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For Safe Operation of the Olympia 4000

The Olympia is intended for use, only by people who have a basic knowledge of motorized equipment operation and maintenance. Resurfice Corp. cannot accept responsibility for any accidents that occur as a result of operation or maintenance of the machine by personnel who lack this basic knowledge or sufficient training.

Operating conditions vary widely and Resurfice Corp. cannot predict these varying conditions, and it is therefore the user's responsibility to determine the appropriate settings in the operation of the Olympia.

Each Olympia is shipped with a variety of built-in safety devices. To prevent the occurrence of such accidents, all operators and maintenance personnel that deal with the machine must carefully read the manuals supplied by Resurfice Corp., the power train manufacturer and the fuel supplier, before attempting to operate and maintain the Olympia.

Because there are so many "things that cannot be done" and "things that must not be done" when using the Olympia, it is impossible to cover it all in the Olympia Manual. Assume that something is impossible or unsuitable unless the manual specifically states that it can be done.

The following manual is customized for this particular Olympia. It provides detailed information regarding the following:

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Please make use of this material when operating and maintaining the Olympia. Fundamental safety information is high lighted throughout the manual.

All cautions on operation must be strictly observed when operating the machine, carrying out maintenance work, and storing the equipment. Failure to observe the fundamental safety information can cause accidents in which the operator or other personnel that deal with the Olympia are seriously injured, or the machine is damaged. All personnel that deal with the machine must carefully read and thoroughly understand the information in the following pages before attempting to operate or maintain the Olympia.

1 Delivery Procedure

Unloading & Parts Check

The Olympia is delivered with the various parts of the conditioner stored inside the snow bin. After unloading the Olympia from the transportation vehicle, drive it to your maintenance area.

Come to a complete stop and shift into "N" and then apply the parking brake.

The Olympia has one forward gear and one reverse gear.

Shifting gears from Park, Reverse and Drive is a simple matter of pushing the lever forward or back to the desired position.

Safety Note: Make sure you come to a complete stop before trying to change gears.

The speed of the Olympia is controlled directly by the accelerator.

The tachometer on the dash will display the engine's RPM's, which is useful to maintain a constant speed while flooding the ice and to prevent over-revving the engine. At no time should the engine exceed 2,100 RPM.

The hydraulic power steering system combined with the studded tires give you optimum control and manoeuvrability.

The self adjusting brakes require only a moderate pressure to activate.

After parking the Olympia, push the snow bin control knob on the dash upward and hold until the snow bin cover reaches a fully opened position.

Remove the parts from inside the snow bin. Please do an immediate check.

1. Blades sheathed in wooden holders (retain wooden holders for future use)
2. Towel Bar Assembly
3. Two Blade Hooks
4. Blade Bolts & Nuts (15)
5. Spare Tire
6. Combination Wrench Set
7. Allen Wrench Set
8. Grease Gun
9. Tube of Grease
10. Jack
11. Wheel Wrench and Socket
12. Conditioner Cover Plates (5)
13. Magnetic Blade Protector
14. Olympia Room Sign
15. Squeegee
16. 3/8" x 1 1/4" Hex Head Cap Screws (20) & Lock Nuts (20)
17. Touch up Paint

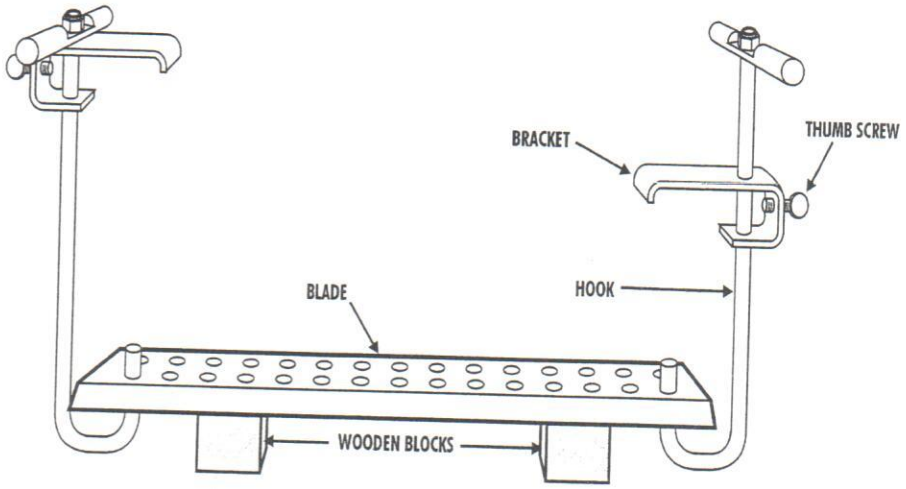
Unpack the blade and put the magnetic protector guard on the sharp edge.
For shipping and storage, blades should be bolted into wooden sheaths.

Safety-Note: For operator safety and to protect the edge of the blade, always use the magnetic blade protector when handling the blade, as it is extremely sharp.

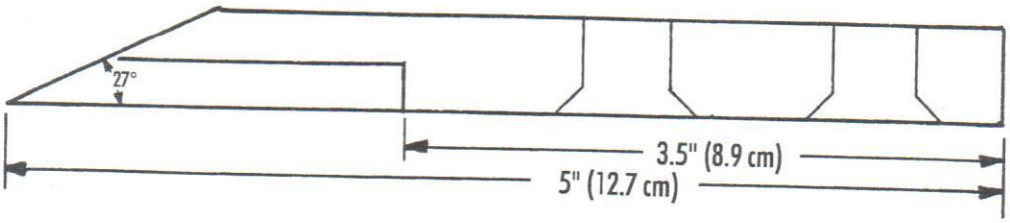
Blade Installation

Before installing a blade, make sure the blade holder surface is clean and lightly coated with oil to prevent rust. The blade should also be clean where it attaches to the blade holder and coated with oil. Place it on blocks at the rear of the conditioner.

Using the blade hook lift and slide the blade underneath the conditioner until the attachment holes line up. Tighten the blade hooks onto the conditioner .



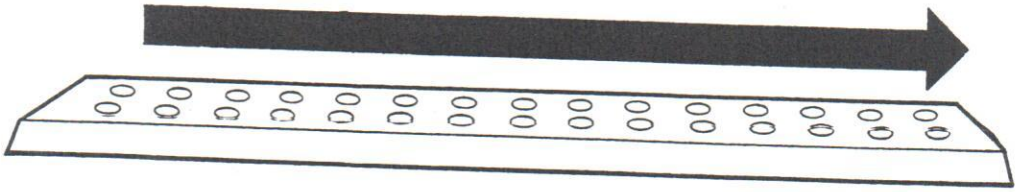
When installing a blade use the row of holes closest to the cutting edge. The second row of holes should be used when the blade has been ground down to 4" overall width.



Following the diagrams below, begin to install the blade bolts. Finger tighten the bolts. DO NOT use lockwashers as they will damage the blade holder. There are two ways of properly tightening the blade bolts:

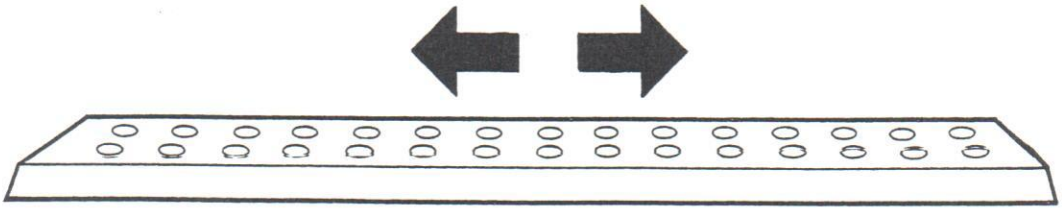
Blade Bolt Sequence "A"

Sequence "A" - starting at one end of the blade, tighten the bolts consecutively across the blade to the opposite end. Remove the blade hooks and insert the remaining two blade bolts and tighten.



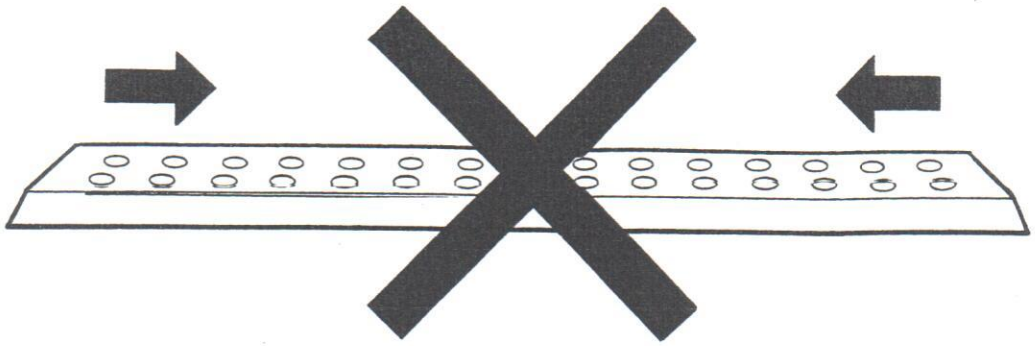
Blade Bolt Sequence "B"

Sequence "B" - Starting at the center tighten the bolts to one end of the blade and then return to the center bolt and tighten the bolts to the other end. Remove the blade hooks, then insert and tighten the remaining two bolts.

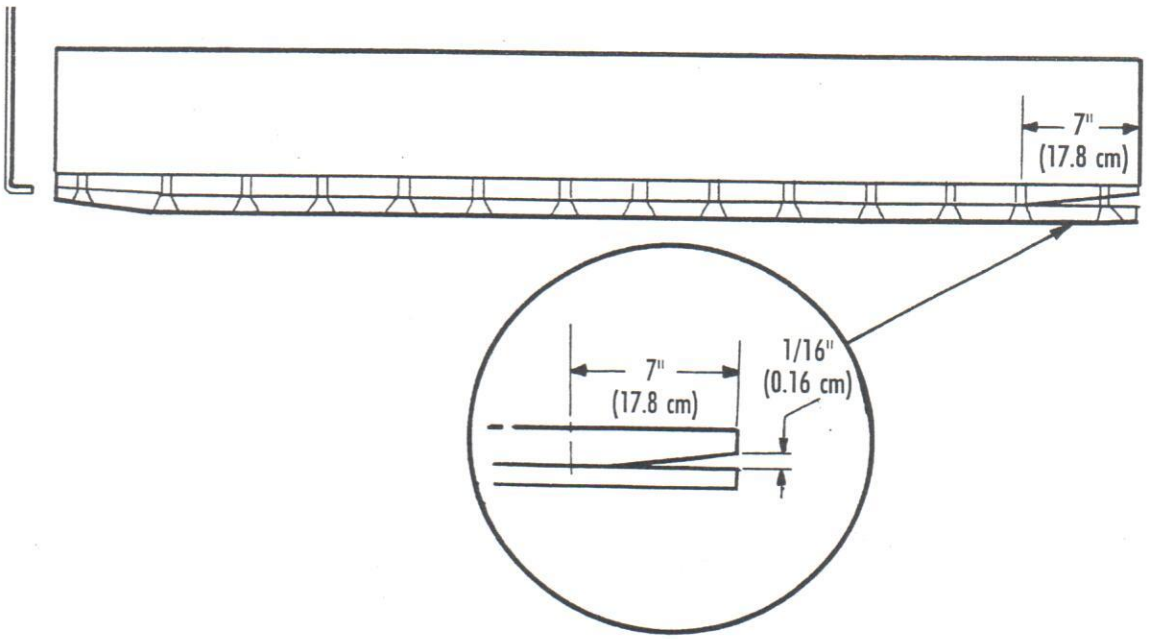


Wrong Sequence

Please note: Tightening the bolts in any other order, such as from the ends to the middle or at random will result in a warped blade and uneven ice.



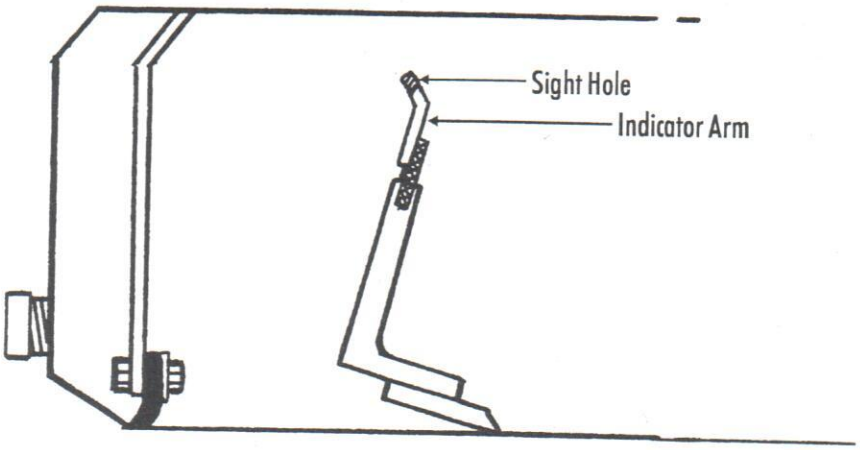
The blade holder is feathered 1/16" (0.16 cm) over the last 7" (17.8 cm) on each end. This prevents ridges forming on the ice during the resufacing operation.



Blade Level Adjustment

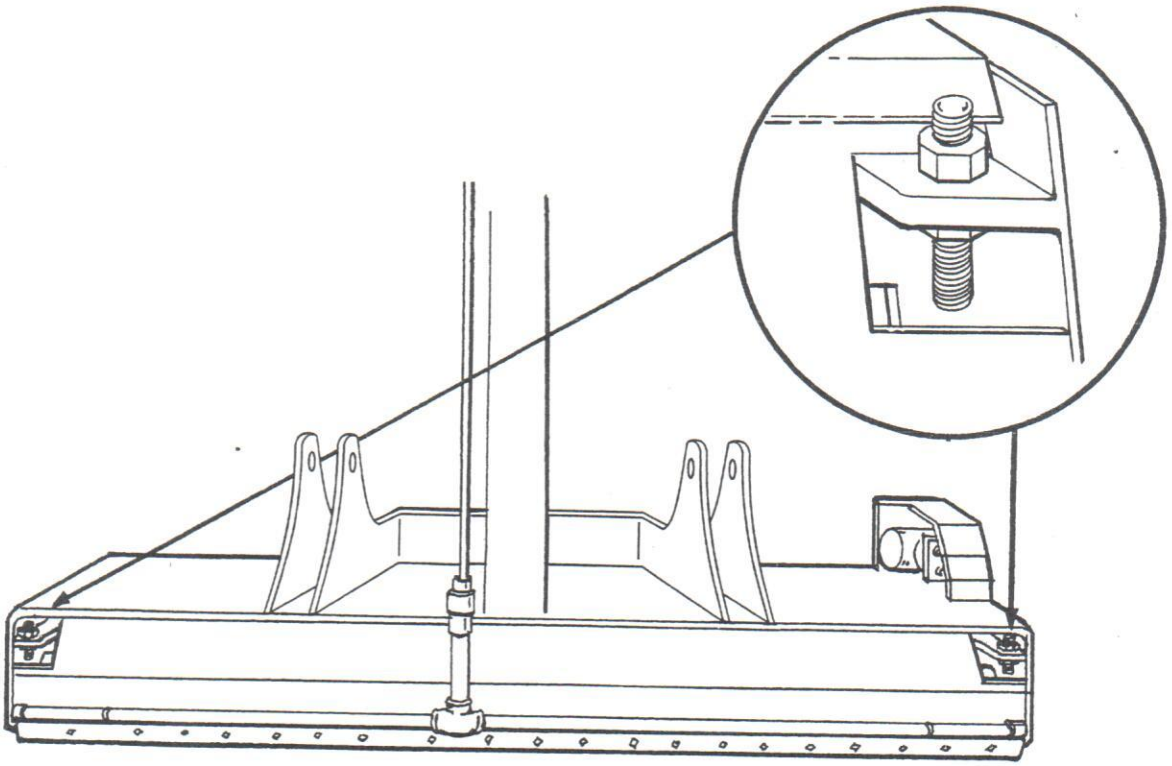
The next step is to adjust the level of the blade. The blade adjustment crank, located on the tower to the right of the operator, raises and lowers the blade. The adjustment crank is turned until the indicator arm completely fills the sight hole at the side of the conditioner as shown below.

Blade Sight Hole



If the sight hole is filled but the blade is too high or low, go to the rear of the conditioner and using a 1 1/8" wrench, first loosen the top nut of the blade level adjusters located on each side of the rear of the conditioner shown below.

Blade Level Adjusters



Blade/Coin Check

To check the level of the blade, slide a large coin along the runners of the conditioner, from back to front, until you feel it pass over the edge of the blade.

Safety Note: Be careful when doing the coin check. Make sure you are wearing gloves and that you move the coin from back to front as the blades are extremely sharp.

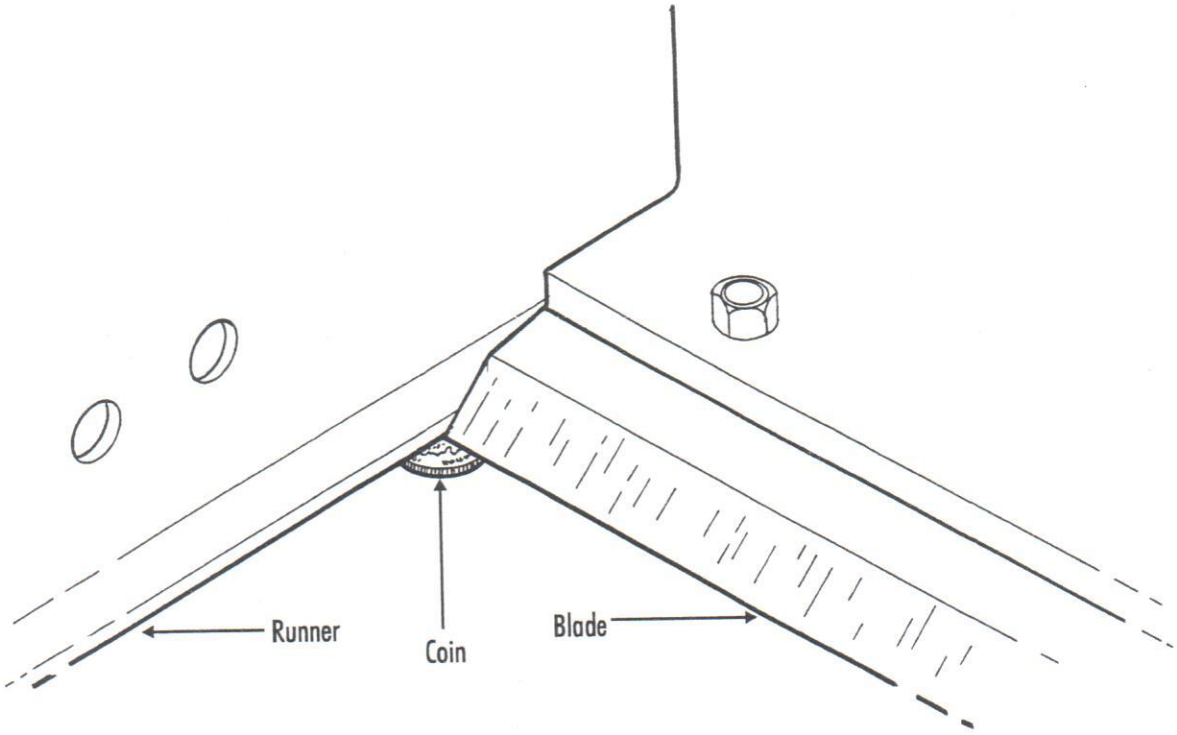
The sharp tip of the blade should be flush with the runners on both sides. Adjust the top nut to raise or lower the blade at each end, into the proper position. Once the blade is at the proper level on both sides, tighten both bottom nuts on the blade adjusters.

When the ends of the blade are flush with the runners, the majority of the blade will extend 1/16" (0.16 cm) below the runners, which is an excessive amount unless the intent is ice maintenance. The blade is now set for a specific blade width.

To raise the blade, turn the blade adjustment crank counter clockwise.

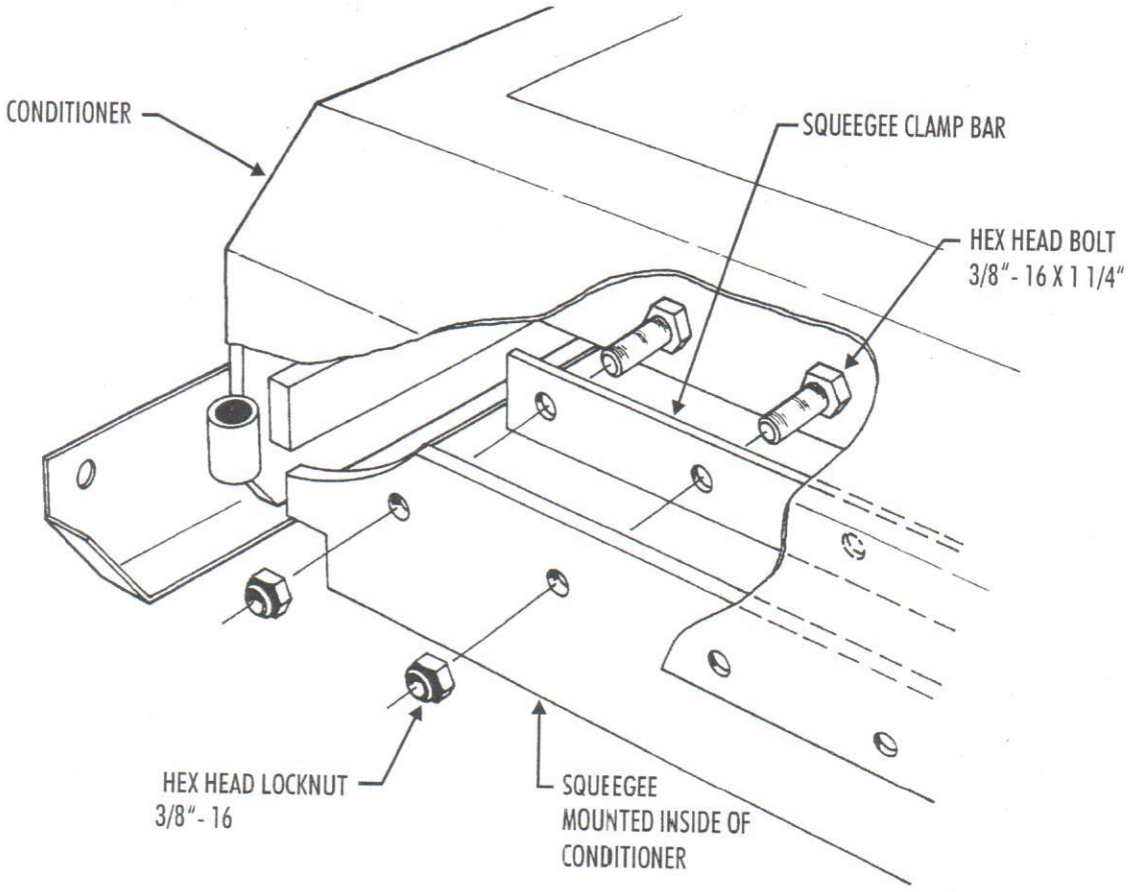
After the blade angle and level are set, any change in the cutting depth will alter the indicator arm position in the sight hole, but blade angle tolerances will accommodate such adjustment and further adjustment of the blade angle will not be necessary.

Please Note: It is important that the blade holder and blade surface be free of foreign material and lightly coated with oil to prevent rust.



Squeegee Installation

To install the squeegee, mount it on the inside of the conditioner, using 3/8" x 1-1/4" hex head cap screws and lock nuts. Trim the squeegee ends to fit tight against the side plates of the conditioner. Snow which is pushed by the squeegee will be trapped between the squeegee and runners and must not be able to escape and form a ridge on the ice.



Horizontal & Vertical Augers

The horizontal auger in the conditioner carries the snow scraped off the ice by the blade into the centre of the conditioner where a vertical auger picks it up and transports it to the snow bin in the front of the Olympia.

The horizontal auger should be barely above the ice level to maximize snow pick up while at the same time preventing any marking of the ice surface.

Both the vertical and horizontal augers will begin turning when the elevator control lever is pushed down until it locks into the On position.

To reverse the auger movement push the elevator control lever up and hold as the auger reverses. Upon release the control lever will return to the neutral position and the auger movement will stop. Reversing the auger is used to back out anything that may have become plugged in the auger tube.

Horizontal Auger Adjustment

The horizontal auger is adjusted by loosening the four outer bolts on the bearing adjustment plate on each end of the auger and the four bolts for the auger motor mount. The lowest point of the auger should be between 1/16" (0.16 cm) and 1/8" (0.32 cm) above the bottom of the runners. This can be checked by running a piece of string between the runners at the lowest point of the auger.

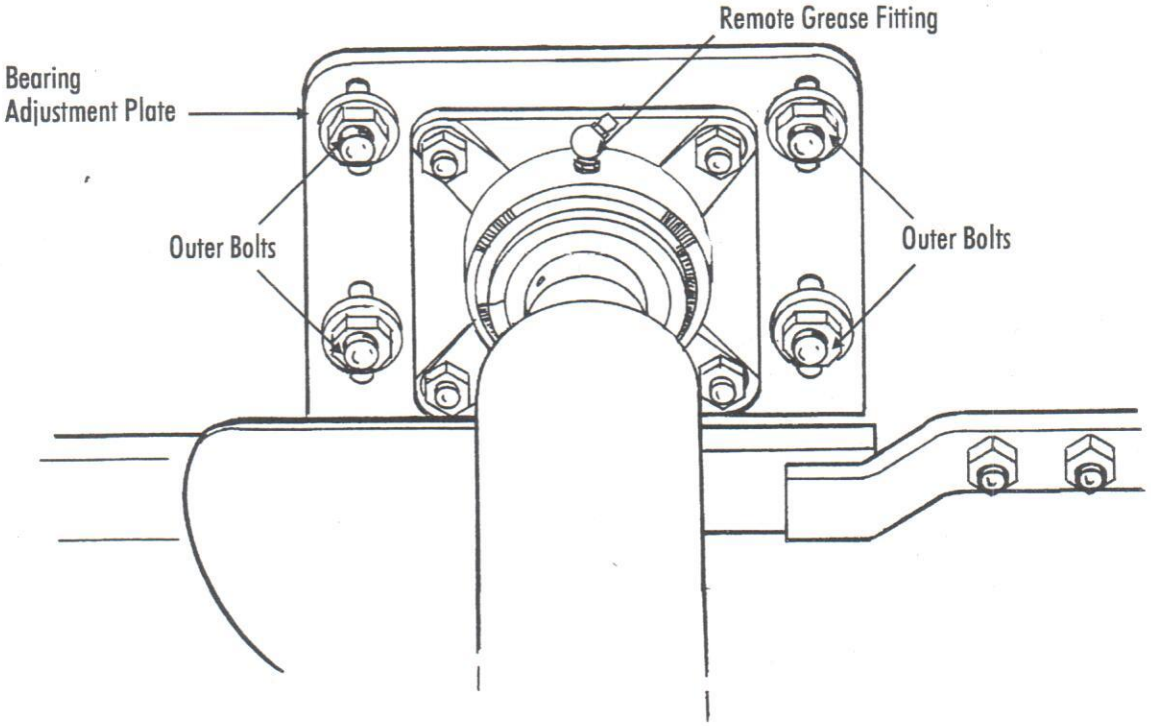
Pry the auger to the proper position.

After the adjustment has been completed, re-tighten the four outer bolts on the bearing adjustment plate.

If the auger is set too low, diagonal lines may be found where the auger touches the ice.

If the auger is set too high, excessive amounts of snow will be left on the ice surface at the end of the flood.

Auger Height Adjustment

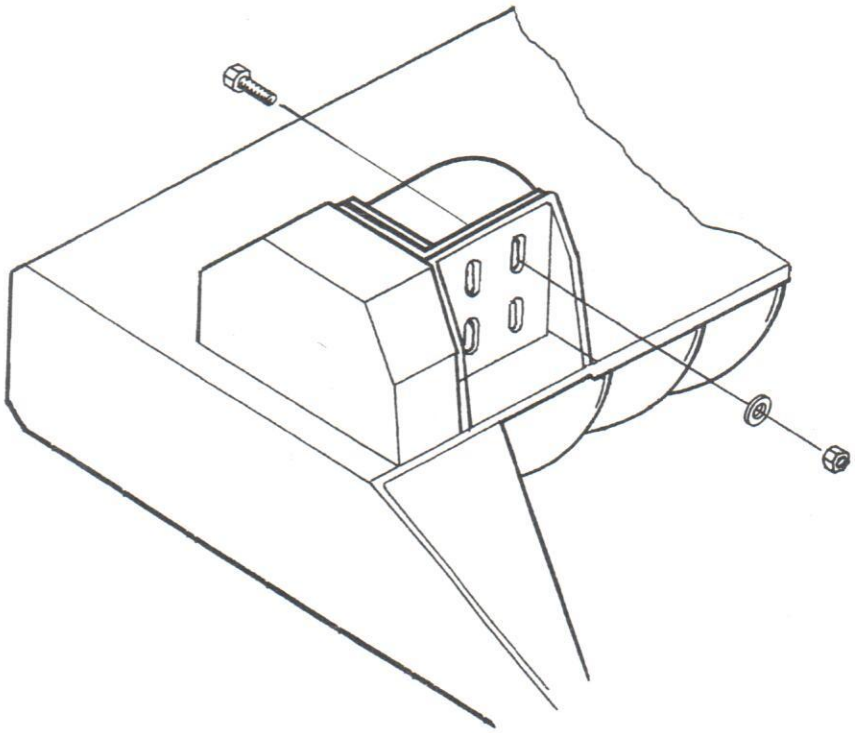


Auger Drive Chain Adjustment

The horizontal auger drive chain should be kept at a reasonable tension at all times. If too loose, the sprockets and chain will wear out prematurely.

If too tight, the sprockets, chain and auger bearings will also wear out prematurely.

To adjust the chain tension, loosen the motor mount plate bolts and slide the motor mount until you get the proper tension, then re-tighten the motor mount plate bolts.



Conditioner Control

Raise the blade to above the runners by turning the adjustment crank counter clockwise.

With the conditioner in the Up position, drive the Olympia out onto the ice surface.

Lower the conditioner to the ice surface by holding the conditioner lever in the Down position, until the lift arms are against the down pressure stops. Before operating the Olympia, you should check to see if the runners are sitting level on the ice surface.

We recommend that you drive around the ice surface with the conditioner down for 2 or 3 laps to cool the runners.

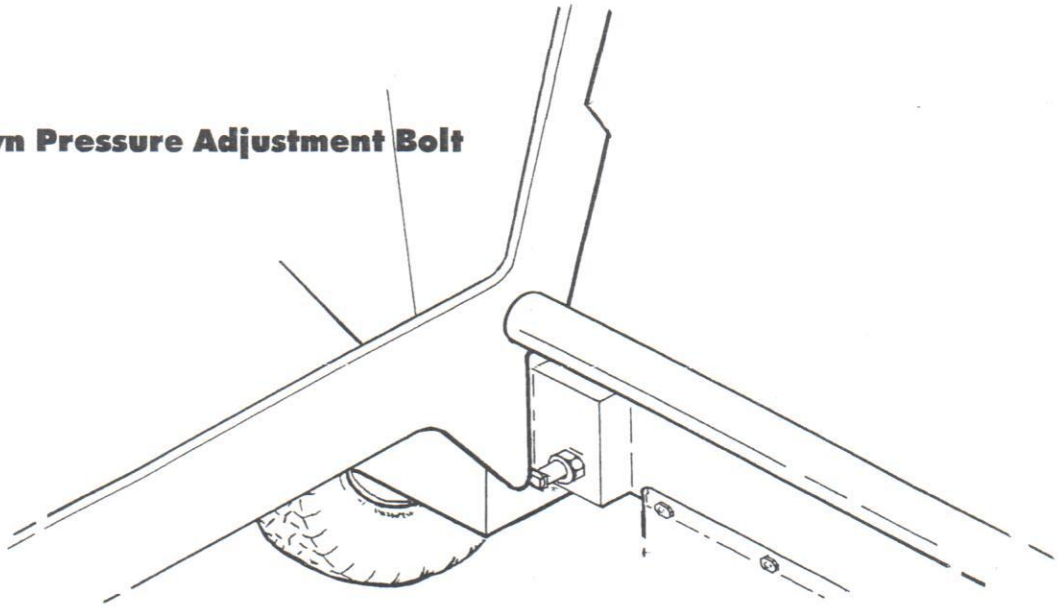
To do this, the conditioner should be lowered so the runners are sitting on the ice surface and the conditioner lift arms are against the down pressure stops.

For proper traction and control the rear tires of the Olympia should be in full contact (the entire width and 3 inches (7.62 cm) of the length of the tire) with the ice surface.

Down Pressure Adjustment

To adjust the down pressure, raise the conditioner and loosen the jam nuts. Turn the bolt in (clockwise) .Set the desired down pressure with the conditioner level on the Ice.

Down Pressure Adjustment Bolt



Tighten the bolts against the lift arm and lock with the jam nuts.

Too much down pressure will lift the rear wheels off the ice resulting in a loss of control.

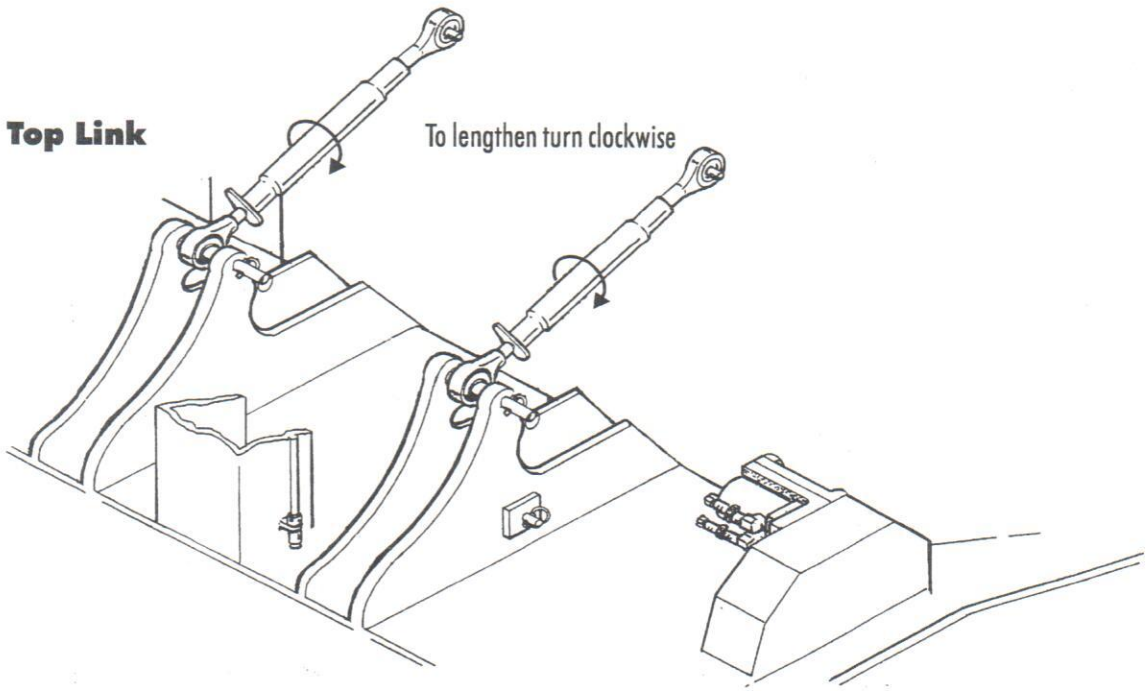
Too little down pressure will result in rippled ice and gouging in the corners.

Top Link Adjustment

Check to make sure the front of the runners are still on the ice surface.
Drive the Olympia once around the rink.
When the Top link is adjusted properly the rear tires should leave a full tread pattern on the ice.

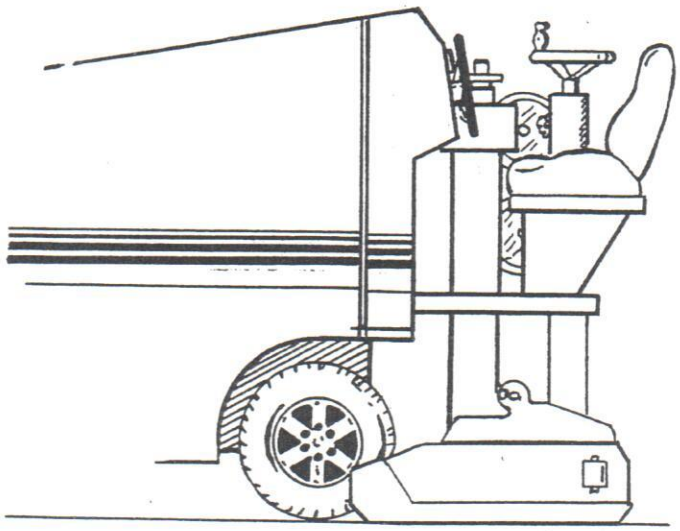
Please Note: It is essential for proper operation that the tire pressure be maintained at 65 psi.

To adjust the top linkage, loosen the jam nuts on both top links. Turn the body of both top links counter clockwise until there is play. Turn the jam nut 'lightly' against the top link body. Now adjust both top link bodies away (clockwise) from the jam nuts until they are hand tight only. When properly adjusted the runners will not leave any marks on the ice surface.

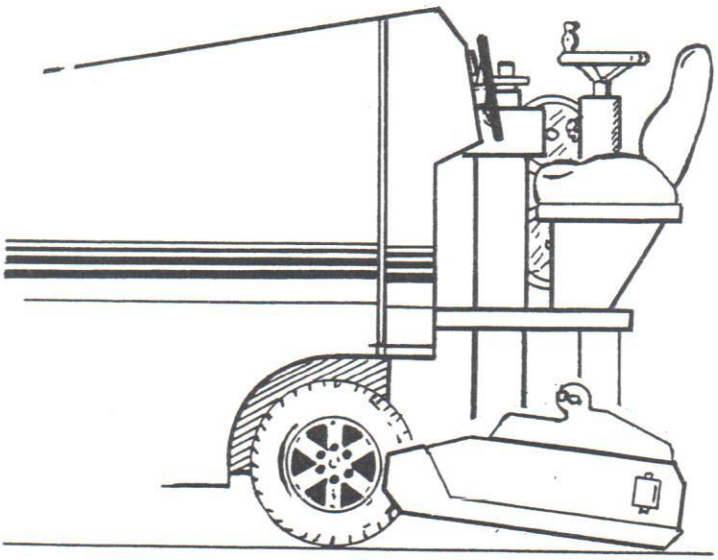


Please Note: It is essential that you adjust both top links at the same time.

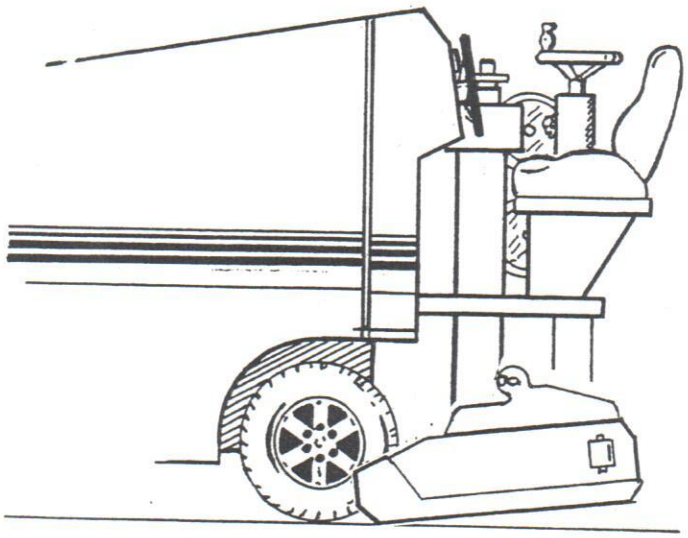
Proper Top Link Adjustment



Top Link too long



Top Link too short



Daily Pre-Start Check List

The Olympia is designed to make your job easier, faster and trouble free.
Prior to starting the Olympia it is recommended that you carry out these basic pre-start checks:

1. Make sure the fuel tanks are full.
2. Turn on the fuel.
3. Check couplings and connections with soap & water solution, check for bubbles.
4. Fill water tank.
5. Connect towel bar.
6. Remove water hose from tank.
7. If using a natural gas powered unit make sure the gas fill line has been disconnected.

Safety Note: These pre-start checks should be made every time prior to operating the unit.

Standard Safety Procedures

To assure safety, the operator should take the following safety precautions:

1. Drive defensively at all times.
2. No unauthorized personnel on the ice during resurfacing operations.
3. No passengers allowed on the Olympia while in use.
4. Keep feet and hands away from moving parts.
5. Use the bin safety bar if working under the bin.
6. Never have the augers turning with the conditioner cover plates removed.
7. The dumping area should be kept free of people and obstructions.
8. Do not handle blades without safety gloves and the blade guard in place.
9. Do not operate the Olympia while under the influence of alcohol or drugs.
10. Refuel the Olympia outdoors.
11. Wear proper protective equipment while refuelling, including gloves, goggles and safety shoes.
12. Never operate the hydraulic system above 2100 rpm, as it will cause serious damage to the entire hydraulic system.

Water Problems

If you notice a residue forming in your water tanks, it is likely the result of minerals such as calcium and lime in your water supply. This type of residue will eventually block the flood pipe holes. This will be apparent when your water flow is restricted or the ice appears streaked after flooding. The solution is to remove the flood pipe and clear the holes. A more permanent solution is to deminieralize the flood water supply before filling the tanks.

Flood Water Handling Procedure

Safety Note: Do not leave the Olympia unattended during the water filling procedure.

With the conditioner properly adjusted, you are ready to fill the flood water tanks, in preparation for resurfacing the ice. Both tanks are filled through a common pipe located beside the driver's platform. If the extra water option is installed on your machine, all three water tanks are filled through the filler cap on the extra water tank.

Flood water flow is regulated by the water tap, which is mounted on the sled tower beside the blade adjustment wheel.

For best resurfacing results, use flood water at 85-95° C (180-200° F). Hot water flows into cracks in the ice before cooling and freezing. It also melts some of the ice surface before freezing thus getting the best possible bond with the existing ice. Hot water also holds less oxygen than cold water and therefore produces a denser, harder ice.

Hard ice does not get damaged as easily and therefore does not require resurfacing as often nor as deeply, resulting in minimal ice buildup. This means less time spent on ice maintenance and saves wear and tear on the ice resurfacing equipment.

Wash Water Handling Procedure

To attain best results the wash water system should be used. Fill the tank with Cold Water only.

The wash water system sprays water from the sides of the conditioner into the centre in front of the squeegee creating slush. Excess water is then vacuumed up, taking with it any dirt or debris from the ice.

In addition to removing small debris from the ice surface, any snow left behind the blade is turned into slush by the wash water and is pushed into cracks in the ice by the squeegee.

The water is filtered and then returned to the wash water tank.

Once you have taken on sufficient water, drive back onto the ice and carry out the normal flood procedure as follows: lower the conditioner to the ice surface by holding the conditioner lever in the Down position, until the conditioner arms are against the stops. Engage the horizontal and vertical augers by pushing the elevator lever on the dash to the Down position. During resurfacing drive at a slow steady speed, between 1600-1800 RPM.

To operate the wash water system during the resurfacing operation, first turn on the water valve on the tower and then go the distance between two lines before turning on the wash water pump switch on the dash.

While the pump is operating, the orange indicator light on the dashboard will be lit.

It is very important that the pump not be turned on until the wash water tap is open as the pump impeller will wear out if there is no water passing through it.

Building Ice Proceedure

When building a layer of initial ice at the beginning of the season, the water tanks, as well as the optional tank, can be filled full with hot water.

Once a layer of ice 3/4 " to 1 1/2 " (2-4 cm) thick has been formed, the amount of ice removed during the resurfacing should equal the amount of water used. This will prevent further ice buildup.

Fill water tanks with sufficient water to do one resurfacing at a time.

Extra water after resurfacing should be drained from the water tanks.

Once you have completed resurfacing the ice, turn off the augers by pushing the elevator lever up to the Off position, and raise the conditioner off the ice surface by holding the conditioner lever in the Up position.

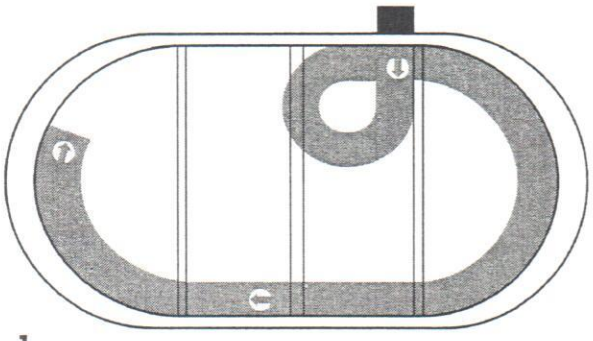
Drive to the snow dumping area, check for overhead clearance, place gear shift in "N" neutral and then raise the snow bin by holding the snow bin lever in the Up position. By releasing the snow bin control lever to the neutral position the bin will be held in place by the hydraulic pressure.

Typical Resurfacing Pattern

Upon completion of the flood, first turn off the wash water valve on the tower and then turn off the wash water switch on the dash. Turn off the flood water valve on the tower. Stop the auger by placing the elevator lever in the neutral position. Then raise the conditioner to the maximum position by pushing the conditioner lever to the Up position, before leaving the ice surface.

Please Note: After each ice resurfacing operation, drain the water from both the flood water and the wash water tanks.

Drain the water tanks through the flood pipes by leaving the water control valve open, or through the water tank drainage valves. By following this procedure, the hot water added for the next resurfacing will not be mixed with any cold water left in the tanks from the previous flood, and will be as hot as possible for flooding. If these procedures are not followed the result will be a poor ice surface which will require more maintenance than usual.



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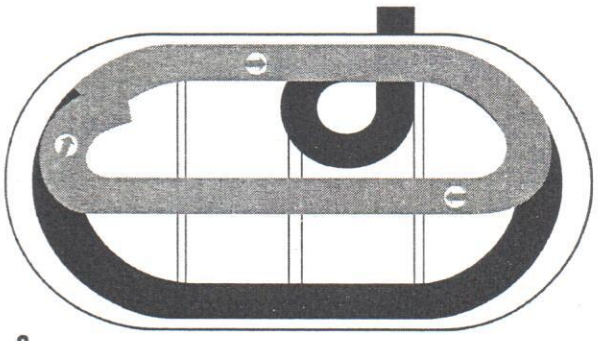

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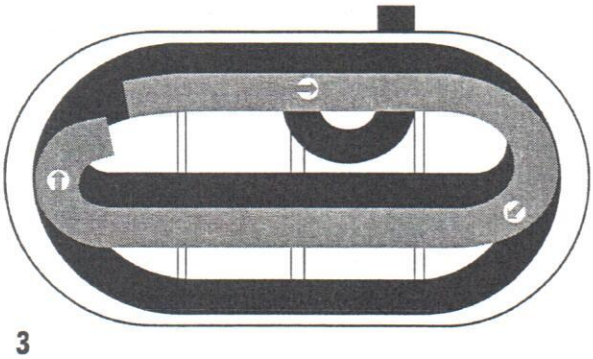

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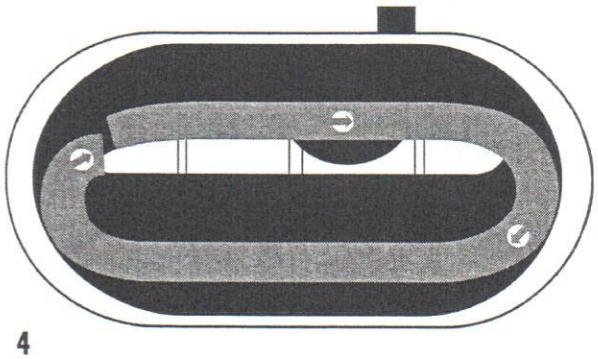

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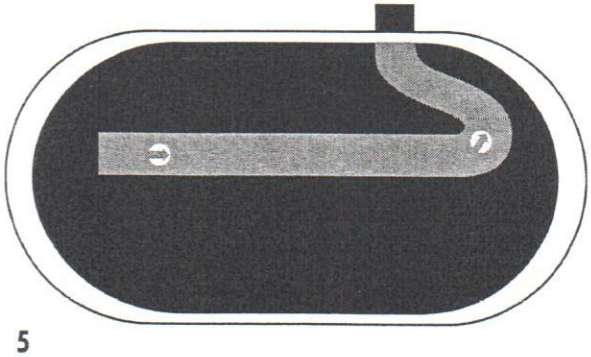


5

Board Brush

During the first circuit of the ice surface, lower the conditioner until the arms are against the stops. Push the board brush lever to the down position. The board brush will come down and fully extend. Once the brush is fully extended, only the front edge of the brush should touch the ice surface.

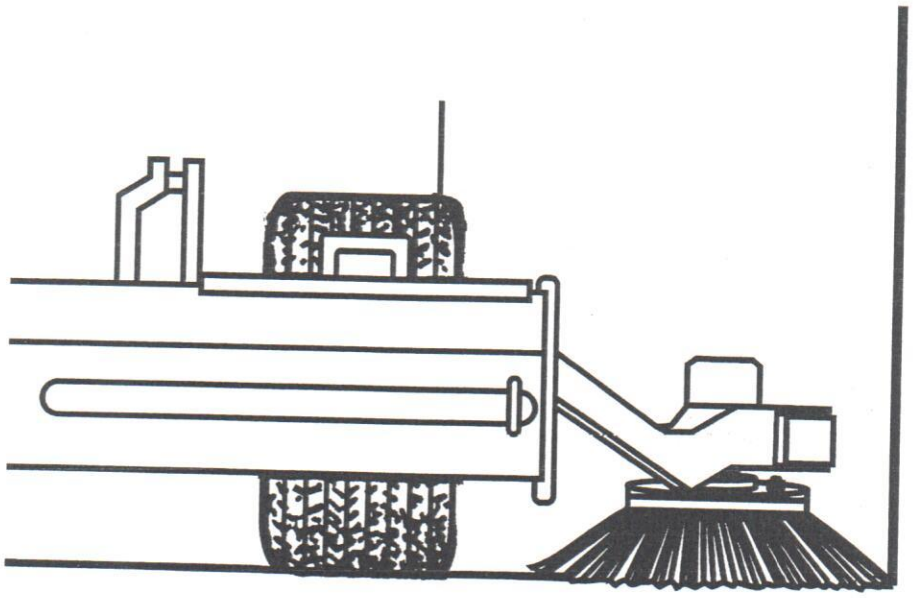
Drive ahead slowly keeping the board brush close to the rink board.

This will clean the snow on the edges of the ice surface into the conditioner.

Upon completion of a full circuit of the rink, retract the board brush by pushing the board brush lever to the Up position and hold it there until the brush is fully retracted.

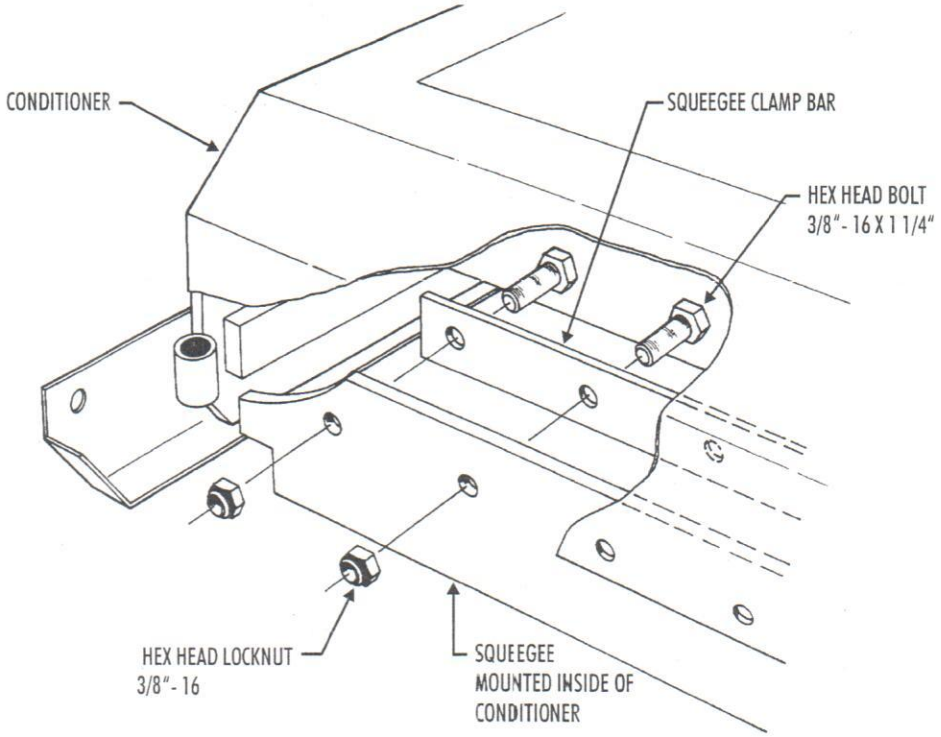
If necessary to adjust the board brush, first loosen the jam nut and then adjust the square head nut, turn in to increase the pressure and out to reduce the pressure. Make sure to tighten the jam nut once the board brush is properly set, then retract the board brush.

Safety Note: Do not leave the board brush running while adjusting, as it will melt the ice.



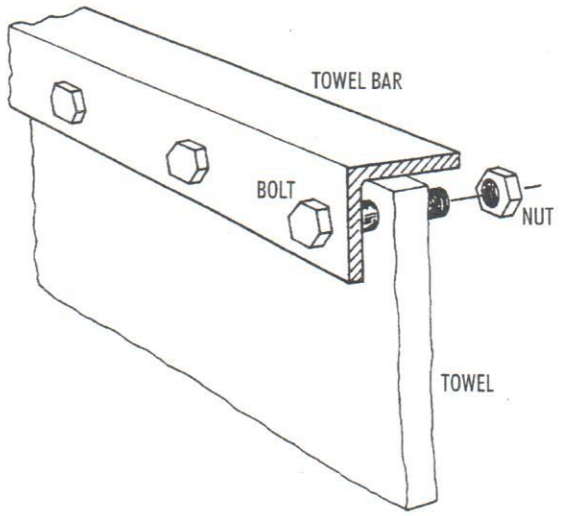
Squeegee Replacement

If the squeegee needs replacing, it should be mounted on the inside of the conditioner, using 3/8" x 1-1/4" hex head cap screws and lock nuts. Trim the squeegee ends to fit tight against the side plates of the conditioner. Snow which is pushed by the squeegee will be trapped between the squeegee and runners and must not be able to escape and form a ridge on the ice.



Towel Replacement

Inspect and replace if necessary. Install the towel on the backside of the auger with 3/8" x 1" hex head bolts locknuts, making sure the nuts are on the towel side of the auger.



TIRE WASH SYSTEM

The Olympia Tire Wash system is designed to prevent dirt and debris from outside from being tracked onto the ice surface when the vehicle re-enters the building.

To activate the tire wash system switch the tire wash lever to the "on" position. Excess water from the wash water system will be sprayed onto the tires. Drive the Olympia forward, making sure the tires make at least a full revolution or more, to insure complete coverage of the tires.

The water should remove the loose dirt and debris from the tire.

Upon completion of the tire wash, check the tire treads for debris that may have become jammed in the treads. Remove the debris prior to driving onto the ice surface.

Please Note: Always clean the floor surface before and after the tire wash procedure.

Offical Procedure for Changing Propane Fuel Cylinders on Ice Resurfacing Equipment

Responsibility:

The supervisor is responsible for issuing all the necessary equipment, training the employee in its use and ensuring that this procedure is adhered to.

The Employee is responsible to follow the tasks as outlined by this procedure.

Equipment:

Personal protective equipment required but not limited to the following shall be used:

A. Gloves
B. Safety Goggles
C. Safety Shoes
D. Correct hand tools

General:

A. The ice resurfacer shall be moved to the designated area outside. The area must be in a location so as to prevent any source ignition.

B. The operator will close the fuel valve at the cylinder, leaving the machine running until it quits as a result iof no fuel being available to support combustion.

C. The ignition shall be turned off. *Do not use any tool to loosen the coupling.*

D. The propane fuel hose may now be disconnected from the propane fuel cylinder.

E. Remove the near-empty propane cylinder.

F. A correctly filled propane cylinder may now be mounted.

Note: At this stage it is important to ensure that the propane fuel cylinder is mounted with the pressure relief valve in the correct positon (12 o'clock if mounted horizontally and to the right hand side if mounted vertically) and check the sealing gasket on the coupling, for placement and foreign materials.

G. The propane fuel hose may now be connected to the propane fuel cylinder. *Hand tighten only.*

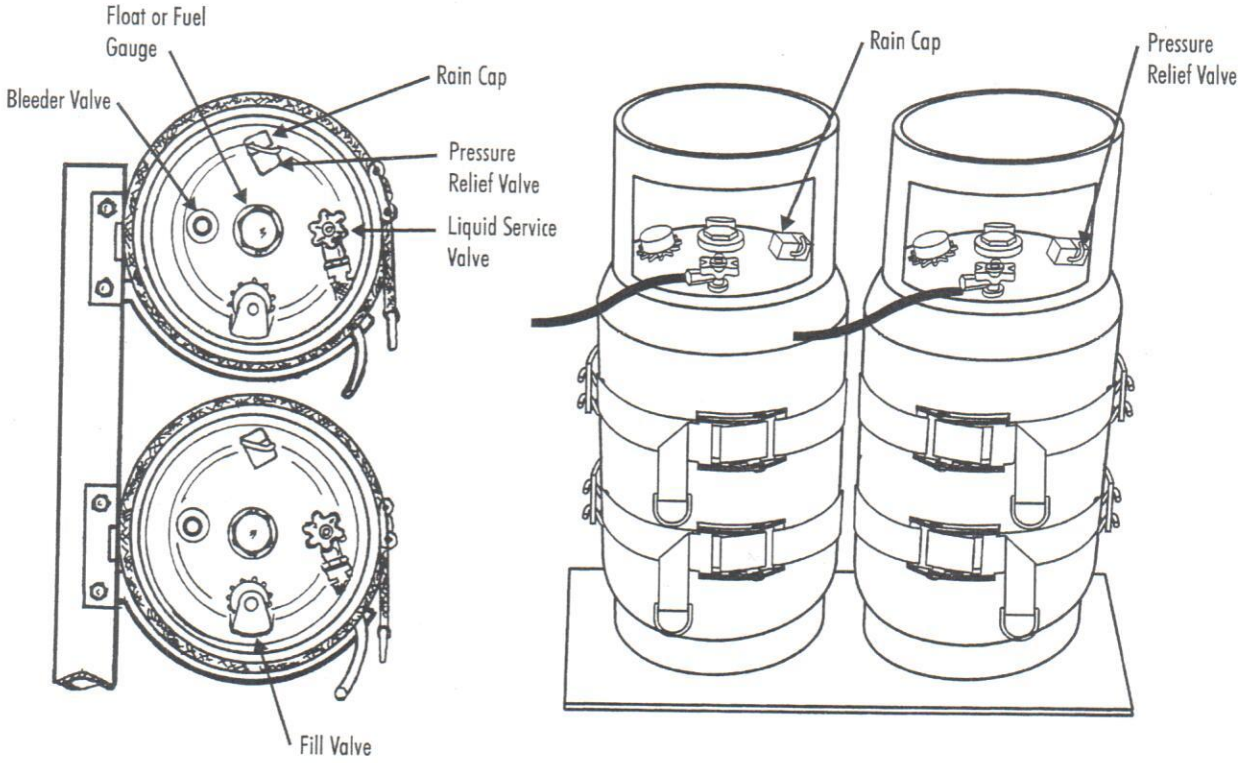
H. The valve on the propane fuel may be opened slowly and a final check for leaks made using soapy water and checking for bubbles.

Propane Tank Handling

The standard fuel supply is liquid propane under pressure. Your local propane distributor will be able to arrange a fuel supply program as well as trouble shoot any problems you might experience. If your local licensed propane professional office is not equipped to deal with automotive fuel systems, they can recommend a licensed propane professional who will be authorized to complete service work on their behalf.

Safety Note: When liquid propane is released from a tank, it rapidly returns to its vapour state which is accompanied by extreme cold. To avoid frostbite, protective gloves and glasses must be worn while working with connections on propane tanks.

Tanks should always be handled carefully. Undo the straps which hold the tanks in place and move the straps clear of the tank brackets and hoops. Install tanks with the relief valve pointing to the right of the driver in the vertically installed tanks. Install tanks with the relief valve in the 12:00 o'clock position for tanks mounted in a horizontal fashion. Reconnect straps and check hoses for leaks using soapy water, and check for bubbles.



Open the service valve on both tanks and make the appropriate tank selection.

The service valve should be opened slowly or the excess flow valve will close automatically. If this should occur, close the service valve. The valve will reset itself momentarily and then can be reopened slowly.

When reopening the service valves, the operator's attention will also be drawn to the quantity of fuel shown on each tank's fuel gauge.

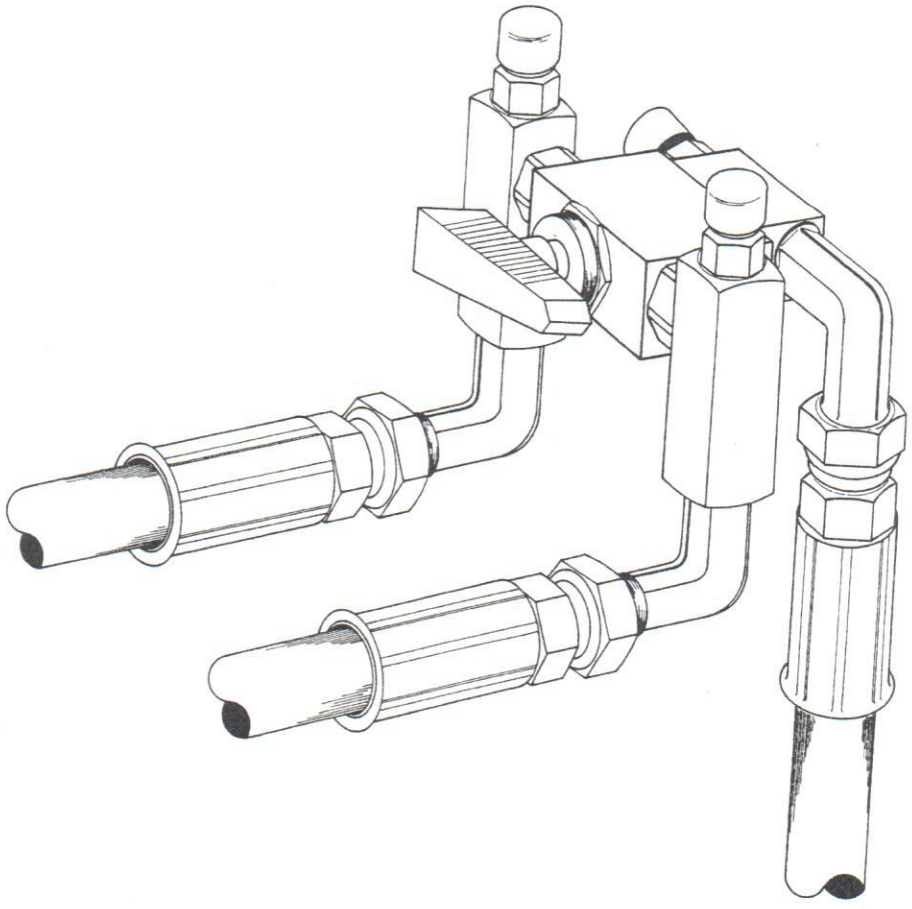
When operating the machine, fuel tanks can be selected by the selector switch mounted on the vertical auger housing.

When parking the machine, we recommend that both tanks be shut off to avoid the possibility of a slow leak. Hoses and connections should be checked for leaks using soapy water as a detector.

Safety Note: Never use an open flame to detect a leak. Do not expose to excessive heat.

Recommended Fuel Management

Some operators find the easiest way to manage their propane fuel is to always run on the left tank. When the left tank is empty, the right tank is used to finish the flood, dump and park the machine. The right tank is then moved to the left position on the rack and a full tank is placed on the right rack. Using this method, the machine should never run out of fuel unexpectedly.



4 Governor Adjusting Procedure

Storage Procedures

Propane is a liquid which is stored under pressure and requires special storage and handling procedures to assure safety.

Tanks should be stored outdoors, in an upright position, according to Propane Code requirements. To further ensure safety, tanks should be changed outdoors with the engine shut off and away from open flames.

Safety Note: Due to the flammability of propane vapour, precautions should be taken to ensure safety by prohibiting smoking around the Olympia and particularly while changing tanks.

Pressure Relief Valve

The pressure relief valves on propane tanks are set to release if internal pressure increases past safety limits. If a relief valve releases, it will automatically reset when pressure inside the tank returns to normal. The relief valve should always be protected.

Safety Note: Since propane is poisonous to breathe, it has an odorizing agent added to it to allow operators to notice a leak. If a leak occurs, it will be first noticeable in low areas such as dump pits since propane is heavier than air. If a leak is detected, close the service valve on each tank, making sure to have on your protective gloves and break the hose connections.

Deisel Safety

If your Olympia is Diesel powered, accepted safety practices must be observed while refuelling and while in enclosed areas. It is not advisable to park the machine with full tanks as the fuel may expand if the temperature increases, causing a potentially dangerous spill.

Catalytic Exhaust Purifier

Some municipalities require that the exhaust of vehicles operating in enclosed spaces meet certain emission standards.

The optional catalytic exhaust purifier is available on either fuel system and will oxidize most harmful carbon monoxide, hydrocarbons and odour causing agents from engine exhaust.

Battery

Your Olympia has a negative ground electrical system and is equipped with a 12 volt Delco Freedom battery which requires no maintenance. The test indicator (hydrometer) on top of the battery indicates by colour whether the battery is sufficiently charged for testing (green) or if it requires charging (blue).

Hydraulic Pump

A tandem pump is driven off the engine. The hydraulic system is a complex series of pilot check valves and motion control valves that regulate the flow of hydraulic fluid to various components as required and should only be serviced by qualified personnel. Operation of the hydraulic pump should never exceed 2100 RPM, as serious damage to the hydraulic system will occur.

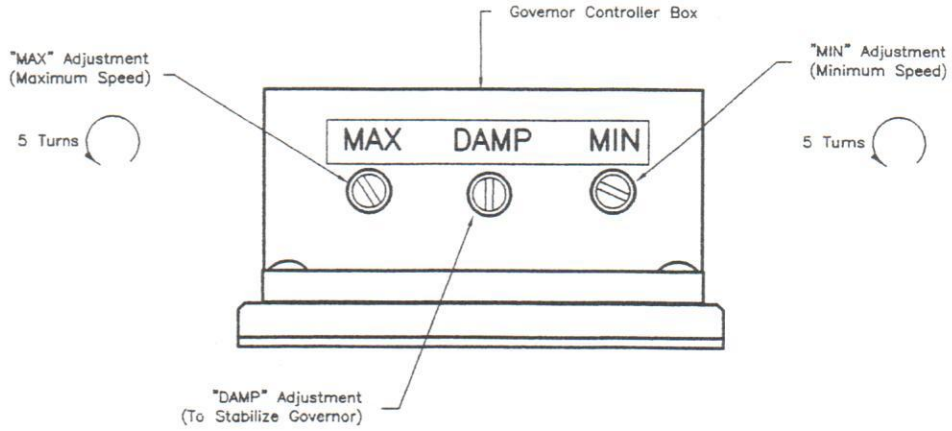
Governor Adjusting Procedure

Governor Adjustments

SAFETY NOTE: Do Not allow the Solenoid Output to come in contact with the chassis or ground as it can burn out the controller. When making MAX, DAMP, and MIN adjustments, use a flat blade screwdriver only, with a maximum blade width of 3/32 inches.

1. Make sure the engine ignition is switched "OFF".
2. Turn the MAX adjustment five full turns counter-clockwise.
3. Turn the DAMP adjustment 5 full turns counter-clockwise to set the governor at an intermediate setting.
4. Turn the MIN adjustment five full turns counter-clockwise.
5. Turn the remote external Potentiometer counter-clockwise as far as it can go. (If this control is not installed, ensure that pins 4 and 5 on the controller box are connected with a jumper cable.)
6. For variable speed applications turn the external potentiometer clockwise to its maximum setting.
7. Turn the MAX adjustment to the desired maximum engine speed.
8. Turn the external potentiometer counter-clockwise to its minimum setting.
9.
9. Turn the MIN adjustment to the desired minimum engine speed.
10. You can now control the governor speed by rotating the external potentiometer knob.
11. Curb idle can be achieved by switching OFF the connection between controller pins 2 and 7.
12. When setting DAMP, the usual setting is five full turns counter clockwise for speeds below 3000 rpm.
13. The small adjusting potentiometers are protected by a slip clutch at each end eliminating damage caused by over turning.

SAFETY NOTE: Always replace the rubber plugs in the adjustment screw holes to prevent corrosion once the governor adjustment are completed.



1) 5 Turns

2) 2 Turns

NOTE -- Be sure to replace the 3 rubber plugs in the adjusting screw holes after all governor adjustments are completed.

4 Governor Adjusting Procedure

Maximum Engine Speed

1. Depress the accelerator pedal completely and check for a maximum engine speed of 1800-2000 rpm.
2. Turn the MAX adjustment on the Governor Control Box to fine-tune the governor.
3. Eliminate engine hunting or surging by adjusting the DAMP adjustment screw on the governor control box until the engine runs smoothly. Turning the screw counter-clockwise increases the governor stability. Turning the screw clockwise will make the governor more sensitive and responsive.

Final Checks

Test-drive the Olympia 4000 to check engine speed and make final adjustment to the governor control box as required. Remember to replace the rubber screw plugs after completing all adjustments.

Trouble Shooting

Engine will not go above idle speed.

1. Check ground connection at the Controller Box, pin #10, at the Solenoid and at the Magnetic Sensor to make sure they are secure.
2. Check all wiring connectors for secure attachment. A weak or open connection will be read as a fault and will force the solenoid into a fail-safe idle position.
3. Running the engine at idle check for the following voltages at the control box connector pins.

Pin 1	12 volts DC
Pin 2	12 volts DC
Pin 3	between 1.15 and 1.25 Volts DC
Pin 4	between 5.25 and 5.35 Volts DC
Pin 6	1.4 volt AC minimum. If below that, adjust the gap. If still low replace sensor.
Pin 7	12 volts DC If this voltage is low then replace controller transform.
Pin 8	12 volts DC
Pin 9	Zero volt with the solenoid de-energized. If the solenoid is energized, the reading should be 12 volts DC.

Engine does not reach maximum speed.

Check the settings on MAX and MIN adjustments.

Check for excessive spring tension on the throttle return spring attached to the carburetor.

Engine goes to full throttle when accelerator is in idle.

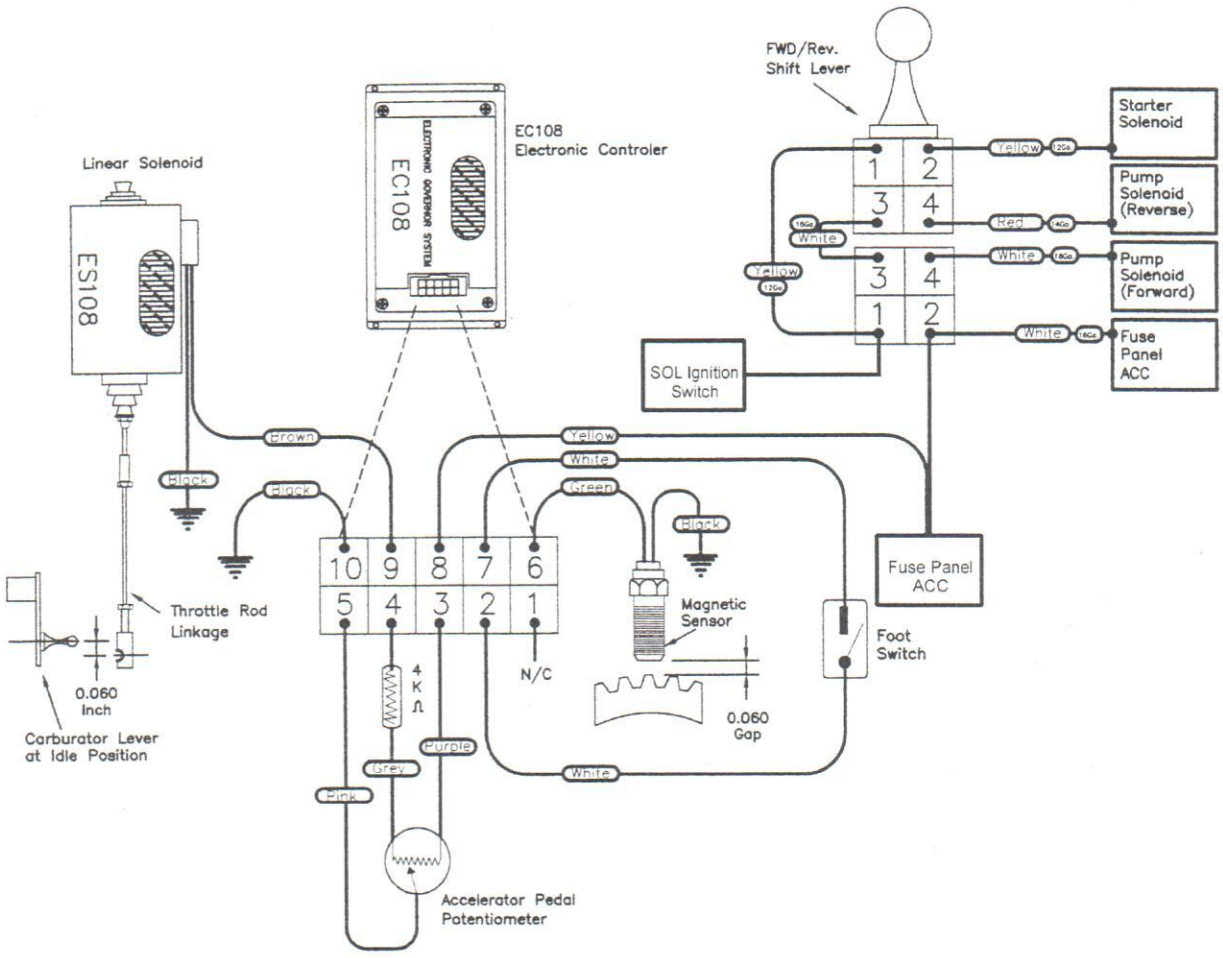
If the governor goes to full throttle in idle and returns to idle when the pedal is depressed slightly then either the idle stop adjustment on the accelerator pedal potentiometer is incorrect or the stop screw bracket has been bent.

Linear Solenoid

Check the resistance between solenoid leads with a digital multimeter. If between 3.0 and 4.0 ohms the solenoid coil is good. If the reading is not in that range the solenoid should be replaced.

Magnetic Pick-up

Check the MPU output leads for a minimum output of 1.4 VAC at the engine idle connection with a digital multimeter. If the voltage is low re-adjust the air gap between the MPU and the ring gear teeth. Check the MPU tip for accumulated metal filings and clean if neccessary.



Governor Adjusting Procedure

Electronic Controller

1. Check the controller with a voltmeter for 13-16 VDC between terminal 10 and terminals 2,7, and 8 while the engine is idling. If the voltage is missing or low check for the following and correct.
   - Wiring error
   - Low battery or alternator output
   - Wire size too small
   - Poor ground conditions
   - Corroded or weak terminal connections
   - Disconnect the throttle linkage from the engine
2. With the engine off, apply battery voltage (+12 VDC) to terminal 8 on the controller. This should cause the solenoid to strike once and return to the idle position.
3. Start and operate the engine manually at idle. Adjust the MIN pot until the solenoid moves to the maximum fuel position.
4. Manually increase the engine speed. At some Speed, the solenoid should move back to the idle position.
5. Carefully adjust the engine speed manually. The solenoid should be able to hold a position in the center of its stroke. Now adjust the controller pot to match this speed.
6. If the solenoid responds according to the above the controller is working correctly in over-speed, under-speed and on-speed conditions.

Engine Hunting or Surges

1. Turn the DAMP adjustment screw 5 full turns counter clockwise to the fully damped position.
2. Slightly increase the length of the carburetor arm.
3. Slightly increase the length of the throttle rod.
4. Install a light extension spring on the carburetor arm and adjust the tension.
5. Adjust tension on the accelerator pump spring, or relocate the accelerator pump linkage to a different setting.
6. Slowly adjust the carburetor fuel/air mixture.
7. Slightly adjust the engine timing.
8. Manually depress the governor solenoid plunger into the solenoid to check for smooth movement. If it sticks or is uneven, replace the solenoid.
9. Use an EC108 controller box for increased damping capability.

5 Standard/Optional Equipement

Standard Equipment

- 2 Year Warranty
- Chevrolet Power Train
- Rexroth Transmission
- 4 Wheel Drive
- Magnesium Aluminum Alloy Wheels
- Propane/Natural gas
- Front Dump
- Easily Accessible Hydraulic System
- Reversible Auger System
- Precision Conditioner Control System
- Replaceable Runners on Conditioner
- Front & Rear Guide Wheels
- Full Instrumentation
- Full Lighting Package
- Snow Tank Safety Bars
- Safety Labels
- Parking Brake
- Two Tone paint Scheme (6 standard colour selection)
  - Silver and Teal
  - Silver and Blue
  - Silver and Maroon
  - Silver and Charcoal
  - White and Teal
  - White and Blue
  - White and Maroon
  - White and Charcoal

Optional Equipment

- Three-way Catalytic Purifier
- Fuel Management System
- Board Brush
- Wash Water System
- Tire Wash
- Automatic Snow Breaker
- Automatic Towel Lift
- Rear Mounted Power edger
- Stainless Steel Tanks
- Oversized Water Tanks
- Backup Alarm
- Seat belt
- Deadman Switch
- Heated Cab
- Special Paint Colours and Customized Paint Scheme
- Six-way Snowplow

Blade Handling

To ensure operator safety, to protect the edge of the blade, and to provide consistent ice resurfacing, the following section should be read carefully.

It describes the installation and adjustment of the blade, as well as sharpening and storage.

It is essential that the blade be sharp at all times for proper shaving of the ice surface. Blades require sharpening after approximately 100 resurfaces.

Blade Removal Procedure

To safely remove the blade from the Olympia, raise the conditioner and place blocks under it for safety.

Wearing protective gloves, install the magnetic blade protector, then remove each end bolt from the blade.

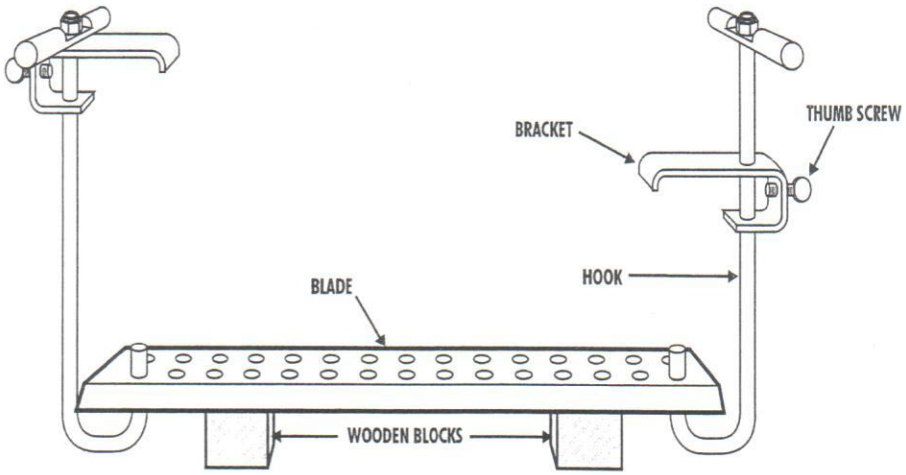
Insert the blade hooks.

Use the locking thumb screw to secure the blade in position.

Remove the remainder of the bolts from the blade.

Carefully lower the blade away from the blade holder on the conditioner onto wooden blocks.

Lightly coat the entire blade with oil to prevent rust.



Blade Specifications

Blades supplied by Resurfice Corp. are high quality alloy steel with a tempered cutting edge which is 58 to 62 Rockwell hard.

If purchasing replacement blades from a source other than Resurfice Corp., specify the above mentioned hardness in order to get the best results from your Olympia.

Resurfice recommends that your blade be held in the grinding machine with the back edge of the blade against two stops (rather than a continuous).

Blades should be ground at a 27 degree angle with one bevel.

Too much angle will result in rippled ice, while a smaller angle will not shave the ice properly.

The blade holder is ground down so that each lap of shaving will be feathered into the next without forming ridges in the ice.

To check whether your blades have been sharpened straight, lay two sharpened blades on a flat surface with two cutting edges together.

If the blades have been sharpened straight, the cutting edges will touch the full length of the blades.

The blades for your Olympia need to be replaced when more than 1 1/2" (3.81cm) has been removed by having them sharpened.

Daily Maintenance

The power train maintenance program should be set up and followed with your local General Motors dealer.

In addition, the basic Olympia maintenance procedure should be carried out according to the following schedule:

To begin the maintenance program, first park the Olympia leaving the conditioner in the Up position and the gear lever in neutral "N" and apply the parking brake. Raise the snow bin. Engage the safety bars on each side of the snow bin, remembering to put in the safety pin once the bars are properly positioned. On the side dumping model, after raising the snowbin make sure it is mechanically secured. Turn off the machine. Remove the key from the ignition before proceeding with any maintenance.

Fluid Checks

On a daily basis carry out these basic fluid checks:
Check the engine oil and top up with a multi-grade oil.
While the hydraulic fluid levels usually remain constant, regular level checks and topping off the levels with Dextron III can avoid a lot of problems down the road.
Finally, check the engine coolant levels and top up with recommended high quality coolant.
When you notice changes in any of the fluid levels you should determine and correct what is causing the loss of fluids.

Belt Checks

Next, the alternator belt should be checked for cracks and wear and replace immediately if neccessary.

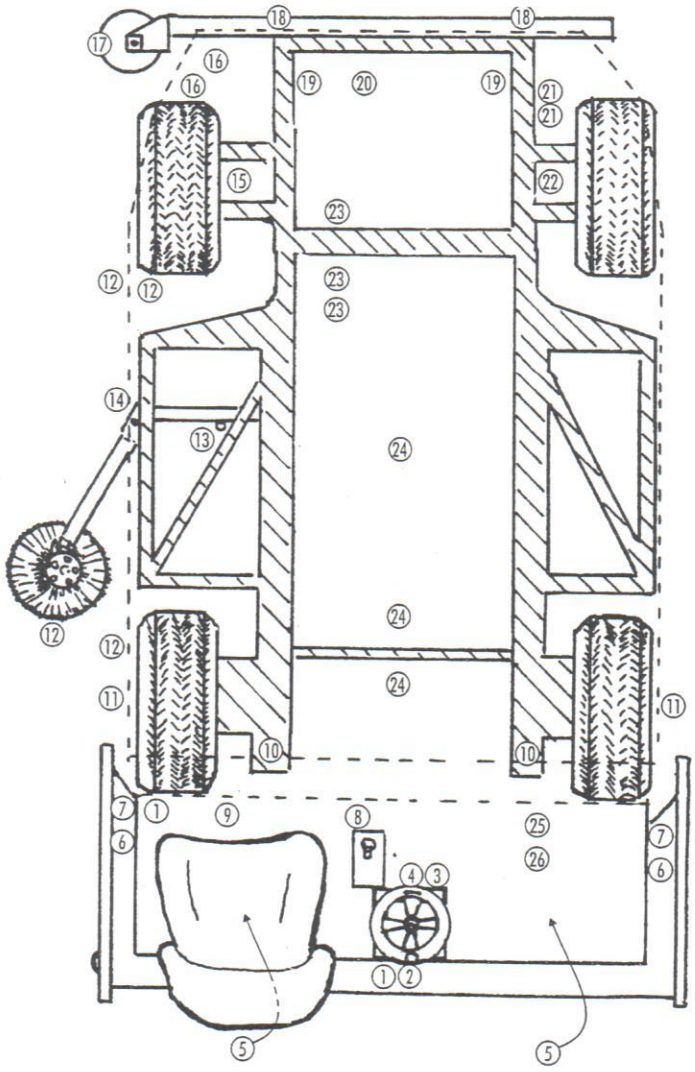
Regular Maintenance

Check the blade holder surface on the conditioner and lightly oil the blade holder.
Because of the humid conditions the Olympia operates in, all of the lube points must be greased on a regular basis.

Please Note: Failure to carry out this basic maintenance can lead to damage and down time.

A little bit of grease goes a long way and makes sure the Olympia will do the same.
Every 100 scrapes you should carry out a full lubrication routine and change the ice shaving blade.

Please Note:On the front dumping units raise the snow bin cover approximately one foot. To complete greasing of the snow bin, move the snow bin lever to the Up position until the bin is fully opened. Engage the safety bars on each side remembering to put in the safety pin. On the side dumping machine after raising the snow bin, make sure the snow bin is mechanically secured before proceding with any maintenance.



Using the drawing on the adjacent page as a guide. Make sure you grease all 25 lube points as follows:

1. The blade adjust screw.
2. The 3/4 inch flange bearing at the top of the blade adjustment crank.
3. The 3/4 inch flange bearing where the blade crank goes through the conditioner.
4. The 3/4 inch universal at the base of the blade adjustment crank.
5. Both ends of the conditioner lift arms.
6. The two blade holder pivots on the blade adjustment arms.
7. Both bottom auger flange bearings - Fill until water is completely flushed.
8. The snow breaker pivot.
9. Brake Pedal
10. The two blocks where the sled arms pivot to raise and lower the conditioner.
11. The two bin cover pivots.
12. On the side dumping units, lube the two lower bin pivots on the driver's side of the Olympia and the two upper door pivots
13. The board brush shaft under the driver's side water tank.
14. The board brush swing arm at the pivot point.
15. Grease the upper and lower ball joints on the drivers side.
16. Grease both ends of the tie rod on the drivers side.
17. Grease the front bumper wheel shaft.
18. Grease the two front bin pivots.
19 Grease the top end and knuckle joint on both of the drop links.
20. The steering cylinder on both ends.
21. Grease both ends of the ties rod on the right hand side of the Olympia.
22. The right hand side upper and lower ball joints.
23. Front drive shaft slide and U-joints
24. Rear drive shaft and U-joints.

Lubrication Procedure

On a monthly basis or after 120 hours of operation you should:

1. Spray grease on the top link threads.
2. Check the tension of the conditioner motor drive chain making sure it has no more than a half inch play.
3. Spray grease on the motor drive chain of the conditioner.
4. Now check the brake fluid level, topping up if needed.
5. Check the tire pressure to ensure the pressure is at 65 PSI.
6. Change the oil and replace the oil filter every 150 hours to avoid costly engine repairs.

Annual Maintenance

Hydraulic Fluid

Before the Olympia goes into long term storage or on a yearly basis, the following maintenance should be carried out:

First, the entire unit must be greased and then the hydraulic fluid changed.
This is done by raising and mechanically securing the snow bin. Then:

1. Remove the drain plug at the bottom of the tank.
2. Remove the two screen filters and flush them clean with a solvent.
3. Upon completion, reinstall the drain plug.
4. Now unscrew the canister on both high pressure oil filters.
5. Remove filters and replace with new ones.
6. Reinstall the canisters and fill the tanks 3/4 full of ATF Dextron III automatic transmission fluid.
7. Always refill the tanks through the filler cap to filter out any impurities that might be in the new oil you are adding.

Differential Oil Change

To change the front differential oil simply:

1. Remove the drain plug and drain the oil.
2. Replace the drain plug.
3. Fill with proper oil (80-90 wt.) to the fill plug level.

Changing the rear differential oil however, is more complicated:

1. First remove the bolts from the cover plate.
2. Drain out the oil.
3. Check the teeth on the gear for excessive wear.
4. Replace the gasket with a new one, and
5. Reinstall the cover plate.
6. Fill the differential with 80-90 wt. gear oil to the fill plug level.

Transfer Case Oil Change

The next major procedure is to change the transfer case oil. This is done by removing the lower drain plug. Now replace the drain plug and refill the transfer case to the top of the plug hole with Dextron III.

To complete the annual maintenance schedule, carry out the combined weekly and 120-150 hours maintenance schedule.

Washing Procedure

The Olympia should be washed with lukewarm water and a mild soap.
Be sure to immediately rinse off the soap with cold water before it can dry and streak the surface of the Olympia.
A high grade automotive wax should be used to preserve the high gloss finish of the Olympia.

7 Long Term Storage Procedures

Storage Procedure

Carry out the annual maintenance procedure as follows.

1. Spray all the metal surfaces of the conditioner with a light coating of penetrating oil, and
2. Grease all the lube points in the Olympia to remove all moisture.
3. Make sure the horizontal and vertical augers and all moving parts of the conditioner are covered with a film of oil.
4. To prevent corrosion in the water system remove the end caps of the flood pipes and flush with water.
5. Drain and flush the water tanks.
6. Leave all the drains and valves open for storage.
7. During the off season the blade should be removed and carefully cleaned with oil.
8. Store blade in the wooden sheath.
9. Check to make sure the blade edge is sharp and there are no nicks.
10. If required, have the blade sharpened before storing for the off season.
11. Don't forget to put a thin layer of grease on the blade holder of the conditioner as well.

Throughout the storage period, start the engine periodically and let run until the normal operating temperatures are reached.

If the battery runs down over the long storage period, have it charged by a battery specialist and checked for load capacity before reinstalling it in the Olympia.

To put the Olympia back into action at the start of the season, simply follow the weekly maintenance procedure and enjoy another year of trouble-free operation.

8 Variable Pump Maintenance Program

Routine Maintenance

The AA4VG variable pumps are relatively maintenance free. Maintenance work is confined to the system, by way of oil changes and renewal filters elements. Both of these measures promote system cleanliness. Monitoring and periodic maintenance of the system can prevent premature breakdowns and repairs. Under normal application conditions, the following maintenance intervals are suggested:

Renewal of Filter Elements

After commissioning.

At every 500 operating hours or when filter indicator shows a dirty element

With charge flow filtration, watch for high-pressure differential across the filter element (Refer to filter manufacturer's specifications).

Caution: Only filters elements capable of meeting or exceeding the fluid cleanliness level requirements should be used.

Note: Paper inserts cannot be cleaned; use throwaway cartridges (maintain a stock).

Hydraulic Oil Change

After 2000 operating hours (1st oil change)

Thereafter every 2000 operating hours or annually irrespective of operating hours achieved.

The oil change should be carried out with the system in warm running condition. Before re-filling, the reservoir should be cleaned to remove any sludge.

Caution: Rags or other treading material must not be used.

Note: The recommended interval between oil changes is based on various factors and should be carried out according to the type of fluid, the degree of aging and contamination of the fluid. The water content is also a contributory factor.

Under application conditions with a heavy occurrence of dust or sever temperature fluctuation the intervals between oil changes should be shortened accordingly.

Caution: Practical experience shows that most maintenance errors occur during and oil change due to:

Use of unsuitable hydraulic oil.

Use of oil contaminated due to faulty storage.

Failure to clean reservoir.

Inadequate cleanliness when filling (dirty drums or containers).

Leakage Inspection

After commissioning.

The complete transmission (pump, motor ands all pipelines, filters, valves, etc.) n should be checked for leakage at regular intervals.

Caution: Leaking joints and connections must only be tightened in pressure less conditions.

Cleanliness Inspection

The oil tank breather should be regularly cleaned of dirt and dust to prevent clogging. The cooling surfaces should be cleaned at the same time.

Caution: If hose couplings are used in the high-pressure lines, it is imperative that the utmost care be taken that no foreign bodies infiltrate the oil circuit when coupling and uncoupling (danger of damage to rotary group, and even the possibility of total breakdown).

Oil Level Inspection

Inspect oil levels in reservoir after commissioning, thereafter daily.

Caution: top up only with specified oil type. Do not mix fluids.

Hydraulic Fluid

Dextron III

9 Variable Pump Troubleshooting Procedure

To aid in troubleshooting refer also to the diagnostic port connections for test gauge installation information. Procedure assumes gauges are installed.

1.0 Transmission does not Drive with the Prime Mover Running

1.1 Is there oil in the reservoir?

No — Fill reservoir

Yes — Proceed to step 1.2

1.2 Is the hydraulic piping in accordance with the hydraulic circuit?

No — Correct the piping

Yes — Proceed to step 1.3

1.3 Is the pump direction of rotation correct

No — Fit pump having the correct direction of rotation.

Yes — Proceed to step 1.4

1.4 Is there a broken pipe, loose fitting or burst hose?

No — Proceed to step 1.5

Yes — Repair the fault

1.5 Are the brakes released?

No — Check brake release circuit or mechanism

Yes — Proceed to step 1.6

Charge Pump & Relief Valve

1.6 Is there any charge pressure at port G

No — Proceed to step 1.9

Yes — Proceed to step 1.7

1.7 Is the charge pressure at least 300 psi while the pump is running at normal operating speed?

No — Proceed to step 1.8

Yes — Proceed to step 1.15

1.8 Can charge pressure be adjusted by adding or removing relief valve spring shims or by adjusting charge pressure relief valve setting screw if so equipped?

No — Proceed to step 1.9

Yes — Adjust charge pressure to 300 psi and proceed to step 1.15

NOTE: If flushing valve is used in circuit, it should be set at 25 psi less than the charge pump relief . Refer data sheet on flushing valve for information and setting procedure.

1.9 Is the suction line shut-off?

No — Open

Yes — Proceed to step 1.10

1.10 Is the charge pump suction pressure within the recommended limits?
(0.8 bar abs or 6.3 In-Hg.)

No Proceed to step 1.11

Yes Proceed to step 1.12

1.11 Is the reservoir air breather blocked or undersized?

No Proceed to step 1.12

Yes Clean or replace air breather.

1.12 Remove charge pressure relief valve cartridge and inspect. Is it damaged?

No Refit cartridge and proceed to step 1.13.

Yes Fit a new cartridge and return to step 1.6.

1.13 Remove and inspect charge pump assembly. Is it damaged?

No Proceed to step 1.14.

Yes Repair or replace damaged components and return to step 1.6.

1.14 Is the charge pump installed for correct direction of rotation?

No Refit charge pump and return to step 1.6.

Yes With proper charge pressure, and transmission still does not operate, proceed to step 1.15.

Pump Control

1.15 Is control medium connected to pump control?
EP...12 or 24 volts dc, electrical current

No Connect appropriate medium and check that control signal is actually being applied to the pump control valve.

Yes Proceed to step 1.16.

1.16 Actuate the control in both directions. Does pump stroke? Does it go to full stroke?

No Refer to the pump service manual and then proceed to step 1.17.

Yes Operate the transmission.

1.17 Remove stroking orifices in X1 and X2. Stroke the pump in both directions. Do the pressures at X1 and X2 alternate between 30 and 250 psi during cycle?

No Remove control module and replace it with a new unit. Repeat step 1.16.

Yes Proceed to step 1.18.

1.18 Is the pressure at port R less than 2 bar abs, or 30 psia?

No Repipe pump case drain line so that case pressure at port B is less than 8 bar abs, or psia. Return to 1.16.

Yes Proceed to step 1.19.

1.19 Stroke pump in both directions. Does any pressure greater than 350 psi alternate between parts MA and MB?

No Verify that loading of the pump will cause system pressure to increase above charge pressure. Proceed to step 1.15.

Yes Proceed to step 1.20.

1.20 Is it possible to adjust high pressure relief valves using the 0...10,000 psi gages at the MA and MB to monitor pressure? (Refer to relief valve adjustment).

No Replace high pressure relief valve cartridges and return to step 1.16.

Yes Adjust high pressure relief valves to required or design pressure. Proceed to step 1.21.

1.21 Actuate Control in both directions. Does transmission run?

No — Check if motor sizing is adequate for application. Check for mechanical faults in the drive beyond the motor shaft.

Yes — Operate the transmission.

Transmission Drive is Sluggish or Erratic

2.1 Is the control medium in good condition?

EP...Control-fluctuating control current.

No — Rectify the control fault.
EP...Check control current.

Yes — Proceed to step 2.2.

2.2 Are the brakes fully released?

No — Check brake release circuit or mechanism.

Yes — Proceed to step 2.3.

2.3 Are the stroking time orifices correctly sized for the application?

No — Remove plugs in ports X1 and X2 and remove control orifices with 3 mm allen wrench,for size 71 and a 5 mm allen wrench for size 250. Try various sizes until desired pump stroking rate is attained.

Yes — Proceed to step 2.4.

2.4 Does the charge pressure fluctuate more than 30 psi when stroking the pump?

Yes — Proceed to step 2.5.

2.5 Are there system pressure fluctuations which are synchronous with the charge pressure fluctuations?

Yes — Determine the cause of system pressure fluctuations, adjust or repair.

Transmission Drives In One Direction Only

3.1 With control lines lines switched does pump drive in opposite direction only?

No — Proceed to step 3.2.

Yes — Control signal from one side does not work properly. Repair as necessary.

3.2 With control lines still switched does pump drive in initial direction only?

No — Proceed to step 3.3

Yes — Problem is one side of control module or the pump. Proceed to step 3.3

3.3 Is there current from both control lines?

No — Correct control signal problem.

Yes — Proceed to step 3.4

3.4 Switch relief valves. Does transmission drive in other direction only?

No — Proceed to step 3.5.

Yes — Repair or replace relief valve on nondriving side.

3.5 Replace control module and reconnect control lines. Does pump operate properly?

No — Replace or repair pump.

Yes — Operate transmission.

Transmission Drives in the Wrong Direction

4.1 Pump with EP control. Switch electrical connectors on solenoids A & B.

Pump Does Not Find or Hold Neutral

5.1 Does pump return to neutral with control lines removed?

No — Proceed to step 5.2

Yes — Check control for electrical signal problem (EP control) or back pressure in the pilot lines (HD control).

5.2 Check mechanical centering of pump and control per pages 24 & 25. Does pump return to neutral with control lines removed?

No — Repair or replace pump.

Yes — Replace control module if needed. Operate transmission.

Transmission Drives at a High Noise Level

6.1 Are the drive gearboxes filled?

No — Fill gearbox with Dextron III.

Yes — Proceed to step 6.2

6.2 Is the drive coupling correctly installed and aligned?

No — Install coupling per manufacturer's instructions and tolerances.

Yes — Proceed to step 6.3

6.3 Is the suction pressure at the charge pump inlet within recommended limits?

No — Return to step 1.6

Yes — Proceed to step 6.4

6.4 Is there air in the hydraulic oil? This may be indicated by foaming or milky colored oil.

Yes — Deaerate the oil and inspect system for cause of air induction.

Transmission Operates at a Higher Than Normal Temperature

7.1 Is the operating temperature above 195°F?

No — 195°F is the upper limit. If temperature is close to 195°F, the oil cooler may need to be cleaned.

Yes — Proceed to step 7.3

7.2 Is the hydraulic motor stalling intermittently?

No — Proceed to 7.3

Yes — Hydraulic oil is being heated through system relief valves. Shut down system and rectify cause of motor stall.

7.3 Does temperature remain above 195°F after cleaning oil cooler?

No — Operate transmission. Check oil cooler more often.

Yes — Proceed to step 7.4

7.4 Check differential pressure across oil cooler as compared to the manufacturer's specs at charge pump flow. Is P higher than it should be?

No — Proceed to step 7.5

Yes — Check piping from oil cooler to reservoir. Check for plugged or damaged oil cooler.

7.5 Disconnect pump case drain from cooler and check flow from charge pump. Is flow normal?

No Refer to charge pump removed and inspection procedure.

Yes Check oil cooler location.

Pump Does Not Develop Maximum Horsepower (Flow & Pressure)

8.1 Does charge pressure meet specification?

No Return to step 1.9

Yes Proceed to 8.2

8.2 Is the case pressure less than 2 bar abs or 30 psia?

No Check sizing of return line from T port of pump and cooler sizing related to flow.

Yes Proceed to 8.3

8.3 Are high pressure relief valves adjusted to the required pressure so that they do not bypass?

No Adjust or replace relief valve cartridge.

Yes Replace the pump.

Note: If pressure override valve is fitted to pump, check that pressure setting is sufficient for the application.

Start-Up Procedure

The following procedure has been developed based on experience with most types of applications, however certain applications may require a departure from or variation to this procedure.

For the start-up of new or overhauled installations

1. If the prime mover is:

   Internal combustion engine: (Diesel, gasoline or LP) - Remove the coil wire, close the injector rack or leave the gas turned off and turn theengine over until the charge pressure reaches 50 psi or more.

   Electric Motor: Jog the starting circuit until the charge pressure reaches 50 psi or more.

2. Start the prime mover, and if possible, maintain a pump speed of approximately 750 rpm for 5 minutes. This will allow the system to be filled.
3. Listen for any abnormal noises.
4. Check for oil leaks.
5. Run prime mover to 1800 rpm. (Adjust to the design speed if less than 1800 rpm.)
6. Set charge and pilot pressure as required for the application. (Refer to circuit schematic)
7. Operate the control to work the hydrostatic transmission at approximately 20% of maximum speed.
8. Deaerate system by venting a bleed valve of by cracking the highest connection until fluid seeps out without bubbles.
9. Check fluid level and add fluid if necessary.
10. Continue operating transmission and gradually increase to full speed, still with no load.

11. With controls neutralized, check for creep in neutral. If evident, center the control in accordance with the instructions in the pump service manual.

12. Check that the controls are connected so that the transmission operates in the correct direction related to the control input.

13. Continue to monitor all pressure gauges and correct any irregularities.

14. Apply brakes and set high pressure relief valves (and pressure override if installed) to levels required for the application by stroking the pump to approximately 20% of maximum displacement.

15. Check security of high pressure connections.

16. Check oil level and temperature.

17. Remove and inspect high pressure filter elements, if so equipped. Replace with new elements.

18. Operate transmission under no load conditions for about 15 minutes to stabilize the temperature and remove any residual air from the fluid.

19. Again remove and inspect high pressure filter elements, if so equipped. If clean, the high pressure, bi-direction filters may be removed from the circuit. If contamination is still evident, fit new elements and continue flushing until the system is clean.

20. Replace the elements in the charge pump suction or pressure filter, whichever is installed.

21. Operate the transmission under full and normal load conditions.

22. Erratic operation may indicate there is still air trapped in the system. By working the pump control to one or both sides the remaining air can be eliminated. The system is free of air when all functions can be operated smoothly and when the oil in the resevoir is no longer aerated. (Usually less than 1 hour of operation).

Note: If, after following the Pre-Start and Start-Up procedures, the transmission does not perform correctly, refer to the relevant sections of the trouble-shooting procedures on pages 36-41.

Power train	-Chevrolet four-wheel drive
Engine	-305 cu.. in. (5.0 litre) displacement, 8 cylinders, 130 horsepower @ 2000 RPM
Transmission	-Rexroth AA4VG71EZ1D1/32R-NSF52F021D -Calzoni radial piston motor MR300N4 -Speed varied by accelerator pedal.
Transfer Case	-Full time four-wheel drive; 2.72:1 ratio
Differentials	-3.73:1 ratio
Alternator	-85 amp rating (Delcotron System)
Battery	-12 volt maintenance-free Delco Freedom -630 amp cold crank rating @ 0° F (17.8° C)
Electrical	-Negative ground system
Brakes	-Self-adjusting drum and disc
Steering	-Power (hydraulic)
Tires	-245-75R16 black wall snow tires load range E -Tungsten tipped studs (including on spare) -Rust-resistant low maintenance magnesium alloy wheels -Spare wheel rim is steel-painted black -Recommended pressure - 65 psi
Fuel	-Liquid Propane under pressure, Natural Gas or Diesel.

Instrument Panel	-Tachometer -Voltmeter (ammeter) -Oil pressure gauge -Water Temperature gauge -Hour meter -Light switch -Audio/visual warning system for Oil/High Temperature -Fuel gauge (on diesel powered) -Low Fuel Warning Light (on propane powered) -Service Engine Soon warning light (with Fuel Management System) -Wash Water switch and light (with Wash Water option) -Tire Wash switch and light (with Tire Wash option)
Controls	-snow dump -conditioner -elevator -board brush -flood water control valve -wash water (optional) -snow breaker
Hydraulics	-Two 14 Imp. Gallon (63 litre) aluminium tanks with fluid level gauges -Three Strainers - UCC - 125 micron -Two Filters - Hycon - 20 micron -Pump - Tandum double - 15 GPM front, 5.68 GPM rear at 1800 RPM (pump speed)
Motors	-Danfoss (horizontal auger) -4.5 cu. in. (74 ml) displacement/Rev -Danfoss (vertical auger) (board brush) (wash water) -3.0 cu. in. (49ml) displacement/Rev
Directional Control Valves	-Kontak
Other Components	-Danfoss and Compact controls -emergency hand pump to raise conditioner (side dump) -emergency hand pumps to raise conditioner and bin cover and snow-bin (front dump)

Exhaust System

-chrome-plated stack and protective heat-guard, vented 84 inches (213 cm.) above ice surface at rear of machine, opposite driver station (heat shield not included with Wash Water or Extra Water option)
-muffler
-Stainless Steel Exhaust System (optional)
-3-Way Catalytic Purifier (optional)

Blade

-96 inch (250.2 cm.) shaving width.

Conditioner

-9 inch (22.9 cm.) clearance under conditioner in Up position
-98 inch (250.2 cm.) conditioner with 96 inch (243.8cm.) blade.

Tools

-14 piece Open and Box end wrenches, 3/8" to 1-1/4".
- 9 piece Allen wrench set, 5/64" to 3/8"
- jack and wheel wrench and socket
-grease gun and cartridge of grease
-blade hooks

Bumper Wheels

-conditioner: non-marking urethane
-board brush non marking urethane (with Board Brush Option)

Tanks

-Flood Water: Aluminum or stainless steel tanks with water drain valve and water level gauge
-Hydraulic Fluid: Aluminum tanks with fluid level gauge

Snow Bin

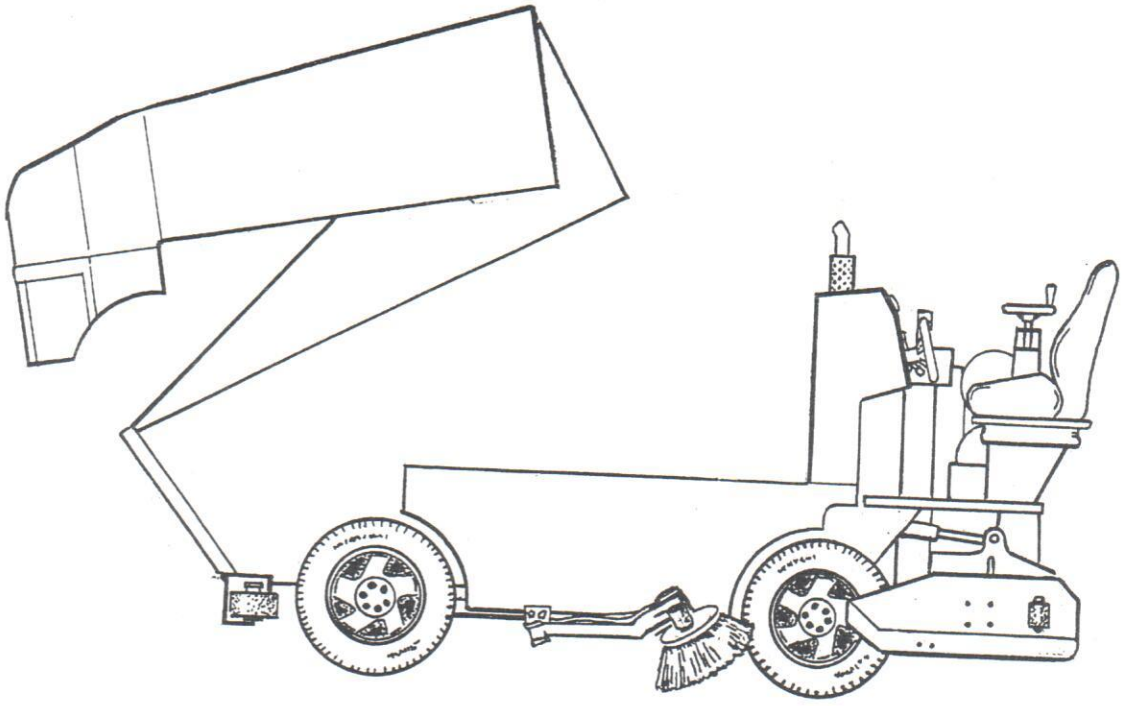
-Steel bin
-interior coating, epoxy primer, Urethane Enamel
-exterior coating, expoxy primer, undercoating

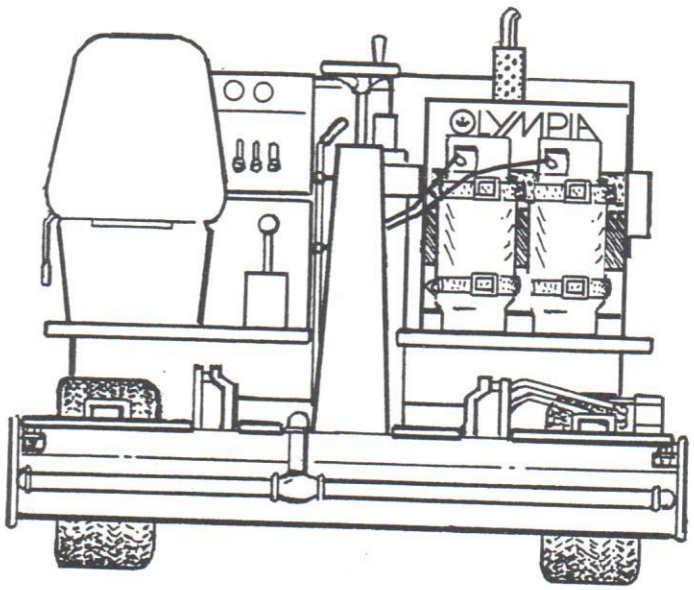
Noise Levels

-1000 RPM engine: 70 DBA
-1500 to 1800 RPM: 82 to 85 DBA

Tachometer	This instrument provides an immediate, accurate indication of the engine RPM.
Voltmeter	The Voltmeter indicates the voltage being produced by the engine's electrical system.
Oil Pressure Gauge	This gauge indicates the pressure under which the engine oil is being distributed to parts which require lubrication.
Water Temperature Gauge	This gauge indicates the temperature of the engine coolant which will vary with air temperature and operating conditions.
Hour Meter	The meter records the number of hours of engine operation.
Key Start	
Horn	
Light Switch	
A/V Warning System	A light and sound alarm activated by too low oil pressure, or by water temperature over 225° F (107.2 C).
Low Fuel Warning Light	
Hydraulic Controls	The hydraulic controls for the snow dump, conditioner, elevator and (optional) board brush are located on the dash and are marked accordingly.
Emergency Hand Pump	Located at the left hand side of lower dash panel.
Accelerator Control	
Brake Control	
Flood Water Control Valve	Mounted on tower of conditioner beneath blade crank.
Snow Breaker Handle	Mounted on back of vertical auger. (not included on the optional automatic snow breaker)

4000 Front Dump





4000 Front Dump

Description	Imperial	Metric
Conditioner Clearance	9"	22.9 cm.
Wheelbase	115"	292.1 cm.
Length Dump Down	210"	533.4 cm.
Length Dump Up	228"	579.1 cm.
Width Dump Down	98.5" (96" blade)	250.2 cm. (243.8 cm. blade)
Height Dump Down	106"	269.2 cm.
Height Dump Up	174"	442.0 cm.
Height of Exhaust Stack	90"	228.6 cm.
Water Tanks	636.6 US / 530 imp. gal	568.3 l.
Snow Tanks	162 cubic ft.	4.5846 cubic m.
Hydraulic Oil Tanks (2)	24 US / 14 imp. gal	90.9 l.
Diesel Fuel Tank	18 US / 15 imp. gal	68.2 l.
Weight - Empty	10500 lbs.	4762.8 kg
Weight - Full of Water	15800 lbs.	7166.8 kg
OPTIONS		
Extra Water Tank	120.1 US / 100 imp. gal	454.6 l.
Wash Water Tank	120.1 US / 100 imp. gal	454.6 l.
Oversize Water Tank	175.8 US / 146.5 imp. gal	666.0 l.

Auger Jam

During normal ice resurfacing operations, be sure the ice surface is free of debris. If debris, such as a puck, is picked up by the vertical auger it could eventually jam the auger, thus blocking the path of the scrapings into the snow bin.

If this does happen, the first thing you have to do is determine if the obstruction is in the horizontal or vertical auger.

The fastest way of checking this is to disconnect the two hoses from the horizontal auger motor and connect the hoses together, thus bypassing the horizontal auger motor.

Turn the elevator on and the vertical auger should spin. If it does, then the jam has occurred in the horizontal auger .

Horizontal Auger Jam

If a jam occurs in the horizontal auger, you first have to make sure the two quick couplers are attached to the horizontal auger motor.

First turn off the augers. Then remove the cover plate on the driver's side. Using a pipe wrench, turn the auger back by pushing the wrench towards the back of the conditioner. Whatever is jamming the auger will turn back out. Replace the cover plate, restart the engine and make sure the auger turns freely.

Vertical Auger Jam

If the vertical auger doesn't spin, then the blockage has likely occurred in the vertical auger.

To un-jam the auger, hold the elevator lever in the Up position and try to reverse the auger. If it reverses, the jammed object will be dislodged. If it doesn't reverse, shut the engine Off.

Remove the cover plate at the top of the blower head and the five bolts around the blower head using a half inch wrench.

Lift the blower head from the unit making sure the gear ring doesn't drop inside the vertical auger tube.

Usually the debris is at the top of the auger but in case there is more debris inside, lift the auger straight out and flush out any ice or debris that is causing the jam.

Once cleared, replace the auger in its original position on top of the stub shaft. Then install the gear ring onto the drive coupling, set the blower head back down on top of the vertical auger tube and reinstall the five bolts in the bottom of the blower head. Reinstall the cover plate and try it again.

If the vertical auger spins freely, stop the auger and then reconnect the two quick couplers to the horizontal auger motor and resume normal operations.

Snow Ridge

If you have a ridge of snow forming as the Olympia moves around the ice, check the squeegee on the conditioner. If the fitting on the squeegee against the side of the conditioner is not tight, it will allow snow to escape and form a ridge on the ice. The solution is to remove the squeegee and replace it with a new one making sure the squeegee is trimmed to fit tightly against the side of the conditioner.

Rippled Ice

Too little down pressure, or an incorrect blade angle, or excessive wear on the blade adjustment screw/nut will result in rippled ice. Other causes could be a worn bearing in the snow tower, a worn blade holder swivel or the pins could be worn.

Emergency Hand Pump

To activate the hand pump, the conditioner lever on the control panel must be held in the Up position. The emergency hand pump handle is stored under the driver's seat.

On front dump models, a second hand pump is provided which lifts the bin cover to allow engine access, again only while holding the bin dump lever in the Up position.

The hand pumps will not lower the conditioner or bin cover even if these procedures are reversed and will not operate any other aspect of the hydraulic system.

Safety Note: make sure you engage the emergency hand pump once a week to insure it is in proper working order.

Driving Control Problems

If there is too much down pressure, the rear wheels will lift off the ice resulting in a loss of control. You can correct the problem by adjusting the down pressure.

Voltmeter Variants

A consistently high or low reading indicates an electrical system problem, which should be assessed and repaired.

Oil Pressure Problems

Pressures indicated may vary with outside temperature and weight of oil being used. Oil pressure in a cold engine may be somewhat higher than normal until the oil reaches operating temperature. If the pressure does not stabilize, or remains either high or low, a problem in the lubrication system may exist and should be investigated immediately to prevent damage to the engine. If an overheating situation occurs, do not operate the engine until the cause is determined to avoid damaging the engine.

Audio/Visual Alarm

The function of this alarm is to assist you in setting up and following a maintenance schedule suitable to your needs and operating conditions. When the alarm is activated, check gauges and return resurfacer to storage room. Shut off engine. If the oil pressure is low, check oil, and fill as necessary. If the water temperature is high, check radiator coolant level, and fill as necessary. Consult with your GMC dealer if further problems persist.

Service Engine Soon

Alerts Olympia operator to the possibility of a malfunction in the fuel or ignition systems, which can create improper exhaust emmissions.(Fuel Management System Option)

Back up Alarm

Automatically engages when the gear lever placed in "R" (reverse) position to alert anyone behind the Olympia.