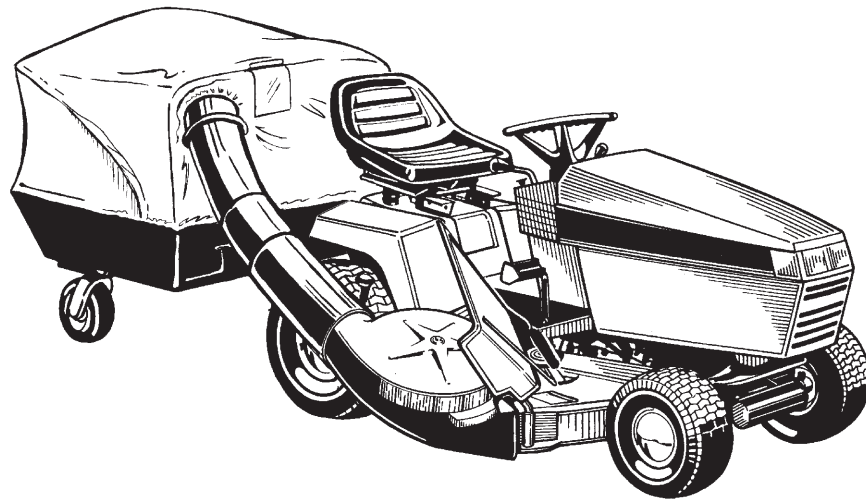


# ATTACHMENT OPERATOR'S MANUAL



## Turbo Wide Body Cart & Hitch

<b>Mfg. No.</b>	<b>Description</b>
1691526	Turbo Wide Body Cart & Hitch <i>(for SunStar / 1900 / 2900 Series &amp; Sovereign / 900 / 2800 Series)</i>
1692526	Turbo Wide Body Cart & Hitch <i>(for Landlord / 1700 / 2700 Series &amp; Broadmoor / 1600 / 2600 Series)</i>



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**Specifications**

**SPECIFICATIONS**

Overall Length .....42"

Overall Width.....46"

Overall Height.....41.4"

Inside Box Length.....31"

Inside Box Width.....44"

Inside Box Height .....7"

Box Capacity.....5 cu. ft.

Weight Capacity .....400 lbs.

Grass Capacity.....17 bushels

Pneumatic Tire Size.....410/350 x 4

**⚠ WARNING**

**The maximum weight capacity is 400 lbs. Do not exceed the maximum capacity.**

# Illustrations & Part Lists

No.	Qty.	Description
1	1	COVER
2	1	ROD, Straight
3	2	CLIP, Safety, Hairpin
4	1	SLEEVE, Plastic, Connecting
5	1	CLAMP, Sleeve
6	1	TUBE, Support
7	2	HANDLE, Lift
8	4	LOCKWASHER, 1/4
9	4	NUT, Hex, 1/4-20
10	4	NUT, Lock, 5/16-18
11	6	WASHER, Flat, 5/16 (1691367 & 1691358)
6	6	WASHER, Flat, 5/16 (1691526 only)
12	1	HANDLE, Latch
13	2	WASHER, Spring, 5/16
14	1	NUT, Hex, Full, 5/16-18
15	1	NUT, Jam, 5/16-18
16	2	SPACER, Plastic, 5/16
17	4	CAPSCREW, Hex Hd., 5/16-18 x 1-1/2
18	1	ROD, Frame
19	1	CAPSCREW, Hex Hd., 5/16-18 x 1-1/4
20	1	ROD, Support
21	8	BOLT, Hex, 3/8-16 x 1
22	2	PIN, 1/2x 1-1/4
23	1	FRAME
24	8	WASHER, Flat, 3/8 S.A.E.
25	8	NUT, Hex Lock, 3/8-16
26	2	WHEEL, Swivel, 410/350-4
27	2	NUT, Hex Lock, 1/2-13
28	2	CAPSCREW, Hex Hd., 1/2-13 x 1-1/4
29	1	"U" BRACKET
30	3	NUT, Hex, 5/16-18
31	3	LOCKWASHER, 5/16
32	3	BOLT, Slotted, Truss Hd.
33	4	CAPSCREW, Hex Hd., 1/4-20 x 1/2
34	1	BOX
35	1	STRAP, Rubber, 6"
36	1	CAPSCREW, 1/4-20 x 1/2
37	1	NUT, Nylon insert, 1/4-20

Figure 1. Wide Body Dump Cart

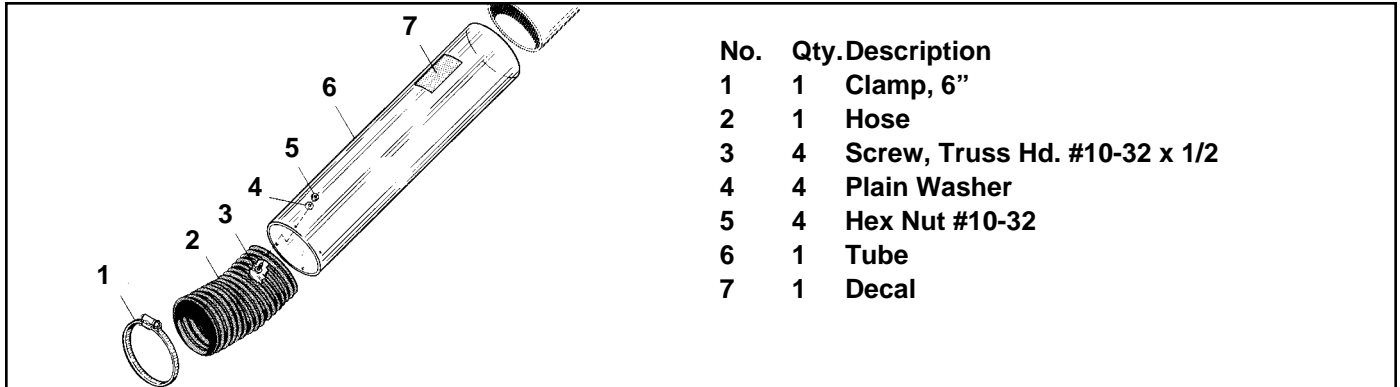


Figure 2. Tube Assembly - Sunstar & Sovereign

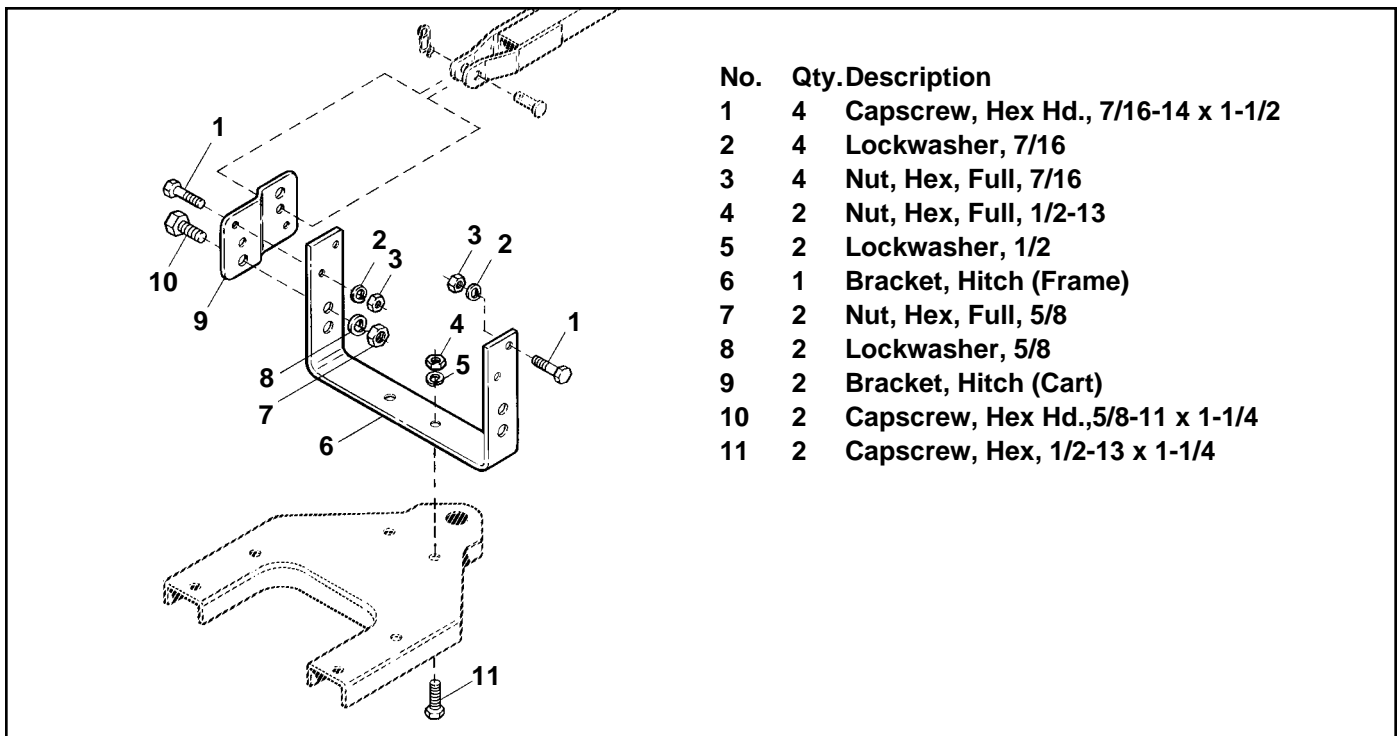


Figure 3. Sunstar Hitch

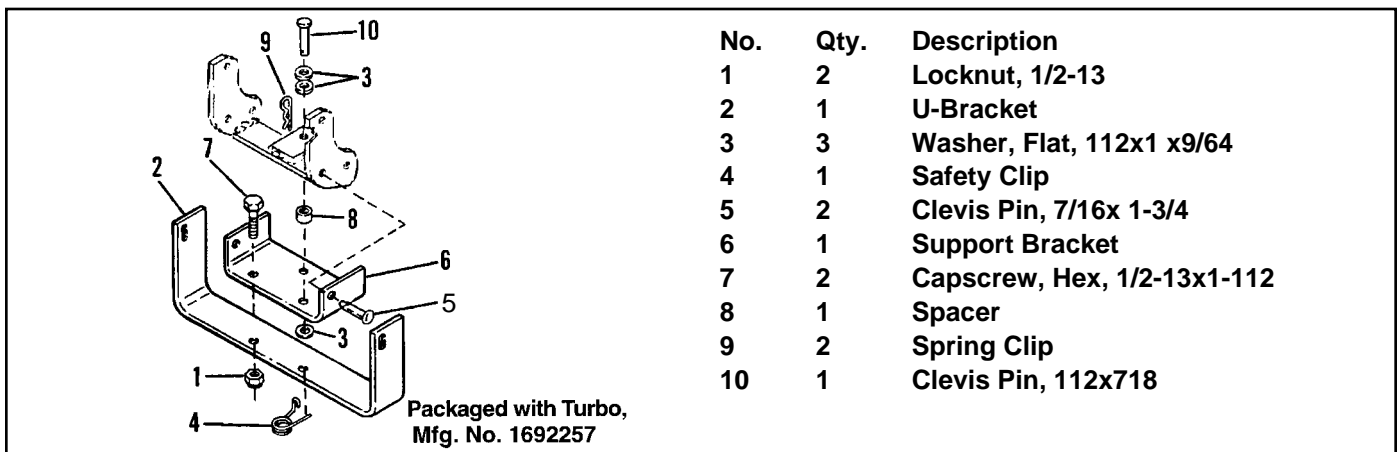


Figure 4. Sovereign Hitch

# Illustrations & Part Lists

No.	Qty.	Description
1	1	Clip, Spring
2	1	Lower Tube Assy.
3	1	Middle Tube
4	1	Upper Tube
5	2	Carriage Bolt, 1/4-20 x 5/8
6	2	Nut, Hex, Flange, Lock, 1/4-20
7	6	Screw, Truss Hd., 10-32 x 1/2
8	12	Washer, Flat, #10
9	6	Nut-Hex Washer Assembly, 10-32

Packaged with  
Cart, Mfg. No.  
1692526

Figure 5. Tube Assembly - Landlord & Broadmoor

Figure 6. Hitch Assembly - Landlord

- |                     |                     |                             |                    |
|---------------------|---------------------|-----------------------------|--------------------|
| A. Hitch Bracket    | B. Hitch Support    | C. Capscrew, 3/8-16 x 1     | D. Locknut, 3/8-16 |
| E. Backside Drawbar | F. Flat washer, 1/2 | G. Capscrew, 1/2-13 x 1-1/4 | H. Locknut, 1/2-13 |

Figure 7. Hitch Assembly - Broadmoor

- |                    |                        |                         |                         |
|--------------------|------------------------|-------------------------|-------------------------|
| A. Hitch Bracket   | B. Hitch Adapter, Left | C. Hitch Adapter, Right | D. Capscrew, 3/8-16 x 1 |
| E. Locknut, 3/8-16 | F. Drawbar             | G. Drawbar Frame        |                         |

## WARNING

Read these safety rules and the safety rules in your tractor Operator's Manual and follow them closely. Failure to obey these rules could result in loss of control of the vehicle, sever personal injury to yourself, or damage to property or equipment. The warning triangle in the test signifies important cautions or warnings which must be followed.

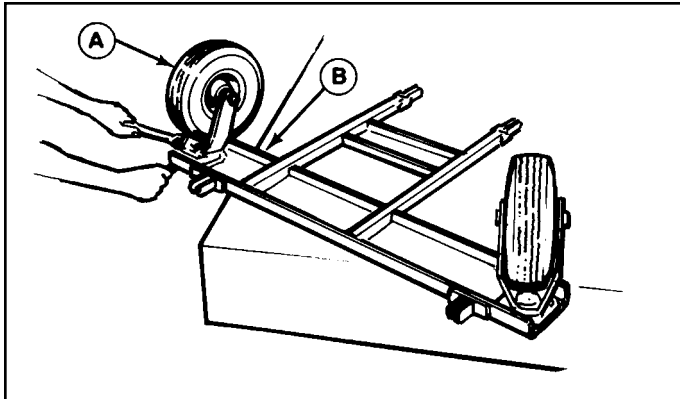
## WARNING

When the blower assembly is removed from the mower deck, the deflector must be installed as described in Operating Without Collection System.

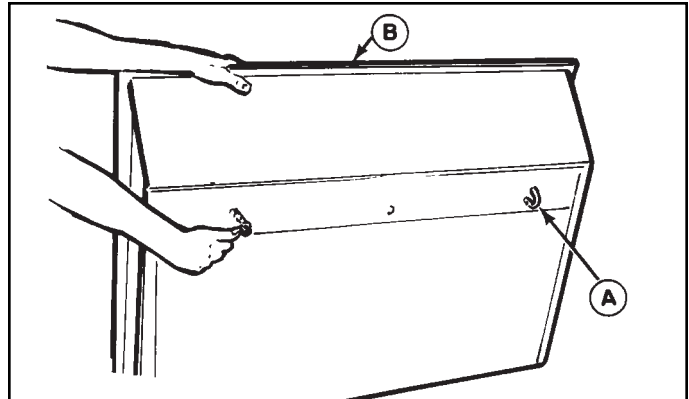
## SAFETY RULES

1. Know the tractor controls and how to stop quickly.  
READ THE TRACTOR'S OWNER'S MANUAL.
2. Shut the engine off before attaching, adjusting, or disconnecting the Collection System.
3. Check the cart to make sure it is attached tightly to tractor.
4. Check the latch handle to make sure it is engaged so the cart's box is locked to the frame.
5. Look behind you to make sure the area is clear before backing up.
6. DO NOT turn sharply when the tractor is alongside a building or any object.
7. DO NOT carry passengers in the cart.
8. For added tractor stability and to prevent tipping or loss of control:
  - a. Reduce ground speed on uneven ground and when turning corners.
  - b. Reduce loads on hillsides. It is recommended that the Collection System be kept only half full when negotiating any slopes. Start mowing on slopes when the Collection System is empty.
  - c. Mow up and down the face of slopes; **never mow across the face of any slope.**
9. **CAUTION: Objects may be thrown from mower.**  
For your safety:
  - a. DO NOT remove the cover while the mower blades are turning. Shut off the engine before opening cover or removing the grass chute.
  - b. Be sure the complete Collection System is in place (cover secure and grass chute connected) before operating the mower.
  - c. Do check the cart cover frequently for wear and tear. Replace with a new cover for safety protection.
10. For best results when mowing grass set the mower to cut from 1 to 2 inches of grass. If grass is exceptionally tall, set your mower as high a possible for first cutting. Lower cutting height at succeeding cuttings until proper height is reached. It may be necessary to mow tall grass at a slower ground speed.

# Cart Assembly



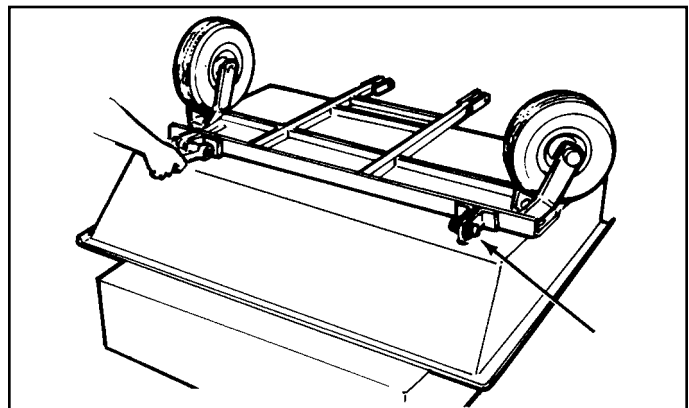
**Figure 8. Wheel Assembly**  
A. Wheel Assembly      B. Frame



**Figure 9. Install U-Bracket**  
A. U-Bracket      B. Box

## CART ASSEMBLY

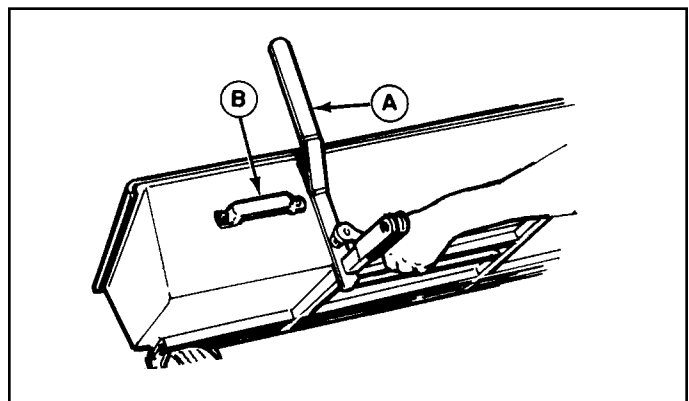
1. Install the wheel assemblies (A, Figure 8) to the frame (B). Place the head of the swivel wheel on the end of the frame. Align the holes and place four 3/8-16 x 1 hex bolts up through the frame and head of the swivel. Secure with four flat washers (13/32 I.D., 7/8 O.D.) and 3/8-16 locknuts.
2. Install the U-bracket (A, Figure 9) to the bottom of the box (B). Place the three 5/16-20 x 3/4 slotted truss head bolts and three flat washers (11/32 I.D., 3/4 O.D.) through the inside of the box and the U-bracket. Secure with three 5/16 lockwashers and nuts.
3. Turn box upside down and install the frame to the U bracket (Figure 10). Align the two prong end (A) in the frame with the ends of the U-bracket and secure with two 1/2-13 x 1-1/4 hex bolts and locknuts. **DO NOT** over-tighten the locknuts, since the box pivots at this point for dumping.



**Figure 10. Install Frame**  
A. Prong End

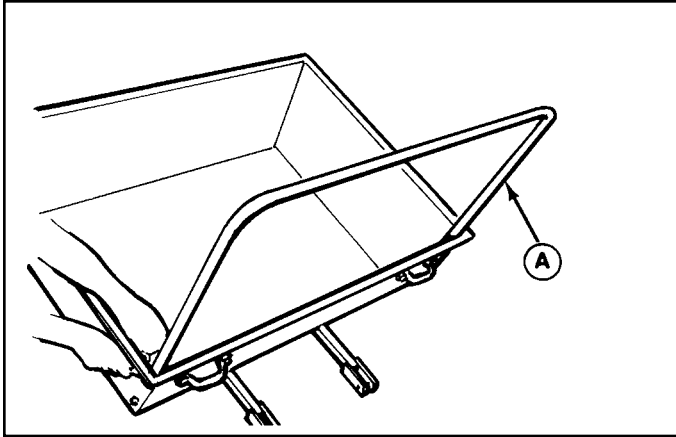
*Note: The latch handle (A, Figure 11) is located on the right hand side on cart, Mfg. No. 1691526 and on the left hand side on cart, Mfg. No. 1692526.*

4. Turn box with frame upright and install the latch handle (A, Figure 11) and two lift handles (B) as follows:
  - a. Latch Handle: Place one 5/16-18 x 1 hex bolt with 5/16 spring washer through the inside of the box. Next place a 5/16 flat washer over the bolt on the outside of the box, the latch handle, a 5/16 flat washer, a 5/16 spring washer and a 5/16 nut and jam nut. Tighten the nuts so that when the latch handle turns the bolt and nut will not turn. (Be sure the cups of the spring washers are facing toward the box surface on both sides.)
  - b. Lift Handles: Install the two lift handles on the outside of the box. Place two 1/4-20 x 1/2 slotted truss head bolts through the inside of the box and the lift handle. Secure with two 1/4 lockwashers and nuts.



**Figure 11. Install Latch Handle**  
A. Latch Handle      B. Lift Handle



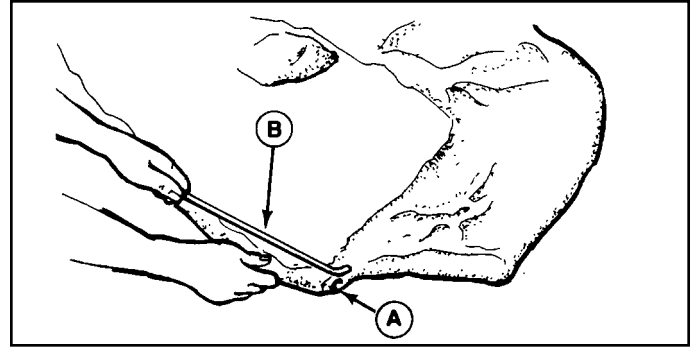


**Figure 12. Install Support Tube**  
A. Support Tube

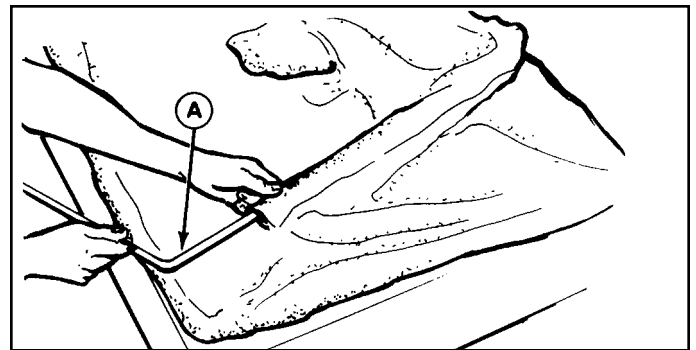
5. Install support tube (A, Figure 12) inside the box. Align each end of the support tube with the two holes at the front corner side of the box. Place one 5/16-18 x 1-1/2 hex bolt with a 5/16 flat washer and plastic spacer through the top, outside hole of the box and the support tube. Secure with a 5/16 locknut on the inside. At the bottom hole place on 5/16-18 x 1 -1/2 hex bolt with a 5/16 flat washer through the box and the support tube. Secure with a 5/16 locknut.

## COVER ASSEMBLY

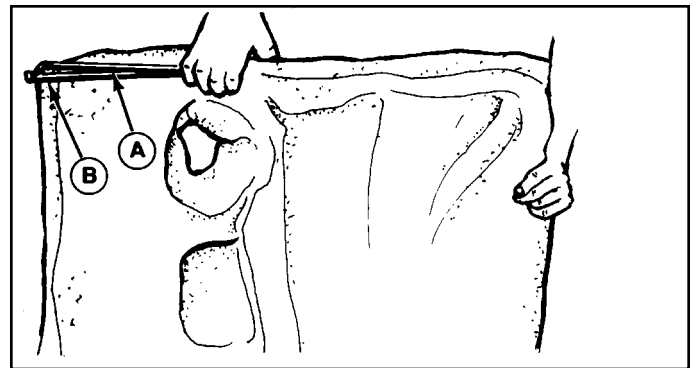
1. Refer to Figure 13. Unfold the cover and spread it out on a flat, clean surface with the white dust shield side up. The two 3/8 inch rods are threaded through two sleeves inside the cover. The rod with the two bent ends is called the frame rod (B), since it lays on top of the box's frame. The rod with the two eyebolt ends is called the support rod, since it supports the top, rear side of the cover.
2. Thread the frame rod through the bottom sleeve of the cover so that the two bent ends protrude through the openings on each side. The openings (A) of the sleeve are found next to the black cord loops.
3. Thread the support rod (A, Figure 14) through the sleeve inside the cover.
4. Pick up the cover by holding the rods and place the support rod inside the frame rod before hooking the frame rod (A, Figure 19) through the eyelet of the support rod (B) on each end.
5. Place the cover assembly over the support tube. Insert the frame rod with the support rod attached through the hole in the support tube and secure with a flat washer (13/32 I.D., 7/8 O.D.) and safety clip (A, Figure 16) on each side.



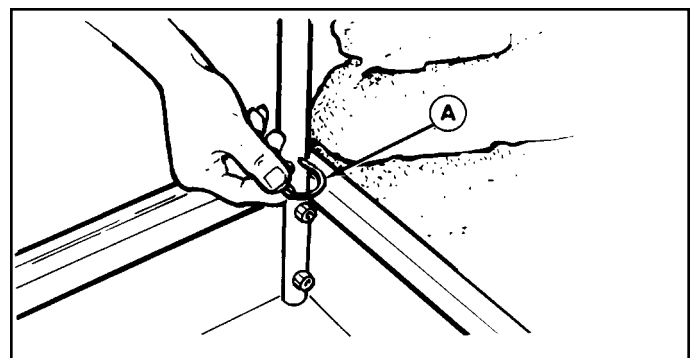
**Figure 13. Install Frame Rod**  
A. Opening B. Frame Rod



**Figure 14. Install Support Rod**  
A. Support Rod

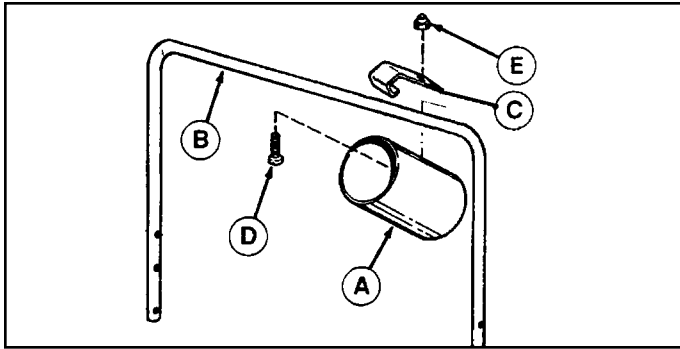


**Figure 15. Connect Frame Rod and Support Rod**  
A. Frame Rod B. Support Rod



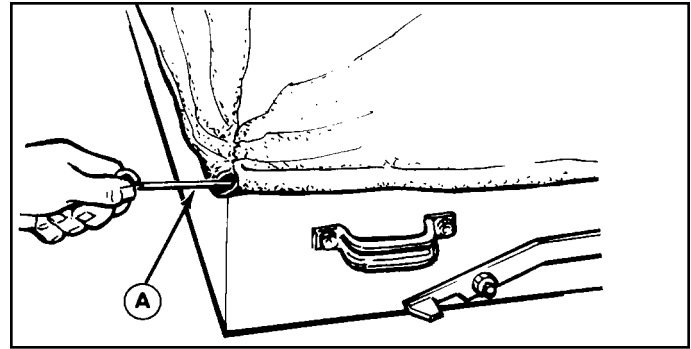
**Figure 16. Secure Rods**  
A. Safety Clip

# Cover Assembly



**Figure 17. Install Connecting Sleeve**

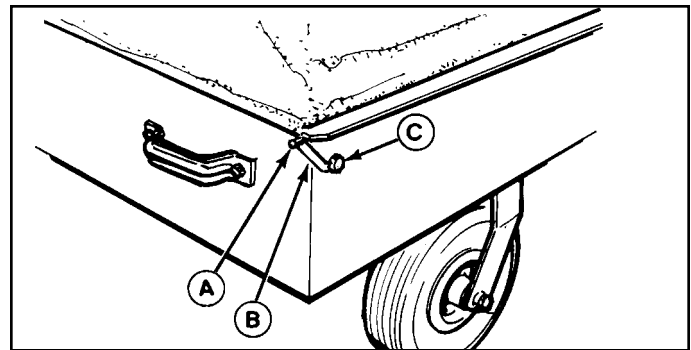
- A. Connecting Sleeve
- B. Support Tube
- C. Sleeve Clamp
- D. Truss Head Screw, 1/4-20 x 1/2
- E. Nyloc Nut



**Figure 18. Install Straight Rod**

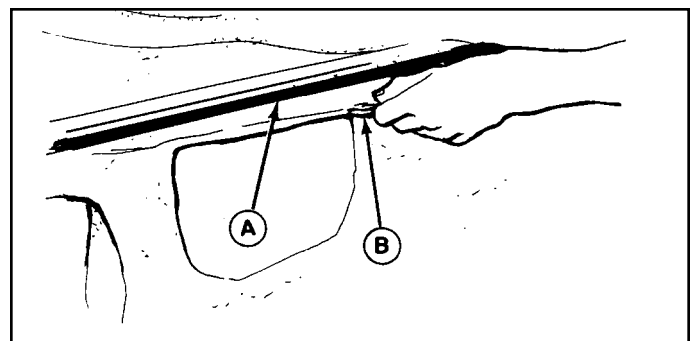
- A. Straight Rod

6. Install the sleeve clamp (C, Figure 17) to the connecting sleeve (A) with 1/4-20 x 1/2 slotted truss head screw (D) and nyloc nut (E). Install the connecting sleeve inside the collar of the cover and position sleeve clamp (C) over the support tube (B).
7. Thread the straight rod (A, Figure 18), which has an eyelet on each end, through the sleeve at the front of the cover.
8. Pinch the black cord loop (B, Figure 19) and thread it through the eyelet on each end of the rod. Next, pull the loop over the top bolt (C) on each side of the box. The rod gives added support to the cover at the front of the box.
9. Inside the cover at the front, there is a long tab with an eyelet on the end. Pull this tab over the top of the support tube (A, Figure 20) and back under the support tube before threading it through the slot in the cover. This locking tab (B) secures the cover to the support tube when the cover assembly is locked into the open position for dumping.
10. Install the six inch rubber strap (B, Figure 21) at the back of the box. Hook the strap over the metal loop (A) on the frame rod, which protrudes through the cover. Close the hook with a pair of pliers. Hook the other end of the strap over the door lock (C) on the box.



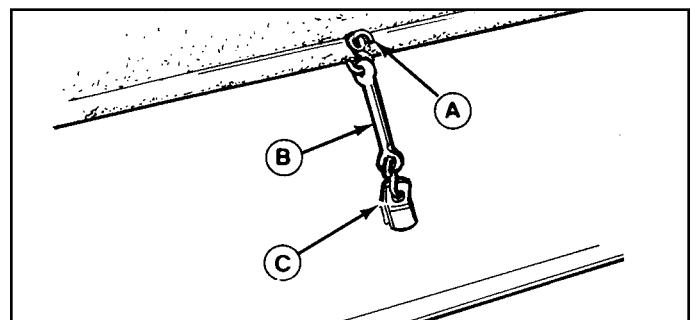
**Figure 19. Secure Cover**

- A. Straight Rod
- B. Cord Loop
- C. Bolt



**Figure 20. Secure Cover To Support Tube**

- A. Support Tubes
- B. Locking Tab



**Figure 21. Install Rubber Strap**

- A. Metal Loop
- B. Rubber Strap
- C. Door Lock

## HITCH INSTALLATION

### SunStar/1900 Series (Mfg. No. 1691526)

1. Install the U-bracket (A, Figure 22) with two 1/2-13 x 1 1/4 capscrews (B), 1/2 lockwashers, and nuts. At top hole on each side, install two 7/16-14 x 1-1/2 cap screws (C), lockwashers and nuts.

*Note: The U-bracket (A, Figure 22) is an accessory hitch with additional ear for tiller attachment. U-bracket (19, Figure 1) supplied with cart mounts in same location with supplied hardware.*

2. See Figure 22. Position brackets (D) with large hole (E) at bottom of each side. In large holes (E), install 5/8-11 x 1-1/4 capscrews, lockwashers and nuts.
3. In top holes of bracket (D), install two 7/16-14 x 1/2 capscrews (F), 7/16 lockwashers and nuts.

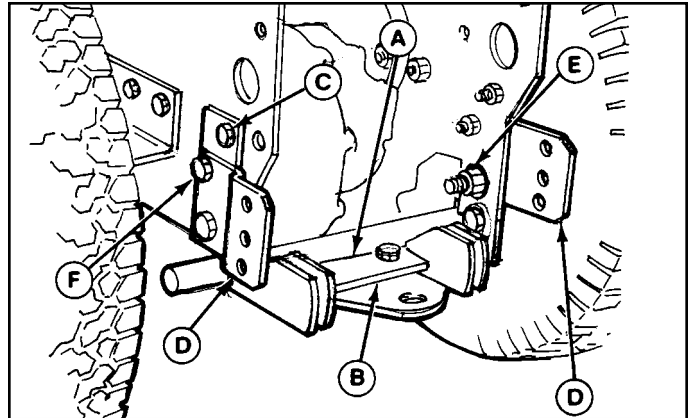
### Sovereign/900 Series (Mfg. No. 1691526)

*Note: Hitch assembly is packaged with the Turbo Blower Assembly, Mfg. No. 1692257.*

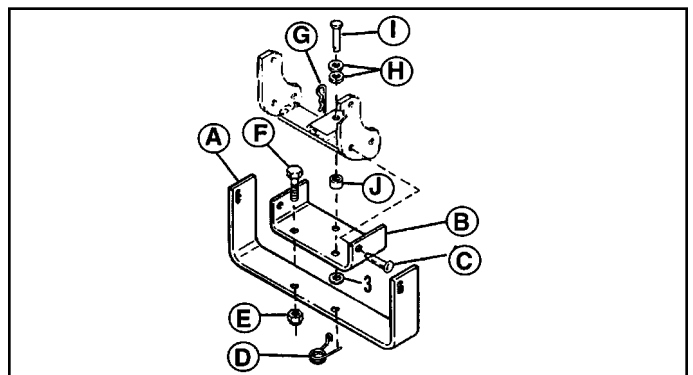
1. Assemble the hitch U-bracket (B, Figure 23) to the support bracket (F) with two 1/2-13 x 1-1/2 cap screws (G) and locknuts (A).
2. Install hitch bracket assembly to tractor drawbar and secure on sides with 1-3/4 clevis pins (D) and spring clips (1).

### Landlord/1700 Series (Mfg. No. 1692526)

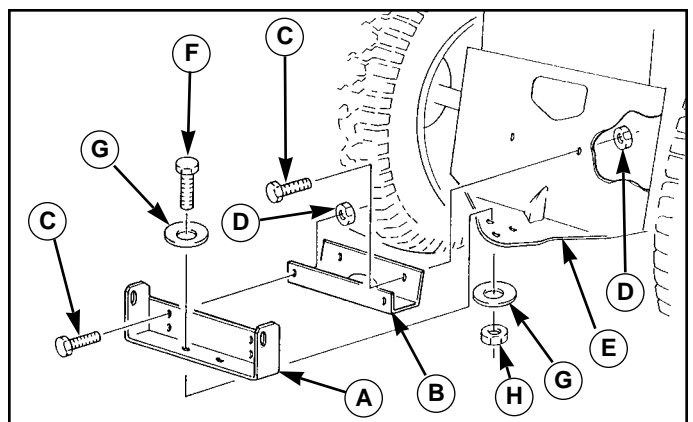
1. Assemble the hitch bracket (A, Figure 24) to the hitch support (B) with two 3/8-16 x 1 capscrews (C) and locknuts (D).
2. Position the hitch bracket to the top side of the drawbar (D) with the hitch support to the backside (F) of the drawbar. Secure the hitch bracket with two 1/2-13 x 1 1/4 capscrews (G), flat washers (H), and locknuts (I) and the hitch support with two 3/8-16 x 1 cap screws and locknuts.



**Figure 22. Sunstar Hitch Installation**  
**A. U-Bracket** **D. Bracket**  
**B. Capscrew, 1/2-13 x 1-1/4** **E. Large Hole**  
**C. Capscrew, 7/16-14 x 1/2** **F. Capscrew, 7/16-14 x 1/2**



**Figure 23. Sovereign Hitch Installation**  
**A. Locknut, 1/2-13** **F. Support Bracket**  
**B. U-Bracket** **G. Capscrew, Hex, 1/2-13x1-1/2**  
**C. Washer, Flat** **H. Spacer**  
**D. Safety Clip** **I. Spring Clip**  
**E. Clevis Pin, 7/16x1-3/4** **J. Clevis Pin, 1/2 x 7/8**



**Figure 24. Landlord Hitch Installation**  
**A. Hitch Bracket** **E. Backside Drawbar**  
**B. Hitch Support** **F. Capscrew, 1/2-13 x 1-1/4**  
**C. Capscrew, 3/8-16 x 1** **G. Flat washer, 1/2**  
**D. Locknut, 3/8-16** **H. Locknut, 1/2-13**

# Hitch Installation

## Broadmoor/1600 Series (Mfg. No. 1692526)

1. Assemble the hitch bracket (A, Figure 25) to the hitch adapters left (B) and right (C) with four 3/8-16 x 1 cap screws (D) and locknuts (E).
2. Position the hitch bracket over the drawbar (F) with the two hitch adapters on the outside of the drawbar frame (F). Secure with four 3/8-16 x 1 capscrews and lock nuts.

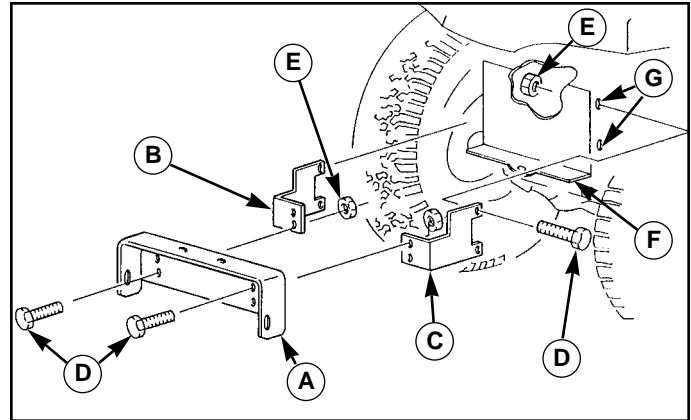


Figure 25. Hitch Assembly - Broadmoor

- |                         |                    |
|-------------------------|--------------------|
| A. Hitch Bracket        | E. Locknut, 3/8-16 |
| B. Hitch Adapter, Left  | F. Drawbar         |
| C. Hitch Adapter, Right | G. Drawbar Frame   |
| D. Capscrew, 3/8-16 x 1 |                    |

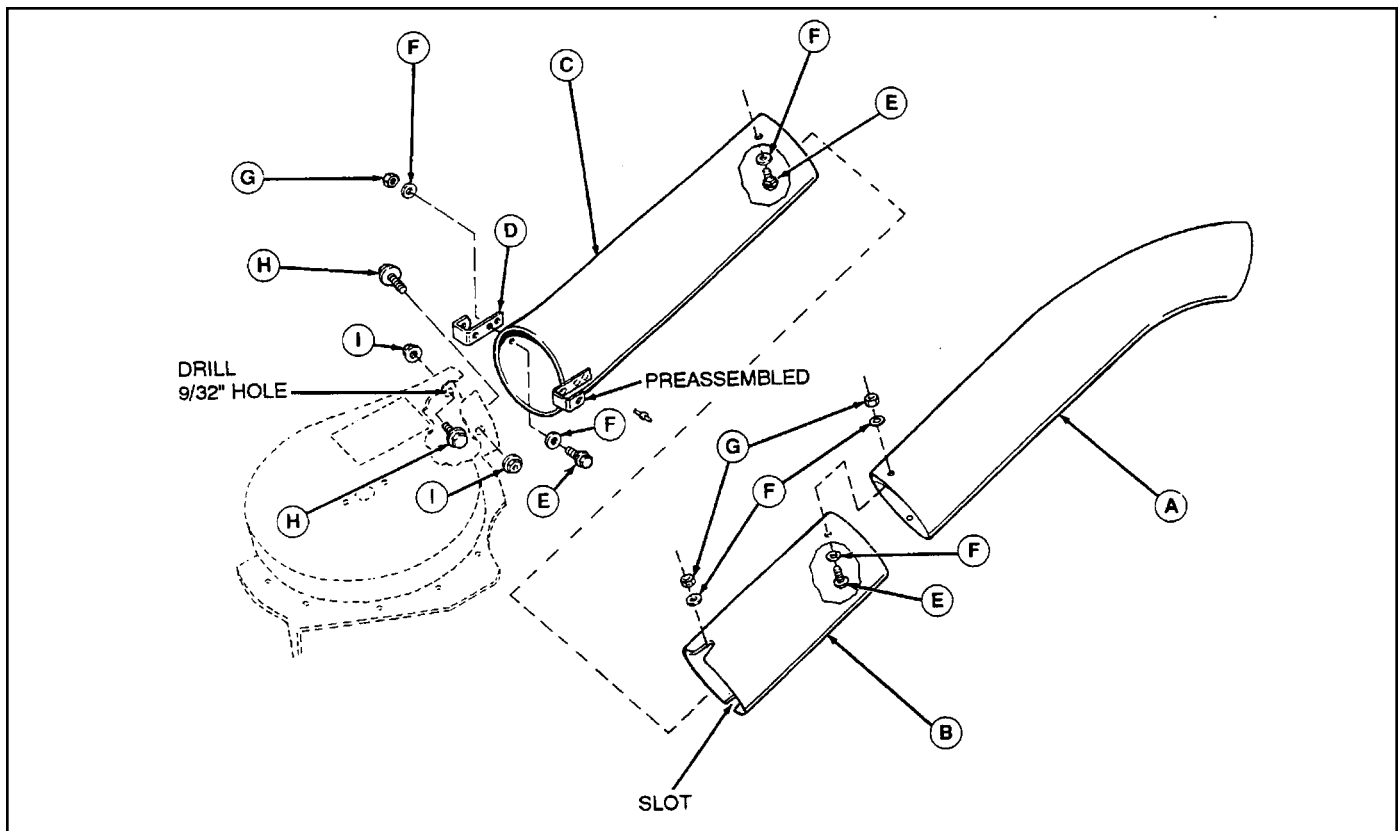


Figure 26. Discharge Tube Installation

- |                                  |                               |
|----------------------------------|-------------------------------|
| A. Upper Tube                    | F. Washer                     |
| B. Middle Tube                   | G. Locknut, 10/32             |
| C. Lower Tube                    | H. Carriage Bolt, 1/4-20, 5/8 |
| D. Spring Clip                   | I. Flange Locknut, 1/4-20     |
| E. Truss Head Screw, 10/32 x 1/2 |                               |

## DISCHARGE TUBE INSTALLATION

### Landlord/1700 Series (Mfg. No. 1692526) Broadmoor/1600 Series (Mfg. No. 1692526)

1. Install the spring clip (D, Figure 26) with two 10/32 x 1/2 truss head screws (E), four flat washers (F), and two locknuts (G).
2. Install 1/4-20 x 5/8 carriage bolt (H) through hole in turbo housing. Secure with 1/4-20 flange locknut (I).
3. Position the lower tube (C) onto turbo housing and hook inside spring clip onto flange locknut (I, installed in step 2). Mark hole location on opposite side of turbo housing for outer spring clip.
4. Remove lower tube and drill 9/32 hole in turbo housing and install 1/4-20 x 5/8 carriage bolt (H) through hole. Secure with 1/4-20 flange locknut (I)
5. Assemble the upper tube (A) on to middle tube (B) as shown in Figure 2 with two 10/32 x 1/2 truss head screws (E), four flat washer (F), and two locknuts (G).
6. Install two 10/32 x 1/2 truss head screws (E), four flat washer (F), and two locknuts (G) to the top holes in the lower tube (C). Leave hardware loose.
7. Install upper tubes (A and B) to lower tube (C) and tighten hardware.
8. Install tube assembly into cart sleeve and onto turbo housing. Hook spring clips (D) onto flange locknuts (I) installed on turbo housing.

### SunStar/1900 Series (Mfg. No. 1691526) Sovereign/900 Series (Mfg. No. 16911526)

1. Assemble the tube (A, Figure 27) to hose (B) with four 10/32 x 1/2 truss head Phillips screws (C) installed from inside hose. Secure on outside of tube with #10 flat washers (D) and 10/32 locknuts (E).
2. Install hose (B) onto turbo housing and secure with hose clamp (F).
3. Install the tube assembly into the connecting sleeve of the cart.

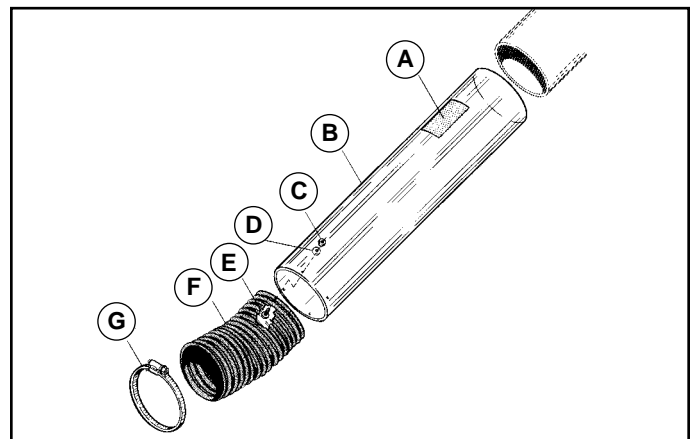


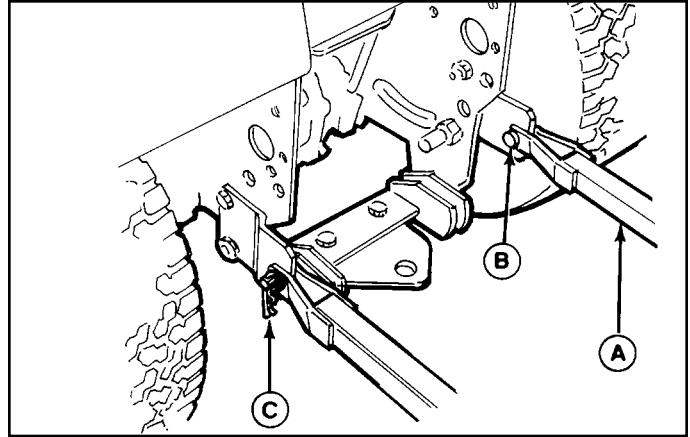
Figure 27. Discharge Tube Installation

- |                   |                     |
|-------------------|---------------------|
| A. Decal          | E. Truss Head Screw |
| B. Discharge Tube | F. Hose             |
| C. Locknut, Hose  | G. Clamp            |
| D. Washer         |                     |

# Connecting Cart / Maintenance

## CONNECTING CART TO TRACTOR

Place the cart frame (A, Figure 28) onto tractor brackets and install the clevis pins (B) and springs clips (C).



**Figure 28. Connecting Cart To Tractor**  
A. Cart Frame                      C. Spring Clip  
B. Clevis Pin

## MAINTENANCE

### Cleaning Clear Tube

To clean the clear mid-tube on the SunStar and Sovereign series collection systems, wash with warm water and mild soap or detergent. Use a soft, clean sponge or cloth. DO NOT use abrasive, alkaline, or petroleum based cleaners.

### Cover

The cover can be rinsed with a hose when dirty. A dirty cover will inhibit the fast flow of grass clippings into the cover. Do not leave grass or leaves in the cart for a long period of time.

### Wheels

Lubricate the wheel assembly before using the cart and as necessary thereafter. A grease fitting is located at swivel base. Use SAE multi-purpose type grease.

### Tires

The tire pressure should be 30 psi.

### **WARNING**

The cover is subject to wear and deterioration. Check the cover frequently. Use an approved replacement cover.

### **WARNING**

Before opening the cover for any reason, engage the parking brake, shut off the engine, remove the key, and wait for all moving parts to stop.

## OPERATION

### Before Operation

Clear the lawn of all sticks, stones, wire and other debris which may be caught or thrown by the mower blades.

Clean the tube with mild detergent (other products may damage tube). The flow of grass can be seen through the tube while mowing.

Check grass condition. If wet, wait until later in the day. If grass is wet, plugging may occur.

For efficient bagging, air circulation under the mower deck, through the chute and into the bag is very important. For this reason, you should remove grass and debris from underside of mower deck, discharge chute and cover.

The blower, tube and elbow can be removed for cleaning.

### During Operation

Grass should be cut often, and not too short. If grass is too long or lush it may be necessary to keep ground speed to a minimum or to cut only half the width to prevent clogging. If grass is high, operate with mower in high cutting position. Cut the grass again in lower cutting position, if desired.

The collector is full when grass builds at the window.

Always operate with throttle at full speed.

### Dumping Grass and Leaves

1. Back the tractor to the desired place for unloading. Shut the tractor's engine off before getting off the tractor's seat.
2. Unhook the strap from the door lock and raise the cover assembly to the open position. Lock the cover in place by hooking the strap to the locking tab in place by hooking the to the locking tab (Figure 29). Also see Figure 30.
3. Move the latch handle to the unlock position and dump the cart's box using one of the front lift handles. The connecting sleeve will slide off the discharge chute and the cart's box will dump at a 90° angle for quick unloading.
4. If bagging the grass clippings is desired, the grass can be pulled from the cart at the curve side into a plastic lawn bag. Also, the grass can be dumped onto a tarp for throwing into a trailer.

### CAUTION

The maximum weight capacity of the cart is 400 lbs. Do not exceed.

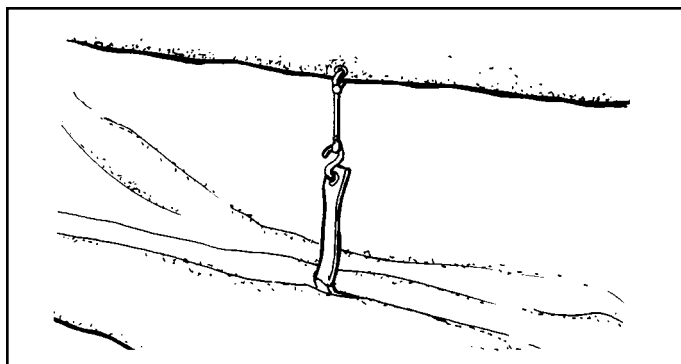


Figure 29. Opening the Cover

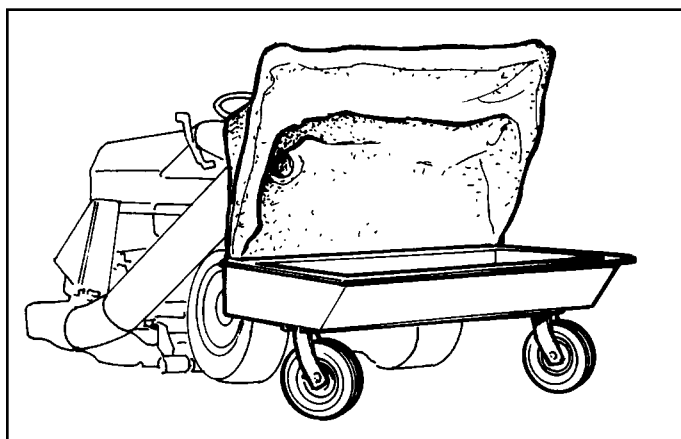


Figure 30. Emptying the Cart

# Operation

## Operating Without Collection System

### **⚠ WARNING**

To operate without the collection system, the blower assembly must be removed and the deflector must be in down position.

1. Unhook the cart from the tractor by removing two clevis pins and spring clips (Figure 28).
2. To remove the blower, remove the belt from the pulley (A, Figure 31).
3. Close cover (D) and tighten knob.
4. Loosen wing nut (B) and, while holding deflector (C) up, pull blower off mover.

### **⚠ WARNING**

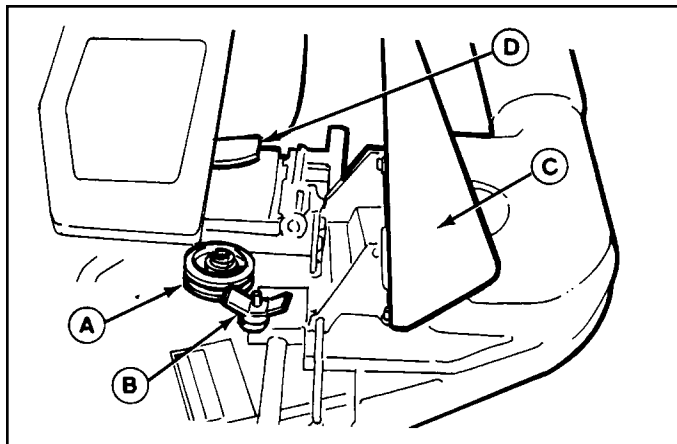
The deflector is spring loaded. When removing the blower, hold the deflector up. Then allow the deflector to go down into normal operating position (see Figure 33).

5. Allow deflector to go down into position shown in Figure 32.

*NOTE: For easier belt removal, later model blowers have a wire loop to move spring-loaded idler pulley.*

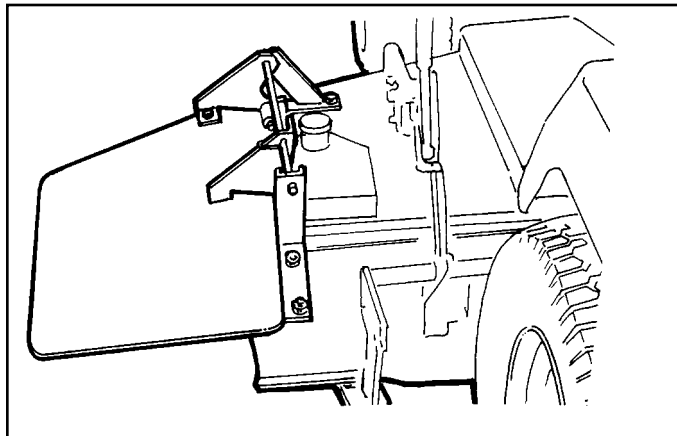
## Reinstallation After Removal

Raise the deflector to slide the blower into position. Tighten the wing nut (B, Figure 31). Place the belt onto the pulley (A) and close the cover (D) and tighten knob. Connect cart and chute.



**Figure 31. Removing the Blower**

- |             |              |
|-------------|--------------|
| A. Pulley   | C. Deflector |
| B. Wing Nut | D. Cover     |

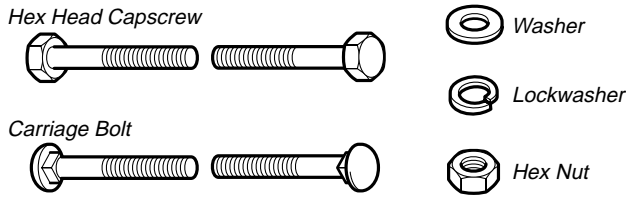


**Figure 32. Deflector**



# Hardware Identification & Torque Specifications

## Common Hardware Types

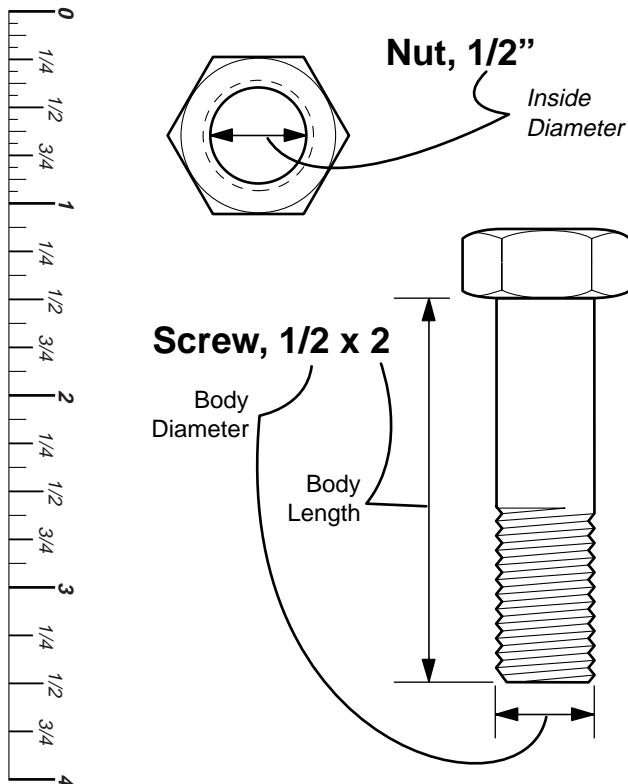


## Standard Hardware Sizing

When a washer or nut is identified as **1/2"**, this is the *Nominal size*, meaning the *inside diameter* is 1/2 inch; if a second number is present it represent the *threads per inch*

When bolt or capscrew is identified as **1/2 - 16 x 2"**, this means the *Nominal size*, or *body diameter* is 1/2 inch; the second number represents the *threads per inch* (16 in this example, and the final number is the *body length* of the bolt or screw (in this example 2 inches long).

**The guides and ruler furnished below are designed to help you select the appropriate hardware and tools.**



## Torque Specification Chart

FOR STANDARD MACHINE HARDWARE (Tolerance ± 20%)

Hardware Grade	No Marks		SAE Grade 2		SAE Grade 5		SAE Grade 8	
	in/lbs	Nm.	in/lbs	Nm.	in/lbs	Nm.	in/lbs	Nm.
8-32	19	2.1	30	3.4	41	4.6		
8-36	20	2.3	31	3.5	43	4.9		
10-24	27	3.1	43	4.9	60	6.8		
10-32	31	3.5	49	5.5	68	7.7		
1/4-20	66	7.6	8	10.9	12	16.3		
1/4-28	76	8.6	10	13.6	14	19.0		
5/16-18	11	15.0	17	23.1	25	34.0		
5/16-24	12	16.3	19	25.8	27	34.0		
3/8-16	20	27.2	30	40.8	45	61.2		
3/8-24	23	31.3	35	47.6	50	68.0		
7/16-14	30	40.8	50	68.0	70	95.2		
7/16-20	35	47.6	55	74.8	80	108.8		
1/2-13	50	68.0	75	102.0	110	149.6		
1/2-20	55	74.8	90	122.4	120	163.2		
9/16-12	65	88.4	110	149.6	150	204.0		
9/16-18	75	102.0	120	163.2	170	231.2		
5/8-11	90	122.4	150	204.0	220	299.2		
5/8-18	100	136	180	244.8	240	326.4		
3/4-10	160	217.6	260	353.6	386	525.0		
3/4-16	180	244.8	300	408.0	420	571.2		
7/8-9	140	190.4	400	544.0	600	816.0		
7/8-14	155	210.8	440	598.4	660	897.6		
1-8	220	299.2	580	788.8	900	1,244.0		
1-12	240	326.4	640	870.4	1,000	1,360.0		

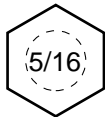
### NOTES

- These torque values are to be used for all hardware excluding: locknuts, self-tapping screws, thread forming screws, sheet metal screws and socket head setscrews.
- Recommended seating torque values for locknuts:
  - for prevailing torque locknuts - use 65% of grade 5 torques.
  - for flange whizlock nuts and screws - use 135% of grade 5 torques.
- Unless otherwise noted on assembly drawings, all torque values must meet this specification.

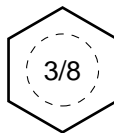
## Wrench & Fastener Size Guide



1/4" Bolt or Nut  
Wrench—7/16"



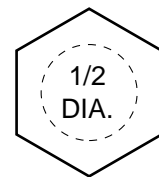
5/16" Bolt or Nut  
Wrench—1/2"



3/8" Bolt or Nut  
Wrench—9/16"



7/16" Bolt or Nut  
Wrench (Bolt)—5/8"  
Wrench (Nut)—11/16"



1/2" Bolt or Nut  
Wrench—3/4"

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## Notes