FORM NO. 3312-837

TORO®

MODEL: 38040 — 7000001 & UP
MODEL: 38050 — 7000001 & UP
MODEL: 38080 — 7000001 & UP

OPERATOR'S MANUAL

524, 724, and 824 SNOWTHROWERS

⚠ SAFETY INSTRUCTIONS

The 524, 724 and 824 SNOWTHROWERS meet or exceed the Outdoor Power Equipment Institute's safety standards for snowthrowers; thus, Toro proudly displays the OPEI safety seal. To assure maximum safety, optimum performance, and to gain knowledge of the product, it is essential that you or any other operator of the snowthrower read and understand the contents of this manual before the engine is ever started. Pay particular attention to the safety symbol which means CAUTION, WARNING or DANGER — "personal safety instruction". Read and understand the instruction because it has to do with safety. Failure to comply with the instruction may result in personal injury.

The following instructions are comparable to the Instructions For Safe Snowthrowing adopted by ANSI — American National Standards Institute. The snowthrower is designed and tested to offer reasonably safe service; however, failure to operate it in accordance with the following Safety Instructions MAY RESULT IN PERSONAL INJURY.

BEFORE OPERATING

1. Read and understand the contents of this manual before starting and operating the machine. Become familiar with all controls and know how to stop the engine quickly.

2. Keep everyone, especially children and pets, away from the area of operation. Never allow children to operate the snowthrower.

3. Inspect area thoroughly where snowthrower will be used. Remove door mats, sleds, boards, sticks, wire and any other foreign objects which might be picked up and thrown by the snowthrower.

4. Keep all shields and safety devices in place. If a shield, safety device or decal is defective or damaged, repair or replace it before operation is commenced. Also, tighten any loose nuts, bolts and screws.

5. Wear adequate winter clothing and footwear that will improve footing on slippery surfaces. Do not wear loose fitting clothing that could possibly get caught in moving parts.

6. Adjust both skids so auger housing clears gravel or crushed rock surfaces.

7. Before starting the engine, move auger drive control to DISENGAGE and wheel drive control to N (neutral).

8. Always use a grounded three wire plug and cord to start snowthrower equipped with an electric starter.

9. Fill fuel tank with gasoline before starting the engine. Avoid spilling any gasoline. Since gasoline is highly flammable, handle it carefully. DO NOT SMOKE.

   A. Use an approved gasoline container.

   b. Fill fuel tank outdoors and only when engine is not running. Engine must be cool to prevent a potential fire hazard.

   C. Open doors if engine will be run in the garage because exhaust fumes are dangerous and could possibly be deadly. Do not run engine indoors.

   D. Wipe up any gasoline that spilled, and install gasoline container cap and snowthrower fuel tank cap securely before starting the engine.

WHILE OPERATING

10. Keep people and pets a safe distance away from the snowthrower and area of operation.

11. Allow engine to warm up for about 2 minutes and machine to adjust to outdoor temperature before clearing snow.

12. Do not run engine indoors, except when starting engine. When starting engine indoors, open outside doors because exhaust gasses are dangerous.

13. Operate the snowthrower only when there is good visibility or light. Always maintain secure

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SAFETY INSTRUCTIONS

footing and keep a firm grip on the handles, especially when operating in reverse.

14. Be attentive when using the snowthrower, and stay alert for holes in the terrain and other hidden hazards. Be careful when clearing snow from a gravel drive because stones could be picked up and thrown if the skids are not adjusted so auger housing clears all rocks.

15. STAY BEHIND THE HANDLES AND AWAY FROM DISCHARGE OPENING WHILE OPERATING THE SNOWTHROWER. Keep face, hands, feet and any other part of your body or clothing away from concealed, moving or rotating parts.

16. Do not make any adjustments while the engine is running.

17. Never direct discharge of snow or operate snowthrower near bystanders, glass enclosures, automobiles and trucks, window wells or a drop-off without proper adjustment of the snow discharge angle.

18. Clear snow from slopes by going up and down; never across the face, and use caution when changing directions. Never clear snow from steep slopes.

19. Do not overload the snowthrower by clearing snow at too fast a rate.

20. If a solid object is hit or snowthrower vibrates abnormally, shut engine off and wait for all movement to stop. Pull high tension wire off spark plug and check snowthrower immediately for possible damage, an obstruction or loose parts. Vibration is generally a warning of trouble. Repair any damage before restarting engine and operating snowthrower again.

21. Do not touch engine while it is running or soon after it is stopped because the engine will be hot enough to cause a burn. Do not add oil or check oil level in crankcase when engine is running because this could be a potential hazard.

22. Check the safety interlock system every time snowthrower is used: refer to page 11. If the interlock system does not operate properly, have the interlock system repaired immediately by an Authorized TORO Service Dealer.

23. Before leaving the operator's position – behind handles – move gear auger drive control to DISENGAGE, shift to N (neutral), and rotate ignition key to OFF. Remove key from switch if snowthrower will be left unattended.

24. Before adjusting, cleaning, repairing and inspecting the snowthrower, and before unclogging the discharge chute, shut engine off and wait for all moving parts to stop. Also, pull high tension wire off spark plug and keep wire away from the plug to prevent accidental starting. Use a stick to remove obstructions.

25. Move auger drive control to DISENGAGE before transporting or storing the snowthrower. Never operate snowthrower at high transport speeds on slippery surfaces. Use care when backing.

26. Let engine run for a few minutes after clearing snow so moving parts do not freeze.

MAINTAINING SNOWTHROWER

27. Perform only those maintenance instructions described in this manual. Shut engine off before performing any maintenance service or adjustment. Additionally, pull high tension wire off spark plug and keep wire away from plug to prevent possibility of accidental starting. If major repairs are ever needed, contact the local Authorized TORO Service Dealer for assistance.

28. Keep snowthrower in safe operating condition by keeping nuts, bolts and screws tight. Check engine mounting bolts frequently to assure they are tight.

29. Do not overspeed the engine by changing governor settings. Recommended maximum engine speed is 3500 rpm. To assure safety and accuracy, check maximum engine speed (3500 rpm) with a tachometer.

30. Allow engine to cool before storing snowthrower in an enclosure such as a garage or storage shed, and make sure the snowthrower fuel tank is empty. Do not store snowthrower near any open flame or where gasoline fumes may be ignited by a spark.

31. When storing the snowthrower for an extended time – off season storage or 30 days – drain gasoline from fuel tank to prevent a potential hazard. Store gasoline in a safety-approved red metal container. Remove key from ignition switch and keep it in a memorable place.

32. At the time of manufacture, the snowthrower conformed with and exceeded safety standards in effect for snowthrowers. Therefore, to assure optimum performance and safety, purchase genuine TORO replacement parts and accessories to keep the TORO all TORO. NEVER USE "WILL-FIT" REPLACEMENT PARTS AND ACCESSORIES. The TORO logo assures genuineness.

33. For safety reasons, use only those accessories and attachments recommended by The TORO Company to assure continued safety certification of the product. Using unapproved accessories and attachments could contribute to a potential hazard.

SAFETY DECALS

Safety and instruction decals are located on the snowthrower chassis and engine. Replace any decal that is damaged.

ON BACK OF ENGINE



(Part No. 54-9750)

ON CHUTE CONTROL BRACKET



(Part No. 29-6370)

NEAR HANDLE GRIP



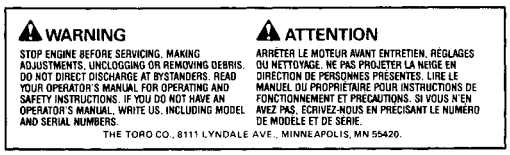
(Part No. 29-6360)

ON DISCHARGE CHUTE



(Part No. 53-7660)

ON AUGER HOUSING



(Part No. 54-9910)

ABOVE CHOKE



(MODEL 724 & 824)
(Part No. 39-3850)

NEXT TO PRIMER



(Part No. 39-3860)

NEXT TO CHOKE



(MODEL 524)
(Part No. 39-3840)

ON AUGER HOUSING



(Part No. 53-7670)



ON ENGINE

(Part No. 53-7680)

LOOSE PARTS

Part	Qty.	Use
Capscrew & Washer	4	Install Handles, page 4
Sems Screw & Locknut	2	Install Throttle, page 4
Small Knob	1	
Clevis Pin & Cotter Pin	1	Install Auger Drive Control Rod, page 4
Clevis Pin & Cotter Pin	2	Install Wheel Drive Control Rods, page 5
Capscrew & Locknut	1	Install Discharge Chute, page 5
Carriage Bolt, Locknut, Pyramidal Washer & Washer	1	Install Discharge Chute, page 5
Keys	2	Use in ignition switch
Registration Card	2	Used to validate product warranty

Specifications and design subject to change without notice.

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SETTING UP INSTRUCTIONS

Note: Determine left and right sides of snowthrower by standing in the normal operating position.

INSTALL HANDLES

1. Remove carton from around snowthrower.

2. Remove plastic ties from handles, controls, and any other area of the unit.

3. Slide handles to the inside of the side plates and line up all holes (Fig. 1).

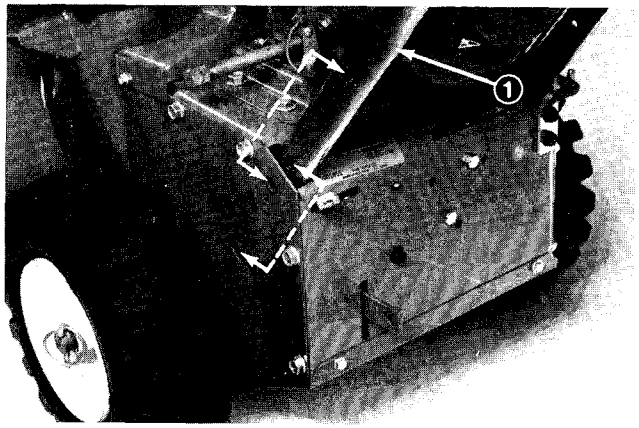


Figure 1

1. Handle

4. Secure handles to side plates with capscrews and washers (Fig. 2).

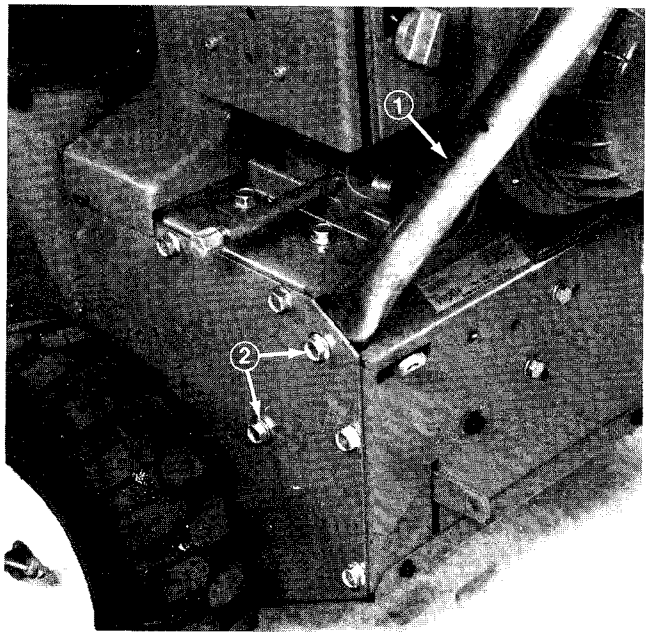


Figure 2

1. Handle
2. Capscrew and washer

INSTALL THROTTLE CONTROL

1. Hold throttle control behind control panel so cable points down; then move control lever fully to the rear.

2. From back side, slide throttle control lever in front of pivot rod and through slot in control panel. Next, secure throttle control plate in place with two hex head sems screws and locknuts (Fig. 3).

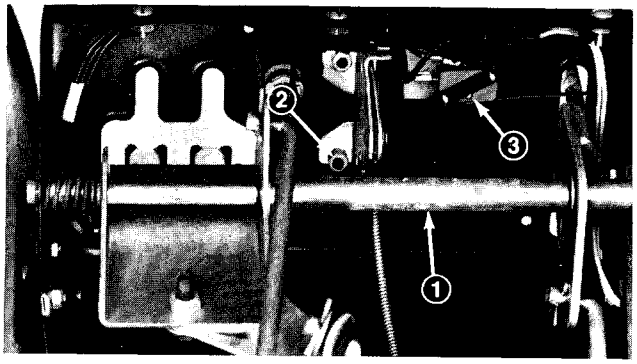


Figure 3

1. Pivot rod
2. Sems screws and locknuts
3. Auger interlock switch

Note: Make sure throttle control cable is not bent or kinked and electrical wires are not pinched by the plate or strained at connection to auger interlock switch.

3. Push, or if necessary, tap small knob onto throttle lever.

INSTALL AUGER DRIVE CONTROL ROD

1. Move auger drive control backward to DISENGAGE and hold it in that position.

2. Rotate clevis at end of auger drive control rod until holes in clevis line up with hole in bent rod (Fig. 4). Next, secure clevis and bent rod together with clevis pin and cotter pin (Fig. 4).

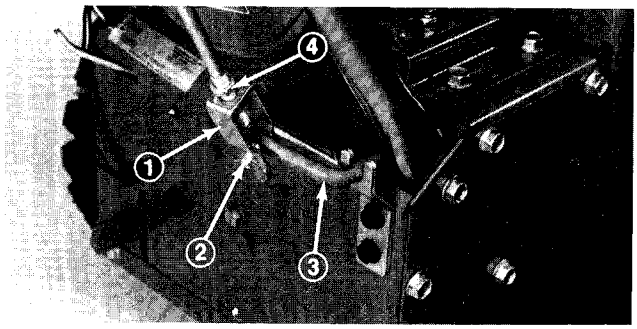


Figure 4

1. Clevis
2. Clevis pin and cotter pin
3. Bent rod
4. Jam nut

SETTING UP INSTRUCTIONS

3. Tighten the jam nut firmly against top of clevis (Fig. 4).

Note: Move auger drive control forward to ENGAGE. If excessive force is required to move the control, adjust the auger drive control: refer to Adjusting Auger/Impeller Drive Belt, page 15.

INSTALL WHEEL DRIVE CONTROL RODS

1. Move wheel drive control into No. 1, 1st gear. Position control lever so its front surface is 1/4 of an inch (6 mm) from bottom of slot (Fig. 5); then hold lever in this position.

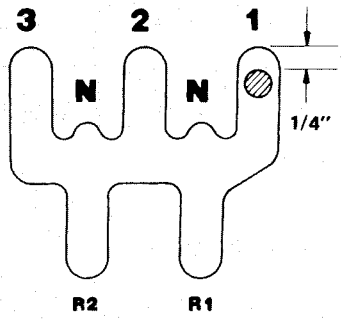


Figure 5

2. While holding wheel drive control lever in position, push up on long rod and rotate clevis until holes in clevis line up with hole in link arm (Fig. 6). Next, secure clevis and link arm together with clevis pin and cotter pin (Fig. 6).

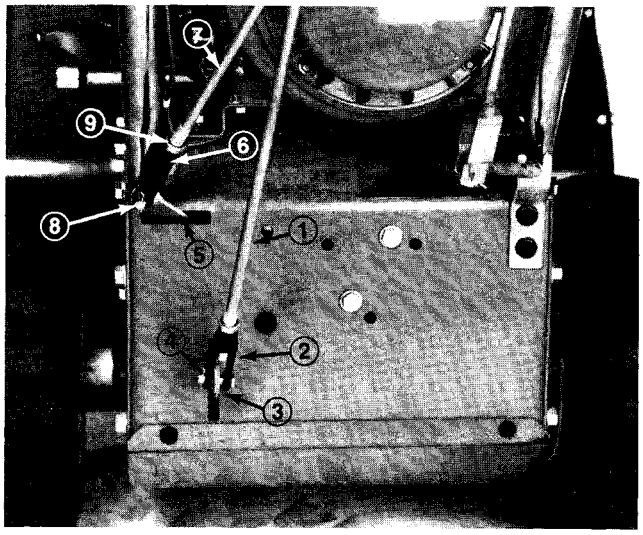


Figure 6

1. *Long rod*
2. *Clevis*
3. *Link arm*
4. *Clevis pin and cotter pin*
5. *Shift arm*
6. *Clevis*
7. *Short rod*
8. *Clevis pin and cotter pin*
9. *Jam nut*

3. Move wheel drive control lever onto the hump between N and 1 (Fig. 7). Hold wheel drive control lever in this position – on hump.

Note: Lever must be held against the hump, not in the N or 1 position.

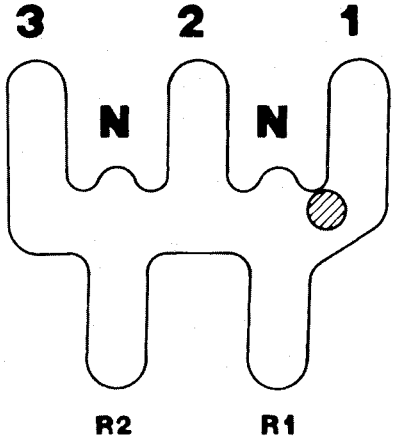


Figure 7

4. Move shift arm fully to the left (Fig. 6). Next, rotate clevis at end of shortest rod until holes in clevis line up with hole in shift arm (Fig. 6). Secure clevis and shift arm together with clevis pin and cotter pin (Fig. 6).

5. Tighten the jam nut against top of both clevises (Fig. 6).

INSTALL DISCHARGE CHUTE

1. Rotate retaining ring so teeth are toward left side of unit (Fig. 8). Next, remove three self tapping screws from top of retaining ring, but do not remove the screw near "TOP" marking, which is on the retaining ring.

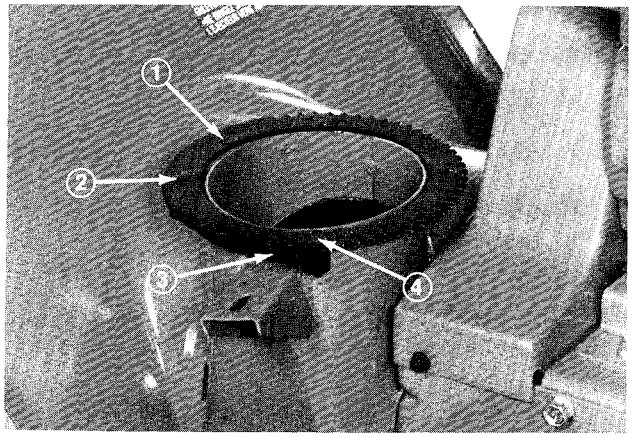


Figure 8

1. *Retaining ring*
2. *Top marking*
3. *Plastic retainer*
4. *Line up holes*

SETTING UP INSTRUCTIONS

2. The two curved plastic retainers are slotted and are used to secure the discharge chute. Therefore, keep retainers in place (Fig. 8).

3. Move opposite end of retainer under the retaining ring so mounting holes line up and slot in retainer fits over the collar at top of discharge opening (Fig. 8).

4. Set discharge chute – open side forward – onto retaining ring and line up mounting holes. Next, secure discharge chute, retaining ring, and plastic retainers together with three self tapping screws (Fig. 9).

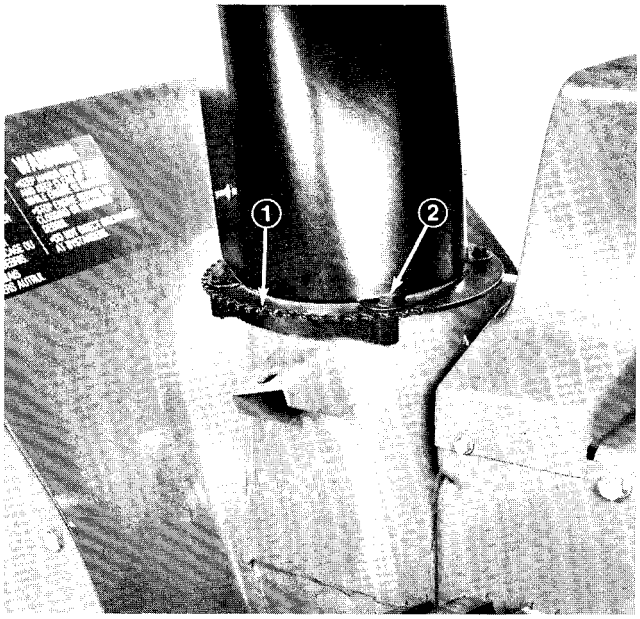


Figure 9

1. Plastic retainer
2. Self tapping screw

5. Tighten self tapping screw near "TOP" marking so discharge chute is held securely in place.

6. Install chute control bracket and rod against left side of handle with capscrew and locknut; but do not tighten the locknut (Fig. 10).

7. Apply No. 2 general purpose grease on worm gear. Next, mount worm bracket and gear on top of mounting flange with carriage bolt, pyramidal washer, flat washer and cone locknut (Fig. 11). Do not tighten locknut.

Note: Flat washer to be between worm bracket and mounting flange.

8. Push worm firmly against teeth in retaining ring; then tighten locknut (Fig. 11). Also tighten locknut holding chute control bracket against left handle (Fig. 10). Check operation by rotating chute control. Repeat if necessary.

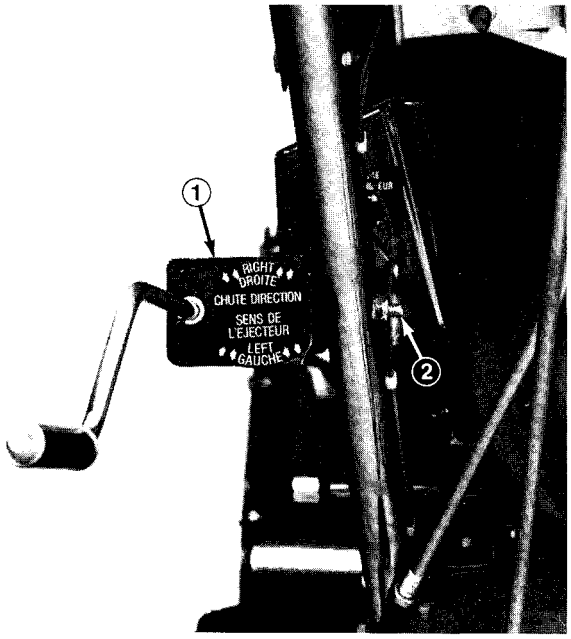


Figure 10

1. Chute control bracket
2. Capscrew and locknut

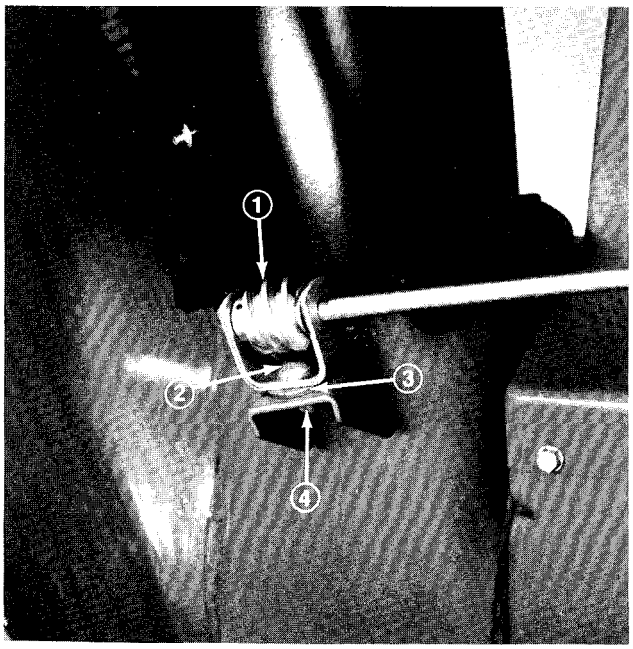


Figure 11

1. Worm gear
2. Carriage bolt
3. Flatwasher
4. Washer and locknut

CONNECT WIRES

1. Plug handle wires firmly into plug on engine. (Fig. 12)

SETTING UP INSTRUCTIONS

2. Push plastic retaining clip holding the wires into hole on top left of main frame (Fig. 12).

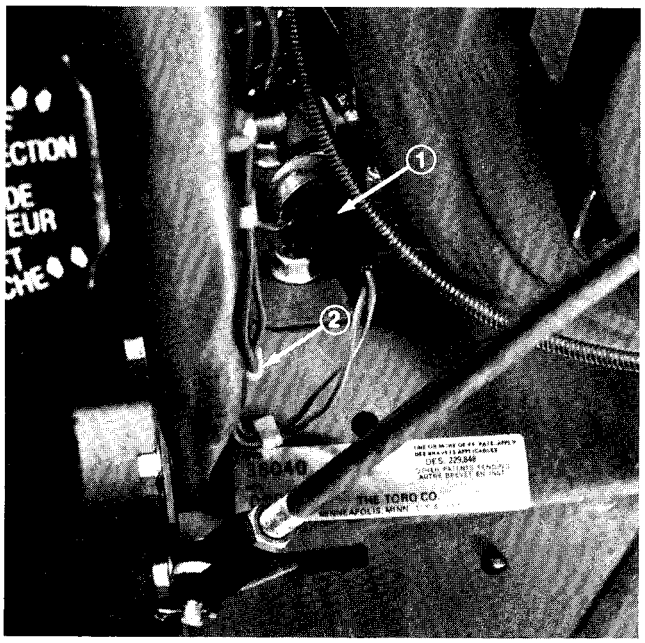


Figure 12

1. *Engine plug*
2. *Retaining clip*

CHECK TIRE PRESSURE

IMPORTANT: Check pressure of tires because they are over inflated at the factory for shipping. Therefore, before the snowthrower is operated, reduce pressure in both tires to 20-25 psi.

PREPARATION BEFORE STARTING

FILL CRANKCASE WITH OIL

The engine is shipped from the factory without oil in the crankcase. Therefore, before trying to start engine, oil must be added to the crankcase.

IMPORTANT: Check level of oil every 5 operating hours or each time unit is used. Initially, change oil after the first 2 hours of operation; thereafter, under normal conditions, change oil after every 25 hours of operation. However, change oil more frequently when engine is operated in extremely dirty conditions.

1. Move unit to a level surface to assure an accurate oil level reading.

2. Clean area around dipstick to prevent foreign matter from entering filler hole when dipstick is removed.

3. Remove dipstick from crankcase (Fig. 14).

PREPARATION BEFORE STARTING

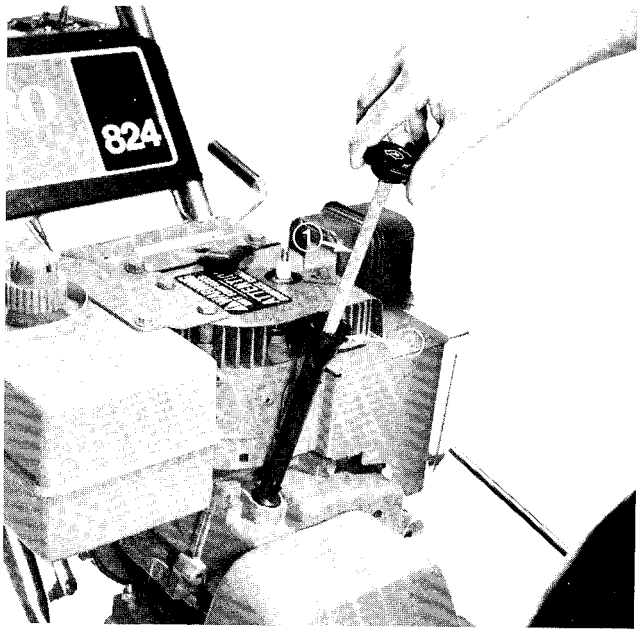


Figure 14

1. Dipstick
2. Filler hole

4. Slowly, pour SAE 5W-30 or SAE 10 oil into the filler hole (Fig. 14), using oil fill chart below. The engine uses any high-quality detergent oil having the American Petroleum Institute — API — "service classification" SC, SD, or SE.

Oil Fill Chart

524 Snowthrower	21 ounces of oil
724 Snowthrower	19 ounces of oil
824 Snowthrower	24 ounces of oil

Note: Dipstick must be fully installed to assure accurate gauging of oil level. DO NOT OVERFILL.

IMPORTANT: Check level of oil after every 5 hours of engine operation or every time snowthrower is used. Initially, change oil after 2 hours of engine operation; thereafter, change oil after every 25 hours of operation. If possible, run engine just before changing oil because warm oil flows better and carries more contaminants than cold oil.

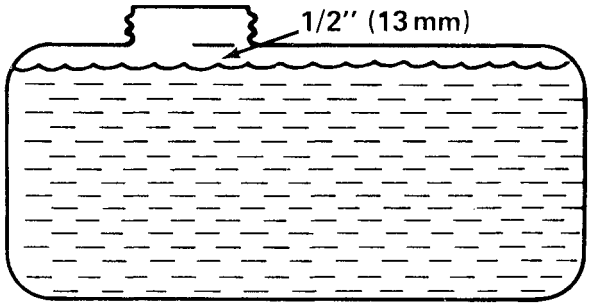
FILL FUEL TANK WITH GASOLINE.

THE TORO COMPANY STRONGLY RECOMMENDS THE USE OF CLEAN, FRESH **UNLEADED** REGULAR GASOLINE IN TORO GASOLINE POWERED PRODUCTS. UNLEADED GASOLINE BURNS CLEANER, EXTENDS ENGINE LIFE, AND PROMOTES GOOD STARTING BY REDUCING THE BUILDUP OF COMBUSTION CHAMBER DEPOSITS. LEADED GASOLINE CAN BE USED IF UNLEADED IS NOT AVAILABLE.

NOTE: NEVER USE METHANOL, GASOLINE CONTAINING METHANOL, GASOHOL CONTAINING MORE THAN 10% ETHANOL, GASOLINE ADDITIVES, PREMIUM GASOLINE, OR WHITE GAS BECAUSE ENGINE FUEL SYSTEM DAMAGE COULD RESULT.

CAUTION

Because gasoline is flammable, caution must be used when storing or handling it. Do not fill fuel tank while engine is running, hot or when unit is in an enclosed area. Keep away from open flame and electrical spark, and DO NOT SMOKE while filling the fuel tank to prevent the possibility of an explosion. Always fill fuel tank outside and wipe up any spilled gasoline before starting engine. Use a funnel or spout to prevent spilling gasoline, and fill fuel tank to about 1/2 inch (13 mm) from the top of the tank, not the filler neck.



Store gasoline in a clean, approved container and keep the cap in place on the container. Keep gasoline in a cool, well-ventilated place; never in the house. To assure volatility, do not buy more than a 30 day supply of gasoline. Gasoline is a fuel for internal combustion engines; therefore, do not use it for any other purpose. Since many children like the smell of gasoline, keep it out of their reach because the fumes are explosive and dangerous to inhale.

1. Clean area around the fuel tank cap. Remove cap from fuel tank and fill tank to within 1/2 inch (13 mm) from the top with unleaded regular gasoline. Reinstall fuel tank cap.

CONTROLS

Auger Drive Control (Fig. 15) – Control has two positions: ENGAGE and DISENGAGE. To engage auger and impeller, push control forward until it stops in an over center position. To disengage auger and impeller, pull control backward.

Interlock Lever (Fig. 15) – Interlock lever must be compressed against right handle grip when auger drive or wheel drive control is engaged. The engine will shut off if lever is released when auger drive or wheel drive control is engaged. This is a safety feature that reminds the user to disengage auger drive and wheel drive controls before leaving operator's position behind the handles.

Wheel Drive Control (Fig. 15) – The control has seven positions: N–neutral (2), R1 and R2–reverse, 1, 2, and 3. To change speeds, move gear shift to position desired. Control must be held in R–reverse –when backing and when it is released, gear shift automatically returns to neutral. Use positions 1, 2, and 3 depending on snow conditions. Keep interlock lever compressed when shifting.

Throttle (Fig. 15) — Moving the throttle forward increases engine speed.

Ignition Switch (Fig. 15) – Switch has two positions: ON and OFF. Rotate key to ON before starting engine with the recoil starter. To stop engine, rotate key to OFF.

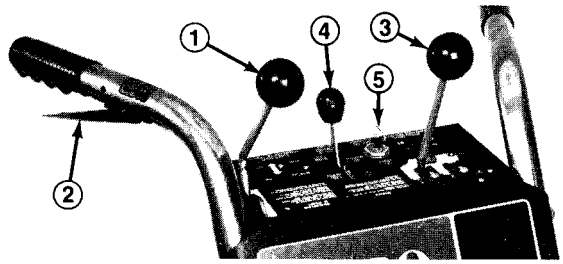


Figure 15

1. Auger drive control 3. Wheel drive control 5. Ignition switch
2. Interlock lever 4. Throttle

Axle Pins (Fig. 16) – Move axle pins to outer axle hole to get free-wheeling characteristic. Push pin through hole in wheel hub and inner axle hole to get direct drive to both wheels.

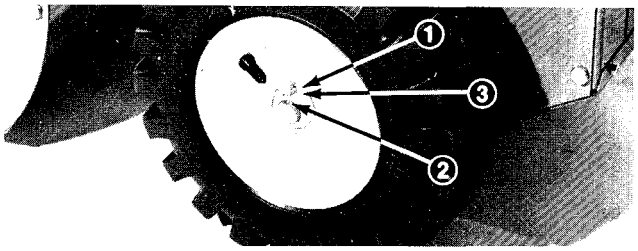
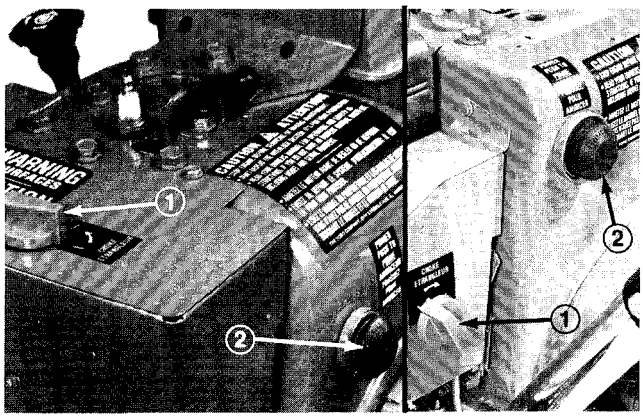


Figure 16

1. Axle pin 3. Inner axle hole
2. Outer axle hole and wheel hub

Choke (Fig. 17) – Choke is located on top of heater box. Rotate choke to FULL choke position to start a cold engine. As engine warms up, rotate choke gradually to OFF.

Primer (Fig. 17) – Press primer to pump small amount of gasoline into engine for improved cold weather starting.



524, 724 Snowthrower 824 Snowthrower

Figure 17

1. Choke
2. Primer

Fuel Shut-Off Valve (Fig. 18) – Valve is located under fuel tank. Close valve to stop fuel flow from fuel tank and open valve to allow fuel to flow to the carburetor. Close valve when snowthrower is not used.

Discharge Chute Control (Fig. 18) – Rotate discharge chute control clockwise to move discharge chute to the left and counterclockwise to move chute to the right.

Recoil Starter (Fig. 18) – Recoil starter is on back side of engine. Pull recoil starter to start engine.

Deflector Handle (Fig. 18) – Deflector handle is on top of discharge chute and it is used to control height of the snow stream.

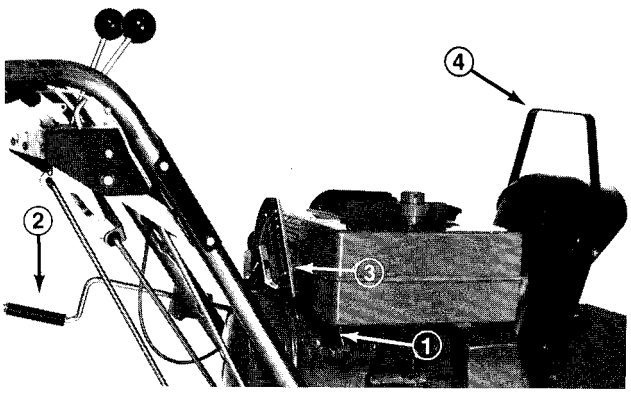


Figure 18

1. Fuel shut-off valve 3. Recoil starter
2. Discharge chute control 4. Deflector handle

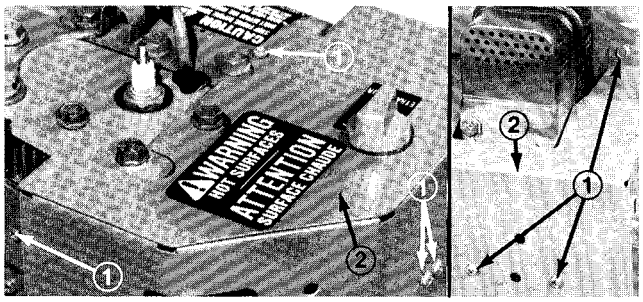
STARTING AND STOPPING INSTRUCTIONS

TO START ENGINE

Note: If engine is operated when temperature is +40° F (4° C) or higher, remove carburetor heater box. However, the heater box must be reinstalled when temperature falls below +40° F (4° C). To remove heater box:

A. Remove mounting screws securing heater box in place. Grasp choke knob and pull it off mounting pin.

B. Lift heater box up and away from the engine, and reinstall choke knob on mounting pin.



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Figure 19

1. Mounting screws 2. Heater box

IMPORTANT: Check auger and impeller to assure that both parts are not frozen solid, but free to rotate. Also, make sure discharge chute is not obstructed.

1. Move auger drive control to DISENGAGE (Fig. 20).

2. Move wheel drive control to N—neutral — and throttle to FAST (Fig. 20).

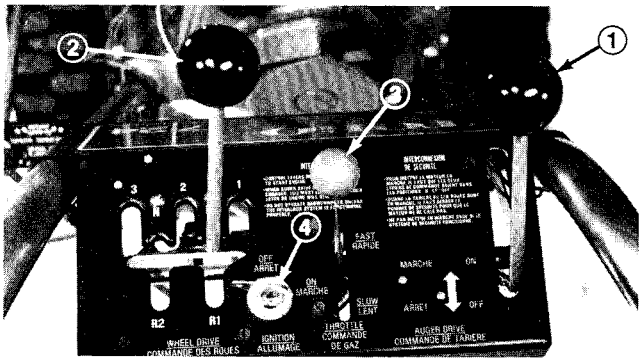
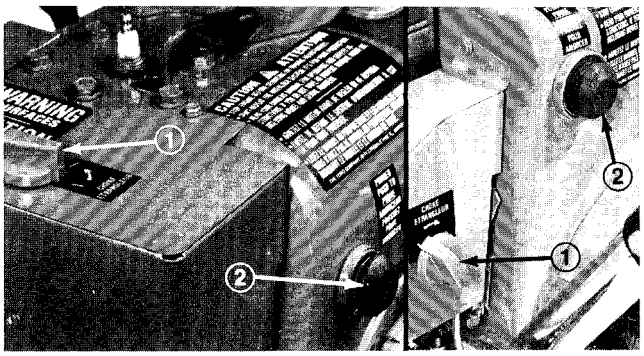


Figure 20

1. Auger drive control 3. Throttle
2. Wheel drive control 4. Ignition switch

3. Open fuel shut-of valve below fuel tank.

4. Move choke to full choke position (Fig. 21).



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Figure 21

1. Choke
2. Primer

5. Rotate ignition key to ON (Fig. 20).

6. Depress primer (Fig. 21) five times.

7. Grasp recoil starter handle (Fig. 22) and pull it out slowly until positive engagement results; then pull vigorously to start the engine. Keep firm grip on starter handle and return the rope slowly.

Note: If engine does not start or if temperature is -10° F or below, additional priming will usually be required.

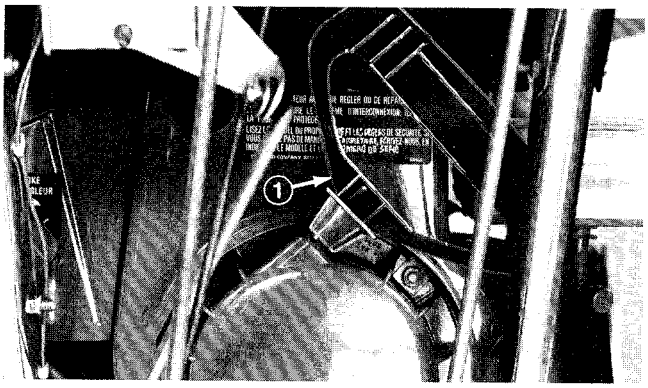


Figure 22

1. Recoil starter handle

8. After engine starts, immediately move choke (Fig. 21) to 3/4 position. As engine warms up, move choke to 1/2 position; then to OFF position. If engine falters, return choke to 1/2 position. When engine warms sufficiently, move choke to OFF position.

TO STOP ENGINE:

1. Move wheel drive control to N—neutral—and auger drive control to DISENGAGE.

2. Move throttle to slow and rotate ignition key to OFF.

OPERATING INSTRUCTIONS

FREE WHEELING OR SELF PROPELLED DRIVE

The snowthrower can be free wheeled or engaged for self propelled operation. When axle pins are through outer axle holes (Fig. 16), snowthrower will free wheel. By contrast, when both pins are installed through holes in wheel hub and inner hole of axle (Fig. 16), snowthrower will self propel itself.

CHECKING SAFETY INTERLOCK SYSTEM

The safety interlock system grounds out and stops the engine through a series of switches (Fig. 23) if the operator releases interlock levers before moving wheel drive control to N – neutral – and auger drive control to DISENGAGE. So, to keep engine running when wheel drive is in gear or when auger drive control is ENGAGED, the interlock lever (Fig. 23) must be compressed against handle grip. This system also prevents the operator from starting the engine with the wheel drive control in gear or auger drive control engaged.

DANGER

If interlock system does not operate properly, have the interlock system repaired immediately by an Authorized TORO Service Dealer. DO NOT TRY TO DEFEAT THE INTERLOCK SYSTEM BY DISCONNECTING WIRES OR SWITCHES, OR IN ANY OTHER WAY MAKE IT INOPERATIVE. An inoperative interlock system will allow the auger and impeller to rotate continuously when the operator's position is left, and this situation is HAZARDOUS. Check the interlock system every time snowthrower is used.

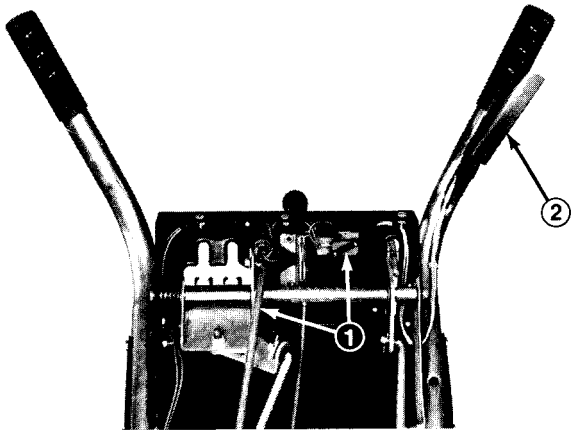


Figure 23

1. Switch
2. Interlock lever

To check interlock system:

1. Push snowthrower outdoors onto a flat, open area. Start the engine: refer to Starting and Stopping Instructions, page 10.

2. Slowly move auger drive control to ENGAGE while interlock lever is fully released. Engine should begin to shut off; when it does, immediately move auger drive control back to DISENGAGE. If engine begins to shut off, switch is operating correctly.

3. Slowly, move wheel drive control to 1 – 1st gear – while interlock lever is fully released. Engine should begin to shut off; when it does, immediately move wheel drive control back to N – neutral. If engine begins to shut off, switch is operating correctly.

SNOWTHROWING TIPS

1. When snowthrower is not being used, close fuel shut-off valve, have wheel drive control in N – neutral position, auger drive control in DISENGAGE position, and key removed from the switch.

2. Remove snow as soon as possible after it falls. This will produce best snow removal results.

3. If snow will be removed from crushed rock or gravel areas, adjust skids so bottom of auger housing clears the rocks: refer to Adjusting Skids, page 14.

4. For concrete or asphalt surfaces, adjust skids so there is 1/8 inch (3 mm) between bottom of auger and concrete or asphalt surface.

5. The snowthrower is designed to clean snow down to the contact surface, but there are times when front of snowthrower may tend to ride up. If this happens, reduce forward speed by shifting into a lower gear. If front still tends to ride up, lift up on both handles to hold down front of snowthrower.

6. Discharge snow downwind whenever possible, and overlap each swath to assure complete snow removal. If wheels slip, shift into a lower gear which reduces forward speed.

7. Normally, chains are not required; however, tire chains are recommended when the wheels spin excessively.

8. In some snow and cold weather conditions, some controls and moving parts may freeze solid. Therefore, when any control becomes hard to operate, stop the engine; then check all parts for freeze up. DO NOT USE EXCESSIVE FORCE AND TRY TO OPERATE THE CONTROLS WHEN FROZEN. Free all controls and moving parts before operating.

MAINTENANCE

CAUTION

To prevent accidental starting of the engine while performing maintenance, rotate ignition key to off and remove it from the switch. Next, pull high tension wire off spark plug (Fig. 24) and make sure wire does not accidentally touch the plug.

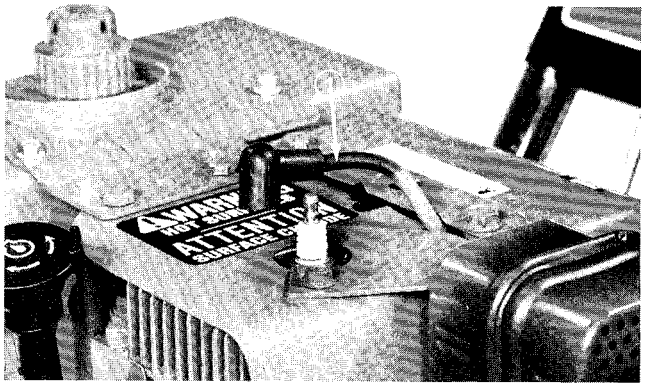


Figure 24

1. High tension wire

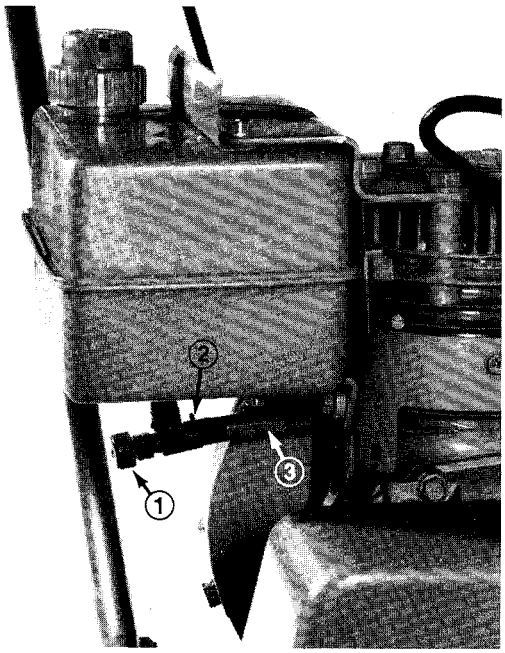


Figure 25

1. Fuel shut off valve
2. Hose clamp
3. Fuel line

4. Open valve allowing fuel to flow into drain pan.

5. Reinstall fuel line and secure with hose clamp.

DRAINING GASOLINE

1. Close fuel shut off valve located under engine (Fig. 25).

2. Place a clean drain pan under shut off valve.

3. Loosen hose clamps securing fuel line to valve and slide line off valve. (Fig. 25)

CAUTION

Since gasoline is highly flammable, drain it outdoors and make sure engine is cool to prevent a potential fire hazard. Wipe up any gasoline that may have spilled. Do not drain gasoline near any open flame or where gasoline fumes may be ignited by a spark. Do not smoke a cigar, cigarette, or a pipe when handling gasoline.

LUBRICATING SNOWTHROWER

Lubricate the control linkage and other moving parts of the snowthrower after every 15 hours of operation.

1. Lubricate pivot points in the control linkage with a few drops of SAE 10W-40 oil (Figs. 26 and 27). Wipe up any excess oil.

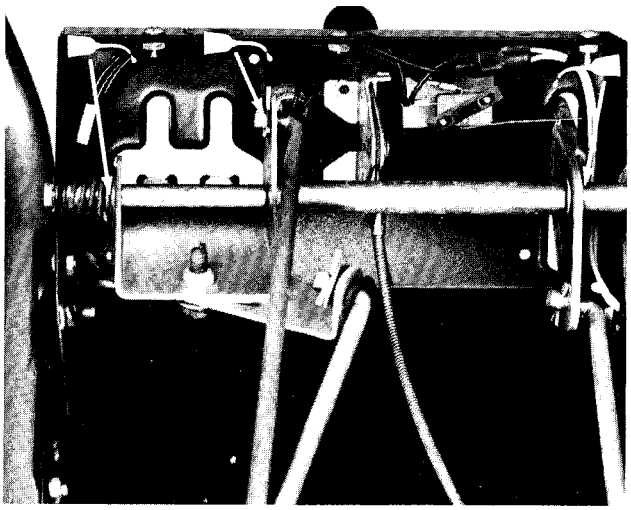


Figure 26

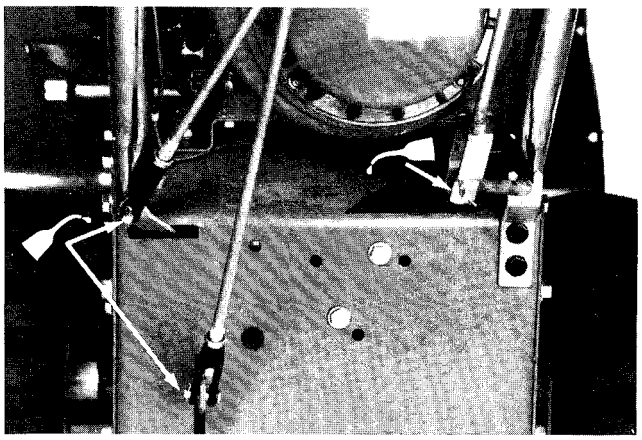


Figure 27

2. Drain gasoline from fuel tank: refer to Draining Gasoline, page 12.

3. Tip snowthrower forward onto auger housing and block it so it cannot fall.

4. Remove four thread forming screws holding rear shield in place, and slide shield away from traction unit.

5. Lightly lubricate drive chains, sprocket bushing, nylon ring, hex shaft, and the other pivot points with SAE 10W40 (Fig. 28).

6. Wipe up any excess oil and install rear shield with four thread forming screws.

IMPORTANT: Do not get oil on rubber wheel or friction drive plate because the wheel will slip and the rubber may deteriorate.

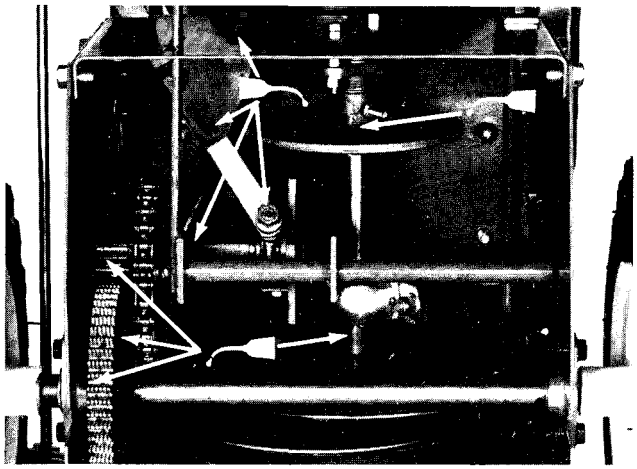


Figure 28

CHANGING CRANKCASE OIL

Initially, change oil after the first 2 hours of engine operation; thereafter, change oil after every 25 hours of engine operation. If possible, run engine just before changing oil because warm oil flows better and carries more contaminants than cold oil.

Note: Drain oil when fuel tank is empty to prevent spilling gasoline.

1. Pull high tension wire off spark plug and make sure wire does not contact plug accidently.

2. Put a two inch (51 mm) block under the right wheel so snowthrower is tipped slightly to the side. This will assure that all oil drains from crankcase.

3. Clean area around oil drain cap. Next, slide oil drain pan below drain extension; then remove oil drain cap (Fig. 29).

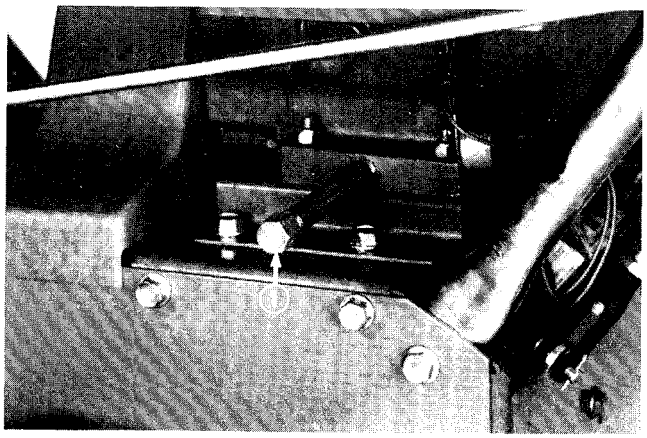


Figure 29

1. Drain cap

4. After all oil is drained, install oil drain cap. Also, REMOVE BLOCK FROM UNDER RIGHT WHEEL.

5. Position snowthrower on a level surface. Next, fill crankcase with oil: see Fill Crankcase With Oil, page 7. Wipe up any oil that may have spilled.

AUGER GEAR BOX

The auger gear box is filled with grease at the factory so regular maintenance is not required. However, if grease must be replaced in gear box:

1. Remove pipe plug (Fig. 30).

2. Fill gear box with a low temperature-high pressure grease such as Lubriplate Mag-1. Capacity 4 oz.

3. Reinstall pipe plug.

MAINTENANCE

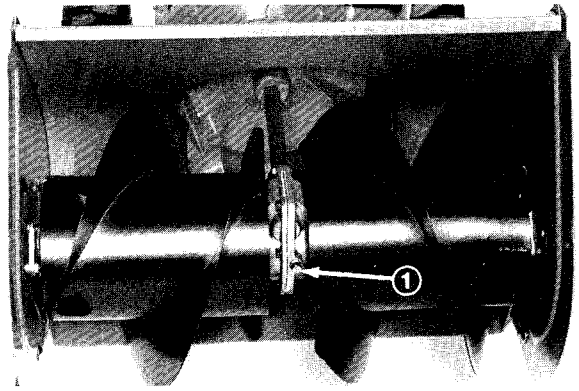


Figure 30
1. Pipe plug

ADJUSTING SKIDS

When snowthrower will be used on concrete or asphalt surfaces, adjust skids using steps 1 - 3. However, use only step 4 when snowthrower will be used on gravel or crushed rock surfaces.

1. Move snowthrower to a level surface. Next, loosen four flange nuts (Fig. 31) securing both skids to auger side plates. Skids must slide up and down.

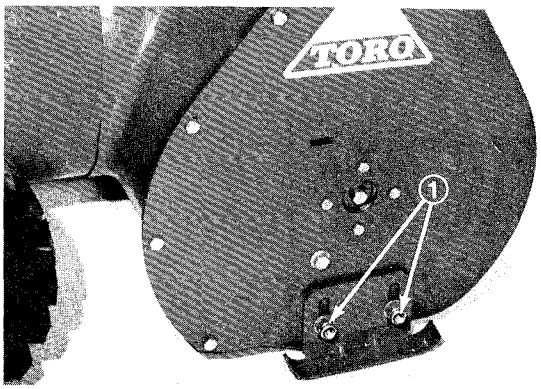


Figure 31
1. Flange nuts

2. Push snowthrower forward so pivoting scraper blade moves backward.

3. Adjust both skids so there is 1/8 of an inch between bottom of auger and level surface. When skids are adjusted correctly, tighten flange nuts. Next, check pivoting scraper blade that is mounted at bottom of auger housing. Scraper must be parallel with level surface. If scraper is not parallel, adjust skids again. Do not use step 4 after adjusting skids for hard surfaces.

4. Loosen four flange nuts (Fig. 31) securing both skids to auger side plates. Next, slide skids down as far as possible so auger is as far from the level surface as skid adjustment allows; then tighten flange nuts.

REPLACING TRACTION DRIVE BELT

When traction drive belt (Fig. 32) becomes worn, stretched, oil-soaked, or otherwise defective, belt replacement is required.

1. Pull high tension wire (Fig. 32) off spark plug and make sure it does not contact the plug accidentally.

2. Remove two thread forming screws holding belt cover in place, and set belt guard aside.

3. Move auger drive control to DISENGAGE and wheel drive control to N, neutral. Next, remove auger drive belt from engine pulley and large auger/impeller pulley (Fig. 32).

4. Loosen two capscrews (Fig. 32) securing traction idler arm to front of engine. Next, remove traction drive belt from engine pulley and large traction pulley (Fig. 32).

5. Install new belt around large traction pulley (Fig. 32). Next, loop belt over engine pulley, making sure that belt is on inside of traction idler pulley and wire belt guide (Fig. 32).

6. Install new belt around large auger/impeller pulley (Fig. 32). Next, loop belt over engine pulley, making sure that belt is on inside of auger/impeller, idler pulley and wire belt retainer (Fig. 32). Slide idler arm and pulley assembly against belt to remove belt slack and tighten capscrews.

Note: Tension belt only enough to remove slack. Do not over-tension.

7. Install belt cover with two thread forming screws.

8. Install high tension lead and test operate unit to check traction. If little or no traction is evident, proceed to step 9. If traction operation is satisfactory, proceed to operate machine.

9. Remove high tension lead from spark plug and remove belt guard. Loosen two capscrews securing traction idler arm and slide idler arm and pulley assembly further against belt. Move assembly a minimal amount to assure belt is not over tensioned.

10. Repeat step 8.

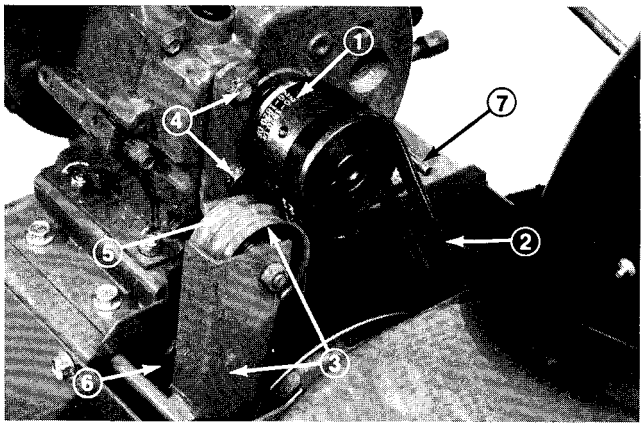


Figure 32

1. *Traction drive belt*
2. *Auger/impeller drive belt*
3. *Auger/impeller pulley & idler*
4. *Capscrews*
5. *Traction idler pulley*
6. *Traction pulley*
7. *Belt guide*

REPLACING AUGER/IMPELLER DRIVE BELT

When auger/impeller drive belt (Fig. 32) becomes worn, stretched, oil-soaked, or otherwise defective, belt replacement is required.

1. Pull high tension wire (Fig. 24) off spark plug and make sure it does not contact the plug accidentally.

2. Remove two thread forming screws holding belt cover in place, and set belt guard aside.

3. Move auger drive control to DISENGAGE and wheel drive control to N, neutral. Next, remove auger drive belt from engine pulley and large auger/impeller pulley (Fig. 32).

4. Install new belt around large auger/impeller pulley (Fig. 32). Next, loop belt over engine pulley, making sure that belt is on inside of idler pulley and wire belt guide (Fig. 32).

5. Install belt cover with two thread forming screws.

ADJUSTING AUGER/IMPELLER DRIVE BELT

If auger slips, which means the auger drive belt is slipping, an adjustment is required. When a new auger/impeller drive belt is installed, an adjustment may also be required.

1. Loosen jam nut from clevis at bottom of auger drive control rod (Fig. 33). Next, remove cotter pin and clevis pin holding clevis to bent rod (Fig. 33).

2. Rotate clevis (Fig. 33) counterclockwise – out – to increase belt tension. By contrast, rotate clevis clockwise – in – to decrease belt tension.

Note: When adjusting clevis, rotate it one half – 180° – turn.

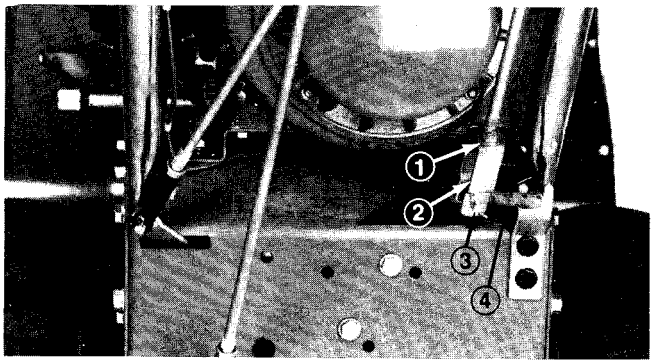


Figure 33

1. *Jam nut*
2. *Clevis*
3. *Clevis pin & cotter pin*
4. *Bent rod*

3. Connect clevis to bent rod with clevis pin and cotter pin (Fig. 33). Next, tighten jam nut against top of clevis (Fig. 33).

4. Check tension of belt by operating the auger. If belt still slips, adjust clevis again.

IMPORTANT: Do not adjust belt too tight because the belt will wear out quickly or possibly cause damage to the snowthrower.

ADJUSTING TRACTION DISC

If snowthrower does not drive in reverse or forward speeds, or if snowthrower does not disengage – come out of gear – an adjustment is required.

1. Drain gasoline from fuel tank. Next, remove high tension wire from spark plug and make sure it does not contact plug accidentally.

2. Tip snowthrower forward onto auger housing, and block the unit so it cannot fall accidentally.

3. Remove four thread forming screws securing rear shield in place, and slide shield away from traction unit.

4. Move wheel drive control to N, neutral position.

5. Top and bottom surface of rubber drive wheel must be an equal distance from the friction disc and pulley (Fig. 34). If distance is the same and traction control does not function properly, contact your local authorized Toro service dealer. If distance is not the same, proceed to step 6.

6. Loosen jam nut from clevis at bottom of longest wheel drive control rod (Fig. 35). Next remove cotter pin and clevis pin holding clevis to link arm (Fig. 35). If rubber drive wheel is too close to the front pulley, lengthen the rod by rotating clevis (Fig. 35) one half turn counterclockwise. By contrast, if rubber drive wheel is too close to the rear friction disc, shorten the rod by rotating clevis (Fig. 35) one half turn clockwise.

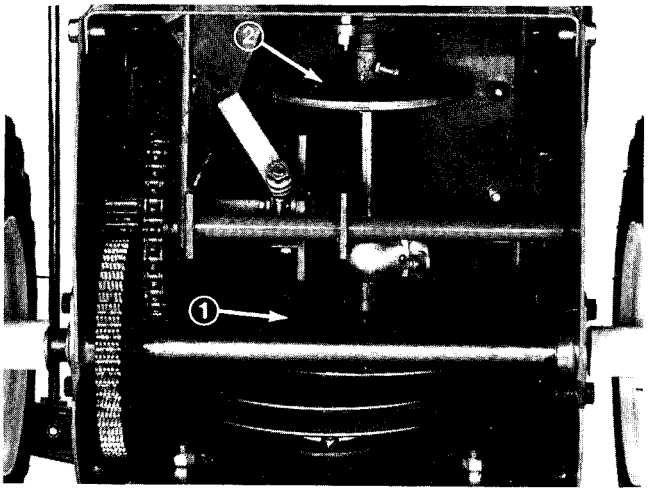


Figure 34

1. Front pulley
2. Rear friction disc

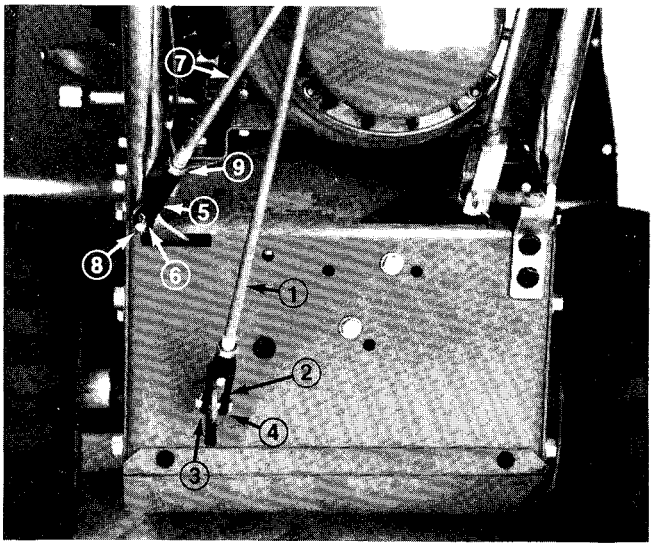


Figure 35

1. Long rod
2. Clevis
3. Link arm
4. Clevis pin & cotter pin
5. Shift arm
6. Clevis
7. Short rod
8. Clevis pin & cotter pin
9. Jam nut

7. Connect clevis to link arm with clevis pin and cotter pin. Tighten jam nut against top of clevis.

8. Install rear shroud with four thread forming screws, and move snowthrower back to its normal position.

REPLACING SPARK PLUG

Correct spark plug to use in a Champion RJ-17LM or Autolite AR7N, and correct air gap is 0.030 of an inch (0.76 mm). Since air gap between center and side electrodes of the spark plug increases gradually during normal engine operation, install a new plug after every 25 hours of engine operation.

1. Clean area around spark plug so foreign matter cannot fall into cylinder when plug is removed.

2. Pull high tension wire off spark plug (Fig. 36), and remove plug from cylinder head.

IMPORTANT: A cracked, fouled, or dirty spark plug must be replaced. Do not sand blast, scrape, or clean electrodes because grit may eventually release from the plug and fall into the cylinder. The result will likely be engine damage.

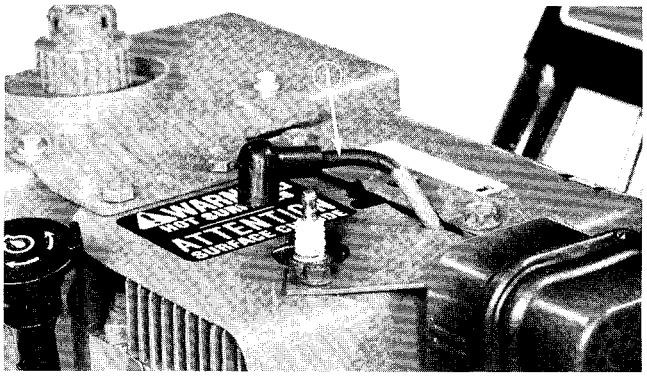


Figure 36

1. High tension wire

3. Set air gap between electrodes of new spark plug at 0.030 of an inch (0.76 mm) (Fig. 37). Next, install spark plug in cylinder head. Tighten plug to 15 ft-lb (20.4 N·m). If torque wrench is not used, tighten plug firmly.

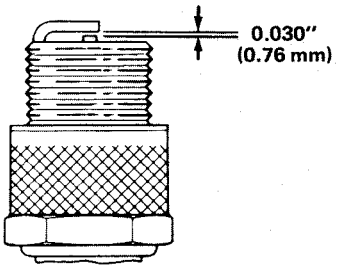


Figure 37

4. Push the high tension wire onto spark plug (Fig. 36).

ADJUSTING CARBURETOR

The carburetor has been adjusted at the factory, but an occasional adjustment may be required. However, do not make unnecessary carburetor adjustments because factory settings are usually satisfactory.

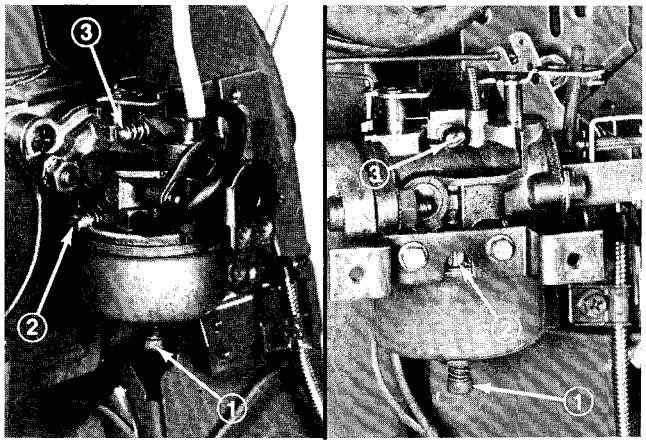
1. Remove carburetor heater box: see Starting and Stopping Instructions, paragraph one, steps A & B, page 10.

IMPORTANT: Do not close power adjusting screw too tight because the screw and seat will likely be damaged.

2. Power Adjusting Screw (Fig. 38) – Close screw by gently rotating it clockwise until a slight seating resistance is felt. Next, rotate power adjusting screw 1 full turn – 360° – counterclockwise.

IMPORTANT: Do not close idle mixture screw too tight because the screw and seat will likely be damaged.

3. Idle Mixture Screw (Fig. 38) – Close screw by gently rotating it clockwise until a slight seating resistance is felt. Next, rotate idle mixture screw 1-1/2 full turns counterclockwise.



524, 724 Snowthrower 824 Snowthrower

Figure 38

1. Power adjusting screw 2. Idle mixture screw 3. Idle speed screw

Note: The settings for the power adjusting screw and the idle mixture screw are approximate; however, these settings will allow engine to be started so carburetor can be fine tuned – steps 4-7.

4. Start engine and let it warm up for approximately 3 to 5 minutes; then move throttle to FAST.

CAUTION

Engine must be running so final adjustment of the carburetor can be performed. To guard against possible personal injury, move auger drive and wheel drive controls to DISENGAGE, and remember to keep hands, feet, face, and other parts of the body away from muffler, auger, discharge chute, and any moving part(s).

5. Rotate power adjusting screw (Fig. 38) clockwise – in – 1/8 turn at a time until engine misses because of a lean gasoline mixture. Then rotate screw counterclockwise – out – 1/8 turn at a time until engine runs unevenly because of a rich gasoline mixture. Next, rotate power adjusting screw clockwise, back to the midpoint between the rich and lean setting so engine runs smoothly.

Note: Wait several seconds between each 1/8 turn setting so engine can adjust to the new fuel mixture.

6. Move throttle backward to idle speed. Next, rotate idle speed screw (Fig. 38) until engine idles fast – 1750 rpm.

7. Rotate idle mixture screw (Fig. 38) clockwise – in – 1/8 turn at a time until engine begins to miss because of a lean mixture. Then rotate screw counterclockwise – out – 1/8 turn at a time until engine runs unevenly because of rich mixture. Next, rotate idle mixture screw clockwise, back to the mid-point between rich and lean setting.

Note: Wait several seconds between each 1/8 turn setting so engine can adjust to the new fuel mixture.

8. Again, rotate idle speed screw (Fig. 38) until engine idles at 1750 rpm.

9. Check carburetor adjustment by quickly moving throttle from low speed to high speed. Engine should accelerate without hesitation or sputtering. If engine does not accelerate properly, adjust carburetor to a slightly richer mixture. Also, if engine falters under load, open power adjusting screw 1/8 turn counterclockwise.

10. After carburetor is adjusted, shut engine off.

PREPARING SNOWTHROWER FOR STORAGE

1. Drain gasoline from fuel tank: refer to Draining Gasoline, page 12. Wipe up any gasoline that may have spilled.

2. Start the engine and let it run until it stops because there is no gasoline in the fuel system. When engine sputters, push choke down so fuel in carburetor is expended.

3. Remove spark plug from cylinder head. Next, pour two teaspoons of SAE 30 engine oil into spark plug hole in cylinder head. Install spark plug in cylinder head, but do not install high tension wire on the plug. Then pull recoil starter slowly to distribute oil on inside of cylinder.

4. Lubricate the snowthrower: refer to Lubricating Snowthrower, page 12. Change crankcase oil: use Changing Crankcase Oil, page 13.

5. Clean the snowthrower. Touch up chipped surfaces with paint. Sand affected areas before painting, and use a rust preventative to prevent metal parts from rusting.

6. Tighten all screws and nuts. If any part is damaged, repair or replace it.

7. Store snowthrower in a clean, dry place, and cover it to give protection.

8. If snowthrower is equipped with the optional drift breaker storage bar, the snowthrower may be stored in upright position. Make sure to drain gas before tipping snowthrower upright on auger housing.

IDENTIFICATION AND ORDERING

MODEL AND SERIAL NUMBERS

The snowthrower has two identification numbers: a model number and a serial number. The two numbers are stamped on a decal (Fig. 39) which is located on back of engine mounting plate. In any correspondence concerning the snowthrower, supply model and serial numbers to assure that correct information and replacement parts are obtained.

To order replacement parts from an Authorized TORO Service Dealer, supply the following information:

1. Model and serial numbers of the snowthrower.

2. Part number, description, and quantity of part(s) desired.

Note: Do not order by reference number if a parts catalog is being used; use the PART NUMBER.

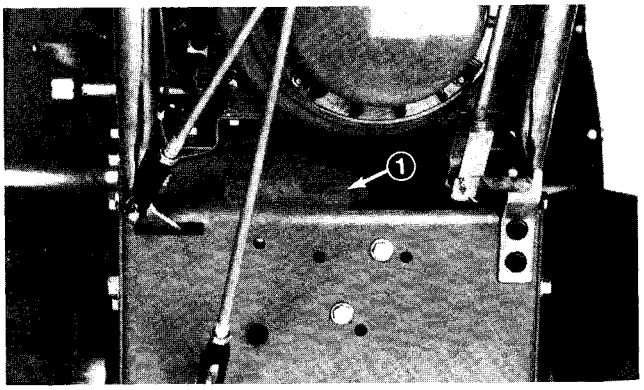


Figure 39

1. Model and serial number

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Lubrication	Summer Storage	Fall Service	Spark Plug Gap

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Lubrication	Summer Storage	Fall Service	Spark Plug Gap

The Toro Promise

A Two Year Limited Warranty
On All
Gasoline Powered Consumer Products

The Toro Company promises to repair these TORO Products if defective in materials or workmanship. The following time periods from the date of purchase apply:

Residential Product	2 Years
Residential Products Used Commercially . . .	45 Days

The costs of parts and labor are included, but the customer pays the transportation costs. Just return any residential product to an Authorized TORO Service Dealer or TORO Distributor.

Should you feel your TORO is defective and wish to rely on The Toro Promise, the following procedure is recommended:

1. Contact any Authorized TORO Service Dealer, TORO Master Service Dealer, or TORO Distributor (the Yellow Pages of your telephone directory is a good reference source).
2. He will either instruct you to return the product to him or recommend another Authorized TORO Service outlet which might be more convenient.
3. Bring the product along with your original sales slip, or other evidence of purchase date, to the service dealer.
4. The servicing dealer will inspect the unit, advise you whether the product is defective and, if so, make all repairs necessary to correct the defect without extra charge to you.

If for any reason you are dissatisfied with the dealer's analysis of the defect or the service performed, you may contact us.

Write:

TORO Customer Service Department
8111 Lyndale Avenue South
Minneapolis, Minnesota 55420

The above remedy of product defects through repair by an Authorized TORO Service Dealer is the purchaser's sole remedy for any defect.

THERE IS NO OTHER EXPRESS WARRANTY. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE ARE LIMITED TO THE DURATION OF THE EXPRESS WARRANTY.

Some states do not allow limitations on how long implied warranty lasts, so the above limitation may not apply to you.

This Warranty applies only to parts or components which are defective and does not cover repairs necessary due to normal wear, misuse, accidents, or lack of proper maintenance. Regular, routine maintenance of the unit to keep it in proper operating condition is the responsibility of the owner.

All warranty repairs reimbursable under The Toro Promise must be performed by an Authorized TORO Service Dealer using Toro approved replacement parts.

Repairs or attempted repairs by anyone other than an Authorized TORO Service Account are not reimbursable under The Toro Promise. In addition, these unauthorized repair attempts may result in additional malfunctions, the correction of which is not covered by warranty.

The Toro Company is not liable for indirect, incidental or consequential damages in connection with the use of the product including any cost or expense of providing substitute equipment or service during periods of malfunction or non-use.

Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

COUNTRIES OTHER THAN THE UNITED STATES OR CANADA

Customers who have purchased TORO products exported from the United States or Canada should contact their TORO Distributor (Dealer) to obtain guarantee policies for your country, province or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the TORO importer. If all other remedies fail, you may contact us at The Toro Company.

Compliance with Radio Interference Regulations Certified.
Certifie Conforme au Reglement sur le Brouillage Radioelectrique.

Litho in U.S.A.