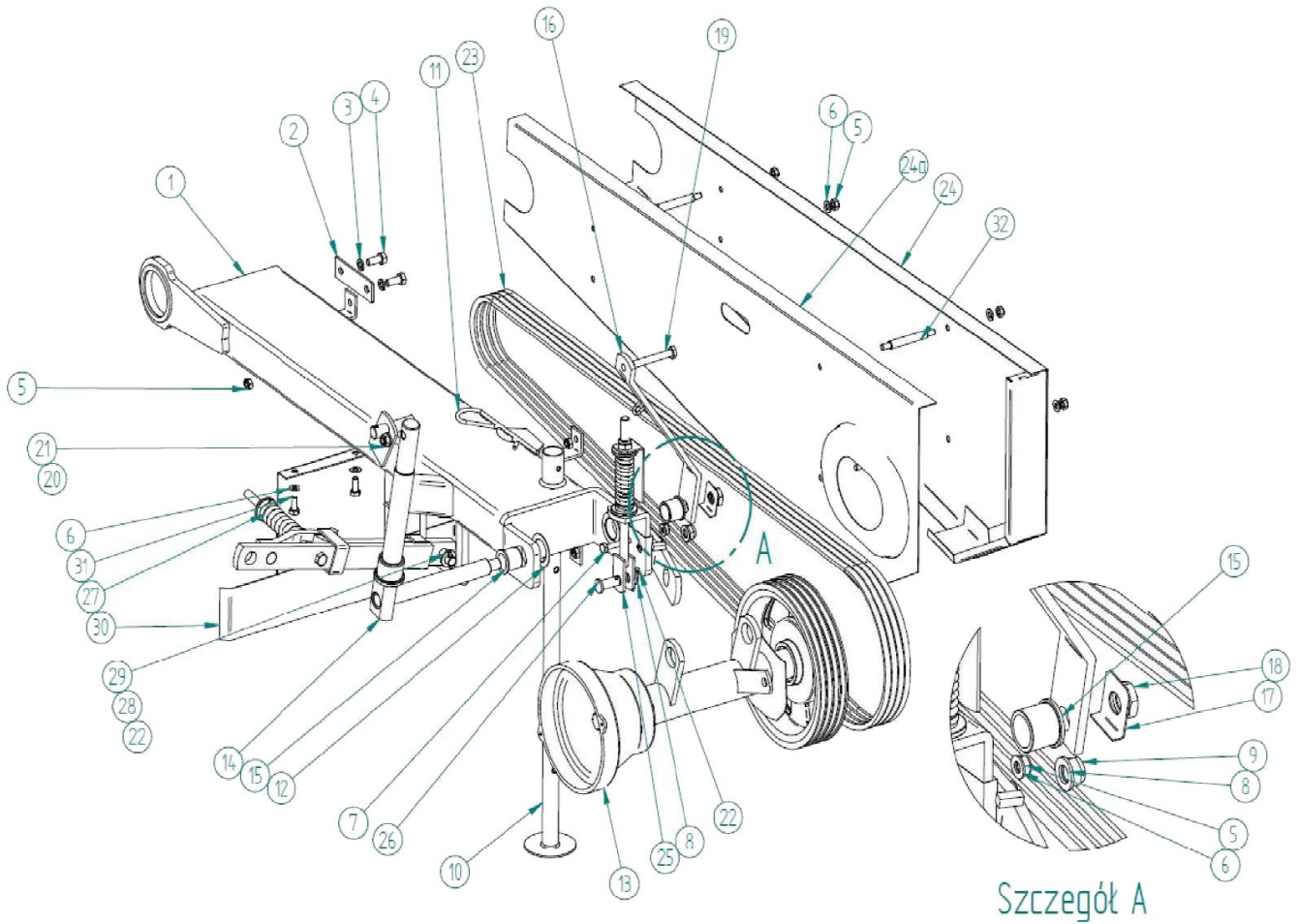
# Central Frame BDR-135, 165, 185



## Central Frame BDR-135, 165, 185

Item	Part #	Description	Qty.
1	DM20175-35	Central beam BDR-135	1
	DM20175-65	Central beam BDR-165	1
	DM20175-85	Central beam BDR-185	1
2	DM150205	Rear plate cover	1
3	LW12	Washer lock M12 Galv.	2
4	BM1212530	Bolt HH M12-1.25 x 30 8.8	2
5	LNM1015	Nut self-locking M10-1.5; BDR-185	5
	LNM1015	Nut self-locking M10-1.5; BDR-135, BDR-165	4
6	FW10	Washer flat M10; BDR-185	3
	FW10	Washer flat M10; BDR-135, BDR-165	2
7	BM101540	Bolt HH M10-1.5 x 40 8.8 Galv.; BDR-185 only	1
8	FW16	Washer flat M16 Galv.; BDR-185	2
	FW16	Washer flat M16 Galv.; BDR-135, BDR-165	1
9	LNM1620	Nut self-locking M16-2.0; BDR-185 only	1
10	DM20760	Stand	1
11	DM11024	Large Spring R-clip	1
12	DM10057	Spacer Washer- M40	2-3 (as req'd.)
13	DM21903	PTO Safety Guard	1
14	DM20131	Angular Axis	1
15	DM20389	Axis joint bushing	2
16	DM20391-35	Clevis; BDR-135, BDR-185	1
	DM20391-65	Clevis; BDR-165	1
17	DMSWM2017	Washer, special bendable M20	1
18	TNM2015	Nut low profile M20-1.5	1
19	BM1217590	Bolt HH M12-1.75 x 90 8.8 Galv.	1
20	FW12	Washer flat M12	1
21	LNM12175	Nut self-locking M12-1.75 Galv.	1
22	CP5x40	Pin cotter M5 x 40 Galv.	2
23	SPA2832	SPA 2832 v-belt; BDR-135	3
	SPA2932	SPA 2932 v-belt; BDR-165	4
	SPA3150	SPA 3150 v-belt; BDR-185	4
24	DMT0215	External belt cover - 135	1
	DMT20157	External belt cover - 165	1
	DMT20251	External belt cover - 185	1
24a	DMT0211	Internal belt cover - 135	1
	DMT20144	Internal belt cover - 165	1
	DMT20162	Internal belt cover - 185	1
25	DM20246	Tensioner rod - bolt	1
26	SPN16x40	Mower pin M16 Galv.	1

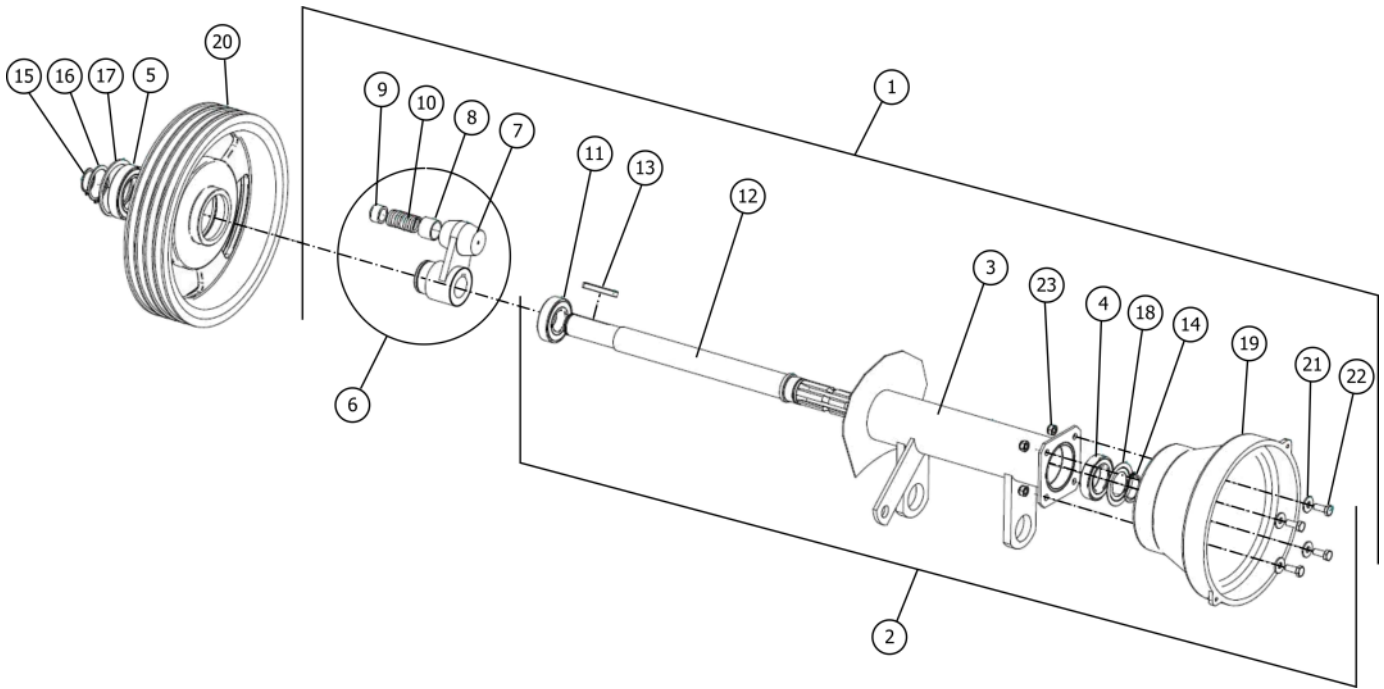
# Central Frame BDR-135, 165, 185



## Central Frame BDR-135, 165, 185

Item	Part #	Description	Qty.
27	DM90290	Safety release	1
28	DMT0234	Mower pin M18 x 65 Galv.	1
29	FW18	Washer flat M18 Galv.	1
30	DM30101	Front cover	1
31	BM101525	Bolt HH M10-1.5 x 25 8.8 (galv.)	2
32	DM150051	Bolt stud (connector bolt) M10-1.4 x 120	4
33	DM10010	Stop	1
34	DM10011	Plastic cap	1
35	BM101525	Bolt HH M10-1.5 x 25	2
36	LW10	Washer lock M10	2
37	FW10	Washer flat M10	2

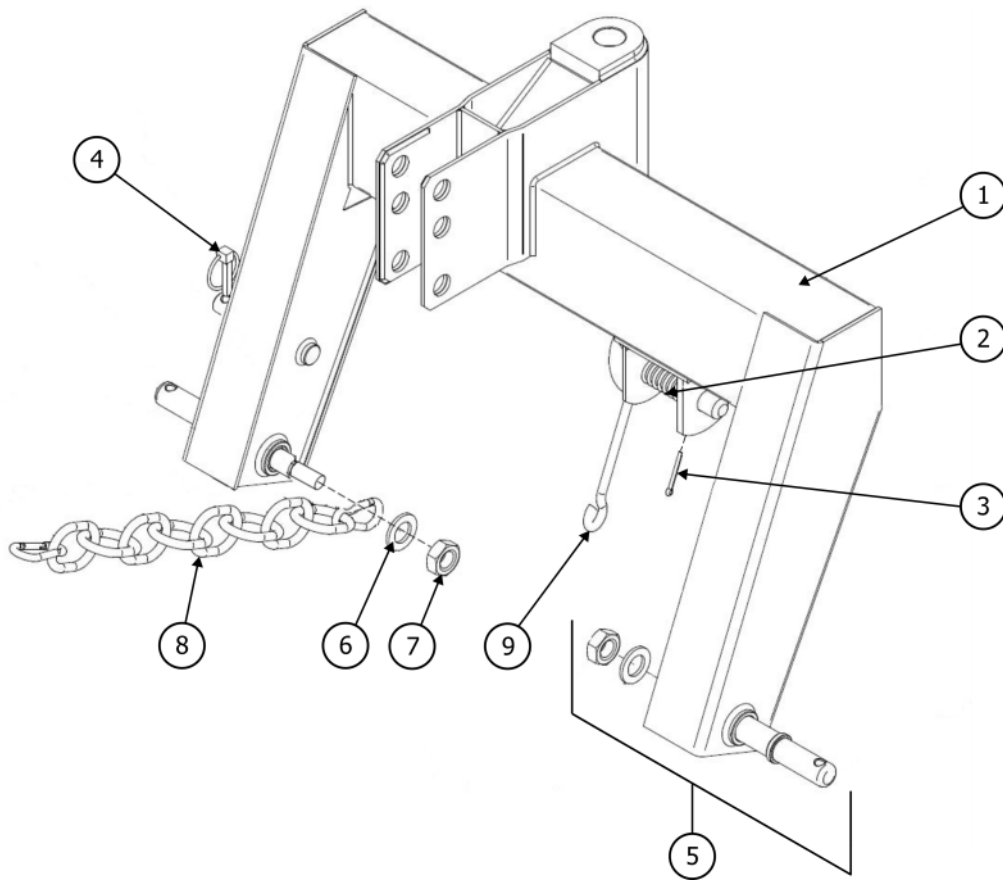
# Head Pipe BDR-135, 165, 185



## Head Pipe BDR-135, 165, 185

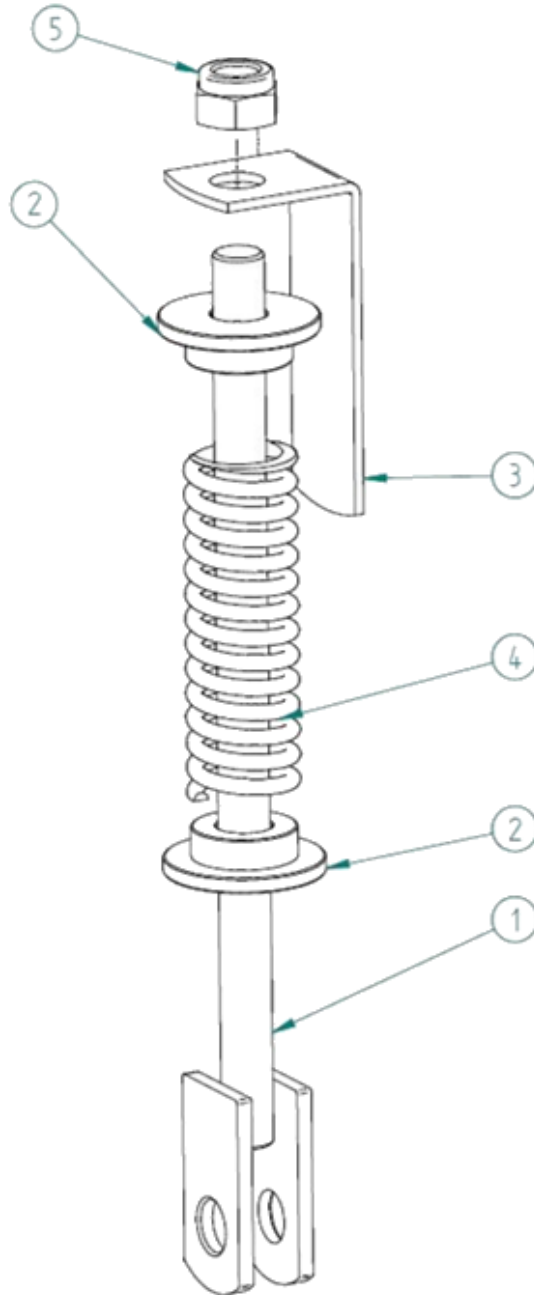
Item	Part #	Description	Qty.
1	DM90513B	Drive head complete	1
2	DM90513	Drive head only	1
3	DM20513	Drive head external housing	1
4	B6007ZZ	Bearing 6007 ZZ	1
5	B60092RS	Bearing 6009-2RS	1
6	DM20172C	Carrier complete	1
7	DM20172	Carrier	1
8	DM20205	Carrier bushing	1
9	DM20198	Carrier king pin	1
10	DM20218	Clutch spring	
11	B6206ZZ	Bearing 6206 ZZ	1
12	DM20602	Drive shaft	1
13	KM080756	Parallel key M8 x 7 x 56	1
14	SRE-35	Snap ring external M35	1
15	SRE-30	Snap ring external M30	1
16	SRE-45	Snap ring external M45	1
17	SRE-72	Snap ring external M72	1
18	DM20615	Securing ring	1
19	DM21903	PTO safety guard	1
20	DM20452A	Large pulley BDR-165, 185	1
	DM20452B	Large pulley BDR-135	1
21	LFW08	Large flat washer	4
22	BM0812520	Bolt HH M8-1.25 x 20 8.8 Galv.	4
23	LNLM08125	Nut self-locking M8-1.25	4

# Frame BDR-135, 165, 185



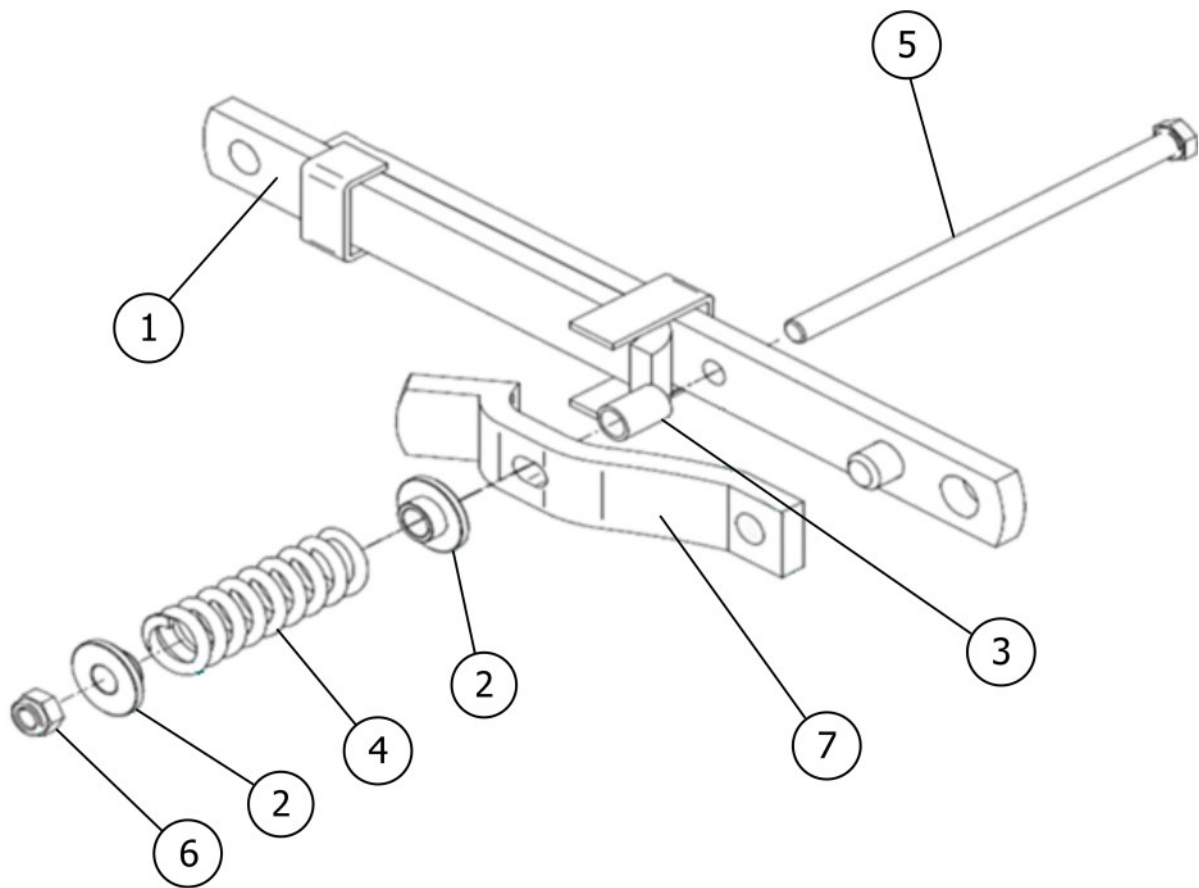
Item	Part #	Description	Qty.
1	DMT0422	A-frame BDR-135	1
	DM20646	A-frame BDR-165	1
	DM20892	A-frame BDR-185	1
2	DMT0404	Closure Spring Galv., BDR-165/BDR-185	1
3	CP5x40	Cotter Pin- M5 x40, BDR-165/BDR-185	1
4	DMT0406	Lynch Pin	1
5	KT4025	Pin complete, Cat1/Cat2 - BDR135,165 <i>(Includes DMT0402 Pin, FW24 Flat washer &amp; TNM2415 Nut)</i>	2 1
	KT4026	Pin complete, Cat1/Cat2 - BDR185 <i>(Includes DMT0408 Pin, FW24 Flat washer &amp; TNM2415 Nut)</i>	1 1
6	FW24	Washer flat M24 (included w/KT4025&KT4026)	2
7	TNM2415	Nut, thin HH M24-1.5 (included w/KT4025&KT4026)	2
8	DM20274	Chain	1
9	DMT0403	Suspension Frame Latch, BDR-165, BDR-185	1

# Tensioner BDR-135, 165, 185



Item	Part #	Description	Qty.
1	DM20246	Tensioner rod	1
2	DM20307	Tensioner spring saddle	2
3	DM20409	Angle bar	1
4	DM20241	Tensioner spring (galv.)	1
5	NM1620	Nut self-locking M16-2.0	1

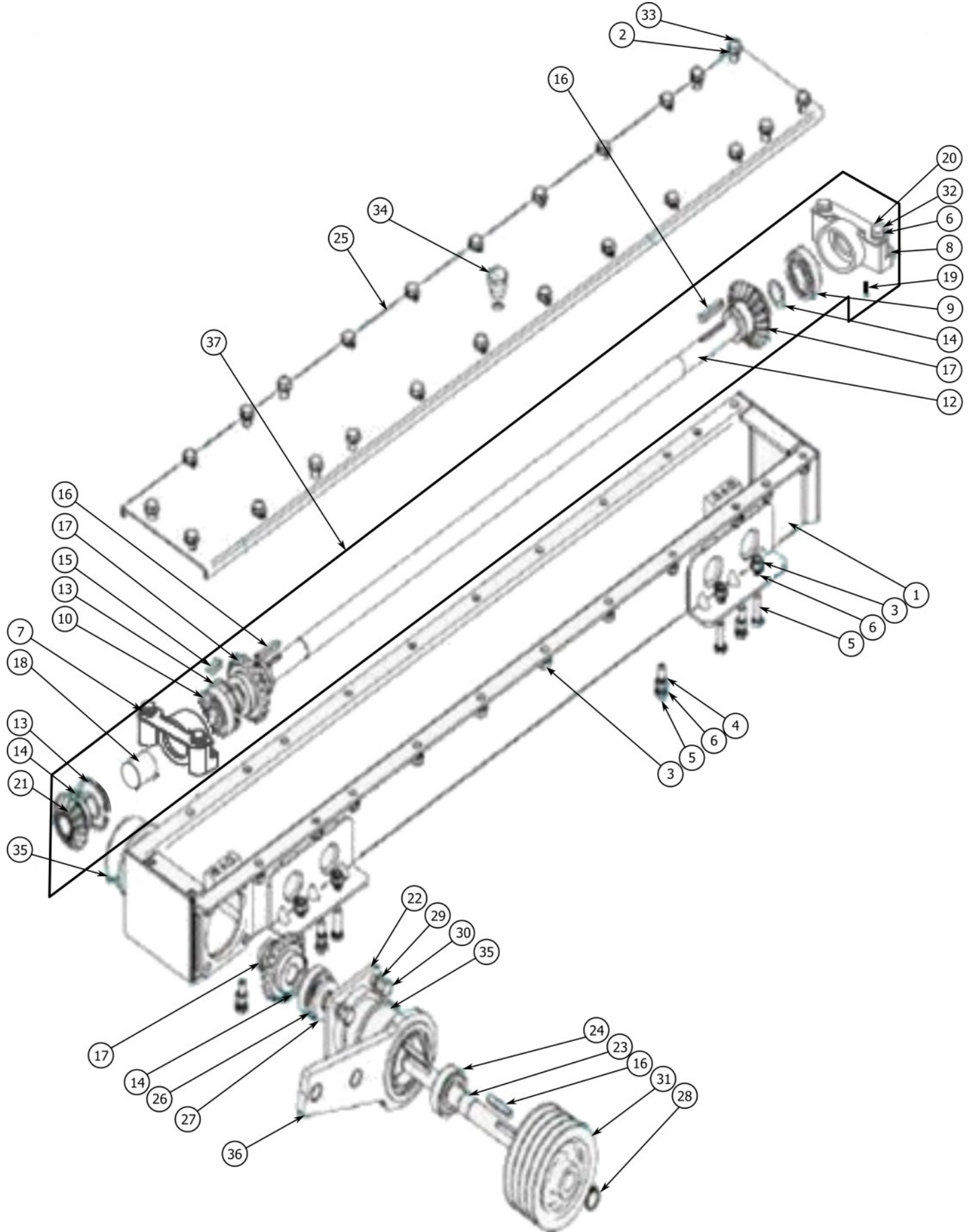
# Safety Device BDR-135, 165, 185



## Safety Device BDR-135, 165, 185

Item	Part #	Description	Qty.
1	DM20290	Sliding bar assembly	1
2	DM30221	Tensioner spring seat	2
3	DM20310	Lock spacer bushing	1
4	DM20348	Tensioner spring	1
5	BM1420260	Bolt HH M14-2.0 x 260	1
6	LN142	Locking nut M14-2.0	1
7	DM20322	Lock fuse	1
-	DM90290	Break away bar complete	1

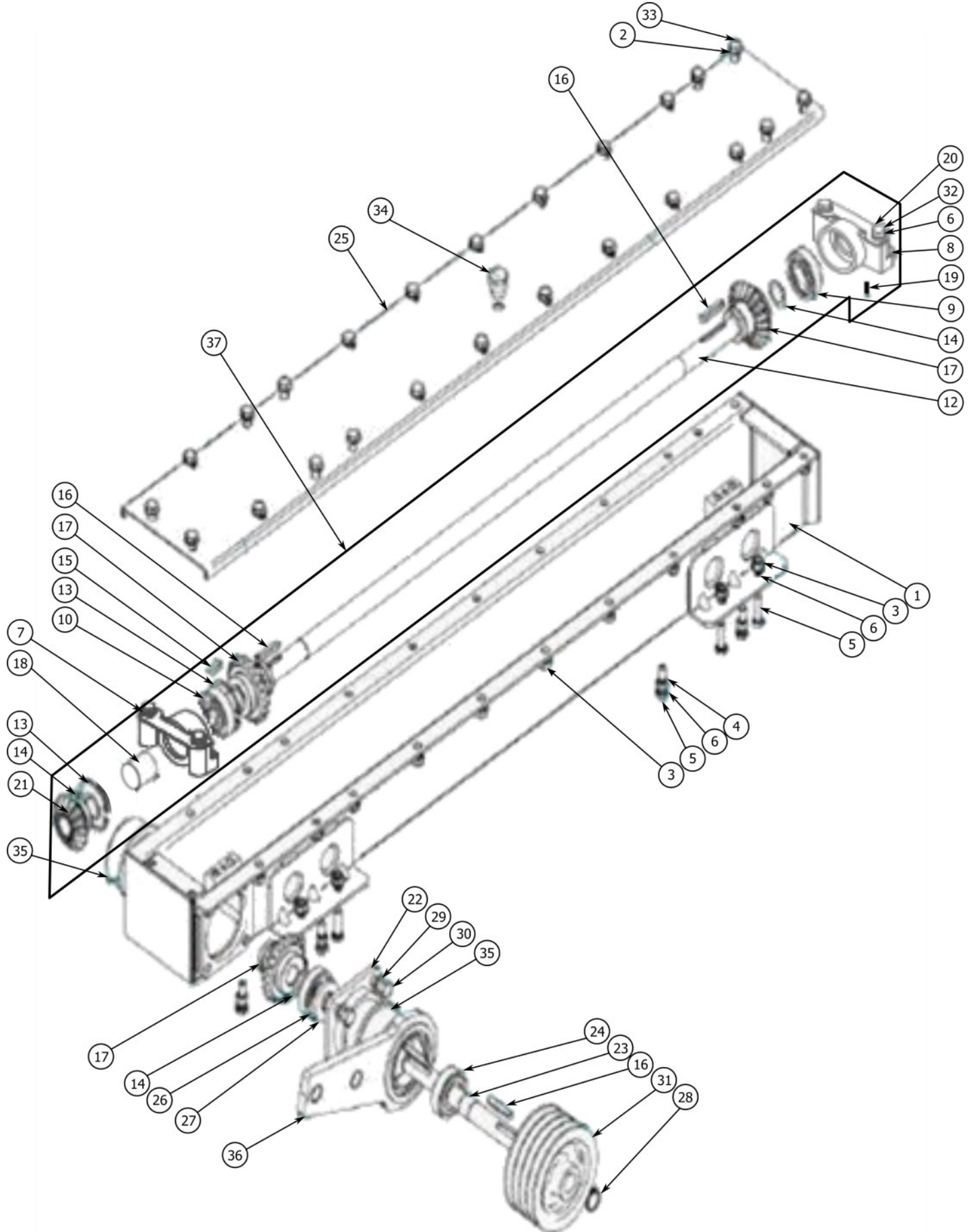
# Cutting Unit - Main Frame BDR-135, 165



## Cutting Unit - Main Frame BDR-135, 165

Item	Part #	Description	Qty.
1	DM10192-135	Main frame BDR-135	1
	DM10192-165	Main frame BDR-165	1
2	FW10	Washer flat M10 (BDR-135)	20
	FW10	Washer flat M10 (BDR-165)	24
3	LNM1015	Nut self-locking M10-1.5 (BDR-135)	22
	LNM1015	Nut self-locking M10-1.5 (BDR-165)	26
4	DM150012	Washer sealing	8
5	BM1217530	Bolt HH M10-1.75 x 35 8.8 (galv.)	12
6	LW10	Washer lock M10	16
7	DM10187	Large bearing housing	1
8	DM10190	Small bearing housing	1
9	B6205	Bearing 6205	1
10	B6305	Bearing 6305	1
11	-		
12	DM10047-35	Frame shaft BDR-135	1
	DM10047-65	Frame shaft BDR-165	1
13	SRI-62	Snap ring internal M62	2
14	DM82005	Shim M25 (4, 0.3;0.5 or 1MM as required)	-
15	KM080736	Key M8 x 7 x 36	1
16	KM080750	Key M8 x 7 x 50	4
17	DM10090-65	Large gear Z21	3
18	-		
19	DM85023	Spring pin M6 x 16	4
20	BM101560	Bolt HH M10-1.5 x 60 8.8 Galv. Half Thread	4
21	DM10019-65	Bevel gear - BDR-135, BDR-165 (16 teeth)	1
22	DM10276	Attachment hub	1
23	DM10263	Attachment shaft	1
24	B6305ZZ	Bearing 6305 ZZ	1
25	DM10136-135	Cover BDR-135	1
	DM10136-165	Cover BDR-165	1
26	B30305	Bearing 30305A	1
27	OS255210	Seal M25 x 52 x 10	1
28	SRE-25	Snap ring external M25	1
29	LW12	Washer lock M12 Galv.	4
30	BM1212530	Bolt HH M12-1.25 x 30 8.8 Galv.	4

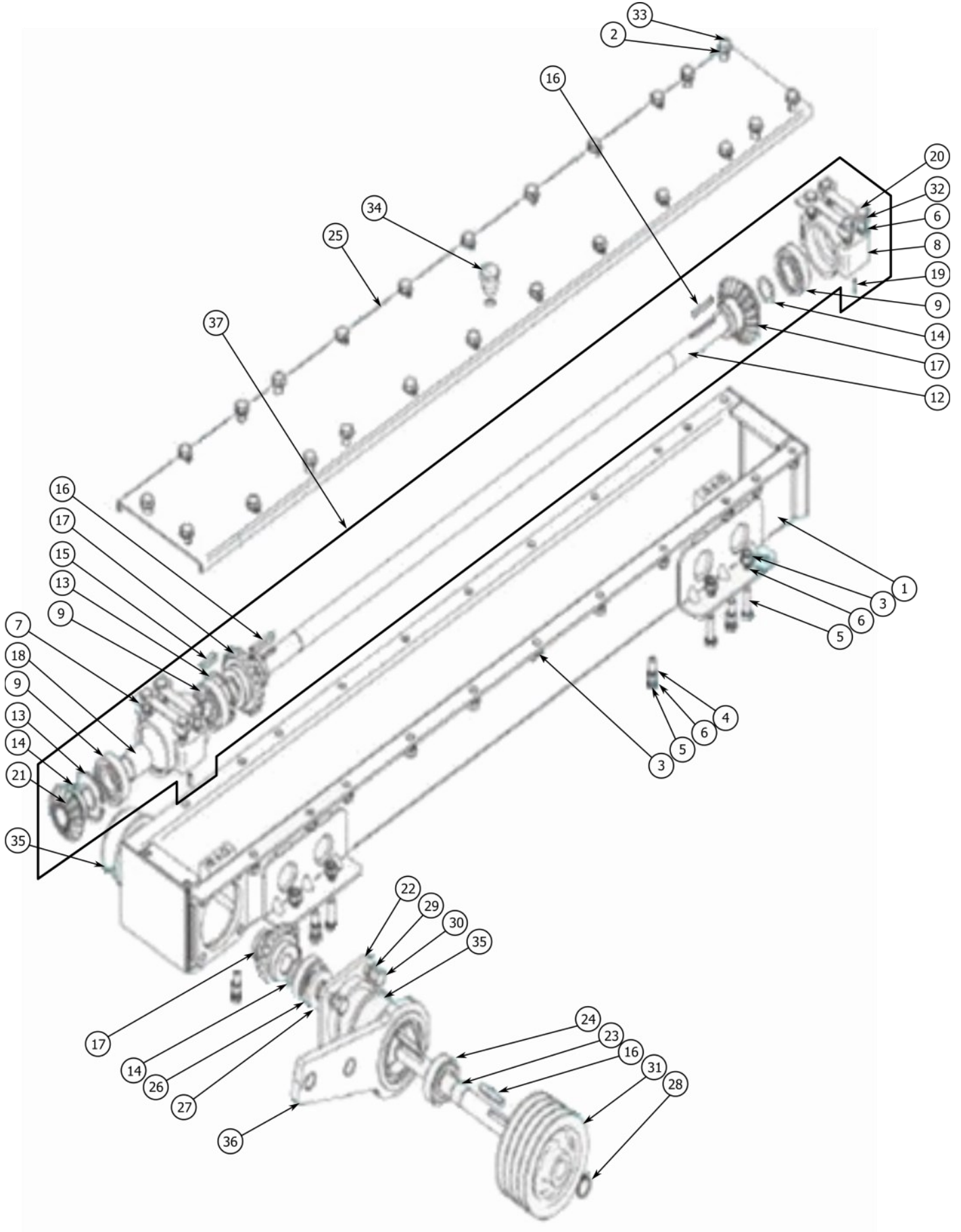
# Cutting Unit - Main Frame BDR-135, 165



## Cutting Unit - Main Frame BDR-135, 165

Item	Part #	Description	Qty.
31	DM10250-35	Small pulley BDR-135	1
	DM10250-85	Small pulley BDR-165	1
32	DM10088	Tab washer	2
33	BM10525	Bolt HH M10-1.5 x 25 8.8 Galv. BDR-135	20
	BM10525	Bolt HH M10-1.5 x 25 8.8 Galv. BDR-165	24
34	DM10441	Vent/fill plug	1
35	DMT0247	Support bushing BDR-135	2
	DM10291	Support bushing BDR-165	2
36	DM10180	End plate	1
37	DM10048-135	135 Main shaft set	1
	DM10048-165	165 Main shaft set	1

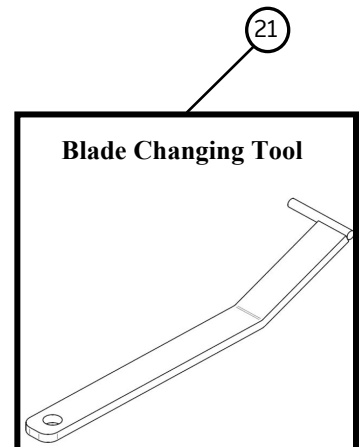
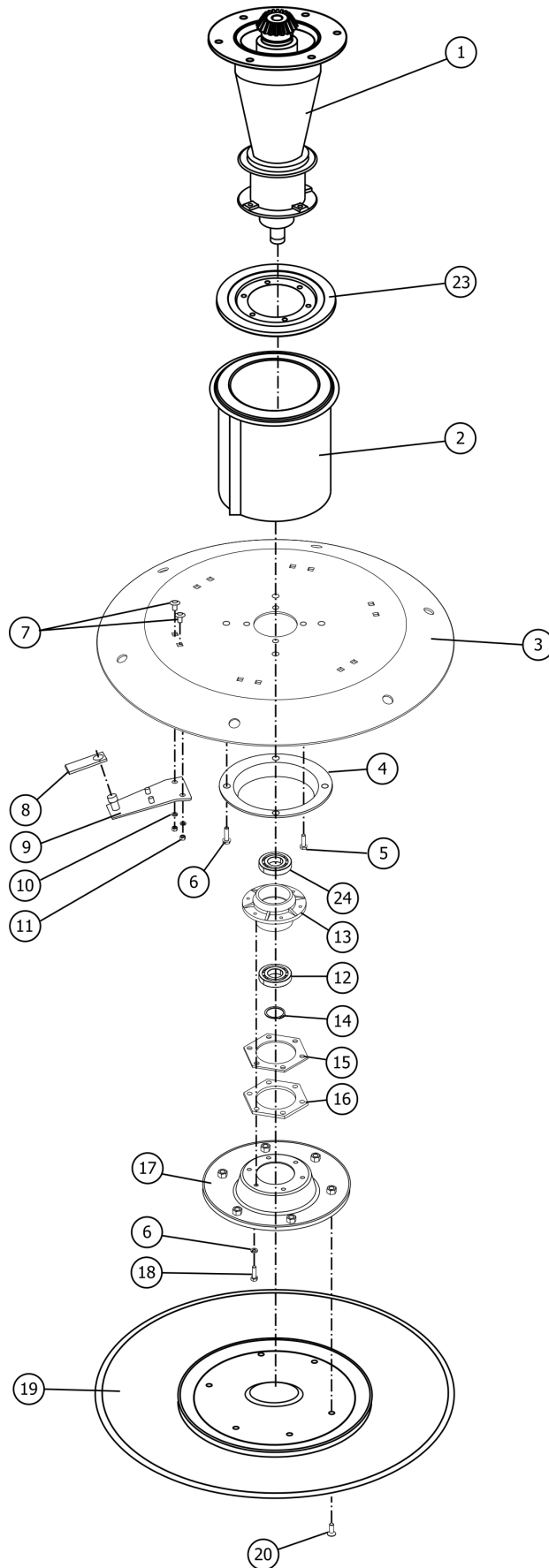
# Cutting Unit - Main Frame 185



## Cutting Unit - Main Frame 185

Item	Part #	Description	Qty.
1	DM10192-185	Main frame BDR-185	1
2	FW10	Washer flat M10	24
3	LNM1015	Nut self-locking M10-1.5	30
4	DM150012	Sealing washer	4
5	BM1217530	Bolt HH M10-1.75 x 35 8.8 (galv.)	12
6	LW10	Washer lock M10	20
7	DM10150	Large bearing housing	1
8	DM10175	Small bearing housing	1
9	B6305	Bearing 6305	3
10	-		
11	-		
12	DM10047-85	Frame shaft BDR-185	1
13	SRI-62	Snap ring internal M62	2
14	DM82005	Shim M25 (4, 0.3;0.5 or 1MM as required)	-
15	KM080736	Key M8 x 7 x 36	1
16	KM080750	Key M8 x 7 x 50	4
17	DM10090-85	Large gear Z21	3
18	DMT7040	Spacer sleeve for Frame Shaft	1
19	DM85023	Spring pin M6 x 16	4
20	BM101560	Bolt HH M10-1.5 x 60 8.8 Galv. half thread	8
21	DM10019-85	Bevel gear BDR-185 (17 teeth)	1
22	DM10276	Attachment hub	1
23	DM10263	Attachment shaft	1
24	B6305ZZ	Bearing 6305 ZZ	1
25	DM10136-185	Cover BDR-185	1
26	B30305	Bearing 30305A	1
27	OS255210	Seal M25 x 52 x 10	1
28	SRE-25	Snap ring external M25	1
29	LW12	Washer lock M12 Galv.	4
30	BM1212530	Bolt HH M12-1.25 x 30 8.8 Galv.	4
31	DM10250-85	Small pulley	1
32	DM10088	Tab washer	4
33	BM101525	Bolt M10-1.5 x 25 8.8 Galv.	24
34	DM10441	Vent/Fill plug	1
35	DM10177	Support bushing BDR-185	2
36	DM10180	End plate	1
37	DM10048-185	185 Main shaft set	1

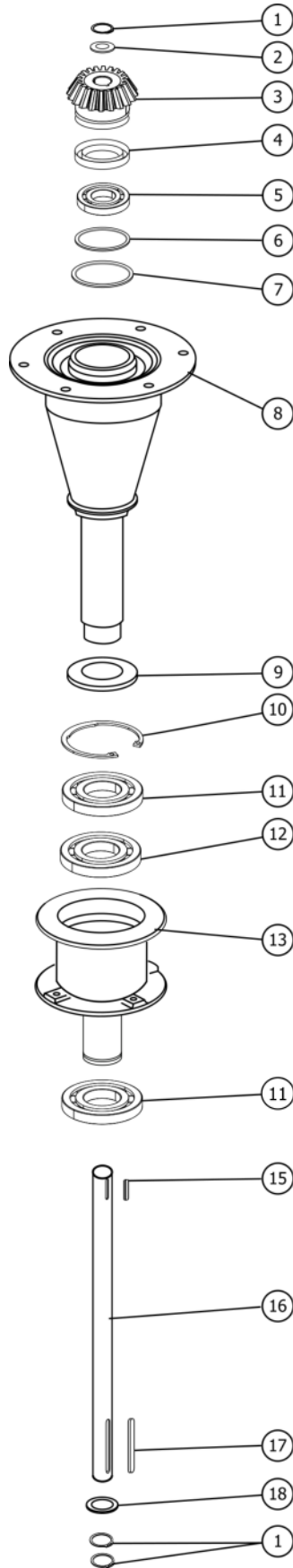
# Cutting Unit - Drum BDR-135, 165, 185



## Cutting Unit - Drum BDR-135, 165, 185

Item	Part #	Description	Qty.
1	DMSC0085	Drum spindle complete w/gears: BRD-185	1
	DMSC3565	Drum spindle complete w/gears: BRD-165	1
	DMSC3535	Drum spindle complete w/gears: BRD-135	1
2	DM10721	Drum guard	1
3	DM20021-185	Operating disc; BDR-185	1
	DM20021-165	Operating disc; BDR-165	1
	DM20021-135	Operating disc; BDR-135	1
4	DM10439	Lower hub guard	1
5	DM150041	Bolt special for drum/spindle; BDR-185, BDR-165	8
	DM150041	Bolt special for drum/spindle; BDR-135	4
6	BM1217535	Bolt M12-1.75x35 Galv. 8.8	4
7	CBM1217525	Bolt carriage M12-1.75x25 C10.9	12
8	DM10454	Blade; BDR-165, BDR-185	6
	DM10454	Blade; BDR-135	4
9	DM10309-165	Blade holder; BDR-165, BDR-185	6
	DM10309-135	Blade holder; BDR-135	4
10	DM150030	Conical ring	12
11	NM12175	Nut HH M12-1.75	12
12	B6209RS	Bearing 6209 RS	1
13	DM10775	Sliding disc hub	1
14	SRE-45	Snap ring external M45	1
15	DM10556-5	Height spacer ring 5mm	1
16	DM10556-8	Height spacer ring 8mm	1
17	DM10340	Resistive disc	1
18	BM101535	Bolt HH M10-1.5X35 C8.8 Galv.; BDR-185	12
	BM101525	Bolt HH M10-1.5X25 C8.8 Galv.; BDR-135, BDR-165	12
19	DM10528-185	Stump jumper disc; BDR-185	1
	DM10528-165	Stump jumper disc; BDR-165	1
	DM10528-135	Stump jumper disc; BDR-135	1
20	SSM1217525	Bolt countersunk allen M12-1.75x25	12
21	DM022099	Blade changing tool	1
22	DM150031	Lower protective cap	1
23	DM10365	Upper drum guard cover	1
24	B6210	Bearing 6210	1

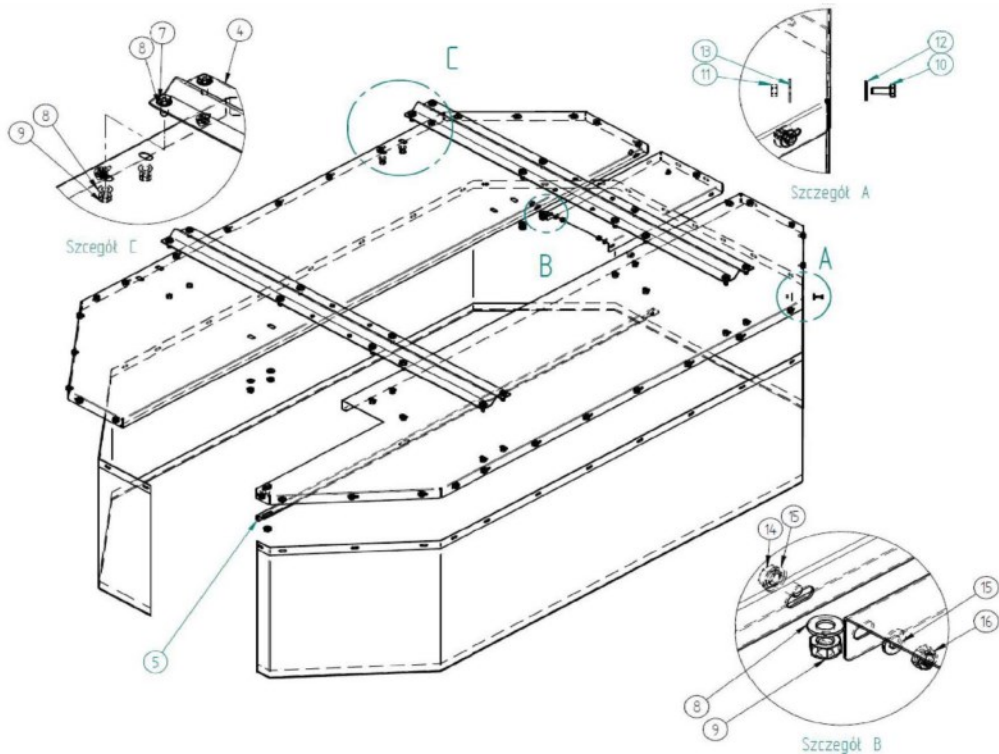
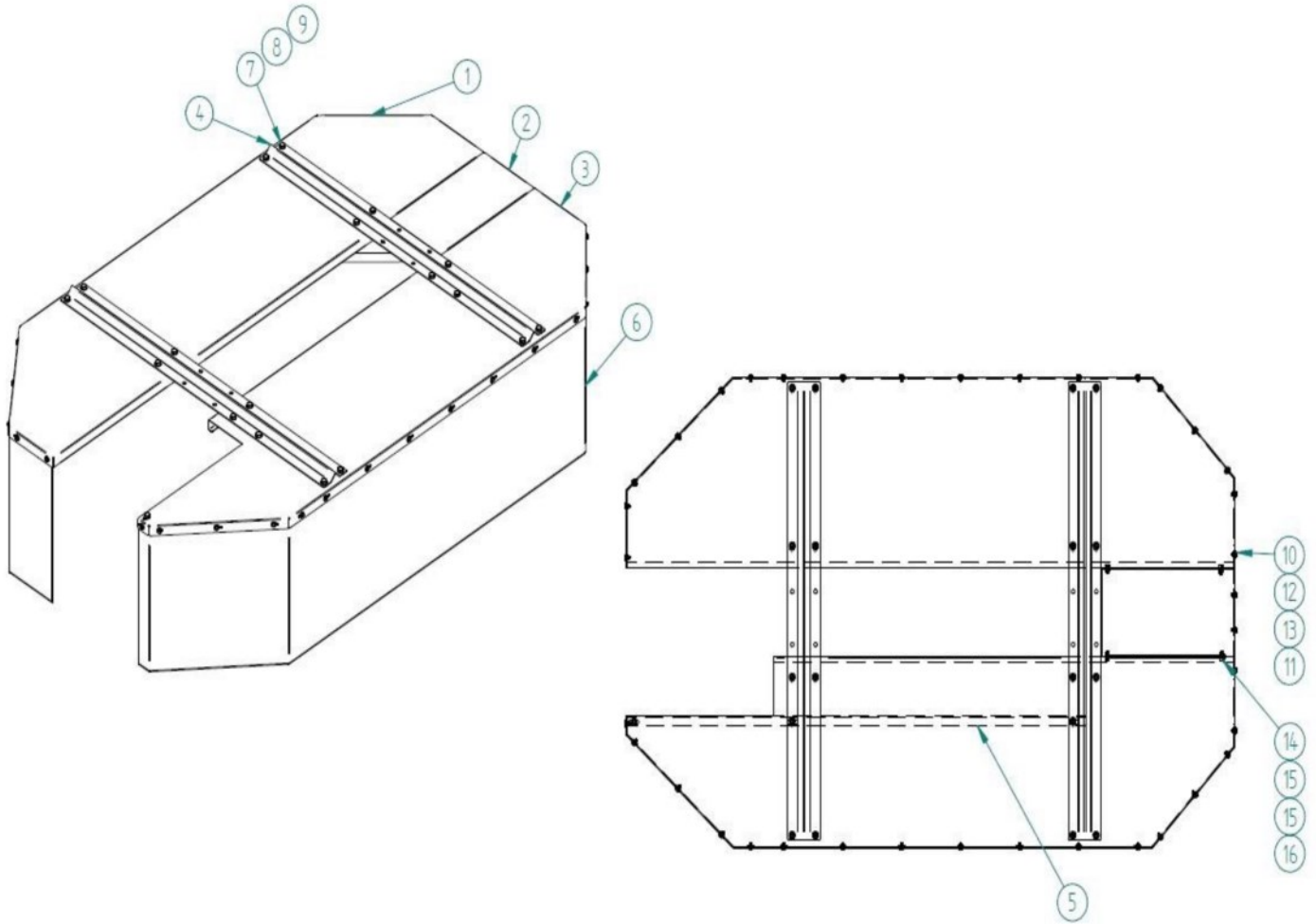
# Complete Drum Unit - Drum BDR-135, 165, 185



## Complete Drum Unit - Drum BDR-135, 165, 185

Item	Part #	Description	Qty.
	DMSC3535	Drum spindle complete; BDR-135	1
	DMSC3565	Drum spindle complete; BDR-165	1
	DMSC0085	Drum spindle complete; BDR-185	1
1	SRE-25	Snap ring eternal M25	3
2	DM82005	Spacer washer M25 (0.3, 0.5 or 1mm as required)	-
3	DM10019-65	Bevel gear - BDR-135, BDR-165 (16 teeth)	1
	DM10019-85	Bevel gear - BDR-185 (17 teeth)	1
4	OS406210	Oil seal 40 x 62 x 10	1
5	B6305ZZ	Bearing 6305 ZZ	1
6	DM150088	Spacer washer M50 x 62 (0.3, 0.5 or 1mm as required)	-
7	OR70x4	Sealing ring M70 x 4	1
8	DM10747	Drum hub	1
9	DM10031	Sealant	1
10	SRI-90	Snap ring internal M90	1
11	B62102RS	Bearing 6210 2RS	2
12	B62092RS	Bearing 6209 2RS	1
13	DM10790	Working disc hub	1
14			
15	KM080732	Key M8 x 7 x 2	1
16	DM10617	Reducing gear drive shaft	1
17	KM080780	Key M8 x 7 x 80	1
18	DM82005	Spacer ring 25 (0.3, 0.5 or 1mm as required)	-

# Guard Assembly - Drum BDR-135, 165, 185



## Guard Assembly - Drum BDR-135, 165, 185

Item	Part #	Description	Qty.
	DM30015-185	Metal guard set (includes items 1-5); BDR-185	1
	DM30015-165	Metal guard set (includes items 1-5); BDR-165	1
	DM30015-135	Metal guard set (includes items 1-5); BDR-135	1
1	DM30016R-135	Right Metal Top Shield- BDR-135	1
	DM30016R-165	Right Metal Top Shield- BDR165	1
	DM30016R-185	Right Metal Top Shield- BDR-185	1
2	DM30069-135	Middle Shield - 135	1
	DM30069-165	Middle Shield - 165	1
	DM30069-185	Middle Shield - 185	1
3	DM30016L-135	Left Metal Top Shield - BDR-135	1
	DM30016L-165	Left Metal Top Shield - BDR-165	1
	DM30016L-185	Left Metal Top Shield - BDR-185	1
4	DM30043	Bent reinforcement bar; BDR-185	2
	DMT0804	Bent reinforcement bar; BDR-135, BDR-165	2
5	DM30071	Reinforcing angle bar; BDR-185	1
	DM30237	Reinforcing angle bar; BDR-165	1
	DMT0805	Reinforcing angle bar; BDR-135	1
6	DM30145-85C	Reinforced apron complete; BDR-185	1
	DM30145-65C	Reinforced apron complete; BDR-165	1
	DM30145-35C	Reinforced apron complete; BDR-135	1
7	BM101525	Bolt HH M10-1.5 x 25 8.8 Galv.	19
8	FW10	Washer flat M10	38
9	LNM1015	Nut self-locking M10-1.5	19
10	BM061016	Bolt HH M6-1.0 x 16 8.8 Galv.	37
11	NM0610	Nut HH M06-1.0	37
12	FW06	Flat washer M6	37
13	LFW06	Large flat washer M6	37
14	BM0812516	Bolt HH M8-1.25 x 16 8.8 Galv.	4
15	LW08	Washer lock M8	8
16	NM08125	Nut HH M8-1.25	4

## PTO & PTO Shielding Replacement

### **For PTO & PTO Shielding replacement**

(Old Style- Yellow)

BDR-135:

PTO Shield Complete - DMT0148-135

PTO Complete - DMT0147-135

(Old Style- Yellow)

BDR-165 & BDR-185:

PTO Shield Complete-DMT0148

PTO Complete - DMT0147

(New Style - Black)

BDR-135:

PTO Shield Complete - DMT0149-135

PTO Complete - DMT0146-135

(New Style- Black)

BDR-165 & BDR-185:

PTO Shielding Complete - DMT0149

PTO Complete - DMT0146

# Warranty

## LIMITED WARRANTY

Belco Resources Equipment warrants to the original purchaser of any new piece of machinery from Belco Resources Equipment, purchased from an authorized Belco Resources Equipment dealer, that the equipment be free from defects in material and workmanship for a period of one (1) year for non-commercial, state, and municipalities' use, ninety (90) days for commercial use from date of retail sale. Warranty for rental purposes is thirty (30) days. The obligation of Belco Resources Equipment to the purchaser under this warranty is limited to the repair or replacement of defective parts.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or to the expiration of the applicable new equipment warranty period, whichever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Belco Resources Equipment dealer during regular working hours. Belco Resources Equipment reserves the right to inspect any equipment or parts, which are claimed to have been defective in material or workmanship.

This limited warranty does not apply to and excludes wear items such as shear pins, tires, tubes knives, blades or other wear items. Oil or grease is not covered by this warranty.

All obligations of Belco Resources Equipment under this limited warranty shall be terminated if:

Proper service is not performed on the machine.

The machine is modified or altered in any way.

The machine is being used or has been used for purposes other than those for which the machine was intended.

## DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES

Belco Resources Equipment obligation under this limited warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, including implied warranties of merchantability and fitness for a particular purpose and any liability for incidental and consequential damages with respect to the sale or use of the items warranted. Such incidental and consequential damages shall include but not be limited to: transportation charges other than normal freight charges; cost of installation other than cost approved by Belco Resources Equipment; duty; taxes; charges for normal service or adjustment; loss of crops or any other loss of income; rental of substitute equipment, expenses due to loss, damage, detention or delay in the delivery.

## REGISTRATION

The online Warranty Registration must be completed in order to qualify for coverage on this Limited Warranty. Visit [br-equipment.com](http://br-equipment.com), click on "Warranty Registration" and completely fill out the form to register the new piece of equipment.

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