

# MK METEOR

## Operator's Manual

### PULL TYPE SNOWBLOWER



#### Models

SB54PT  
SB60PT  
SB68PT  
SB72PT  
SB78PT  
SB87PT  
SB97PT

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Keep this manual with the machine at all times.

Do not attempt to operate equipment without thoroughly reviewing this manual for safe and proper operation.

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Effective on products retailed on or after October 1st, 2022.

**Seven Year Limited Consumer Warranty.  
90 Day Limited Commercial Warranty including Gearboxes.  
Commercial includes rental and industrial applications.  
Warranty coverage is null and void unless the Warranty Registration form has been  
completed in full and is on file at MK Martin Enterprise Inc.  
Keep your registration copy in a safe place, it is required as  
proof of warranty activation.**

This new and unused product is warranted by MK Martin Enterprise Inc., to be free from defects in material and workmanship under normal use and regular service as described in the owner's manual; for a consumer period of 7 years from the date of delivery, and commercial period of 90 days, including gearboxes, from the date of delivery. Warranty is limited to the replacement of parts and/or repair of the product.

If issues develop within the warranty period with the product, contact the local dealer from which you purchased the unit. Only MK Martin authorized dealers may make repairs to the product or affect the replacement of defective parts, unless otherwise approved by MK Martin. Repairs/replacement will be done at no charge within a reasonable time after the receipt of the product. This warranty does not cover the following items:

1. Normal replacement of service items.
2. Normal maintenance or adjustments.
3. Machines or parts lost or damaged during shipment.
4. Accessory items/parts not supplied by MK Martin.
5. Damages resulting from:
  - a. misuse, negligence, accident, theft or fire.
  - b. use of improper or insufficient fuel, fluids or lubricants.
  - c. use of aftermarket parts or accessories, unless approved by MK Martin.
  - d. modifications, alteration, tampering or improper repair.
  - e. any device or accessories installed other than an authorized dealer.
6. Tires are covered by the manufacturer of the tire and the warranty period specified by the manufacturer. Please contact the tire manufacturer for warranty on these items.

MK Martin Enterprise Inc. shall not, in any event, be liable for any losses, damages or costs; to include profits, travel, transportation, pick up, delivery, towing cost, tow vehicle, or loss of use, wether special, incidental, consequential or otherwise, in any way. Unit or parts are returned at the customer's expense. Include a copy of your completed Warranty registration form with any claim as proof of warranty activation.

There are no warranties, expressed or implied, other than those specified herein. No agent, employee or other person has any authority to vary any of the foregoing provisions.

Warranty coverage is null and void unless the Warranty Registration form has been completed in full and is on file at MK Martin Enterprise Inc. Warranty begins at the time of customer deliver and is activated upon Warranty Registration receipt at MK Martin Enterprise Inc.

## Introduction

Thank you for purchasing your new **MK Martin Pull Type Snowblower**. Your implement has been designed and manufactured to give you many years of dependable service. One of the key benefits of the **Pull Type** model is its hitch facing design which allows you to drive straight forward instead of backing into the snow. This makes it easier to follow a consistent pattern and to avoid objects. This design also means that you no longer have to operate your blower while continuously looking over your shoulder.

The **Pull Type Snowblower** was built with bolt-on adjustable skid shoes, hand-welded augers made with high tensile steel ribbon flighting, and a five-blade fan to help you complete your snow clearing tasks safely and efficiently. The **Pull Type Snowblower** also has several options and add-ons to choose from, such as: a variety of chute rotators, deflectors and back drags. For more information on these features, see section **Product Features** on p.23.



### WARNING

- You, or any other person who will be assembling, operating, maintaining or working with this product, must read and completely understand the information and instructions contained in this manual.
- Keep this operator's manual available for reference by the operator and to pass on to new owners and operators.



### NOTE

- There are several options available for the **Pull Type Snowblower**. Follow the instructions that apply to the options you have purchased. For more information, see section **Product Features** on p.23, or contact **MK Martin**.
- Assembly may be required depending on how you purchased your machine. Follow the assembly procedures as outlined in section **Assembly & Inspection** on p.26.

### Intended Use:

MK's **Pull Type Snowblower** was designed to clear snow from surfaces such as driveways or sidewalks. The snowblower uses PTO power when attached and pulled along with the 3PH tractor. Its auger breaks up the snow, and the impeller throws it through the chute in the direction in which it is pointed.

To see the **Pull Type Snowblower** in action, scan the QR code:



## General Information

The purpose of this manual is to assist you in safely operating and maintaining your **Pull Type Snowblower**. Read this manual carefully to obtain valuable information and instructions that will ensure you a safe, efficient and trouble-free operation.



### NOTE

- The illustrations and data used in this manual were current at the time of printing, but due to possible engineering and/or production changes, this product may vary slightly in detail. **MK Martin Enterprise Inc**© reserves the right to update and/or change components as necessary without notification.

If you require further assistance, have questions related to this manual, or would like to order a new manual: contact **MK Martin** or the dealer from which this product was purchased using the information provided on the cover page.

### Terminology:

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In this manual, the **MK Pull Type Snowblower** may be referred to as: snowblower, blower, equipment, machine, attachment or implement. The tractor may be referred to as: power unit. All hardware is Grade #5 unless otherwise specified. When a direction is mentioned, such as: front, rear, left or right, assume you are in the position of the operator; sitting and facing forwards.

### California Proposition 65:

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You may see a warning like the following:

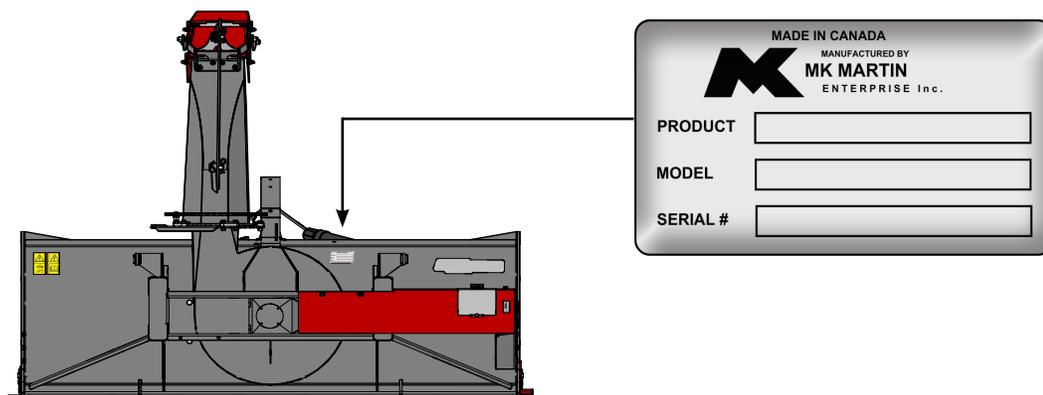


This warning is required by California Proposition 65 (Prop 65), which is meant to notify California residents of exposures to Prop 65-listed chemicals. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Serial Number Location

The serial number and model number for your **Pull Type Snowblower** is located on the back of the blower above the fan housing and gearbox.

Please record your serial number here as a handy reference. In the case there is an issue with your implement, your dealer will need your serial number to verify your warranty.



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

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

# Safety



The Safety Alert symbol means:  
**Attention!**  
**Become Alert!**  
**Your safety is involved!**

The Safety Alert symbol identifies important safety messages on the implement and in the manual. When you see this symbol, read and understand the message, be alert to the potential hazard and follow the instructions in the safety message.

## Safety Messages:

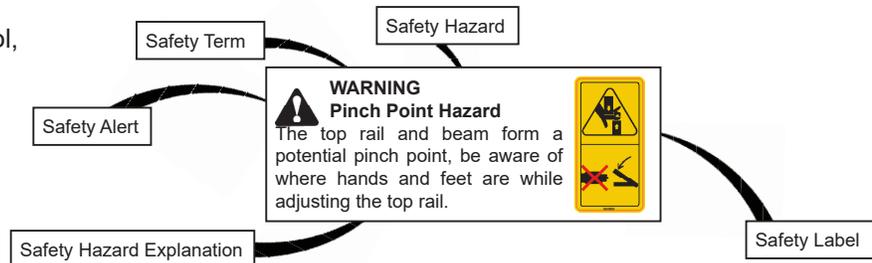
Throughout this manual, the terms in the table below are used to indicate the degree of hazard if safety procedures are not followed. The appropriate term for each message has been selected using the following guide-lines:

Symbol	Alert	Description
	DANGER	Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury, and includes most extreme situations typically for implement 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	Indicates a situation that could result in damage to the implement or other property.
	NOTE	Indicates additional information that may assist you in operating your machine safely.
	TIP	Indicates a helpful hint to improve the efficiency or ease of using your machine.

In the owner's manual, when a hazard is present, you will see a safety message box. The box may contain:

- The safety alert symbol,
- The safety term
- The safety hazard
- The safety hazard explanation

When applicable you may also see the appropriate safety label displayed with the message, as shown below.



The safety information given in this manual does not replace any safety codes, insurance needs, government and local laws.

## Accident Prevention:

**Accidents can be prevented with your help!** You are responsible for the safe operation and maintenance of your implement. You must ensure that you and anyone else who is going to use, maintain or work around the implement, be familiar with the work and related safety information contained in this manual. This manual will take you step-by-step through your working day and provide you with the best safety practices.



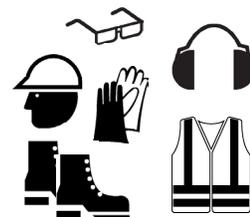
Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices an effective part of your day to day work habits. Be certain that EVERYONE using this implement is familiar with the recommended maintenance and work procedures and follow all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

**The best accident prevention is a careful operator. MK Martin asks that YOU be that careful, responsible equipment operator.**

**Read the accident prevention guidelines below.**



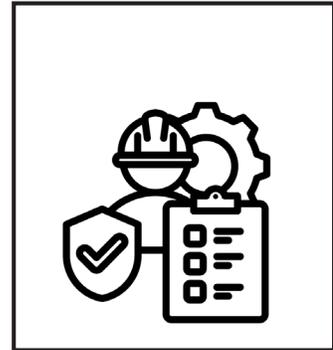
1. Familiarize yourself, and anyone else who will operate, maintain, or work around this product, with the safety and operation information contained in this manual.
2. Read and understand the safety labeling which appears on the implement.
3. Have a first-aid kit available for use should the need arise and know how to use it.
4. Pay attention to the job at hand. Do not let your mind lose concentration on what you are doing. No accident prevention program can be successful without the whole hearted cooperation of the person who is directly responsible for the operation of the implement.
5. Have a fire extinguisher ready for use should the need arise and know how to use it.
6. Reduce the risk of injury or death by following all safety precautions and by using good safety practices.
7. Never exceed the limits of the implement. Safety of the operator and safe operation are the main concerns in designing a safe product, however ignoring implement specifications by the operator can result in an accident which could have been prevented.
8. Do not allow riders on the implement, loaded or empty.
9. Do not operate this implement under the influence of drugs or alcohol.
10. Be responsible for the SAFE operation and MAINTENANCE of YOUR implement.
11. Wear appropriate personal protective equipment (PPE). This list includes but is not limited to:
  - a. Hard hat
  - b. Heavy gloves
  - c. Hearing Protection
  - d. Protective foot wear
  - e. Protective eye wear
  - f. Safety Vest



## Safety Guidelines:

Safety of the operator and bystanders is one of the chief concerns when developing and designing equipment. However, every year many accidents occur which could have been avoided by only a few seconds of thought, and a more cautious approach to handling the equipment.

You, the operator, can avoid many accidents by observing the precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them as well.



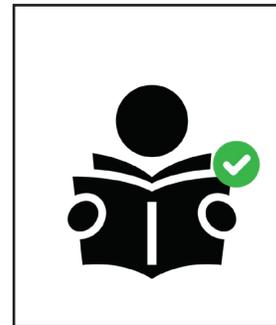
Your **MK Pull Type Snowblower** was designed and configured with safety labels and safety devices. However, hazard control and accident prevention are dependent upon the awareness, concern, and proper training of personnel involved in the *assembly, operation, transport, maintenance, and storage* of the implement. Refer to safety messages and operation instructions in each of the appropriate sections of the tractor and implement manuals. Pay close attention to the safety labeling affixed to the implement.

Read through the safety guidelines below that must be followed at all times.

1. In order to provide a better view, certain illustrations in this manual may show an assembly with a safety device removed. However, equipment should never be used in this condition. Keep all safety devices in place, if removal becomes necessary for repairs, replace the device prior to use.
2. Replace any safety label or instruction sign that is unreadable or is missing. Location of safety signs is indicated in this manual.
3. Never use alcoholic beverages or drugs which can hinder alertness or coordination while using this implement. Consult your doctor about using this implement while taking prescription medications.
4. Under no circumstances should young children be allowed to work with this implement.
5. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated. Assistants should be a responsible, properly trained and physically-able person familiar with machinery and trained in this implement's operations.



6. Never exceed the limits of the implement. If its ability to do a job, or to do so safely, is in question - DON'T TRY IT.
7. Do not modify the implement in any way. Unauthorized modification may result in serious injury or death and may impair the function and life of the implement.
8. This implement is dangerous to persons unfamiliar with its operation. Do not allow persons to use or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and how it works. Review the safety instructions with all users annually.



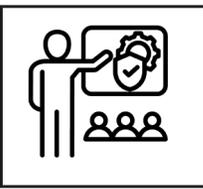
### Safety Training:

Read through the safety training guidelines below that must be followed at all times.

1. Train all new personnel with the instructions alongside the implement. Be certain only a properly trained and physically-able person will use the machinery.
2. Working with unfamiliar equipment can lead to careless injuries. If this implement is used by any person other than yourself, or is loaned or rented, it is the implement owner's responsibility to make certain that the operator, prior to using:
  - a. Reads and understands the operator's manuals.
  - b. Is instructed in safe and proper use of the implement.
3. If the elderly are assisting with the work, their physical limitations need to be recognized and accommodated.
4. Operators or maintenance personnel who are not fully able to read and understand this manual should not operate or work on the implement.
5. Make certain that all operators and maintenance personnel have a complete understanding of the full and exact contents of this manual and safety labeling.
6. ALL information contained in this manual and labeling on the implement must be conveyed CLEARLY and FULLY, in order to be able to operate safely and knowledgeably.
7. Review the implement and instructions regularly with existing workers.
8. All trainees must be fully equipped with PPE, even when simply observing.

 **DANGER**

- *A person who has not been trained or has not read and understood all use and safety instructions is not qualified to use the implement. An untrained operator exposes himself and bystanders to possible serious injury or death.*



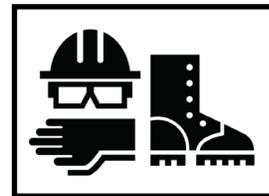
## Work Area Safety:

Not all work spaces are the same, but the principles presented here can be applied to any work space.

1. For worker safety, a pre-season site visit is recommended.
2. Make note of any nearby or overhead obstructions, knowing your work area will make the clearing job easier and safer.
3. Mark any potential hazards that cannot be removed such as tree stumps, rocks, holes, or posts. This is especially important when operating the **Snowblower** since visibility can sometimes be limited by the weather conditions.
4. Ensure bystanders or anyone not directly involved with the work is only permitted outside of the work area to minimize hazards.
5. Workers helping the operator must wear the appropriate PPE and must always make eye contact with the operator before entering the work area. Unauthorized workers or bystanders are not allowed in the work area. Hazards are present.
6. Do not operate the **Snowblower** outside of the designated work area.
7. **Danger:** If solid objects such as rocks, gravel, wire, chains, ice chunks or other debris come into contact with the auger, they can cause damage to the implement and create a danger hazard. At high speeds the thrown objects are extremely dangerous and can cause injury or death to any bystanders or animals. Avoid this by marking objects that cannot be removed.
8. Mark off any steep slopes, hills or icy areas before operating your **Snowblower**. Unstable land can be extremely dangerous and cause you to lose control of your implement, resulting in property damage, personal injury or death.

 **DANGER**

- *Objects thrown from snowblower at high speeds can cause property damage, injury and death! Keep distance from machine, and keep deflector pointing away from yourself and others. Be aware of bystanders.*



 **WARNING**

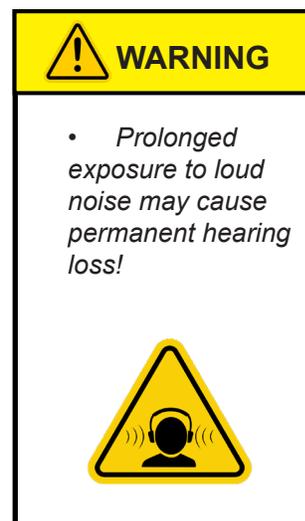
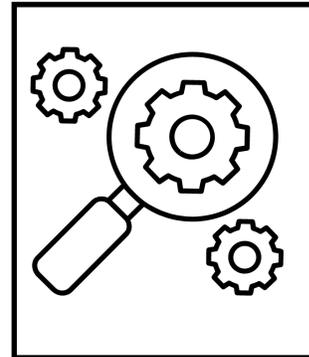
- *Sudden impact from obstacles hidden under the snow may cause injury or damage to your implement. Mark objects that cannot be removed before operating and clear debris from work area.*



## Assembly & Inspection Safety:

Read the safety guidelines below that must be followed when inspecting and assembling your machine.

1. Inspect implement for shipping damage. If damage does exist, do not use. Notify your dealer immediately to have damaged parts replaced or repaired.
2. Assembly may be required depending on how you purchased your equipment. Follow the assembly procedures as outlined in the manual.
3. Ensure all hardware is secure.
4. Visually inspect hydraulic system for leaks. See **Hydraulic Safety** on p.15.
5. Ensure hydraulic hoses are properly secured.
6. Inspect all fasteners are not loose or missing.
7. Ensure all fasteners and wheel bolts are torqued according to the **Bolt Torque Table** on p.62.
8. Ensure that all applicable safety decals are installed and legible. See section **Replacing Labels** on p.18.
9. Personal protection equipment (PPE) including hard hat, safety glasses, safety shoes, and gloves are recommended during *assembly, installation, operation, adjustment, maintaining, repairing, removal, cleaning, or moving* the unit. Do not allow long hair, loose fitting clothing or jewelry to be around equipment.
10. Gas or diesel powered equipment can often be noisy enough to cause permanent, or partial hearing loss. We recommend that you wear hearing protection on a full-time basis. Noise over 85dB on a long-term basis can cause severe hearing loss. Noise over 90dB adjacent to the Operator over a long-term basis may cause permanent, total hearing loss.
11. When not attached to the power unit, block the implement to prevent movement.



## Operation Safety:

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Read the safety guidelines below that must be followed when operating your machine.

1. NEVER allow helpers or bystanders under or near the machine.
2. Ensure the implement is securely attached to the power unit before moving.
3. Inspect all fastening devices, do not use if worn or damaged.
4. Make sure that bystanders and children are clear before using or moving the implement.
5. NEVER position yourself between the power unit and the implement while the power unit is running.
6. Avoid distractions: wait until it is safe to operate mobile communication equipment such as cell phones, text messaging devices, pagers or two-way radios. Always give undivided attention to the machine, the job at hand and your surroundings.
7. Keep body AWAY from all rotating parts and NEVER put hands or feet near or under the **Snowblower**.
8. Watch for traffic when driving near roadways.
9. Do not permit riders while operating this implement.
10. Exercise extreme caution when on or crossing drives, walks, or roads.
11. Where possible, avoid operating near ditches, embankments and holes.
12. Operate the machine up and down the face of slopes.
13. Avoid changing direction on slopes, wait until you are on level ground if possible.
14. NEVER operate on slopes greater than 20 degrees, or wet, icy, or slippery slopes.
15. NEVER park the power unit on a steep grade or slope.
16. Always wear the seat belt. Sudden contact with a hidden object can result in serious personal injury.
17. Before beginning the job inspect areas of operation for potential hazards, and mark obstructions with stakes or flags that will be seen in tall snow.
18. NEVER operate the **Snowblower** when under the influence of alcohol, drugs, or medication.



1. Keep all shields and guards in place.
2. Never dismount from your power unit while it is moving and never leave your implement unattended when the engine is running. Wait at least 60 seconds before dismounting your power unit so that all moving parts on the **Snowblower** come to a complete stop.
3. Do not grease or oil attachment while it is in operation.
4. Always be aware of weather conditions before operating. Never operate the **Snowblower** without good visibility and light. Dress appropriately and if possible, use a tractor with a cab to shelter you from the snow being blown.
5. Always dress appropriately for the job. Wear PPE and avoid loose clothing, jewelry, and clothing with pull strings. Clothing, accessories and long hair can become entangled in the **Snowblower's** rotating parts which could result in severe personal injury or death.
6. Wear appropriate footwear for icy or slippery surfaces.
7. Avoid operating your **Snowblower** when there is a layer of ice below the snow unless your power unit is properly equipped for those conditions. Do not exceed 15km/hour (10mph) when clearing snow. Higher speeds can lead to losing traction and steering control or encountering hidden objects with extreme force. Both situations can result in damage to the implement, personal injury and death.
8. Obey all federal and local laws related to snow removal. Never pile up snow near handicap parking areas, electrical boxes, fire hydrants, water drains, shut-off valves, or mailboxes, and never pile snow on sidewalk's, streets or other's property.
9. Never operate your **Snowblower** in the dark or when visibility is compromised. Ensure there is adequate light, and that you can see at least 300 feet away.
10. **STOP** operating immediately if bystanders are within 200 feet of you.
11. Ensure chute is never blowing snow towards bystanders, buildings or vehicles. Ice, tough snow, or hidden objects can be propelled from the **Snowblower** and cause severe injury.



23. Shut down the power unit immediately if the machine is making any unusual noises, or if there is excessive vibration. This can be an indication that there are hidden objects underneath the **Snowblower**, that parts of your implement have been damaged, broken or clogged. Wait five (5) minutes for the engine to cool and rotating parts to be at a complete stop before dismounting your power unit. When it is safe to do so, inspect the machine for clogs, loose parts or damages.



24. Turn off the power unit immediately if the fan blades are broken or the auger begins to make contact with the housing. Broken or bent blades can break free while operating and can be a serious safety hazard. Continue operating only when all broken or damaged parts have been repaired or replaced.



### Transport Safety:

1. The safest way to transport the implement from job to job is with the use of a trailer attached to a motor vehicle.
2. Use a towing vehicle and trailer of adequate size and capacity.
3. Do not tow your equipment with a truck or passenger car.
4. Secure the attachment to your trailer using tie downs and chains.
5. The **Snowblower** is not designed for travel on public roads or highway speeds. The loss of control can result in death, serious injury or property damage.

 <b>DANGER</b>
<ul style="list-style-type: none"><li>• Do not drive the tractor on public roads with your implement. Doing so could result in damage to your equipment, serious injury or death.</li><li>• Do not tow a load that is more than double the weight of the vehicle towing the load.</li></ul>

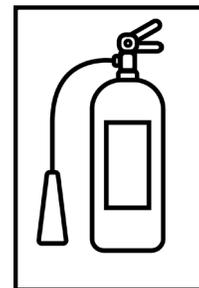
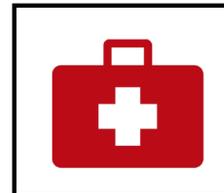
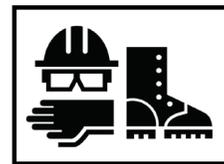
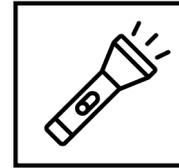


6. Adhere to all federal, state and local laws when transporting equipment. When applicable, ensure slow moving vehicle (smv) sticker and lights are working properly.
7. Drive at a lower speed if your trailer is not equipped with breaks. Sudden breaking could cause the trailer to swerve or tip causing an accident or damage to the **blower**.
8. Stay alert for overhead objects such as tree and wires.

## Maintenance Safety:

---

1. Good maintenance is your responsibility, follow the maintenance schedule. Poor maintenance is an invitation for trouble. Serious injury and possible death could occur from not maintaining your **Snowblower**.
2. Follow good shop practices.
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.
  - Allow equipment to cool before working on it.
3. Stay away until all motion has stopped and the snow blower is securely blocked up before removing material, performing service, and making repairs. Contact with the rotating auger and fan could result in serious injury or death.
4. Use personal protection equipment (PPE) such as eye, hand and hearing protectors.
5. Always have a fire extinguisher and first aid kit nearby.
6. Release hydraulic pressure from your machine prior to beginning any service or maintenance.
7. Never adjust, service, clean or lubricate the implement until all power is shut off when attached to the tow unit.
8. Remove buildup of grease, oil, or debris.
9. Ensure hardware is torqued according to the **Bolt Torque Table** on p.62.
10. Use heavy gloves when handling heavy or sharp components.
11. Read and obey manufacture instructions when handling solvents, chemicals or oils.
12. Collect and dispose of any waste material once repairs to the implement are completed.
13. Be cautious when using a ladder or raised stand to access high spots. Slipping or falling can result in serious injury and death. Stand on solid surfaces to ensure good footing and consider asking someone for assistance.
14. Call your dealer to replace any missing or broken parts. Attempting to use other parts or “makeshift” parts can cause damage to your implement and jeopardize your warranty.



## Hydraulic Safety:

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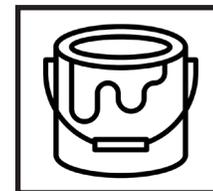
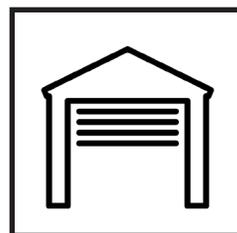
1. Make sure that all components in the hydraulic system are kept in good condition and are clean.
2. Before applying pressure to the system, **visually** inspect for leaks.
3. Ensure that all components, lines, hoses, connections and couplings are not damaged and leak-free.
4. Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tapes, clamps or cements. The hydraulic system operates under extremely high pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
5. Wear proper hand and eye protection when searching for a high pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.
6. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing through the skin.
7. Turn off the power unit and relieve pressure on hydraulic system before maintaining or working on system.
8. All hydraulic work must be done by qualified personnel.
9. Securely support or block hydraulic equipment when conducting service or maintenance to the implement. Hydraulic equipment can accidentally lower or leak which can result in severe injury or death. Always avoid working under hydraulic equipment.



## Storage Safety:

---

1. Store the unit in an area away from human activity.
2. Do not allow children to play on or around the stored implement.
3. Store the unit in a dry, level area. Cover if stored outside.
4. Guard any sharp corners.
5. Ensure components and safety features are not damaged and in good condition before storing the implement. Make repairs now to be ready for the following season.
6. Secure the implement to prevent unwanted movement.



## Safety Labels

Safety labeling is an important part of the overall safe use of the implement. Safety labeling can alert and warn you of potential injury or death. It is important to follow these points to help keep your implement safe for you and others who may be using it.

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

### Safety Label Descriptions:



#### CAUTION

- *Read and understand all safety and operating instructions in the manual. Read and understand ALL safety labels located on the machine. The most important safety device on this equipment is an informed SAFE operator.*



#### CAUTION

- *Personal Protection Equipment (PPE) is required when operating or maintaining this machine. Failure to wear PPE will result in personal injury.*



#### NOTE

- *This label is required by California Proposition 65 (Prop 65), which is meant to notify California residents of exposures to prop 65-listed chemicals.*



#### IMPORTANT

- *The grease gun label indicates grease zerk locations on the machine.*



### WARNING

- Hydraulic leaks could develop without warning! Never check for leaks with your hands or fingers while the system is pressurized. Hydraulic fluid under pressure may cause serious injury if it comes in direct contact with the skin or eyes. Any hydraulic maintenance or repairs must be done by a qualified professional.



### WARNING

- Keep hands and limbs away from rotating parts. Do not operate machine without shields in place. If shield is removed, replace it before operating machine. Risk of crushing or amputation could result.



### WARNING

- Risk of injury from flying objects. Stay clear of the snowblower auger and chute while it is in use. Machine can expel objects fast enough to cause injury. Impact or impalement could result.



### WARNING

- Keep body away from rotating auger. Wait for all moving parts to come to a complete stop before clearing obstructions. Risk of amputation, severe injuries or death.



### CAUTION

- Shut off engine and remove key before performing maintenance or repair work.



 **WARNING**

- *Crushing hazard. Stay clear of draft link lifting range while operating rockshaft controls.*



 **WARNING**

- *Do not open or remove safety shields while engine is running.*



 **IMPORTANT**

- *This symbol indicates a location on the machine where you can use a lift hook.*

## Replacing Labels:

Follow the instructions below if a label needs to be replaced.

1. Be sure that the installation area is clean and dry.
2. Be sure temperature is above 50 °F (10 °C).
3. Determine exact position before you remove the backing paper.
4. Remove the smallest portion of the split backing paper.
5. Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
6. Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
7. Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.



**NOTE**

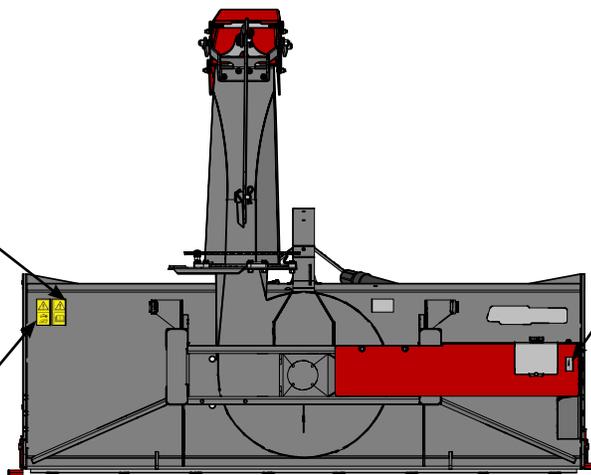
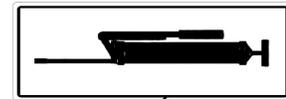
- *If safety labels have been damaged or removed, new labels must be applied. Contact **MK Martin** for new safety signs.*



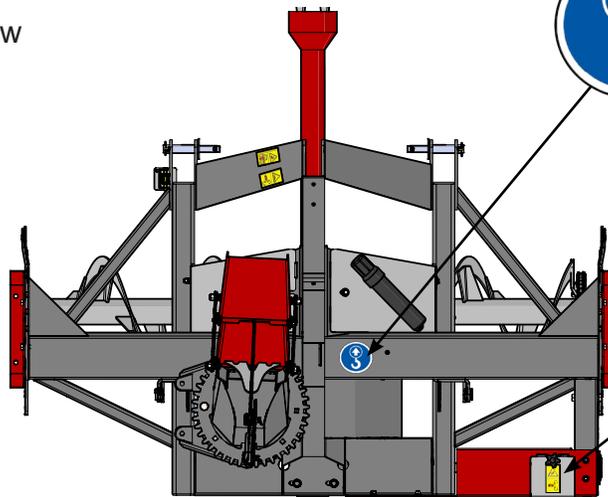




Back View



Top View



## Components & Features

Read this section carefully to learn about components and features that allow you to adjust and operate your **Pull Type Snowblower** safely and efficiently. Review the names of the components and the feature descriptions. These names will be used to describe where they are and how they work.

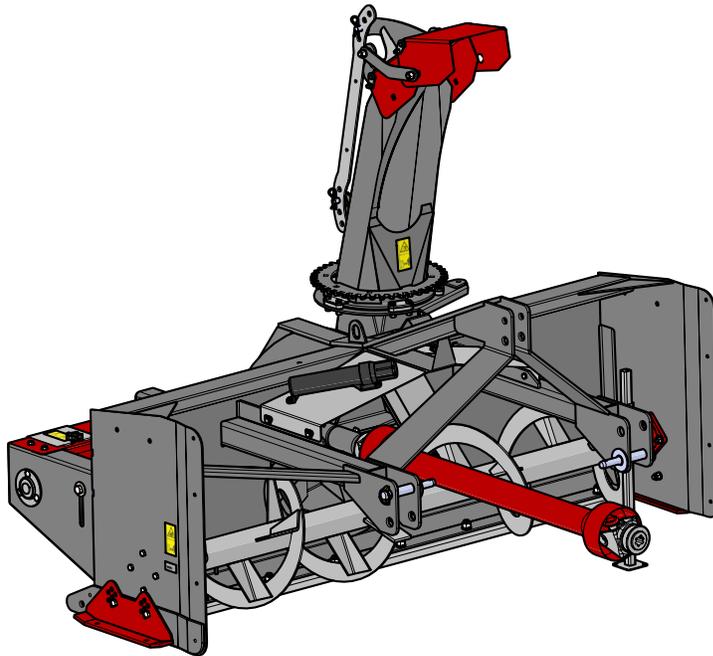
The **black** numbered components are **standard** parts and the **red** numbered parts are **optional** features.



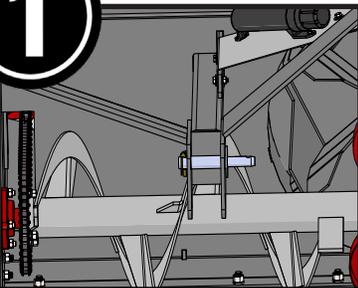
### WARNING

- Do not operate if you are not familiar with the components and features of your implement.

## MK Pull Type Snowblower Components:

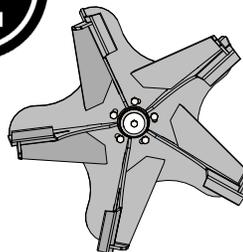


1



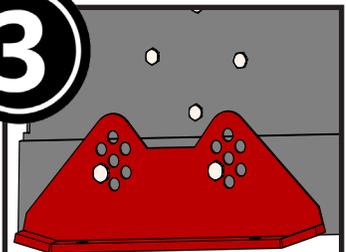
High Tensile Steel  
Ribbon Flighting

2



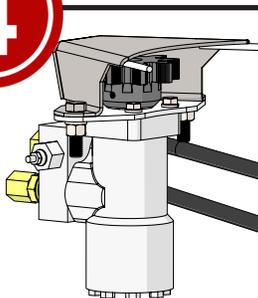
Five Blade Fan

3



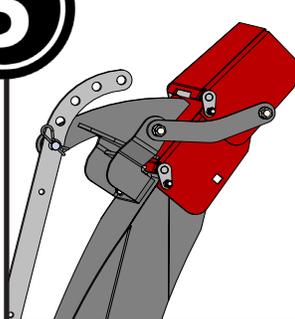
Adjustable  
Skid Shoes

4



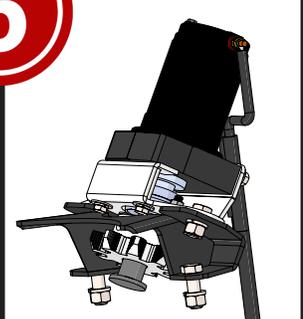
Hydraulic Rotator

5



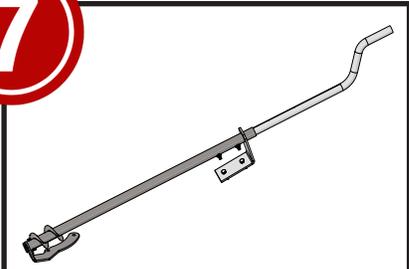
Multi-Hinge Deflector

6



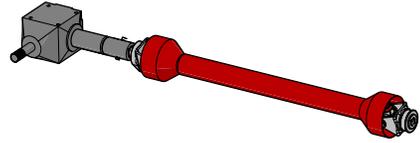
Electric Rotator

7



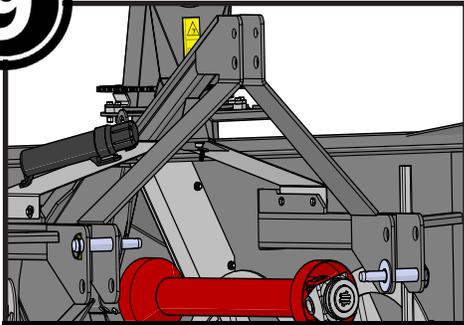
Manual Rotator

8



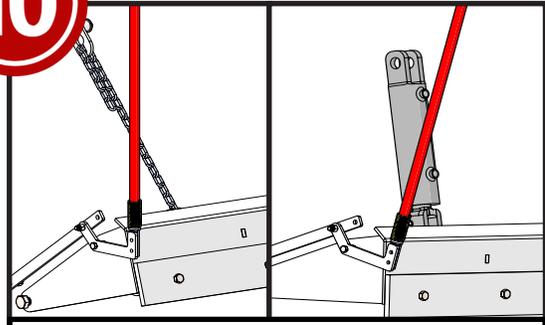
Gear Box & PTO

9



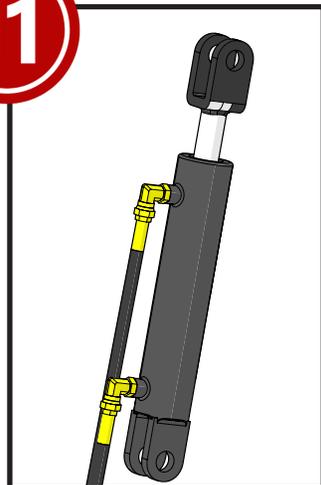
3PH Attach

10



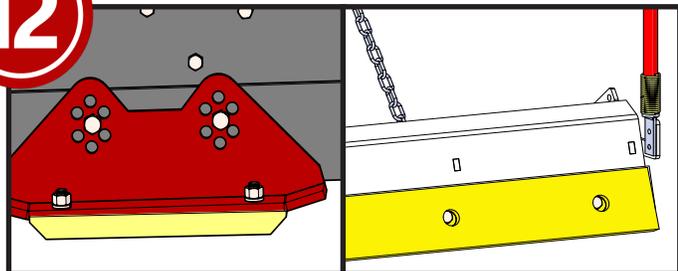
Back Drag Options

11



Hydraulic Deflector

12



Tivar Wear

## Product Features:

---

To see a video demonstration of these product features, scan the QR code on p.3.

**1**

### High Tensile Steel Ribbon Flighting:

- To deliver even the heaviest wet snow to the awaiting fan, the **MK Pull Type Snow Blower** uses machine formed hand welded augers made with high tensile steel ribbon flighting to provide strength and durability for years to come.

**2**

### Five Blade Fan:

- The **MK Blower** features a 5 blade fan to evacuate high volumes of snow quickly and to increase the velocity of snow exiting the chute.

**3**

### Adjustable Skid Shoes:

- The **Blower** comes equipped with adjustable skid shoes extending the life of the cutting edge and helping to protect surfaces from damage commonly associated with snow removal.

**4**

### Hydraulic Rotator:

- The optional hydraulic rotator is the ideal upgrade for tractors with cabs or for contractors/property managers needing to make frequent adjustments.

**5**

### Multi-Hinge Deflector:

- The multi-hinge deflector is standard on models SB68PT and higher. It allows increased precision in where snow is blown so it can be placed closer to the blower or into a truck to be hauled away.

**6**

### Electric Rotator:

- When hydraulic power isn't available the 12V electric rotator provides a hands off approach to chute rotation.

7

**Manual Rotator:**

- The manual rotator allows you to manually direct the chute while operating your **Snowblower**. They are standard on the 54" and 60" models, and can be optionally outfitted on most models where operators can safely reach the adjustment handle.

8

**Gear Box & PTO:**

- The gearbox transfers PTO power from the tractor into the driveline of the **blower** ensuring consistent power input to the auger and fan assemblies.

9

**3PH Attach:**

- All single auger PTO driven models are built for Category 1 or Category 2 type 3PH tractors. Dual auger PTO driven models are built for Category 2 or Category 3 type 3PH. All models are Quick Attach compatible.

10

**Back Drag Option:**

- The **MK blowers** have optional back drag options:
  - Manual Chain Adjustment - Available on all models.
  - Hydraulic Lift - Available on 68"-97" models.
- Tivar back drags are available for either option on any model.

11

**Hydraulic Deflector:**

- Hydraulic deflectors control the distance and arc of the thrown snow and are available for all models.

12

**Tivar Wear:**

- Tivar is a wear resistant plastic that replaces steel cutting edges and bolts onto parts. The tivar is gentler on the surface when clearing snow which is ideal for interlocking brick and decorative stone. On this product it is available for the skid shoes, cutting edge and back drag.

## Specifications & Dimensions

The table below specifies characteristics for each of the  
**MK Pull Type Snowblower** models.

Models	54"	60"	68"	72"	78"	87"	97"
HP (Rec.)	25 HP	25 HP	35 HP	35 HP	50 HP	60 HP	60 HP
Cutting Width	54"	60"	68"	72"	78"	87"	97"
Cutting Edge	Bolt On (1/2 x4)						
Auger Diam.	14"				15"		
Fan Diam.	18"		21"		23"	27"	
Chute Diam.	8"		10"			12"	
Chute Rotation Options	Manual, Hydraulic, or Electric						
Chute Deflector	Manual Standard/ Opt. Hydraulic 6" cylinder			Manual Standard/Opt. Hydraulic 8" cylinder			
Double Hood Deflector	N/A		Standard				
Main Body Height	25"				28"	32 1/2"	
3PH Mount	Cat.1				Cat.1 & 2	Cat. 2	
Weight (LBS.)	462	495	671	685	900	1175	1225
Tube Size	2 3/8" OD				3 1/2" OD		
Flighting Size	1/4 x 2 1/4					5/16 x 2 1/4	
Roller Chain Drive	#50		#60 Heavy				
Fan Depth	5"		7"		8"	10"	
Blades per fan	5						
Auger Drive Shaft Size	1"		1 1/4"				
Fan Output Shaft Size	1 3/8"				40 mm		
Back Drag Options	Manual Lift		Manual/Hydraulic Lift				
Tivar Kit Options	Available for Skid Shoes, Cutting Edge and Back Drag						

## Assembly & Inspection

The **Pull Type Snowblower** models were designed to fit a variety of tractors. Although the size of our models may differ, assembly instructions remain consistent. The chute and deflector are packaged separately and require assembly. If you purchased optional features such as the hydraulic deflector, manual, electric or hydraulic rotator, or the manual or hydraulic back drag, these items may also require assembly. Follow the instructions that apply to your implement and power unit in the order they are presented.

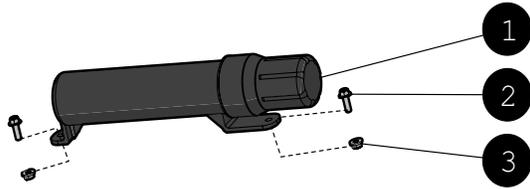
### Inspection Steps:

Before operating, it is important to inspect your machine. Doing so can prevent accidents, damage to equipment, and personal injury.



Inspection Checklist	<input checked="" type="checkbox"/>
Review section <b>Assembly &amp; Inspection Safety</b> on p. <b>10</b> .	<input type="checkbox"/>
The power unit engine is turned off and the implement is on ground level.	<input type="checkbox"/>
The Operator's Manual is in the canister.	<input type="checkbox"/>
All safety decals are in place and legible.	<input type="checkbox"/>
There are no signs of cracks or stress on machine.	<input type="checkbox"/>
The auger and impeller are free from debris.	<input type="checkbox"/>
All bolts and pins are secure.	<input type="checkbox"/>
Cutting edge, auger flighting, impeller and skid shoes are in good condition.	<input type="checkbox"/>
Skid shoes have been adjusted for the task at hand. See p. <b>50</b> .	<input type="checkbox"/>
Check shear sprocket, idler sprocket, and auger sprocket for wear. Replace if worn.	<input type="checkbox"/>
Adjust chain tension, allowing 1/4" sag in the bottom span of chain between shear and auger sprocket. See p. <b>51</b> .	<input type="checkbox"/>
No bent impellers or auger flighting that could break off and become dangerous.	<input type="checkbox"/>
Work area is clear of obstacles and hidden objects.	<input type="checkbox"/>
Work area is clear of bystanders.	<input type="checkbox"/>
Operator is wearing all necessary PPE and weather-appropriate clothing.	<input type="checkbox"/>
All components, lines, hoses, connections and couplings are not damaged, are leak-free, and will not come into contact with moving parts.	<input type="checkbox"/>
The connecting points on hoses and fittings are free from debris.	<input type="checkbox"/>
Hydraulic hoses are routed correctly and not kinked, pinched or twisted.	<input type="checkbox"/>
Wiring harness is routed correctly and connection points are secure.	<input type="checkbox"/>
Wires are not frayed, pinched or broken and are away from moving parts.	<input type="checkbox"/>
Weather conditions and visibility allow you to see 300 feet away.	<input type="checkbox"/>

## Operator's Manual Assembly:

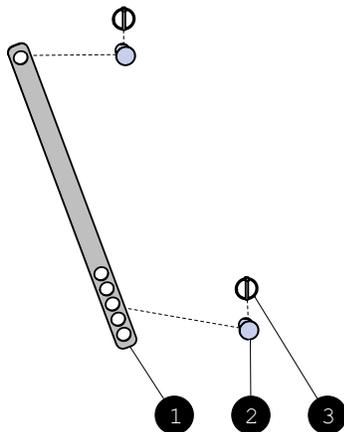


Item #	Description
1	Operator's Manual Canister
2	1/4 x 3/4 Flange Serrated Screw
3	1/4-20 Flange Serrated Nut

## Operator's Manual Assembly Steps

Step	Before	After
Bolt the operator's manual canister to the outside of the A-frame using the 1/4 x 3/4 flange serrated screws (2) and 1/4-20 flange serrated nuts (3) to keep it away from the <b>Snowblower's</b> moving parts.		

## Manual Deflector Assembly:

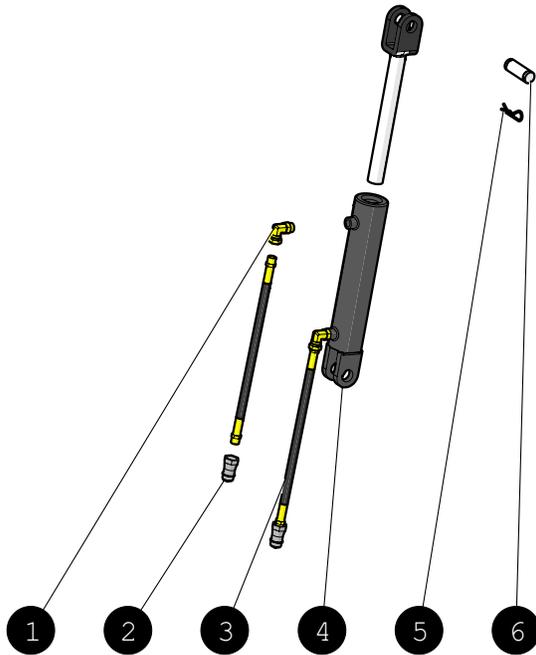


Item #	Description
1	Deflector Adjuster Bar
2	Chute Pins
3	Lynch Pins

## Manual Deflector Assembly Steps

Step	Before	After
Attach the deflector adjuster bar (to the chute using the chute pins (2) and lynch pins (3).		

## Hydraulic Deflector Assembly:

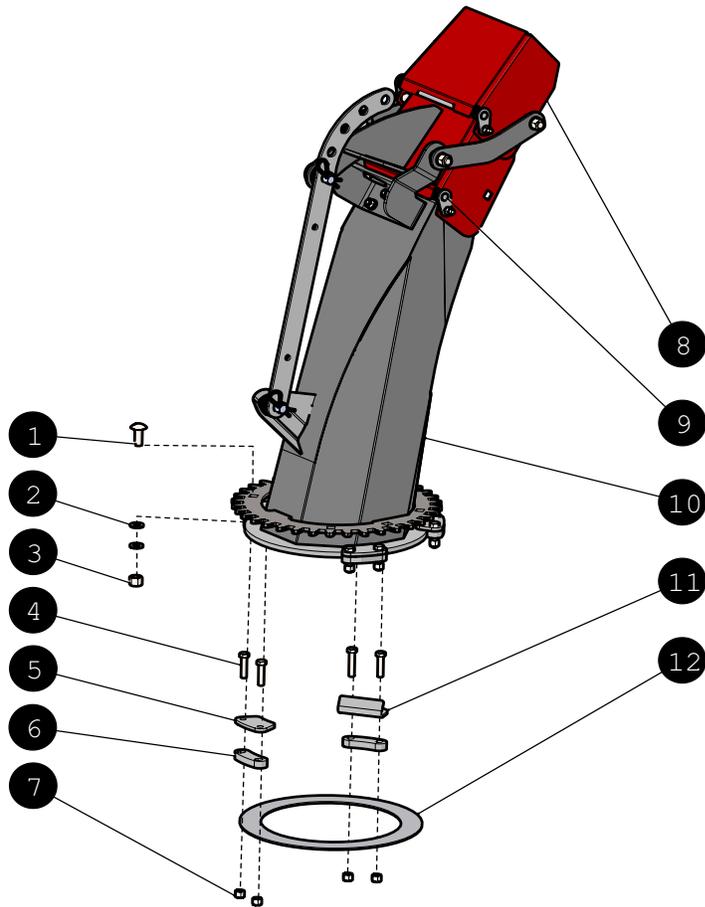


Item #	Description
1	90° Elbow
2	Agri-ball nipple
3	Hydraulic Hose
4	Cylinder
5	Hair Pin
6	Cylinder Pin

### Hydraulic Deflector Assembly Steps

Step	Before	After
<p><b>1. Attach Deflector</b></p> <p>Attach the hydraulic deflector to the chute by inserting the cylinder pins (6) followed by the hair pins (5).</p>		
<p><b>2. Attach Hoses</b></p> <p>See <i>Hydraulic Safety</i> on p.15. Attach the hydraulic hoses on the deflector to your power unit. See p.48.</p>		

## Chute Assembly:



### ⚠ IMPORTANT

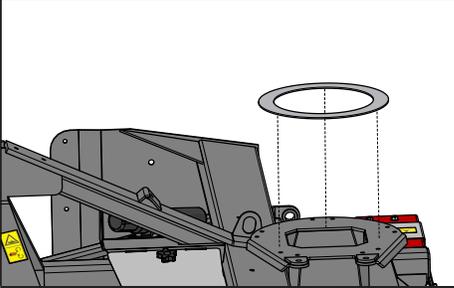
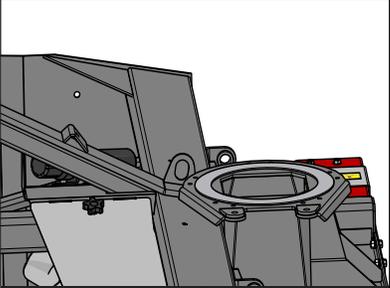
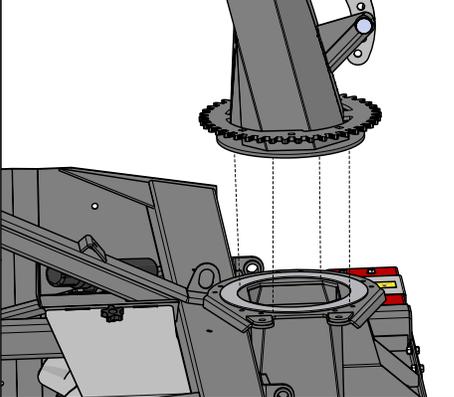
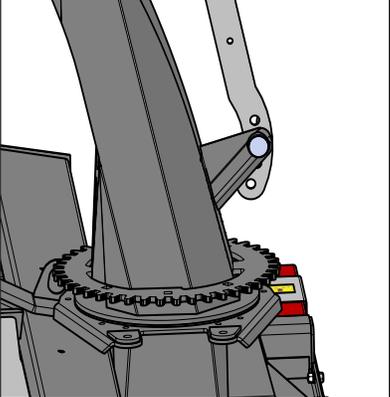
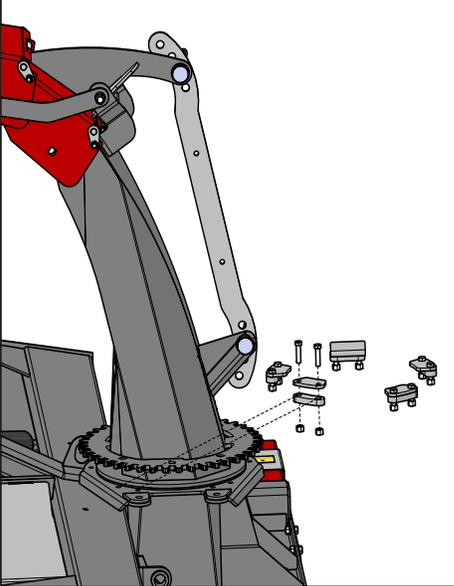
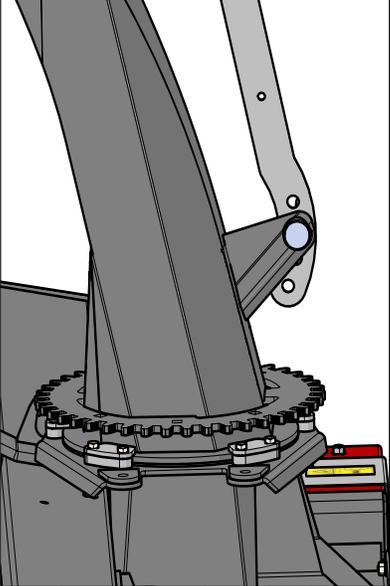
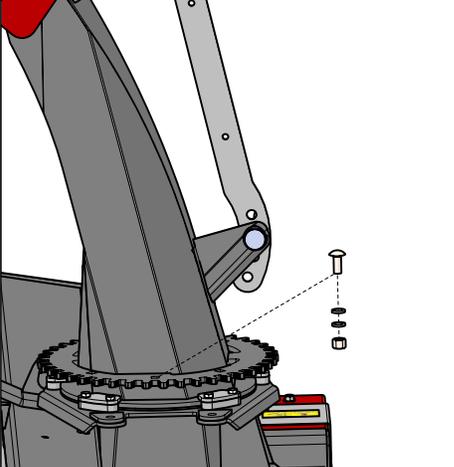
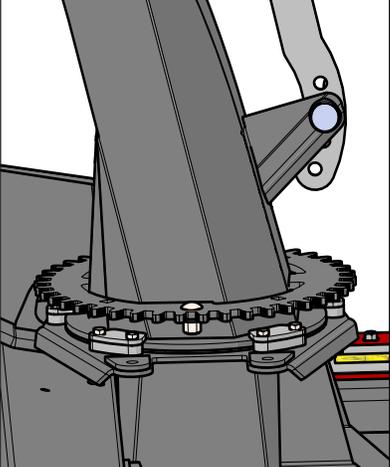
- Follow the chute assembly steps table in the order they are presented. The **chute stop** prevents the chute from rotating towards the operator and prevents the hydraulic hoses/electric wires (when used) from getting wound around the chute. If installed incorrectly, it could damage the machine or cause a safety hazard.

### 📝 NOTE

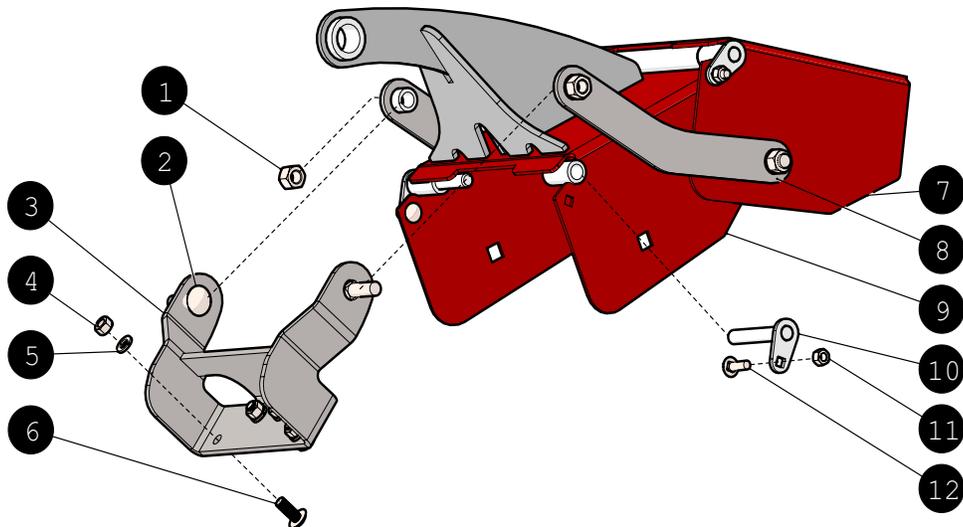
- The multi-hinge deflector is **not available** on the 54" and 60" models. Assembly instructions are **the same** for a chute with a single deflector.
- If your chute has a multi-hinged deflector, or you purchased a multi-hinge deflector as an option, see assembly instructions on p.31.
- Your chute is designed to fit the model you purchased. Reference the table below to know which parts are required for your chute size.

Item #	Description	54"	60"	68"	72"	78"	87"	97"
		Qty						
1	1/2 x 1 1/4 Carriage Bolt	1	1	1	1	1	1	1
2	1/2 Lockwasher	2	2	2	2	2	2	2
3	1/2-13 Locknut	1	1	1	1	1	1	1
4	3/8-16 x 1 1/2 Bolt	9	9	9	9	10		
	3/8-16 x 1 3/4 Bolt						14	14
5	Chute Holder	4	4	4	4	4	6	6
6	Chute Slide	5	5	5	5	5	7	7
7	3/8-16 Nylon Locknut	13	13	13	13	13	17	17
8	Deflector	1	1	1	1	1	1	1
9	Deflector Pin Assembly							
10	Chute	1	1	1	1	1	1	1
11	Chute Stop	1	1	1	1	1	1	1
12	UHMW Ring	1	1	1	1	1	1	1

## Chute Assembly Steps

Step	Before	After
<p><b>1. Place Ring</b></p> <p>Set the ring (12) down on the hood base.</p>		
<p><b>2. Place Chute</b></p> <p>Place the chute (10) directly on top of the ring (12).</p>		
<p><b>3. Bolt Chute</b></p> <p>Place the chute holders (5) on top of the chute slides (6) so that they attach the chute to the hood base. Make sure the chute slides (6) and chute holders (5) are aligned with the holes on the hood base. Start by bolting the chute stop piece (11) to the side facing opposite of the rotator. Use the 3/8-16 x 1 1/2 bolts or the 3/8-16 x 1 3/4 bolts (4) and the 3/8-16 nylon locknuts (7).</p>		
<p><b>4. Bolt Chute Stop</b></p> <p>Make sure the chute stop <i>bolt</i> is bolted on the opposite side of the chute stop <i>piece</i>. Use the 1/2 x 1 1/4" carriage bolt (1), 1/2" lockwashers (2) and 1/2" nylon locknut (3).</p>		

## Multi-Hinge Deflector Assembly:



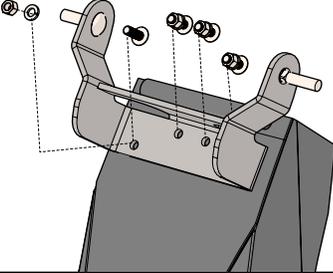
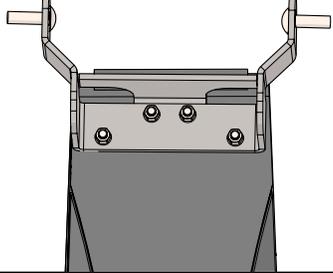
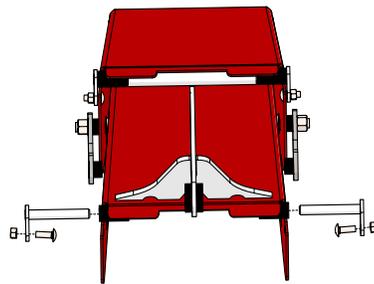
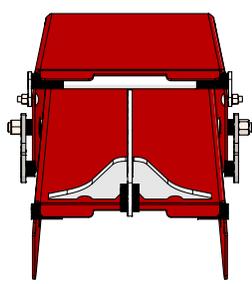
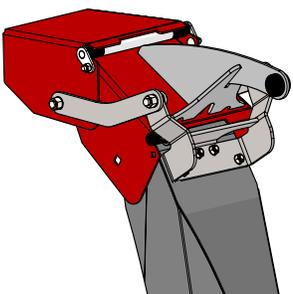
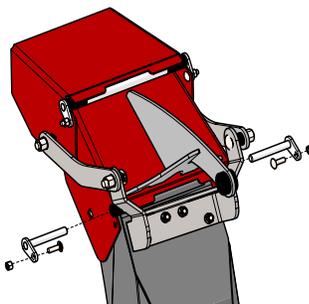
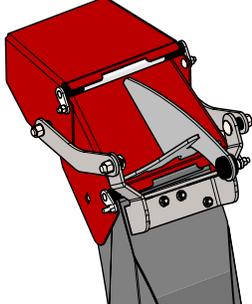
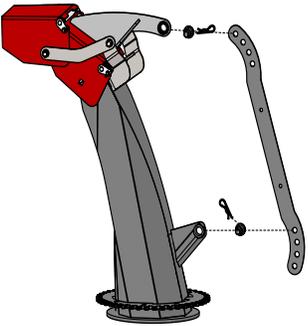
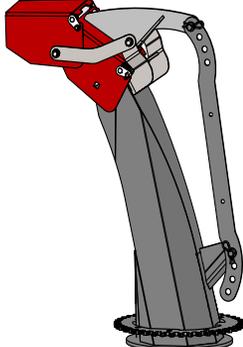
Item #	Description
1	1/2-13 Nylon Locknut
2	1/2 x 1 3/4 Carriage Bolt
3	Hinge Bracket Double Deflector
4	3/8 Regular Nut
5	3/8 Lockwasher
6	3/8 x 1 Truss Head Machine screw
7	First Deflector
8	Hinge Tie Plate
9	End Deflector
10	Hinge Pin
11	5/16-18 Nylon Locknut
12	5/16 x 1 Carriage Bolt Zinc



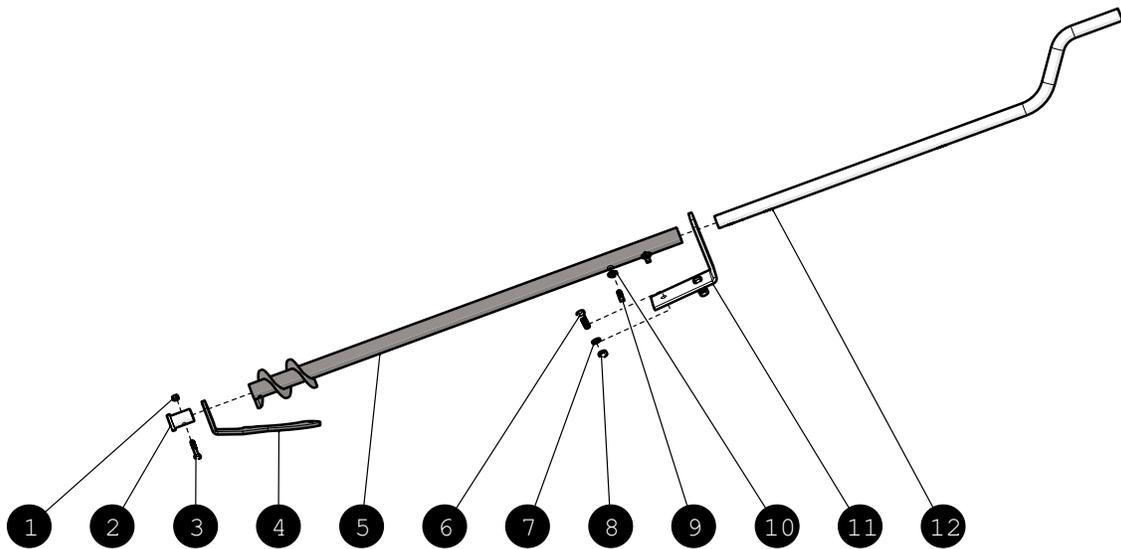
### NOTE

- The multi-hinge deflector is **standard** on models **SB68PT - SB97PT**.
- The multi-hinge deflector is **not available** for models **SB54PT - SB60PT**.

## Multi-Hinge Deflector Assembly Steps

Step	Before	After
<p><b>1. Bolt Bracket to Chute</b></p> <p>If the bracket is not already welded for you: bolt the bracket (3) to the chute using the 3/8 x 1 truss head machine screws (6), 3/8 lockwashers (5), and 3/8 locknuts (4).</p>		
<p><b>2. Remove Hinge Pins</b></p> <p>Remove the hinge pins (10) along with their 5/16 x 1 carriage bolts (12) and 5/16-18 nylon locknuts (11) from the end deflector (9).</p>		
<p><b>3. Place Multi-Hinge Deflector</b></p> <p>Slide the hinge tie pieces (8) that are connected to the end deflector (9) onto the bracket's welded bolts (2). Secure the hinge tie pieces (8) with the 12-13 nylon locknuts (1).</p>		
<p><b>4. Re-Insert Hinge Pins</b></p> <p>Re-insert the hinge pins (10) through the hinge tube and secure them with 5/16 x 1 carriage bolts (12) and 5/16-18 nylon locknuts (11).</p>		
<p><b>5. Re-attach Deflector</b></p> <p>Re-attach your manual or hydraulic deflector with its chute pins and hair pins.</p>		

## Manual Rotator Assembly:

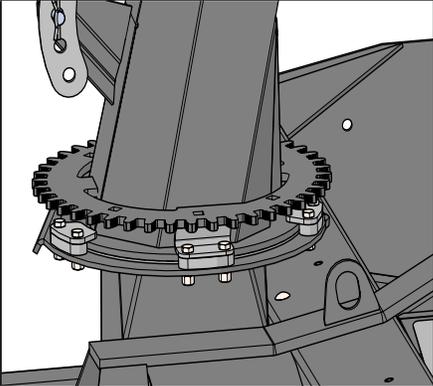
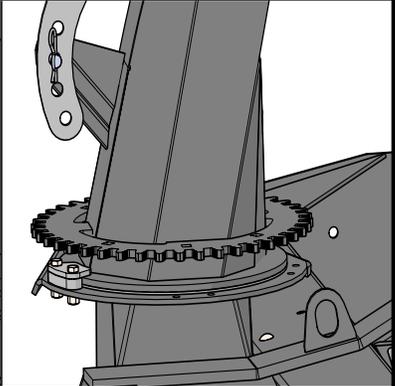
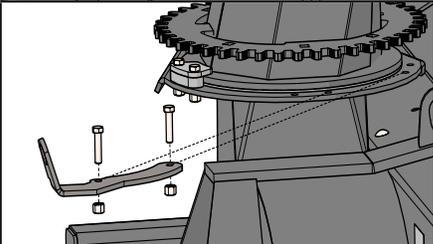
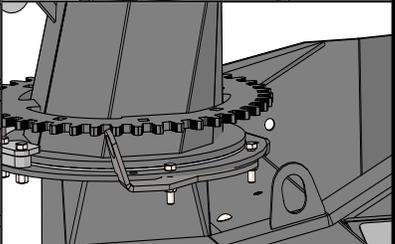
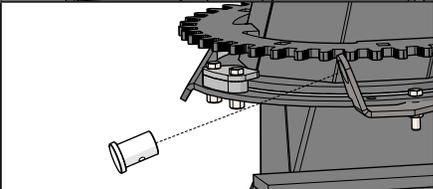
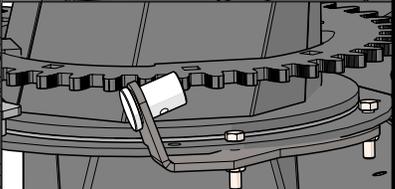
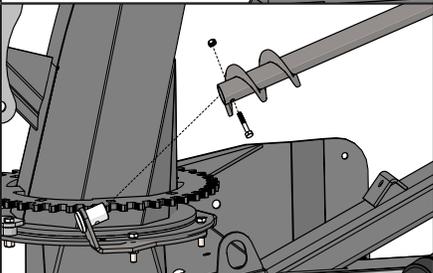
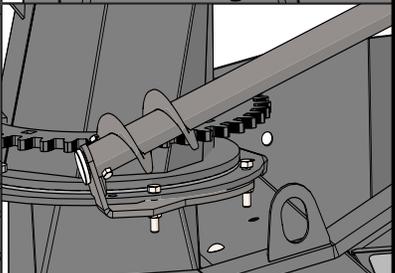
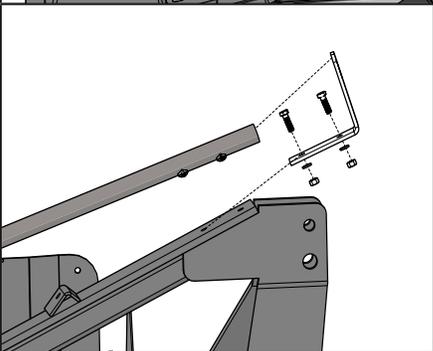
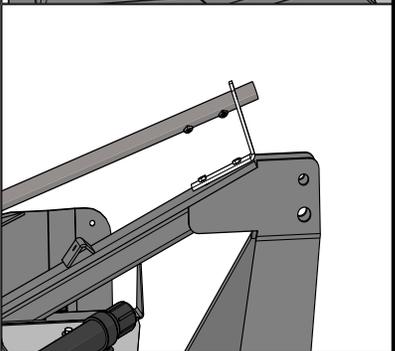
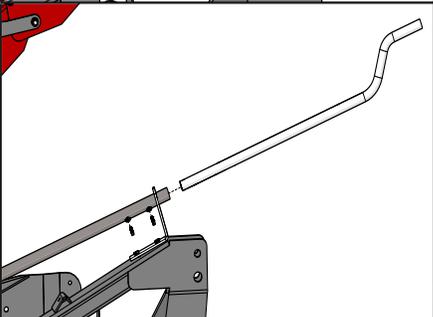
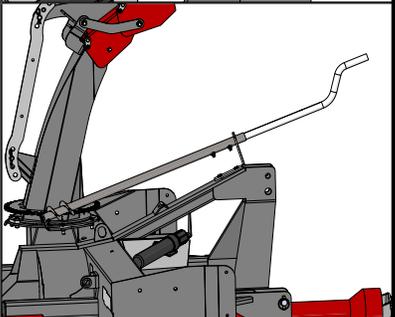


Item #	Description
1	5/6"-18 Locknut
2	Retainer Pin
3	1/4 x 1 1/2" Bolt
4	Crank Tail Bracket
5	Crank Worm
6	3/8 x 1 1/4" Bolt (54"- 78") 3/8 x 1 1/2" Bolt (87", 97")
7	3/8" Lockwasher
8	3/8"-16 Locknut
9	5/16 x 3/4 Sq Head Setscrew
10	5/16-18 Square Weld Nut
11	Upper Crank Bracket
12	Crank

### CAUTION

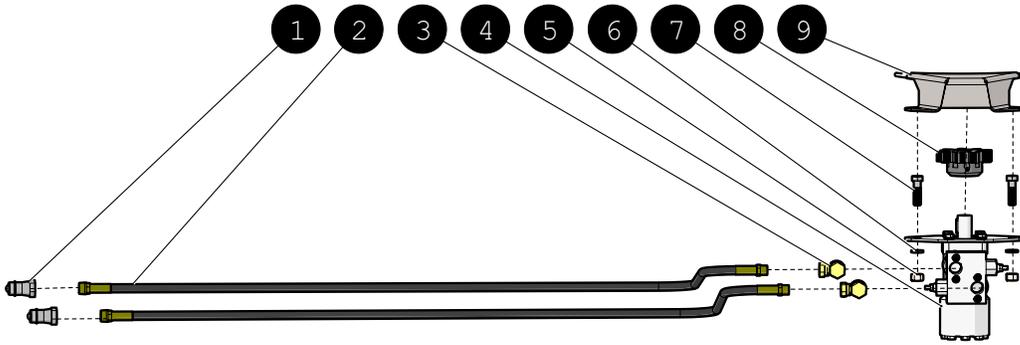
- When the blower is raised, the Manual Rotator will be closer to the tractor and could damage the cab or cause injury to the operator. Be mindful of the position of the rotator during assembly.

## Manual Rotator Assembly Steps

Step	Before	After
<p><b>1. Remove Bolts</b></p> <p>Remove the two chute slides, the chute stop piece, and chute holder along with their bolts and nuts as shown in the illustration. See <b>Chute Assembly</b> on p.29 as a reference for these parts. Keep the removed hardware close by to re-insert.</p>		
<p><b>2. Bolt Crank Tail Bracket</b></p> <p>Place the crank tail bracket (4) underneath the hood base so the holes are aligned. Re-insert the bolts with a washer and nut.</p>		
<p><b>3. Place Retainer Pin</b></p> <p>Insert the retainer pin (2) onto the slot on the crank tail bracket (4).</p>		
<p><b>4. Attach Crank Worm</b></p> <p>Slide the end of the crank worm (5) into the retainer pin (2). Secure the crank worm (5) with the 1/4 x 1 1/2" bolt (3) and 5/6"-18 locknut (1).</p>		
<p><b>5. Bolt Upper Crank Bracket</b></p> <p>Slide the upper crank bracket (11) onto the crank worm (5). Attach the upper crank bracket (11) to the top of the A-frame using the 3/8 x 1 1/4" or 3/8 x 1 1/2" bolts (6), with 3/8" lockwashers (7) and 3/8" locknuts (8).</p>		
<p><b>6. Attach Crank</b></p> <p>Slide the crank (12) into the crank worm (5) and secure it by screwing the 5/16" x 3/4 square head screws (9) into the welded 5/16"-18 square nuts (10).</p>		

## Hydraulic Rotator Assembly:

The hydraulic rotator uses a hydraulic motor, controlled by the tractor hydraulics to rotate the chute. Follow the instructions in the Hydraulic Rotator Assembly Steps table.

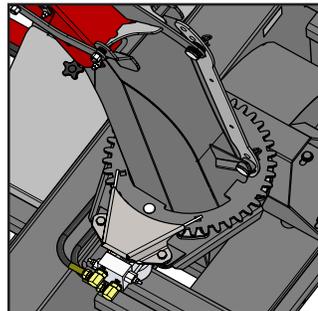


Item #	Description
1	Coupler
2	Hose
3	Elbow
4	Hydraulic Rotator
5	1/2"-20 Locknut
6	1/2" Lockwasher
7	1/2"-20 x 2 Bolt
8	Gear
9	Shield



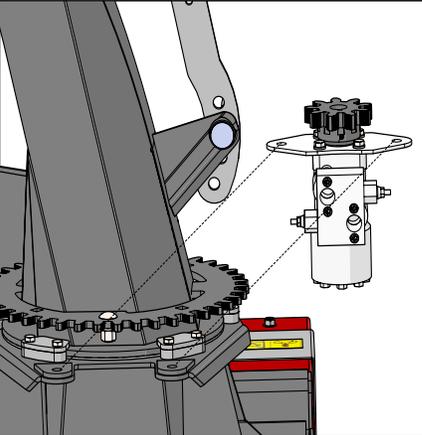
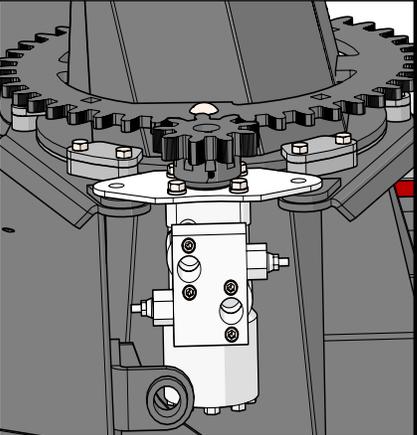
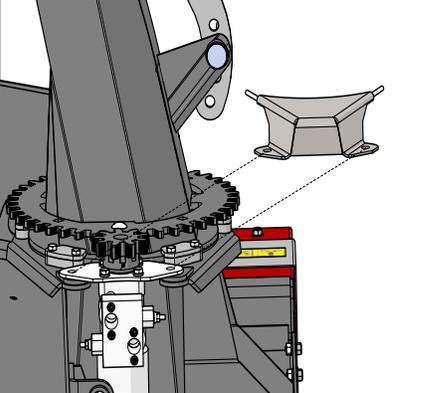
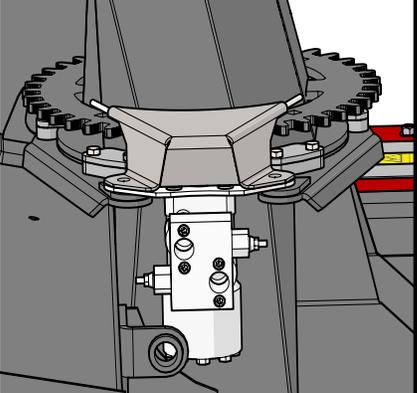
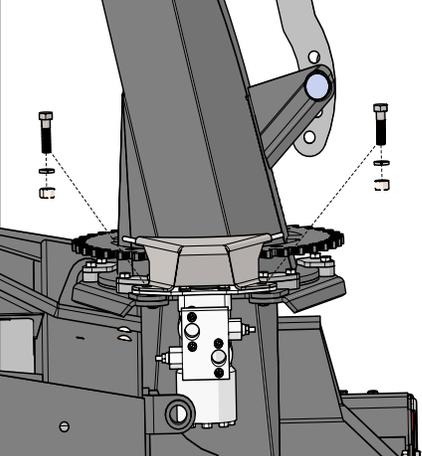
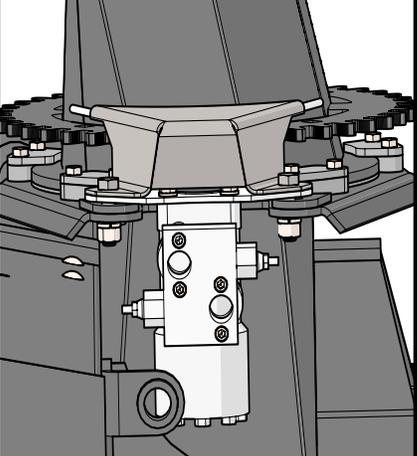
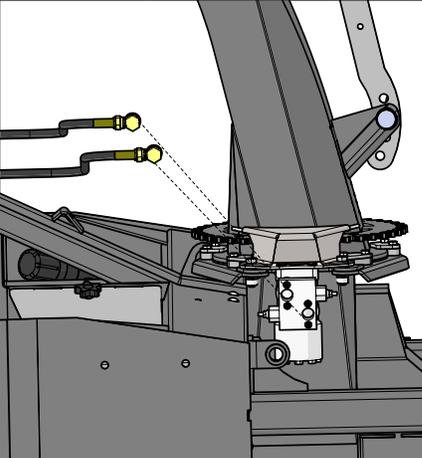
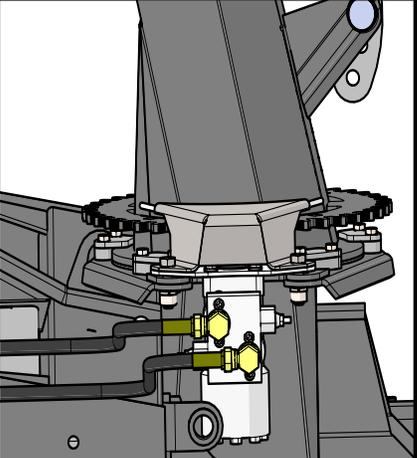
### TIP

- The hydraulic rotator's shield has rods that act as guides for the deflector. All shields are manufactured with the rods straight. However, rods may need to be bent in for smaller blowers and bent out for larger blowers.
- **To bend the rod:** use a short piece of 3/8 pipe for a lever, or an adjustable wrench to bend the rod. Do not use a hammer as it has less control of the bend. Keep the height of the rod the same, only bend it inwards or outwards.



- The rods should be slightly inside the root of the gear teeth as shown in the illustration above.

## Hydraulic Rotator Assembly Steps

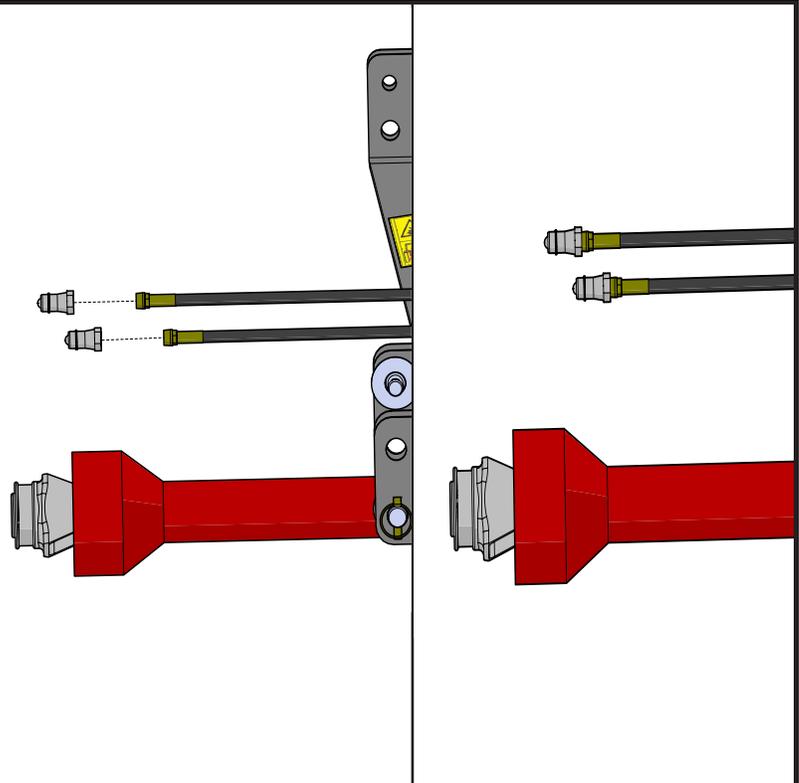
Step	Before	After
<p><b>1. Place Rotator</b></p> <p>Place the hydraulic rotator (4) so its holes line up with the holes on the hood base.</p>		
<p><b>2. Place Shield</b></p> <p>Place the shield (9) on top of the gear (8).</p>		
<p><b>3. Bolt Rotator</b></p> <p>Attach the hydraulic rotator (4) and shield (9) to the hood base using the 1/2"-20 x 2 bolts (7), 1/2" lockwashers (6) and 1/2"-20 locknuts (5).</p>		
<p><b>4. Attach Hoses to Rotator</b></p> <p>See <b>Hydraulic Safety</b> on p.15. When installing the hydraulic elbows (3), turn them "no more than 4 rounds", then tighten the jam-nut to secure the elbow in the direction you want it to go in.</p>		

## 5. Attach Couplers to Hoses

Route hoses away from moving parts. Attach the couplers (1) to end of both hoses (2). See **Attaching Hydraulic Hoses to 3PH tractor** on p.48. The relief valves are factory preset at 900 PSI.

**WARNING**

- Route and secure hoses so they do not come in contact with rotating chute, PTO, or get pinched in 3PH when operating. Ensure the hoses do not get too tight or rub on the frame when the blower is raised or lowered.



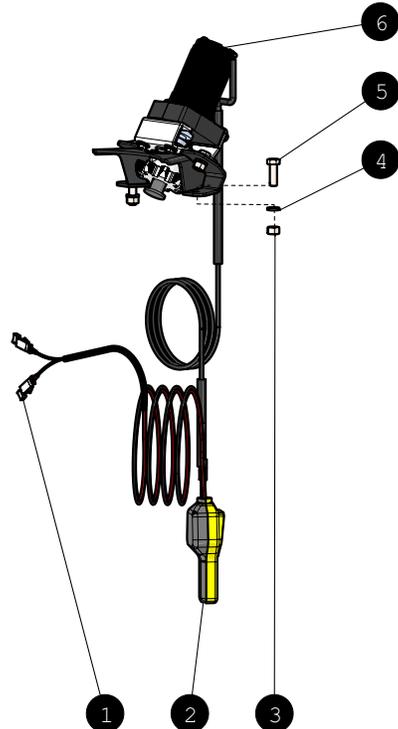
## Electric Rotator Assembly:

The electric rotator serves as an alternative to the hydraulic rotator. Minimal assembly is required.

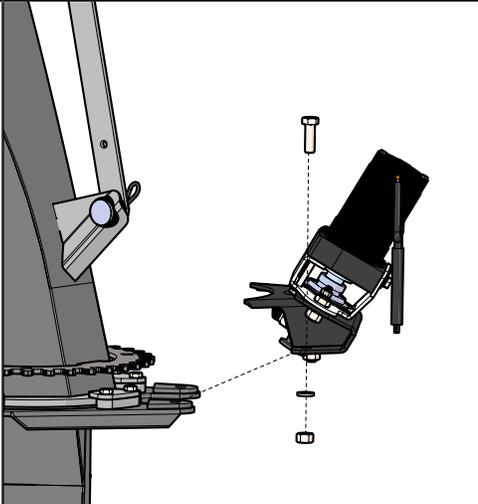
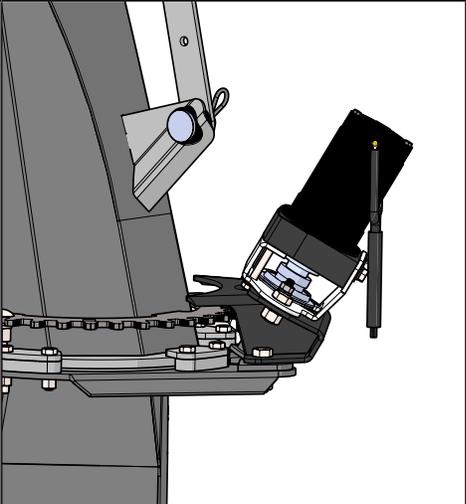
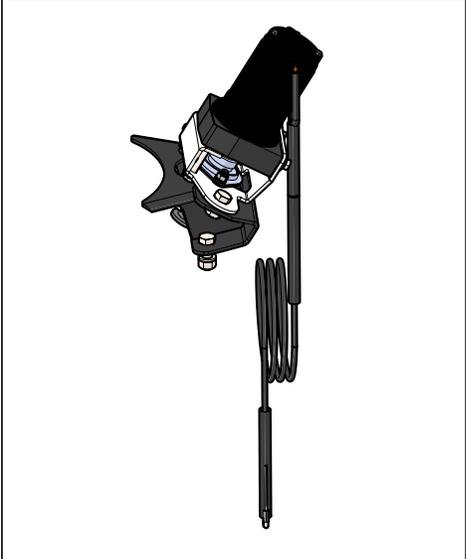
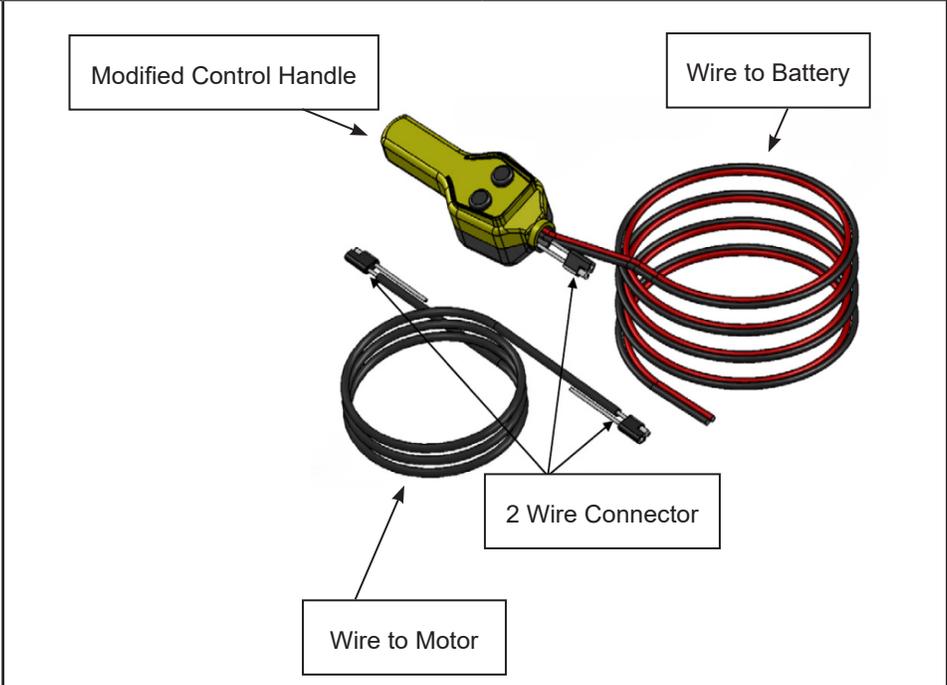
**WARNING**

- The electric rotator can be hooked up to a battery or a 12 Volt power source. If connecting to a 12 Volt power source, ensure it supports at least 15 AMP to prevent overheating and damaging equipment or creating a safety hazard.

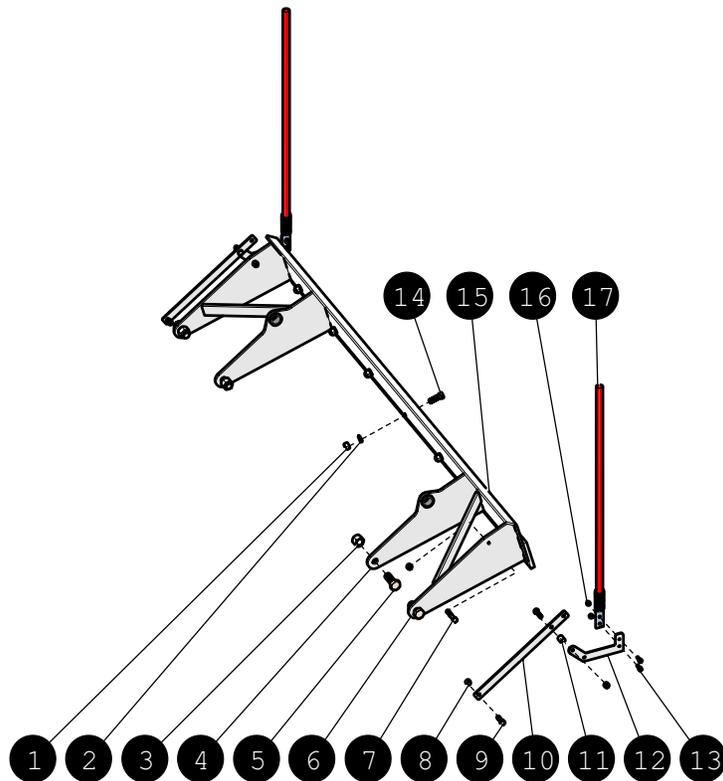
Item #	Description
1	Battery Clips
2	Controller
3	1/2"-13 Locknut
4	1/2" Lockwasher
5	1/2"-13 Bolt
6	Electric Rotator



## Electric Rotator Assembly Steps

Step	Before	After
<p><b>1. Bolt Rotator</b></p> <p>Place the rotator (6) onto the hood base. Secure with 1/2"-13 bolts (5), 1/2" lockwashers (4) and 1/2"-13 locknuts (3).</p>		
<p><b>2. Motor Wire to Connector</b></p> <p>Plug one end of the motor wire into the motor connector and secure the wire along the blower top brace.</p>		
<p><b>3. Motor Wire to Controller Handle</b></p> <p>Plug the other end of the motor wire into the control handle. To attach wire to battery, see <b><i>Attaching Electric Harness to 3PH Tractor</i></b> on p.49.</p>	 <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 5px;">Modified Control Handle</div> <div style="border: 1px solid black; padding: 2px 5px;">Wire to Battery</div> </div> <div style="display: flex; justify-content: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 5px;">2 Wire Connector</div> </div> <div style="display: flex; justify-content: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 5px;">Wire to Motor</div> </div>	

## Back Drag Assembly:



Item #1	Description
1	1/2"-13 Locknut
2	1/2" Lockwasher
3	3/4"-10 Nylon Locknut
4	Inner Plate
5	3/4" x 2 Bolt
6	Outer Plate
7	3/8" x 2 Bolt
8	3/8"-16 Nylon Locknut
9	3/8" x 1 1/4 Bolt
10	Parallel Link
11	Stand Off Marker Linkage
12	Marker Linkage
13	1/4"-20 Bolt
14	1/2" x 1 1/2 Bolt
15	Cutting Edge
16	1/4"-20 Nylon Locknut
17	Corner Marker

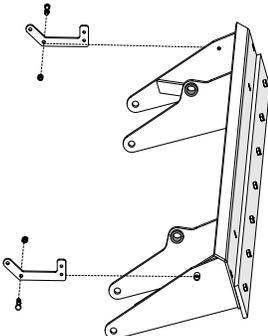
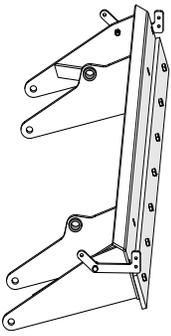
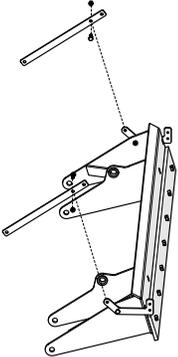
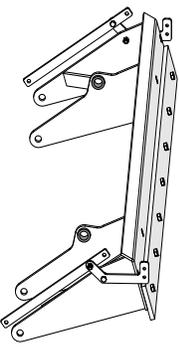
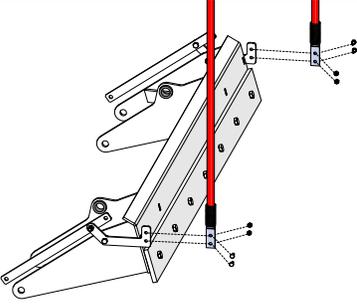
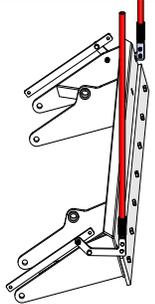
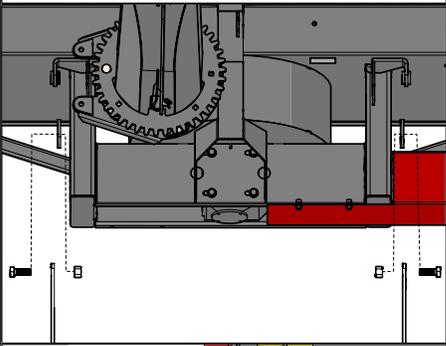
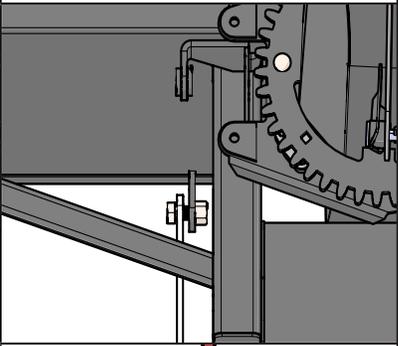
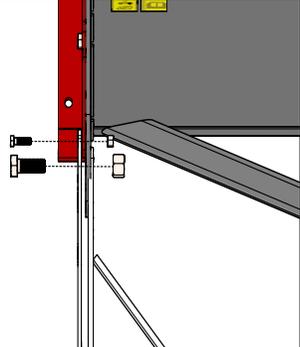
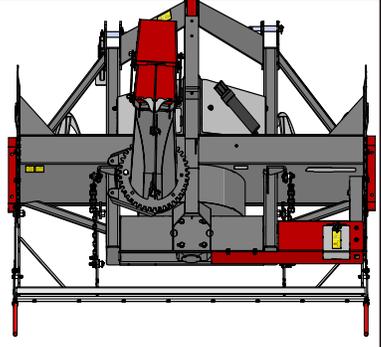


### WARNING

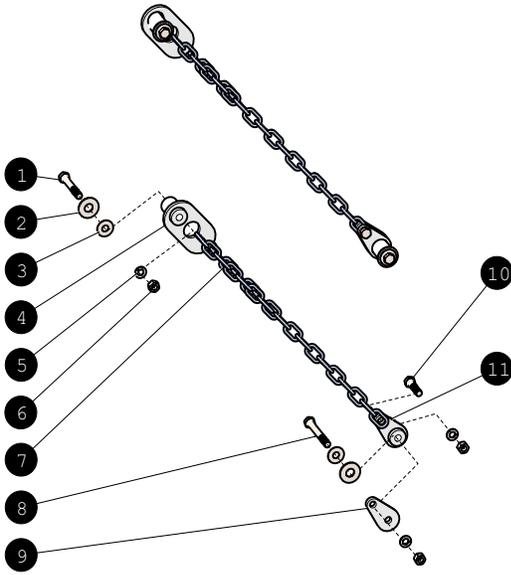
- Wear PPE and use heavy gloves when handling heavy or bulky equipment.



## Back Drag Assembly Steps

Step	Before	After
<p><b>1. Attach Marker Linkages</b></p> <p>Connect the marker linkage pieces (12)* to the outer plates (6) using the 3/8" x 1 1/4 bolts (9) and 3/8"-16 nylon locknuts (8).</p> <p>*Refer to the illustration and parts table on p.39.</p>		
<p><b>2. Attach Parallel Links</b></p> <p>Connect the parallel link pieces (10) to each of the marker linkage pieces (12) using the 3/8" x 1 1/4 bolts (9), stand off marker linkage (11), and 3/8"-16 nylon locknuts (8).</p>		
<p><b>3. Connect Corner Markers</b></p> <p>Connect the corner markers (17) to the marker linkages (12) using the 1/4"-20 bolts (13) and 1/4"-20 nylon locknuts (16).</p>		
<p><b>4. Bolt Inner Plates</b></p> <p>Connect the inner plates (4) of the back drag to the snowblower using the 3/4" x 2 bolts (5) and 3/4"-10 nylon locknuts (3).</p>		
<p><b>5. Bolt Outer Plates</b></p> <p>Connect the outer plates (6) of the back drag to the snowblower using the 3/4" x 2 bolts (5) and 3/4"-10 nylon locknuts (3).</p>		

## Back Drag Manual Lift Assembly:

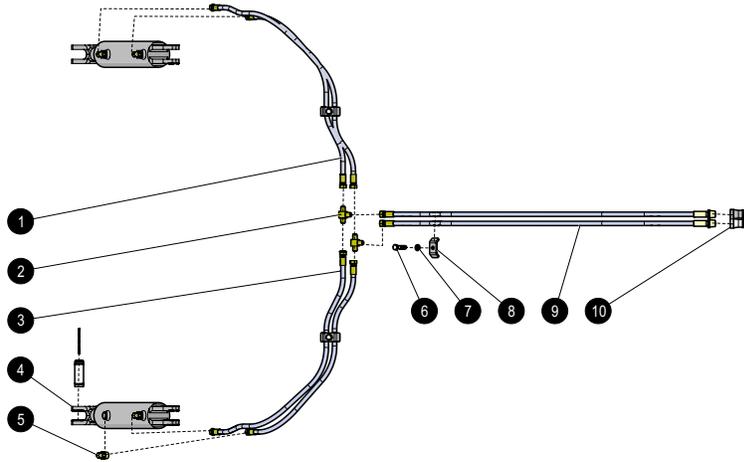


Item #	Description
1	3/8" x 2 1/2 Bolt
2	1/2" Flatwasher
3	3/8" Flatwasher
4	Upper Chain Mount
5	3/8" Lockwasher
6	3/8" Locknut
7	Drag Lift Chain
8	3/8" x 3 Bolt
9	Lower Chain Mount
10	3/8" x 1 1/2 Bolt
11	Lower Keeper Plate Chain Mount

### Back Drag Manual Lift Assembly Steps

Step	Before	After
<p><b>1. Attach Lower Chain Mounts to Snowblower</b></p> <p>Connect one chain at a time. Align the holes on the lower chain mount (9) with the lower keeper plate chain mount (11). Start by connecting the bottom of both chains to the snowblower using the 3/8" x 3 bolt (8), 3/8" flatwasher (3), 1/2" flatwasher (2), 3/8" lockwasher (5), and 3/8" locknut (6) on the bottom slot of the lower chain mount (9). Insert the 3/8" x 1 1/2 bolt (10), 3/8" lockwasher (5) and 3/8" locknut (6) through the top slot of the lower chain mount (9).</p>		
<p><b>2. Attach Upper Chain Mounts to Snowblower</b></p> <p>Adjust the chains to your preferred length for operation, and connect the upper chain mounts (4) to the snowblower using the 3/8" x 2 1/2 bolt (1), 1/2" flatwasher (2), 3/8" flatwasher (3), 3/8" lockwasher (5) and 3/8" locknut (6).</p>		

## Back Drag Hydraulic Lift Assembly:



### NOTE

- The hydraulic back drag is only available for models 68"- 97".

Item #	Description
1	Hose #1
2	3/8 JIC Tee
3	Hose #2
4	Hair Pin
5	Cylinder Pin
6	Hydraulic Cylinders
7	Elbow
8	3/8" Bolt
9	3/8 Lockwasher
10	Hose clamp short
11	Hose #3
12	Coupler

## Back Drag Hydraulic Lift Assembly Steps

Step	Before	After
<p><b>1. Attach Hydraulic Cylinders</b></p> <p>Attach the hydraulic cylinders (6) to the back drag and the snowblower using the cylinder pins (5) and hair pins (4).</p>		
<p><b>2. Attach Hoses</b></p> <p>See <b>Hydraulic Safety</b> on p.15. If not already attached, connect the hoses (1,3, and 11) to the hydraulic cylinders (6) using the elbows (7) and facing them in a direction that will keep hoses away from moving parts. Use the hose clamps (8, 9, 10) provided or zip ties to secure the hoses, and see <b>Attaching Hydraulic Hoses to 3PH Tractor</b> on p.48.</p>		

## Operation

This section describes how to operate your **Snowblower** and the procedures necessary to complete various tasks safely and efficiently. Not all situations will be addressed, proceed with caution and use the safety guidelines. Following the procedures below will help provide a safe working environment for the operator, bystanders, and anyone else on the work site.

The owner or operator has the responsibility of being familiar with the operation of the implement and must train all other operators before they start working with the machine.



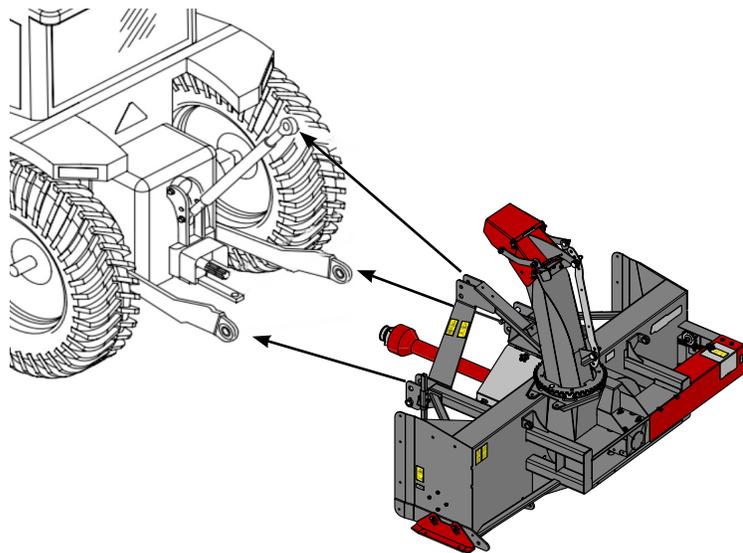
### DANGER

- *First time operators must read and completely understand the material in this manual before operating the **Pull Type Snowblower**, and review this manual at least once per season there after.*
- *Attaching the **Snowblower** will add extra weight to your power unit. It is necessary that a minimum 20% of tractor weight be put on the front wheels of your tractor to keep the machine balanced. If the tractor is unbalanced, there is a risk of tipping over, or losing steering control which could result in property damage, personal injury, or death.*



### Attaching Pull Type Snowblower to 3PH Tractor:

1. Back the tractor up to the **Snowblower** that is on level ground.
2. Line up the tractor's lift arms so that they are sitting between the **Snowblower's** A-frame.
3. Turn off the power unit before proceeding.
4. Fasten the lower 3PH link to the lower hitch mount.
5. Lengthen or shorten the top link until the link can be pinned onto the top hitch mount.
6. Insert the lift pins and use the lynch pins to secure the tractor's lift arms to your implement.



## Installing PTO Shaft:

Once the Snowblower's A-frame is secured to the tractor, you will be able to determine the length and angle of the PTO shaft. The length of the PTO shaft on the **Pull Type Snowblower** is standard to fit a variety of tractors. However, the instructions demonstrate how to adjust the length and angle of your PTO when needed. To install the PTO shaft correctly before beginning operations, follow the steps below in the following order:

- A. Check Length of PTO Shaft
- B. Alter Length of PTO Shaft (if needed)
- C. Alter Angle of PTO Shaft (if needed)
- D. Attach PTO Shaft
- E. Remove Park Stand



### NOTE

- Any malfunctions upon altering the length of the PTO shaft will not be covered under warranty. See a qualified professional or call **MK Martin** to replace broken parts or to perform service and maintenance on your PTO.



### DANGER

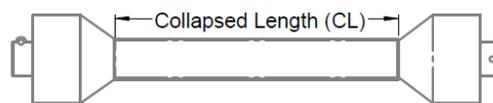


- Do not allow anyone to stand in between the snowblower and the tractor when securing the attachment. Doing so could result in damage to equipment, injury, and death.

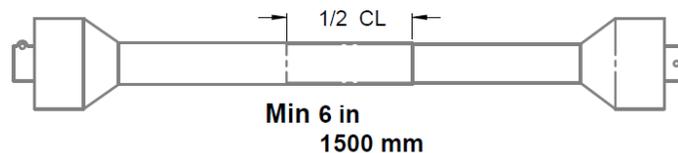
### A. Check Length of PTO Shaft:

The length of the PTO shaft located on the **Pull Type Snowblower** may be too short or too long depending on the type of tractor you are using. Only make alterations to the length of the PTO shaft if absolutely necessary.

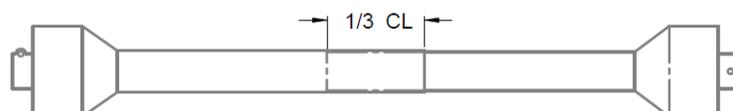
1. Raise or lower the equipment until the PTO out of the tractor is horizontal with the input shaft on the **Snowblower**.
2. Measure lock-pin groove to lock-pin groove or bolt hole and compare it with the measurement on the tractor. The difference between these two measurements needs to be cut from both halves of the PTO shaft plus  $\frac{1}{2}$ ".



Working Length overlap is 1/2 of above collapsed length



Minimum Overlap in Transport Position 1/3 of collapsed length



## B. Alter Length of PTO Shaft:

When altering the length of the PTO shaft, follow the checklist below:

PTO Checklist	<input checked="" type="checkbox"/>
Use a sharp hacksaw to cut the PTO Tube.	
Use a fine file to remove any sharp edges and burrs from sawing.	
Clean off all dirt and filings from tube, carefully test for smooth fit.	
Apply a light coat of grease to the outside of the small tube.	
Re-install the shields.	
Install on equipment and re-check.	

Telescopic tubes of PTO should overlap a minimum length to meet ideal conditions and transmitting power. The table below can be used as a guide to find maximum permissible length of PTO.

PTO Description	Over-all Length Closed	Over-all Length Opened Max	Telescopic Tube Overlap
T20-056P	29 3/4"	41"	5"
T40-056P	30 1/2"	40 1/2"	6"
T50-071P	36 1/2"	51 1/4"	7"
T60-071P	37 3/4"	51 1/4"	7"
T80-066P	36"	47 1/4"	7"
T80-076P	40 1/2"	53"	8"
T90-071P	39"	51"	8"

## C. Alter Angle of PTO Shaft:

PTO Shafts are made to transmit power with angle at universal joints. However, these angles should be kept at a minimum. Larger angles shorten the life of PTO. The table below shows the correlation between the angle and PTO lifespan using the example of a snowblower attached to a 60HP tractor operating at a maximum capacity (of 60HP continuous).

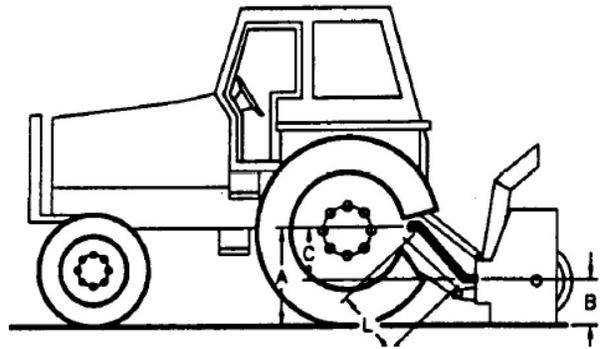
 **WARNING**

- *Tractor that is too large may overpower blower! It is dangerous to use a tractor that is too big or too powerful. The tractor will always be able to overload the blower even when it is at maximum capacity. If the tractor is too high or the angles are too large it will result in a shortened life span for the universal joints. Reference the angles in this section to ensure the longest lifespan for your PTO and safe and smooth operation.*

HP	PTO Angles	Estimated Life in Hours
60 @ 540 RPM	5°	450 hours
	10°	195 hours
	15°	90 hours
	20°	40 hours
	25°	20 hours

To *alter* the PTO angle, first you have to *determine* the PTO angle. Follow the steps below using the image and tables provided to determine the PTO angle.

1. Ensure the **Snowblower** is level with the ground.
2. Measure A, B and L.
3. Subtract B from A ( $A - B = C$ )
4. Divide L by C ( $L / C = F$ )
5. Compare F Factor in the table below to find the PTO angle (Interpolate if necessary).



Letter	Description
A	PTO height at tractor
B	PTO height at blower
C	A-B
L	Cross center distance in working position
F	F Factor

F Factor	Angle
6	10°
3.75	15°
2.75	20°
2.15	25°
1.75	30°

The lifespan of the PTO is directly related to the universal joint angle of the PTO. Reduce the angle as much as possible by increasing the distance between the tractor and the snowblower. See the images below that demonstrate examples of acceptable angles, and angles to avoid.

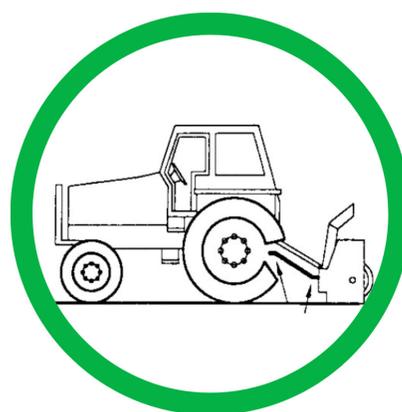


#### TIP

- *If impossible to increase the distance between tractor and snowblower: it is recommended to use a larger size PTO that is a greater capacity PTO. Contact your dealer for more details.*
- *For snowblowers of 100HP: an additional gearbox is available that can be mounted on the existing snowblower gearbox, which increases the input shaft height. This reduces the angle at PTO Joints. The additional gearbox has an input speed of 1000 RPM which greatly increases PTO capacity.*



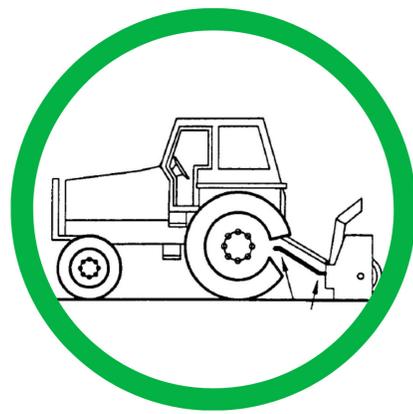
Avoid Large Angles at PTO Joints



Acceptable Angles at PTO Joints



Avoid Non-Equal Angles at PTO Joints



Acceptable Equal Angles at PTO Joints



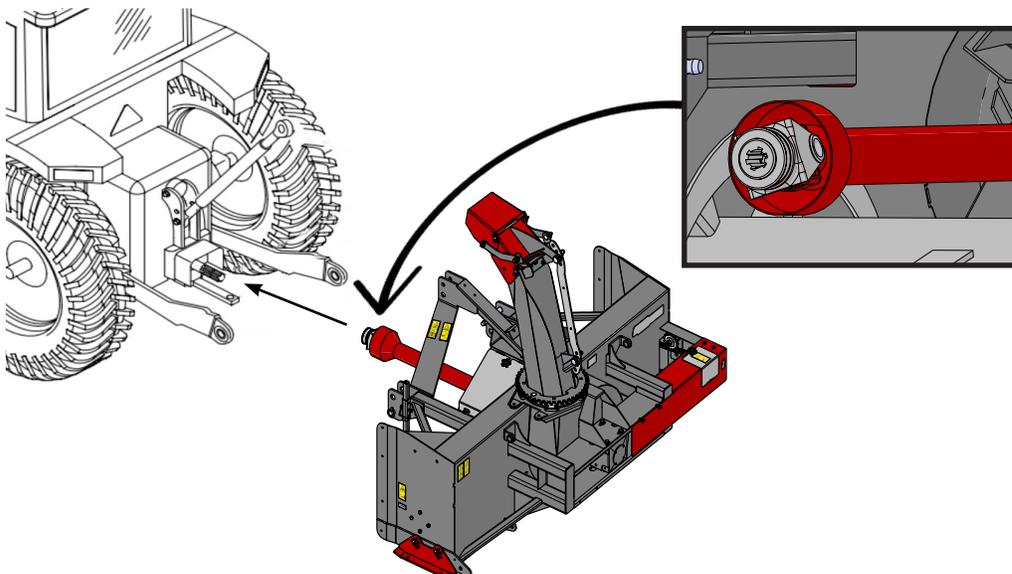
### WARNING

- *Do not change snowblower angle to obtain a scraping affect! Always keep the tractor PTO and snowblower input shaft parallel to one another. Changing the angle of the snowplow can cause damage to the implement. This practice can become harmful to the PTO if the angle is unequal at each end. It can cause a fan speed variation as well as a drastic increase of weight on the cross and bearings.*

#### D. Attach PTO Shaft:

Once the snowblower's A-frame is attached to the tractor and the length and angle are acceptable for operation, you can install the PTO shaft. Follow the steps below:

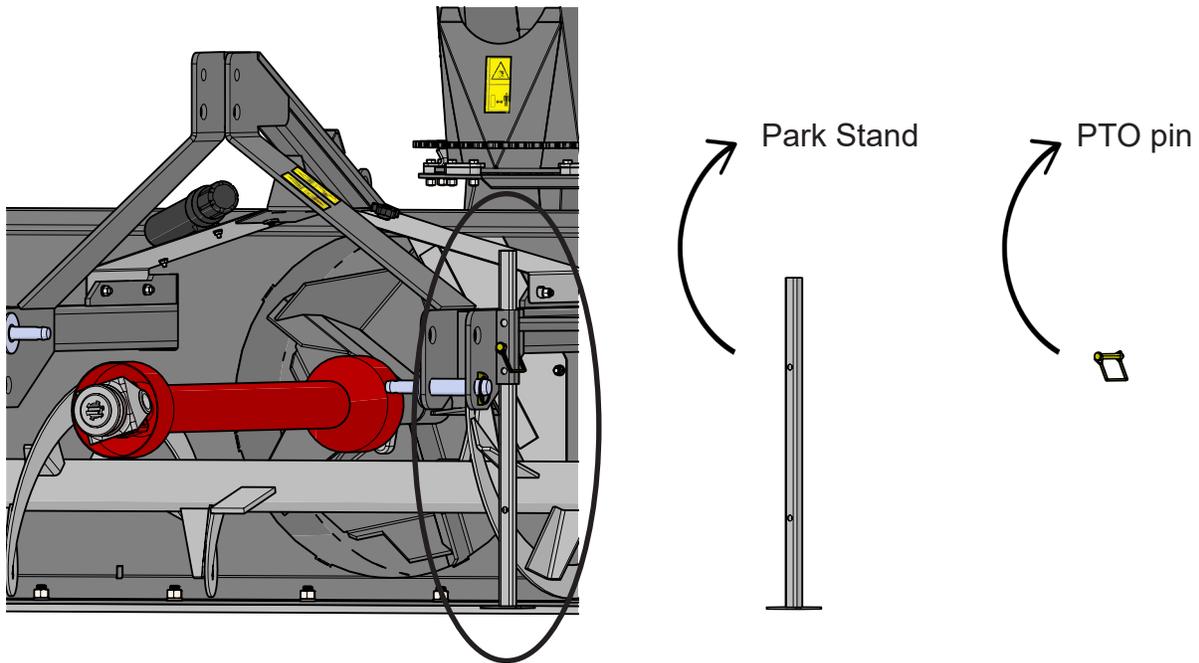
1. Ensure tractor is turned off and no parts are moving.
2. Line up the splines with the notches.
3. Push the locking button down.
4. Engage the shaft and the coupler.
5. Test the connection by pulling slightly on the shaft to ensure it is properly engaged.



## E. Remove Park Stand:

Once the snowblower is attached to the tractor, it no longer needs the park stand for support. Follow the steps below to remove the park stand before beginning operation:

1. Ensure tractor is turned off and no parts are moving.
2. Double-check the Snowblower is on ground level, the A-frame and PTO are both securely attached to the tractor.
3. Remove the PTO pin.
4. Remove the Park Stand.



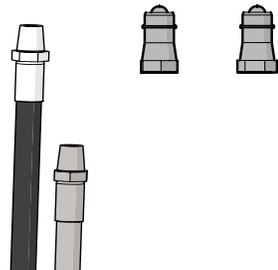
## Attaching Hydraulic Hoses to 3PH Tractor:

1. Make sure the couplers and fittings are free from debris.
2. Connect the hose ends to their corresponding couplers.
3. Attach the couplers to the tractor by pushing them into the corresponding ports until they lock. If you are unsure of which ports to attach the hoses too, refer to your power unit's operator's manual.
4. Avoid twisting or crossing the hoses. Doing so could interfere with the hydraulic pressure. The hoses should remain secured under the hose clamps on the **Snowblower**.
5. Use hose clamps or zip ties to secure the hoses to the **Snowblower** if there is extra length after attaching.
6. Once the hoses are securely attached, turn on your power unit and test the hydraulic system. If there are abnormal noises, excessive bulging or improper functioning, turn off the power unit immediately and **visually** inspect the attachments before repeating these steps.



### NOTE

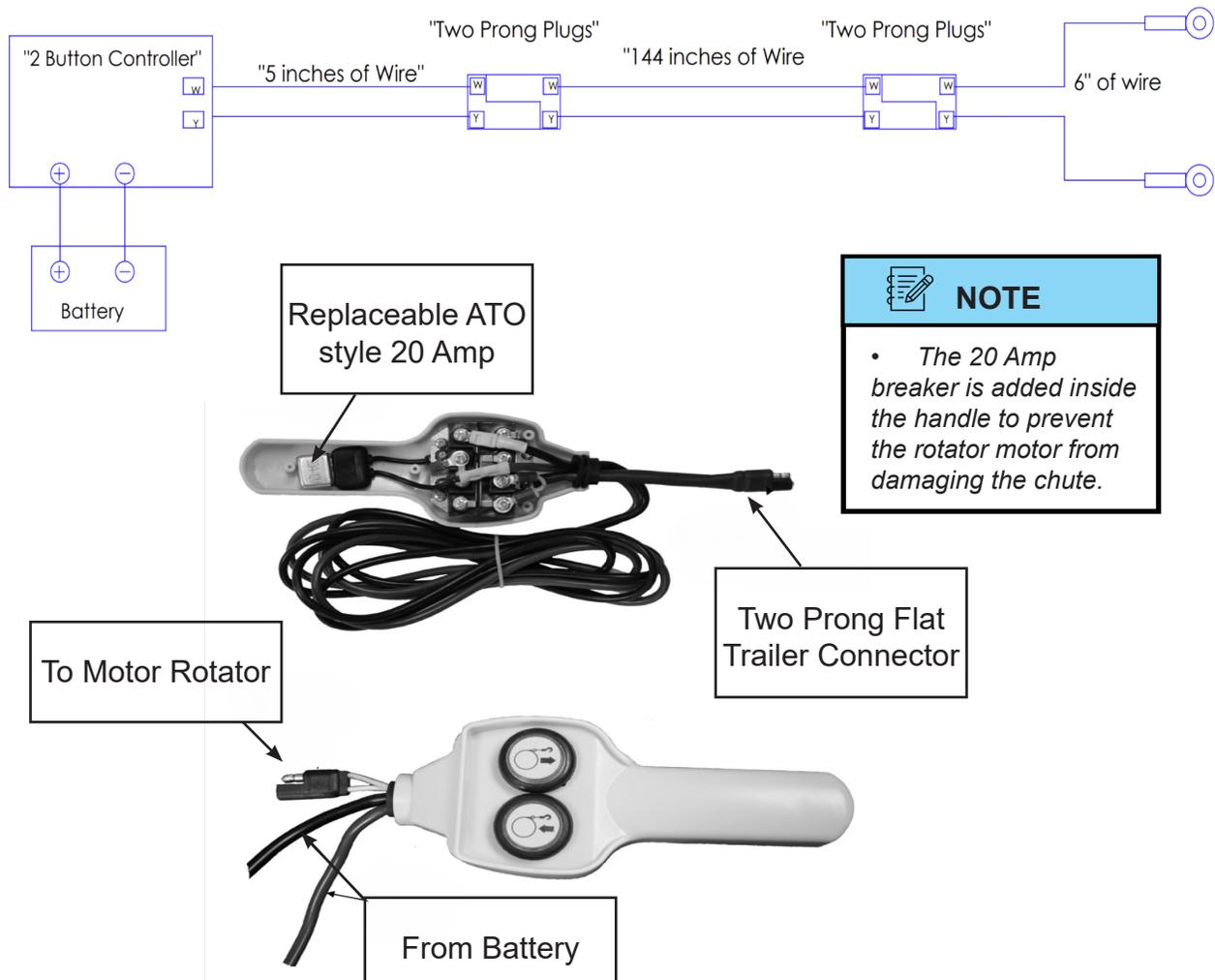
- *The following instructions only apply if you have purchased hydraulic options such as the hydraulic rotator and/or the hydraulic back drag.*



## Attaching Electric Harness to 3PH Tractor:

Once the electric rotator has been properly assembled (see p.37), follow the steps below to attach the battery clips to your tractor or 12V power source.

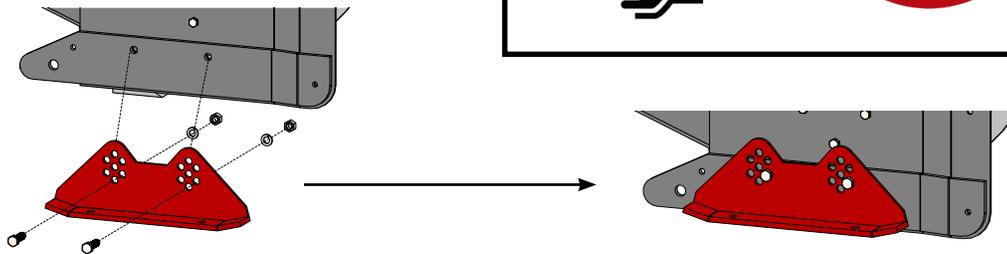
1. Ensure tractor is turned off and no parts are moving.
2. Refer to **page 5 in Superwinch® Owner's Guide** and note the **wire to the battery connection**. The in-line breaker is to protect the primary wires and the handle circuit. We have added an additional breaker inside the handle to limit the power to the motor. This should be trouble free and need minimal attention.
3. Refer to schematic below to ensure all parts of controller assembly are securely connected.
4. When safe to do so, attach the battery clips to your tractor or 12V power source.
5. Use zip-ties or hose clamps to keep wires from getting entangled with moving parts and to secure the Control Handle in a convenient location for when you begin operating your **Pull Type Snowblower**.
6. Use the control handle to test the chute rotation once assembly is complete. Pressing a button on the handle will cause the motor to turn in one direction, pressing the other button will reverse the rotation. To switch the orientation of the buttons, reverse the leads on the motor rather than the battery connections.



## Adjusting Skid Shoes:

The skid shoes on the **Pull Type Snowblower** are designed with several slots so that you can manually adjust the height and angle of your skid shoes. Adjust one skid shoe at a time by following the steps below:

1. Ensure tractor is turned off and no parts are moving.
2. The **Snowblower** is blocked up, the A-frame and PTO are both securely attached to the tractor.
3. Remove 1/2-13 x 1 3/4 Bolts, 1/2" Lockwashers and 1/2-13 Locknuts.
4. Adjust skid shoes.
5. Re-insert bolts, washers and nuts.



**DANGER**

- **Do not** begin adjustments to the implement until it has been securely attached to the power unit, and the unit is turned off.
- **Never** go under the machine to make adjustments. **Never** take the risk of placing yourself beneath a hydraulic system. The cutting edges are heavy and sharp, use heavy gloves to avoid injury.



Condition	Adjustment	Skid Shoe
<b>Ground is Level</b>	Bolt the skid shoes in the center holes on both sides.	
<b>Light Snow (gravel, soil or rocky pathways)</b>	Move skid shoes down so the cutting edge is further away from the ground. This will help avoid hitting objects or getting material other than snow in the auger, fan or chute.	
<b>Light Snow (paved or cement pathways)</b>	Move skid shoes up so cutting edge is lower to the ground. The cutting edge will completely clear the surface from snow and ice.	
<b>Heavy Wet/ Packed Snow</b>	Move skid shoes down so cutting edge is higher from the ground. This will avoid overloading the snowblower and slowing you down. Go over a section several times, re-adjusting skid shoes if needed.	
<b>Ice or Frozen Snow</b>	Move up skid shoes so the cutting edge can make contact with the ground and scrape the hard ice and snow.	

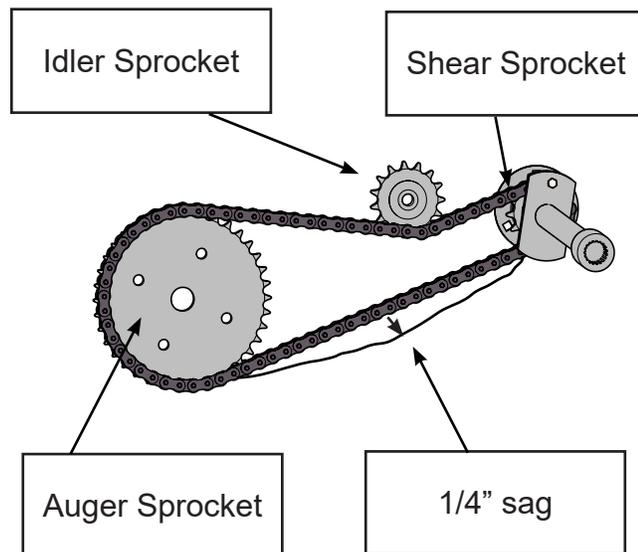
## Adjusting Chain Tension:

The drive chain should be adjusted during inspection to check for wear and tension, and to allow a **1/4" sag** in the bottom span of the chain between the shear and auger sprocket. Follow these steps to adjust chain tension:

1. Follow **Stop Operating Checklist** on p.53.
2. Remove the auger drive shield, set shield, and hardware in a safe place.
3. Loosen idler gear bolt and push down on idler sprocket until movement in the middle of the bottom span of chain has 1/4" sag.
4. Hold sprocket in this position and tighten bolt to the correct torque.
5. Reattach auger drive shield. Make sure bolts are tightened to the correct torque.

 **IMPORTANT**

- Do not over tension drive chain. A tight drive chain will overload drive shaft auger shaft, and bearings, and accelerate chain and sprocket wear.

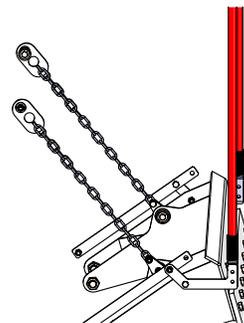
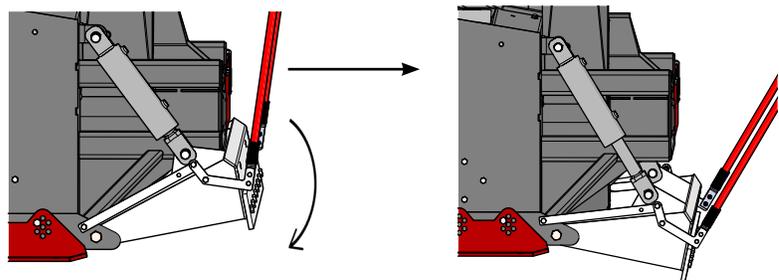


## Adjusting Back Drag:

The hydraulic back drag can be adjusted using the hydraulic controls in your power unit to raise and lower the attachment.

For a back drag with manual lift, follow the steps below:

1. Ensure tractor is turned off and no parts are moving.
2. The **Snowblower** is blocked up, the A-frame and PTO are both securely attached to the tractor.
3. Tighten or loosen the chains to adjust the height of the back drag.



## Best Practices:

The **Pull Type Snowblower** is intended to clear light or packed snow from the surface. Unintended use risks damaging your implement. Review **Intended Use** on p.3. The following procedures explain how to safely operate your **Snowblower** when completing specific tasks and how to avoid damaging your machine.

## Before Operating:

Before operating your snowblower, it is important to test your equipment. Follow the Pre-Operation Checklist below.

Pre-Operation Checklist	<input checked="" type="checkbox"/>
<b>Inspection Checklist</b> is complete. See p.26.	<input type="checkbox"/>
Review <b>Work Area Safety</b> on p.9.	<input type="checkbox"/>
Review <b>Operation safety</b> on p.11.	<input type="checkbox"/>
Carefully raise and lower the snowblower, noting any pinch, stretch or kink points in the hydraulic hoses or electric harness.	<input type="checkbox"/>
Adjust any strained or loose hoses and/or wires.	<input type="checkbox"/>
Test chute rotator.	<input type="checkbox"/>
Test chute deflector.	<input type="checkbox"/>
Adjust PTO angle. See p.45 - 47.	<input type="checkbox"/>

## Begin Operation:

Follow the steps below to operate your **Pull Type Snowblower**.

1. Engage the PTO and slowly bring the blower up to operating speed.
2. Adjust the chute deflector so the snow is going in the direction you want it to go.
3. Select a slow forward gear and start driving forward.
4. Adjust the chute rotator as you operate your snowblower so that the snow is always pointing in the direction you want it to go.
5. Pick up speed when certain the PTO angle and level of the **Snowblower** are set for the job at hand.

**TIP**

- *Adjust the chute rotator and deflector so the snow is going the same direction as the wind.*

**DANGER**

- *Objects thrown from snowblower at high speeds can cause property damage, injury and death! Keep distance from machine, and keep deflector pointing away from yourself and others. Be aware of bystanders.*

## Gravel Driveways:

For gravel driveways it is important to remain cautious during operation. If your **Snowblower** is too close to the ground, there is a risk of the auger picking up loose gravel instead of snow which could damage the equipment and become a safety hazard.

### To avoid picking up loose gravel:

1. Drive slowly to assess the operation and ensure only snow is being caught by the auger and thrown through the chute.
2. Adjust the skid shoes to raise the blower above the gravel. See **Adjusting Skid Shoes** on p.50.

 **WARNING**

- *Sudden impact from obstacles hidden under the snow may cause injury or damage to your implement. Mark objects that cannot be removed before operating and clear debris from work area.*



## Paved Driveways:

1. Drive slowly to ensure snowblower is properly leveled.
2. If you purchased the back drag option: adjust your back drag so it is lower to the ground to remove ice and snow directly from the surface. See **Adjusting Back Drag** on p.51.

 **NOTE**

- *The back drag option is ideal for paved driveways. The cutting edge can scrape away any ice from beneath the snow.*

## Stop Operating:

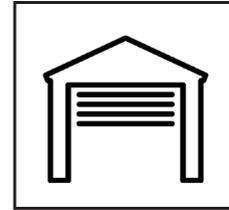
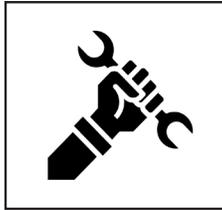
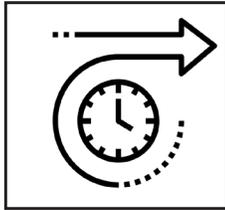
When stopping your operation, follow the checklist below.

Stop Operation Checklist	<input checked="" type="checkbox"/>
Lower any raised hydraulic equipment.	<input type="checkbox"/>
Disengage the PTO to stop the blower.	<input type="checkbox"/>
Place tractor in park on a flat surface and turn off the engine.	<input type="checkbox"/>
Remove switch key, wait approximately 5 minutes for machine to cool down.	<input type="checkbox"/>
Do not exit the tractor until all moving parts have come to a complete stop.	<input type="checkbox"/>

## Storage

After the season's use or when the machine will not be used for a period of time, completely inspect all parts of the **Snowblower**. Replace or repair any damaged components to prevent any unnecessary down time at the beginning of the next season.

Your implement is an important investment. Spending some time to protect it from rust and corrosion will result in a safer, longer service life and better performance.



Storage Checklist	<input checked="" type="checkbox"/>
Review section <b>Storage Safety</b> on p. 15.	
Carefully remove any excess snow that may be clogging the <b>Snowblower</b> .	
Remove all remaining materials from around the machine.	
Check the cutting edge and plow bolts for wear and follow the replacement instructions under <b>Replacing Cutting Edge</b> on p. 56.	
Inspect the <b>Snowblower</b> for any loose, worn, or damaged parts. Tighten and replace as necessary.	
Sand down scratches and the edges of areas that are missing paint.	
Repaint any chipped or scraped areas to prevent rust and corrosion.	
Replace any safety decals that are missing or not readable. See section <b>Safety Labels</b> on p. 16.	
Guard any sharp corners.	
Ensure all pins, latches, and locks are secure.	
Store your implement on a level surface, in a clean and dry area. If that is not possible, cover your <b>Snowblower</b> with a waterproof tarpaulin and tie it down securely.	
Block the implement to prevent any unwanted movement.	
Service all grease and lubrication points. See p. 57.	
Ensure hydraulic hose ends are covered to prevent contamination.	

**CAUTION**

- Use caution when spraying near the edges of safety decals or spraying near torn or damaged safety decals as water-spray could peel them off.



## Service & Maintenance

Good maintenance is your responsibility. To keep your **Snowblower** in good condition, we suggest carefully following a service and maintenance program.

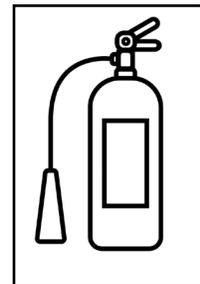
Review the maintenance checklist before beginning any service or maintenance on your **Pull Type Snowblower**.



Maintenance Checklist	<input checked="" type="checkbox"/>
Review section <b>Maintenance Safety</b> on p.14.	
Release hydraulic pressure before doing any maintenance.	
Keep service area clean and dry.	
Use adequate light for the job at hand.	
All electrical outlets and tools are properly grounded.	
All rotating parts including the drive shaft, auger and fan are at a complete stop.	
<u>Never work under equipment</u> unless it is blocked up securely to prevent any movement.	
A fire extinguisher and first aid kit are readily accessible.	
Parts replacement <b>should only be performed by qualified personnel</b> to ensure safe and complete installation.	
Always use PPE such as eye, hand, foot, and hearing protectors.	
Use heavy gloves when handling heavy or sharp components.	
The power unit is turned off prior to beginning any service, cleaning, lubrication or maintenance on your implement.	
The hydraulic system, hoses and couplings are free of debris and leaks.	
Hoses that are rubbing, pinched or crimped have been re-routed.	
All nuts, bolts, and screws have been torqued according to the <b>Bolt Torque Chart</b> on p.62.	

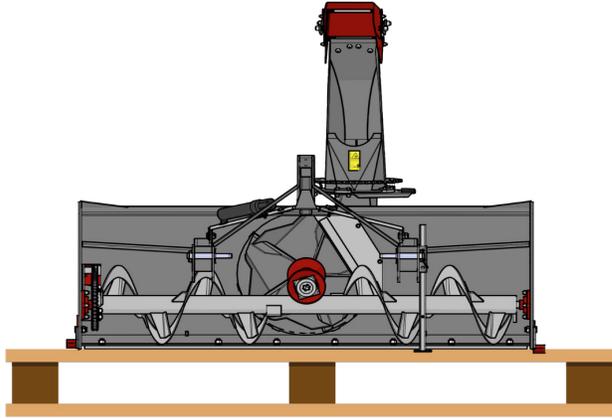
### ! WARNING

- The service & maintenance instructions are only to be followed by qualified personnel.



## Blocking up Pull Type Snowblower:

1. Place two 6" x 6" blocks under each side of the **Snowblower** or a large enough skid.
2. Lower the **Snowblower** until it is securely placed on the blocks to stop movement.



### NOTE

- To service the **Snowblower** while it is attached to the power unit, it must be blocked up off the ground. Do not block higher than needed.



### DANGER

- When adjusting or replacing parts, do not place yourself or other persons or any part of your body under a raised **Snowblower**!

## Replacing Cutting Edge:

Follow the steps below to remove and replace cutting edge. Only replace cutting edge when both the top and bottom are worn out. Block up your implement before beginning, and use the parts pages as a reference.

1. Block up Snowblower.
2. Remove 5/8" x 1 3/4 plow bolts, 5/8" spring tension washers and 5/8"-11 locknuts.
3. Replace the cutting edge.
4. Re-insert bolts, washers and nuts.



### WARNING

- Cutting edge is heavy! Handle with care and use heavy gloves!



## Reversing & Replacing Skid Shoes:

Overtime the front of the skid shoes may wear down. When the front of both skid shoes have lost 1/2 of their metal thickness, they need to be reversed or replaced to perform properly and to avoid damaging the frame of your **Snowblower**. If the front of the skid shoes are worn down and the backs are in good condition, follow the steps below to reverse them. Ensure the **Snowblower** is blocked up to prevent movement.

1. Block up Snowblower, and remove one skid shoe at a time.
2. Remove 1/2" x 1 1/2 bolts, 1/2" lockwashers and 1/2"-13 locknuts.
3. Reverse the skid shoes by switching them to opposite sides of the snowblower (ensuring they are both still on the outside). If worn, replace the skid shoes.
4. Re-insert bolts, washers and nuts.

## Hydraulic Oil:

Hydraulic oil is an important part of your **Snowblower**. Monitoring your hydraulic oil will prevent hydraulic failures and result in long-lasting equipment with good performance. Hydraulic oil level in the power unit should be checked daily, and the quality of the oil should be inspected every 50 hours. If the oil is dirty or smells burnt, it should be replaced. Be sure to relieve the system of pressure before performing and service to the hydraulic system.



### WARNING

- *Be aware that hydraulic leaks could develop without warning. Do not check for leaks with your hands or fingers while the system is pressurized.*



### WARNING

- *Personal injury can result from hydraulic oil pressure and hot oil. Hydraulic oil pressure can remain in the hydraulic system after the engine has been stopped. Serious injury can be caused if this pressure is not released before any service is done on the hydraulic system. Make sure all of the attachments have been lowered and the oil is cool before removing any components or lines. All hydraulic parts replacement should be performed by qualified personnel.*

## Lubrication:

To keep your **Pull Type Snowblower** in good condition, there are several areas that need to be lubricated on a regular basis and before entering storage. Use the legend below to determine lubrication spots and the type of lubrication required.

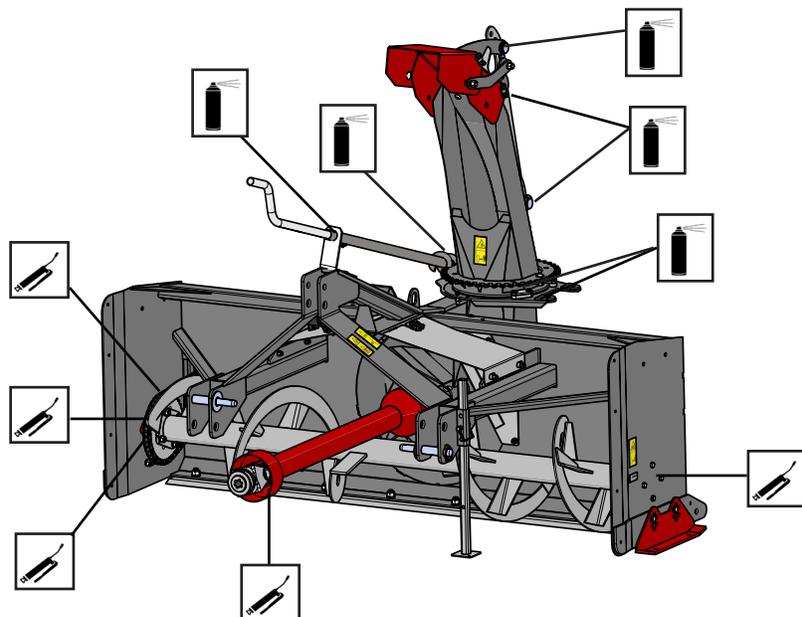


### CAUTION

- *Unusual play or noise could be an indication of worn parts. Inspect components before each use. Parts replacement should be done only by qualified personnel.*

### Lubrication Legend

	Multi-Purpose Spray Lube
	Multi-Purpose Oil Lube
	Multi-Purpose Grease Lube
	Intervals at which lubrication is required



**Grease:**

To prevent premature wear, use the table and images below that indicate which parts require grease lubrication at which frequency. Follow the Grease Lubrication Checklist.

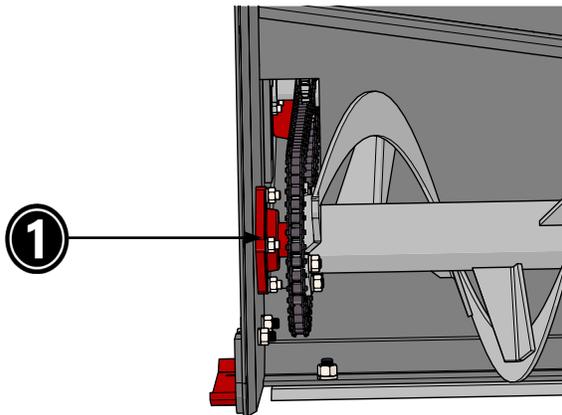
Item #	Part	Frequency (hrs)
1	Shear Sprocket Bearings (x2)	20
2	Shield Bearings	8
3	Cross Bearings	8
4	Telescopic Tubes	16

**! WARNING**

- Do not run the machine without the guard in place. The sprockets and chain are in motion and serious injury could result. Possible entanglement and amputation hazard.



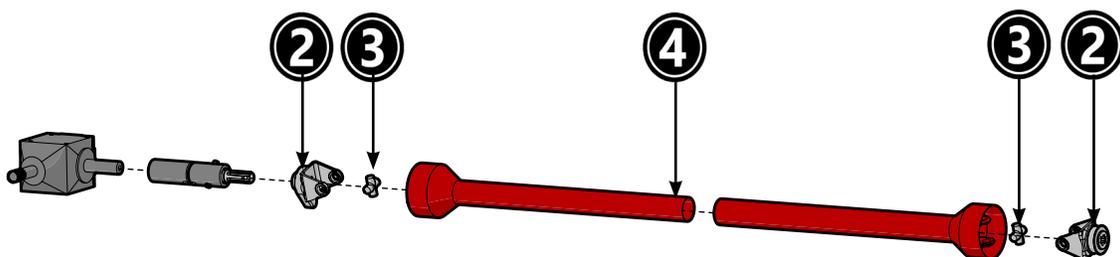
Grease Lubrication Checklist		<input checked="" type="checkbox"/>
Lubricate with a good Lithium EP2 grease or equivalent.		
Use hand-held grease gun for all greasing. One shot of grease is adequate.		
Wipe grease zerk with a clean cloth before greasing, to avoid injecting dirt and grit.		
Replace any broken zerk fittings immediately.		
If grease zerk will not take grease, remove and clean thoroughly. Also clean lubricant passageway.		
Replace zerk fittings if necessary.		



**! CAUTION**

- Do not over-grease parts, damage to bearing seals may result.





## Oil Spray:

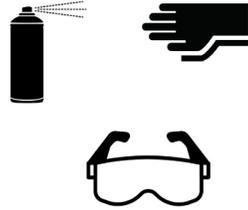
To ensure freedom of movement and prevent corrosion, use the table and images below that indicate which parts require oil lubrication at which frequency. Follow the Oil Lubrication Checklist.

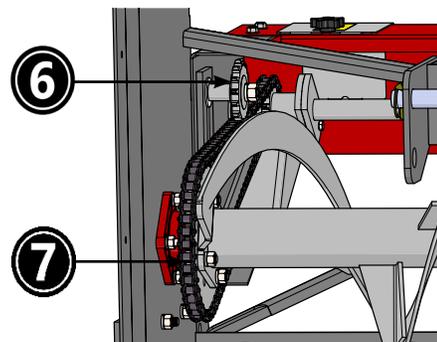
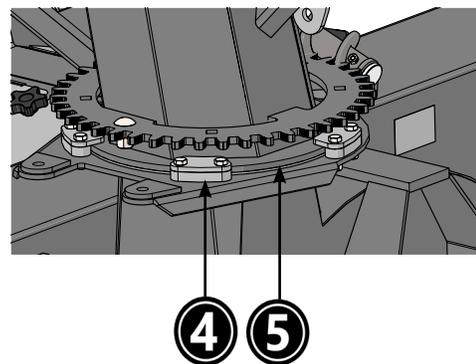
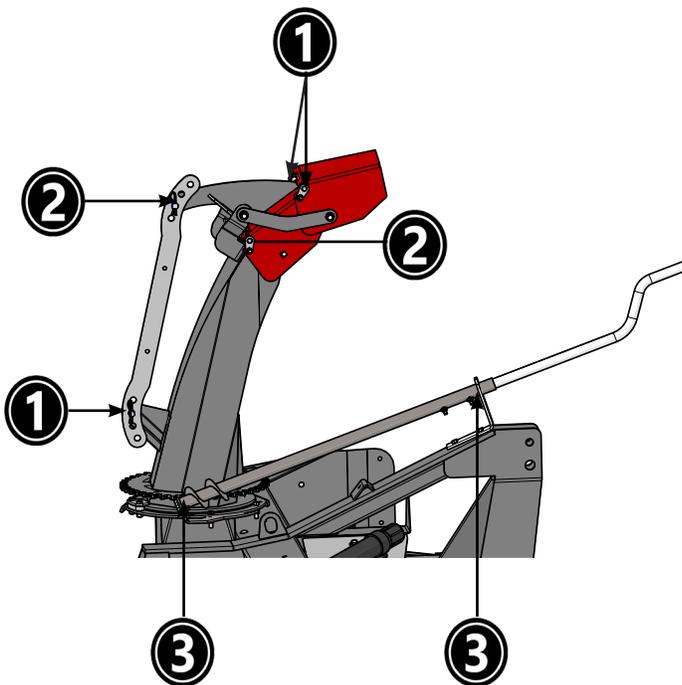
Item #	Part	Frequency (hrs)
1	Chute Deflector Handle (x2)	50
2	Chute Deflector (x2)	50
3	Manual Rotator (x2)	50
4	Chute Slides (x5 or x7)	50
5	UHMW Ring	50
6	Chain Tension Adjuster	50 (or after every use)
7	Drive Chain	50 (or after every use)

Oil Lubrication Checklist	<input checked="" type="checkbox"/>
Use a light oil or lubricating spray.	
Avoid contact with eyes. Wash off any oil that makes contact with skin or eyes immediately.	
Ensure you are in a well-ventilated area to avoid breathing in any harmful chemicals.	
When finished with application, return oil or spray to a dry location away from heat and sunlight.	

**! WARNING**

- Lubricating spray can be harmful to eyes and skin. If contact is made, wash immediately. Wear PPE such as safety glasses and gloves to avoid personal injury.





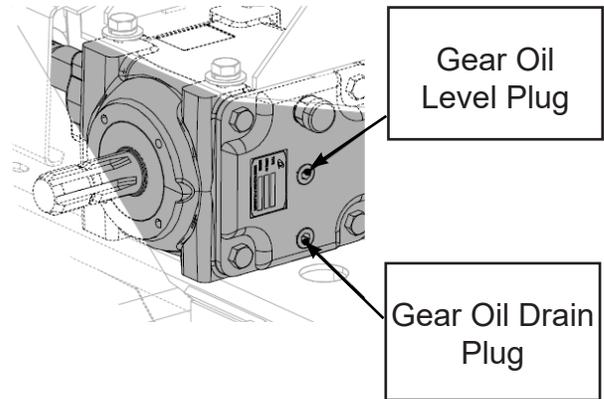
**Gearbox:**

To prevent premature wear and sludge build up, plan oil changes every 500 to 600 hours or more often with heavy use. Change oil at least once per year for optimal performance.

Perform first oil change after 50 hours.

Type of lubrication: **SAW 90** or **80-90W EP Gear Lube**

Reference the Oil Change Checklist and illustrations.



Oil Change Checklist	☑
Check oil level while it is cold, oil expands when it is hot.	
Ensure the machine is level and blocked up to prevent unwanted movement.	
Change oil while it is still warm.	
Remove oil level plug as shown in the illustration.	
Remove the drain plug, or use a suction or siphon pump to drain gearbox of oil out of the oil level hole when there is no oil drain hole.	

 **NOTE**

- *Not all models have gear oil drain plugs.*

 **IMPORTANT**

- *Do not overfill! Snowblower should be level when changing oil.*

**Shear Bolts:**

Shear bolts are built to break under shocks on the fan or the auger as a second layer of protection. If the shear bolt breaks, it is important to replace it immediately with the same category bolt. The shear bolt must be kept tight to maintain efficiency of the shearing mechanism and to prevent damaging or enlarging the mounting holes.

To replace shear bolts, follow the steps in order, using the tables and illustrations as a reference.

 **CAUTION**

- *Replacing shear bolts requires lifting heavy parts. Prevent potential strain injury, use approved lifting equipment and safety practices, or ask for help when moving heavy, bulky parts.*

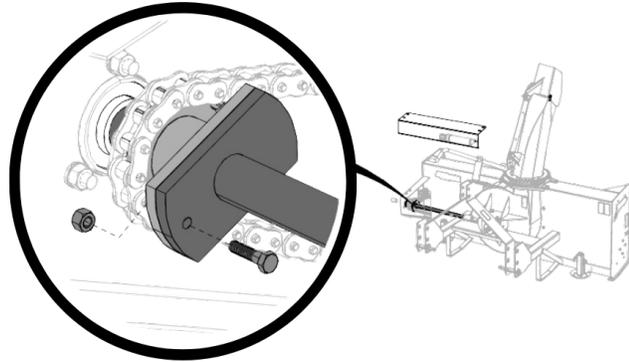
 **IMPORTANT**

- *The gearbox shafts are made with special alloy steel. However they are case hardened to increase capacity to shock load. These shafts cannot be broken under normal loads. However, undesirable objects may enter the fan and either bend or break the gearbox shaft. It is understood that the gearbox cannot be built to resist every possible overload and consequently, gearbox fan shafts will not be replaced under warranty. Therefore, the user of the snowblower must be very careful.*

## Auger Drive:

Model	Shear Bolt
54, 60	1/4" x 1" Gr.2
68, 72	1/4" x 1 1/4" Gr.2
78, 87, 97	5/16" x 1" Gr.2

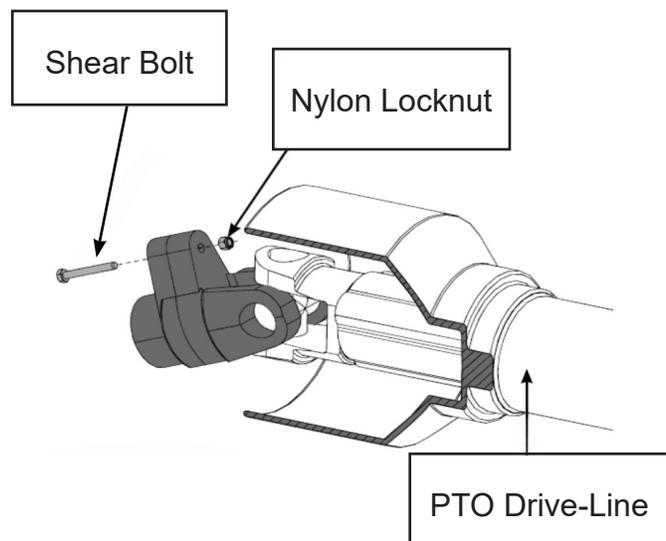
1. Follow **Stop Operation Checklist** on p.53.
2. Ensure machine is blocked up to prevent unwanted movement. See p.56.
3. Remove the auger drive shield. Set the shield and hardware in a safe place.
4. Re-align holes in drive shaft tab and shear sprocket.
5. Insert the new shear bolt with a new hex nylon locknut.
6. Tighten nylon locknut.
7. Replace auger drive shield.



## PTO Drive-Line:

Drive-Line	Shear Bolt
T20	M6 x 40mm Gr.8.8
T40	M8 x 50mm Gr.8.8
T50	M10 x 55mm Gr.8.8

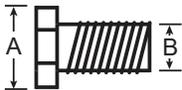
1. Follow **Stop Operation Checklist** on p.53.
2. Ensure machine is blocked up to prevent unwanted movement. See p.56.
3. Detach the PTO from the tractor. Separation may be required.
4. Remove the old hardware if needed.
5. Insert the new shear bolt with a new hex nylon lock nut.
6. Tighten nylon lock nut.
7. Re-attach PTO.



# Bolt Torque Table

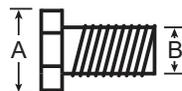
These tables are offered as the suggested maximum torque values for dry (not lubricated) threaded products and are only a general guide. Check tightness of bolts periodically and replace hardware with the same strength bolt when needed. Torque specification for bolts are identified by their head markings as shown below.

## METRIC TORQUE SPECIFICATIONS



Wrench Size: "A"	Thread Size: "B" Fine	Class 8.8		Class 10.9		Thread Size: "B" Coarse	Class 8.8		Class 10.9	
		N-m	lbs-ft	N-m	lbs-ft		N-m	lbs-ft	N-m	lbs-ft
10 mm	6 x 0.75	---	---	---	---	6 x 1.0	11.3	8.3	16.5	12.2
13 mm	8 x 1.0	27	20	38	28	8 x 1.25	27.3	20.1	40.1	29.6
16 mm	10 x 1.25	52	38	73	54	10 x 1.5	54	40	49	36
18 mm	12 x 1.25	95	70	135	100	12.1.75	93	69	137	101
21 mm	14 x 1.5	150	111	210	155	14 x 2.0	148	109	218	161
24 mm	16 x 1.5	225	166	315	232	16 x 2.0	230	170	338	249
27 mm	18 x 1.5	325	240	460	339	18 x 2.5	329	243	469	346
30 mm	20 x 1.5	460	339	640	472	20 x 2.5	464	342	661	487
34 mm	22 x 1.5	610	450	860	634	22 x 2.5	634	468	904	667
36 mm	24 x 2.0	780	575	1100	811	24 x 3.0	798	588	1136	838
41 mm	27 x 3.0	---	---	---	---	27 x 3.0	1176	867	1674	1234
46 mm	30 x 2.0	---	---	---	---	30 x 3.0	1597	1178	2274	1677

## SAE TORQUE SPECIFICATIONS



Wrench Size: "A"	Thread Size: "B" Fine	SAE 2		SAE 5		SAE 8		Thread Size: "B" Coarse	SAE 2		SAE 5		SAE 8	
		lbs-ft.	N-m	lbs-ft.	N-m	lbs-ft.	N-m		lbs-ft.	N-m	lbs-ft.	N-m	lbs-ft.	N-m
7/16"	1/4-28	6	8.1	10	13.6	14	19.0	1/4-20	5	6.8	8	10.8	12	16.3
1/2"	5/16-24	13	17.6	19	25.7	27	36.6	5/16-18	11	14.9	17	23.0	25	33.9
9/16"	3/8-24	23	31.2	35	47.4	49	66.4	3/8-16	20	27.1	31	42.0	44	59.6
5/8"	7/16-20	36	48.8	55	74.5	75	101.6	7/16-14	32	43.4	49	66.4	70	94.9
3/4"	1/2-20	55	74.5	85	115.2	120	162.6	1/2-13	49	66.4	75	101.6	107	145.0
13/16"	9/16-18	79	107.0	122	165.3	172	233.1	9/16-12	70	94.9	109	147.7	154	208.7
15/16"	5/8-18	110	149.1	170	230.4	240	325.2	5/8-11	97	131.4	150	203.3	212	287.3
1-1/8"	3/4-16	192	260.2	297	402.4	420	569.1	3/4-10	173	234.4	266	360.4	376	509.5
1-5/16"	7/8-14	184	249.3	474	642.3	668	905.1	7/8-9	166	224.9	429	581.3	606	821.1
1-1/2"	1.0-12	274	371.3	705	955.3	995	1348.2	1.0-8	250	338.8	644	872.6	909	1231.7

## Troubleshooting

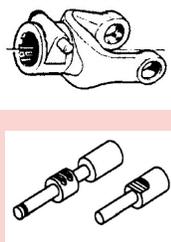
The following tables describes issues you could encounter with your **Pull Type Snowblower**, the possible cause, and the proposed solution. For any issue not listed below, call **MK Martin** your local dealer.

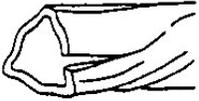
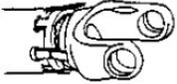
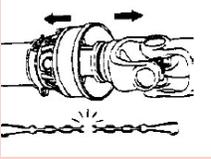
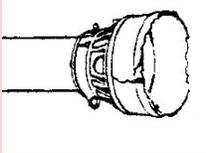
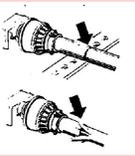
### Snowblower Troubleshooting:

Issue	Possible Cause	Solution
Chute won't rotate.	Hydraulic hose has a break, is obstructed or is not connected properly.	See <b>Stop Operation</b> on p. <b>53</b> and <b>Hydraulic safety</b> on p. <b>15</b> . Visually inspect hose and connection. Replace hose if needed.
	Wire harness connection is loose.	See <b>Stop Operation</b> on p. <b>53</b> and re-connect harness. Replace if wiring is damaged.
	There is ice built-up around the base of the chute.	See <b>Stop Operation</b> on p. <b>53</b> and carefully remove ice.
Chute is getting clogged.	Auger is rotating too fast.	Decrease motor speed.
	Tractor is moving too fast.	Decrease ground speed.
Discharge chute throws snow at the operator.	The chute was assembled incorrectly and the chute stop is not in it's proper location.	See <b>Stop Operation</b> on p. <b>53</b> and re-assemble chute. See <b>Chute Assembly</b> on p. <b>29</b> .
Deflector does not throw snow the preferred distance.	Deflector angle has not been adjusted.	Adjust manual or hydraulic deflector.
Auger and/or impeller stalls (will not turn).	Hidden objects are stuck in auger or blower housing.	See <b>Stop Operation</b> on p. <b>53</b> and carefully clear objects manually. See <b>Work Area Safety</b> on p. <b>9</b> .
	Auger or PTO shear bolt has sheared.	Follow instructions to replace shear bolt on p. <b>60 - 61</b> .
Impeller is throwing small amounts of snow.	Inadequate snow to fill the impeller.	This is normal when clearing shallow snow.
	PTO is operating at a speed lower than 540 RPM.	Operate PTO at 540 RPM.
	Tractor is moving too slow.	Gradually increase ground speed.
Skid shoes are wearing too fast	Snowblower is not parallel to ground.	See <b>Stop Operation</b> on p. <b>53</b> and ensure blower is leveled.
Snowblower makes intermittent clicking noise.	Auger flighting or fan blades are bent or broken.	Stop operation immediately. See <b>Stop Operation</b> on p. <b>53</b> . Repair/replace damaged parts.
Snow is left on the ground.	Skid shoes are too low to the ground.	See p. <b>50</b> to re-adjust skid shoes.

Snowblower makes excessive noises or vibrates excessively.	Auger is making contact with the ground.	Adjust snowblower so that it is level with the ground or see p. <b>50</b> to adjust skid shoes.
	Dirty or frozen snow is making contact with the auger.	Wait for snow to become softer and refrain from operating in unsafe weather conditions.
	Auger is making contact with hidden objects or material other than snow (ex. gravel).	See <b>Stop Operation</b> on p. <b>53</b> and carefully clear objects manually. See <b>Work Area Safety</b> on p. <b>9</b> .
	Auger or fan is damaged.	Stop operation immediately. See p. <b>53</b> . Repair/replace damaged parts.

### PTO Troubleshooting:

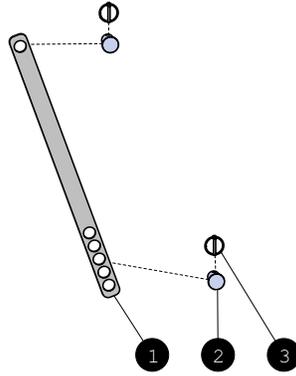
Issue	Possible Cause	Solution
Quick-disconnect yoke damaged or seized  	Quick disconnect pin dirty (insufficient maintenance).	Clean, oil and grease telescopic tubes. See <b>Lubrication</b> on p. <b>55</b> . Replace both tubes if necessary.
	Quick-disconnect pin defective (forced into place, incorrect handling).	Replace Quick disconnect-pin.
	Excessive Shaft Length or Axial Load too high.	Shorten shaft length. See <b>Alter Length of PTO Shaft</b> on p. <b>45</b> .
 <b>NOTE</b> <ul style="list-style-type: none"> <li>Newer PTO shafts may have a locking collar. (Issue, Cause and Solution will still be similar).</li> </ul>		
Deformed, Distorted, or Worn or pounded yoke  	Excessive shaft length or Axial too high.	Shorten shaft length. Replace defective yokes. Clean and grease telescopic tubes. See p. <b>55</b> . Replace both tubes if necessary.
	Excessive working angle and torque.	Verify compatibility between shaft and working conditions (torque vs. angle). Replace defective yokes. Engage PTO more carefully, and use appropriate safety device. Avoid excessive angle. See <b>Alter Angle of PTO Shaft</b> , on p. <b>45</b> .
	Overload caused by high starting and peak torque.	Disengage PTO during lifting/lowering the implement. Change to a larger PTO size.
Cross Arms worn on Cross Kit/Bearing Caps turning in their cross journal/Overheated caps  	Extreme torque peak or shock load. Axial loads too large.	Use appropriate safety device. Change to a larger PTO or shorten PTO shaft. See <b>Alter Length of PTO Shaft</b> on p. <b>45</b> .
	Excessive continuous torque/excessive working angle.	Verify compatibility between shaft and working conditions (torque vs. angle). Replace defective bearings.
	Inadequate greasing.	Carefully follow greasing instructions. See <b>Lubrication</b> on p. <b>57</b> .

<p>Telescopic tube failure or twisting</p> 	Excessive torque or shock load.	Use appropriate safety device and change to a larger PTO size.
	Short tube engagement (overlap).	Replace the PTO drive shaft with one of adequate length. Replace defective tubes.
<p>Accelerated wear of telescopic tubes</p> 	Extreme load when sliding.	Change to a PTO with coated tube.
	Short tube engagement.	Replace PTO drive shaft with one of proper length. See <b>Check Length of PTO Shaft</b> on p.42.
	Inadequate greasing.	Carefully follow greasing instructions. See <b>Lubrication</b> on p.57.
	Weather conditions or material (sand etc).	Replace defective tubes.
<p>Excessive wear of shield bearings</p> 	Insufficient lubrication	Follow lubrication instructions.
	Incorrect chain mounting.	Mount chain to allow maximum angularity.
	Shield interfering with implement.	Avoid shield contact with machine or tractor. Replace shield bearings.
<p>Chain failure</p> 	Incorrect chain mounting.	Mount chain to allow maximum angularity.
	Shield interfering with implement.	Avoid shield contact with machine or tractor. Replace defective parts.
<p>Guard cone damaged</p> 	Guard cone in contact with implement or tractor.	Eliminate interference between guard cone and any part of implement or tractor.
	Excessive angularity.	Avoid excessive angles. Replace damaged guard cone.
<p>Guard tubes damaged (deformed and split at one side)</p> 	Guards are in contact with tractor or implement.	Eliminate interference between guard cone and any part of the implement or tractor.
	Guard tube overlap too short or no overlap with PTO tube extended.	Replace damaged tubes. Adjust guard tube length with longer tubes.

## Parts

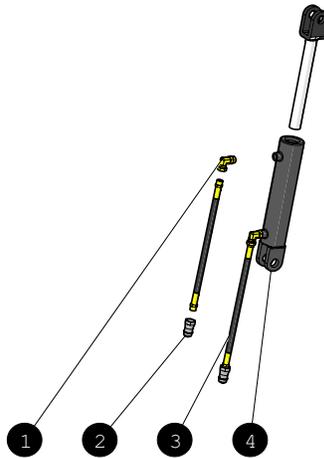
The following pages contain illustrations of parts of the **MK Pull Type Snowblower** along with the part descriptions, numbers, and quantities for each of their respective models.

### Manual Deflector:



Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	20644	68 Deflector Adjuster Bar	1	1	1	1			
	20987	75 Deflector Adjuster Bar					1	1	1
2	21708	Chute Pin	2	2	2	2	2	2	2
3	wal385502	1/4 x 1 1/2 lynch pins	2	2	2	2	2	2	2

### Hydraulic Deflector:

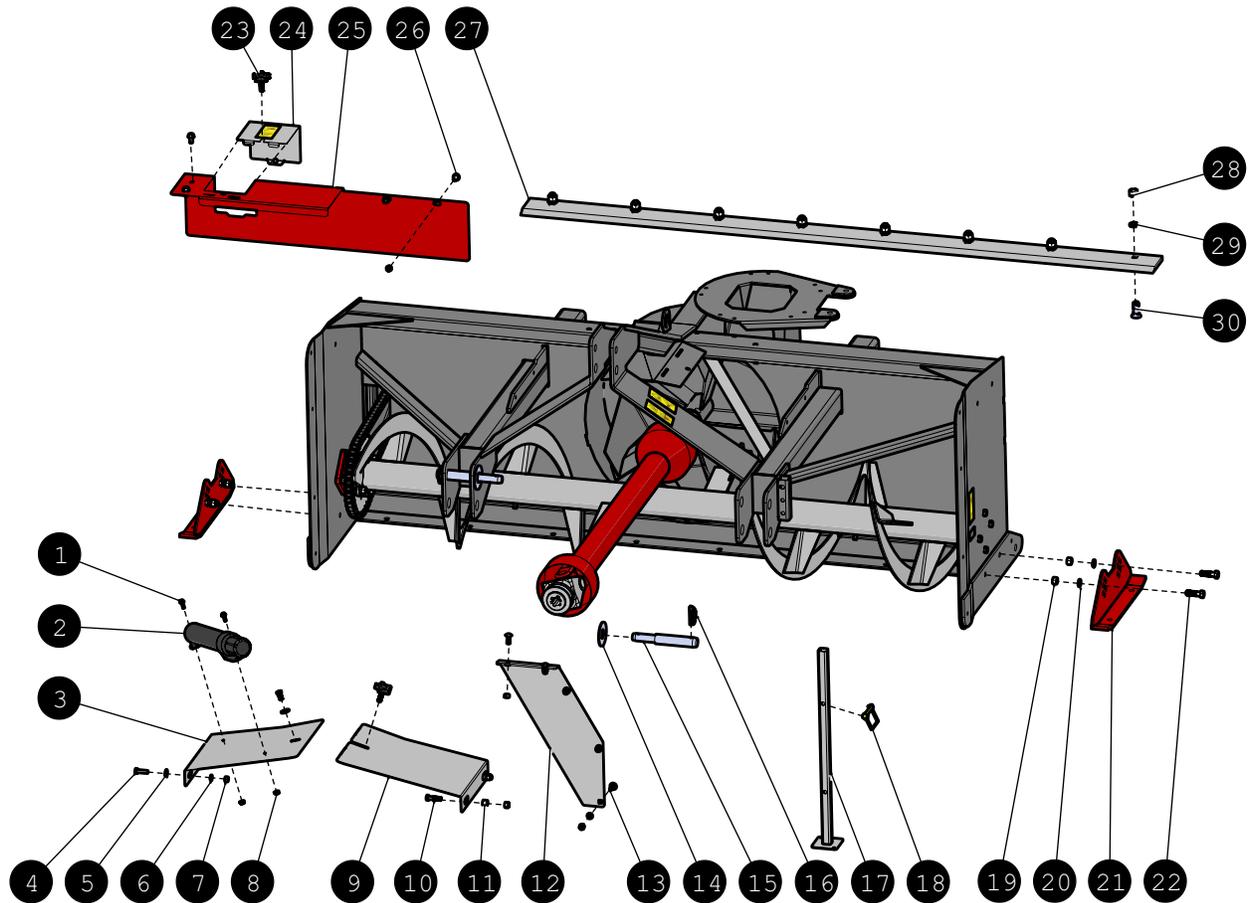


#### NOTE

- There are two sizes of hydraulic deflectors for the **Pull Type Snowblower**. The SB68HD fits on models 54-72, and the SB75HD fits on models 78-97.

Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	6901-0806	1/2 Male SAE x 3/8 Female NPSM 90 Degree					2	2	2
	9405x6x6	3/8 NPT Swivel Elbow 90°	2	2	2	2			
2	s71-4	agri-ball nipple 1/2" npt	2	2	2	2	2	2	2
3	40904	Hydraulic Hose 109-04/5016-06/5016-08/120 cl	2	2	2	2	2	2	2
4	MK52766	2 1/2 x 8 Welded Hyd Cylinder					1	1	1
	MK53962	2 x 6 Welded Cylinder	1	1	1	1			

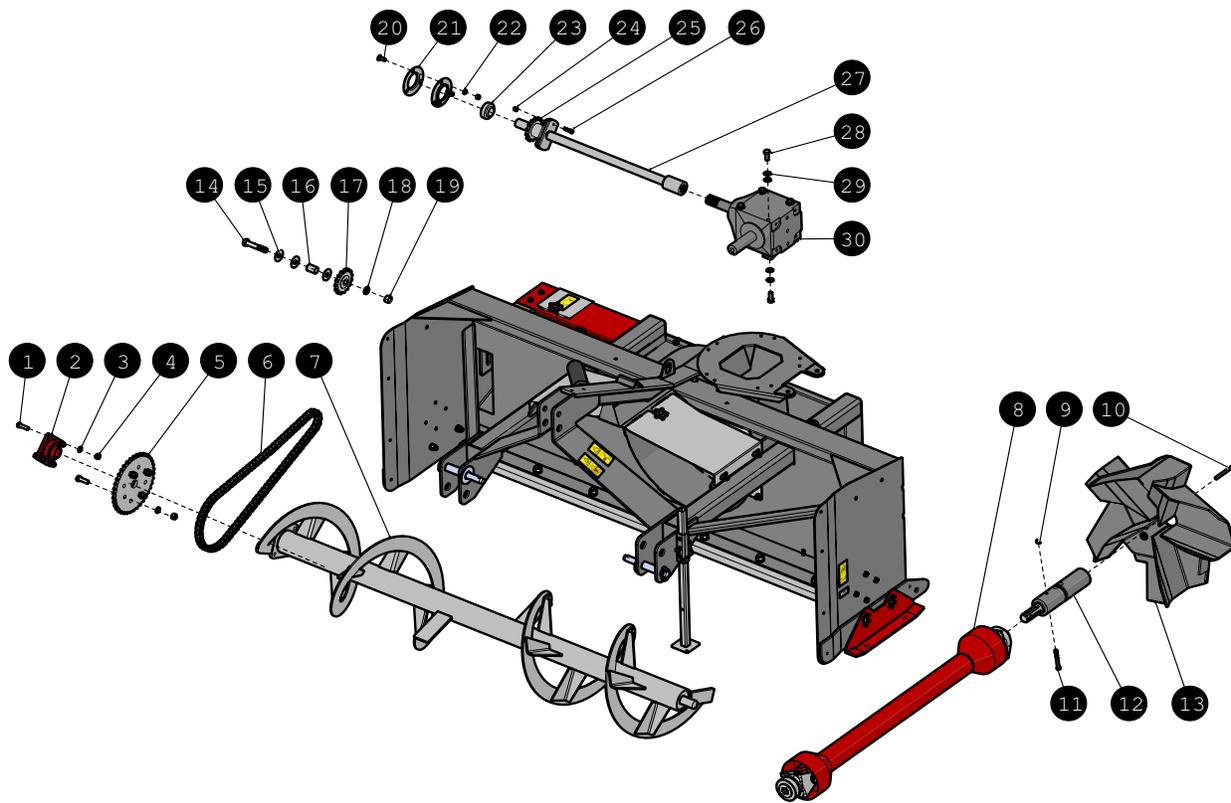
## MK Pull Type Snowblower:



Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	xzhfss2507nc5	1/4 x 3/4 Flange Serrated Screw	2	2	2	2	2	2	2
2	DJA70111	Operator's Manual Tube	1	1	1	1	1	1	1
3	54723	Front right auger cover	1	1	1	1			
	54717	Front right auger cover					1	1	1
4	xzhcs3712nc5	3/8 x 1 1/4" Bolt	6	6	3	2	2	2	2
5	xzfw37	3/8 Flatwasher	3	3	3	3	3	3	3
6	xzlw37	3/8 Lockwasher	18	18	17	17	14	14	14
7	xznylnut37nc	3/8-16 Nylon Locknut	3	3	3	3	3	3	3
8	xznut25fs	1/4-20 Flange Serrated Nut	2	2	2	2	2	2	2
9	54722	Front left auger cover	1	1	1	1			
	54715	Front left auger cover					1	1	1

10	xzhcs3715nc5	3/8 x 1 1/2 Bolt	2	2	2	2	2	2	2
11	54716	Shield Pegs	2	2	2	2	2	2	2
12	55955	Fan Cover 54", 60"	1	1					
	38169	Fan Cover 68", 72"			1	1			
	38254	Fan Cover 78"					1		
	35295	Fan Cover 87", 97"						1	1
13	xzcar3707nc	3/8 x 3/4 Carriage Bolt	5	4					
	xzcar3710nc	3/8 x 1 Carriage Bolt			8	8	8	9	9
14	xzfw112	1 1/8" Flatwasher							
15	wal382710	Cat.1 Lift Pin	2	2	2	2			
	MKMSB75LP	Cat.1 & 2 Lift Pin					2		
	wal386015	Cat 2 Lift Pin						2	2
16	52656	7/16 Lynch Pin	2	2	2	2	2	2	2
17	35952	54" - 78" Stand	1	1	1	1	1		
	35300	87" - 97" Stand						1	1
18	wal387113	3/8 x 2 1/2 PTO Pin	1	1	1	1	1	1	1
19	xznut50nc	1/2"-13 Locknut	4	4	8	8	8	16	16
20	xzlw50	1/2" Lockwasher	9	9	14	14	10	16	18
21	35271	Skid Shoe	2	2	2	2	2	2	2
22	xzhcs5015nc5	1/2 x 1 1/2 Bolt	4						
	xzhcs5017nc5	1/2-13 x 1 3/4 Bolt		4	4	4	4	4	4
23	933LB-4715-2AY	3/8-16 x 1 1/4" Stud Closed Adjustable Knob	2	2	2	2	2	2	2
24	54711	Shear Bolt Access Cover	1	1	1	1	1	1	1
25	55953	Auger Drive Shield 54"	1						
	38143	Auger Drive Shield 60"		1					
	38163	Auger Drive Shield 68"			1				
	38179	Auger Drive Shield 72"				1			
	38251	Auger Drive Shield 78"					1		
	38300	Auger Drive Shield 87"						1	
	38310	Auger Drive Shield 97"							1
26	xzhfss3707nc5	3/8 x 3/4 Flange Serrated Screw	4	4	4	4	4	4	4
27	60788	54" Single Bevel Cutting Edge	1						
	letcoSB59	60" Single Bevel Cutting Edge		1					
	letcoSB66	68" Single Bevel Cutting Edge			1				
	letcoSB70	72" Single Bevel Cutting Edge				1			
	letcoSB76	78" Single Bevel Cutting Edge					1		
	letcoSB86	87" Single Bevel Cutting Edge						1	
	letcoSB96	97" Single Bevel Cutting Edge							1
28	xznut62nc	5/8-11 Locknut	6	7	8	8	9	10	11
29	knpw-385	5/8" Spring Tension Washer	5	6	7	7	8	9	10
30	xbpb6217nc5	5/8 x 1 3/4 Plow Bolt	5	6	7	7	8	9	10

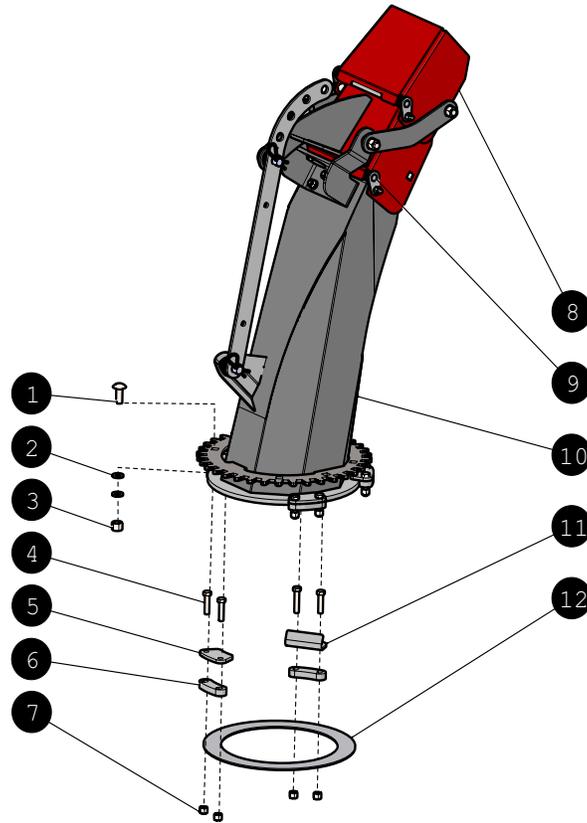
## MK Pull Type Snowblower - Drive Parts:



Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	xzhcs4315nc	7/16 x 1 1/2 Bolt	8	8	8	8	8		
	xzhcs5015nc5	1/2 x 1 1/2 Bolt						12	12
2	cnxsaf20620g	206-20G Flange Bearing	2	2	2	2	2		
	cnxsaf20720g	207-20G Flange Bearing						2	2
3	xzlw43	7/16" Lockwasher	8	8	8	8	8		
	xzlw50	1/2" Lockwasher						16	18
4	xznut43nc	7/16-14 Nut	8	8	8	8	8		
	xznut50nc	1/2-13 Nut						16	16
5	cnx50a3	50A36 Auger Sprocket	1	1					
	cnx60a38	Auger Sprocket 68 - 97S			1	1	1	1	1
6	52643	54 - 60 roller chain	1	1					
	52644	68 - 72 Auger Chain			1	1			
	52642	75 Auger Chain					1		
	35310	97 PT Auger Chain						1	1
7	60785	54 PT Auger Assy	1						
	36437	60 PT Auger Assy		1					
	36123	68 PT Auger Assy			1				
	60805	72 PT Auger Assy				1			
	35924	78 PT Auger Assy					1		
	35895	87 PT Auger Assy						1	
	35302	97 PT Auger Assy							1

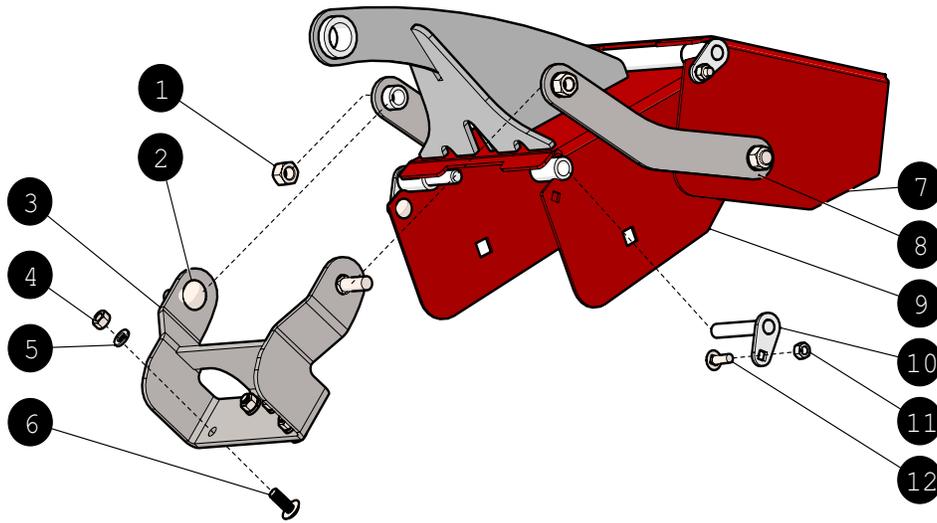
<b>8</b>	cnxT20-056P-022324-220001	PTO T20, see p.82.	1	1					
	cnxt40056	PTO T40, see p.83.			1	1			
	cnxt50071	PTO T50, see p.84.					1	1	1
<b>9</b>	xznylnut37nc	3/8-16 Nylon Locknut	1	1	3	3	3	3	3
<b>10</b>	31684	3/8 x 3/8 x 3.5 Keystock	1	1	1	1	1	1	1
<b>11</b>	xzhcs3730nc	3/8 x 3 Bolt	1	1	1	1			
	xzhcs3735nc5	3/8 x 3 1/2 Bolt					1	1	1
<b>12</b>	35991	68 PT Fan Hub	1	1	1	1			
	35304	97 PT Fan Hub					1	1	1
<b>13</b>	36458	60 PT Fan Assy	1	1					
	35989	68 PT Fan Assy			1	1			
	35927	78 PT Fan Assy					1		
	35307	97 PT Fan Assy						1	1
<b>14</b>	xzhcs6235nc5	5/8 x 3 1/2 Bolt	1		1	1	1		
	xzhcs6240nc5	5/8 x 4 Bolt		1				1	1
<b>15</b>	xzfw62	5/8 Flatwasher	3	3	2	2	3	3	3
<b>16</b>	31102	Idler Spacer	1	1	1	1	1	1	1
	37856	#50 Idler Sprocket	1	1					
<b>17</b>	cnxsi60c15Hx5/8	#60 Idler Sprocket			1	1	1	1	1
<b>18</b>	xzlw62	5/8 Lockwasher	7	7	8	8	9	11	12
<b>19</b>	xznut62nc	5/8 Nut	7	7	8	8	9	10	11
<b>20</b>	xzcar3107	5/16 x 3/4 Carriage Bolt	3	3					
	xzcar3710nc	3/8 x 1 Carriage Bolt			8	8	8	9	9
<b>21</b>	brgpf5z	1" 3 bolt flangettes	2	2					
	cnxpf6z	PF6Z Flangette			2	2	2	2	2
<b>22</b>	xzlw37	3/8 Lockwasher	18	18	17	17	14	14	14
<b>23</b>	brgsa20516	1" flangette brg (insert)	1	1					
	cnxsa20620	SA206-20 Bearing Insert			1	1	1	1	1
<b>24</b>	xznylnut31	5/16-18 Nylon Locknut	4	4	4	4	4	4	4
<b>25</b>	cnx50sb12h1	#50 Shear Sprocket, 12T, 1" Bore	1	1					
	cnx60sb14h-T281	Shear sprocket for T281, 1/4" shearbolt			1	1			
	cnx60sb14h	#60-14T Shear Sprocket, 5/16 shearbolt					1	1	1
<b>26</b>	xzcar3110nc5	5/16 x 1 Carriage Bolt	2	2	4	4	4	4	4
	33179	Auger Drive Shaft 54"	1						
	31100	Auger Drive Shaft 60"		1					
<b>27</b>	31202	Auger Drive Shaft 68"			1				
	36030	Auger Drive Shaft 72"				1			
	36031	Auger Drive Shaft 78"					1		
	35890	Auger Drive Shaft 87"						1	
	35297	Auger Drive Shaft 97"							1
<b>28</b>	xzhcs3755nc	3/8 x 5 1/2 Bolt		4	4	4			
	xzhcs5012nc	1/2 x 1 1/4 Bolt					8	8	8
<b>29</b>	NordLock 3-8 SP Washer			4	4	4			
	NordLock 1-2 SP Washer						8	8	8
<b>30</b>	cnxT281A 1 3/8 Fan Shaft	Gearbox T281, see p.80.	1	1	1				
	cnxt27d267801	Gearbox T27D, see p.81.				1	1	1	1

**Chute:**



Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	xzcar5012nc	1/2 x 1 1/4 Carriage Bolt	1	1	1	1	1	1	1
2	xzlw50	1/2 Lockwasher	2	2	2	2	2	2	2
3	xznylnut50	1/2-13 Locknut	1	1	1	1	1	1	1
4	xzhcs3715nc5	3/8-16 x 1 1/2 Bolt	9	9	9	9	10		
	xzshcs3717nc	3/8-16 x 1 3/4 Bolt						14	14
5	55467	Chute Holder	4	4	4	4	4	6	6
6	55099	Chute Slide	5	5	5	5	5	7	7
7	xznylnut37nc	3/8-16 Nylon Locknut	13	13	13	13	13	17	17
8	37620	54-60" Deflector	1	1					
	61736	68-72" Multi-Hinge Deflector			1	1			
	61748	78" Multi-Hinge Deflector					1		
	61724	87-97" Multi-Hinge Deflector						1	1
9	36914	Hinge Pin Assy	1	1	1	1	1	1	1
10	37618	54-60" Hood Assembly	1	1					
	37626	68-72" Meteor Chute Weldment			1	1			
	37616	75" Meteor Chute Weldment					1		
	37629	87-97" Meteor Chute Weldment						1	1
11	55468	Chute Stop	1	1	1	1	1	1	1
12	Gepoly99330026	54" - 60" UHMW Ring	1	1					
	Gepoly99330029	68" - 78" UHMW Ring			1	1	1		
	Gepoly99330027	87" - 97" UHMW Ring						1	1

## Multi-Hinge Deflector:

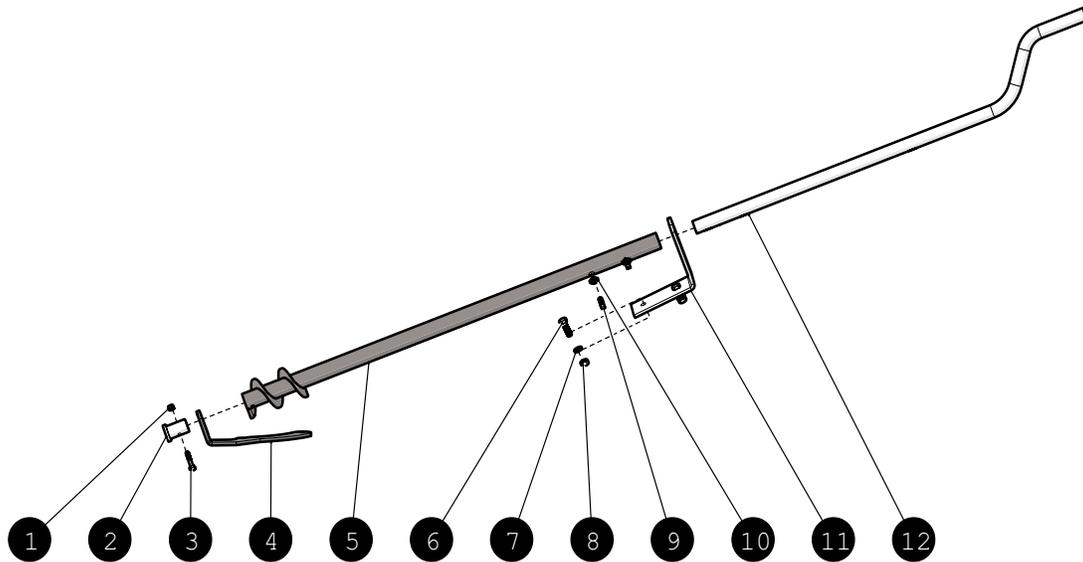


### NOTE

- The multi-hinge deflector is **not available** on the 54" and 60" models.

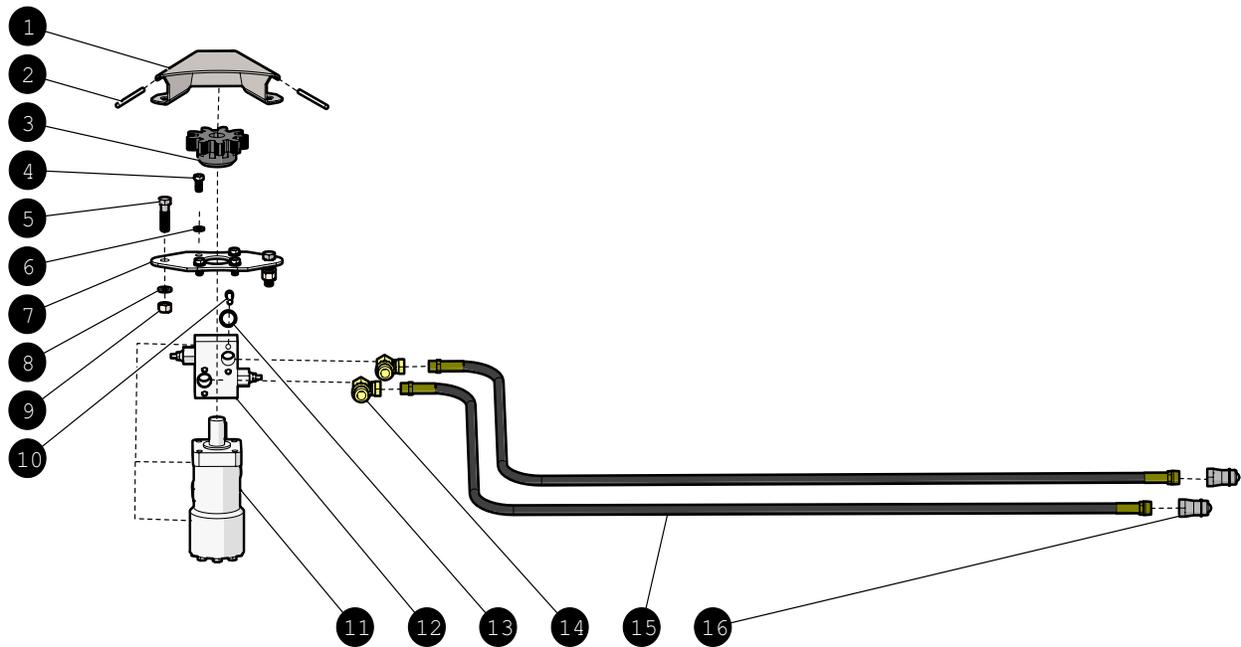
Item #	Part #	Description	68"	72"	78"	87"	97"
			QTY				
1	xznylnut50	1/2-13 Nylon Locknut	4	4	4	4	4
2	xzcar5017nc5	1/2 x 1 3/4 Gr 5 Carriage Bolt	4	4	4	4	4
3	61742	68-72" Hinge Bracket Double Deflector	1	1			
	61752	78" Hinge Bracket Double Deflector			1		
	61733	87-97" Hinge Bracket Double Deflector				1	1
4	xznut37nc	3/8-16 Fin Nut Gr 2	4	4	4	4	4
5	xzlw37	3/8 Lockwasher	4	4	4	4	4
6	knp380-009	3/8 x 1 Truss Head Machine screw- slot drive	4	4	4	4	4
7	61737	68-72" First Deflector	1	1			
	61749	78" First Deflector			1		
	61725	87-97" First Deflector				1	1
8	61746	68-72" Hinge Tie Plate	2	2			
	61732	78-97" Hinge Tie Plate			2	2	2
9	61741	68-72" End Deflector	1	1			
	61750	78" End Deflector			1		
	61726	87-97" End Deflector				1	1
10	36914	Hinge Pin Assy	1	1	1	1	1
11	xznylnut31	5/16-18 Nylon Locknut	4	4	4	4	4
12	xzcar3110nc5	5/16 x 1 Gr 5 Carriage Bolt	4	4	4	4	4

## Manual Rotator:



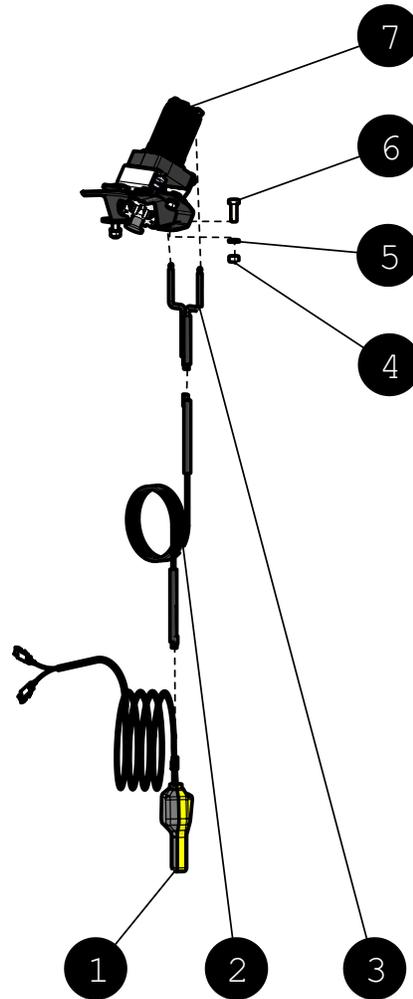
Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	xznut31nc	5/16-18 Locknut	1	1	1	1	1	1	1
2	34969	Retainer Pin	1	1	1	1	1	1	1
3	xhcs2515nc5	1/4 x 1 1/2 gr 5 Hex Bolt Zinc	1	1	1	1	1	1	1
4	38537	54"-60" Crank Tail Bracket	1	1					
	38565	68"-72" Crank Tail Bracket			1	1			
	38562	78" Crank Tail Bracket					1		
	38560	87",97" Crank Tail Bracket						1	1
5	54209	54"-60" Crank Worm	1	1					
	31681	68"-97" Crank Worm			1	1	1	1	1
6	xzhcs3712nc5	3/8 x 1 1/4" Bolt	2	2	2	2	2		
	xzhcs3715nc5	3/8 x 1 1/2" Bolt						2	2
7	xzlw37	3/8 Lockwasher	2	2	2	2	2	2	2
8	xznut37nc	3/8 Locknut	2	2	2	2	2	2	2
9	xsqss3107	5/16 x 3/4 Sq Hd Set Screw	2	2	2	2	2	2	2
10	5/16-18 Square Weld Nut		2	2	2	2	2	2	2
11	36022	54"-60" Upper Crank Bracket	1	1					
	38566	68"-72" Upper Crank Bracket			1	1			
	38568	78" Upper Crank Bracket					1		
	36015	87", 97" Upper Crank Bracket						1	1
12	31225	Crank	1	1	1	1	1	1	1
--	SB60PTMR	54/60 Manual Rotator	1	1					
--	SB68PTMR	68/72 Manual Rotator			1	1			
--	SB78PTMR	78 Manual Rotator					1		
--	SB87PTMR	87/97 Manual Rotator						1	1

## Hydraulic Rotator:



Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	23931	Hydraulic Chute Rotator Shield	1	1	1	1	1	1	1
2	23930	Hydraulic Rotator Shield Hose Guide	2	2	2	2	2	2	2
3	MKMT9T	9 Tooth Gear for Hydraulic Rotator	1	1	1	1	1	1	1
4	xzhcs3707nc5	3/8 x 3/4 Gr 5 Hex Bolt zinc	4	4	4	4	4	4	4
5	xzhcs5020nf5	1/2-20 Bolt	2	2	2	2	2	2	2
6	xzlw37	3/8 Lockwasher Zinc	4	4	4	4	4	4	4
7	31232	Motor Mount Hyd Hood Turner	1	1	1	1	1	1	1
8	xzlw50	1/2 Lockwasher	2	2	2	2	2	2	2
9	xznut50nc	1/2-13 Locknut	2	2	2	2	2	2	2
10	xzshcs3115nc	5/16 x 1 1/2 socket head cap screw	4	4	4	4	4	4	4
11	hydMLH-PQ315C4UD	hydraulic motor chute rotator	1	1	1	1	1	1	1
12	MK52760	hydraulic motor chute rotator cross over valve	1	1	1	1	1	1	1
13	cnxOR15-16-3-32	O-Ring	2	2	2	2	2	2	2
14	T5M125	0691-10-06 Male orb x female npsm 90° elbow	2	2	2	2	2	2	2
15	MKSEP07-2	Hydraulic Hose 1/4 x 80 (06-08), incl. quick coupler	2	2	2	2	2	2	2
16	S71-4	Agri-ball Nipple 1/2 npt	2	2	2	2	2	2	2

## Electric Rotator:

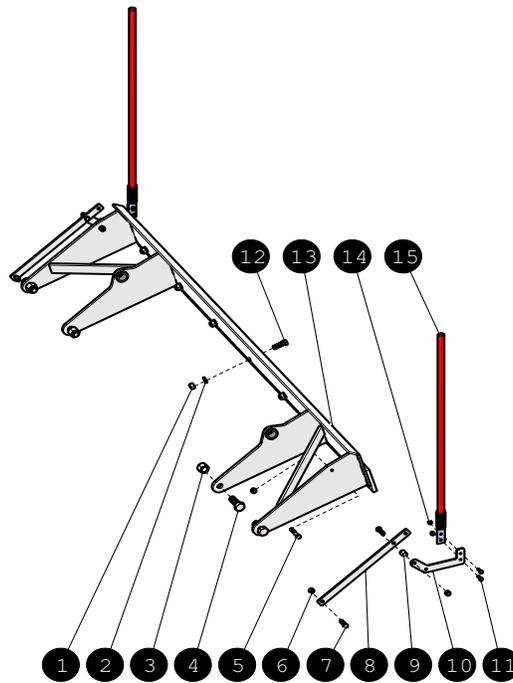


### NOTE

- The electric rotator is available for all models, but it is recommended to only use the electric rotator for the 78" model.

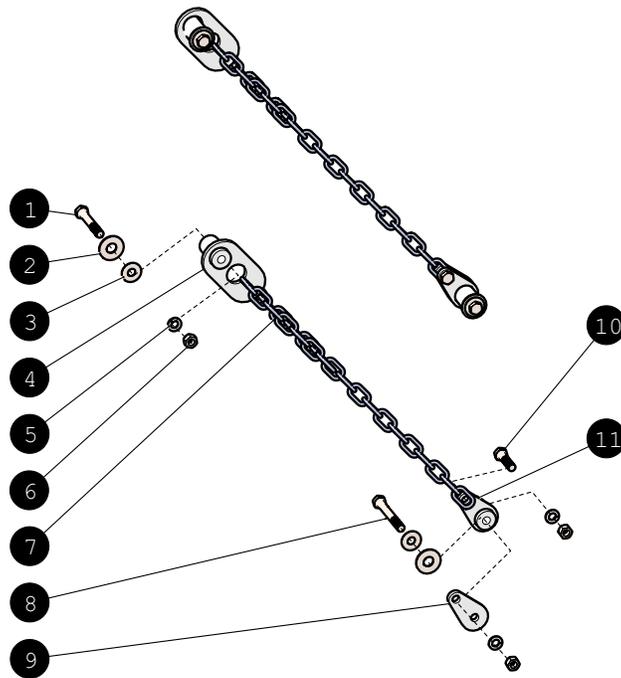
Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	23589	2 Button Chute Control - ER handles	1	1	1	1	1	1	1
2	10581	Electric 2 Button Control Motor Wire	1	1	1	1	1	1	1
3	23588	Winch Motor Connector	1	1	1	1	1	1	1
4	xznut50nc	1/2"-13 Locknut	2	2	2	2	2	2	2
5	xzlw50	1/2" Lockwasher	2	2	2	2	2	2	2
6	xzhcs5010nc	1/2"-13 Bolt	2	2	2	2	2	2	2
7	23586	Electric Rotator Motor Assy	1	1	1	1	1	1	1

**Back Drag:**



Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	xznut50nc	1/2-13 Locknut	5	6	7	7	8	9	10
2	xzlw50	1/2" Lockwasher	5	6	7	7	8	9	10
3	xznylnut75nc	3/4"-10 Nylon Locknut	4	4	4	4	4	4	4
4	xzhcs7520nc5	3/4" x 2 Bolt	4	4	4	4	4	4	4
5	xzhcs3720nc	3/8" x 2 Bolt	2	2	2	2	2	2	2
6	xznylnut37nc	3/8"-16 Nylon Locknut	6	6	6	6	6	6	6
7	xzhcs3712nc5	3/8" x 1 1/4 Bolt	4	4	4	4	4	4	4
8	35230	Parallel Link	2	2	2	2	2	2	2
9	35975	Stand Off Marker Linkage	2	2	2	2	2	2	2
10	36472	54", 60" Marker Linkage	2	2					
	35974	68"-97" Marker Linkage			2	2	2	2	2
11	xzhcs2507nc	1/4"-20 Bolt	4	4	4	4	4	4	4
12	xzhcs5015nc5	1/2" x 1 1/2 Bolt	5	6	7	7	8	9	10
13	60792	54" Drag Steel Cutting Edge	1						
	36473	60" Drag Steel Cutting Edge		1					
	35983	68" Drag Steel Cutting Edge			1				
	60824	72" Drag Steel Cutting Edge				1			
	35940	78" Drag Steel Cutting Edge					1		
	35899	87" Drag Steel Cutting Edge						1	
	35242	97" Drag Steel Cutting Edge							1
14	xznylnut25nc	1/4"-20 Nylon Locknut	4	4	4	4	4	4	4
15	wal186002	Snowplow Corner Marker	2	2	2	2	2	2	2

## Manual Back Drag Parts:

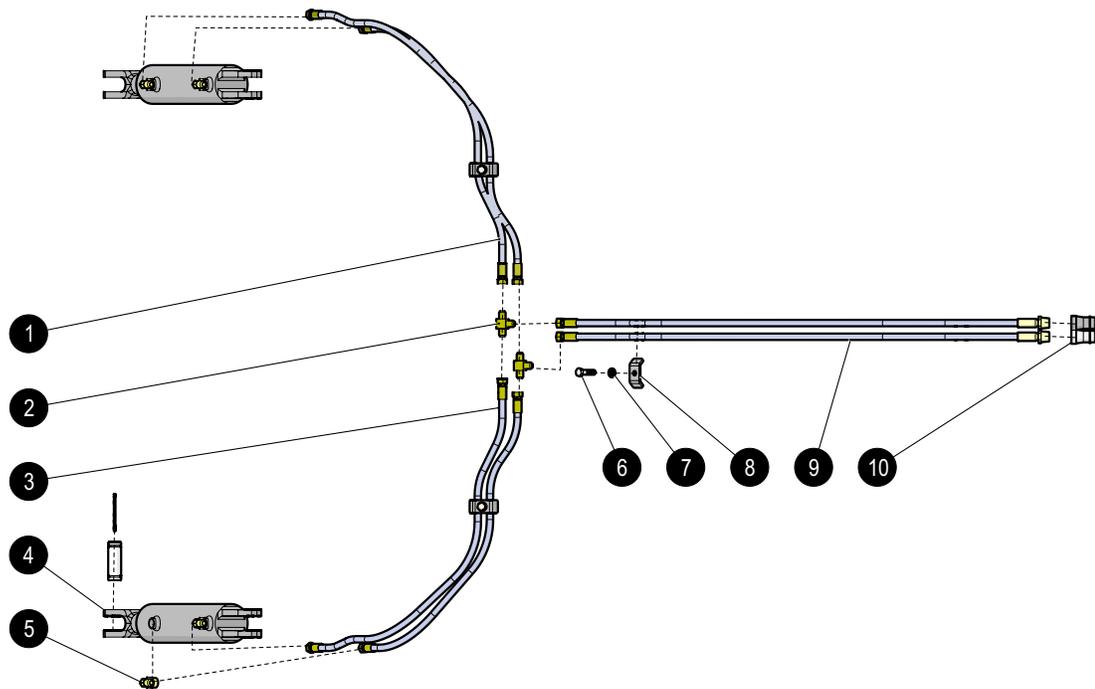


### NOTE

- The Manual Back Drag is available on all of the Pull Type Snowblower models.

Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	xzhcs3725nc	3/8" x 2 1/2 Bolt	2	2	2	2	2	2	2
2	xzfw50	1/2" Flatwasher	4	4	4	4	4	4	4
3	xzfw37	3/8" Flatwasher	4	4	4	4	4	4	4
4	35235	Chain Mount Upper	2	2	2	2	2	2	2
5	xzlw37	3/8" Lockwasher	6	6	6	6	6	6	6
6	xznut37nc	3/8" Locknut	6	6	6	6	6	6	6
7	36487	54", 60" Drag Lift Chain	2	2					
	35239	68"-97" Drag Lift Chain			2	2	2	2	2
8	xzhcs3730nc	3/8" x 3 Bolt	2	2	2	2	2	2	2
9	35237	Chain Mount Lower	2	2	2	2	2	2	2
10	xzhcs3715nc5	3/8" x 1 1/2 Bolt	2	2	2	2	2	2	2
11	35238	Keeper Plate Chain Mount Lower	2	2	2	2	2	2	2

## Hydraulic Back Drag Parts:

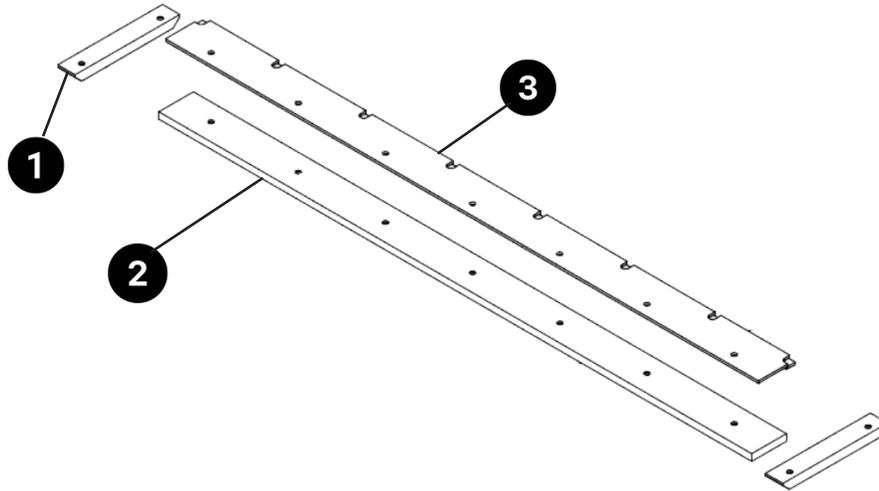


### NOTE

- The Hydraulic Back Drag is only available on the 68" - 97" Pull Type Snowblower models.

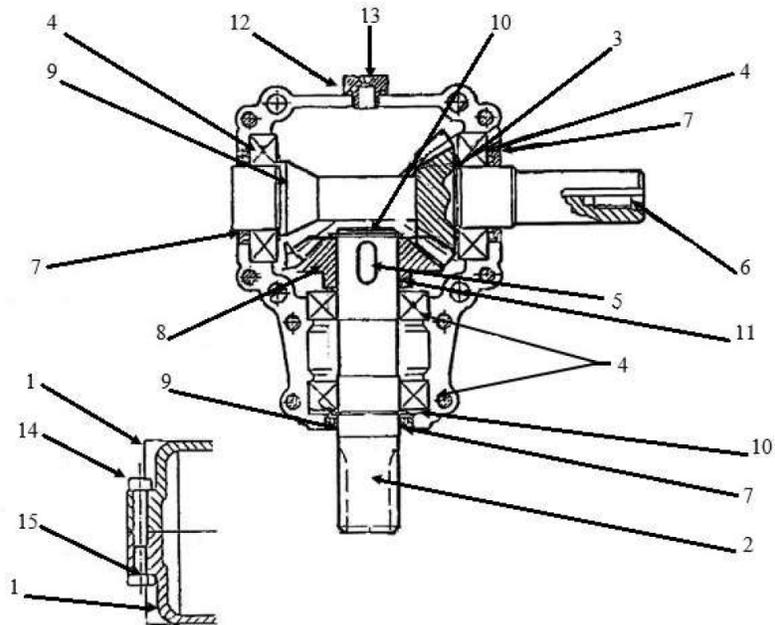
Item #	Part #	Description	68"	72"	78"	87"	97"
			Qty				
1	35314	3/8 JIC Swivel-1/4 Hose-3/8 JIC Swivel (Set 1)	2	2	2	2	2
2	2603-060606	3/8 JIC Tee	2	2	2	2	2
3	35315	3/8 JIC Swivel-1/4 Hose-3/8 JIC Swivel (Set 2)	2	2	2	2	2
4	MK21918	2 1/2 x 6 Welded Hyd cylinder Land L tilt & Lift	2	2	2	2	2
5	6801-0608	3/8 MJIC x 1/2 MORB 90 Degree	4	4	4	4	4
6	xzhcs3715nc5	3/8" Bolt	2	4	4	2	2
7	xzlw37	3/8 Lockwasher	3	3	3	3	3
8	10179	Hose clamp short	3	3	3	3	3
9	35316	3/8 JIC Swivel-1/4 Hose-3/8 JIC Swivel (Set 3)	2	2	2	2	2
10	S71-4	Agri-ball Nipple 1/2 npt	2	2	2	2	2

**Tivar Back Drag Option:**



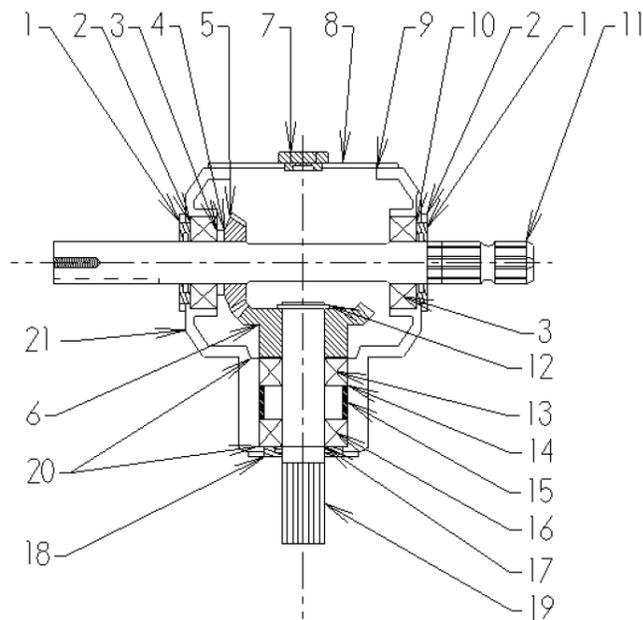
Item #	Part #	Description	54"	60"	68"	72"	78"	87"	97"
			Qty						
1	36254	Tivar Skid Shoe	2	2	2	2	2	2	2
2	37666	54" Wear Edge	1						
	36493	60" Wear Edge		1					
	36255	68" Wear Edge			1				
	37664	72" Wear Edge				1			
	36256	78" Wear Edge					1		
	36257	87" Wear Edge						1	
	36258	97" Wear Edge							1
3	37670	54" Cutting Edge Support	1						
	36490	60" Cutting Edge Support		1					
	36126	68" Cutting Edge Support			1				
	37660	72" Cutting Edge Support				1			
	36178	78" Cutting Edge Support					1		
	36181	87" Cutting Edge Support						1	
	36184	97" Cutting Edge Support							1

## Gear Box 60, 68 (T 281):



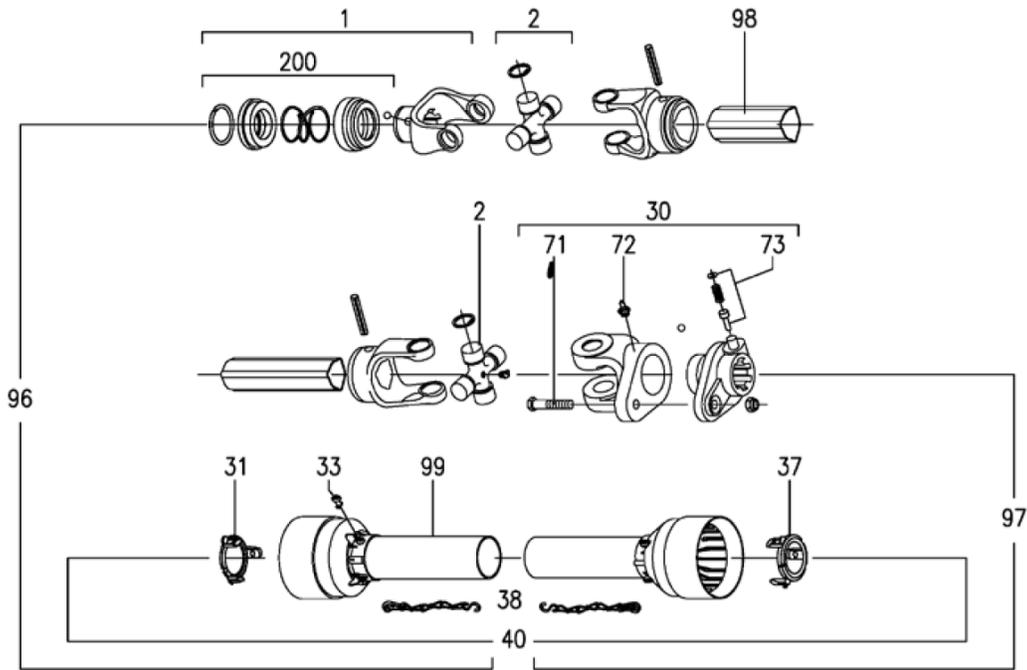
Item #	Part #	Description	Qty
1	519-1.281.0300.00	Casting	2
2	519-0.281.2207.00	Shaft 1 1/4	1
3	519-0.259.7500.00	Shim 48.0	1
4	519-8.0.1.00025	Bearing 6207	4
5	519-8.4.1.00057	Parallel Key 10x8x30	1
6	519-53912	Pinion Shaft Z13MS	1
7	519-8.7.3.00028	Oil Seal 35x52x7	3
8	519-0.259.6000.00	Gear Z19 MS	1
9	519-0.259.7505.00	Shim 35.3x0.5	2
10	519-8.5.1.00005	Snap Ring 35 UN17435	2
11	519-0.259.7506.00	Shim 35.3x0.6	1
12	519-8.7.6.00191	O-Ring OR-3062	1
13	519-0.281.7100.00	Plug	1
14	519-8.1.2.01174	Bolt M8x55	8
15	519-8.2.1.00382	Hex Nut M8	8

**Gear Box 78-97 (T 27D):**



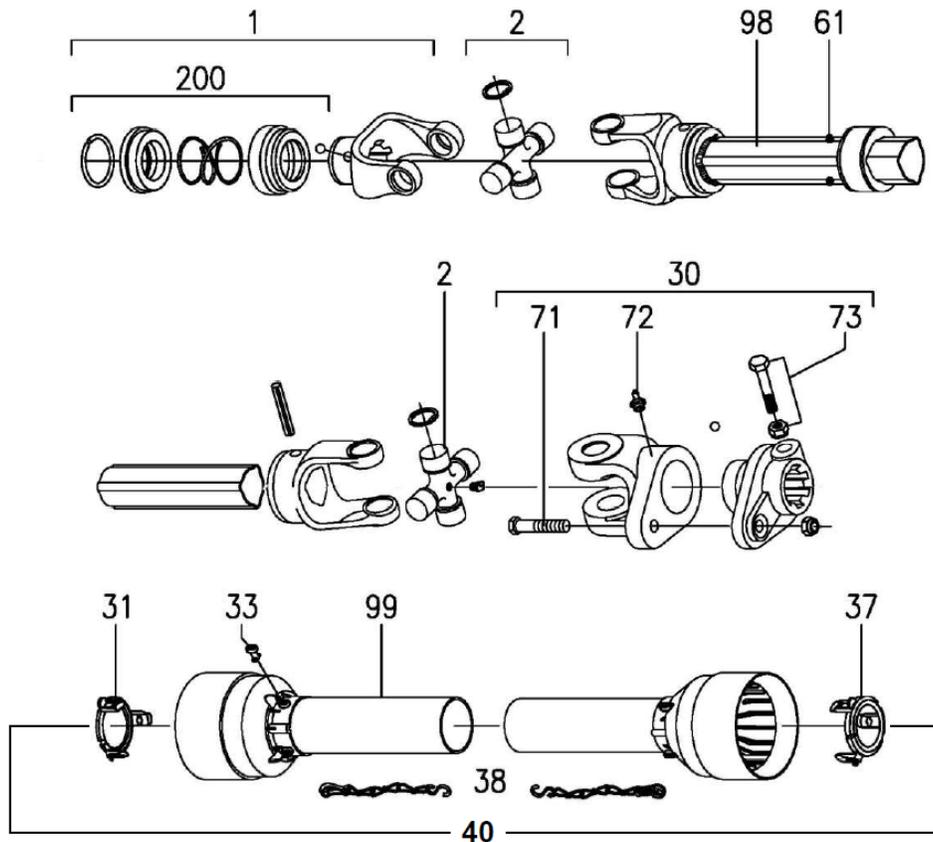
Item #	Part #	Description	Qty
1	519-87100748	Double Lip Seal 40x80x12	2
2	519-85200030	Snap Ring	2
3	519-80900024	Bearing 30208	2
4	519-02447500	Shim 515	1
5	519-01325002	Gear Z18 M6.15	1
6	519-02675000	Gear Z18 M6.15	1
7	519-86500006	Plug	2
8	519-02671300	Cover	1
9	519-81101031	Bolt M10 x 14	4
10	519-01107500	Shim 79.7	1
11	519-53911	Shaft	1
12	519-85100029	Snap Ring 40 UN17435	1
13	519-80900026	Bearing 30207	1
14	519-85200131	Snap Ring 72 17437	1
15	519-02677100	Spacer	1
16	519-80100025	Bearing 6207	1
17	519-85100005	Snap Ring UN17435	1
18	519-87100152	Double Lip Seal 35x72x10	1
19	519-02672000	Shaft	1
20	519-02597500	Shim 48.0	2
21	519-02670301	Casing	1

**PTO T20:**



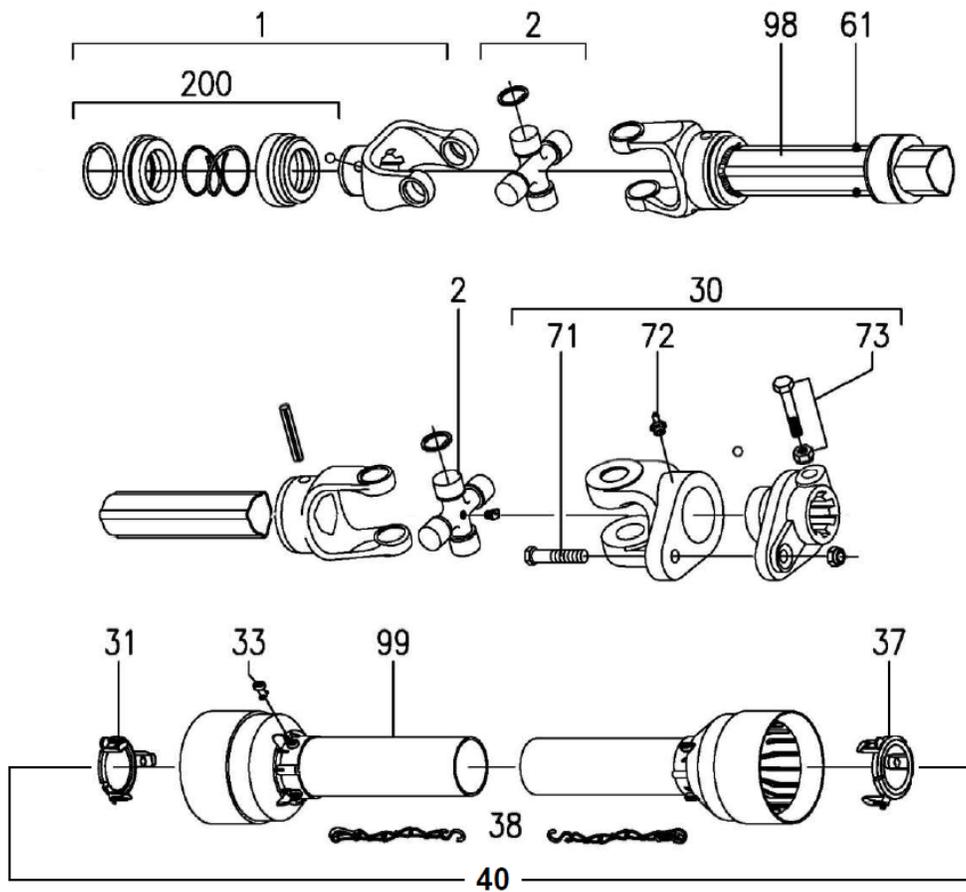
Item #	Part #	Description	Qty
1	141.022.324.1	Complete Collar Yoke	1
2	180.012.130	Cross Journal Assy	2
30	143.220.003.1	Complete Shear Yoke	1
31	8180.012.184	Guard Retaining Collar for Outer Tube	1
33	8180.014.240	8180.014.240	6
37	8180.012.183	Guard Retaining Collar of Inner Tube	11
38	180.016.790	Safety Chain	2
40	142.220.252.7221	Complete Guard with Instruction Manual	1
71	165.000.544	Bolt & Nut M6x40 cl 10.9	1
72	190.000.020	Grease Fitting	1
73	166.026.004	Push pin Set 1 3/8	2
200	165.000.628	Collar Kit for 1 3/8" Yoke	1
98	190.000.216	Danger Label for Outer Tube	1
99	190.000.215	Danger Label for Outer Guard Tube	1
100	190.000.371	PTO Instruction Manual	1

**PTO T40:**



Item #	Part #	Description	Qty
1	141.024.430.1	Complete Collar Yoke	1
2	180.014.130	Cross Journal Assy	2
30	143.240.011.1	Complete Shear Yoke	1
31	8180.014.233	Guard Retaining Collar for Outer Tube	1
33	8180.014.240	Special Plastic Bolt	6
37	8180.014.232	Guard Retaining Collar of Inner Tube	11
38	180.016.790	Safety Chain	2
40	142240211	Complete Guard with Instruction Manual	1
71	165.000.571	Bolt & Nut M8x50 cl 8.8	1
72	190.000.020	Grease Fitting	1
73	165.000.525	Bolt & Nut M12x1.25x70 cl 8.8	2
200	165.000.628	Collar Kit for 1 3/8" Yoke	1
	190.000.216	Danger Label for Outer Tube	1
	190.000.215	Danger Label for Outer Guard Tube	1
	190.000.371	PTO Instruction Manual	1

**PTO T50:**



Item #	Part #	Description	Qty
1	141.025.363.1	Complete Collar Yoke	1
2	180.015.130	Cross Journal Assy	2
30	143.250.016.1	Complete Shear Yoke	1
31	8180.015.288	Guard Retaining Collar for Outer Tube	1
33	8180.014.240	Special Plastic Bolt	6
37	8180.015.289	Guard Retaining Collar of Inner Tube	11
38	180.016.025	Safety Chain	2
40	142250257	Complete Guard with Instruction Manual	1
61	8180.012.418	Special Grease Nipple	1
71	165.000.511	Bolt & Nut M10x55 cl. 8.8	1
72	190.000.020	Grease Fitting	2
73	165.000.525	Bolt & Nut M12x1.25x70 cl. 8.8	1
200	165.000.628	Collar Kit for 1 3/8" Yoke	1
	190.000.216	Danger Label for Outer Tube	1
	190.000.215	Danger Label for Outer Guard Tube	1
	190.000.371	PTO Instruction Manual	



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