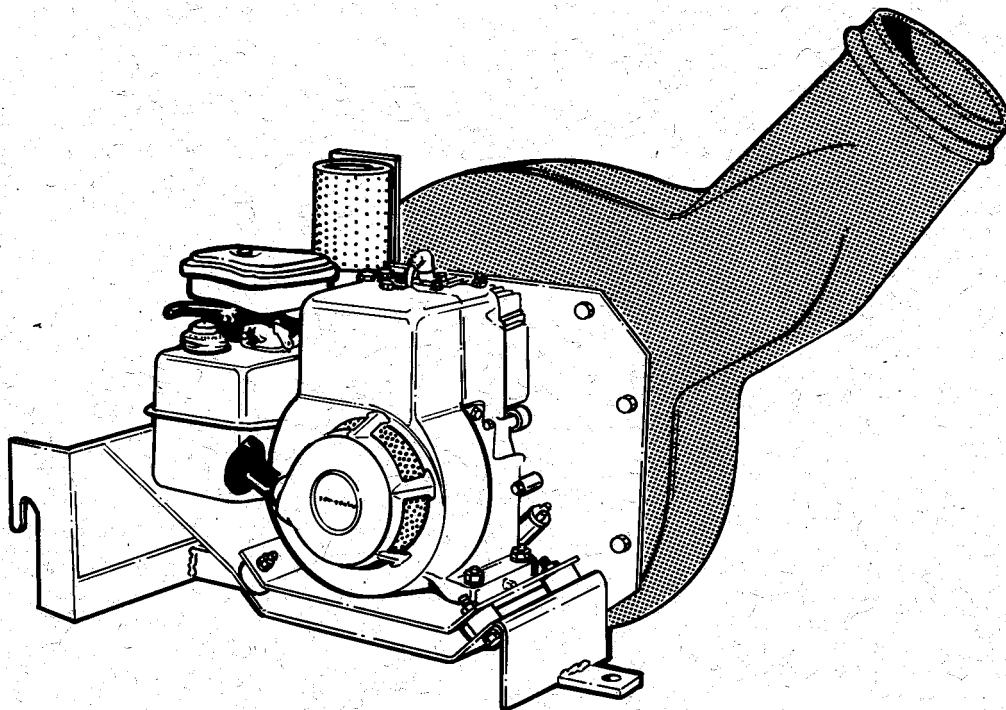


# OPERATOR'S MANUAL

## ENGINE DRIVEN VACUUM COLLECTOR



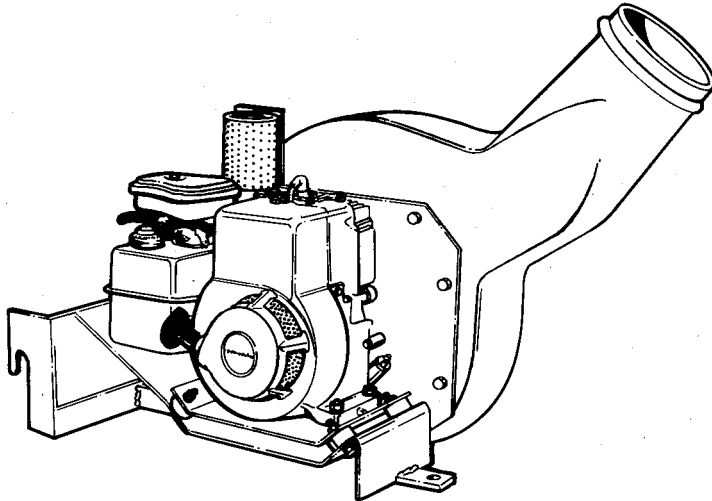
ENGINE DRIVEN VACUUM COLLECTOR  
MFG. NO. 1690226  
36" MOWER ADAPTER  
MFG. NO. 1690228  
42" & 48" MOWER ADAPTER  
MFG. NO. 1690227

FORM - 1657071-02  
PRINTED IN U.S.A.  
832

# Specifications

<b>ENGINE</b>	<b>MAKE:</b>	<b>MODEL NO.:</b> 111212	<b>STROKE:</b> 1-7/8 Inches (47.6 mm)
	<b>BRIGGS</b>	<b>CYCLES:</b> 4	<b>DISPLACEMENT:</b> 11.39 Cu. In.
	<b>AND</b>	<b>CYLINDERS:</b> 1	(187 cc)
	<b>STRATTON</b>	<b>BORE:</b> 2-25/32" Inches (70 mm)	<b>CRANKSHAFT:</b> Horizontal
	<b>Starter</b>	Manual Rewind Easy-Spin	
	<b>Choke</b>	Manual	
	<b>Governor</b>	Air Vane	
	<b>Ignition</b>	Magneto	
	<b>Lubrication</b>	Splash System	
<b>Fuel Capacity</b>	CRANKCASE CAPACITY: 1-1/4 Pints (0.5 L)		
<b>Air Cleaner</b>	2 Quarts (1.9 L)		
<b>Muffler</b>	Reusable Oiled Foam Element		
<b>BLOWER FAN</b>	<b>Blower Housing</b>	Quiet, Low Back Pressure Type, Top Discharge	
	<b>Blower Wheel</b>	High Density Cross Linked Polyethylene	
	<b>Blower Inlet</b>	12.5 Inches Diameter (319 mm), 4 blade, welded steel fan	
	<b>Blower Outlet</b>	7 Inch (178 mm) Diameter. Accepts material from righthand discharge 36 and 42 inch mowers or Roving Nozzle	
<b>HOSES</b>	<b>Blower Outlet</b>	6 Inch (152 mm) Diameter. Delivers material radially into trailing cart through connecting flexible hose.	
	<b>Material</b>	Steel Wire Reinforced Urethane	
	<b>Inlet Hose Length</b>	45 Inches (1143 mm)	
	<b>Inlet Hose Diameter</b>	7 Inches (178 mm)	
	<b>Outlet Hose Length</b>	39 Inches (991 mm)	
<b>OVERALL DIMENSIONS</b>	<b>Outlet Hose Diameter</b>	6 Inches (152 mm)	
	<b>Width</b>	21 Inches (533 mm)	
	<b>Length</b>	31 Inches (787 mm)	
	<b>Height</b>	23 Inches (584 mm)	
	<b>Weight</b>	Net (Dry) 69.5 Lbs. (31.5 kg)	

**SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE**




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# Safety Rules



**Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of vehicle, severe personal injury to yourself or bystanders, or damage to property or equipment. The triangle  in the text signifies important cautions or warnings which must be followed.**



ALL WARNINGS, CAUTIONS, and instructional messages on this attachment and on your tractor should be carefully read and obeyed. Personal bodily injury can result when these instructions are not followed.

## GENERAL

- Read the Operating and Service Instructions carefully. Be thoroughly familiar with the controls and the proper use of the equipment.
- Never allow children to operate the machine. Do not allow adults to operate it without proper instruction.
- Do not carry passengers.
- Use only attachments or accessories designed for your machine. See your dealer for a complete list of recommended attachments or accessories.
- Keep the area of operation clear of all persons, particularly small children, and pets.
- When using any attachments, never direct discharge of material toward bystanders. Do not allow anyone near the vehicle while in operation.
- Make sure:
  - a. tractor and attachments are in good operating condition,
  - b. all safety devices and shields are in good working condition, and
  - c. all adjustments (cutting height, etc.) have been made.

## PREPARATION

- Make sure entire unit is installed. Never operate vacuum collector without adapter, discharge tube, hoses, and dump cart fully connected.
- Handle gasoline with care - it is highly flammable.
  - a. Use approved gasoline container.

b. Never remove the cap of the fuel tank or add gasoline to a running or hot engine, or fill the fuel tank indoors. Wipe up spilled gasoline.

- Do not run the engine indoors. Exhaust fumes are deadly.
- Clear the work area of objects which might be picked up thrown.
- Disengage all attachment clutches and shift into neutral before attempting to start the engine.
- Wear heavy footwear. Do not operate tractor when barefoot or when wearing open sandals or canvas shoes.

## OPERATION

- Disengage power to attachment(s) and stop the engine before leaving the operator's position.
- Disengage power to attachment(s) and stop the engine before making any repairs or adjustments.
- Shut the engine off and remove key before unclogging hoses or emptying dump cart.
- Stay alert for holes in the terrain and other hidden hazards. Be extra careful when operating on wet or slippery surfaces.
- The vehicle and attachment(s) should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.
- Disengage power to mower and shut off vacuum collector engine when transporting or not in use.
- When mowing, proceed as follows:
  - a. Mow only in daylight or in good artificial light.
  - b. Never operate the tractor without the mower clutch safety interlock switch properly attached and working.

- c. Check the blade mounting bolts for proper tightness at frequent intervals.
- Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes - never across the face.
- Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Use extreme caution when changing direction on slopes.
- Watch out for traffic when crossing or near roadways.
- If equipment begins to vibrate abnormally, disengage power to attachments and stop engine at once. Inspect for damage and correct before starting tractor.
- Be especially careful not to touch mower or attachment parts which might be hot from operation. Allow such parts to cool before attempting to maintain, adjust, or service.
- Use counterweight(s) or wheel weights when suggested in the operator's manual.
- Take all possible precautions when leaving the

vehicle unattended, such as disengaging the power take off, lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the tractor engine and vacuum collector engine, and removing the key.

- Keep the vehicle and attachment(s) in good operating condition, and keep safety devices in place.

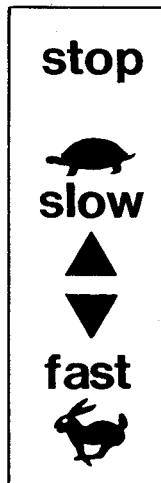
**MAINTENANCE & STORAGE**

- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
- Do not change the engine governor settings or overspeed engine.
- To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.
- Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.

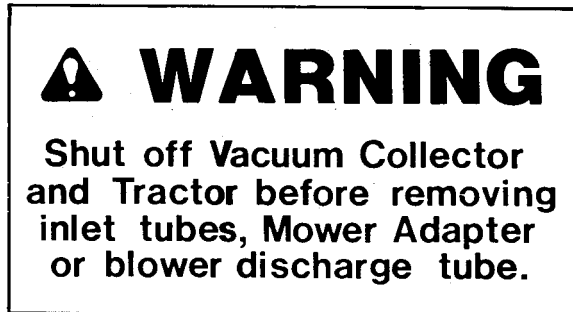
ALL WARNING, CAUTION and instructional messages on this unit and on your tractor and mower should be carefully read and obeyed. Personal bodily injury can result when these instructions are not followed. The information is for your safety, and it is important. The following are on your vacuum collector attachment.



LOCATION: AT TOP OF ENGINE



LOCATION: NEAR THROTTLE ON AIR CLEANER

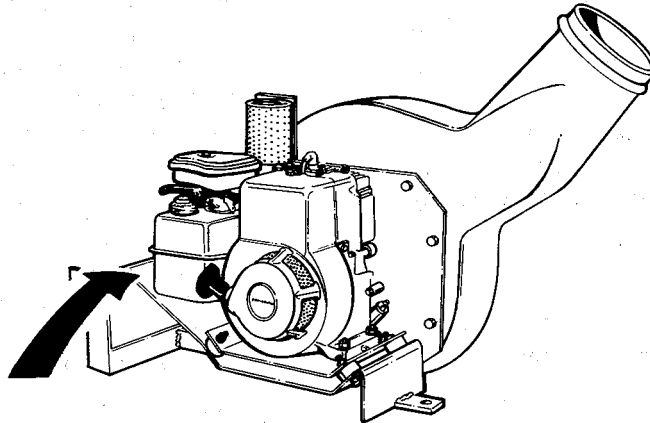


LOCATION: AT TOP OF BLOWER HOUSING

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## Identification

When ordering replacement parts for your vacuum collector, be prepared to give your dealer the identification number found on the identification plate shown below.



**VACUUM COLLECTOR IDENTIFICATION PLATE**

Refer to ID No. when  
writing or ordering parts.

**ID NO.**

---

## Accessories

See your dealer to purchase any of the following accessories for your tractor or vacuum collector.

### **REQUIRED ACCESSORIES**

**36" & 42" MOWER ADAPTERS**

**DUMP CART (1000 Lb. Capacity)**

**DUMP CART COVER**

### **OPTIONAL ACCESSORIES**

**ROVING NOZZLE** - Collects grass and leaves in out of the way places.

**FRONT COUNTERWEIGHT** - (Required on slopes) - increases tractor steering ability and stability.

**HOURLY METER** - (Electric start tractors only). Records operating time in tenths of an hour.

**Models illustrated in this manual may vary slightly from the model you have.**

# Installation

## CONTENT OF SECTION

The Installation Section provides procedures for fully connecting the vacuum collector prior to operation. Included in this section are procedures for installing the vacuum collector on the tractor, and for connecting the vacuum collector to the mower and dump cart. This section also provides instructions for removing the vacuum collector.

Before the dump cart cover can be installed and connected it must be assembled onto the dump cart. The necessary assembly procedures are provided in the Assembly Section of this manual.

## INSTALLING 36" ADAPTER

To install the 36" vacuum collector adapter on the 36" right-hand discharge mower, proceed as follows:

### WARNING

For your safety, stop tractor engine and remove ignition key. Do not attempt to remove mower grass deflector or install vacuum collector adapter until you are certain that mower blades have stopped rotating.

1. To remove the mower deflector, remove the nuts and lockwashers (items B and C, figure 1) which hold it in place. These will be used again.

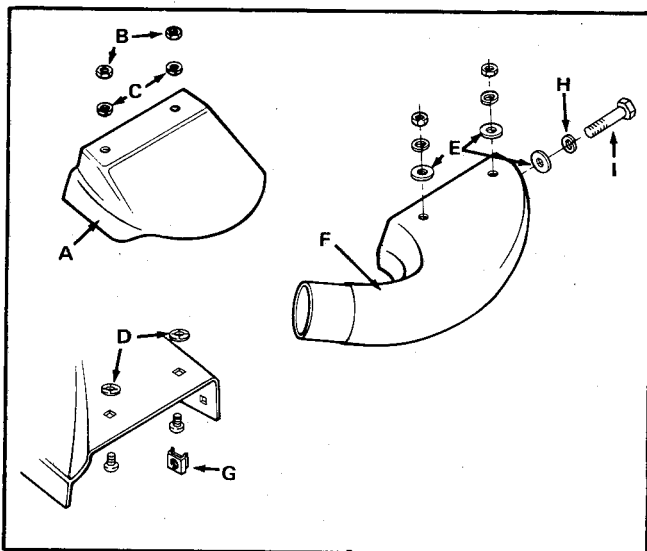


Figure 1. Installing 36" Adapter

- |                  |                 |
|------------------|-----------------|
| A. Deflector     | F. Adapter      |
| B. Hex Nuts      | G. Nut Retainer |
| C. Lockwashers   | H. Lockwasher   |
| D. Push Nuts     | I. Capscrew     |
| E. Large Washers |                 |

2. Place the two push nuts (item D) provided on the original carriage bolts as shown. The push nuts hold the carriage bolts in place and can be left in position if the mower deflector is reinstalled.
3. Install the nut retainer (item G) provided in the square hole on the front of the mower housing near the discharge opening. From inside of mower housing, slip one end of the nut retainer into the square hole and press it into place using a screwdriver. The nut retainer can remain in place if the mower deflector is reinstalled.
4. Position the adapter on the mower with the two carriage bolts through the holes at the top of the adapter. Using two of the large washers (item E) provided and the original nuts and lockwashers (items B and C), install the adapter.
5. Place the lockwasher (item H) and remaining large washers on the cap screw (item I). Thread the cap screw into the nut retainer and tighten it in place.

### WARNING

The vacuum collector adapter must be used only when fully connected to the vacuum collector at the rear of tractor. If the vacuum collector is removed, always install the original mower deflector before operating mower.

## INSTALLING 42" ADAPTER

To install the 42" vacuum collector adapter on the 42" right-hand discharge mower, proceed as follows:

### WARNING

For your safety, stop tractor engine and remove ignition key. Do not attempt to remove mower grass deflector or install vacuum collector adapter until you are certain that mower blades have stopped rotating.

1. To remove the mower deflector, remove the nuts and lockwashers (items B and C, figure 2) which hold it in place. These will be used again.
2. Place the two push nuts (item D) provided on the original carriage bolts as shown. The push nuts hold the carriage bolts in place and can be left in position if the mower deflector is reinstalled.
3. Remove the carriage bolt nearest the discharge opening from the skid shoe bracket. The nut (item H) will be used again.

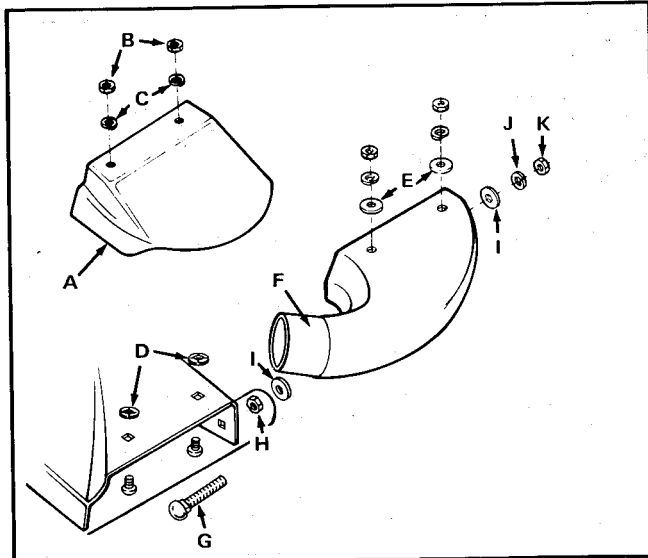


Figure 2. Installing 42" Adapter

- |                  |                  |
|------------------|------------------|
| A. Deflector     | G. Carriage Bolt |
| B. Hex Nuts      | H. Nut           |
| C. Lockwashers   | I. Washer        |
| D. Push Nuts     | J. Lockwasher    |
| E. Large Washers | K. Nut           |
| F. Adapter       |                  |

4. Replace the bolt with the longer 1-1/4 inch carriage bolt (item G) provided and reinstall original nut (item H). Put one of the 5/16 inch washers (item I) on the bolt after the nut.
5. Position the adapter on the mower with the two carriage bolts through the hole at the top of the adapter and the 1-1/4 inch carriage bolt through the hole at the front of the adapter. Using the two large washers (item E) provided and the original nuts and lockwashers (items B and C), install the adapter.
6. Place the remaining 5/16 inch washer (item I), lockwasher (item J), and nut (item K) onto the 1-1/4 inch bolt and tighten in place.



**WARNING**

The vacuum collector adapter must be used only when fully connected to the vacuum collector at the rear of tractor. If the vacuum collector is removed, always install the original mower deflector before operating mower.

**INSTALLING VACUUM COLLECTOR**

To install the engine and blower assembly on your tractor, follow these procedures.



**WARNING**

For your safety, stop tractor engine and remove key. Be certain that all moving parts have stopped.

1. Remove the capscrew, washer, lockwasher, and nut already on the rear support of the tractor (see figure 3). The lockwasher and nut will be used again.
2. Replace the capcrew and washer just removed with the longer 1-1/4 inch capscrew and larger washer (items A and B, figure 3) provided. Do this by placing the washer and one of the spacers (item C) provided on the capscrew and inserting capscrew back into support. Install the original lockwasher and nut on capscrew from inside the support and tighten in place.
3. Repeat steps 1 and 2 for the other side.

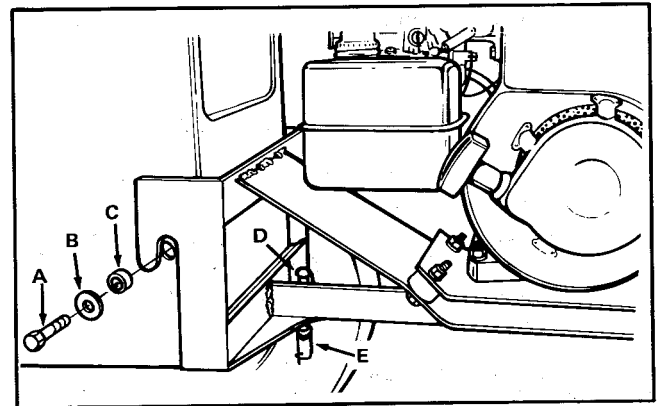


Figure 3. Attaching Engine Assembly

4. Lift the engine and blower assembly onto the rear of tractor so slots in the hanger fit over the spacers and the hanger pin (item D) is through tractor hitch.
5. Install safety clip (item E) under hitch through hole in hanger pin.

With the engine and blower assembly in place, proceed as follows to connect it to the adapter on mower.

1. Slip the larger of the two hose clamps provided onto one end of the 7 inch (178 mm) diameter inlet hose. The inlet hose is also the longer of the two hoses.
2. Push the hose with clamp fully onto the inlet spout a the right of blower housing.
3. Insert one of the 3 inch long screws through the clamp, and tighten clamp securely with lockwasher and nut provided (see figure 4). Position this screw out of the way at bottom as shown.



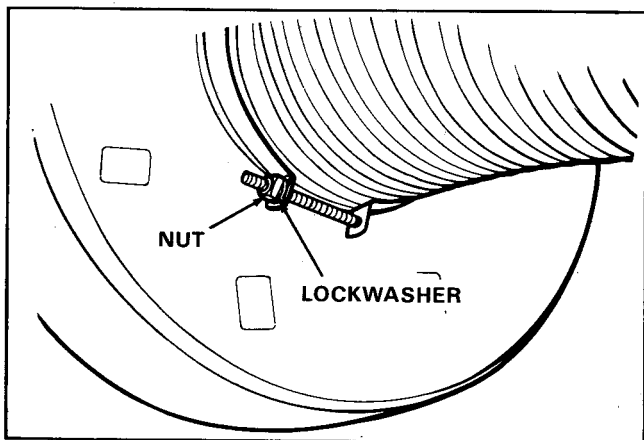


Figure 4. Installing Inlet Hose

4. Slip other end of inlet hose onto the adapter on mower (see figure 5). Be sure to push the hose fully to the ridge on adapter.

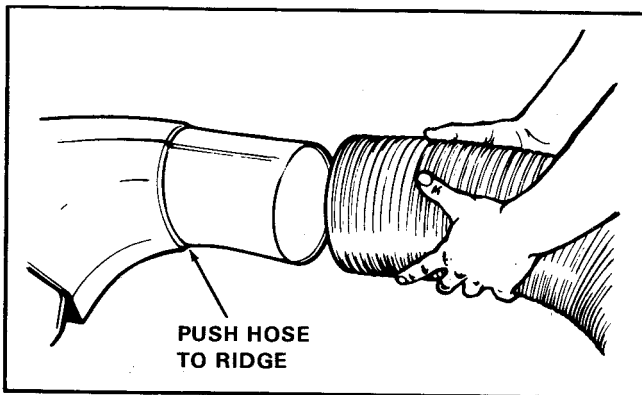


Figure 5. Installing Hose on Adapter

With the dump cart cover installed on dump cart as instructed by Assembly Section of this manual, and with dump cart connected to vacuum collector rear hitch, connect the outlet hose to the top of the blower assembly and to the dump cart cover as follows:

1. Slip the remaining hose clamp provided onto one end of the 6 inch (152 mm) diameter outlet hose.
2. Push hose with clamp onto the outlet spout as far as it will go.
3. Insert the remaining 3 inch long screw through the clamp, and tighten clamp securely with the lockwasher and nut provided.
4. Use clamp supplied with cart cover to connect hose to cart. See instructions supplied with cart cover.

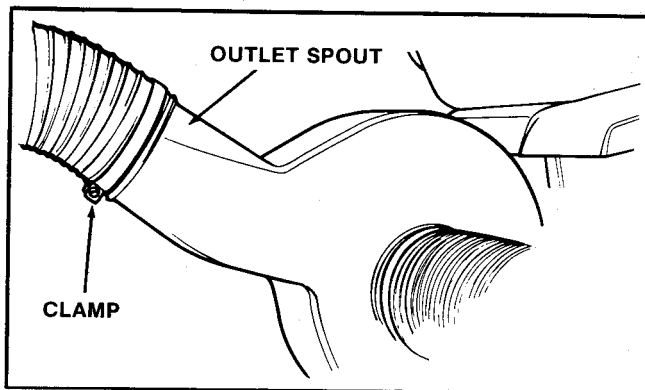


Figure 6. Connecting Outlet Hose

### REMOVING VACUUM COLLECTOR



#### WARNING

For your safety, stop the tractor engine and vacuum collector engine and remove tractor key. Do not work around the mower housing or blower assembly until the mower blades and the blower fan have stopped rotating.

1. Slide the inlet hose from the adapter on mower.
2. Loosen clamp on inlet hose at blower assembly inlet spout and remove inlet hose if desired.
3. Remove outlet hose from cart cover.
4. Loosen clamp on outlet hose at top spout of blower assembly and remove outlet hose if desired.
5. Unhitch cart from vacuum collector.
6. Remove safety clip from hanger pin at tractor hitch.
7. Lift engine and blower assembly off rear of tractor. The spacers and mounting hardware can remain on tractor.
8. Remove vacuum collector adapter from mower and reinstall grass deflector.



#### WARNING

For your safety, use the vacuum collector adapter only when fully connected to the vacuum collector at the rear of the tractor. If the vacuum collector is removed, always install the original mower deflector before operating mower.

### INSTALLING ROVING NOZZLE (Optional)

Before the roving nozzle can be installed it must be assembled. See instructions supplied with roving nozzle.

The roving nozzle mounts on the inlet spout of the blower housing in place of the inlet hose from the mower. To install the roving nozzle proceed as follows:



#### **WARNING**

**Disengage mower, set parking brake, stop tractor and vacuum collector engines, and remove key. If the mower is to be used while roving nozzle is installed, the original grass deflector must be reinstalled on mower. Do not disconnect the outlet hose from cart when using the roving nozzle.**

1. Remove the inlet hose (if present) connecting mower and blower as explained in Removing Vacuum Collector instructions.

2. Slip hose clamp provided on hose end opposite handle.

#### **NOTE**

The hose flange shipped with the roving nozzle will not be used on your attachment.

3. Push hose with clamp fully onto the inlet spout.
4. Insert the 3 inch screw provided through clamp, and tighten clamp securely with the lockwasher and nut. Position this screw out of the way at bottom as shown in figure 4 for the inlet hose.
5. If blower assembly is not already connected to dump cart cover, connect it according to instructions for use with mower.

# Operation

## CONTENT OF SECTION

This section explains how to inspect and prepare your vacuum collector before operation and how to operate your vacuum collector.

The vacuum collector unit must be assembled and installed before it can be used on your tractor. The necessary procedures are provided in the Assembly and Installation Section of this manual.

## CHECKS BEFORE STARTING

The checks listed below should be performed before each use of the vacuum collector.

1. Be sure you are familiar with the safety precautions, controls, and operation of your tractor. Read the tractor operator's manual carefully. Also read the instructions for your dump cart.
2. Check the mower and vacuum collector to be sure they are properly installed and to be sure that all nuts, bolts, and pins are securely fastened.
3. Refer to Normal Care Section of this manual to determine and perform any needed care for your vacuum collector. Be sure to check engine oil before first use.



### CAUTION

**For your safety, never operate the mower unless the grass deflector or the entire vacuum collector assembly is in place.**

4. Remove fuel tank filler cap (item A, figure 7) and fill with clean, fresh leaded or non-leaded "Regular" grade automotive gasoline. Replace filler cap securely.
5. Clear the lawn of all sticks, stones, wire and other debris which may be caught in or thrown by the mower blades or vacuum collector assembly.

## STOPPING THE VACUUM COLLECTOR

To stop the vacuum collector engine, push the throttle lever all the way in to the STOP position.

## STARTING THE VACUUM COLLECTOR

1. Move throttle lever (item B, figure 7) halfway between the STOP and FAST position.
2. Pull choke (item C, figure 7) fully outward.
3. Grasp the recoil starter handle firmly and pull straight out to start the engine.

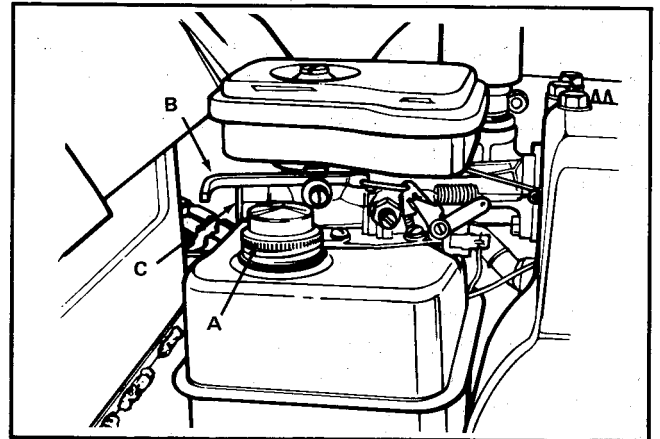


Figure 7. Starting the Engine

### NOTE

If the engine fails to start after 4 or 5 pulls it may be flooded. Return the choke to OFF position and pull recoil starter handle to clear the excess fuel.

4. After the engine starts, push choke knob fully in.
5. After the engine starts, move throttle lever 3/4 outward.
6. Always return starting handle by hand; do not release handle with rope extended.
7. When operating vacuum collector with the mower, next start the tractor engine and engage mower according to the instructions in your tractor operator's manual. Check your tractor operator's manual for operating with the vacuum collector attachment.

## OPERATING THE VACUUM COLLECTOR



### WARNING

**For your safety, do not work around the mower housing or vacuum collector blower unless you are certain the mower blades and the blower fan have stopped rotating. Use caution near the hot muffler.**

**Never operate the vacuum collector without the adapter, hoses, and cart cover completely installed.**

The vacuum collector attachment collects grass or leaves as they are discharged from the mower. It is powered by its own engine which creates an intake vacuum. The vacuum collector can also be used independently of the mower with the roving nozzle. Consult your tractor operator's manual if you have any questions on tractor and mower operation.

## Operation

Under average dry conditions set the vacuum collector engine throttle about 3/4 open and operate tractor and mower at normal speeds recommended in tractor operator's manual. Under damp conditions or when collecting thick, heavy material, run vacuum collector engine at full throttle and slow tractor ground speed (first gear).

When collecting leaves and tall grass raise the mower to highest cutting height on first pass then lower it for the second pass.

In extremely heavy or tall grass, it may be necessary to cut only half the width of the mower to prevent the vacuum collector hoses from clogging. Check periodically to make sure the material does not accumulate in hoses or blower housing and block the flow to the dump cart.

### NOTE

It is recommended that you do not try to collect grass or leaves that are wet with external moisture such as rain or dew.

Best results for filling the covered cart can be obtained with at least a 3/4 engine speed throttle setting on both the vacuum collector and tractor.

As the cart and cover fill up it is advisable to occasionally stop the tractor and vacuum collector engines to allow the cart cover to settle and show how full the cart is. If the cart is over-filled the discharge hose can be quickly filled and the blower plugged.

### OPERATION ON SLOPES

The weight of the vacuum collector behind the tractor reduces the weight on the front wheels. Use of the front counterweight is recommended to restore the normal steering ability and stability of the tractor, and it is required on slopes. Even with the weight installed, avoid fast starts and adjust the tractor speed to fit conditions.



### WARNING

**For your personal safety, always mow up and down the face of slopes, and never across the face. Never attempt to mow excessively steep slopes, and use caution when turning on any slope.**

Use of the front counterweight is required when mowing with the vacuum collector installed on slopes greater than 15 percent (8.5 degrees). Never operate on slopes greater than 30 percent (16.7 degrees).

### DUMP CART WITH COLLECTOR ATTACHED

To empty the cart, back it into the area where material is to be dumped and shut off tractor and vacuum collector.



### WARNING

**For your safety, disengage mower, shift transmission into neutral, set parking brake, stop tractor engine, and remove key. Stop vacuum collector engine.**

Unhook the latch in front of dump cart. Disconnect the hose from the cart cover. Remove the upper and lower tail gates. The dump cart can be tipped back to dump contents.

### ROVING NOZZLE

The roving nozzle can be used to collect piles of leaves or grass in areas where the mower cannot reach, such as around flower beds, bushes and trees. See instructions supplied with roving nozzle.

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## Normal Care

### CONTENT OF SECTION

Your engine driven vacuum collector is designed and built to provide years of service with only minor care. Certain tasks, however, must be performed to keep it in good operating condition and to avoid costly repairs. This section describes and provides procedures for the necessary care of the vacuum collector.

### SCHEDULED CARE

Refer to the engine manual supplied with the vacuum collector for normal care (maintenance) information.

Before each use, check to be sure all screws, nuts, bolts, and pins are present and secure.

After each use, clean vacuum collector, adapter, hoses, cart and cart cover of all grass and dirt.

### NORMAL STORAGE

To protect your vacuum collector attachment, store it in an enclosed dry area. Do not store in an enclosure where fumes from the fuel can reach an open flame without first draining the fuel tank.

If you do not intend to use your vacuum collector for 30 days or more, follow the off-season storage instructions which follow.

### OFF-SEASON STORAGE

1. Drain the fuel tank completely by running the engine until it stops. If desired, fuel can be stored in containers or in the tank by using a gasoline stabilizer. Follow the directions on the can. This additive prevents formation of gum and varnish for up to one year and provides easier starting and a cleaner fuel system.

2. Change oil. (See engine manual.)
3. Remove spark plug, pour 1 oz. (30 ml) of 10W-30 oil into cylinder through plug hole. Crank engine a few times to distribute oil. Reinstall plug.
4. Remove vacuum collector from tractor. (See Removing Vacuum Collector in Installation Section of this manual.)
5. Clean vacuum collector, hoses, and cart cover to remove all grass and dirt.
6. Store vacuum collector assembly in a dry place.

### STARTING AFTER STORAGE

1. Clean engine fins and air filter. (See engine manual.)
2. Install vacuum collector on tractor. (See Installation Section of this manual.)
3. Remove spark plug and wipe dry. Crank engine several times to blow excess oil out of plug hole. Reinstall the plug.
4. Full fuel tank with fresh gasoline (unless a fuel stabilizer was used).
5. Start engine outdoors. Do not run engine at high speed immediately after starting.

### COVER STORAGE

Remove the entire dump cart cover and store in a dry place where air can circulate around it. This will help to prevent deterioration of the fabric. Be sure cover is clean and thoroughly dry before storing.

# Troubleshooting

## CONTENT OF SECTION

This section guides you in troubleshooting some of the more common and easily corrected vacuum collector problems. For problems not covered in this manual, it is recommended that you contact your dealer.

they are listed. Correct any problems that are found and try to operate the vacuum collector again to see if you have eliminated the trouble.

## TROUBLESHOOTING PROCEDURES

Troubleshooting procedures are provided below. To use these procedures, first locate the problem description that best fits the trouble that you have encountered. Check the possible causes one at a time in the order that



### WARNING

For your safety: 1) Stop tractor and vacuum collector engines. 2) Set parking brake and remove key. 3) Wait for mower blade and blower fan to stop rotating. 4) Remove vacuum collector engine spark plug wire and fasten it away from plug. 5) Use caution near hot muffler.

PROBLEM	CAUSE/REMEDY
1. Engine fails to start.	<ul style="list-style-type: none"> <li>A. Fuel tank empty. Refill fuel tank.</li> <li>B. Throttle lever is not set to half open. Reset throttle.</li> <li>C. Spark plug wire is not securely connected.</li> <li>D. Choke plunger is not pulled out to CHOKE position.</li> <li>E. Engine flooded. To clear a flooded engine, push choke in and pull starter rope several times to clear engine of excess fuel.</li> <li>F. No spark. Check points, plug and plug wire.</li> <li>G. Water in fuel. Old stale gas. Drain fuel tank and refill with fresh fuel.</li> </ul>
2. Engine starts hard or runs poorly.	<ul style="list-style-type: none"> <li>A. Fuel mixture too rich. Be sure choke is off. Clean air filter.</li> <li>B. Bad points. Adjust or replace points.</li> <li>C. Spark plug faulty, fouled, or poorly gapped. Remove and check.</li> </ul>
3. Engine exhaust is black or smoky.	<ul style="list-style-type: none"> <li>A. Dirty air filter. Clean filter.</li> <li>B. Check carburetor adjustment.</li> </ul>
4. Leaves and grass not being completely picked up.	<ul style="list-style-type: none"> <li>A. Vacuum collector engine speed too slow. Run at 3/4 to full throttle.</li> <li>B. Tractor ground speed too fast. Use slower ground speed.</li> <li>C. Hose or blower plugged. Stop attachment and tractor engines and remove key. Then remove and unplug hoses.</li> </ul>
5. Vacuum collector unit or mower plugs easily.	<ul style="list-style-type: none"> <li>A. Grass or leaves too wet. Wait for drier conditions.</li> <li>B. Grass too high. Reduce tractor ground speed, reduce cutting width or raise mower adjustment for the first pass, lower it for the second pass.</li> <li>C. Dump cart full. Empty.</li> <li>D. Buildup of cut grass in mower or adapter. Clean thoroughly.</li> </ul>
6. Vacuum collector vibrates excessively.	<ul style="list-style-type: none"> <li>A. Clean dirt and grass from blower fan blades.</li> </ul>

## Troubleshooting Procedures

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