Service Manual

Model 380 Two-Stage Snow Thrower

NOTE: These materials are for use by trained technicians who are experienced in the service and repair of outdoor power equipment of the kind described in this publication, and are not intended for use by untrained or inexperienced individuals. These materials are intended to provide supplemental information to assist the trained technician. Untrained or inexperienced individuals should seek the assistance of an experienced and trained professional. Read, understand, and follow all instructions and common sense when working on power equipment. This includes the contents of the product's Operators Manual, supplied with the equipment. No liability can be accepted for any inaccuracies or omission in this publication, although care has been taken to make it as complete and accurate as possible at the time of publication. However, due to the variety of outdoor power equipment and continuing product changes that occur over time, updates will be made to these instructions from time to time. Therefore, it may be necessary to obtain the latest materials before servicing or repairing a product. The company reserves the right to make changes at any time to this publication without prior notice and without incurring an obligation to make such changes to previously published versions. Instructions, photographs and illustrations used in this publication are for reference use only and may not depict actual model and component parts.

MTD Products LLC - Product Training and Education Department

FORM NUMBER 769-01419

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Service Manual
Model 380 Two Stage Snow Thrower

MODEL 380 TWO STAGE SNOW THROWER

31A-380D000 Serial number 1F-193l40012.

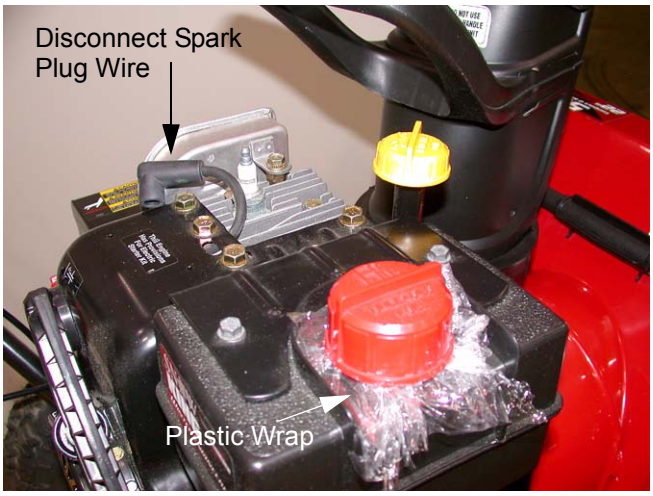
Please refer to the owners manual for Assembly Instructions, Preparation, Operation, Maintenance, StorageandSafetyprecautions.

> **NOTE:** These materials are prepared for use by trained technicians who are experienced in the service and repair of this type of equipment described in this publication, and are not intended for use by untrained or inexperienced individuals. All such individuals should seek the assistance of an authorized service dealer.

Proper set up is very important to the long life and problem free operation of power equipment.

> **WARNING:** Before servicing, repairing, or inspecting, disengage all clutch levers and stop engine. Wait until all moving parts have come to a complete stop. Disconnect spark plug wire and ground it against the engine to prevent unintended starting.

> **NOTE:** Some procedures require you to tip the snow thrower up on the front of the auger housing. If there is fuel in the gas tank, place a piece of plastic wrap over the gas tank opening and screw the cap back on the tank tightly. This should keep gas from leaking from the cap vent.



> **NOTE:** a piece of plastic wrap or the parts bag can be used to seal the cap from possible gas leakage.

1. SKID SHOE ADJUSTMENT

To prevent excessive and uneven wear on the Shave Plate at the bottom of the snow thrower auger housing, it is necessary to properly adjust the Skid Shoes.

1.1. Place a piece of carton cardboard under the shave plate. See Figure 1.1.

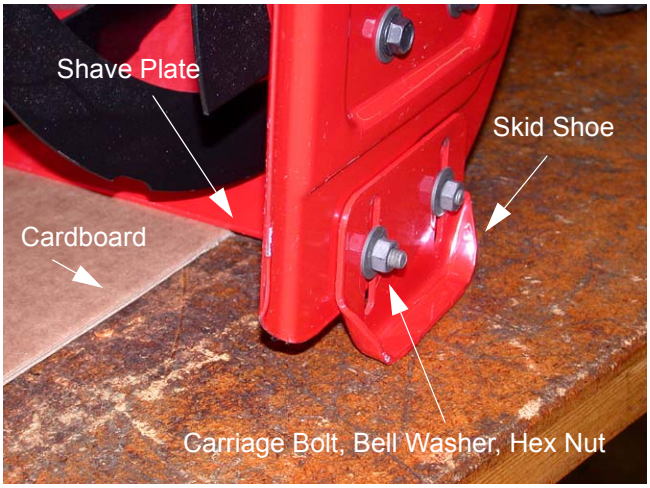


Figure 1.1

1.2. Loosen the two carriage bolts which secure each skid shoe to the auger housing. Lower the skid shoes to the ground and retighten the carriage bolts.

2. SKID SHOE REMOVAL AND REPLACEMENT

2.1. Remove the two carriage bolts, bell washers and hex nuts securing the skid shoes to the auger housing. See Figure 1.1.

2.2. Reassemble new skid shoes with the hardware just removed. Make sure the cupped side of the washer goes against the skid shoe and that the skid shoes are adjusted as described in Section 1.

3. SHAVE PLATE REMOVAL AND INSTALLATION

3.1. Remove both skid shoes and hardware including carriage bolts, bell washers and hex nuts which attach shave plate to the snow thrower housing. See Figure 1.1.

3.2. Reassemble new shave plate, making sure heads of the carriage bolts are to the inside of the housing. reinstall skid shoes and tighten securely.

4. BELT REMOVAL AND REPLACEMENT

NOTE: There are two belts on the unit, the auger belt and the drive belt. It is recommended that you replace both belts at the same time.

AUGER BELT

4.1. Using a 5/16” socket, remove the screw securing the right side of the belt cover to the drive housing. See Figure 4.1.

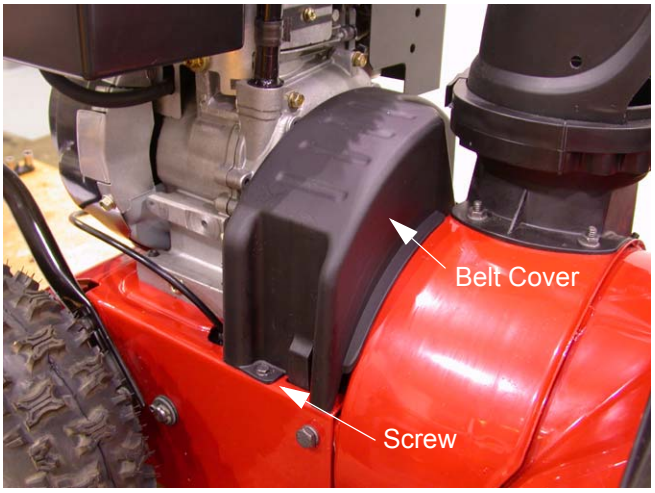


Figure 4.1

4.2. Press in on the tabs on each side of the cover and lift upwards pulling the belt cover out from around the engine.

4.3. Slip the front auger belt off the engine pulley pushing it down between the idler bracket and the engine pulley. See Figure 4.3.

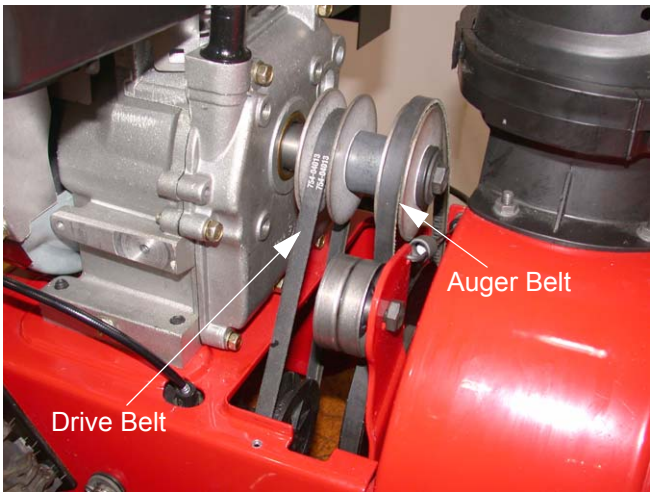


Figure 4.3

4.4. Squeeze the auger control bail to release the tension on the auger belt brake; remove the belt. See Figure 4.4.

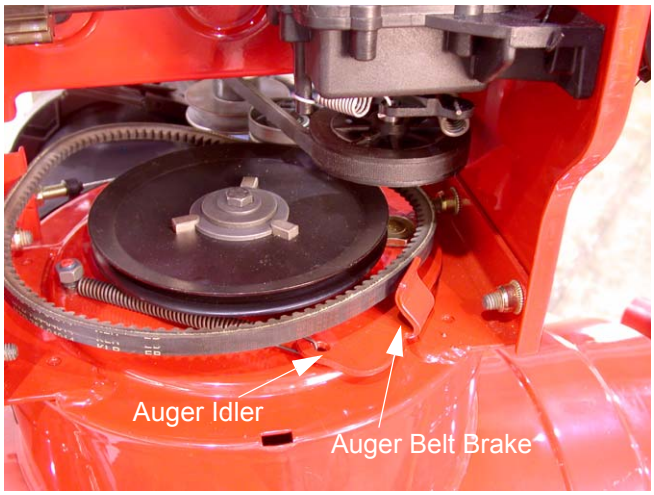


Figure 4.4

4.5. Replace with a new belt AFTER replacing the drive belt.

DRIVE BELT

NOTE: Replace the drive belt before reassembling the new auger belt.

4.6. Tip the snow thrower up and forward so that is rests on the auger housing.

4.7. Remove the spring that connects the transmission to a bolt on the right hand side of the engine frame. See Figure 4.7.

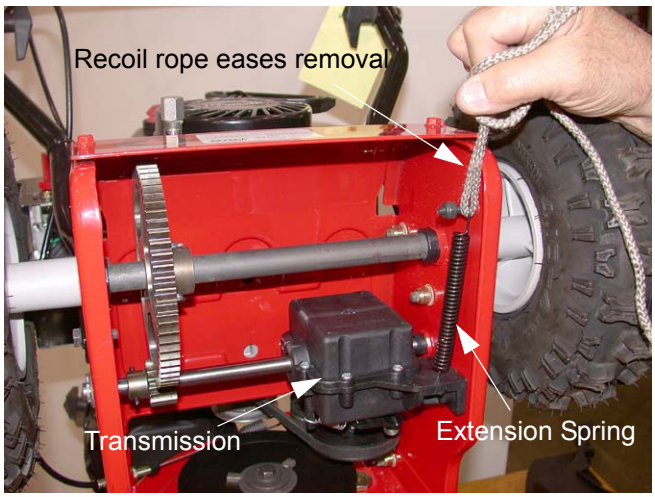


Figure 4.7

4.8. Pivot the transmission forward to release pressure on the drive belt and remove the belt from around the engine pulley and transmission.

4.9. Replace both belts in reverse order of disassembly.

5. AUGER SHEAR BOLTS

5.1. The augers are secured to the spiral shaft with two shear bolts and hex lock nuts. If you hit a foreign object or ice jam, the snow thrower is designed so that the bolts may shear. If the augers do not turn, check if the bolts have sheared. Two replacement shear bolts and hex lock nuts have been provided with the snow thrower.

NOTE: NEVER replace the auger shear bolts with standard hex bolts. Any damage to the auger gearbox or other components, as a result of doing so, will NOT be covered by your snow thrower warranty.

6. AUGER CABLE ADJUSTMENT

Periodic adjustment to the auger control cable may be required due to normal stretch and wear on the auger belt. Adjustment is needed if the augers seem to hesitate while turning, but the engine maintains speed.

6.1. Remove the screw securing the belt cover to the right side of the housing. See Figure 6.1.

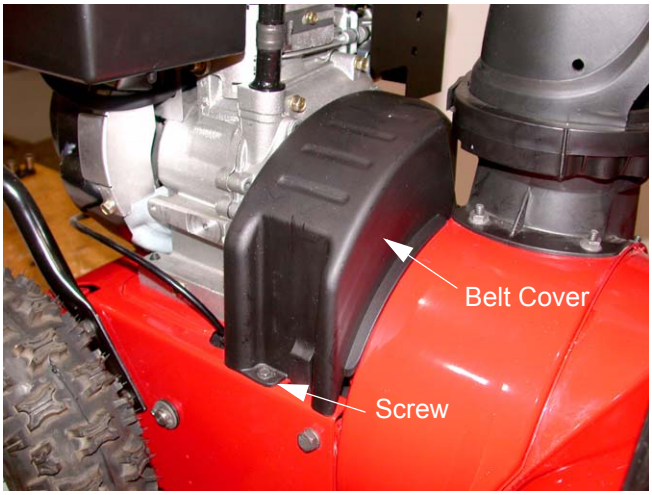


Figure 6.1

6.2. Press the tabs that secure it to the snow thrower housing. Remove the belt cover and set it aside.

6.3. You can now access the auger cable. Adjust the two hex nuts on the auger cable towards the

spring to increase the tension on the auger belt when it is engaged. See Figure 6.3.

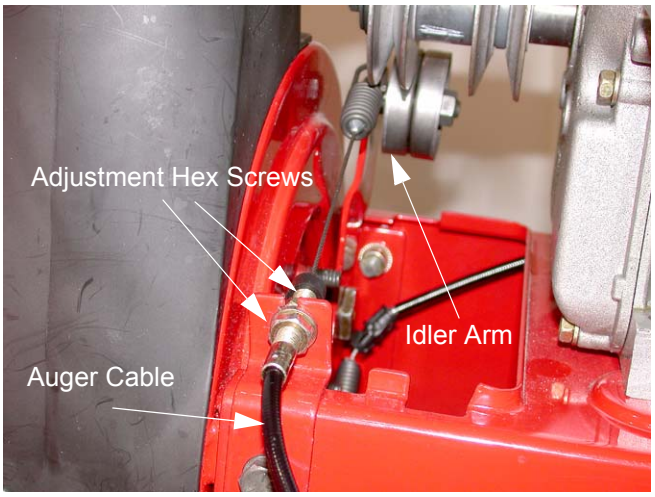


Figure 6.3

6.4. Reassemble the belt cover.

7. WHEEL REMOVAL

7.1. Tip the snow thrower up and forward so that it rests on the auger housing. See Figure 7.1.

Figure 7.1

7.2. Using a 1/2” socket and ratchet, remove the lock bolt and bell washer securing the wheel to the axle.

7.3. Remove the wheel from the axle.

NOTE: The wheel hubs are made from a special polymer. They will not rust or corrode.

8. DRIVE AXLE REMOVAL

8.1. Remove the wheels as described in section 7.

8.2. Remove the cotter pin and clevis pin securing the 70T gear to the axle shaft. See Figure 8.2.

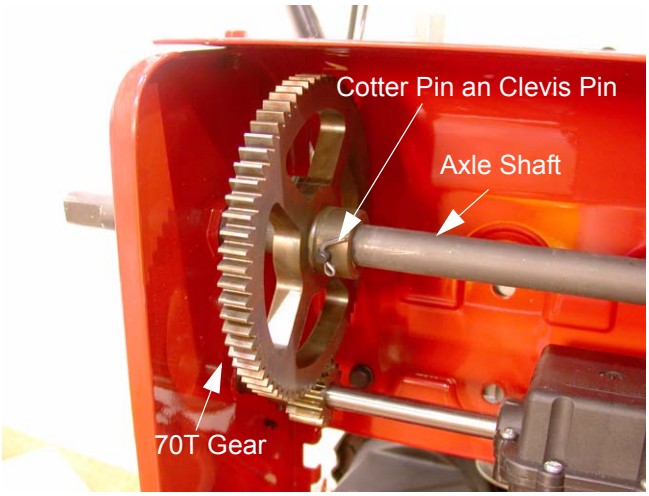
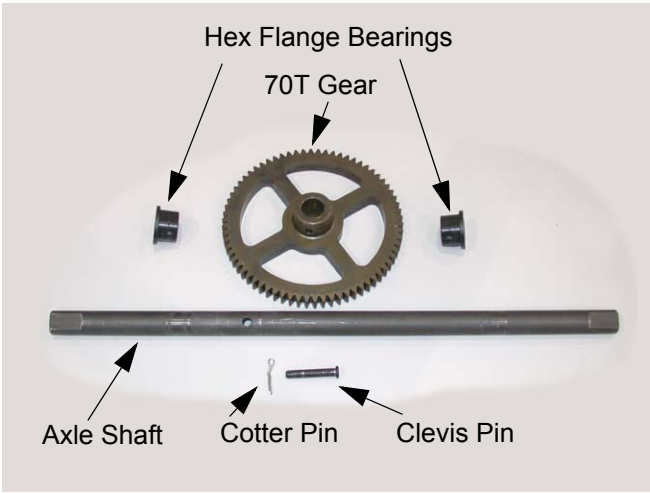


Figure 8.2

8.3. Slide the axle from the drive housing as you remove the gear from the axle shaft.

8.4. Remove the hex flange bearings from the drive housing.



Drive Axle Components

9. TRANSMISSION REMOVAL

9.1. Tip the unit up and forward on the auger housing.

9.2. Remove the wheels as described in section 7.

9.3. Remove the tension spring attached to the frame and transmission. See Figure 9.3.

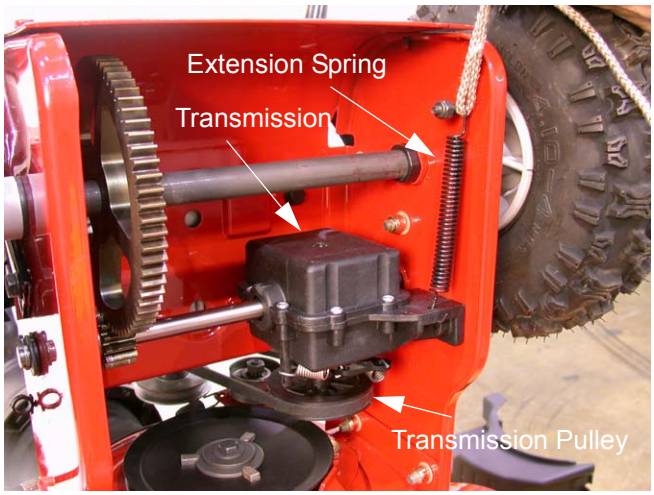


Figure 9.3

9.4. Remove the belt from around the transmission pulley.

9.5. Tip the transmission forward. Using a pair of needle nose pliers, squeeze the tabs on the drive cable where it attaches to the transmission and remove the cable from the bracket. See Figure 9.5.

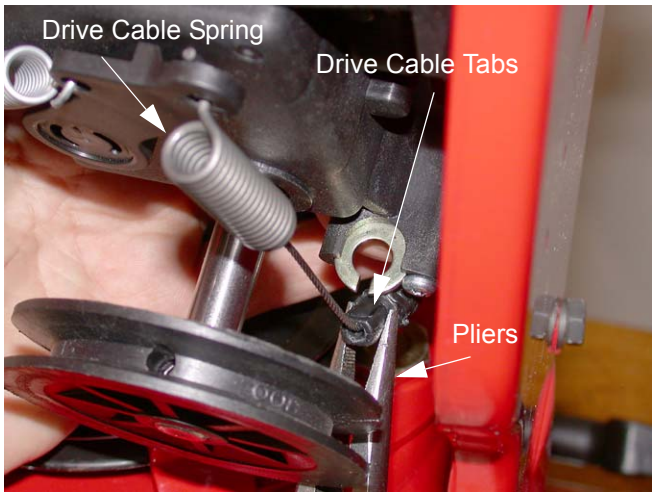


Figure 9.5

9.6. Remove the drive cable Z fitting from the transmission housing.

9.7. Remove the cotter pins and flat washers securing the transmission mounting axle to the drive housing. See Figure 9.7.

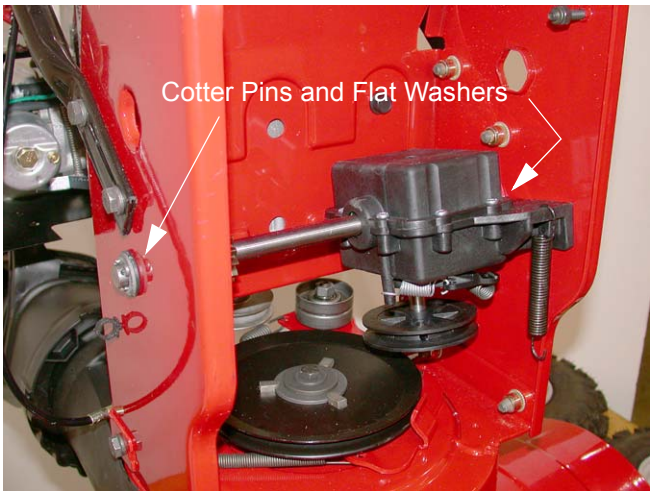


Figure 9.7

9.8. Move the transmission to the left and to the right and pivot it from the drive housing.

9.9. Remove the two hex flange bearings from the drive housing.

NOTE: The transmission is not serviceable. The transmission must be returned to the factory unopened for warranty reimbursement.

NOTE: The pinion gear and roll pin are serviceable.

10. AUGER PULLEY REMOVAL

NOTE: In order to ease removal of the auger pulley it is recommended that you remove the transmission first. See transmission removal section for instructions.

10.1. Using a ½" socket and ratchet, remove the lock bolt securing the auger pulley to the auger gearbox drive shaft. See Figure 10.1.

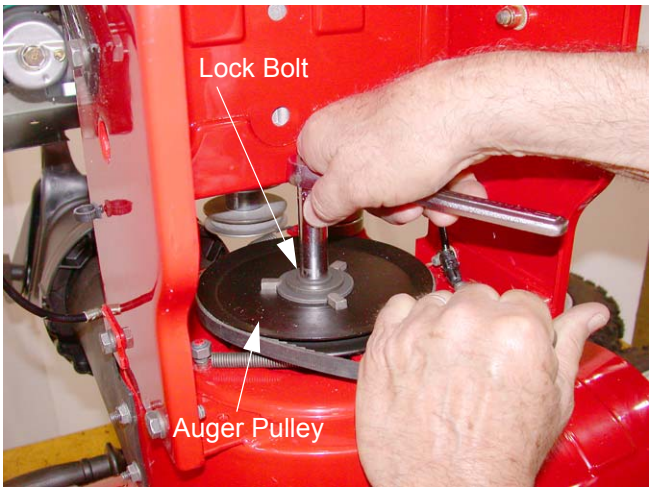


Figure 10.1

NOTE: Use a drive belt to apply pressure to the auger pulley and hold in place during removal of the lock bolt.

10.2. Inspect the idler arm, flat idler pulley, tension spring and cable for proper operation. Lubricate between the idler arm and auger housing at any point of contact. See Figure 10.2.

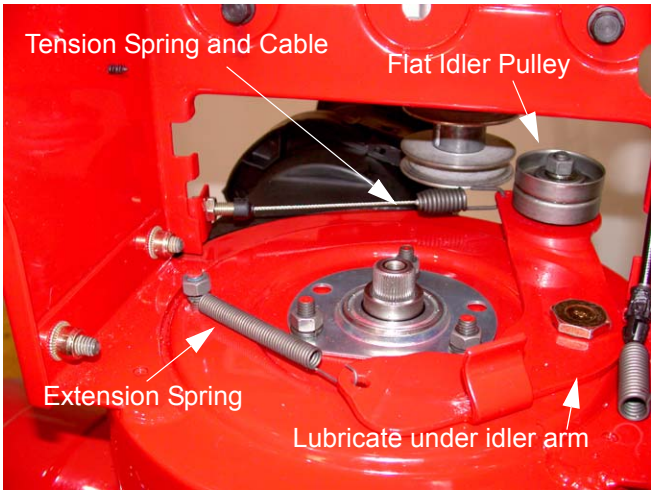


Figure 10.2

11. AUGER AND IMPELLER REMOVAL

11.1. Remove the wheels to ease removal of the transmission. See section 7.

11.2. Remove the Transmission. Refer to Section 9.

11.3. Remove the Auger Pulley. Refer to Section 10.

11.4. Using a 1/2" socket, remove the three hex nuts and lock washers securing the bearing housing to the auger housing. Set the bearing housing aside. See Figure 11.4.

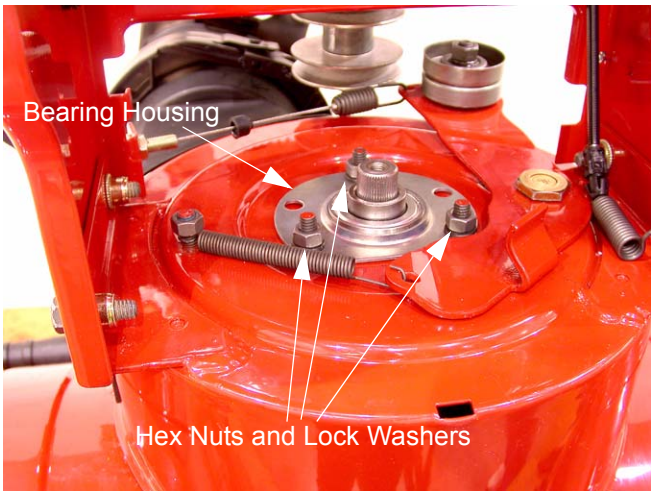


Figure 11.4

NOTE: The order of parts in this group are bearing housing, bearing, shim and spacer.

11.5. Tip the unit back and down so it rests on the drive housing.

11.6. Using a 1/2" socket, remove the six AB Screws and bell washers securing the auger assembly to the sides of the auger housing. See Figure 11.6.

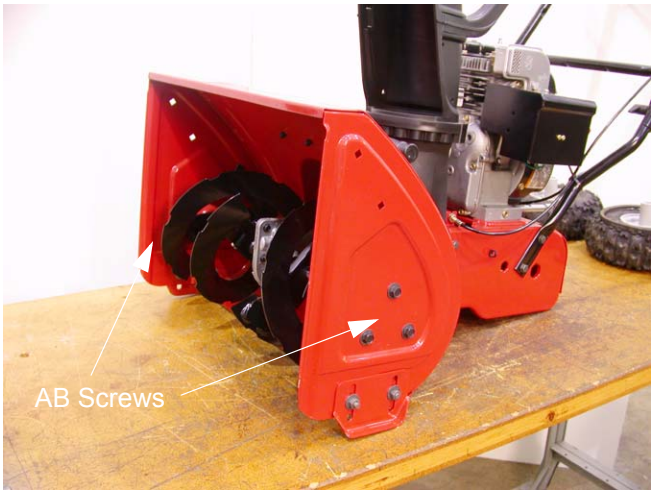


Figure 11.6

11.7. Remove the complete auger assembly from the auger housing. See Figure 11.7.

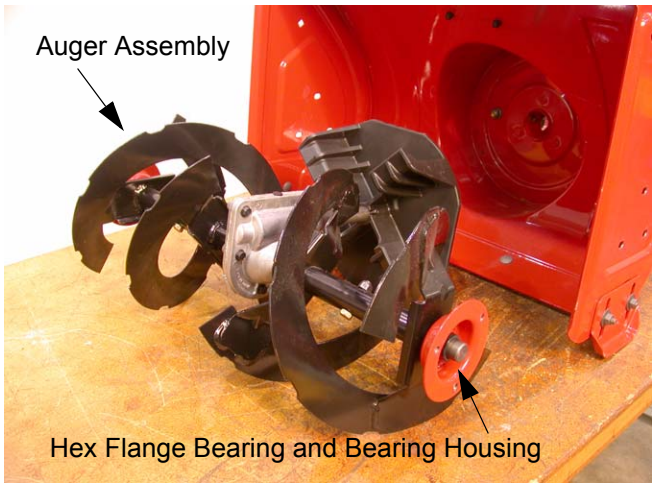


Figure 11.7

11.8. Inspect the hex flange bearings and bearing housings for any wear or damage

11.9. If not removed previously, remove the shim and spacer from the worm shaft. See Figure 11.9.

Figure 11.9

NOTE: The auger housing holes are elongated to allow auger alignment during reassembly.

NOTE: When reassembling be careful not to over torque and strip the bearing hub housing holes.

12. SPIRAL ASSEMBLY REMOVAL

12.1. Remove the auger and impeller assembly from the housing. Refer to Section 11.

12.2. Using a 1/2” socket and a box end wrench, remove the hex lock nut and shear bolt from the spiral assembly and auger drive shaft. See Figure 12.2.

Figure 12.2

12.3. Slide the spiral augers off the shaft and mark the spiral for left or right side.

NOTE: It is possible to install the auger spirals backwards. If necessary, refer to the illustrated parts diagram for proper orientation.

NOTE: During disassembly note the location of the flat washer on the gearbox side of the spiral and flange bushings on both ends of the spiral.

13. IMPELLER REMOVAL

13.1. Remove the auger and impeller as described in Section 11.

13.2. Using a 3/16 punch and hammer, remove the front spiral pin securing the impeller to the worm shaft. See Figure 13.2.

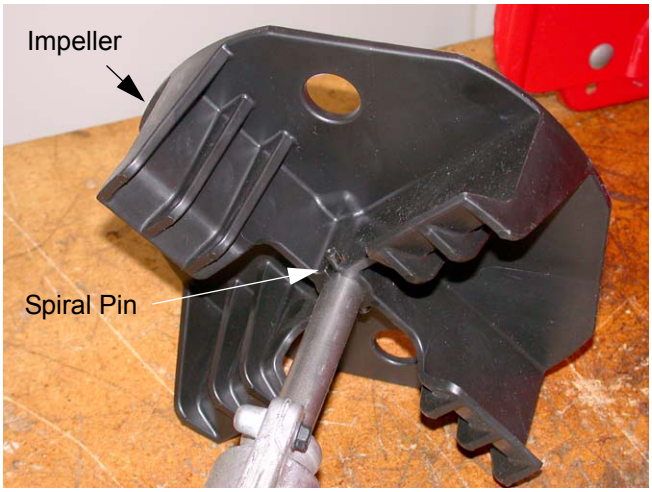


Figure 13.2

13.3. Slide the impeller on the worm shaft towards the reducer housing to gain access to the rear spiral pin.

13.4. Using a 3/16 punch and hammer, remove the rear spiral pin. See Figure 13.4.

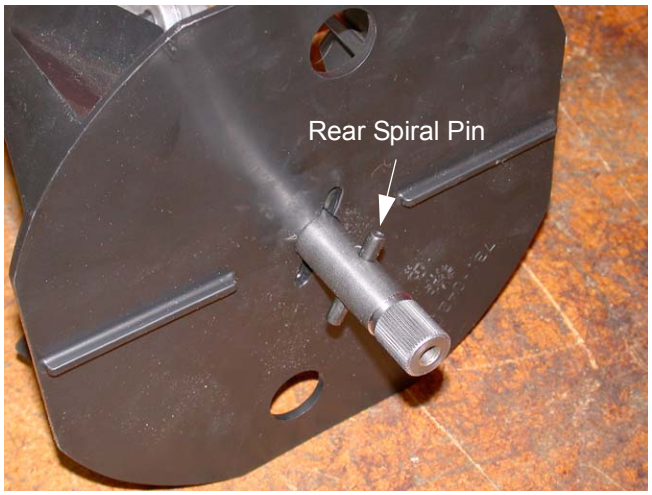


Figure 13.4

13.5. Remove the impeller from the worm shaft.

14. REDUCER TRANSMISSION

14.1. The reducer can be serviced. It can also be purchased as an assembly. See Figure 14.1.

NOTE: On the top of the gearbox is inspection and access hole for adding grease when and if required. Remove the rubber grommet from the lubrication port.

Figure 14.1

15. REDUCTION TRANSMISSION DISASSEMBLY

15.1. Using a 3/8” socket, remove the 5 TT screws securing the reducer halves together. See Figure 15.1.

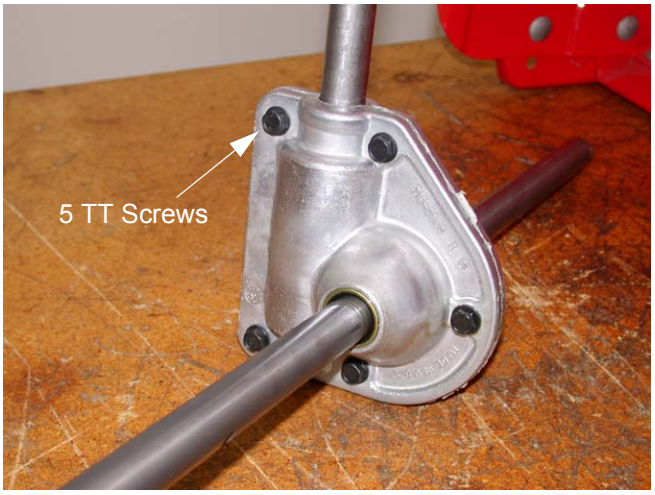


Figure 15.1

15.2. Separate the housing halves using a putty knife. See Figure 15.3.

15.3. Inspect all internal parts for wear or damage.

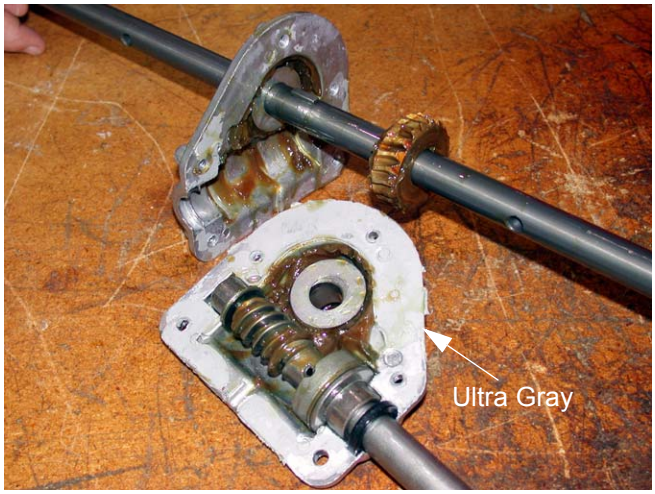


Figure 15.3

NOTE: before assembly, clean off all of the ultra-gray sealant on both sides of the gearbox housing. Use ultra gray to reseal the housing before assembly.

16. AUGER CABLE REPLACEMENT

16.1. Using two 7/16”inch wrenches loosen the two hex nuts attaching the auger control cable to the bracket on the left hand drive housing. See Figure 16.1.

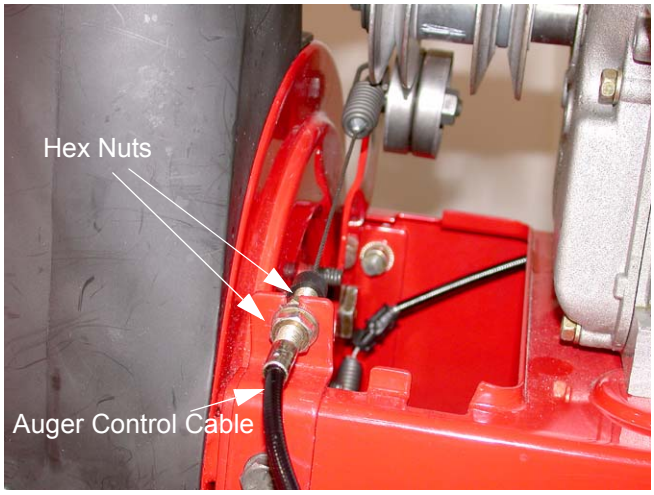


Figure 16.1

16.2. Spin the inner nut off the end of the control cable and slide the cable out of the bracket.

16.3. Remove the spring from the auger bracket.

16.4. Using a ½” inch socket and a ½” inch box wrench loosen the hex nut securing the cable bracket to the left hand handle bar. See Figure 16.4.

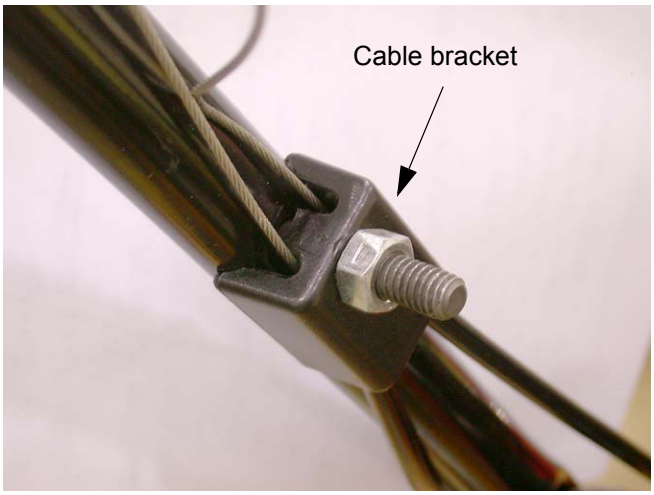


Figure 16.4

16.5. Remove the cable from the bracket and remove the “Z” fitting from the bail.

16.6. Slide the cable through the plastic tie and plastic mounting grommet on the frame.

16.7. Replace in the reverse order of disassembly.

17. DIRECTIONAL DISCHARGE CHUTE ASSEMBLY REMOVAL.

17.1. Turn the discharge chute until it faces to the right. See Figure 17.1.

Figure 17.1

17.2. Using a screwdriver, pry the clasp on the chute assembly collar to release the clasp. See Figure 17.2.

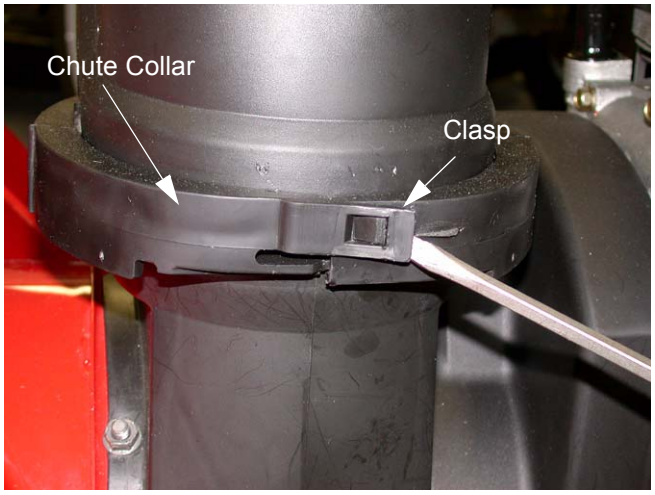


Figure 17.2

17.3. Pry the lower inner clasp to release the collar. See Figure 17.3.

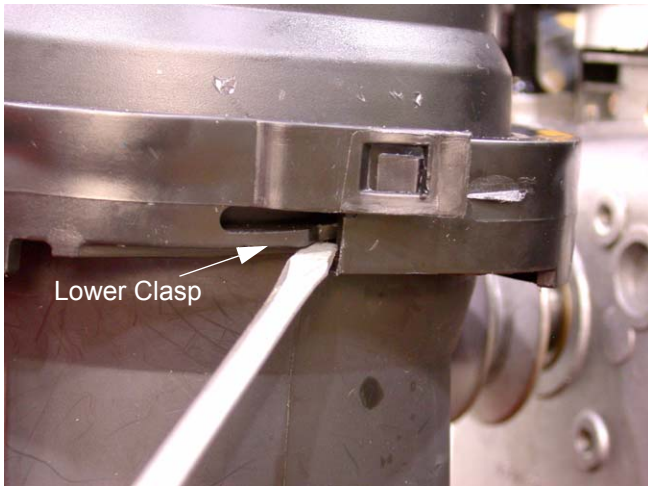
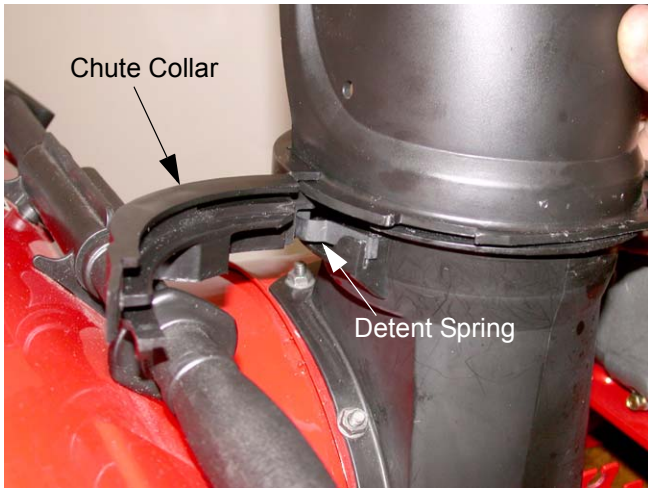


Figure 17.3

17.4. Remove the collar.

17.5. Lift off the discharge chute

NOTE: During assembly make sure to position the collar into the detent spring. Take time to fit upper and lower flanges on the collar around the chute flanges. This will fit without forcing.



Assembly Detail

18. REMOVAL OF THE AUGER IDLER BRACKET

18.1. Remove the belts as described in Section 4.

18.2. Remove the wheels as described in Section 7.

18.3. Remove the transmission as described in Section 9.

18.4. Remove the auger pulley as described in Section 10.

18.5. Remove the auger and impeller as described in Section 11.

18.6. Using a 15/16” socket on the Idler side and a 9/16” socket on the impeller side, remove the shoulder screw and flange lock nut securing the idler to the auger housing. See Figure 18.6.

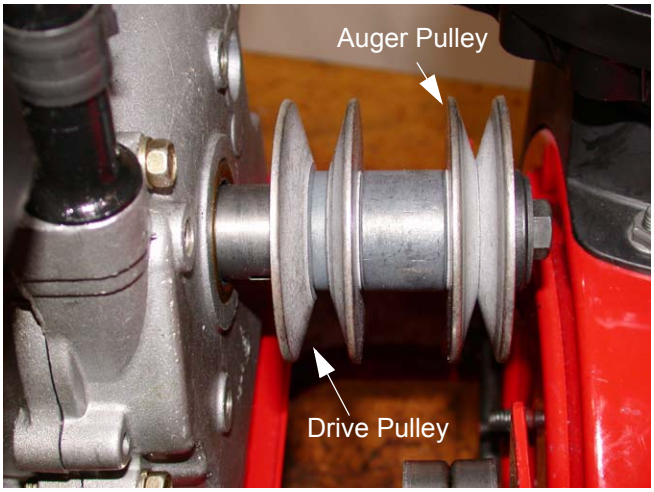
Figure 18.6

18.7. Disconnect the extension spring from the idler to the housing.

18.8. Remove the Idler bracket.

19. ENGINE PULLEYS

NOTE: If there is reason to disassemble the engine pulleys, pay attention to the shape and orientation of the pulleys and spacers for reassembly.



20. CARBURETOR BOWL DRAIN

This model has a spring loaded drain for the float bowl. It can be used to drain water or old fuel from the float bowl. See Figure 20.0.

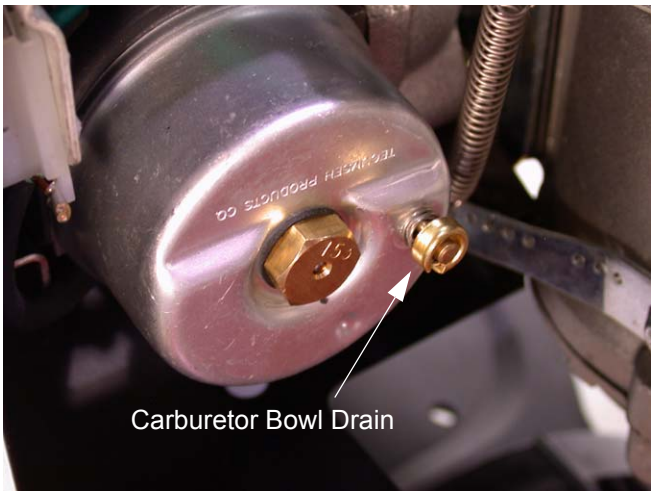


Figure 20.0