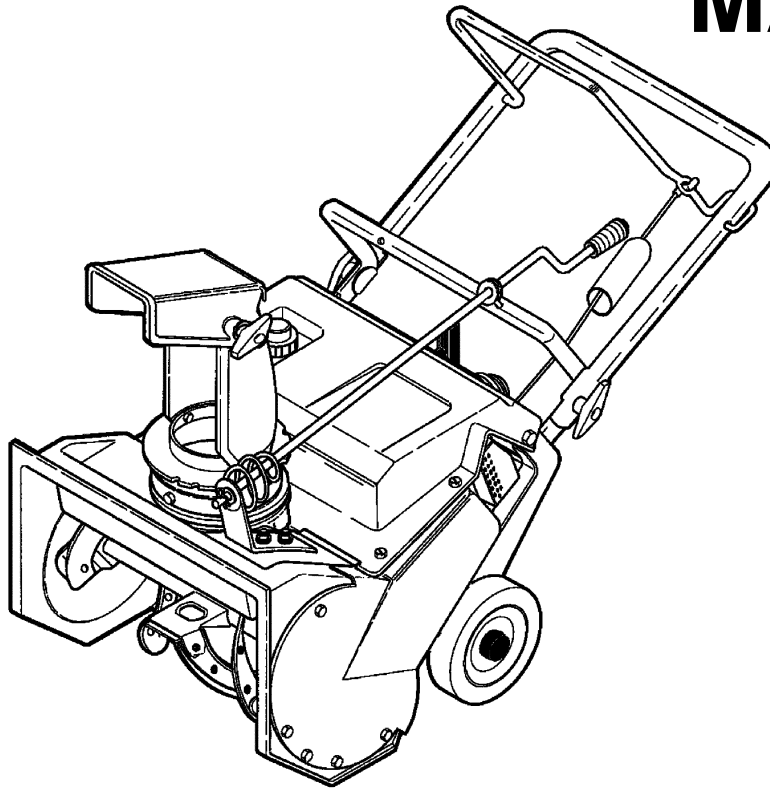


ST0320 Snow Thrower

OPERATOR'S MANUAL



MTF-041007C

FRONTIER
EQUIPMENT™

INTRODUCTION

Congratulations on your purchase of a Frontier Snowthrower. It has been designed, engineered and manufactured to give you the best possible dependability and performance. However, like all mechanical products, your machine will occasionally require adjustment and maintenance. This handbook should be read before operating or performing and adjustments on your machine.

The instructions in this Owner's Manual are written for a person with some mechanical ability. Like most service books, not all the steps are described. Steps on how to loosen or tighten fasteners are steps anyone can follow with some mechanical ability. Read and follow these instructions before you use the unit.

Know your product:: If you understand the unit and how the unit operates, you will get the best performance. As you read this manual, compare the illustrations to the unit. Learn the location and the function of the controls. To help prevent an accident, follow the operating instructions and the safety rules. Keep this manual for future reference.

IMPORTANT: Many units are not assembled and are sold in cartons. It is the responsibility of the owner to make sure the assembly instructions in this manual are exactly followed. Other units are purchased in an assembled condition. On assembled units, it is the responsibility of the owner to make sure the unit is correctly assembled. The owner must carefully check the unit according to the instructions in this manual before it is first used.

The warranty, found in this manual, details the coverage and limitations of this product. **Registration of the warranty is necessary and must be preformed by the dealer within sixty (60) days from the date of retail sale or delivery.** The Warranty Registration Form is located on the Frontier website.

RESPONSIBILITY OF THE OWNER

The responsibility of the owners to follow the instructions below.

1. Carefully read and follow the rules for safe operation.
2. Follow all the assembly instructions.
3. Inspect the unit.
4. Make sure that the operator of the unit knows how to correctly use all standard and accessory equipment.
5. Operate the unit only with guards, shields, and other safety items in place and working correctly.
6. Correctly adjust the unit.
7. Service the unit only with authorized or approved replacement parts.
8. Complete all maintenance on the unit.

PRODUCT INFORMATION

The owner must be certain that all the product information is included with this unit.

This information includes the *INSTRUCTION BOOKS*, the *REPLACEMENT PARTS* and the *WARRANTIES*. This information must be included to make sure state laws and other laws are followed.

**Read And Keep This Book For
Future Reference. This Book Contains Important Information On:
*SAFETY, ASSEMBLY, OPERATION AND MAINTENANCE.***

RULES FOR SAFE OPERATION

IMPORTANT



WARNING: Always disconnect the spark plug wire and place it where it cannot make contact with spark plug to prevent accidental starting during: Preparation, Maintenance, or Storage of your snowthrower.



Safe Operation Practices for Snowthrowers As Recommended By: American National Standards Institute.



WARNING:



Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. WASH HANDS AFTER HANDLING.

IMPORTANT: Safety standards require operator presence controls to minimize the risk of injury. Your snowthrower is equipped with such controls. Do not attempt to defeat the function of the operator presence control under any circumstances.

Training

1. Read the operating and service instruction manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
2. Never allow children to operate the equipment. Never allow adults to operate the equipment without proper instruction.
3. Keep the area of operation clear of all persons, particularly small children and pets.
4. Exercise caution to avoid slipping or falling especially when operating in reverse.

Preparation

1. Thoroughly inspect the area where the equipment is to be used and remove all doormats, sleds, boards, wires, and other foreign objects.
2. Disengage all clutches before starting the engine (motor).
3. Do not operate the equipment without wearing adequate winter outer garments. Wear footwear that will improve footing on slippery surfaces.
4. Handle fuel with care; it is highly flammable.

- a. Use an approved fuel container.
 - b. Never remove fuel tank cap or add fuel to a running engine (motor) or hot engine (motor).
 - c. Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors.
 - d. Replace fuel cap securely and wipe up spilled fuel.
 - e. Never store fuel or snowthrower with fuel in the tank inside of a building where fumes may reach an open flame or spark.
 - f. Check fuel supply before each use, allowing space for expansion as the heat of the engine (motor) and/or sun can cause fuel to expand.
5. For all units with electric starting motors use electric starting extension cords certified CSA/UL. Use only with a receptacle that has been installed in accordance with local inspection authorities.
 6. Adjust the snowthrower height to clear gravel or crushed rock surface.
 7. Never attempt to make any adjustments while the engine (motor) is running (except when specifically recommended by manufacturer).
 8. Let engine (motor) and snowthrower adjust to outdoor temperatures before starting to clear snow.
 9. Always wear safety glasses or eye shields during operation or while performing an adjustment or repair to protect eyes from foreign objects that may be thrown from the snowthrower.

Operation

1. Do not operate this machine if you are taking drugs or other medication which can cause drowsiness or affect your ability to operate this machine.
2. Do not use this machine if you are mentally or physically unable to operate this machine safely.
3. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.
4. Exercise extreme caution when operating on or crossing gravel drives, walks or roads. Stay alert for hidden hazards or traffic.
5. After striking a foreign object, stop the engine (motor), remove the wire from the spark plug, thoroughly inspect snowthrower for any damage, and repair the damage before restarting and operating the snowthrower.
6. If the unit should start to vibrate abnormally, stop the engine (motor) and check immediately for the cause. Vibration is generally a warning of trouble.

RULES FOR SAFE OPERATION

7. Stop the engine (motor) whenever you leave the operating position, before unclogging the auger/impeller housing or discharge chute and when making any repairs, adjustments, or inspections.
8. When cleaning, repairing, or inspecting, make certain the auger/impeller and all moving parts have stopped and all controls are disengaged. Disconnect the spark plug wire and keep the wire away from the spark plug to prevent accidental starting.
9. Take all possible precautions when leaving the snowthrower unattended. Disengage the auger/ impeller, stop engine (motor), and remove key.
10. Do not run the engine (motor) indoors, except when starting the engine (motor) and for transporting the snowthrower in or out of the building. Open the outside doors; exhaust fumes are dangerous (containing CARBON MONOXIDE, an ODORLESS and DEADLY GAS).
11. Do not clear snow across the face of slopes. Exercise extreme caution when changing direction on slopes. Do not attempt to clear steep slopes.
12. Never operate the snowthrower without proper guards, plates or other safety protective devices in place.
13. Never operate the snowthrower near enclosures, automobiles, window wells, drop-offs, and the like without proper adjustment of the snow discharge angle. Keep children and pets away.
14. Do not overload the machine capacity by attempting to clear snow at too fast a rate.
15. Never operate the machine at high transport speeds on slippery surfaces. Look behind and use care when backing up.
16. Never direct discharge at bystanders or allow anyone in front of the unit.
17. Disengage power to the collector/impeller when snowthrower is transported or not in use.
18. Use only attachments and accessories approved by the manufacturer of the snowthrower (such as tire chains, electric start kits, ect.).
19. Never operate the snowthrower without good visibility or light. Always be sure of your footing and keep a firm hold on the handles. Walk; never run.
20. Do not over- reach. Keep proper footing and balance at all times.
21. Exercise caution if operating on steep sloping surfaces.
22. This snowthrower is for use on sidewalks, driveways and other ground level surfaces.
23. Do not use the snowthrower on surfaces above ground level such as roofs of residences, garages, porches or other such structures or buildings.

Maintenance And Storage

1. Check shear bolts and other bolts at frequent intervals for proper tightness to be sure the equipment is in safe working condition.
2. Never store the snowthrower with fuel in the tank inside a building where ignition sources are present such as hot water and space heaters, clothes dryers, and the like. Allow the engine (motor) to cool before storing in any enclosure.
3. Always refer to operator's guide instructions for important details if the snowthrower is to be stored for an extended period.
4. Maintain or replace safety and instruction labels, as necessary.
5. Run the snowthrower a few minutes after throwing snow to prevent freeze-up of the auger/impeller.



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SAFETY DECALS

WARNING: If safety decals are damaged or missing, replace immediately.

Look for this symbol to indicate important safety precautions. This symbol indicates: "Attention! Become Alert! Your Safety Is At Risk."

Before operation of your snowthrower, read the safety decals as shown on your snowthrower. The cautions and warnings are for your safety. To avoid a personal injury or damage to your snowthrower, understand and follow all safety decals. If you have any questions regarding the meaning or how to comply with the instructions, do not operate until you understand the purpose for the warning or danger given in the safety decal. If you do not understand

the meaning, then thoroughly read all safety and operation instructions in this Owner's Manual or contact your local dealer.

If any safety decals become worn or damaged and cannot be read, order replacement decals from your local dealer.

Identifying Your Snowthrower

The snowthrower has two (2) identifying numbers: (1) unit model number: (2) unit serial number. The two preceding numbers are required to insure that the proper replacement parts are obtained when required. If you have any questions concerning parts, service, or technical data, contact the dealer where the unit was purchased. For complete warranty information refer to the warranty in the Owner's Information section of this manual.

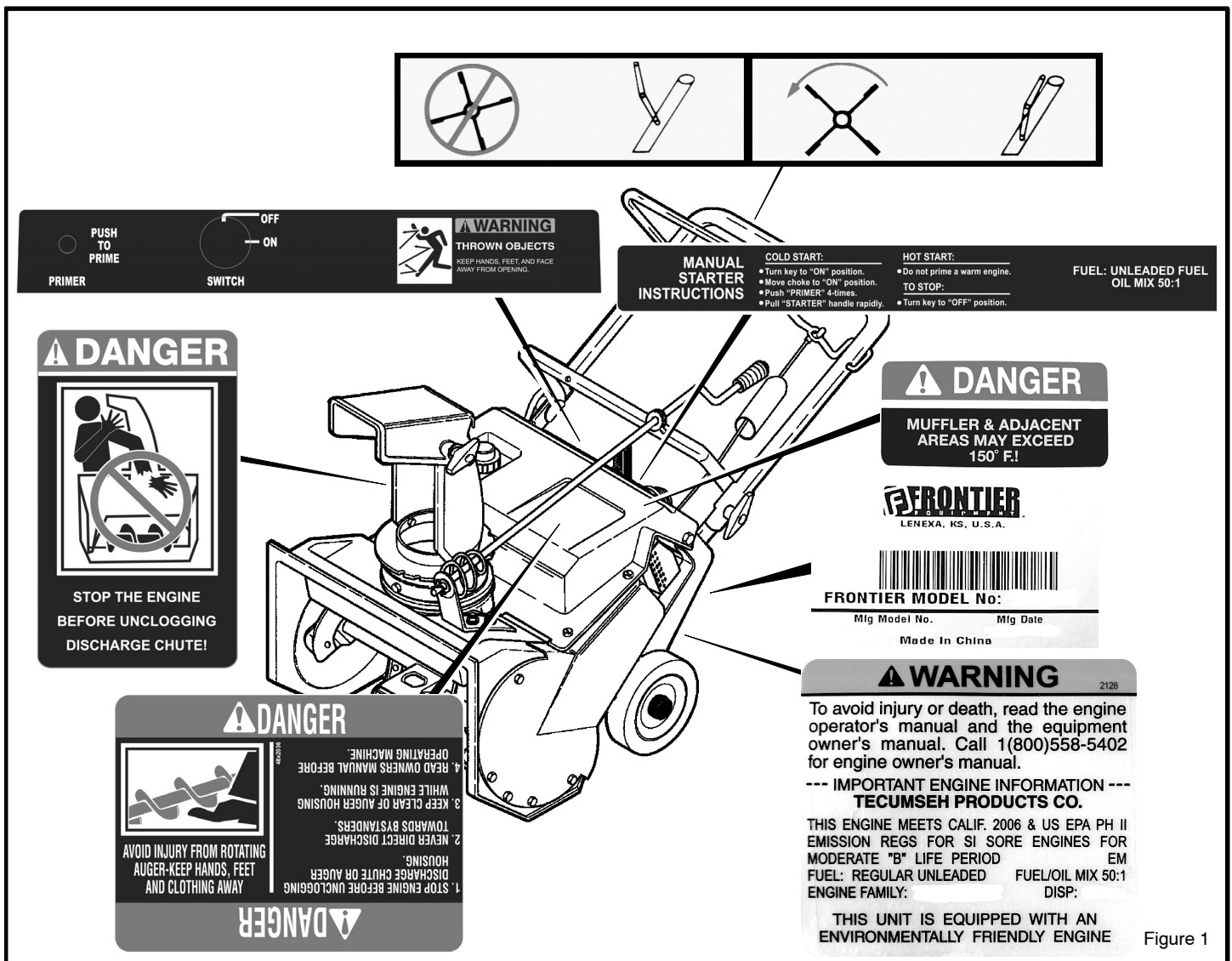


Figure 1

OWNER'S INFORMATION

THREE YEAR LIMITED WARRANTY

Murray warrants to the original purchaser of this Frontier Branded Snowthrower that this unit shall be free from defects in material and workmanship under normal use and service for a period of **Three (3) Year** from the date of purchase; however, this warranty does not cover accessories (such as electric starters) and Normal Wear Parts (except as noted below) as the companies that manufacture these items furnish their own warranties and provide service through their authorized field service facilities. For additional information, see the warranties covering these particular parts. If you are uncertain whether your unit contains or is equipped with one or more of these parts, consult your dealer prior to purchase. Subject to the terms and conditions noted in this Limited Warranty, we shall, at our option, repair or replace at no cost to the original purchaser any part covered by this Limited Warranty during the applicable warranty period.

Normal Wear Parts are defined as drive belts, augers, shear pins, tires and headlights. These parts are warranted to be free from defects in material and workmanship as delivered with the product. Any claim for repair or replacement of Normal Wear Parts must be made within thirty (30) days of the date of purchase. No claims involving damage caused from material use, abuse or misuse will be honored.

This Murray **Three (3) Year Limited Warranty** for your Frontier Branded Snowthrower is your exclusive remedy; however, this warranty is void or does not apply to any unit that has been tampered with, altered, misused, abused. If used for commercial and/or professional (non-homeowner) uses, the duration of this warranty is ninety (90) days after the date of purchase. Your warranty does not cover minor mechanical adjustments which are not due to any defect in material or workmanship. For assistance in making such adjustments, consult your Operator's Manual.

The engine on this Frontier Branded Snowthrower is warranted to the original purchaser for only a **Two (2) Year Limited Warranty**. See your engine manual for information regarding the warranty policy and items covered under warranty. See your authorized John Deere/Frontier Dealer for service or replacement parts. *MT*

To make a claim under this Murray **Three (3) Year Limited Warranty** for your Frontier Branded Snowthrower, return the unit (or if authorized in advance, the defective part) along with your proof of purchase to an Authorized John Deere/Frontier Dealer near you. To locate the nearest Authorized John Deere/Frontier Dealer, check the Yellow Page listings in your local telephone directory. If you return the entire unit, John Deere/Frontier will repair all warranty items. If authorize to return the defective part only, John Deere/Frontier will either replace or repair the part. This Murray **Three (3) Year Limited Warranty** for your Frontier Branded Snowthrower gives you specific legal rights, and you may also have other rights which vary from state to state. **This Limited Warranty is given in lieu of all other expressed and implied warranties including the implied warranty of merchantability and warranty of fitness for a particular purpose.** If you need additional information on this written warranty or assistance in obtaining service, contact you local John Deere/Frontier Dealer.

FOR YOUR RECORDS

DATE PURCHASED: _____

MODEL NO: _____

SERIAL NO: _____

STORE WHERE PURCHASED: _____

ADDRESS: _____

CITY: _____ STATE: _____

TELEPHONE : _____

Record this information about your unit so that you will be able to provide it in case of loss or theft.

ASSEMBLY

PARTS BAGS CONTENTS:

- 1 - 2.6 ounces 2-cycle oil
- 1 - Owner's Manual

TOOLS REQUIRED FOR ASSEMBLY

- 1-Knife
- 1-Pliers



WARNING: Always wear safety glasses or eye shields while assembling the snowthrower.

Figure 2 shows the snow thrower in the operating position.

References to the right or left hand side of the snow thrower are from the viewpoint of the operator's position behind the unit.

HOW TO REMOVE THE SNOW THROWER FROM THE CARTON

1. Locate all parts that are packed separately and remove from the carton.
2. Remove and discard the packing material from around the snow thrower.
3. Cut down all four corners of the carton and lay the side panels flat.
4. Hold onto the lower handle and pull the snow thrower off the carton.

CAUTION: DO NOT back over cables.

5. Remove the packing material from the handle assembly.

HOW TO ASSEMBLE THE HANDLE

1. Remove the packing material from the upper and lower handles.
2. Loosen the **knobs** on each side of the **handle**. (See Figure 2)
3. Raise the upper **handle** to the operating position. Hold the upper **handle** apart to prevent scratching the lower handle.

NOTE: Make sure the cables are not caught between the upper and lower handle.

4. Tighten the **knobs**.

5. Cut and discard the **cable tie** from the lower end of the **chute control rod**.
6. Turn the **chute deflector** around toward the front of the snow thrower.

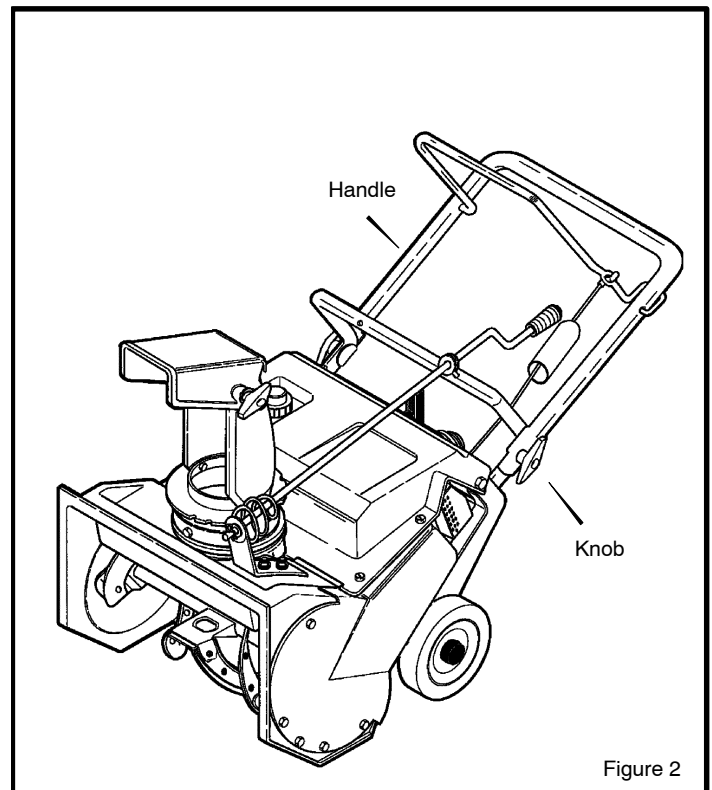


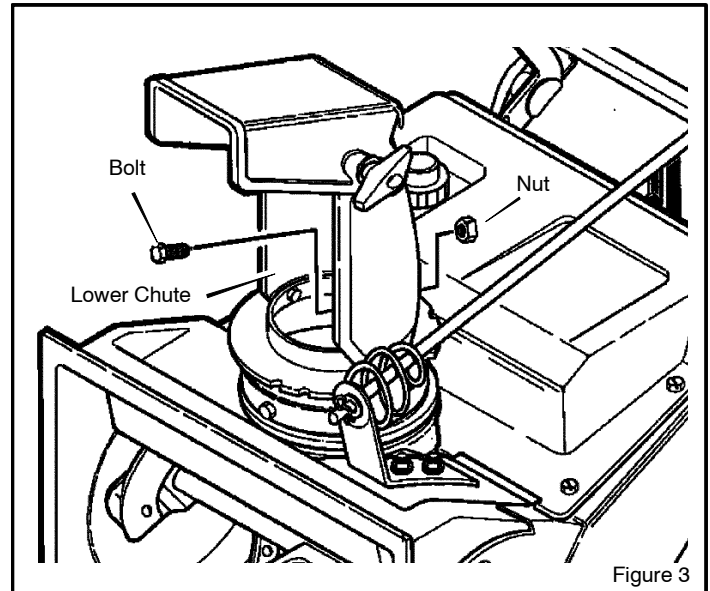
Figure 2

ASSEMBLY

HOW TO ASSEMBLE THE LOWER CHUTE

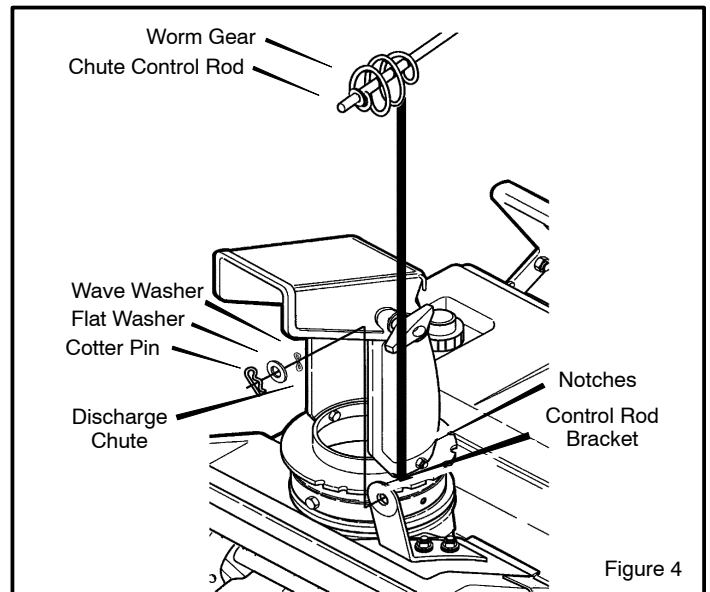
For shipping purposes, some models are shipped with the rear nut and bolt removed from the **lower chute**. If the lower chute is not attached, assemble as follows.

1. Use the **bolt** and **nut** found in the parts bag to attach the **lower chute**.
2. Tip the **lower chute** backward until the hole in the chute ring is aligned with the hole in the **lower chute**. See Figure 3
3. Attach the **lower chute** with **bolt** and **nut**. Make sure the **nut** is tight.



HOW TO ASSEMBLE THE CHUTE CONTROL ROD

1. Remove the **cotter pin**, **flat washer**, and **wave washer** from the end of the **chute control rod**. DO NOT DISCARD. (See Figure 4)
2. Mount the end of the **chute control rod** through the hole in the **control rod bracket**. Make sure the **worm gear** is aligned with the **notches** in the **discharge chute**.
3. Fasten the **chute control rod** to the **control rod bracket** with **cotter pin**, **flat washer**, and **wave washer**.
4. Rotate the **chute control rod** clockwise and counterclockwise. Make sure the **discharge chute** rotates freely.



✓ CHECKLIST

Before you operate your new snow thrower, to ensure that you receive the best performance and satisfaction from this quality product, please review the following checklist:

- ✓ All assembly instructions have been completed.
- ✓ The discharge chute rotates freely.
- ✓ No remaining loose parts in carton.

While learning how to use your snow thrower, pay extra attention to the following important items:

- ✓ Make sure the fuel tank is filled with the correct mixture (50:1 ratio) of gasoline and oil.
- ✓ Become familiar with the location of all controls and understand their function.
- ✓ Before starting the engine, make sure all controls operate correctly.

OPERATION

KNOW YOUR SNOW THROWER

READ THIS OWNER'S MANUAL AND SAFETY RULES BEFORE OPERATING YOUR SNOW THROWER. Compare the illustrations with your SNOW THROWER to familiarize yourself with the location of various controls and adjustments. Save this manual for future reference.

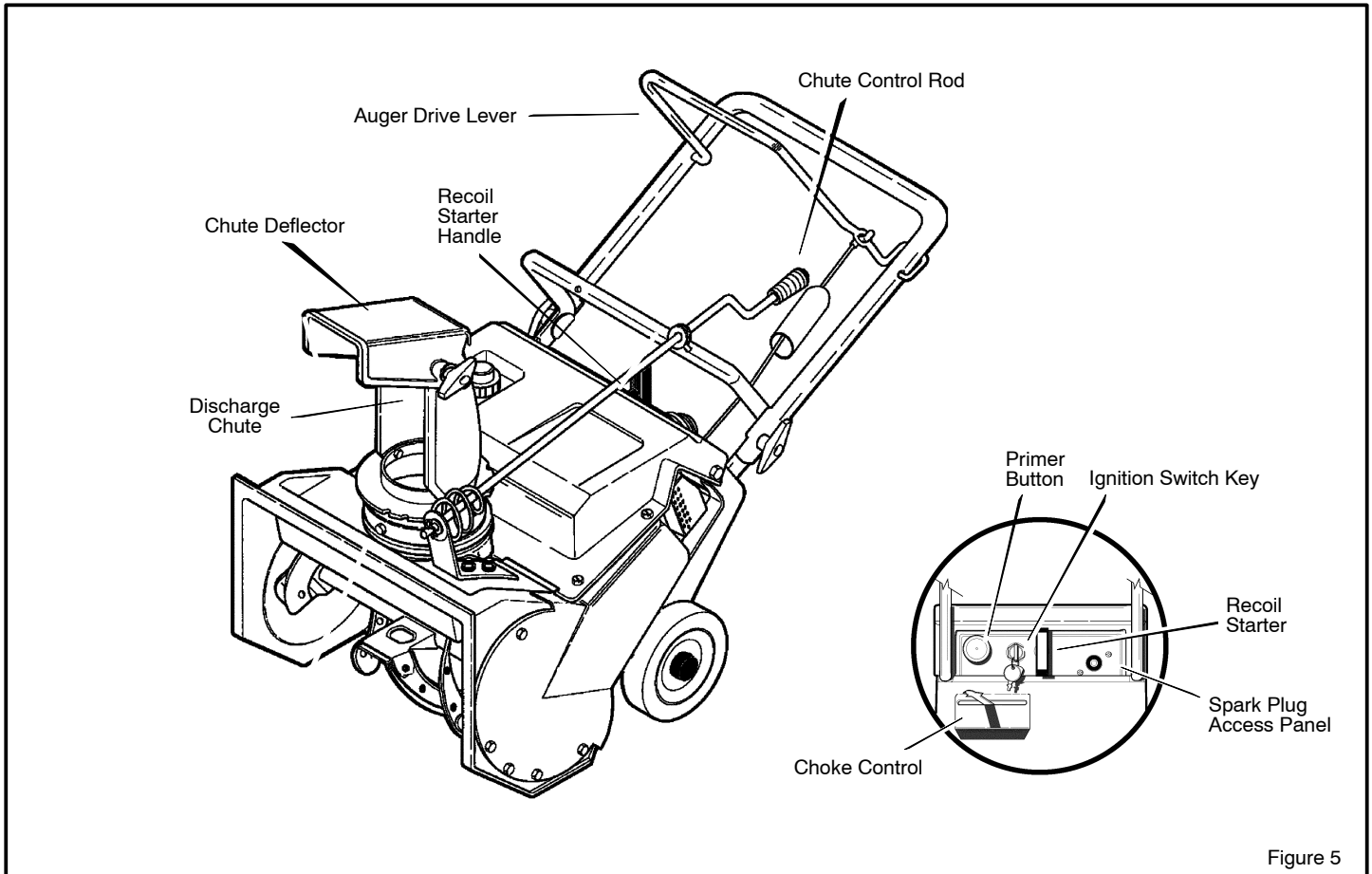


Figure 5

ENGINE AND SNOW THROWER OPERATING CONTROLS

Auger Drive Lever - Starts and stops the auger.

Chute Control Rod - Changes the direction of snow throwing through the discharge chute.

Chute Deflector - Changes the distance the snow is thrown.

Discharge Chute - Changes the direction the snow is thrown.

Ignition Switch Key - Must be inserted and turned to the ON position to start the engine.

Recoil Starter Handle - Starts the engine manually.

Choke Control - Used to start a cold engine.

Primer Button - Injects fuel directly into the carburetor manifold for fast starts in cold weather.

Spark Plug Access Panel - Aides in the removal of the spark plug.

OPERATION

SNOWTHROWER OPERATION

The most effective use of the snowthrower will be established by experience, taking into consideration the terrain, wind conditions and building location which will determine the direction of the discharge chute.

NOTE: Do not discharge snow toward a building as hidden objects could be thrown with sufficient force to cause damage.



WARNING: Read Owner's Manual before operating machine. This machine can be dangerous if used carelessly.

Never operate the snowthrower without all guards, covers, and shields in place.

Never direct discharge toward windows or allow bystanders near machine while engine is running.

Stop the engine whenever leaving the operating position.

Disconnect spark plug before unclogging the impeller housing or the discharge chute and before making repairs or adjustments.

When leaving the machine, remove the ignition key.

To reduce the risk of fire, keep the machine clean and free from spilled gas, oil and debris.

HOW TO STOP THE SNOWTHROWER

1. To stop throwing snow, release the **auger drive lever**. (See Figure 7).

HOW TO THROW SNOW

1. Engage the **auger drive lever**. (See Figure 7).
2. To stop throwing snow, release the **auger drive lever**.

HOW TO MOVE FORWARD

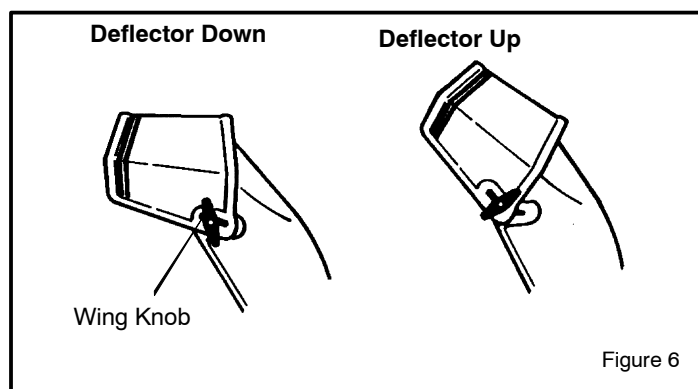
1. Hold the **auger drive lever** against the **handle** (See Figure 7). The auger will begin rotating.
2. To go forward, raise the **handle** to allow the **rubber auger blades** to contact the ground. Maintain a firm hold on the **handle** as the snow thrower starts to move forward. Guide the snow thrower by moving the **handle** either left or right. Do not attempt to push the snow thrower.
3. To stop, release the **auger drive lever**.

NOTE: If the snow thrower continues to slowly move forward, see "How To Adjust The Auger Control Cable" in the Service And Adjustment Section.

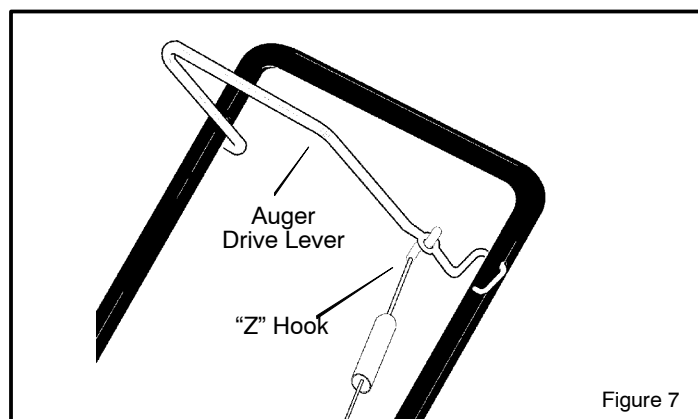
2. To stop the engine, move the **ignition key** to the OFF position.

HOW TO CONTROL SNOW DISCHARGE

1. Turn the **chute control rod** to set the direction of the snow throwing. (See Figure 5)
2. Loosen the **wing knob** on the chute deflector and move the deflector to set the distance. Move the deflector (**Up**) for more distance, (**Down**) for less distance. Then tighten the **wing knob** (See Figure 6).



NOTE: If the auger continues to rotate, see "How To Adjust The Auger Control Cable" in the Service and Adjustments section.



OPERATION

BEFORE STARTING THE ENGINE

WARNING: Experiences indicates that alcohol blended fuels (called gasohol or those using ethanol or methanol) can attract moisture which leads to separation and formation of acids during storage. Acidic gas can damage the fuel system of an engine while in storage.

NOTE: To avoid engine problems, the fuel system must be emptied before storage for 30 days or longer. Start the engine and let it run until the fuel lines and carburetor are empty. Use the carburetor bowl drain to empty residual gasoline from the float chamber. Use fresh fuel next season. See the Storage section in this manual for additional information.

Never use engine or carburetor cleaner products in the fuel tank or permanent damage can occur.

HOW TO MIX THE FUEL MIXTURE

The two cycle engine, used on this snow thrower, requires a mixture of gasoline and oil for lubrication of the bearings and other moving parts. The correct fuel mixture ratio is 50:1 (2.6 oz. oil per one gallon of gas - see the Fuel Mixture Chart). Gasoline and oil must be pre-mixed in a clean gasoline container. Always use fresh, clean, unleaded gasoline.

FUEL MIXTURE CHART (mixture 50:1)

U.S.		IMPERIAL		SI. (Metric)	
GAS	OIL	GAS	OIL	GAS	OIL
1 Gal.	2.6 oz.	1 Gal.	3.1 oz.	4 liter	80 ML

Mix gasoline and oil as follows:

1. Pour one (1) U.S. quart of fresh, clean, unleaded automotive gasoline into a one gallon size gasoline container.
2. Add 2.6 ounces of clean, high quality, two-cycle oil to the gasoline container.
3. Install the fuel cap onto the gasoline container. Vigorously shake the gasoline container to mix the oil with the gasoline.
4. Add an additional three (3) U.S. quarts of gasoline to the gallon container. Again shake the gasoline container.

WARNING: Gasoline is flammable. Always use caution when handling or storing gasoline. Do not fill fuel tank while snow thrower is running, when it is hot, or when snow thrower is in an enclosed area.

Keep away from open flame or an electrical spark and do not smoke while filling the fuel tank.

Never fill the tank completely. Fill the tank to within 1/4"-1/2" from the top to provide space for expansion of fuel.

Always fill fuel tank outdoors and use a funnel or spout to prevent spilling.

Make sure to wipe up any spilled fuel before starting the engine.

Store gasoline in a clean, approved container and keep the cap in place on the container.

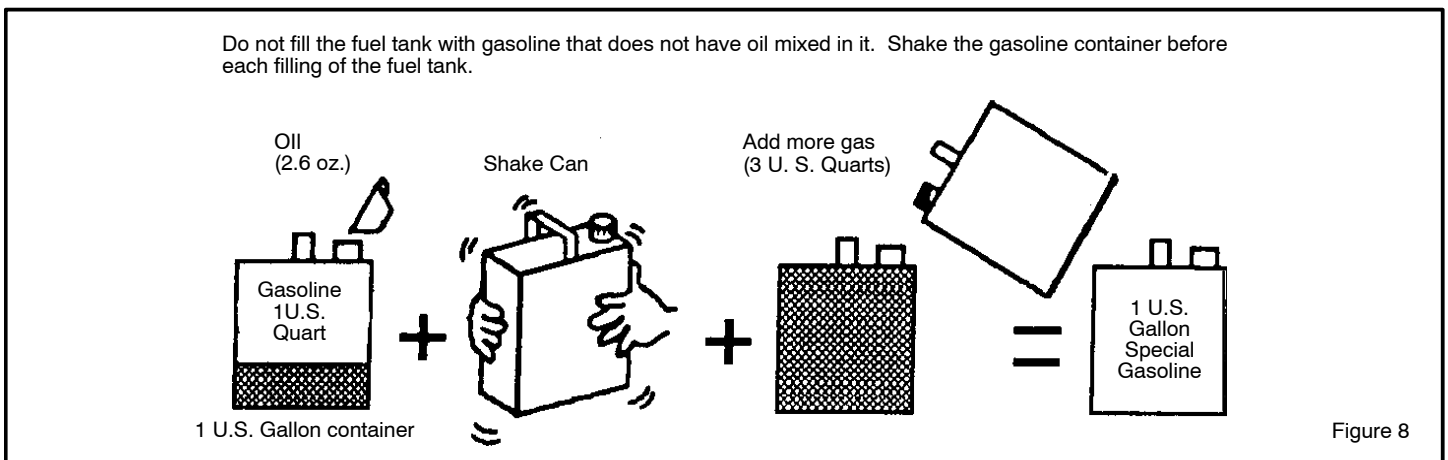


Figure 8

OPERATION

BEFORE STARTING THE ENGINE

1. Before you service or start the engine, familiarize yourself with the snow thrower. Be sure you understand the function and location of all controls.
2. Be sure that all fasteners are tight.
3. Before starting the engine, make sure all controls operate correctly.

HOW TO STOP THE ENGINE

To stop the engine, move the ignition key to the stop position.

HOW TO START THE ENGINE

COLD START

1. Fill the fuel tank with a fresh, clean fuel mixture. See "How To Mix The Fuel Mixture".
2. Move the choke control to FULL position.
3. Make sure the **auger drive lever** is in the disengaged (released) position.
4. Insert the **ignition key** and turn to the ON position.
5. Move the **choke control** to the full choke position.
6. Push the **primer button** while covering the vent hole as follows: Remove finger from primer button between primes.
 - Do not prime if temperature above 50° F (10° C).
 - Push twice if temperature is 50° F (10° C) to 15°F (-10° C).
 - Push four times if temperature is below 15° F (-10° C).
 - Push five time if temperature is below 0° F (-18° C).
7. Rapidly pull the **recoil starter handle**. Do not allow the **recoil starter handle** to snap back. Slowly return the **recoil starter handle**.
8. If the engine does not start in 5 or 6 tries, See the "Trouble Shooting Chart" Instructions.
9. As the engine warms up, move the **choke control** to 1/2 choke position. When the engine runs smoothly, move the **choke control** to the off position.

NOTE: Allow the engine to warm up for several minutes before blowing snow in temperatures below 0°F.

WARM START

If restarting a warm engine after a short shutdown, leave choke at "OFF" and do not push the primer button. If the engine fails to start, follow the Cold Start instructions.



WARNING: Never run engine indoors or in enclosed, poorly ventilated areas. Engine exhaust contains **CARBON MONOXIDE, AN ODORLESS AND DEADLY GAS**. Keep hands, feet, hair and loose clothing away from any moving parts on engine and snow thrower.

The temperature of muffler and nearby areas may exceed 150°F. Avoid these areas.

DO NOT allow children or young teenagers to operate or be near snow thrower while it is operating.



WARNING: Do not attempt to remove any item that may become lodged in auger without taking the following precautions:

- Release auger drive lever.
- Move the ignition lever to the stop position to stop the engine.
- Disconnect spark plug wire.
- Do not place your hands in the auger or discharge chute. Use a pry bar.

OPERATION

HOW TO REMOVE SNOW FROM THE AUGER HOUSING



WARNING: Do not attempt to remove snow or debris that may become lodged in auger housing without taking the following precautions.

1. Release the **auger drive lever**.
2. Remove the **ignition key**.
3. Disconnect the spark plug wire.
4. Do not place your hands in the **auger housing** or the **discharge chute**. Use a pry bar to remove any snow or debris.

SNOW THROWING TIPS

1. When the handle is raised, the auger blades will engage the ground and the snow thrower will move forward. When the auger drive lever is released, the auger blades will stop. If the blades do not stop, see "How To Adjust The Auger Control Cable" in the Service And Adjustment section.
2. Most efficient snow throwing is accomplished when the snow is removed immediately after it falls.
3. For complete snow removal, slightly overlap each previous path.
4. Whenever possible, discharge the snow down wind.
5. The distance the snow will be discharged can be adjusted by moving the discharge chute deflector. Raise the deflector for more distance or lower the deflector for less distance.
6. In windy conditions, lower the chute deflector to direct the discharged snow close to the ground where it is less likely to blow into unwanted areas.
7. For safety and to prevent damage to the snow thrower, keep the area to be cleared free of stones, toys and other foreign objects.
8. Do not use the auger propelling feature when clearing gravel or crushed rock driveways. Move the handle down to slightly raise the auger.
9. The forward speed of the snow thrower is dependent on the depth and weight of the snow. Experience will establish the most effective method of using the snow thrower under different conditions.

10. After each snow throwing job, allow the engine to run for a few minutes. The snow and accumulated ice will melt off the engine.
11. Clean the snow thrower after each use.
12. Remove ice, snow and debris from the entire snow thrower. Flush with water to remove all salt or other chemicals. Wipe snow thrower dry.

DRY AND AVERAGE SNOW

1. Snow up to eight inches deep can be removed rapidly and easily by walking at a moderate rate. For snow or drifts of a greater depth, slow your pace to allow the discharge chute to dispose of the snow as rapidly as the auger receives the snow.
2. Plan to have the snow discharged in the direction the wind is blowing.

WET PACKED SNOW

Move slowly into wet, packed snow. If the wet, packed snow causes the auger to slow down or the discharge chute begins to clog, back off and begin a series of short back and forth jabs into the snow. These short back and forth jabs, four to six inches, will "belch" the snow from the chute.

SNOW BANKS AND DRIFTS

In snow of greater depth than the unit, use the same "jabbing" technique described above. Turn the discharge chute away from the snow bank. More time will be required to remove snow of this type than level snow.

SERVICE RECOMMENDATIONS

SERVICE RECOMMENDATIONS									
PROCEDURE		FIRST 2 HOUR	BEFORE EACH USE	OFTEN	EVERY 5 HOURS	EVERY 10 HOURS	EVERY 25 HOURS	BEGINNING EACH SEASON	BEFORE STORAGE
S N O W T H R O W E R	Tighten all screws and nuts	✓		✓				✓	
	Lubricate Chute Control Flange	✓							✓
	Check Auger Drive Cable Adjustment (See Cable Adjustment)							✓	
	Check Drive Belt								✓

The warranty on this snowthrower does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, operator must maintain snowthrower as instructed in this manual. The following **Service Recommendations** is supplied to assist operator to properly maintain snow thrower. This is a check list only. Adjustment referred to will be found in the MAINTENANCE section of this manual.

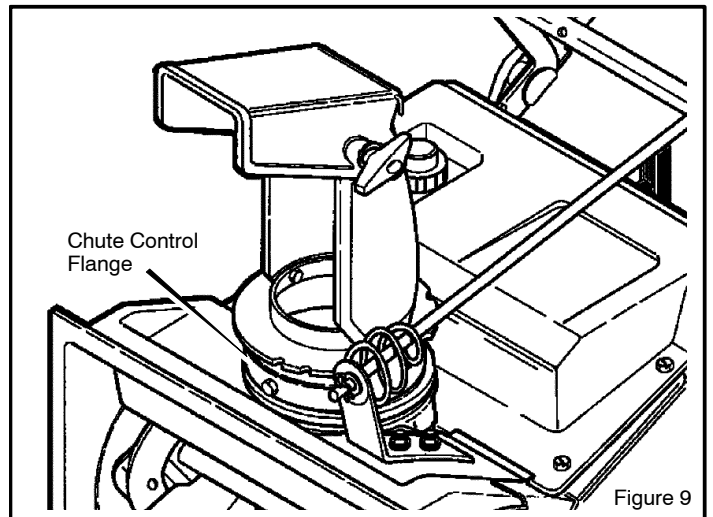
AFTER EACH USE

1. Check for any loose or damaged parts.
2. Tighten any loose fasteners.
3. Check and maintain the auger.
4. After each use, remove all snow and slush off the snowthrower to prevent freezing of auger or controls.
5. Check controls to make sure they are functioning properly.
6. If any parts are worn or damaged, replace immediately.

LUBRICATION

Before Storage

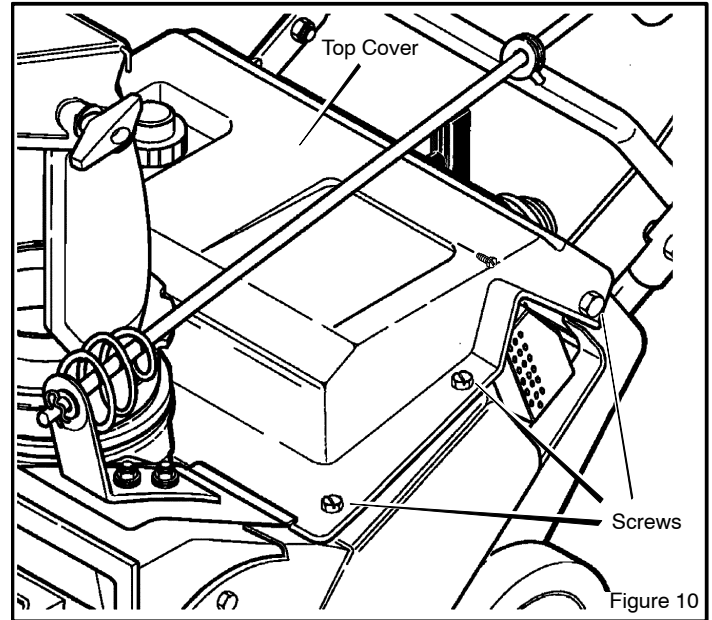
1. Lubricate the **chute control flange**. Apply a clinging type of grease such as Lubriplate.



MAINTENANCE

HOW TO REMOVE THE TOP COVER

1. Remove the **screws** from the top cover.
2. Remove the **top cover**.
3. To install the **top cover**, reverse the above steps.

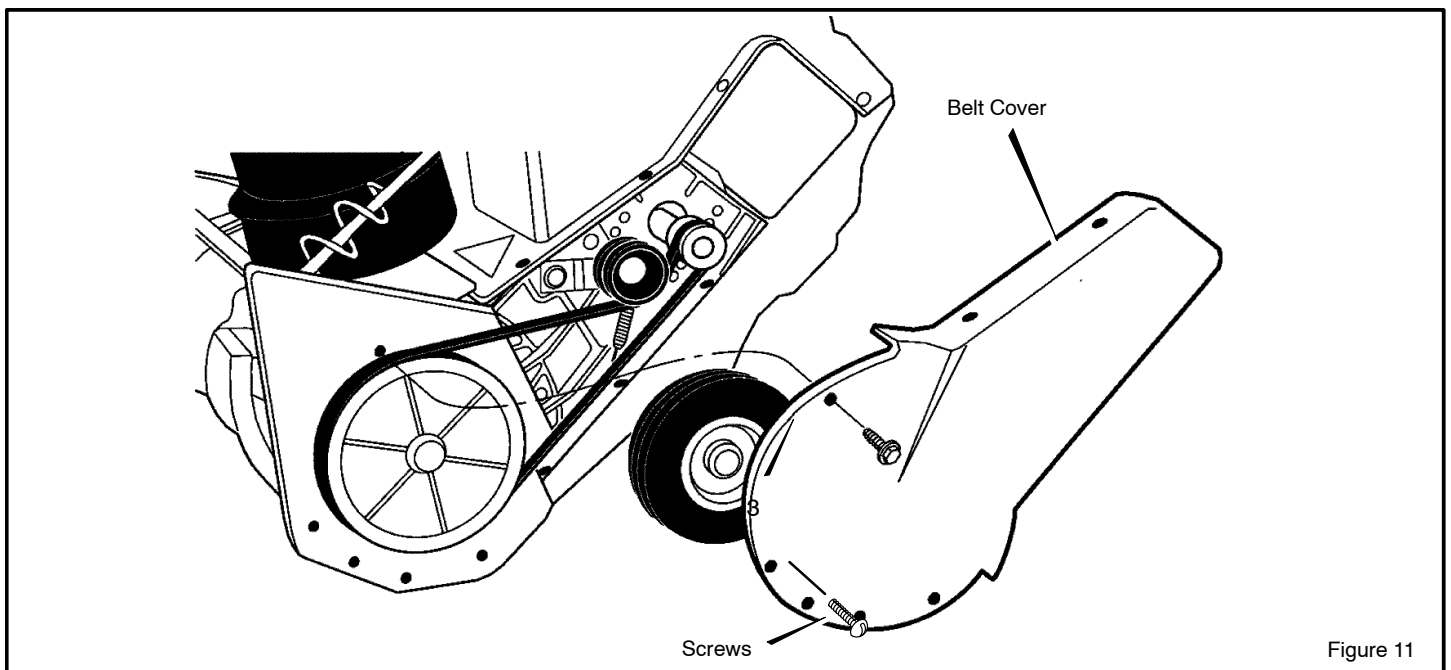


HOW TO REMOVE THE BELT COVER

1. The **belt cover** is fastened with ten **screws**. Remove all ten screws.
2. There are five screws on the front of the **belt cover**. Three screws on the bottom of the **belt cover**. Two screws on the top of the **belt cover**.

3. Remove the **belt cover**.
4. To install the **belt cover**, reverse the above steps.

NOTE: One screw is shorter than the other screws. Make sure to install screw in the correct location.



MAINTENANCE



WARNING: To prevent accidental starting when making any adjustments or repairs, always disconnect the spark plug wire and place it where it cannot make contact with the spark plug .

HOW TO ADJUST THE CHUTE CRANK

If the chute crank will not rotate fully to the left or right, adjust as follows.

1. Remove the top cover. See "How To Remove The Top Cover".
2. Loosen the **nuts**.
3. Move the **crank adjusting bracket** to allow **1/8 inch (3mm) clearance** between the notch in the **flange** and the outer diameter of the **worm gear**.
4. Tighten the **nuts**.

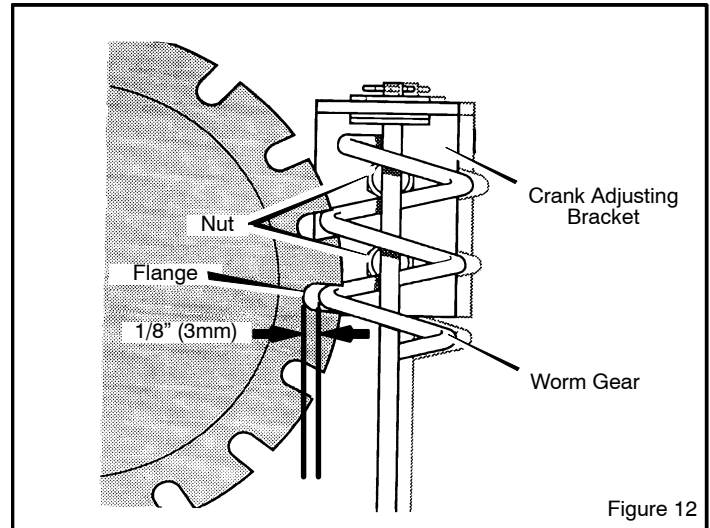


Figure 12

HOW TO ADJUST THE AUGER CONTROL CABLE

The auger control cable is adjusted at the factory. During normal use, the auger control cable can become stretched and the auger drive lever will not properly engage or disengage the auger.

1. Remove the "**Z**" hook from the **auger drive lever** (Figure 13).
2. Slide the **cable boot** off the **cable adjustment bracket** (Figure 14).
3. Push the bottom of the **auger control cable** through the **cable adjustment bracket** until the "**Z**" hook can be removed.
4. Remove the "**Z**" hook from the **cable adjustment bracket**. Move the "**Z**" hook down to the next adjustment hole.
5. Pull the **auger control cable** up through the **cable adjustment bracket**.
6. Put the **cable boot** over the **cable adjustment bracket**.
7. Install the "**Z**" hook to the **auger drive lever**.
8. To check the adjustment, start the snow thrower. Make sure the auger does not rotate when the auger drive lever is released.

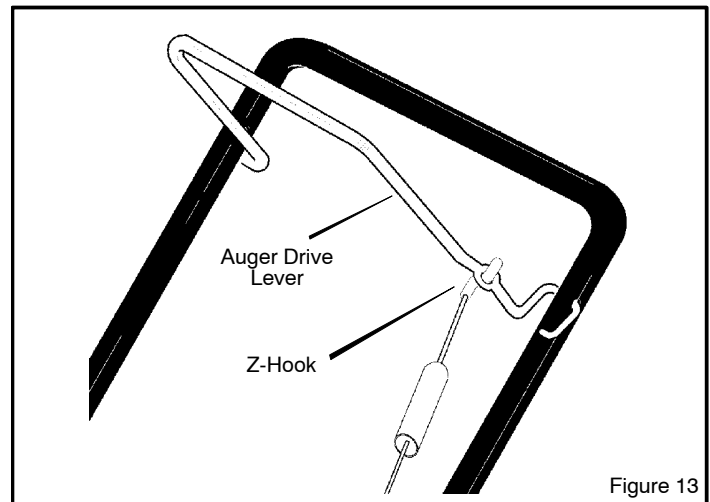


Figure 13

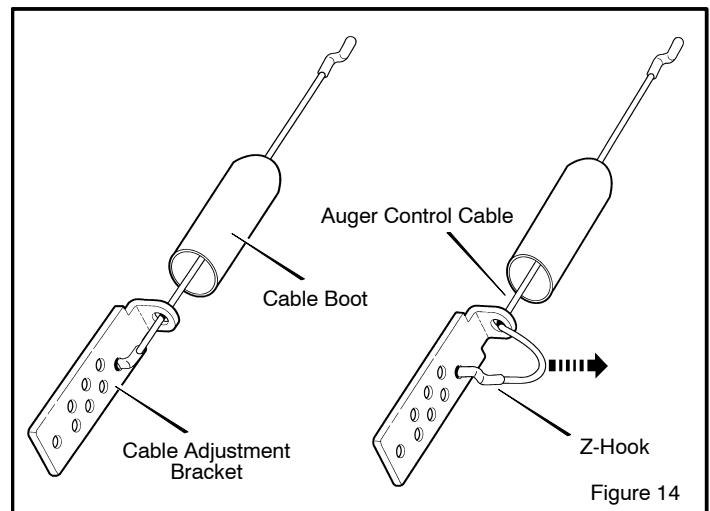


Figure 14

MAINTENANCE

HOW TO REPLACE THE DRIVE BELT

The drive belt is of special construction and must be replaced with original factory replacement belt available from your nearest authorized service center.

1. Remove the belt cover. See "How To Remove The Belt Cover".
2. Remove the **drive belt** from the **idler pulley**. (See Figure 15 and Figure 16)
3. Remove the **drive belt** from the **engine pulley**. Be careful, not to bend the belt guides.
4. Remove the **drive belt** from the **auger pulley**. (See Figure 16)
5. Remove the old **drive belt**.
6. To install the new **drive belt**, reverse the above steps.
7. Make sure the **drive belt** is seated properly on the pulleys.

NOTE: When the auger control lever is engaged, the belt guides must be 1/16" from the drive belt . (See Figure 17)

8. Install belt cover. See "How To Remove The Belt Cover".

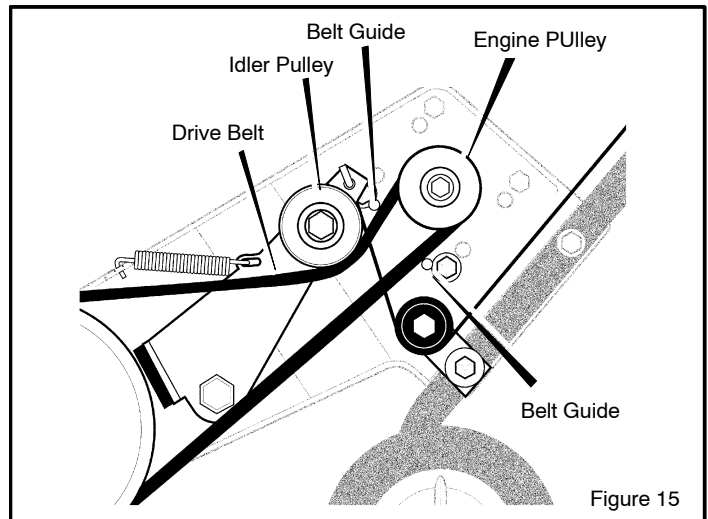


Figure 15

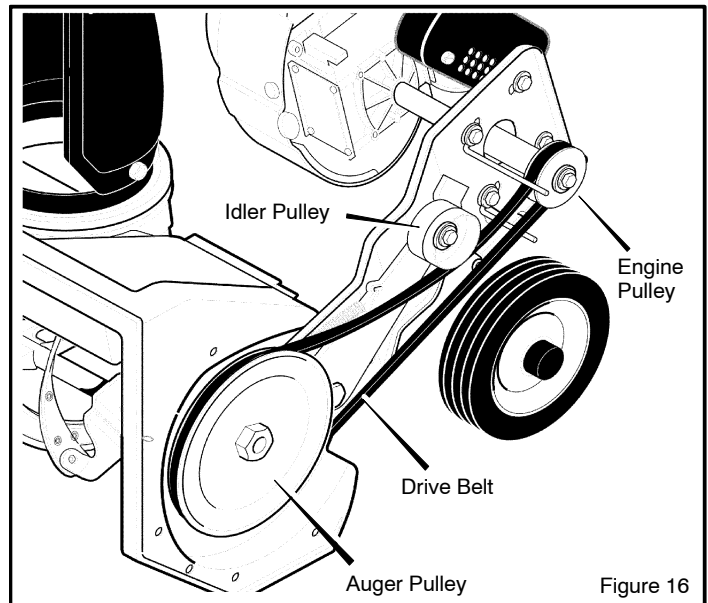


Figure 16

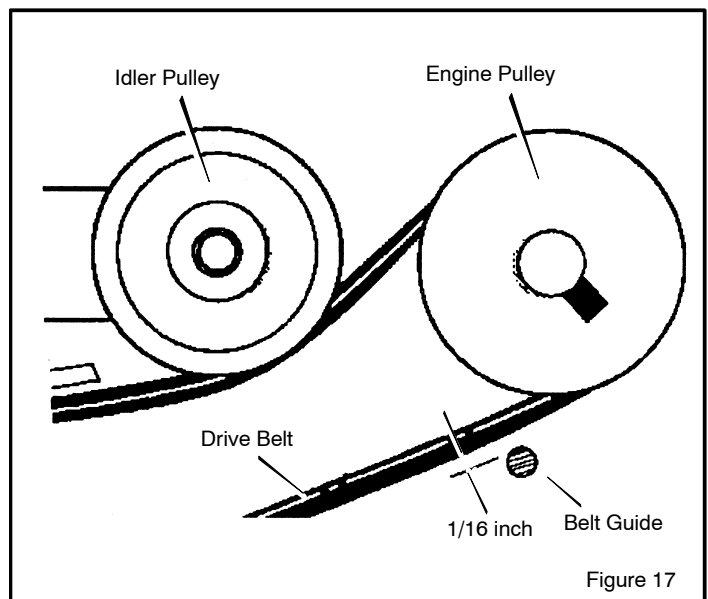


Figure 17

MAINTENANCE

HOW TO REPLACE THE AUGER

1. Remove the belt cover. See “How To Remove The Belt Cover”.
2. Remove the drive belt. See “How To Replace The Drive Belt”.
3. Remove the **auger pulley** from the auger shaft (threads are left hand; turn clockwise to remove). (See Figure 18).
4. To keep the **auger** from rotating, set a 2"x4" piece of **wood** on the center **paddle** to secure **auger**.
5. Remove the fasteners from the **bearing assembly**. Remove the **bearing assembly** from the **auger housing**.
6. Slide the **auger** out of the bearing assembly on the right side of the snow thrower.
7. Tip the **auger** enough to allow the **auger** to slide out of the **auger housing**.
8. To install **auger**, reverse the above steps.

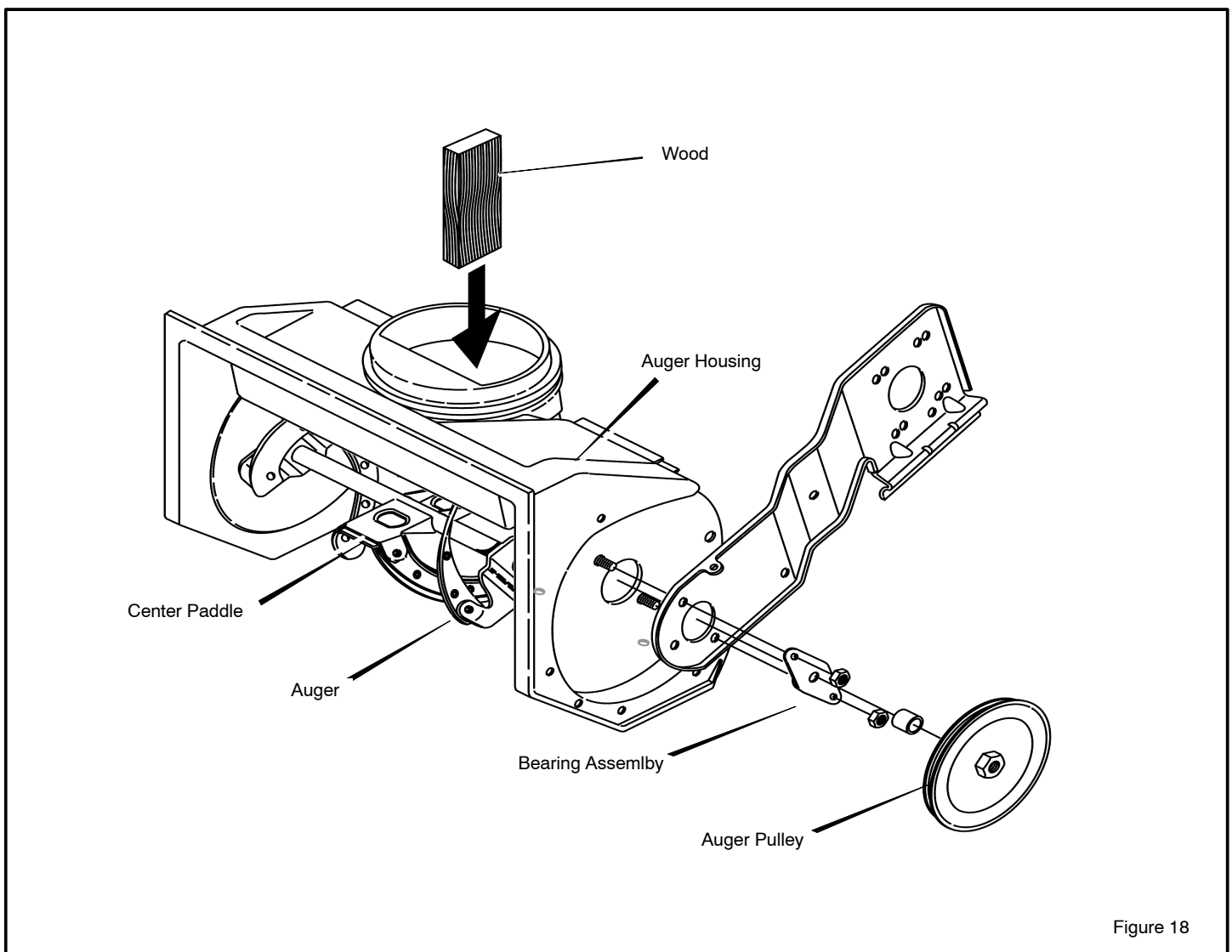


Figure 18

MAINTENANCE

TO ADJUST THE CARBURETOR

The carburetor is not adjustable. Engine performance should not be affected at altitudes up to 7,000 feet. For operation at higher elevations, contact your nearest authorized service center.

IMPORTANT: Never tamper with the engine governor, which is factory set for proper engine speed. Over-speeding the engine above the factory high speed setting can be dangerous. If the engine-governed high speed needs an adjustment, contact an authorized service center. They have the proper equipment and experience to make any necessary adjustments.

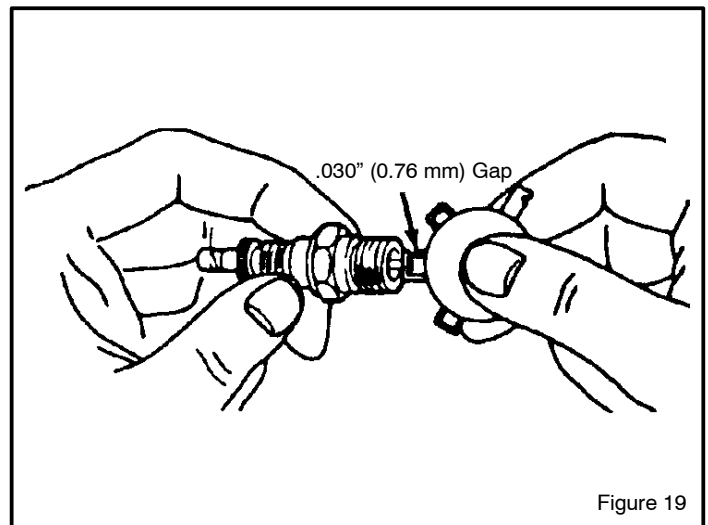
TO ADJUST OR REPLACE THE SPARK PLUG

Check the **spark plug** every twenty-five (25) hours. Replace the **spark plug** if the electrodes are pitted or burned or if the porcelain is cracked.

The spark plug is housed in the engine compartment under the top cover and cannot be seen under normal conditions.

1. Remove the top cover. See "How To Remove The Top Cover".
2. The spark plug and wire are now visible.
3. Remove the spark plug wire.
4. Clean the area around the spark plug base to prevent dirt from entering the engine when the spark plug is removed.
5. Remove the spark plug.
6. Check the spark plug. If the spark plug is cracked, fouled or dirty, it must be replaced .
7. Set the gap between the electrodes of the new spark plug at 0.030 inch (Figure 19).

8. Install the spark plug in the cylinder head and firmly tighten. Recommended torque is 18 to 20 foot pounds.



STORAGE

OFF SEASON STORAGE



WARNING: Never store the engine, with fuel in the tank, indoors or in a poor ventilated enclosure where fuel fumes could reach an open flame, spark or pilot light as on a furnace, water heater, clothes dryer, etc.

Handle gasoline carefully. It is highly flammable and careless use could result in serious fire damage to your person and/or property.

Drain fuel into approved containers outdoors, away from open flame.

If the snowthrower is to be stored for thirty (30) days or more at the end of the snow season, the following steps are recommended to prepare your snowthrower for storage.

NOTE: Gasoline must be removed or treated to prevent gum deposits from forming in the tank, filter, hose, and carburetor during storage.

1. To remove gasoline, run engine until tank is empty and engine stops.

If you do not want to remove the gasoline, add fuel stabilizer to any gasoline left in the tank to minimize gum deposits and acids. If the tank is almost empty, mix stabilizer with fresh gasoline in a separate container and add some to the tank. ALWAYS FOLLOW INSTRUCTIONS ON STABILIZER CONTAINER. THEN RUN ENGINE AT LEAST 10 MINUTES AFTER STABILIZER IS ADDED TO ALLOW MIXTURE TO REACH CARBURETOR. STORE SNOWTHROWER IN SAFE PLACE.

2. Lubricating the piston/cylinder area. This can be done by first removing the spark plug and squirting clean engine oil into the spark plug hole. Then cover the spark plug hole with a rag to absorb oil spray. Next, rotate the engine by pulling the starter two or three times. Finally, reinstall spark plug and attach spark plug wire.
3. Thoroughly clean the snowthrower.
4. Lubricate all lubrication points (see "Lubrication" in the Service Recommendations section).

5. Insure that all nuts, bolts, and screws are securely fastened. Inspect all visible moving parts for damage, breakage, and wear. Replace if necessary.
6. Touch up all rusted or chipped paint surfaces; sand lightly before painting.
7. Cover the bare metal parts of the blower housing and auger with rust preventative.
8. If possible, store your snowthrower indoors and cover it to give protection from dust and dirt.
9. On models with folding handles, loosen the knobs that secure the upper handle. Rotate the upper handle back.
10. If the machine must be stored outdoors, block up the snowthrower and insure the entire machine is off the ground. Cover the snowthrower with a heavy tarpaulin.

REMOVING THE SNOWTHROWER FROM STORAGE

When removing the snowthrower from storage, follow the steps below.

1. Put the upper handle in the operating position, tighten the knobs that secure the upper handle.
2. Fill the fuel tank with a fresh fuel-oil mixture. See "How to Mix The Fuel Mixture" in the Operation section.
3. Lubricate the auger bail and idler arm.
4. Check the spark plug. Make sure the gap is correct. If the spark plug is worn or damaged, replace before using.
5. Make sure all fasteners are tight.
6. Make sure all guards, shields, and covers are in place.
7. Make sure all adjustments are correct.

TROUBLE SHOOTING CHART

PROBLEM	LOOK FOR	REMEDY
Difficult starting	Defective spark plug.	Replace defective spark plug.
Engine runs erratically	Blocked fuel line.	Clean fuel line.
	Empty gas tank.	Check fuel supply,
	Stale gasoline.	Add fresh gasoline.
	Water or dirt in fuel system.	Remove carburetor bowl to drain fuel tank. Refill with fresh fuel. CAUTION: Do not remove carburetor bowl when the engine is hot.
Engine stalls	Unit running on CHOKE.	Set choke lever to RUN position.
Loss of power	Gas cap vent hole is plugged.	Remove ice and snow from cap. Be sure vent hole is clear.
Excessive vibration	Loose parts.	Stop engine immediately and remove spark plug wire. Tighten all bolts and make all necessary repairs. If vibration continues, have the unit serviced by a competent repairman.
Unit fails to propel itself	Drive belt loose or damaged.	Replace drive belt. Refer to Drive Belt Replacement in the Maintenance section of this manual.
	Incorrect adjustment of traction drive cable.	Adjust traction drive cable. Refer to Cable Adjustment in the Maintenance section of this manual.
Unit fails to discharge snow	Auger drive belt loose or damaged.	Replace or adjust auger drive belt. Refer to Drive Belt Replacement and Drive Belt Adjustment in the Maintenance section of this manual.
	Auger control cable not adjusted correctly.	Adjust auger control cable. Refer to Cable Adjustment in the Maintenance section of this manual.
	Discharge chute clogged.	Stop engine immediately and disconnect spark plug wire. Refer to the first Warning in Snowthrower Operation in the Operation section of this manual. Clean discharge chute and inside of auger housing.
	Foreign object lodged in auger.	Stop engine immediately and disconnect spark plug wire. Remove object from auger housing.

Identifying Your Snowthrower

Your new Snowthrower has two (2) identifying numbers: (1) unit model number: (2) unit serial number. The two preceding numbers are required to insure that the proper replacement parts are obtained when required. If you have any questions concerning parts, service, or technical data, contact your nearest John Deere/Frontier dealer.

For complete warranty information refer to the warranty in the Owner's Information section of this manual.

REPLACEMENT PARTS

WE RECOMMEND JOHN DEERE/FRONTIER quality parts and lubricants available at your John Deere/Frontier dealer.

PART NUMBERS MAY CHANGE. When you order replacement parts, use the part numbers listed below and on the following pages. If a part number changes, your John Deere/Frontier dealer will have the latest part number.

WHEN YOU ORDER PARTS, your John Deere/Frontier dealer must have your snowthrower model and serial number and your engine model number. This is the model and serial number that you recorded in the “Owner’s Information” section of this Owner’s Manual.

QUICK REFERENCE PART NUMBERS

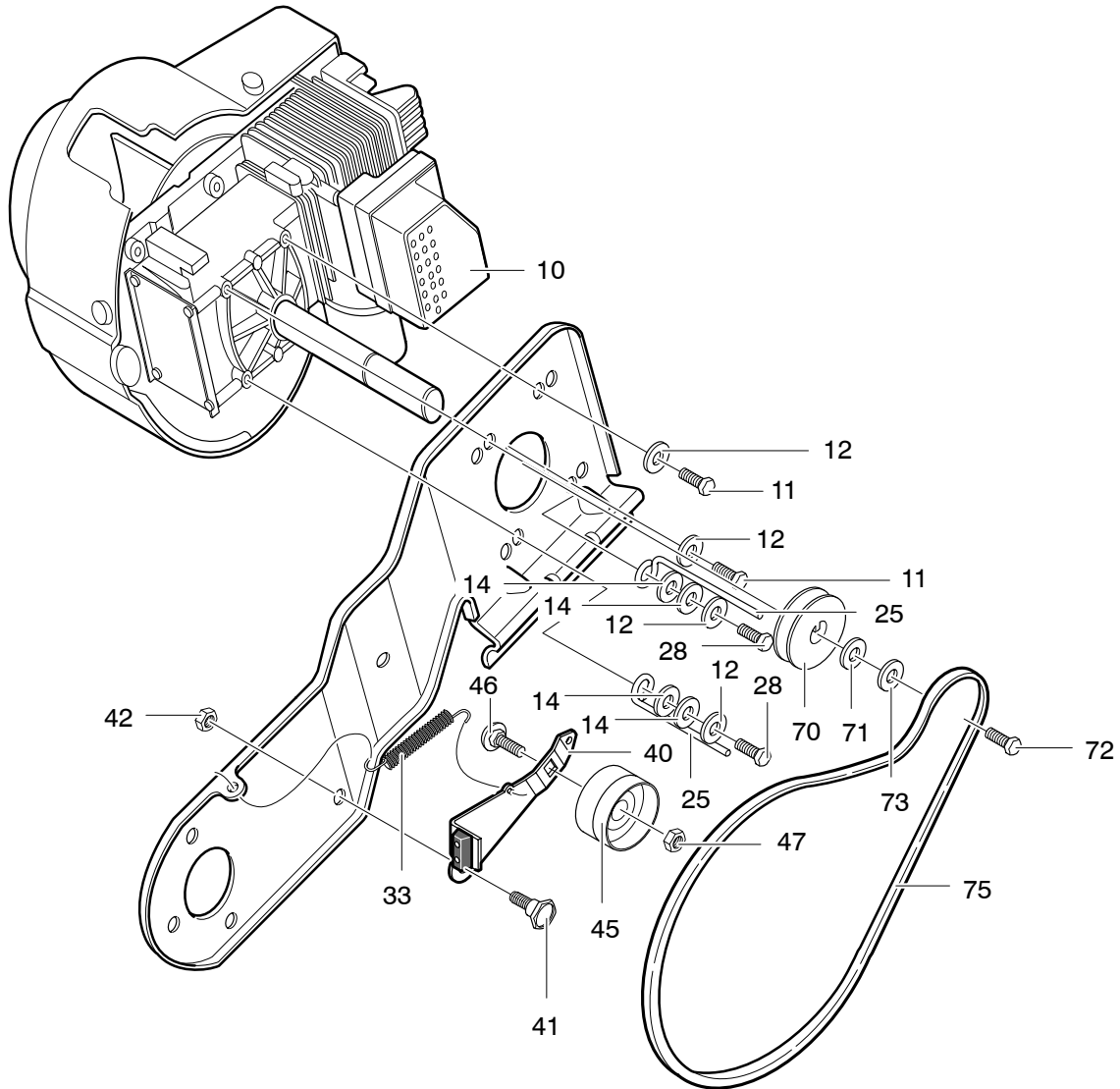
The following is a list of replacement parts that you may need for routine service and maintenance. If you do not see the replacement part you need in the following chart, then check the full list of replacement part illustrations following this page.

ITEM	PART NUMBER *
Belt	MT37x132
Scraper Blade	MT334031
Spark Plug	Champion RCJ8Y

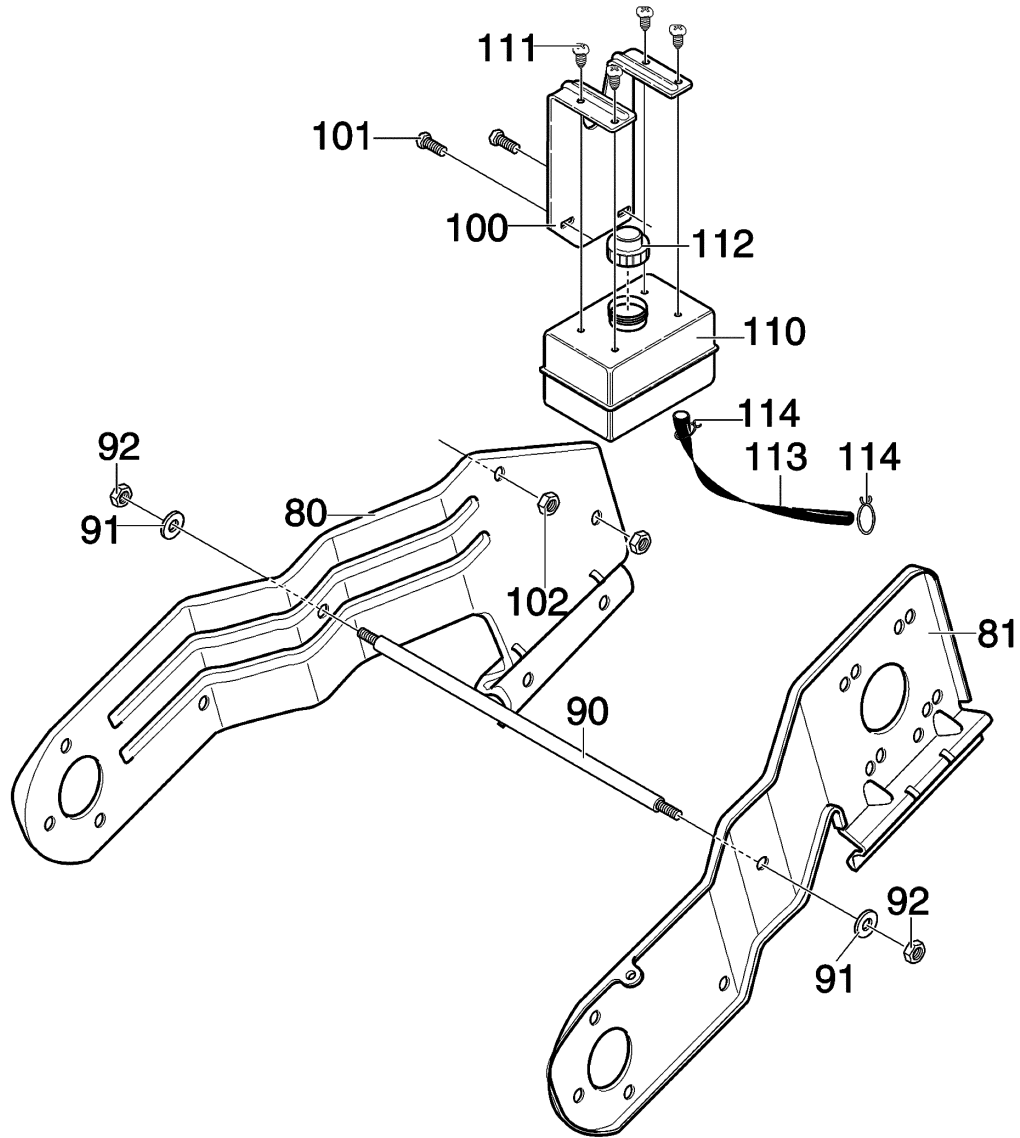
* Part Numbers are subject to change without notice.

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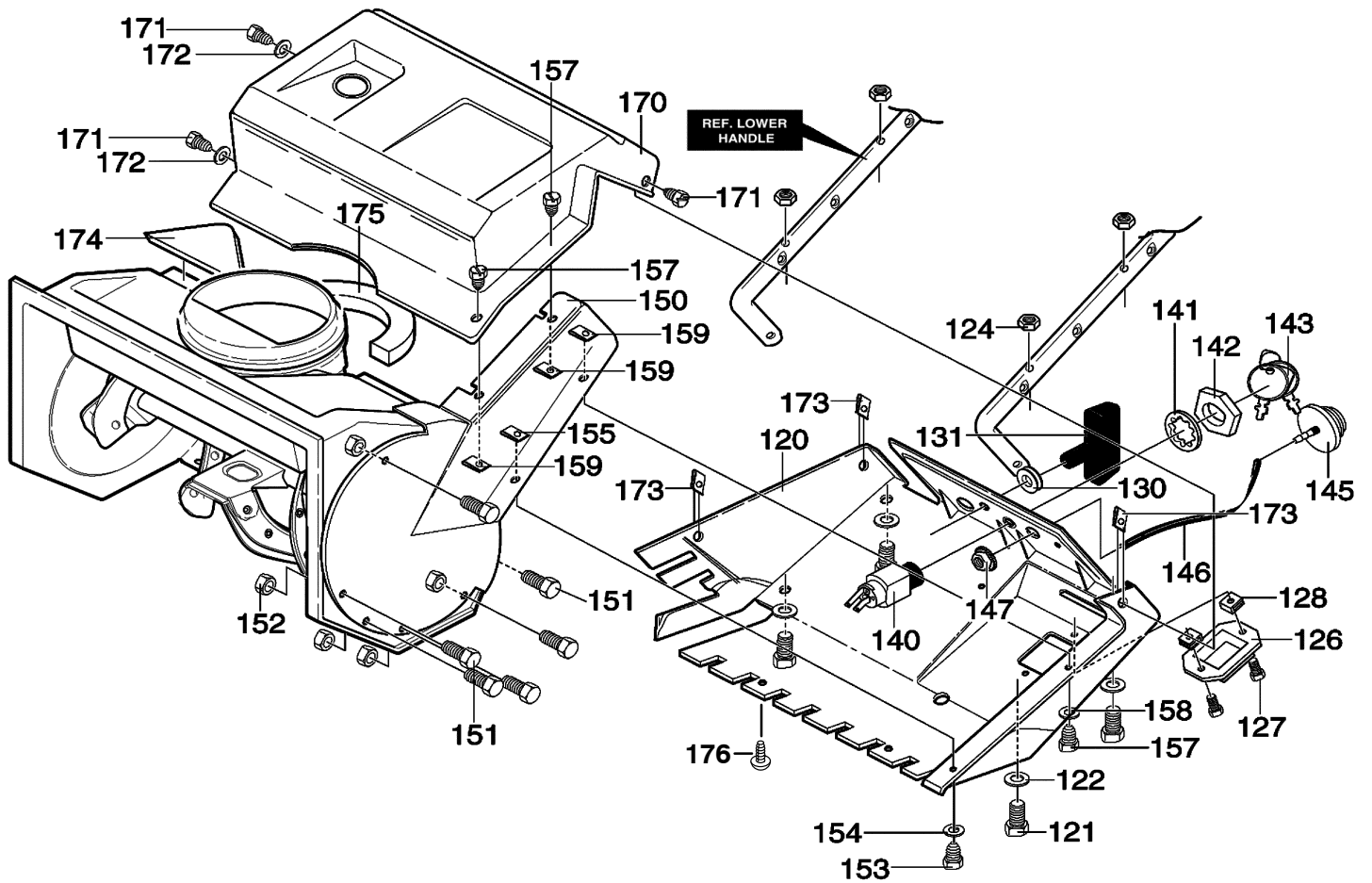
FACTORY MODEL 620351x16NB ENGINE ASSEMBLY



Key No.	Part No.	Description
10	-----	ENGINE
11	MT180077	SCREW, 5/16-18 X.75
12	MT018x16	WASHER
14	MT71071	WASHER, FLAT
25	MT313440	GUIDE, BELT
28	MT710312	SCREW
33	MT339017	SPRING, IDLER BRAKE
40	MT1501013	ASSY, IDLER BRAKE ARM
41	MT333594	BOLT
42	MT71391	NUT, 5/16-18
45	MT48924	PULLEY, IDLER
46	MT45892	BOLT, CARRIAGE
47	MT590	NUT
70	MT338849	PULLEY, ENGINE
71	MT25840	WASHER, BELLEVILLE
72	MT181595	SCREW, 5/16-24X.75
73	MT018x16	WASHER, SPLTLK
75	MT37x132	BELT V 3L 34.8"
--	MTF-041007C	OPERATOR'S MANUAL



Key No.	Part No.	Description
80	MT760272E701	FRAME SIDE SUPPORT RH
81	MT760271E701	FRAME SIDE SUPPORT LH
90	MT760169	ROD, SUPPORT
91	MT71063	WASHER, HVSPTLK
92	MT71044	NUT, 3/8-16 REGHEX
100	MT578093E701	BRACKET, GAS TANK
101	MT302628	SCREW, 1/4-20X.75
102	MT15x143	NUT, 1/4-20 YZ
110	MT55381	TANK, FUEL
111	MT313681	SCREW, 1/4-14X.88 WAHHTAP
112	MT315433	CAP, GAS-BLACK
113	MT327290	TUBING 11.50 IN.
114	MT323387	CLAMP, FUEL LINE



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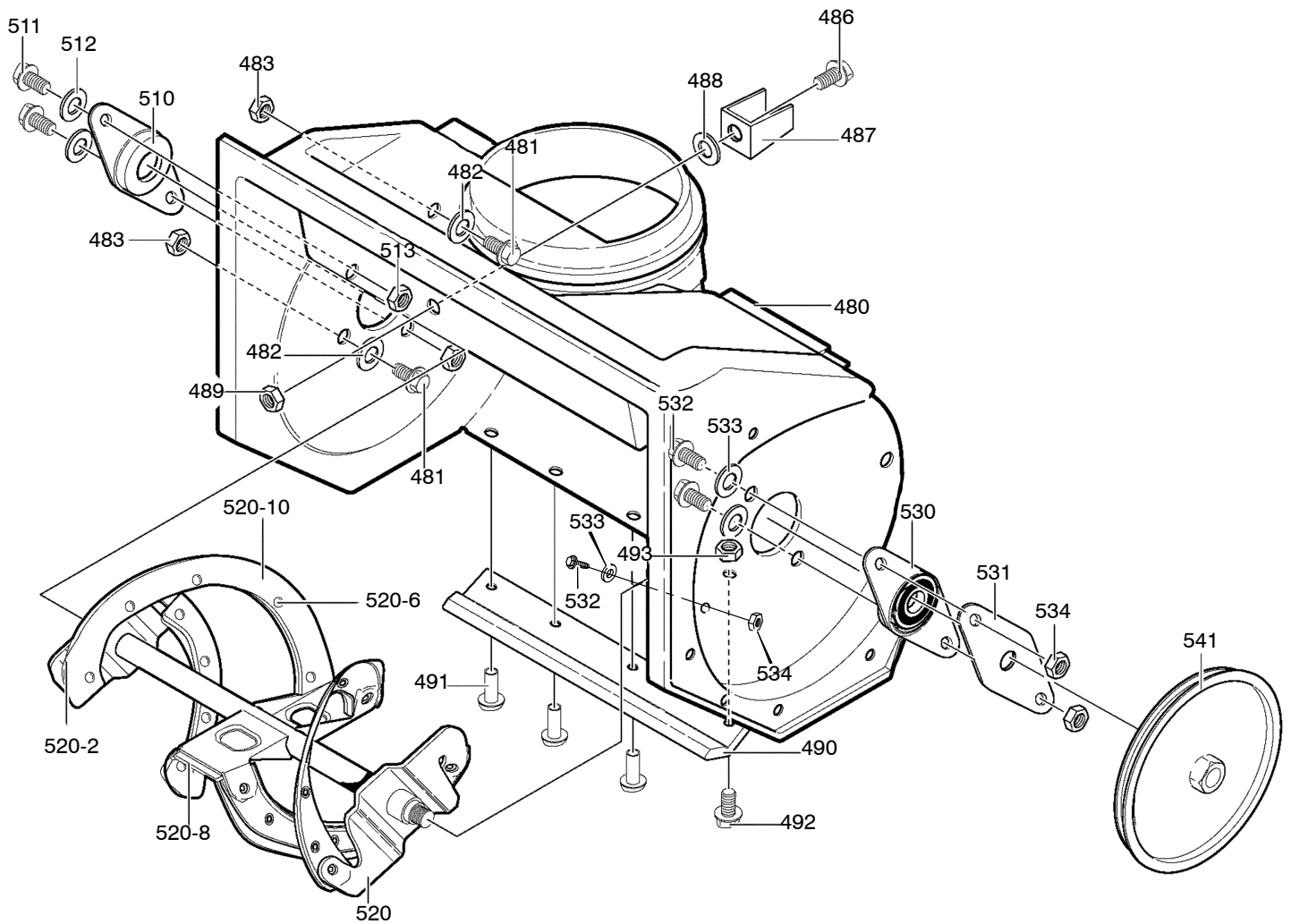
FACTORY MODEL 620351x16NB TOP COVER ASSEMBLY

Key No.	Part No.	Description
120	MT302265	COVER, BOTTOM
121	MT313674	SCREW, 1/4-20X1.25
122	MT71067	WASHER, FLAT .281X.63X.065
124	MT15x143	NUT, 1/4-20 YZ
126	MT326212	COVER, CARB
127	MT313685	SCREW, 1/4-14X.75
128	MT578109	NUT, 1/4-10 SPEED J TYPE
130	MT57587	GROMMET & WASHER, ROPE GUIDE
131	MT333643	KNOB, STAND TEE
140	MT56992	SWITCH, IGNITION
141	MT313683	WASHER
142	MT300193	NUT, 5/8-32 ACC
143	MT49643	2 KEYS & RING
145	MT54601	PRIMER, ENGINE
146	MT1259	HOSE, PRIMER
147	MT271172	KEPS NUT, 1/4-20
150	MT57036	COVER, BELT
151	MT12342	SCREW, 10-24X.50
152	MT312300	NUT, #10-24
153	MT313686	SCREW, 1/4-20X.50
154	MT71067	WASHER, FLAT .281X.63X.065
155	MT578107	NUT, 1/4-20 TINN
157	MT313685	SCREW, 1/4-14X.75
158	MT71067	WASHER, FLAT .281X.63X.065
159	MT578109	NUT, 1/4-20 SPEED J TYPE
170	MT1501690	COVER, TOP
171	MT313685	SCREW, 1/4-14X.75
172	MT71067	WASHER, FLAT .281X.63X.065
173	MT578109	NUT, 1/4-10 SPEED J TYPE
174	MT55379	SEAL, FOAM
175	MT55380	SEAL, STRIP CHUTE & GAS SEAL
176	MT26x292	SCREW 10-14 x 0.63

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FACTORY MODEL 620351x16NB

AUGER HOUSING



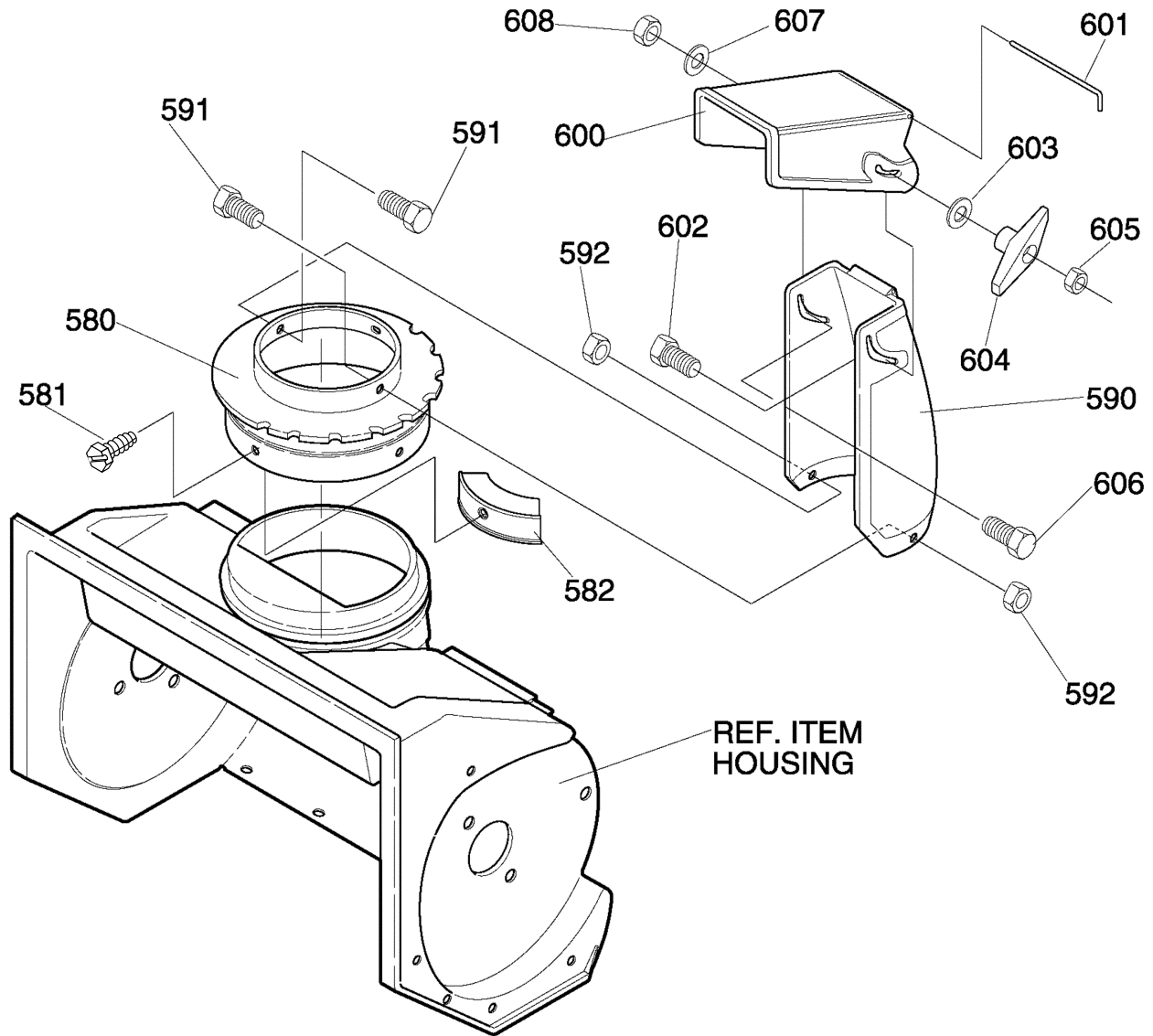
FRONTIER MODEL ST0320

FACTORY MODEL 620351x16NB AUGER HOUSING

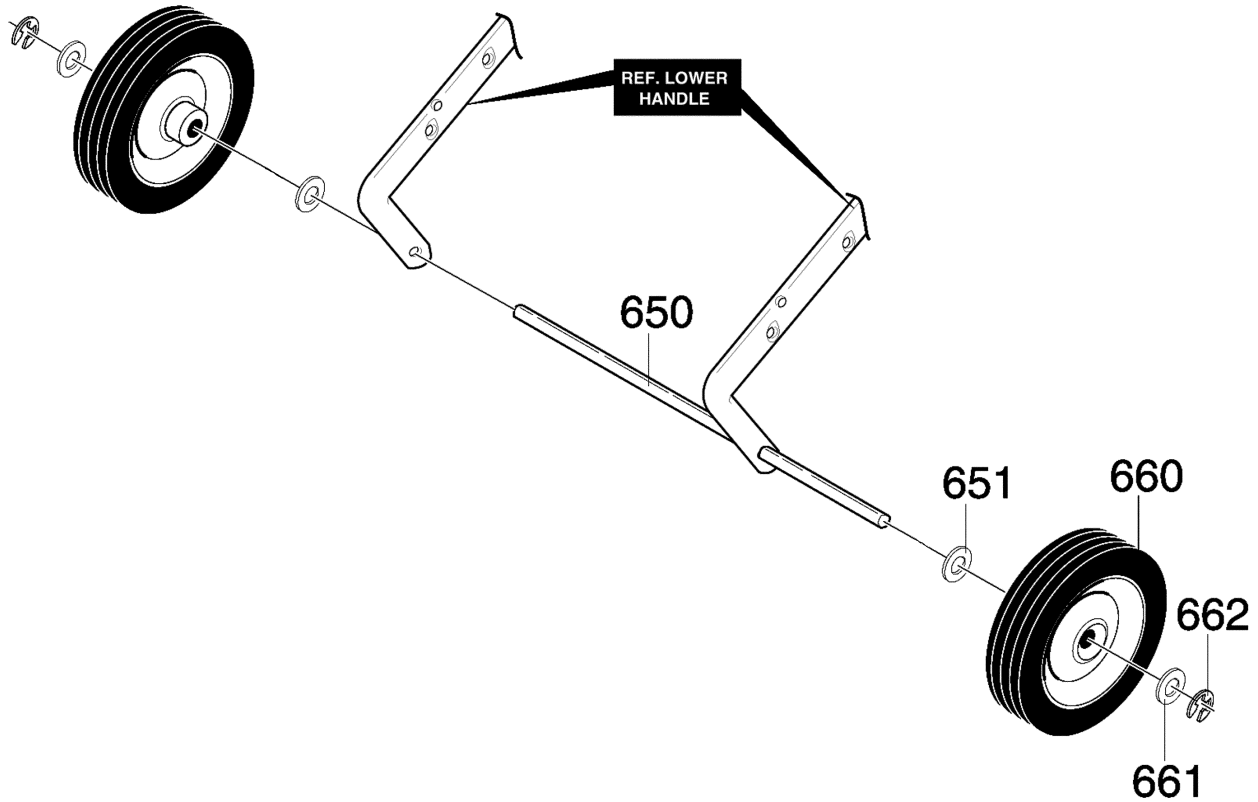
Key No.	Part No.	Description
480	MT330312	HOUSING, ASSY
481	MT302628	SCREW, 1/4-20X.75
482	MT71067	WASHER, FLAT .281X.63X.065
483	MT15x143	NUT, HEX 1/4-20 YZ
486	MT579052	SCREW, 1/4-20X.63
487	MT331126	BRACKET, STOP
488	MT331211	WASHER, FLAT .333X.87X.119
489	MT780029	NUT, 1/4-20 HEX NYLOCK
490	MT334031	BLADE, SCRAPER
491	MT577707	RIVET, OVSET
492	MT302628	SCREW, 1/4-20X.75
493	MT15x143	NUT, 1/4-20 YZ
510	MT577023	BEARING, FLANGE
511	MT710263	SCREW, 1/4-20X1.00
512	MT71067	WASHER, FLAT .281X.63X.065
513	MT15x143	NUT, 1/4-20
520	MT1501926	AUGER, ASSY
520-2	MT302565	BLADE, AUGER
520-6	MT49838	RIVET
520-8	MT335992	BLADE, CENTER
520-10	MT1501925E701	AUGER & BLADE SUPPORT
530	MT583459	BEARING & PLATE ASSY
531	MT334287	PLATE, RETAINER
532	MT579052	SCREW, 1/4-20X.63
533	MT71067	WASHER, FLAT .281X.63X.065
534	MT73826	NUT, 1/4-20
541	MT338965	PULLEY

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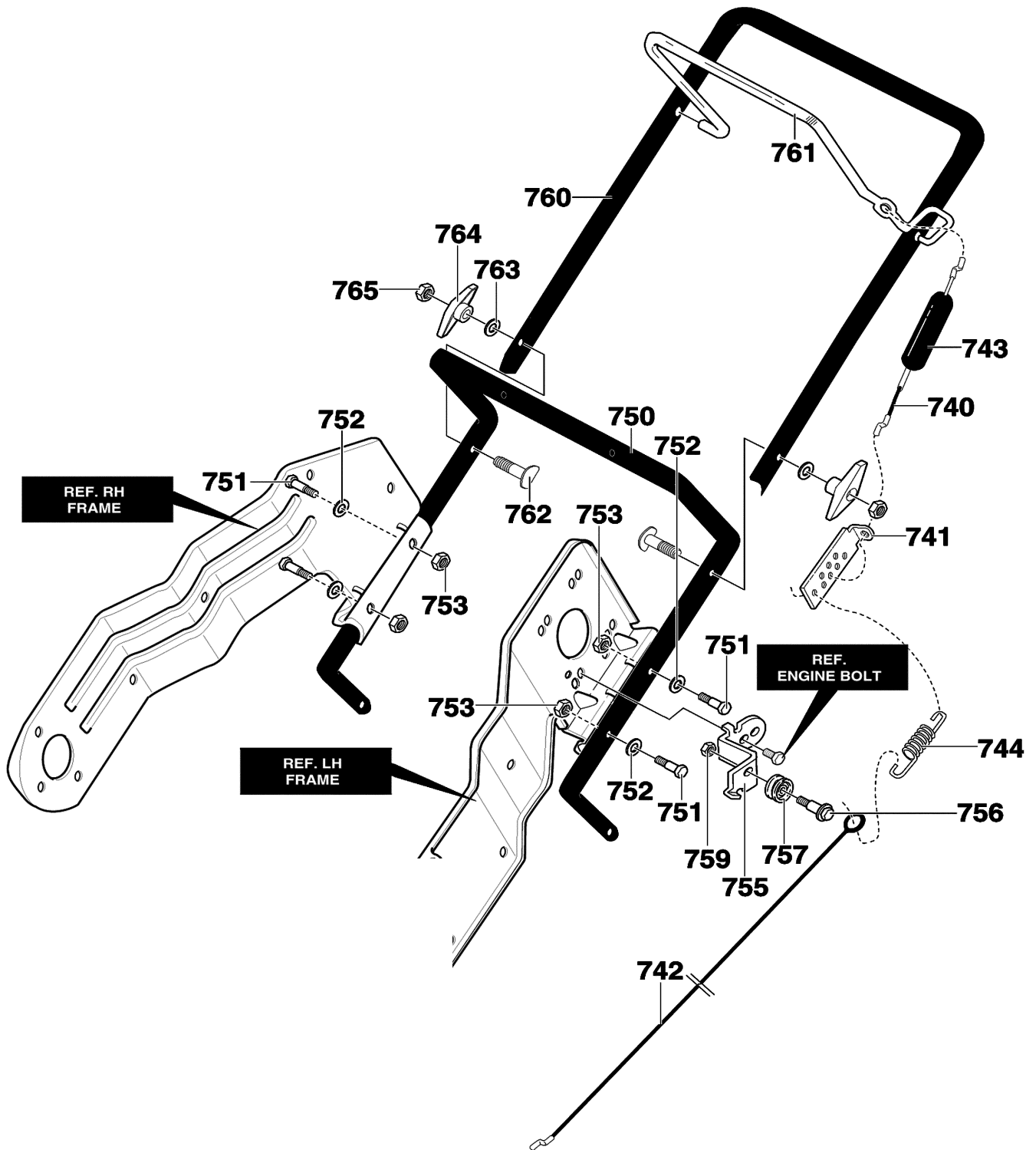
FACTORY MODEL 620351x16NB DISCHARGE CHUTE



Key No.	Part No.	Description
580	MT314239	RING, CHUTE
581	MT711752	SCREW, #10X.50
582	MT577021	GUIDE, CHUTE
590	MT334234	CHUTE, LOWER
591	MT313686	SCREW 1/4-20X.50
592	MT15x143	NUT, 1/4-2 YZ
600	MT325847	CHUTE, UPPER
601	MT308931	WIRE, HINGE
602	MT302843	BOLT, CARRIAGE 5/16-18X1.25
603	MT71071	WASHER, FLAT .349X.69X.066
604	MT57171	KNOB, T
605	MT71037	NUT, HEX 5/16-18
606	MT578088	SCREW, 5/16-18X.75
607	MT71071	WASHER, FLAT .349X.69X.066
608	MT71391	NUT, HEX 5/16-18



Key No.	Part No.	Description
650	MT1501923	AXLE SHAFT
651	MT583409	WASHER, FLAT .391X1.00X1.25
660	MT1501689	TIRE & RIM
661	MT583409	WASHER, FLAT .391X1.00X.125
662	MT577598	RING, RET E



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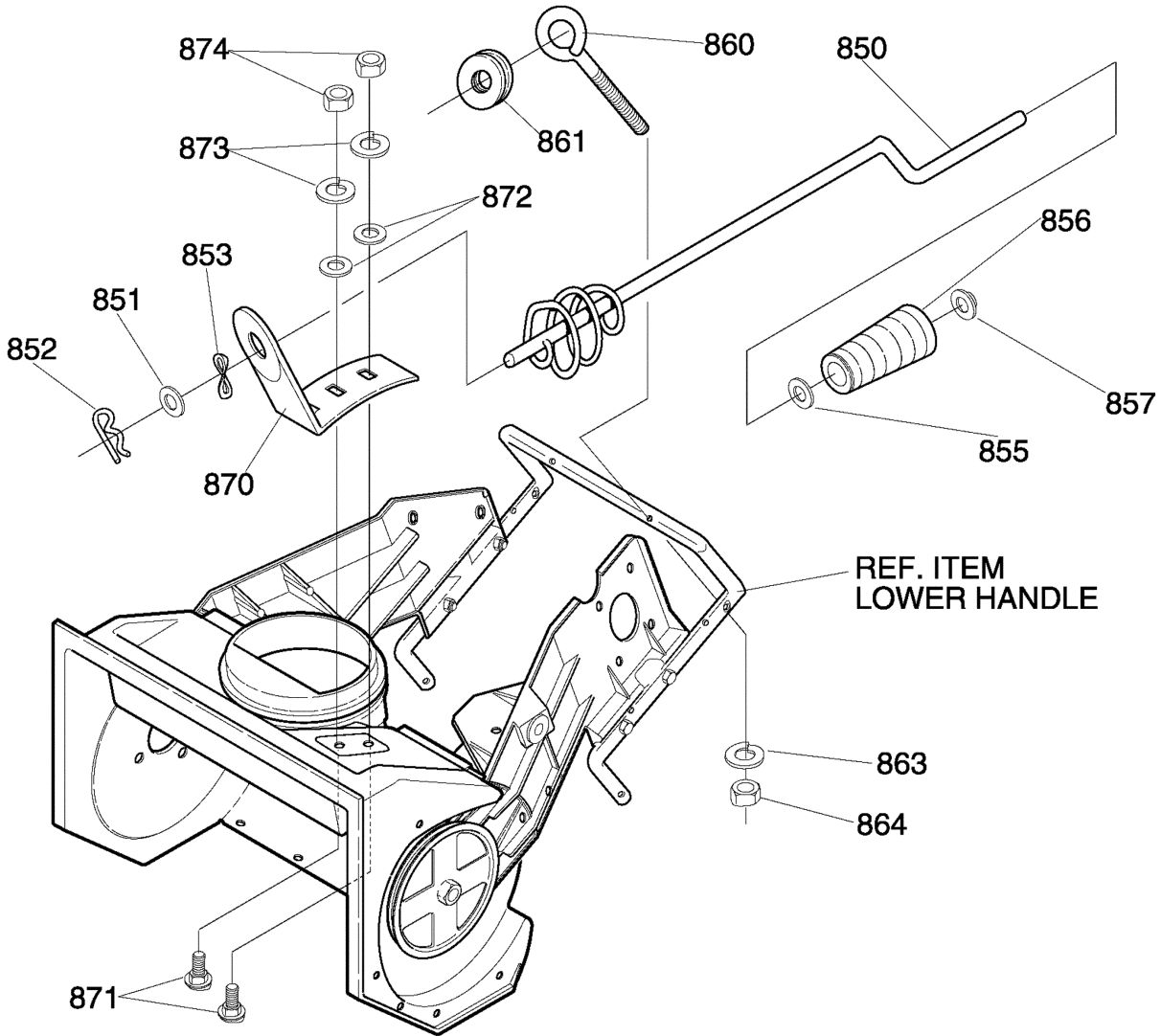
FACTORY MODEL 620351x16NB HANDLE ASSEMBLY

Key No.	Part No.	Description
740	MT760774	CABLE, UPPER
741	MT313441	BRACKET, CABLE ADJ
742	MT760773	CABLE, LOWER CONTROL
743	MT308146	BOOT, CLUTCH SPRING
744	MT313471	SPRING, EXTENSION
750	MT313487E701	HANDLE, LOWER
751	MT313674	SCREW, 1/4-20X1.25
752	MT71067	WASHER, FLAT
753	MT73826	NUT, 1/4-20
755	MT761486E701	BRACKET, CABLE
756	MT712234	BOLT
757	MT39298	PULLEY
759	MT15x143	NUT, 1/4-20 YZ
760	MT313489E701	UPPER HANDLE
761	MT313308E701	BAIL, CONTROL
762	MT337584	BOLT
763	MT311936	WASHER, FORM
764	MT57171	KNOB, T 3.00 WD
765	MT71037	NUT, 5/16-18

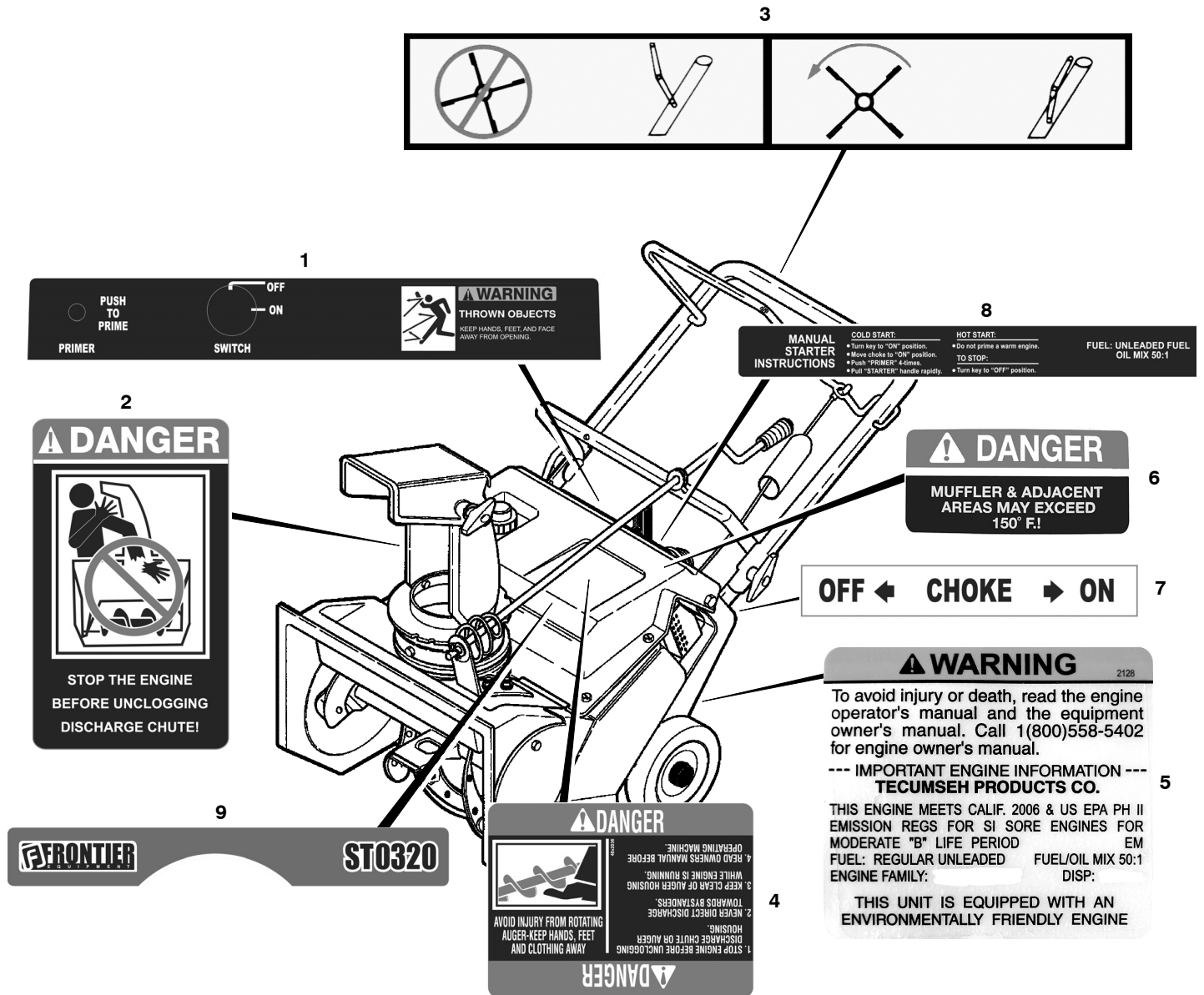
FRONTIER MODEL ST0320

FACTORY MODEL 620351x16NB

CHUTE ROD ASSEMBLY



Key No.	Part No.	Description
850	MT314996	ROD, ASSY UPPER CHUTE CONTROL
851	MT71072	WASHER, FLAT .406X.81X.066
852	MT71082	PIN, COTTER
853	MT313431	WASHER, CURVED SPRING
855	MT71072	WASHER, FLAT .406X.81X.066
856	MT57082	KNOB, SLEEVE
857	MT331532	NUT, PUSH
860	MT313712	BOLT, EYE 3/8-16X2.00
861	MT148	GROMMET, EYE BOLT
863	MT71062	WASHER
864	MT71045	NUT, HEX JAM 3/8-16
870	MT333946E701	BRACKET, CHUTE ROTATE
871	MT340720	BOLT, CARRIAGE 5/16-18X.75
872	MT71071	WASHER, FLAT .349X.69X.066
873	MT71060	WASHER .328X.60X.09
874	MT71037	NUT, HEX 5/16-18



Key No.	Part No.	Description
1	MT48x5258	DECAL, THROWN OBJECTS
2	MT48x5642	DECAL, DANGER STOP ENGINE
3	MT337524	DECAL, STOP LEVER
4	MT48x2036	DECAL, ROTATING AUGER
5	MT48x5639	DECAL, TECUMSEH PRODUCTS CO.
6	MT69880	DECAL, HOT MUFFLER
7	MT318494	DECAL, CHOKE ON/OFF
8	MT48x5259	DECAL, MANUAL STARTER INSTRUCTIONS
9	MT48x5257	DECAL, FRONTIER ST0320
*	MTF-041007C	OPERATOR'S MANUAL

* Not Illustrated

SPECIFICATIONS ST0320

Engine	Tecumseh Snow King 2-Cycle
Horsepower	3.5 hp
Starter	Recoil
Fuel Capacity	1.0 quart
Drive System	Auger
Tire Diameter	7"
Clearing Width	20"
Housing Height	10.25"
Auger Diameter	9"
Auger Type	Rubber-edged
Chute Rotation	Remote
Chute Turning Radius	190°
Deflector Control	Manual
Weight	55 lbs
Warranty - Engine	2 years
Warranty - Machine	3 years



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