

▲ SAFETY MESSAGE ▲

The product for which you have requested information or replacement parts is not a current product. The replacement models incorporate product designs, safety features, safety instructions or warnings which represent the latest "State Of The Art" developments. For your safety and those around you please contact your nearest Ariens/Gravely Dealer for a demonstration of the current product safety provisions and features.

Ariens®

Sno-Thro

Owner/Operator Manual



924
SERIES

M O D E L S

080 - TT8

082 - ST824

084 - ST1032

085 - ST1236

086 - ST1028

093 - ST924

311 - ST824

312 - ST924E

313 - ST1028

314 - ST1228E

315 - ST1232E

316 - ST1236E

A Message to Ariens Customers...

Welcome to the world of Ariens equipment. We are pleased that you have selected Ariens and sincerely believe you have purchased the best equipment available. The care you give your new Ariens equipment will determine the satisfaction and service life you will obtain from it. Use this manual and the engine manual supplied, as your guide. By observing the instructions and suggestions in these manuals your Ariens equipment will serve you well for many years.

Your Ariens dealer will be happy to supply any service or advice which may be required to keep your Ariens equipment operating at peak efficiency. He stocks genuine Ariens parts and lubricants; manufactured with the same precision and skill as the original equipment. His factory trained staff is kept well informed on the best methods of servicing Ariens equipment and is ready and able to serve you. If engine repairs or

services are required, they can be obtained from an Ariens dealer or from an authorized engine manufacturer's service center. If service is required, be prepared to supply the service person with the Model Number and Serial Number of the equipment and the engine, as well as a full description of the problem encountered.

NOTE: The descriptions and specifications contained in this manual were in effect at the time the manual was approved for printing. Ariens Company reserves the right to discontinue models without notice and without incurring obligation. The equipment described within this manual may not be identified as either standard or optional and the various illustrations may not all be applicable to your particular unit. If you have questions, always check with your Ariens dealer.

Safety Alert Symbol And Notations

The following safety notations are used throughout this manual to call attention to special information or operating procedures. Understand the message in each notation and be alert to unsafe conditions and the possibility of personal injury.

NOTE: A **NOTE** points out general reference information regarding proper operation and maintenance practices.

IMPORTANT: An **IMPORTANT** statement indicates specific procedures or information that is required to prevent damage to the machine or its attachments.



This safety alert symbol is used to attract your attention! **PERSONAL SAFETY IS INVOLVED!** When you see this symbol - **BECOME ALERT - HEED ITS MESSAGE.**



DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.



CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor moderate injury.



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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Specific Model and Serial Numbers are on a label located on the frame of your Sno Thro and on a label located on the product registration form. Record those numbers below and transfer the label from the product registration to place indicated below. Use these numbers whenever parts or service is required.

Model Number _____

Serial Number _____



Model

Model 924080 (TT 8) 8 H.P. Tractor Serial No. 000101 and up	Model 924311 (ST824) 8 H.P. w/24" Attachment Serial No. 001000 and up
Model 924082 (ST824) 8 H.P. w/24" Attachment Serial No. 039200 and up	Model 924312 (ST924E) 9 H.P. w/24" Attachment Serial No. 000150 and up
Model 924084 (ST1032) 10 H.P. w/32" Attachment Serial No. 000101 and up	Model 924313 (ST1028) 10 H.P. w/28" Attachment Serial No. 000101 and up
Model 924085 (ST1236) 12 H.P. w/36" Attachment Serial No. 000101 and up	Model 924314 (ST1228E) 12 H.P. w/28" Attachment Serial No. 000101 and up
Model 924086 (ST1028) 10 H.P. w/28" Attachment Serial No. 000101 and up	Model 924315 (ST1232E) 12 H.P. w/32" Attachment Serial No. 000101 and up
Model 924093 (ST924) 9 H.P. w/24" Attachment Serial No. 001700 and up	Model 924316 (ST1236E) 12 H.P. w/36" Attachment Serial No. 000101 and up

NOTE: All references to "Left", "Right" and "Front" and "Rear" are given from operators position.

Safety Precautions

Training

Read and understand this Owner's Manual and engine instructions before operating unit. Be thoroughly familiar with controls and proper use of equipment. Know how to stop unit and disengage controls quickly in an emergency.

Use only attachments or accessories designed for your unit. See your Ariens Dealer for a complete list of recommended attachments or accessories.

Understand and follow each Warning, Caution, Danger and instruction decal installed on equipment.

NEVER allow children to operate equipment. **DO NOT** allow adults to operate unit without proper instruction.

Keep the area of operation clear of all persons, particularly children and pets.

Safe operation of this equipment requires your complete and unimpaired attention at all times. **DO NOT** operate unit after or during the consumption of medication, drugs or alcohol.

Preparation

Thoroughly inspect and clear work area of objects which might be picked up and thrown. Remove all doormats, sleds, boards, wires, bones and other foreign objects.

Wear adequate winter outer garments and footwear which will improve footing on slippery surfaces.

Safety Precautions (Continued)

Wear eye protection such as safety goggles to protect eyes from objects that may be thrown from machine.

DO NOT wear loose clothing or scarves that may get caught in rotating parts of unit.

Gasoline is highly flammable and its vapors are explosive. Handle with care. Use an approved fuel container.

NEVER allow smoking materials, sparks or flame match, pilot light, etc.) near equipment or fuel container.

Check fuel supply before starting engine. Fill fuel tank outdoors with extreme care, **DO NOT** fill fuel tank indoors, when engine is running or while engine is still hot from operation. Replace fuel cap securely and wipe up spilled fuel and allow vapors to dissipate before starting engine.

Adjust auger/impeller housing height to clear gravel or crushed rock surfaces.

NEVER attempt to make any adjustments to unit while engine is running (except where specifically recommended.)

Disengage all clutches and shift into neutral before starting engine (motor).

Use grounded three-wire plug-in for electric starter, if so equipped.

Let engine and machine adjust to outdoor temperatures before starting to clear snow.

Operation

DO NOT put hands or feet near or under rotating parts. Keep clear of discharge opening at all times.

Keep equipment in good condition. Keep all shields in place and safety devices operating properly.

Open doors if engine is run in garage, exhaust fumes are dangerous. **DO NOT** run engine in an enclosed area.

Operate equipment only when there is good visibility and light

Always be sure of your footing (Walk, never run). Exercise caution to avoid slipping or falling, especially when operating in reverse.

DO NOT operate unit at high transport speeds on slippery surfaces. Use care when backing.

Disengage power to auger/impeller when unit is being transported or is not in use.

DO NOT overload machine capacity by attempting to clear snow at too fast a rate.

NEVER direct discharge of material toward bystanders nor allow anyone in front of equipment while unit is in operation. Be familiar with area of operation. Thrown objects can cause severe injury.

Stay alert for holes, rocks, roots and hidden hazards in area of operation.

Exercise extreme caution when operating on or crossing gravel drives, walks, or roads. Stay alert for hazards and traffic. **DO NOT** operate Sno-Thro near glass enclosures, automobiles, window wells, drop-offs, etc., without proper adjustment of discharge direction and angle.

DO NOT clear snow across face of slopes. Exercise extreme caution when changing direction on slopes. **DO NOT** attempt to clear steep slopes.

Stop engine, remove key, wait for moving parts to stop and remove wire from spark plug (keep wire away from spark plug to prevent accidental starting) before leaving operator's position for any reason such as unclogging auger/impeller housing, discharge chute, when making any repairs, adjustments, inspections or cleaning unit.

DO NOT touch equipment parts which might be hot from operation. Before attempting to maintain, adjust or service allow such parts to cool.

If equipment vibrates abnormally disengage attachment, stop engine at once, and remove key. Abnormal vibration is a warning of trouble. Repair any damage before restarting unit.

Safety Precautions (Continued)

Stop engine and remove wire from spark plug after striking a foreign object. Thoroughly inspect Sno Thro for any damage and repair damage before restarting and operating unit.

Run unit a few minutes after throwing snow to prevent freeze-up of auger/impeller in housing.

Take all possible precautions when leaving unit unattended, such as disengaging power to attachment, stopping engine and removing key to prevent unauthorized use.

Maintenance and Storage

DO NOT change engine governor setting or overspeed engine.

Keep all nuts, bolts and screws tight and be sure equipment is in safe working condition. Check shear bolts and all hardware at regular intervals.

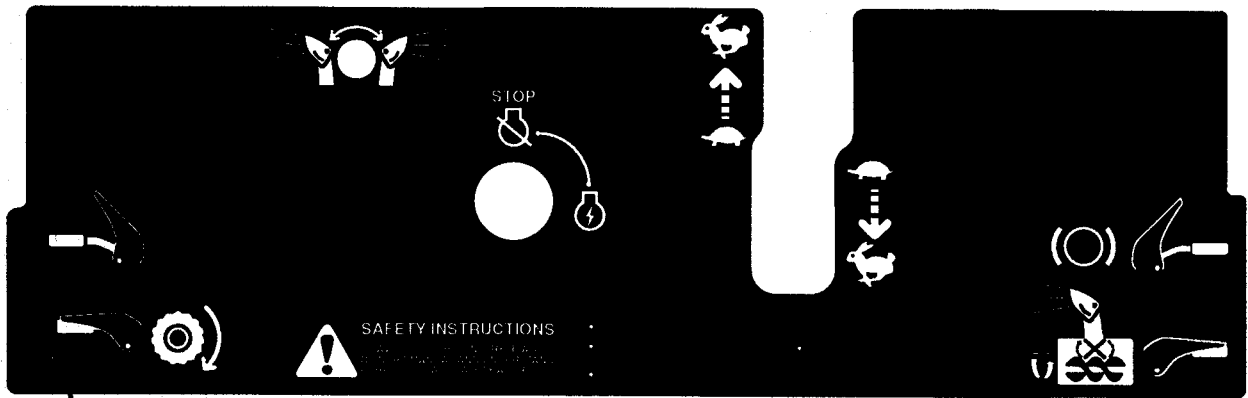
Refer to Owner's Manual for important instructions if Sno-Thro is to be stored for an extended period.

Never store equipment with fuel in tank inside a building where fumes may reach an open flame or spark. Allow engine to cool before storing in any enclosure.

Maintain or replace safety and instruction decals, as necessary.

On units with 12 volt batteries use extreme care when servicing the battery. When charging the battery remove it from the snow thrower and make certain that you connect positive (+) lead of charger to positive (+) terminal and negative (-) lead to negative (-) terminal. Reverse connections can cause sparks and potential unsafe conditions.

Safety Decals



! DANGER

ROTATING PARTS
Stop engine & remove ignition key before clearing

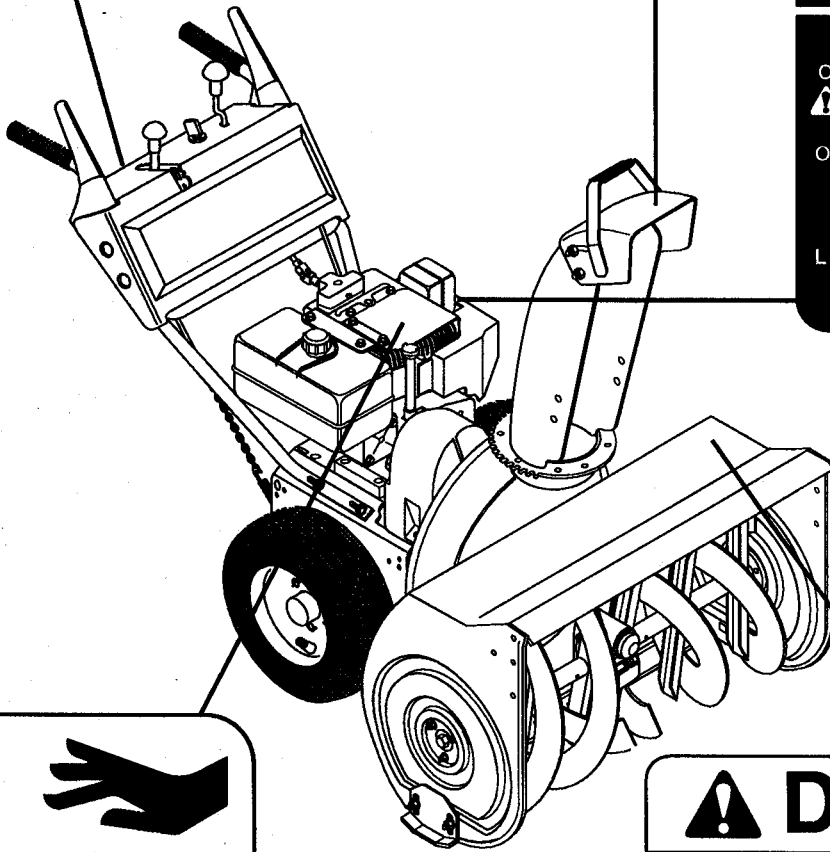
Attention
When using summer attachments, remove heater box and install air cleaner.

Engine Instructions

CAUTION:
For your personal protection, read all safety notes in engine owner's manual.

OPERATION:
For detailed lubrication, starting & operating instructions, see engine owner's manual & equipment mfr.'s instruction.

LUBRICATION:
Summer SAE 30 Oil
Winter SAE 5W-30 Oil



! DANGER

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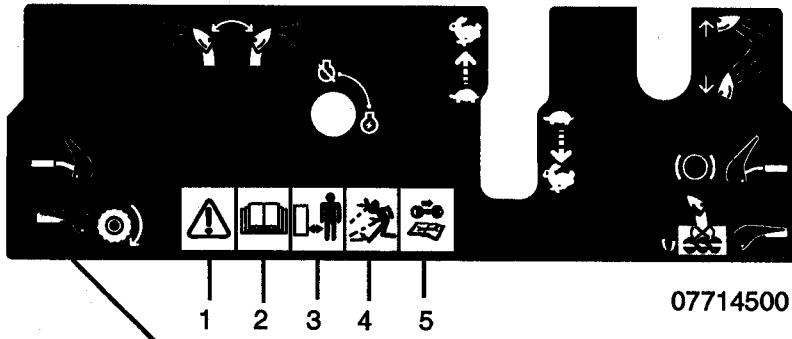
! DANGER

Keep clear of auger while engine is running.

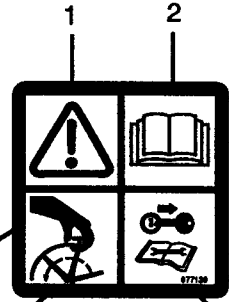
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Figure 1: Decals

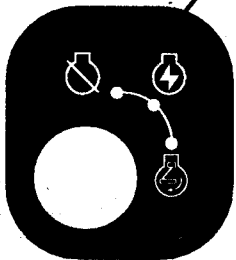
Safety Decals



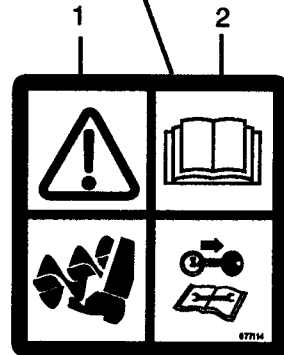
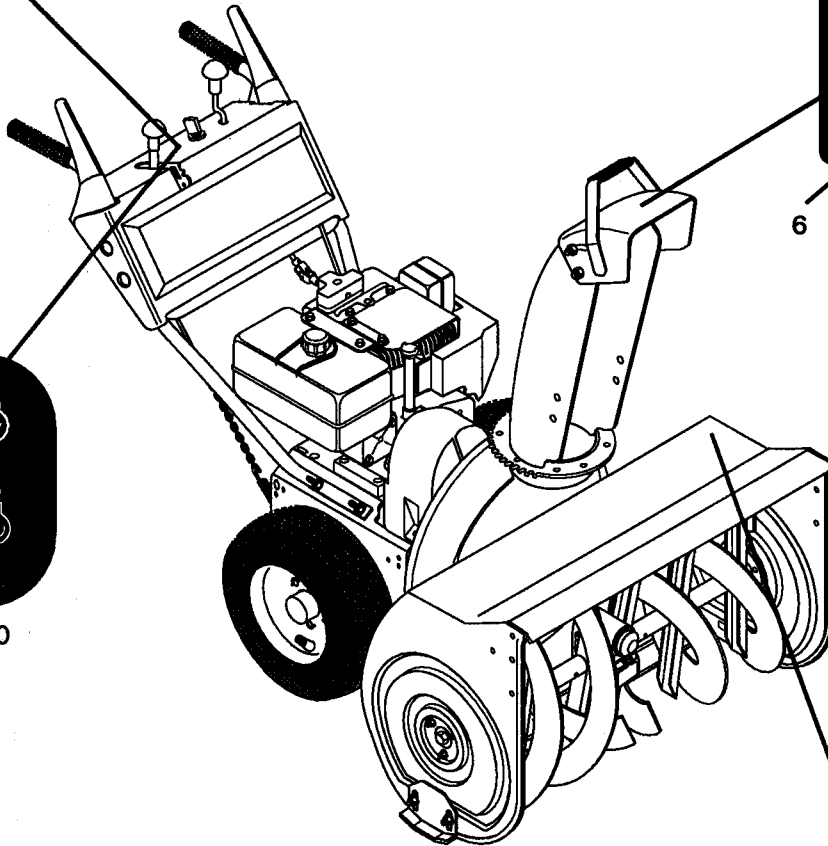
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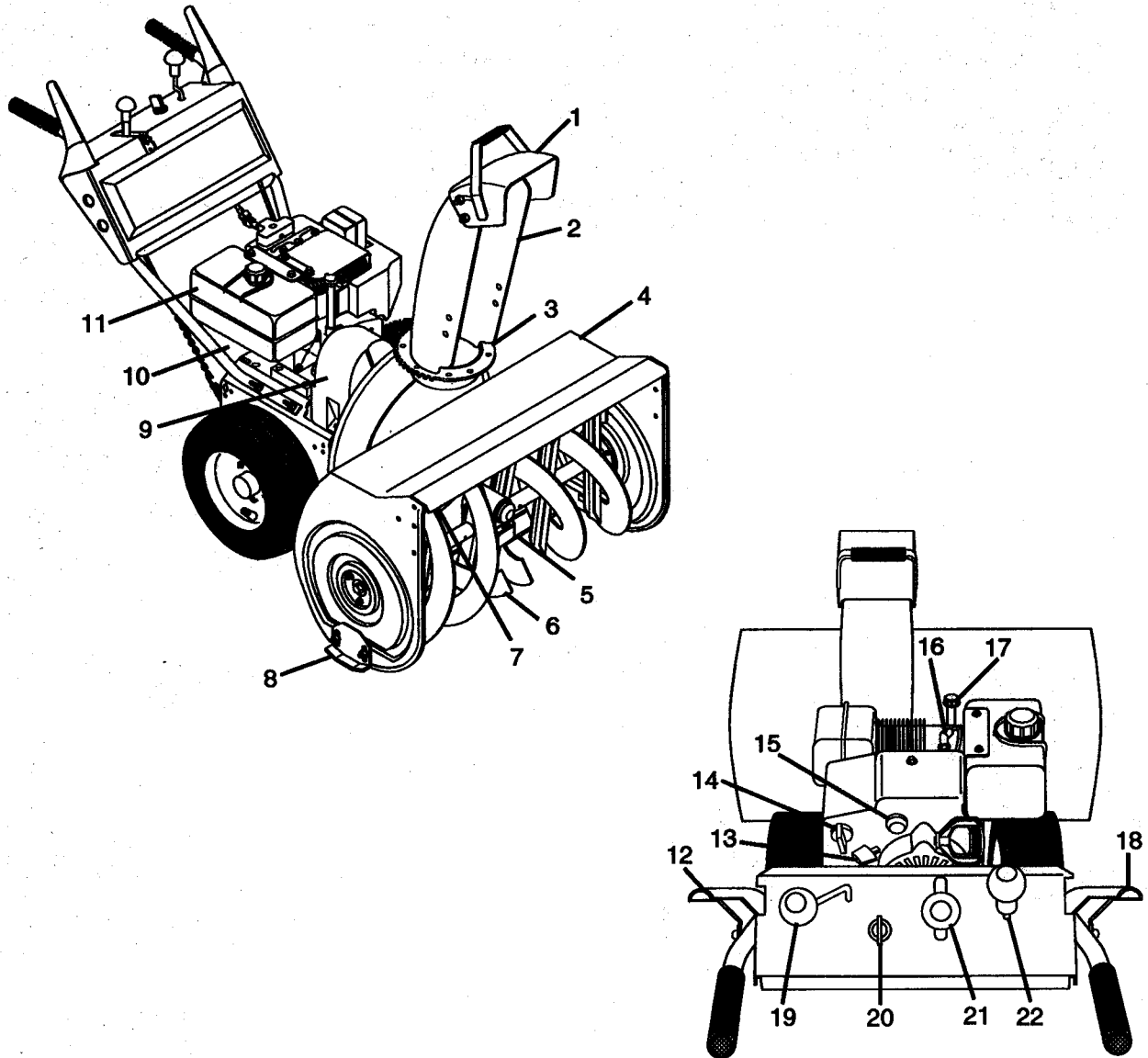
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1. Safety Alert Symbol
2. Read Owners Manual
3. Keep By-Standers Away
4. Thrown Objects
5. Remove Key Before Service
6. Rotating Parts (Impeller)
7. Rotating Parts (Auger)
8. Hot Surface - Keep Away

Controls And Features



1. Chute Deflector
2. Discharge Chute
3. Differential Lock Hub
4. Housing (Auger/Impeller)
5. Scraper Blade
6. Auger
7. Impeller
8. Runners
9. Belt Guard
10. Fuel Shut-Off Valve
11. Fuel Tank & Cap
12. Wheel Drive Clutch Lever
13. Throttle
14. Choke
15. Primer Bulb

16. Spark Plug & Wire
17. Oil Fill & Dip Stick
18. Attachment Clutch Lever
19. Chute Crank
20. Engine Ignition (Key Switch)
21. Speed Selector
22. Deflector Remote

NOT SHOWN

23. Light
(ST1028, 1032, 1236 Standard)
(ST324, Optional)

Figure 2: Component Identification

Operation

Pre-Starting



WARNING: Wear adequate winter outer garments, footwear which will improve footing on slippery surfaces and eye protection such as safety goggles. **DO NOT** wear loose clothing or scarves that may get caught in rotating parts of unit.



CAUTION: Make sure all hardware is tight, all safety devices in place and all adjustments correct.

IMPORTANT: Check impeller to be sure it is not frozen by removing spark plug wire, engaging attachment clutch and pulling rewind starter. If impeller is frozen, move Sno-Thro to a heated area and thaw to prevent possible damage to unit.

NOTE: This product is equipped with an internal combustion type engine. **DO NOT** use unit on or near any unimproved, forest-covered or brush covered land unless exhaust system is equipped with a spark arrester meeting applicable local, state or federal laws. A spark arrester, if it is used, must be maintained in effective working order by operator.

Check that engine crankcase oil is full using dipstick. Refer to Lubrication and Maintenance Section.

Starting



CAUTION: **DO NOT** attempt to start your engine at this time. Thoroughly read this entire Owner's Manual and engine manufacturers operating instructions first.

NOTE: Try out each control without running engine to see how they work and what they do.

Fuel



WARNING: Gasoline is highly flammable and must be handled with care. Never fill tank when the engine is running or hot from operation. **DO NOT** allow open flame, matches or smoking in area. **DO NOT** overfill. Wipe up any spills. Use approved

(Red) gasoline container.

Check fuel supply. Fill gasoline tank with good grade of fresh unleaded gasoline (leaded if unleaded is unavailable). **DO NOT** use premium, gasahol or mix gasoline with oil.

NOTE: To prevent foreign particles from entering tank while filling; wipe snow, dust, dirt and debris from around cap before removing.

Function of Clutches



CAUTION: Check clutch disengagement before each use. If clutches do not function properly, adjust or repair per instructions in Adjustments Section of this manual before operating unit.

On units with interlock, check interlock by pressing down on clutch levers (engaging both clutches). Remove hand from attachment clutch lever, attachment clutch should remain engaged until traction clutch lever is released then both clutches must disengage.

Differential Lock



On units with differential, to engage differential lock pull and turn knob to "LOCKED" position and release (it will snap in when positioned correctly). To resume differential action, for transport, etc., pull and turn knob to "UNLOCKED" and release.

With differential locked, power is applied equally to both wheels. Engage differential lock (located in left wheel hub) for best traction when throwing snow.

Runners



CAUTION: Adjust auger/impeller housing (scraper blade) height to clear gravel or crushed rock surfaces.

Runners should be adjusted as conditions require. Raising or lowering runners controls distance scraper blade (auger/impeller housing) is held above surface being cleared.

Operation (Continued)

When operating machine on gravel surface, lower runners so that housing will not pick up gravel. On concrete, blacktopped or packed snow surfaces raise runners so that scraper blade scrapes clean. To reduce tendency of housing to ride up over heavy wet or hard-packed snow, remove runners and re-install with their narrow edge down.

Position Sno-Thro on a flat level surface. Adjust runners by inserting a spacer of desired thickness under center of scraper blade, loosen hardware, slide runners to flat surface and retighten hardware.

NOTE: Above method keeps housing level by adjusting runners equally. Uneven runners make machine difficult to steer and results in uneven clearing.

Chute Deflector



Position Deflector at desired height. **DO NOT** throw snow any higher than necessary. (Remote control, turn knob 1/4 turn to unlock, push in or pull out to desired height and turn knob to lock deflector in position).

Discharge Chute



DANGER: DO NOT put hands or feet near or under rotating parts. Keep clear of discharge opening at all times.



WARNING: NEVER direct discharge of material toward bystanders nor allow any one in front of equipment while unit is in operation. Be familiar with area of operation

IMPORTANT: DO NOT operate Sno-Thro near glass enclosures, automobiles, window wells, dropoffs etc., without proper adjustment of discharge direction and angle.

Direct snow away from area to be cleared and with direction of wind whenever possible. Chute rotates 230 degrees.

Snow is best removed as soon as possible after a snow fall.

Engine Ignition



WARNING: If equipment vibrates abnormally disengage attachment, stop engine at once, and remove key. Abnormal vibration is a warning of trouble. Repair any damage before restarting unit.



CAUTION: Turn Key "OFF" and remove it before attempting any maintenance, adjustment or leaving unit unattended.

To start engine, place Key in Switch and turn it clockwise to "engine ignition" position.

Throttle



Throttle controls engine speed. To increase engine speed (Pull-Up), to decrease (Push-Down) throttle. Set throttle at part-throttle position for cold weather starts and at fast position for normal operation or warm starts.

Choke



Move choke control to "Choke Closed" position. When engine has started, open choke gradually.

NOTE: A warm engine requires less choking than a cold engine. If fuel drips out of carburetor while trying to start engine, engine is over-choked. Pull starter several times with choke open.

Primer Bulb



Push primer bulb quickly two or three times when engine is cold. When temperatures go below—15° Fahrenheit repeat priming may be needed.

Operation (Continued)

Rewind Starter



WARNING: To prevent discharge toward operator starting position, always turn discharge chute straight ahead for starting unit.

Stand to right of unit and grasp starter handle and pull rope out slowly until it pulls harder, this is compression stroke, let rope rewind slowly. Then pull rope with a rapid continuous full arm stroke. Let rope rewind slowly.

IMPORTANT: DO NOT let starter handle snap against starter.

Repeat above instructions until engine starts. (Refer to engine manufacturer's instructions).

After engine has started and choke has been opened, set throttle at its fast position.

NOTE: If Sno-Thro is equipped with electric starter, refer to instructions provided with starter accessory.

Electric Starter



WARNING: To prevent discharge toward operator starting position, always turn discharge chute straight ahead for starting unit.

If your machine is equipped with a 12V electric starter, turn key to the start position after properly preparing engine with choke and primer. Repeat prime and crank after 4 to 6 revolutions when very cold.

Repeat above instructions until engine starts. (Refer to engine manufacturer's instructions).

After engine has started and choke has been opened, set throttle at its fast position.

Headlight



CAUTION: Operate equipment only with good visibility and light.

NOTE: Headlight is standard equipment on ST 1028 1032 and 1236. Headlight is optional for ST 824 and ST 924.

Headlight operates only when engine is running. Adjust headlight by loosening hardware, position light and retighten hardware.

NOTE: Lamp remains "ON" at all times for longer lamp life. Lamp is more sensitive to fatigue failure when unlit than when lit.

Speed Selector



CAUTION: DO NOT overload machine capacity by attempting to clear snow at too fast a rate.

Speed Selector controls unit's forward speed and reverse motion. Moving Speed Selector forward increases forward travel speed. Moving it rearward decreases forward motion and/or engages reverse motion.

IMPORTANT: Position Speed Selector in notch of desired speed. Forward speed can be changed without declutching. DO NOT change motion from forward to reverse with clutch engaged.

NOTE: Low speed (1) is recommended for removing deep or hard-packed snow.

Traction Drive Clutch



CAUTION: Stay alert for holes, rocks, roots and hidden hazards in area of operation. Exercise extreme caution when operating on or crossing gravel drives, walks or roads. Stay alert for hidden hazards or traffic.

Pressing down on left clutch lever engages wheel drive for propelling unit. Releasing clutch lever stops forward or reverse movement

Operation (Continued)



CAUTION: Disengage power to auger/ impeller when unit is being transported or is not in use. **DO NOT** operate unit at high transport speeds on slippery surfaces. Use care when backing.

NOTE: When transporting unit to or from area to be cleared, press down on handlebars enough to raise front of Sno-Thro slightly off surface and engage wheel drive clutch without engaging attachment drive clutch.

Attachment Clutch



CAUTION: Stop engine and remove wire from spark plug after striking a foreign object. Thoroughly inspect Sno-Thro for any damage and repair damage before restarting and operating unit.

Pressing down on right attachment clutch lever engages attachment and releasing it disengages attachment. Both clutch levers must be released to insure stopping of attachment drive.

NOTE: Attachment clutch should be engaged before wheel drive clutch when attempting to throw snow.

To clear an area, run Sno-Thro in an overlapping series of paths. For large areas start in middle and blow snow to each side so you do not have to move it more than once.

Stopping



WARNING: Take all possible precautions when leaving unit unattended, such as disengaging power to attachment, stopping engine and removing key to prevent unauthorized use.

IMPORTANT: Run attachment a few minutes after throwing snow to prevent freeze-up of auger/impeller.

Release attachment clutch, throttle down and turn engine ignition key to "STOP".

Lubrication And Maintenance

Ariens Dealers will provide any service which may be required to keep your Sno-Thro operating at peak efficiency. Should engine service be required, it can be obtained from an Ariens dealer or an authorized engine manufacturer's service center.



WARNING: Stop engine, remove key, wait for moving parts to stop and remove wire from spark plug (keep wire away from spark plug to prevent accidental starting) before any lubrication or maintenance procedures.



CAUTION: DO NOT touch engine or Sno Thro drive parts which are hot from operation. Allow such parts to cool before servicing unit.

Engine Oil Checking

The engine crankcase oil should be checked daily or every 5 hours of operation. Oil level **MUST** be maintained in safe operating range on dipstick at all times or engine damage will result.

To check oil, park Sno-Thro on a flat level surface. Wipe all debris from around dipstick, remove it and wipe oil off. Screw dipstick assembly firmly but slowly until cap bottoms on tube. Remove dipstick and observe oil level. If low add clean fresh oil, of same type and viscosity as is in engine, to bring oil level to Full (F) mark (per engine manufacturer's instructions)

IMPORTANT: DO NOT overfill. Level must not exceed full (F) mark.

Engine Oil Changing

IMPORTANT: Change oil after first 5 hours of operation, thereafter change oil every 25 hours of operation (more often in dusty, dirty conditions). See Engine Manufacturer's Instructions for proper type, viscosity and amount required.

NOTE: Run engine just prior to changing oil. Oil will flow more freely and carry away more contamination when warm.

Drain crankcase by removing oil drain plug. When oil has drained replace plug and refill engine crankcase with new oil of proper grade (per engine manufacturer's instructions). Recheck oil level with dipstick.

Engine Cooling

The engine is air cooled. Air must circulate freely around engine from air intake screen, over cooling fins on cylinder head and block to prevent overheating.

Every 100 operating hours or yearly (more often if conditions require) remove cooling shrouds and clean cooling fins. Also clean external surfaces of your engine of dust, dirt and oil deposits which can contribute to improper cooling.

IMPORTANT: DO NOT operate engine with cooling shrouds removed - this will cause overheating and engine damage.

Shear Bolt Replacement



WARNING: Stop engine, remove key, wait for moving parts to stop and remove wire from spark plug before leaving operator's position and attempting to maintain or inspect auger.

IMPORTANT: Use only Ariens Shear Bolts for replacement. Use of any other type of shear bolt may result in severe damage to unit.

Occasionally an object may enter auger/impeller housing and jam auger, breaking shear bolts which secures auger to shaft. This allows auger to turn freely on shaft preventing damage to gear drive.

To replace shear bolt, slide auger outward against roll pin and align hole in shaft with hole in auger (holes in shaft for roll pins and shear bolts line up). Drive shear bolt through hole (if shear bolt was broken this will drive remaining part from shaft) and secure with nut.

Lubrication And Maintenance (Continued)

Attachment Drive Belt



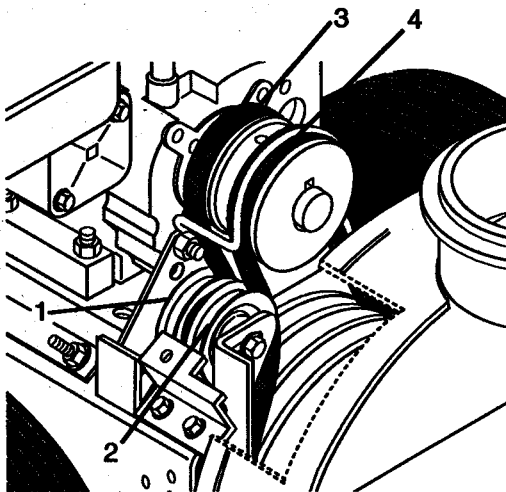
WARNING: Stop engine, remove key, wait for moving parts to stop and remove wire from spark plug before attempting any repairs, adjustments, inspections or cleaning unit.



WARNING: Gasoline is highly flammable and its vapors are explosive. Handle with care. Never allow smoking materials, sparks or flame (match, pilot light, etc.) near equipment or fuel container.



CAUTION: When unit is tipped up onto housing remove enough fuel so that no spillage will occur



1. Traction Belt Idler
2. Attachment Belt Idler
3. Traction Drive Belt
4. Attachment Drive Belt

Figure 3: Belt and Idlers

To separate housing from unit, remove two screws securing belt guard to unit and remove belt guard. Remove hairpin from chute crank assembly at "U" joint and separate.

Remove attachment drive belt from engine pulley (it may be necessary to turn engine pulley using rewind starter).

IMPORTANT: To avoid bending bottom cover, when tipping unit apart, support handlebars firmly or tip unit up on housing and remove bottom cover by removing four cap screws before separating unit.

Remove cap screws securing housing to frame (one on each side). Tip housing and frame apart on pivot pin.

Remove attachment drive belt from sheave (hold brake away from belt).

Replace attachment drive belt in reverse order making sure sheaves align. If alignment is necessary, loosen attachment sheave set screws, reposition sheave and retighten set screws.



WARNING: When clutch is engaged, impeller brake disengages. If brake is not 1/16 min. from belt when disengaged, refer to Adjustments Section page 16-18.

Traction Drive Belt

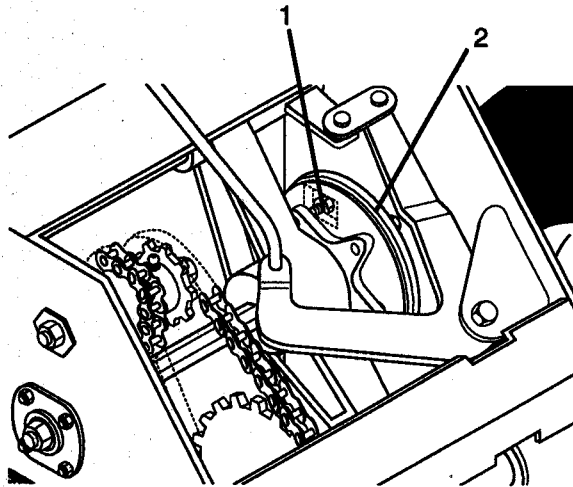
NOTE: Housing and frame must be tipped apart and attachment drive belt removed from engine sheave in order to change traction drive belt. (See Attachment Drive Belt above).

Pull idler away from belt and remove belt from idler pulley, engine and driven pulley (it may be necessary to turn engine pulley using rewind starter).

NOTE: To gain clearance engage traction clutch and if necessary pull back attachment idler arm clevis pin.

Replace traction drive belt in reverse order making sure pulleys align. If alignment is necessary, loosen engine pulley set screws, reposition pulley and retighten set screws. Check alignment of attachment driven pulley and align if necessary.

Lubrication And Maintenance (Continued)



1. Cap Screw
2. Friction Wheel

Figure 4: Friction Wheel

Friction Wheel

To replace friction wheel, tip unit up onto housing on a flat level surface.

Remove bottom cover by removing four cap screws.

Place Speed Selector in first "1" position, depress Traction Clutch Lever to hold friction wheel and hub. Release traction clutch lever, remove cap screws, shift to third "3" position, and remove friction wheel.

Secure new friction wheel on hub with five cap screws and torque cap screws to 8-10 foot pounds.

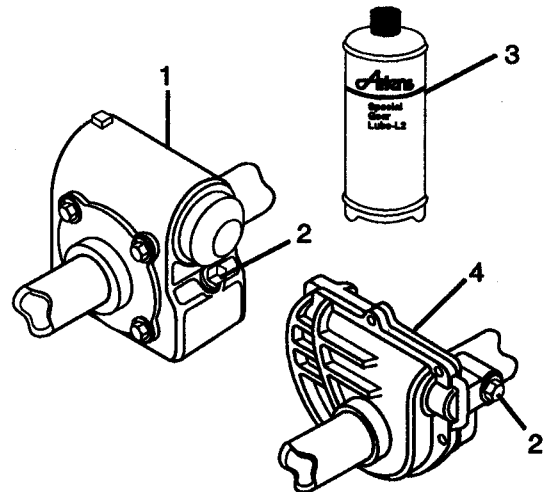
Replace bottom cover.

Adjust Traction Drive Clutch per instructions in Adjustment Section page 17.

Auger Gearcase

IMPORTANT: Too much lubricant may cause excessive leakage. Too little lubricant will cause gear and/or bearing damage.

Gear cases are filled to the correct level at the factory. Unless there is evidence of leakage, no additional lubricant should be required. Check for evidence of leakage every 25 hours of operation.



1. Auger Gearcase (Cast Iron)
2. Oil Fill and Drain Plug
3. Ariens Special L-2 Gear Lube
4. Auger Gearcase Aluminum

Figure 5: Gear Lubrication

Cast Iron Gearcase

On models using cast iron gearcases correct level (5 oz.) is at oil fill plug with machine on flat level surface.

Aluminum Gearcase

IMPORTANT: Too much lubricant may cause leakage. Too little lubricant will cause gear and/or bearing damage.

Gear cases are filled to the correct level at the factory. Unless there is evidence of leakage, no additional lubricant should be required. Check for evidence of leakage every 25 hours of operation.

To insure adequate lube level, (2 oz. minimum), the following checking procedure is recommended.

To check remove filler plug. Lubricant must be at least up to bottom of lube filler hole with unit resting on a level-surface. Add, if required, drain level and replace plug.

When adding lubricant, add only Ariens special gear lube L-2 (Part Number 000080).

Lubrication And Maintenance (Continued)

Oil and Grease Locations



CAUTION: DO NOT touch engine or Sno Thro drive parts which are hot from operation. Allow such parts to cool before servicing unit.

IMPORTANT: Wipe each fitting clean before and after lubrication.

NOTE: Use Ariens Multi-Purpose Grease (Part Number 000150) or good grade of general purpose grease at zerk fittings and oil at lubrication points.

Sno-Thro should be lubricated at beginning of season or every 25 operating hours. Grease and oiling points are indicated in Figure 7.

IMPORTANT: DO NOT allow grease or oil to get on friction wheel, drive disc or belts.

NOTE: To grease auger shaft, remove shear bolt nuts, & shear bolts. Turn auger on shaft while applying grease at zerk fittings. Replace shear bolt per instructions in Shear Bolt Replacement.

Battery



WARNING: Batteries produce explosive gases which can cause personal injury. DO NOT allow flames, sparks or any ignited object to come near battery.

When charging or working near a battery, always shield your eyes and provide ventilation.



CAUTION: Keep batteries out of reach of children. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. In case of acid contact with skin, eyes or clothing, flush immediately with water for a minimum of 15 minutes. If acid is swallowed, drink large quantities of milk or egg or vegetable oil. Call a physician immediately.

Every 25 hours or each week check electrolyte level of each cell by removing caps one at a time. The electrolyte level should be evel indicator. Use distilled water to fill each cell if needed. Install and tighten each cap after checking.

IMPORTANT: When distilled water is added to battery during freezing weather, it must be charged to mix water with electrolyte or water will remain at top and freeze.

Keep battery and its terminals clean and inspect monthly to be sure of obtaining best performance.



WARNING: DO NOT allow tools or other objects to come into contact with both terminals at same time. When removing battery from tractor, remove negative (-) cable first to reduce risk of sparks.

To clean terminals remove battery from tractor by removing cables. Loosen tie down rod nuts and lift battery out and clean or service away from unit.

Remove corrosion from battery terminals and cable connections with a wire brush, then wash with a weak baking soada solution.

Lubrication And Maintenance (Continued)

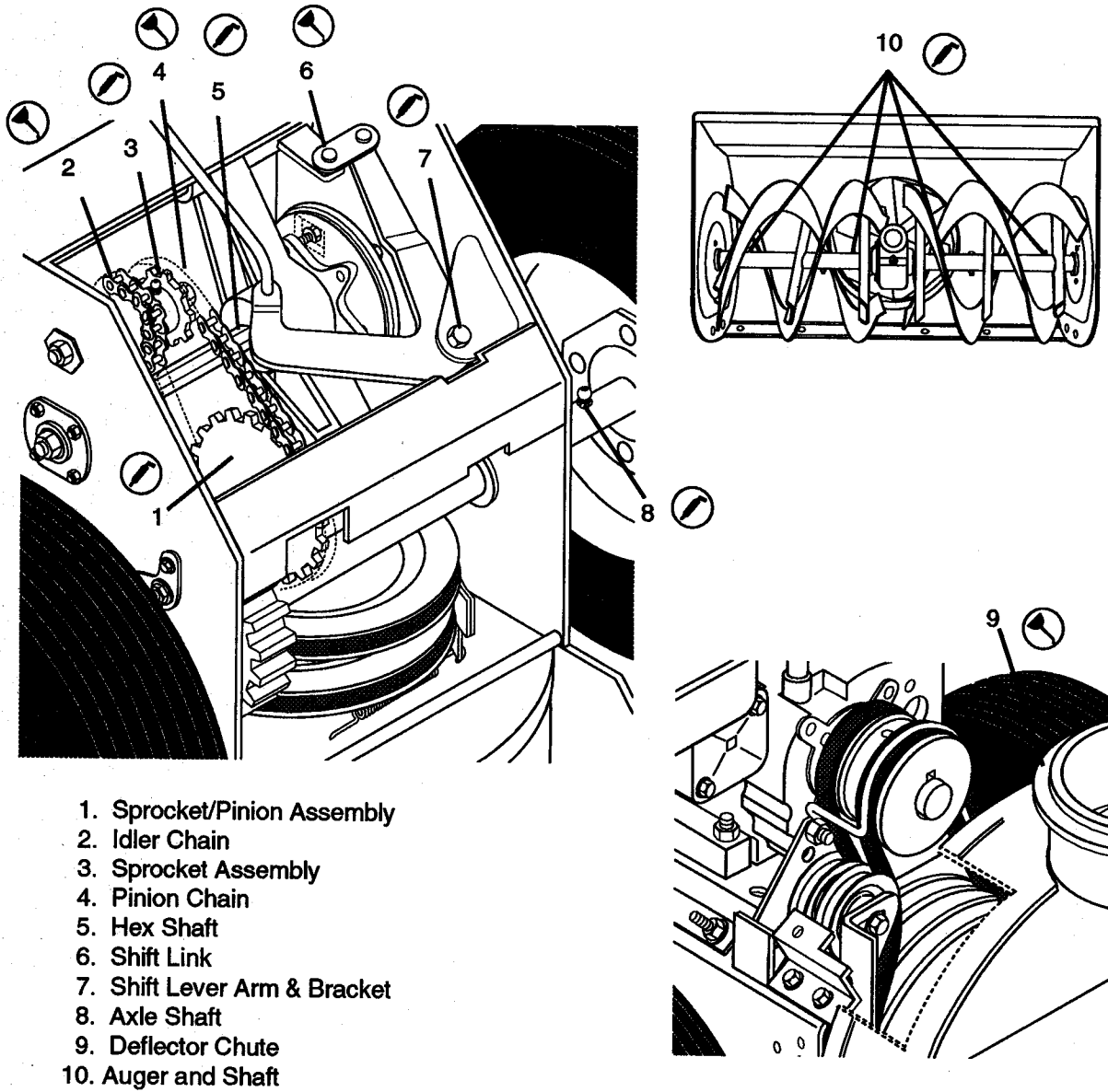


Figure 6: Grease and Oil Points

Lubrication and Maintenance (Continued)

SERVICE TO BE PERFORMED		TIME INTERVALS BETWEEN SERVICE (Minimum once per year)	
	General Lubrication	20 HRS.	
		ACTUAL HOURS	DATE
	Check the Fasteners	40 HRS.	
		ACTUAL HOURS	DATE
	Check the Engine Cooling System	60 HRS.	
		ACTUAL HOURS	DATE
	Check the Tire Pressure	80 HRS.	
		ACTUAL HOURS	DATE
	Check the Rake Gear Box and Grease Rakes	100 HRS.	
		ACTUAL HOURS	DATE
		120 HRS.	
		ACTUAL HOURS	DATE
		140 HRS.	
		ACTUAL HOURS	DATE
		160 HRS.	
		ACTUAL HOURS	DATE
		180 HRS.	
		ACTUAL HOURS	DATE
		200 HRS.	
		ACTUAL HOURS	DATE
		220 HRS.	
		ACTUAL HOURS	DATE
		240 HRS.	
		ACTUAL HOURS	DATE
		260 HRS.	
		ACTUAL HOURS	DATE
		280 HRS.	
		ACTUAL HOURS	DATE

MAINTENANCE RECORD

Adjustments

Ariens Company recommends that you have adjustments made by your Ariens dealer. He has tools and the know-how to properly perform adjustments which may be required to keep your Sno-Thro operating at peak efficiency. Should you decide to make the following adjustments on your Sno-Thro yourself, Ariens Company recommends that you call your dealer for answers to any questions that might arise.



WARNING: Stop engine, remove key, wait for moving parts to stop and remove wire from spark plug (keep wire away from spark plug) to prevent accidental starting before attempting to make adjustments.

Runners

See Operating Section, Page 6.

Scraper Blade

IMPORTANT: If blade wears too far auger/impeller housing may be damaged.

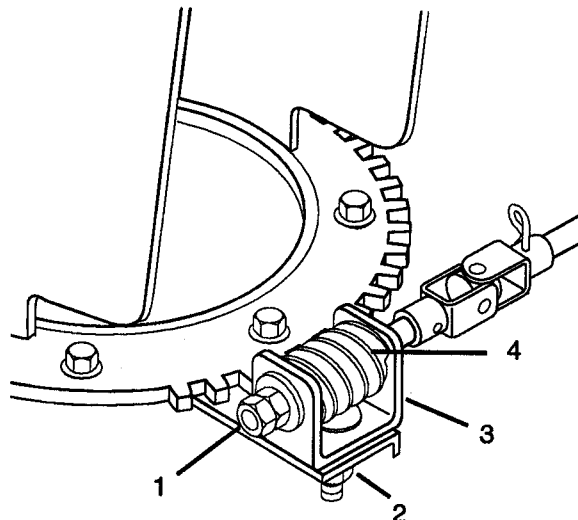
Scraper blade is adjustable to compensate for wear.

To adjust scraper blade, tip unit back onto handlebar, support housing and loosen nuts retaining blade. With runners adjusted to their full up position, reposition scraper blade down, flush with runners, and tighten lock nuts.

Chute Crank

Smooth and easy rotation of properly lubricated chute with crank (without binding) is obtained by adjusting clearance between worm and discharge chute gear teeth. To adjust, loosen nut on bracket supporting worm, position worm to fully engage (without binding), gear teeth on discharge chute and tighten nut. See figure 7.

To prevent discharge chute from rotating by itself when unit is being operated, tighten jam nuts on end of crank rod to put increased tension on worm gear.



- | | |
|-------------|--------------|
| 1. Jam Nuts | 3. Bracket |
| 2. Nut | 4. Worm Gear |

Figure 7: Chute Crank

Attachment Clutch/Impeller Brake



WARNING: With improper use, injury may result if attachment clutch lever is released and brake DOES NOT STOP auger/impeller within 5 seconds.



WARNING: Gasoline is highly flammable and its vapors are explosive. Handle with care. Never allow smoking material, sparks or flame (match, pilot light, etc.) near equipment or fuel container.

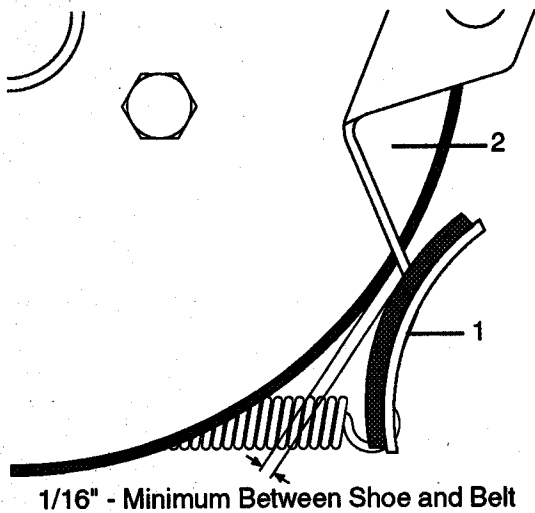


CAUTION: When unit is tipped up onto housing, remove enough fuel so that no spillage will occur.

Remove belt cover. Adjust attachment clutch with both clutch lever and clutch arm in disengaged position, pull clutch chain taut and connect chain link to spring.

NOTE: Once proper chain link position has been selected it "Must" remain there. Do not utilize chain length to adjust for the 3/8" spring extension.

Adjustments (Continued)



1. Brake Shoe
2. Drive Belt
3. Spring Extension - 3/8"

Figure 8: Impeller Brake

Spring extension is to be obtained only by proper positioning of the attachment idler. Move the attachment idler toward the belt to increase spring extension. Approximately (1/8") movement of the idler will increase spring extension by (1/8"). Spring should extend approximately 3/8" when clutch is engaged but allow clutch arm (at lower end) to return to it's maximum down position when clutch is disengaged.

To check and/or adjust impeller brake, tip unit forward onto auger/impeller housing. Remove bottom cover by removing four cap screws. Measure distance between impeller brake shoe and belt with attachment clutch engaged (refer to Figure 8). Impeller brake shoe should be 1/16 inch minimum from belt. When attachment clutch is disengaged, brake must contact belt.

If proper brake adjustment cannot be obtained see your Ariens Dealer.

Traction Drive Clutch

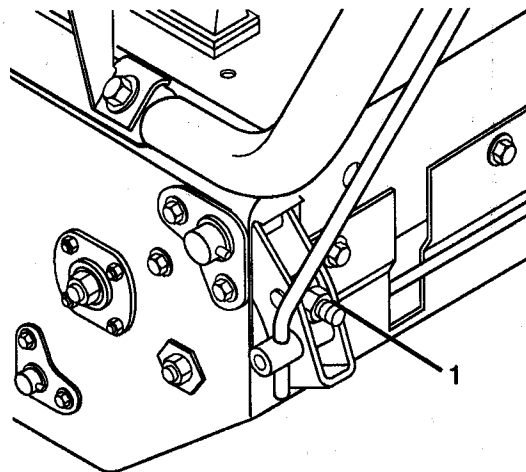


WARNING: Gasoline is highly flammable and its vapors are explosive. Handle with care. Never allow smoking materials, sparks or flame (match, pilot light, etc.) near equipment or fuel container.



CAUTION: When unit is tipped up onto housing remove enough fuel so that no spillage will occur.

Adjust traction clutch to compensate for wear of friction wheel when slippage occurs.



1. Adjustment Nut

Figure 9: Drive Adjustment

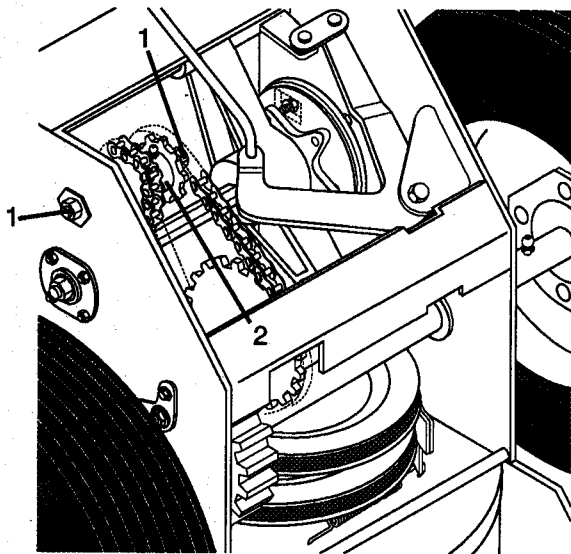
To adjust traction clutch, place speed selector in First (1) and tip machine forward onto housing.

Adjustments (Continued)

With traction clutch disengaged turn wheels while tightening adjustment nut, at clutch yoke, (Figure 9) until wheels begin to drag. Engage and release traction clutch to align clutch linkage. Repeat procedure as necessary. When wheel drag is obtained with linkage aligned, turn nut back three turns. Wheels will then turn freely.

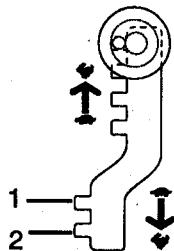
Speed (Shift Linkage)

Tip machine forward onto housing. Pull shift rod out of chassis until it stops, put speed selector lever into reverse panel notch. Two notches are available, place in last notch. See figure 11. Adjust length of shift rod until rod end passes into hole on selector lever arm. Tighten jam nut. Install rod into arm hole and secure with cotter pin.



1. Reduction Shaft Nut
2. Reduction Sprocket

Figure 10: Chain Adjustment



1. First Notch
2. Second Notch

Figure 11: Speed Selector

Drive Chain



WARNING: Gasoline is highly flammable and its vapors are explosive. Handle with care. Never allow smoking materials, sparks or flame (match, pilot light, etc.) near equipment or fuel container.



CAUTION: When unit is tipped up onto housing, remove enough fuel so that no spillage will occur.

Chain should be taut with little or no play in it. To compensate for looseness or excessive tightness in drive chain, tip unit forward onto housing. Remove bottom cover by removing four cap screws.

Loosen two nuts on reduction shaft, move reduction sprocket up or down equally in slot as necessary and torque nuts to 170-180 inch pounds.

Storage



WARNING: Never store Sno Thro in an enclosed area where fuel fumes may reach flame, sparks, pilot lights or an ignited object. Drain fuel outdoors away from any ignition source. Use only approved fuel container.

Your authorized Ariens Dealer is trained and equipped to service your Sno-Thro. A periodic check-up by your dealer will help reduce your maintenance costs.

Inspect Sno Thro for visible signs of wear, breakage or damage. Order any parts required and make necessary repairs to avoid delays when beginning use again.

Clean unit thoroughly and then lubricate the machine per the lubrication instruction in this manual. Touch up all unpainted areas to avoid rust and store in a cool, dry protected place.

Engine

When storing unit for extended periods, we recommend stabilization of fuel with a gum and varnish preventing anti-oxidant stabilizer or removing all fuel from tank and carburetor. Also refer to Engine Manufacturer's Instruction Manual.

Service Manual

Service manuals are available for owners who wish to perform some of their own maintenance and service operations.

When ordering parts always include the Model and Serial Number of your unit to assure prompt service. A parts manual is included in your literature package to make ordering of service parts easier.

Mail Request to:

**Ariens Service
655 West Ryan Street
P.O. Box 157
Brillion, WI 54110-0157**

Trouble Shooting

1. Engine will not start.

Fuel tank empty.
Ignition switch in off position. (recoil start)
Gummed up carburetor (run dry for storage).

2. Engine will not crank. (12V)

Battery discharged.
Battery connections loose.
Engine Starter nonfunctional.
Solenoid nonfunctional.
Ignition switch starter circuit nonfunctional.

3. Forward/Reverse Inoperable.

Friction drive wheel adjusted improperly.
Tractor drive belt nonfunctional.

4. Snowblower doesn't function when clutch operated.

Clutch adjustment improper.
Blower drive belt nonfunctional.
Broken clutch linkage component.

5. Engine stops quickly under heavy load.

Improper carburetor adjustment.
Mechanical jam in blower rake or impeller.

Specifications

MODEL	ST1236	ST1032	ST824	ST1028	ST924
Engine	12 HP	10 HP	8 HP	10 HP	9 HP
Rewind Start	Standard	Standard	Standard	Standard	Standard
12V Start	"E" Model				"E" Model
Clearing Width	36"(91 cm)	32" (81 cm)	24" (61 cm)	28" (71 cm)	24" (61 cm)
Speeds					
Forward	6	6	6	6	6
Reverse	2	2	2	2	2
Discharge Distance	5'-35' (1.5-10.5M)	5'-35' (1.5-10.5M)	3'-30' (.9-9.1M)	5'-35' (1.5-10.5M)	3'-30'
Chute Turning Radius	230°	230°	230°	230°	230°
Tires	Pneumatic 16/6.50x8	Pneumatic 16/6.50x8	Pneumatic 4.80/4.00x8	Pneumatic 4.80/4.00x8	Pneumatic 4.80/4.00x8
Gas Tank Capacity	1 Gallon (3.8 Liters)	1 Gallon (3.8 Liters)	1 Gallon (3.8 Liters)	1 Gallon (3.8 Liters)	1 Gallon (3.8 Liters)
Adj. Runners	Standard	Standard	Standard	Standard	Standard
Disc-O-Matic Drive	Standard	Standard	Standard	Standard	Standard
Lockout Diff.	Standard	Standard	Standard	Standard	Standard
Dimensions:					
Length	60" (152 cm)	60" (152 cm)	60" (152 cm)	60" (152 cm)	60" (152 cm)
Height	40" (101.6 cm)	40" (101.6 cm)	40" (101.6 cm)	40" (101.6 cm)	40" (101.6 cm)
Width	34 1/2" (87.6 cm)	34 1/2" (87.6 cm)	26 1/4" (67 cm)	30 1/2" (77.6 cm)	26 1/4" (67 cm)
Shipping Wt.	341 lbs. (155 Kg)	316 lbs. (144 Kg)	265 lbs. (120 Kg)	303 lbs. (138 Kg)	265 lbs. (120 Kg)

Specifications

MODEL	ST1228	ST1232
Engine	12 HP	12 HP
Rewind Start		
12V Start	"E" Model	"E" Model
Clearing Width	28"(71 cm)	32" (81 cm)
Speeds		
Forward	6	6
Reverse	2	2
Discharge Distance	5'-35' (1.5-10.5M)	5'-35' (1.5-10.5M)
Chute Turning Radius	230°	230°
Tires	Pneumatic 18/6.50x8	Pneumatic 18/6.50x8
Gas Tank Capacity	1 Gallon (3.8 Liters)	1 Gallon (3.8 Liters)
Adj. Runners	Standard	Standard
Disc-O-Matic Drive	Standard	Standard
Lockout Diff.	Standard	Standard
Dimensions:		
Length	60" (152 cm)	60" (152 cm)
Height	40" (101.6 cm)	40" (101.6 cm)
Width	30 1/2" (77.6 cm)	34 1/2" (87.6 cm)
Shipping Wt.	318 lbs. (144 Kg)	325 lbs. (148 Kg)

Dealer Preparation

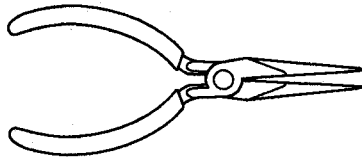
Customer Note: Your Ariens Dealer is expected to complete these preparation steps and review important information, including this manual, with you before or upon delivery of machine or attachment.

The preparation information is included here so that you and your dealer may review it together.

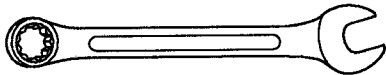


WARNING: Failure to follow all instructions could result in personal injury and/or damage to Sno-Thro. Remove wire from spark plug before attempting any adjustment or assembly procedures.

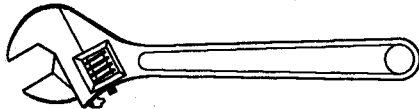
Tools Required:



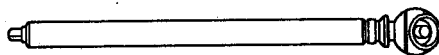
Needle Nose Pliers



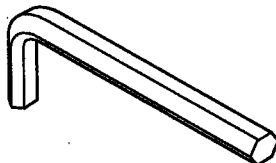
Open-End Wrench: 3/8, 7/16, 1/2, & 9/16



and/or Adjustable Wrench

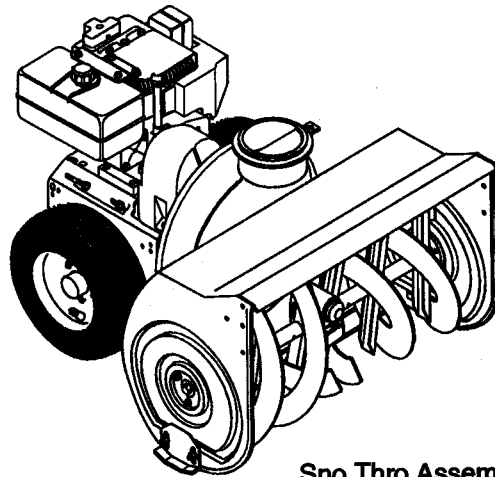


Tire Gauge

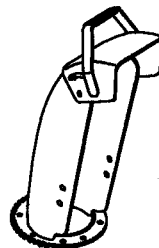


Allen Wrench

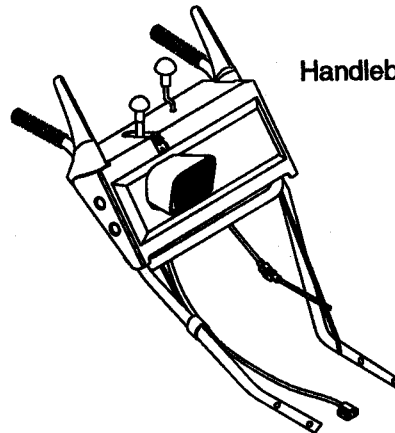
Package Contents:



Sno Thro Assembly



Discharge Chute

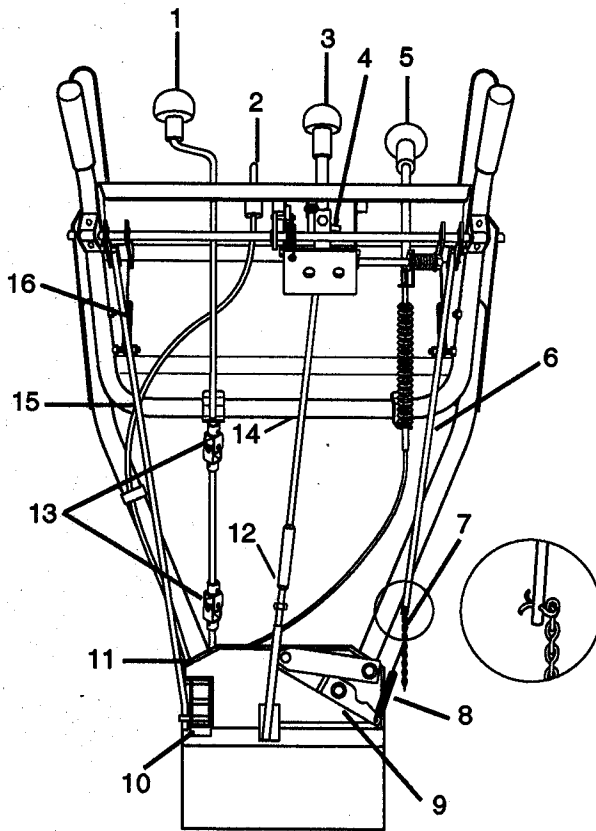


Handlebars Assembly

OS0030



Dealer Preparation (Continued)



1. Chute Crank
2. Key Switch
3. Speed Selector Lever
4. Cotter Pin
5. Chute Cap Remote
6. Attachment Clutch
7. Chain
8. Spring
9. Attachment Clutch Arm
10. Traction Clutch Arm
11. Lower Shift Rod
12. Jam Nut
13. Universal Joint
14. Upper Shift Rod
15. Wiring Harness
16. Traction Clutch Rod

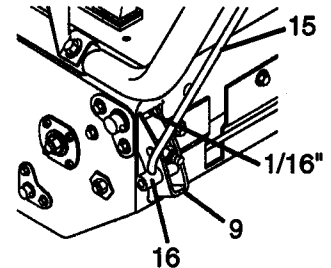


Figure 12: Handlebar Controls

Step 1

Install lower handlebars to frame using 3/8" hardware supplied. The right hand side is attached using a flat washer, lock washer and nut front end rear. The left side uses a flat washer, lock washer and capscrew at the front. The rear has the chute crank support bracket, lock washer, and capscrew securing the handlebar.

Step 2

On models equipped with a standard headlight, put the wire through the slot and then assemble the light and hardware to the panel. Route the wire down the handlebar. Install the wire terminals into the housing.

Attach the wire to the handlebar using the clip, and plug the terminal housing into the alternator connector.

Step 3

Remove chute clamps and tap screws from parts bag and position chute on auger/impeller housing, after properly lubricating surfaces.

Hand tighten tap screws to 60 in. # (5 ft #) into the chute clamp to secure discharge chute using a hand hex driver.

NOTE: Chute must rotate freely. (See Adjustment Section)

Dealer Preparation (Continued)

Step 4

On models with remote control deflector, route cable through plastic tie and under chute crank rod at rod bracket.

Secure cable threaded end in chute bracket with jam nuts. Loosen lock nuts on deflector slightly to allow deflector to pivot.

Secure threaded connector to deflector bracket with hair pin.

Position deflector in its lowest position with cable control pushed full forward and tighten jam nuts on chute bracket.

NOTE: Check deflector movement to highest position. Adjust jam nuts and/or threaded connector if necessary to obtain full travel.

Step 5

Slide chute crank into universal joint and secure with hairpin.

IMPORTANT: Chute should rotate easily, if not refer to Chute Crank in Adjustments Section, page 15.

Step 6

Thread the jam nut and upper shift rod onto the lower shift rod and follow adjustment procedure in Adjustment Section, so that the upper shift rod end passes easily into the selector lever arm when the selector lever is set into the last notch (2nd).

Step 7

Secure clutch chain to attachment clutch rod using cotter pin. See figure 11. Hook spring on clutch arm, pull clutch chain taut and connect chain link to spring with both clutch lever and clutch arm in disengaged position. Spring should expand approximately 3/8" beyond free state when clutch is engaged but allow clutch arm at lower end to return to it's maximum down position when clutch is disengaged.



WARNING: Attachment Brake must function properly or severe personal injury could result.

Check attachment brake and clutch for proper function per instructions in Adjustments Section.

Step 8

Install traction clutch rod into rod adapter. Move traction clutch lever up and forward as far as possible and secure rod to adapter with setscrew.

NOTE: To adjust traction clutch refer to Adjustments Section.

Clutch Function



WARNING: Failure of clutches to disengage, together with improper usage or adjustment of unit, could result in severe personal injury.

Both clutches must operate freely. On units with interlock, check interlock action by pressing down (engaging) both clutch levers. Remove hand from attachment clutch lever, attachment clutch should remain engaged until traction clutch lever is released then both clutches must disengage. To adjust refer to Adjustments Section.

Step 9

On models without runners installed, install them on both sides of auger/impeller housing with carriage bolts, washers and lock nuts (install with heads inside of housing; short carriage bolts go in front holes, long in rear).

Step 10

Route key switch Wire Harness as shown in Figure 11. Secure with clips and connect wires to switch terminals.

IMPORTANT: Position wire harness so that clutch rod does not rub against it, a short may develop.

Dealer Preparation (Continued)

Step 11

Check oil level in auger gearcase. Refer to Lubrication/Maintenance Section.

Step 12

Check tire pressure and adjust to 20 PSI for operation.

Step 13

IMPORTANT: Engines on all Sno-Thro models are shipped without oil in crankcase. Refer to Engine Instruction Manual for proper type oil and crankcase capacity.

Step 14



WARNING: Gasoline is highly flammable and its vapors are explosive. Handle with care. Use an approved (Red) gasoline container.



CAUTION: Check function of all controls before starting engine. All safety devices and guards must be in position and operating properly or personal injury may result.

Fill fuel tank with unleaded gasoline. Tank capacity is 1 gallon.

Step 15



WARNING: Batteries produce explosive gases which can cause personal injury. DO NOT allow flames, sparks or any ignited object to come near battery.

When charging or working near a battery, always shield your eyes and provide ventilation.



CAUTION: Keep batteries out of reach of children. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. In case of acid contact with skin, eyes or clothing, flush immediately with water for a minimum of 15 minutes. If acid is swallowed, drink large quantities of milk or egg or vegetable oil. Call a physician immediately.

On units with 12 volt starting capability ("E" Models) a properly prepared battery of a capacity to provide 250 C.C.A. must be installed with the red cable to the "+" terminal and the black cable to the "-" terminal.

Step 16

Start engine and allow unit to reach operating temperature (approximately 5 minutes). Check function of all controls with unit operating at idle speed and at maximum throttle. Check auger/impeller stopping time. Must not exceed 3 seconds from time both control levers are released until complete stoppage occurs. Correct any improperly functioning control prior to delivery per adjustment section of this manual.

Step 17

Complete Sno-Thro Product Registration Form and mail original copy to Ariens Company.

Warranty is registered under model and serial number found on plate attached to frame near engine.

Step 18

Using the Owner's Manual instruct the customer on controls and operation of unit. Emphasize safety and discuss the Safety Precautions.

Explain recommended lubrication and maintenance of the unit.

IMPORTANT: Remind customer to observe break in requirements and change engine oil after first two (2) hours of operation or after the first sno thro season.

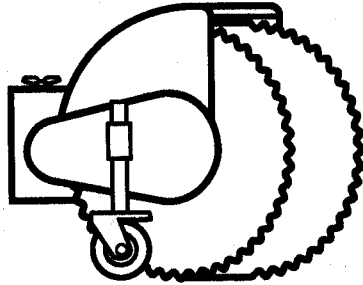
Advise customer on adjustments, demonstrate how to put on and remove attachments if any.

Explain Ariens Company, Limited Warranty Policy. Place Model and Serial Number on page (1) of this manual.

Give customer his Owner's Manual and engine manufacturer instructions. Advise him to thoroughly read and understand them.

Attachments

See your authorized Ariens dealer to add this additional attachment to your Sno Thro.



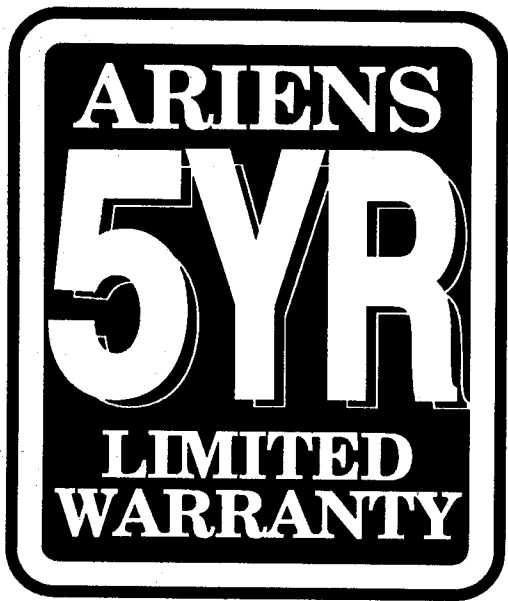
82401000 36" Rotary Brush

Accessories

Enhance your Sno Thro with these Ariens Accessories.

72401700	12 V Electric Starter (Not "E" Models)
72403600	120 V Electric Starter (Not "E" Models)
71099700	Slicer Bar
72402100	Remote Deflector Control Kit (924082,924093)
72407500	Light (924082,924093)

Be sure to always use genuine Ariens parts to keep your sno thro running like new.



Quality PRODUCTS Quality GUARANTEE

Ariens Company hereby warrants to the original consumer purchaser that products manufactured by Ariens Company will be free from defects in material and workmanship FOR A PERIOD OF FIVE (5) YEARS FROM THE DATE OF PURCHASE, EXCEPT AS NOTED BELOW.



PROTECTION PLAN

- The Company will provide for the replacement of any part found upon examination by the Company to be defective. Such repair or replacement will be free of charge to the purchaser (labor and parts) for two years (24 months) from the date of purchase. Ariens manufactured parts (but not labor) will be free of charge for an additional *three years* (36 months) thereafter.

This warranty is subject to the following exceptions and limitations:



PURCHASER RESPONSIBILITIES -

- Maintenance & minor adjustments per owners manual
- Notification of need for warranty service
- Transportation to/from place of warranty repair



PRODUCT REGISTRATION -

- Return of registration card required to validate warranty



PURCHASED COMPONENTS AND NORMAL WEAR -

- Two year labor and parts on purchased components i.e., (tractor drive train components manufactured by Dana, Eaton, Foote, Sundstrand and any plastic and electrical components, wire harnesses, bags, boots tubes, etc.).
- Two year labor and parts on normal wear items i.e., (belts and rubber components, bearings, cables, controls, clutches, tines, etc.).



BATTERY WARRANTY PRORATED -

- One to six months - *free replacement*
- Seven to twelve months - 50 % credit
- Thirteen to twenty-four months - 25% credit



WARRANTY - COMMERCIAL PRODUCTS -

- One year parts and labor
- Product labeled commercial / professional
- Household use - 5 year limited warranty applies



RENTAL USE - ALL PRODUCTS

- NINETY DAYS LABOR & PARTS

CONSUMER PRODUCT - PUT TO COMMERCIAL, INDUSTRIAL, INSTITUTIONAL USE -

- NINETY DAYS LABOR & PARTS

SERVICE PARTS AND ACCESSORIES -

- NINETY DAYS LABOR & PARTS



SERVICE -

- For warranty service, contact any Ariens Distributor or Dealer. For the name and location of the Ariens Distributor or Dealers in your area, and for further warranty information, write or call the Ariens Company.



ENGINES, ENGINE ACCESSORIES, AND PEERLESS PRODUCTS -

- Covered only by manufacturer's warranty.



EXCLUSIONS -

- No warranty is extended to blades, mower vanes, skid shoes, runners, scraper blades, shear bolts, light bulbs, headlights and any equipment which has been altered, misused, misassembled, improperly adjusted, neglected, or damaged by accident.
- No warranty is extended for service completed by someone other than an authorized distributor or dealer.
- No warranty is extended on any parts that are not genuine Ariens service parts.

Ariens Company reserves the right to incorporate any changes in design into its products without obligation to make such changes on products previously manufactured.

DISCLAIMER OF FURTHER WARRANTY

There is no other express warranty. Implied warranties, including any warranty of merchantability or fitness for a particular purpose, are limited to the duration of this written warranty, and are excluded to the extent permitted by law. There are no warranties which extend beyond the description of the product contained herein. In no event shall the company be liable for indirect, special or consequential damages (such as loss of anticipated profits) in connection with the consumer's use of the product.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow the exclusion of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitation and exclusions may not apply to you.



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