

OWNER'S MANUAL

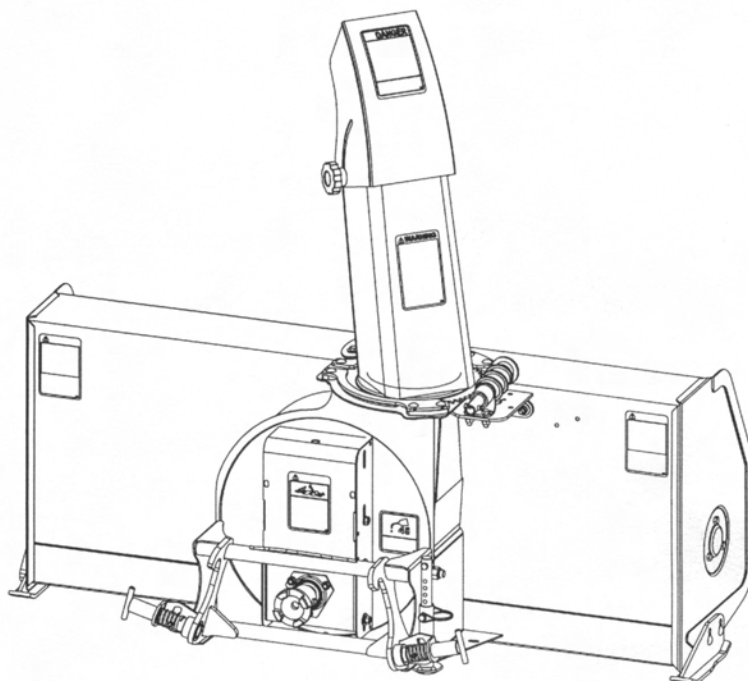
OM0455SB-A / Rev0 01-17

MANUAL PN 77700- 08318

Kubota®

BX2816 – 50" Snowblower

SERIAL NO. 21700001 AND UP



For BX1880 / BX2380 / BX2680 / BX23S series

**PLEASE READ THIS MANUAL CAREFULLY
KEEP READY AT ALL TIMES**

INTRODUCTION

TO THE PURCHASER

All products are designed to give safe, dependable service if they are operated and maintained according to instructions. **Read and understand this manual before operation, and keep it in your files for further reference.**

This manual has been prepared to assist the owner and operators in the safe operation and suitable maintenance of the equipment. The information is applicable to products at the time of manufacture and does not include modifications made afterwards.

Read and understand this operator's manual before attempting to put equipment into service. Familiarize yourself with the operating instructions **AND ALL THE SAFETY RECOMMENDATIONS** contained in this manual and those labeled on the equipment and on the machine. Follow the safety recommendations and make sure that those with whom you work follow them.

TO THE DEALER

Give this manual to the owner upon delivery of the equipment.

TO THE PURCHASER AND THE DEALER

Illustrations

The illustrations may not necessarily reproduce the full detail and the exact shape of the parts or depict the actual models, but are for reference only.

Direction Reference

All references to right and left, forward or rearward are from the operator seat.

To assist your dealer in handling your needs, please record hereafter the model number and serial number of your equipment and machine. It is also advisable to supply them to your insurance company. It will be helpful in the event that equipment or machine is lost or stolen

MODEL: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____

DEALER NAME: _____

DEALER TELEPHONE NUMBER: _____

INTRODUCTION

All products are designed to give safe, dependable service if they are operated and maintained according to instructions. **Read and understand this manual before operation.** It is the owner's responsibility to be certain anyone operating this product reads this manual, and all other applicable manuals, to become familiar with this equipment and all safety precautions. Failure to do so could result in serious personal injury or equipment damage. If you have any questions, consult your dealer.



SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.



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



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



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

IMPORTANT : Indicates that equipment or property damage could result if instructions are not followed.

NOTE : Gives helpful information.

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The Product(s) described in this Publication are designed and manufactured only for the country in which they are initially wholesaled by Kubota. Kubota does not provide parts, warranty or service for any Product which is re-sold or retailed in any country other than the country for which the Product(s) were designed or manufactured.

California Proposition 65

WARNING

Engine exhaust, some of its constituents, certain vehicle components and fluids, contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

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SAFETY INFORMATION

Children

Tragic accidents can occur if the operator is not alert to the presence of children. Children are generally attracted to machines and the work being done. Never assume children will remain where you last saw them

1. Keep children out of the operating area and under the watchful eye of another responsible adult.
2. Be alert and turn machine off if children enter the work area.
3. Before and when backing, look behind for small children.
4. Never carry children while operating the machine. They may fall off and be seriously injured or interfere with the safe operation of the machine.
5. Never allow children to play on the machine or attachment even when the machine is turned off.
6. Never allow children to operate the machine even under adult supervision.
7. Use extra care when approaching blind corners, shrubs, trees, or other obstructions that might hide children from sight.

Before Operation

1. Read and understand both the machine AND implement operator's manual before using the snowblower. Know how to operate all controls and how to stop the unit and disengage the controls quickly. Lack of knowledge can lead to accidents.
2. Park the machine/implement on level ground, set the parking brake, lower the implement to the ground, place all control levers in neutral, shut off the engine and remove the ignition key and allow the rotating parts to stop BEFORE making any implement adjustments, repairs or inspections.
3. Keep clear of all rotating parts. Do not put hands or feet under, or into snowblower and subframe with engine running.

4. For your safety, do not work under any hydraulically supported machine elements, they may creep down, suddenly drop or be accidentally lowered. Do not use loader, quick hitch, or an implement as a jack for servicing.
5. Do not operate the machine/implement that is defective or has missing parts. Make sure that all recommended maintenance procedures are completed before operating the unit.
6. Keep the machine/implement clean. Snow, dirt or ice build-up can lead to malfunction or personal injury from thawing and refreezing in garage. Inspect and clean every rotating parts.
7. Do not modify or alter this implement or any of its components, or any implement function without first consulting your dealer. The manufacturer will not claim responsibility for fitment of unapproved parts and/or accessories and any damages as a result of their use.
8. Verify that all machine/implement safety protective devices are in place. Shields, guards and covers must be correctly installed at all times. When necessary to remove these for servicing, cleaning, or repair work, they must be reinstalled immediately.
9. Always make sure all implement components are properly installed and securely fastened.
10. Check that all machine/implement drivelines are in good working order.
11. Check for moving parts excessive wear regularly. ALWAYS USE GENUINE PARTS WHEN REPLACEMENT PARTS ARE REQUIRED.
12. Prior to operation, clear work area and mark all curbs, pipes, etc. that cannot be moved.
13. Inspect the machine/implement after striking any foreign object to assure that all machine/implement parts are safe and secure and not damaged.
14. Handle fuel with care, as it is highly flammable. Use approved fuel container.
15. Never add fuel to a running engine or a hot engine.
16. Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors. Replace fuel cap securely and wipe up spilled fuel. Always refuel using a properly grounded system.

SAFETY INFORMATION

17. Check all machine controls regularly and adjust where necessary. Make sure that the brakes are evenly adjusted. Periodically check all nuts and bolts for tightness, especially wheel hub and rim nuts.
18. Make sure the machine is counterweighted and has tire chains for better traction and stability as recommended by your dealer. Weights provide the necessary balance to improve stability, traction and steering. Use only those recommended by your dealer.
19. Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable noises..
8. Park the machine/implement on level ground, place the transmission in neutral, set the parking brake, disengage the driving system, lower the equipment to the ground, place all levers including auxiliary control levers in neutral, shut off the engine and remove the ignition key **BEFORE LEAVING THE MACHINE.**
9. Always drive the machine at speeds compatible with safety, especially when operating over rough ground, crossing ditches, slippery surface or when turning.
10. Operate only with good visibility and during daylight hours, or when the area is well lit with bright artificial light.
11. Do not run the engine indoors except when starting engine and transporting attachment in or out of building. Carbon monoxide gas is colorless, odorless and deadly.

During Operation

1. Never allow anyone to operate the machine and implement until they have read the manuals completely and are thoroughly familiar with their basic operation. Lack of operating knowledge can lead to accidents.
2. Do not allow anyone to ride on the machine/implement at any time. The only one allowed is the operator that **MUST** sit in the driver seat.
3. Never allow anyone near the work area. The debris that can be thrown could cause serious personal injuries.
4. Never stand alongside of the implement while the engine is running.
5. Never operate the implement without safety protective devices in place. All machine/implement shields, guards and covers must be correctly installed at all times.
6. Keep clear of all rotating parts. Do not put hands or feet under, or into the implement with engine running.
7. If the implement starts to vibrate abnormally, disengage the PTO, stop the engine immediately and check for cause. Excessive vibration is generally a sign of trouble.
12. Exercise extreme caution when operating on or crossing a gravel drive, walks, or roads. Stay alert for hidden hazards or traffic.
13. Use extra caution when backing up.
14. Operate up and down (not across) intermediate slopes. Avoid sudden starts and stops. Drive machine backwards up steeper slopes with the implement off. Then operate as you travel down the slope.
15. Never park the machine on a steep slope. Do not attempt to operate on steep slopes. If operating on slopes is necessary, exercise extreme caution when changing direction.
16. Disengage power to implement when transporting or when not in use

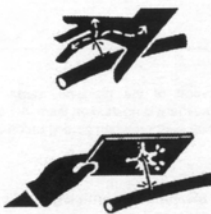




GENERAL SAFETY INFORMATION

	<p>BEFORE YOU START SERVICE</p> <ul style="list-style-type: none"> • Read all instructions and safety instructions in this manual and on your machine safety decals. • Clean the work area and machine. • Park the machine on a stable and level ground, and set the parking brake. • Lower the implement to the ground. • Stop the engine, then remove the key. • Disconnect the battery negative cable. • Hang a "DO NOT OPERATE" tag in the operator station. 		<p>No Smoking or Open Flames while Fueling</p> <ul style="list-style-type: none"> • Fuel is extremely flammable and dangerous. Never smoke near fuel. If fuel is spilled on the machine, its engine, or electrical parts, it may cause a fire. If fuel is spilled, wipe it all up immediately. • Never smoke while filling the machine with fuel. And always tighten the fuel cap securely and wipe up any spilled fuel.
	<ul style="list-style-type: none"> • When performing maintenance on the equipment, hang the DO NOT OPERATE sign where it will be obvious from and around the driver's seat. • When performing maintenance or repairs, always lower attachments to the ground, stop the engine and secure the tracks with blocks. • When performing maintenance on the equipment, always disconnect the negative battery cable. • Before using tools, make sure you understand how to use them correctly and use tools in good condition and of the right size for the job. 		<ul style="list-style-type: none"> • Before getting on/off of the machine, clean off around the steps so there is no mud on them. Always give yourself 3-point support when getting on/off the machine. <p>CAUTION</p> <ul style="list-style-type: none"> • 3-point support means using both legs and one hand or both hands and one leg as you climb up/down.
	<p>START SAFELY</p> <ul style="list-style-type: none"> • Do not do the procedures below when you start the engine. <ul style="list-style-type: none"> – short across starter terminals – bypass the safety start switch • Do not alter or remove any part of machine safety system. • Before you start the engine, make sure that all shift levers are in neutral positions or in disengaged positions. • Do not start the engine when you stay on the ground. Start the engine only from operator's seat. 		<ul style="list-style-type: none"> • Do not remove the radiator cap when the engine operates, or immediately after it stops. If not, hot water can spout out from the radiator. Only remove the radiator cap when it is at a sufficiently low temperature to touch with bare hands. Slowly loosen the cap to release the pressure before you remove it fully.
	<p>Starting the Machine Safely</p> <ul style="list-style-type: none"> • Before starting the engine, always sit in the driver's seat and make sure the area is safe and clear. • As it is dangerous, never start the engine from anywhere but the driver's seat. • Always check and make sure control lever(s) are not engaged before starting the engine. • Never start the engine by hot-wiring the starter circuit. This is not only dangerous, but may damage the machine. 		<ul style="list-style-type: none"> • The engine, muffler, radiator, hydraulic line, etc., have parts that remain very hot even after the engine has been stopped. Be sure to avoid these parts, as touching them can result in burns. Radiator coolant, hydraulic fluid and oil also remain hot. Therefore, do not attempt to remove caps and plugs, etc., before these fluids have sufficiently cooled. • Make sure the coolant temperature has dropped sufficiently before opening the radiator cap. Also, since the inside of the radiator is pressurized, when removing the cap, first loosen it to release the pressure before removing the cap completely.
	<ul style="list-style-type: none"> • Wear clothes appropriate for working on equipment. Do not wear loose-fitting clothes as they may catch on the machine controls. • When working on the equipment, use all safety gear, such as a helmet, safety glasses and shoes, that are required by law or regulation. • Never perform maintenance while drowsy or under the influence of alcohol or drugs. 		<ul style="list-style-type: none"> • Grease is under high pressure inside the hydraulic cylinder. It is very dangerous to loosen a grease nipple quickly as it may shoot off. Always loosen grease nipples slowly. • And never face a grease nipple while loosening it.
	<p>Be Ready for an Emergency</p> <ul style="list-style-type: none"> • Keep a first-aid kit and fire extinguisher close at hand so you can use it when needed. • Keep emergency contact information for doctors, hospitals and ERs handy. 		<p>PREVENT A FIRE</p> <ul style="list-style-type: none"> • Fuel is very flammable and explosive under some conditions. Do not smoke or let flames or sparks in your work area. • To prevent sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last. • The battery gas can cause an explosion. Keep the sparks and open flame away from the top of battery, especially when you charge the battery. • Make sure that you do not spill fuel on the engine.
	<p>KEEP A GOOD AIRFLOW IN THE WORK AREA</p> <ul style="list-style-type: none"> • If the engine is in operation, make sure that the area has good airflow. Do not operate the engine in a closed area. The exhaust gas contains poisonous carbon monoxide. 		<p>Dispose of Waste Fluids Properly</p> <ul style="list-style-type: none"> • Never dispose of waste fluids on the ground, in the gutter, a river, pond or lake. Always dispose of hazardous substances like waste oil, coolant and electrolytic fluid in accordance with the relevant environmental protection regulations. • Keep the safety plates clean so they can be read. If a safety plate is damaged and comes off or becomes illegible, put a plate with the same warnings back in its place.



GENERAL SAFETY INFORMATION

	<ul style="list-style-type: none"> The pressure in the hydraulic circuit stays at pressure even after the engine stops. Before removing parts, such as hydraulic devices from the machine, first release the pressure. Please note that when releasing residual pressure, the machine itself and/or implements may move without warning, so be very careful when releasing the pressure. Oil gushing out under pressure is extremely dangerous as it may pierce your skin or your eyes. Similarly, oil leaking out of pinholes is not visible. So when checking for oil leaks, always wear safety glasses and gloves and use a piece of cardboard or a wood block to shield yourself from oil. 		<ul style="list-style-type: none"> When you need to access the underside of the machine for maintenance purposes, but sure to support the machine with a safety stand. Getting under the machine while supporting the machine by machine's own hydraulic cylinder or using a hydraulic jack can be extremely dangerous in the event of a hydraulic fluid leakage or similar mishap. <p>(1) Safety stand (2) Secure point for safety stand</p>
	<ul style="list-style-type: none"> Do not open a fuel system under high pressure. The fluid under high pressure that stays in fuel lines can cause serious injury. Do not disconnect or repair the fuel lines, sensors, or any other components between the fuel pump and injectors on engines with a common rail fuel system under high pressure. Put on an applicable ear protective device (earmuffs or earplugs) to prevent injury against loud noises. Be careful about electric shock. The engine generates a high voltage of more than DC100 V in the ECU and is applied to the injector. 		<ul style="list-style-type: none"> Whenever it is necessary to open the engine covers or hood in order to service the machine, always prop them open. If it is absolutely necessary to run the engine while working on the machine, make sure you are clear of all rotating or moving parts. Also take care not to leave anything, such as tools or rags, near any moving parts.
	<ul style="list-style-type: none"> Engage the loader control valve lock to prevent accidental actuation when the implement is not in use or during transport. Do not utilize the valve lock for machine maintenance or repair. Do not perform machine maintenance with loader in the air. If possible, follow loader instructions to remove loader before performing maintenance. If the machine has a backhoe, engage swing and boom locks. 		

SPECIFICATIONS

Features and Specifications	BX2816
Type	Counter clockwise
Overall width	50"
Overall height (without chute)	21"
Overall height (with chute)	46"
Overall length (without female hitch)	22 1/2"
Overall length (with female hitch)	26 3/8"
Working width	49 3/4"
Working height	20"
Housing thickness	14 Ga.
Side plate thickness	11 Ga.
Thickness of the drum back plate	14 Ga.
Thickness of the drum contour	12 Ga.
Number of stages	2
Drive	Driveline
Impeller drive	Chain #40
Driving sprocket	40C11
Driven sprocket	40B32
Auger drive	Worm gearbox - ratio 5:1
Auger diameter	12 3/4"
Auger pitch	15"
Impeller width	15 3/4"
Number of impeller blades	4
Chute position	Right
Chute rotation	Manual
Adjustable deflector	Yes
Adjustable skid shoes	Yes
Replaceable cutting edge	Yes
Cutting edge angle	20°
Number of shearbolts on auger	2
Number of shearbolt on impeller	1
Hitch system	4 point hitch "A" shape
Approximate shipping weight	287 lbs.

ESTIMATED ASSEMBLY TIME

Refer to the following table for the estimated assembly time to open the package and assemble the equipment.

	50" Snowblower BX2816
Estimated initial installation time	25-35 min
Reinstallation (on the tractor)	2-3 min

The assembly times of the table are only a reference under normal conditions according to the following assumptions:

1. The assembly is done by a competent person who is familiar with the equipment.

2. The following tools and materials are prepared:

- Wrench set (flat wrenches)
- Ratchet & socket set
- Cutting pliers
- Allen key set
- Security gloves

ASSEMBLY

SNOWBLOWER ASSEMBLY

Before assembly, separate all hardware according to size. When the assembly is complete, tighten all the bolts by referring to the "Torque Specification Table" located at the end of the manual.

Preparation

Remove the lawnmower and the front loader if equipped from the tractor by following the instruction in the tractor's operator's manual.

IMPORTANT: The front loader and subframe should never be installed simultaneously on the tractor.



WARNING: To avoid serious personal injury or death: Read and understand the SAFETY INFORMATION on the previous pages before installation and operation. Perform all the assembly with the unit properly blocked and supported.



WARNING: To avoid serious personal injury or death: Park the tractor on level ground, place the transmission in neutral, set the parking brake, disengage the drive system, put all levers to neutral, shut off the engine, remove the ignition key and wait for all movement to stop **BEFORE** starting installation.

ASSEMBLY

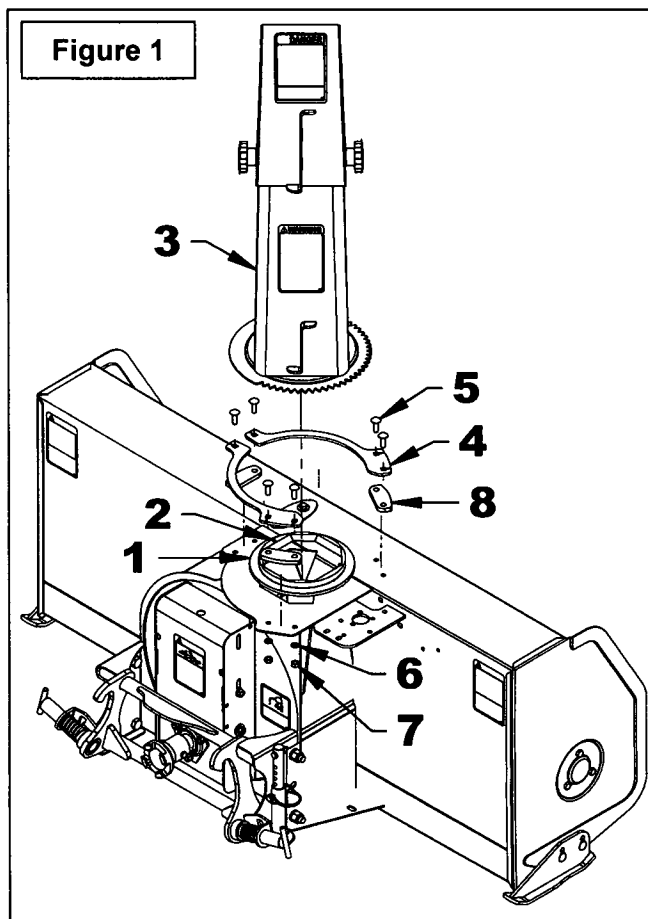
SNOWBLOWER ASSEMBLY

The snowblower is pre-assembled at the factory; however, parts in the bag and box must be assembled. Use the present manual and lay out all parts for assembly. Separate bolts and nuts into various sizes. After assembly, torque all the bolts according to the "Torque Specification Table" enclosed at the end of the manual..

Chute Installation

(Figure 1)

1. Place the rotation bushing (item 1) over the fan output with the marker (item 2) facing up and towards the left side of the snowblower and install the chute Item 3).
2. Secure the chute with the two retaining plates (item 4) with six 5/16"NC x 1" carriage bolts (item 5), three spacers (item 8), 5/16" lockwashers and 5/16" nuts (items 6-7).
3. Tighten according to the "Torque Specification Table" at the end of the manual.



N°	PARTS FIGURE 1	QTY
1	Rotation bushing	1
2	* Rotation bushing marker	1
3	Chute	1
4	Retaing plate	2
5	Carriage bolt ø5/16"NC x 1" PTD	6
6	Lockwasher ø5/16" PTD	6
7	Hex. nut ø5/16"NC PTD	6
8	Apacer	3

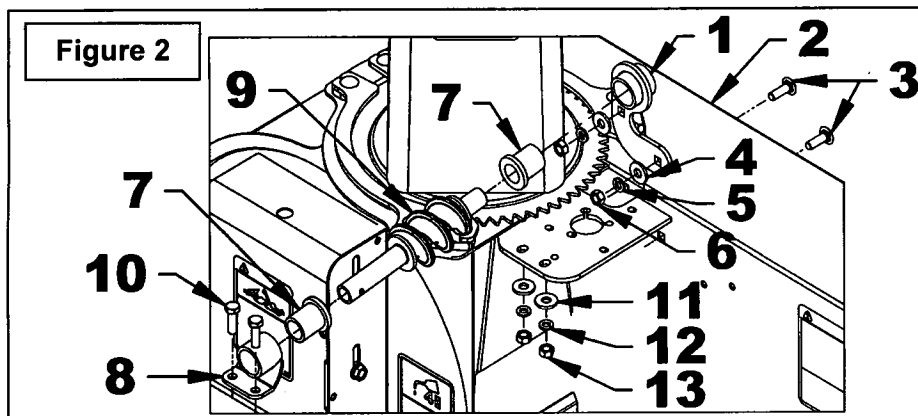
ASSEMBLY

Installation of the Manual Rotation

(Figure 2)

If electric or hydraulic rotation was selected, go to step "**Connecting the Snowblower**"

1. Attach the front rotation bracket (item 1) to the snowblower housing (item 2) with two 5/16"NC x 1" carriage bolts (item 3), two 5/16" flat washers, two 5/16" lockwashers and two 5/16"NC nuts (items 4-5-6). Do not tighten.
2. Insert the plastic bushings (item 7) in the front bracket (item 1) and rear support (item 8).
3. Insert the rotation worm (item 9) in the front bracket (item 1) and rear support (item 8)
4. Attach the rear support (item 8) to the snowblower housing with two 5/16"NC x 1" bolts (item 10), 5/16" flat washers, 5/16" lockwashers (item 12) and 5/16"NC nuts (items 11-12-13).
5. Slide the rotation worm (item 9) toward the chute so it will connect as much as possible with the chute gear and tighten the two rotation bracket nuts (item 6) and the two rear support nuts (item 13). The rotation worm must turn freely otherwise, readjust.



N°	PARTS FIGURE 2	QTY
1	Front rotation bracket	1
2	Snowblower	1
3	Carriage bolt ø5/16"NC x 1" PTD	2
4	Flat washer ø5/16" PTD	2
5	Lockwasher ø5/16" PTD	2
6	Hex. nut ø5/16"NC PTD	2
7	Plastic bushing 1 5/16" lg.	2
8	Rear rotation worm support	1
9	Rotation worm	1
10	Hex. bolt ø5/16"NC x 1" PTD	2
11	Flat washer ø5/16" PTD	2
12	Lockwasher ø5/16" PTD	2
13	Hex. nut ø5/16"NC PTD	2

ASSEMBLY

Connecting the Snowblower (Figures 3)

1. Make sure the area is clear of any object that could interfere with the connection.
2. Make sure the drive system is functional and that there's no residue, snow or ice that would prevent them from operating properly.
3. **Figures 3a-3c:** Make sure the engagement shafts (items 2-8) and the hitches connection points (items 3-7-9-10) are clean and not covered with snow or ice.
4. **Figure 3c:** Make sure the "T" pins (item 7) of the equipment hitch is in the disengaged position.
5. **Figure 3a:** Place the engagement lever (item 1) in the unlock position by moving it completely rearward as illustrated.
6. **Figure 3b:** Make sure the snowblower is slightly tilted backwards as shown on figure.
7. Make sure the tractor PTO is disengaged.

⚠ WARNING: To avoid serious injuries or death: never engage the tractor PTO when the engagement lever of the male hitch is in the unlocked position and there's no PTO driven equipment installed.

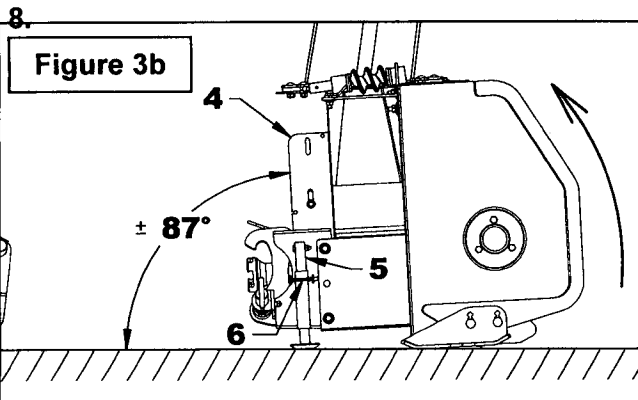
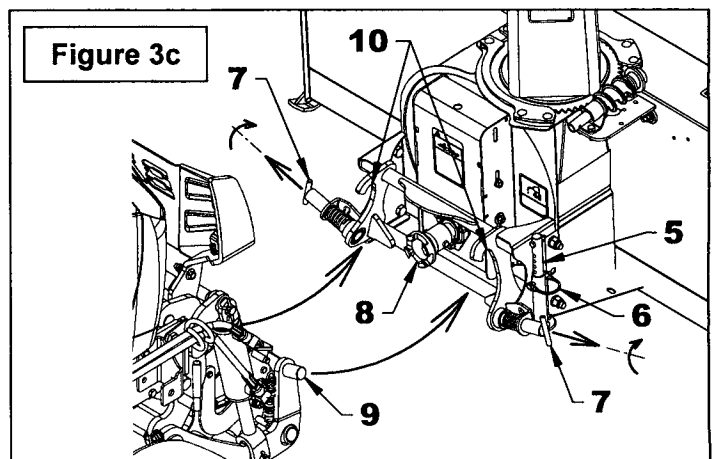
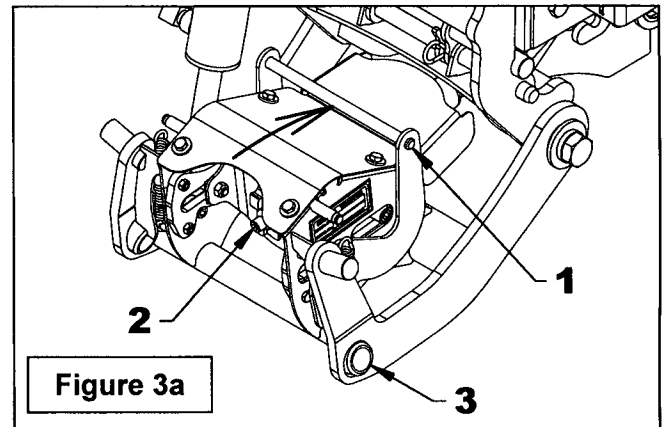


Figure 3c: Start the tractor, remove the parking brake and advance slowly making sure to align the snowblower female hitch with the male hitch of the tractor. Lower the male hitch enough so the two hitch pins (item 9) can be inserted in the hooks (item 10) of the snowblower hitch

9. Raise the snowblower completely to correctly position the snowblower hitch with the tractor hitch.



ASSEMBLY

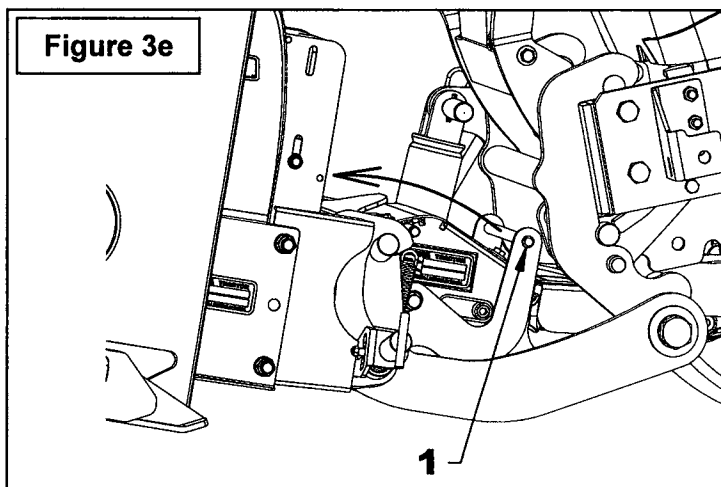
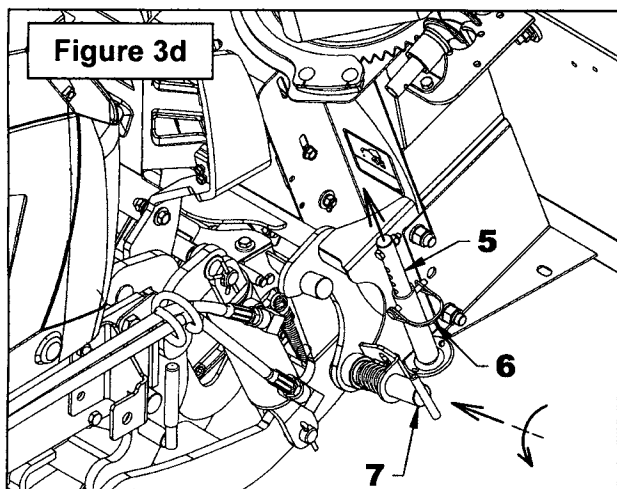
⚠ WARNING: To avoid serious injuries or death: always engage the lock of the tractor control lever, set the parking brake and turn off the engine before stepping down from the tractor to connect or disconnect the equipment.

10. **Figure 3d:** Insert the two equipment hitch T pins (item 7) in the male hitch bushings (**figure 3a**, item 3) making sure they are fully engaged.
11. **Figure 3d:** Raise the parking stand (item 5) completely and secure with the 1/4" x 1 3/4 round locking pin (item 6).
12. **Figure 3e:** Move the engagement lever (item 1) completely forward (towards the snowblower) to engage the drive mechanism.

IMPORTANT: Make sure the couplers are clean before connecting them.

13. If applicable, connect the snowblower hydraulic/electric couplers to the tractor couplers.
14. With the hydraulic control lever, lower the equipment to the ground..
15. Adjust the engine speed to **low rpm** and engage the PTO to complete the engagement of the equipment.

IMPORTANT: Engaging the PTO must always be done at **low rpm** so as not to damage the mechanical components.

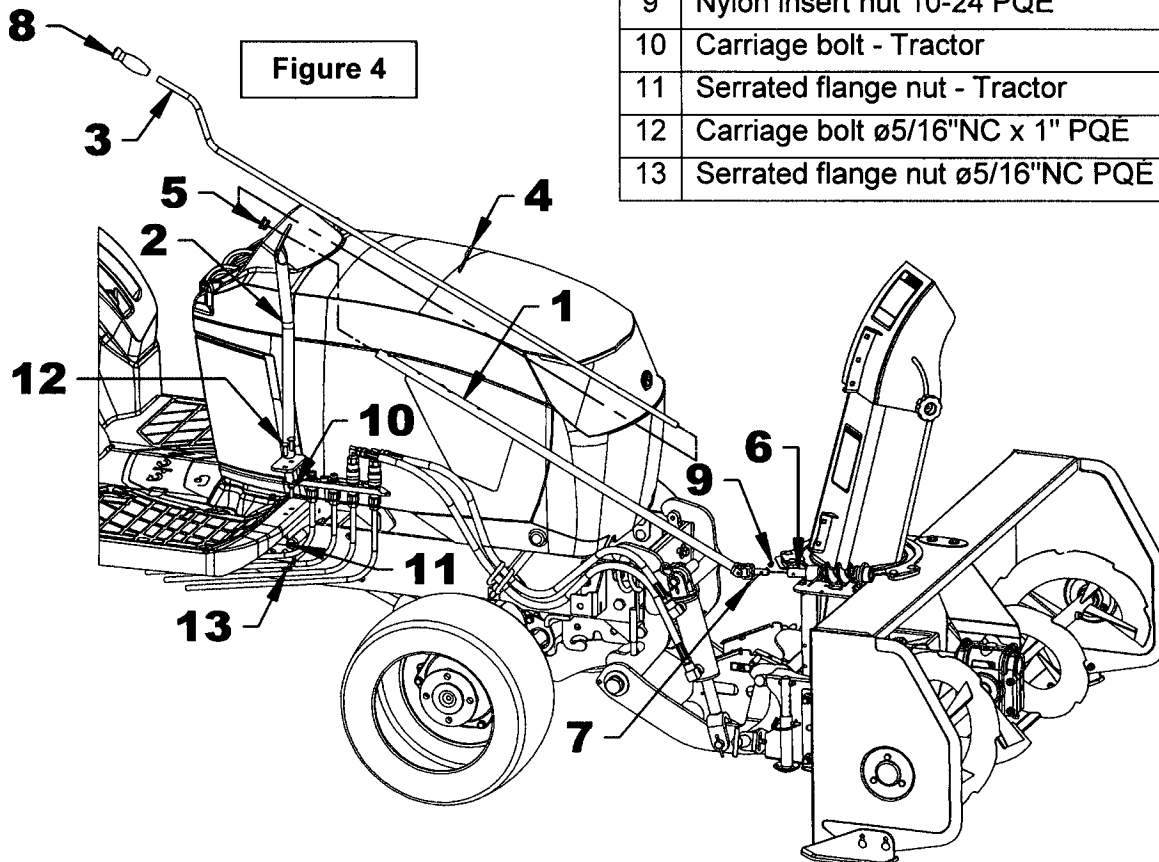


ASSEMBLY

Installation of Manual Rotation on the Tractor (Figure 4)

1. Insert the plastic grommet (item 5) in the upper hole of the handle support (item 2).
2. Remove the carriage bolt and nut (items 10-11) that secure the tractor step plate. Attach the handle support (item 2) to the two holes in the step plate with the original carriage bolt and serrated flange nut (items 10-11) and a 5/16" x 1" carriage bolt and 5/16" serrated flange nut (items 12-13).
3. Attach the rotation tube yoke (item 1) to the rotation worm shaft (item 6) with a 10-24 NC x 1" allen socket head capscrew (item 7) and a 10-24 NC nylon insert locknut (item 9).
4. Install the plastic handle (item 8) on the rotation handle (item 3) and tighten all bolts.
5. Insert the rotation handle (item 3) in the handle support (item 2) and the rotation tube (item 1) and secure with a 4mm x 80mm hairpin (item 4).

N°	PART FIGURE 4	QTY
1	Rotation tube	1
2	Handle support	1
3	Handle $\varnothing 1/2"$ x 53 3/4"	1
4	Hairpin $\varnothing 4$ mm x 80 mm	1
5	Plastic grommet	1
6	Rotation worm	1
7	Allen socket head capscrew 10-24 x 1"	1
8	Plastic handle $\varnothing 1/2"$ x 3"	1
9	Nylon insert nut 10-24 PQÉ	1
10	Carriage bolt - Tractor	1
11	Serrated flange nut - Tractor	1
12	Carriage bolt $\varnothing 5/16"$ NC x 1" PQÉ	2
13	Serrated flange nut $\varnothing 5/16"$ NC PQÉ	2



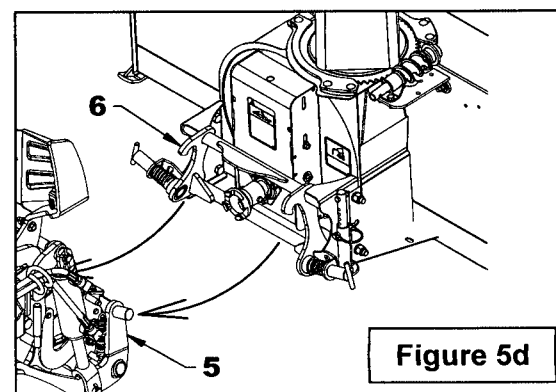
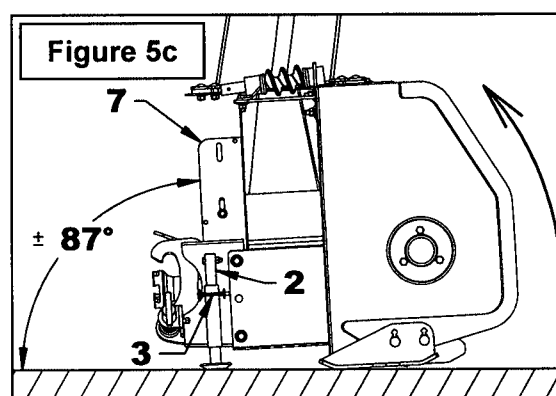
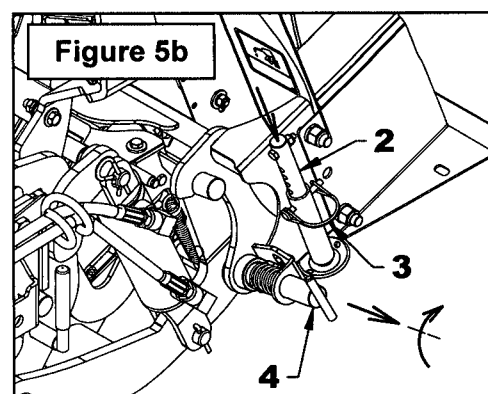
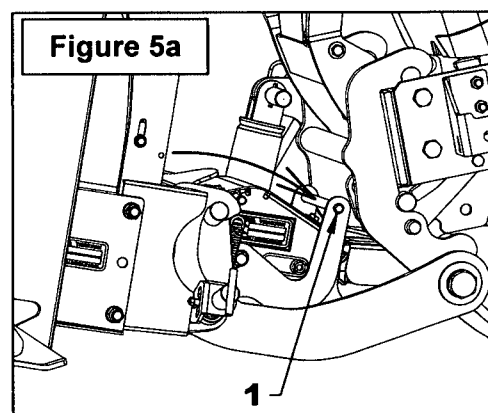
ASSEMBLY

Disconnecting the Snowblower (Figures 5)

1. Make sure the area is clear of any object that could interfere with the disconnection.
2. Make sure the tractor PTO is disengaged.
3. Start the tractor and raise the snowblower completely with the hydraulic control lever.

⚠ WARNING: To avoid serious injuries or death: always engage the lock of the tractor control lever, set the parking brake and turn off the engine before stepping down from the tractor to disconnect the snowblower.

4. **Figure 5a:** Move the engagement lever (item 1) completely rearwards.
5. For snowblowers with hydraulic and/or electric functions, disconnect the hoses and/or wiring, roll up and place on the snowblower.
6. **Figure 5b:** Lower the parking stand (item 2) keeping the snowblower slightly tilted backwards when it's removed from the hitch (refer to instructions at **figure 5c**). Secure the parking stand with the round wire lock pin (item 3).
7. **Figure 5b:** Release the two T pins (item 4) from the equipment hitch.
8. **Figure 5c:** Lower the equipment slowly to the ground with the tractor's control lever and make sure the position of the equipment once removed is tilted backwards as shown on figure. If it's not, lift the equipment and reposition the parking stand (item 2).
9. **Figure 5d:** Remove the male hitch (item 5) from the snowblower hitch (item 6) by backing up slowly.



OPERATION

GENERAL PREPARATION

1. Read the operator's manual carefully before using the tractor and snowblower. Be thoroughly familiar with the controls and proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
2. Wear adequate winter outer garments while operating the equipment.
3. Make sure the snowblower is clear of snow and other material before engaging the snowblower.
4. Make sure the auger and fan operate freely.
5. Check the oil level in the reduction box and if necessary, add AGMA 5EP, SAE 80W90 gear oil or equivalent.
6. Check the three shear bolts, one on each auger section and one between the fan and gearbox for proper tightness.
7. Adjust the skid shoes so the snowblower runs leveled.
8. Before engaging the snowblower drive, always have the engine running at idle.
9. Operate the snowblower at maximum engine RPM.



WARNING: To avoid serious personal injury: Do not use your hands to unclog the chute. Use a 36" (925mm) stick or board. Do not attempt to unclog the chute while engine is running. If the chute is clogged, shut off the tractor engine, remove the key and clear the snow from the chute.



WARNING: To avoid serious injurious or death:

- Never allow anyone near the work area.
- Never allow anyone to climb on the equipment or the subframe.
- Before cleaning, adjusting or repairing the equipment or subframe, immobilize the tractor, wait for the complete stop of the moving parts, set the parking brake, lower the equipment to the ground, shut off the engine and remove the ignition key.
- Never place any part of your body under the equipment when making adjustments.



WARNING
Always operate the equipment from the tractor seat. Never allow anyone to climb on the machine.



WARNING
Operate the equipment at a speed that corresponds to the work area conditions. Be careful when working near a slope or on uneven ground.



WARNING
Always wear safety glasses when operating the equipment.

OPERATION

OPERATION

Engine Speed

1. Start the tractor engine. Let the engine warm up at least one minute before engaging the drive mechanism then increase speed gradually.
2. Make sure the snowblower head is properly positioned and engage the drive mechanism.
3. Adjust the ground speed according to conditions. For maximum power, run engine at or near full throttle.

IMPORTANT: Use full RPM power when removing wet, sticky snow. Low RPM power will tend to clog the chute..

Increasing Traction and Stability



WARNING: To avoid serious injurious or death:
Always make sure the tractor is equipped with a rear counterweight of 350 lbs. that offers the necessary balance to avoid overturning, loss of traction or steering.

Engaging the Drive Mechanism

Refer to the tractor's operating manual for instructions.

Controls

The front loader hydraulic valve lever controls the movements of the hitch and equipment installed.

- To RAISE the hitch and equipment, pull on the valve lever.
- To LOWER the hitch, push slowly on the valve lever.
- To place the equipment in FLOAT mode, push on the valve lever completely until it engages the detent and remains in that position. The float mode allows the equipment to follow ground contours when the tractor is moving.

IMPORTANT: Always use float mode when operating the snowblower.

It is however possible to momentarily lock the position of the snowblower when working in an area where the snow has hardened such as roadsides or in compacted snow.

OPERATION

ADJUSTMENTS



WARNING

To avoid serious personal injury:

Make sure tractor engine and snowblower come to a complete stop and tractor drive mechanism is disengaged **BEFORE** making any adjustments.

Deflector Adjustment

The deflector angle must be set according to the distance the snow must be thrown. To adjust the angle:

- Turn the chute to the right as far as possible.
- Loosen the two deflector knobs on the side and adjust the deflector at the appropriate angle.
- Tighten the knobs.

Skid Shoe Adjustment

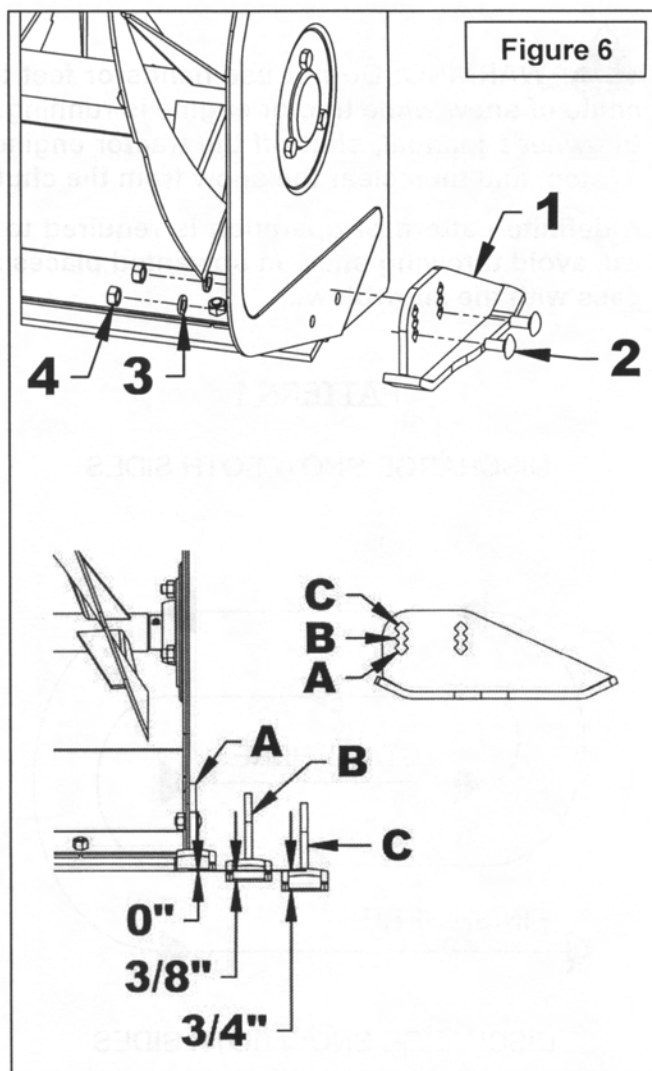
(Figure 6)

Adjust the snowblower so that the skid shoes run level and according to the surface conditions so that stones are not thrown with the snow. Make sure the skid shoes are at the same height to keep cutting edge leveled.

To adjust skid shoe height (item 1) remove the two carriage bolts, flat washers and nuts (items 2-3-4). Select the distance of the cutting edge based on the unevenness of the surface either in position "B" or "C". Tighten bolts securely.

Clearance between cutting edge and surface:

- POSITION A: Level paved surface:
Adjust to 0"
- POSITION B & C: Uneven or gravel surface:
Adjust to 3/8" or 3/4"



OPERATION

SNOW REMOVAL METHODS

When removing snow, do not use the snowblower as a dozer blade to push snow. Let the snowblower work its way through deep drifts. If the speed of your tractor is too fast, the snowblower may become overloaded and clog. For best results, raise the snowblower and remove a top layer of snow. A second pass with the snowblower will remove the remaining snow.

IMPORTANT: Use full RPM power when removing wet, sticky snow. Low RPM power will tend to clog the chute.

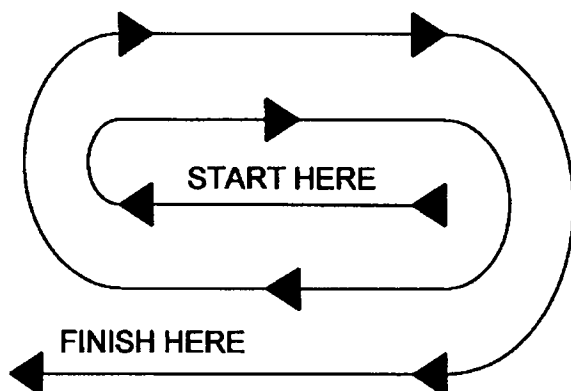


WARNING: Do not use hands or feet to unclog chute. Do not attempt to clear clogged chute of snow while tractor engine is running. If the chute clogs, disengage the PTO according to owner's manual, shut off the tractor engine, remove the ignition key, wait for all movement to stop, and then clear the snow from the chute.

A definite pattern of operation is required to thoroughly clean the snow area. These patterns will avoid throwing snow in unwanted places as well as eliminating a need to perform a second pass with the snowblower.

PATTERN 1

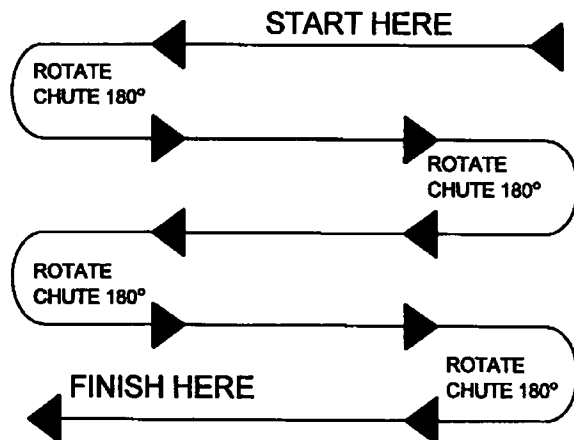
DISCHARGE SNOW BOTH SIDES



DISCHARGE SNOW BOTH SIDES

Where it is possible to throw the snow to the left and right (above), as on a long driveway, it is advantageous to start in the middle. Plow from one end to the other, throwing snow to both sides without changing the direction of the chute.

PATTERN 2



DISCHARGE SNOW THIS SIDE ONLY

If the snow can only be thrown to one side of the driveway or sidewalk (above), start on the opposite side. At the end of the first pass, rotate the discharge guide 180 degrees for the return pass. At the end of each succeeding pass, rotate the chute 180 degrees to maintain direction of throw in the same area.

MAINTENANCE

MAINTENANCE

ALWAYS USE GENUINE PARTS WHEN REPLACEMENT PARTS ARE REQUIRED

1. Keep the tractor and snowblower properly maintained.
2. Park the tractor/snowblower on level ground, place the transmission in neutral, set the parking brake, disengage the PTO, lower the snowblower to the ground, place all control levers in neutral, shut off the engine and remove the ignition key and allow the rotating parts to stop **BEFORE** making any snowblower adjustments.
3. To avoid injury, do not adjust, unblock the driving system, or service the snowblower with the tractor engine running.
4. Keep the tractor/snowblower clean. Snow, dirt or ice build-up can lead to malfunction or personal injury from thawing and refreezing in garage.
5. Always wear eye protection when cleaning or servicing the snowblower or subframe.
6. **DO NOT** service the tractor while the engine is running or hot, or if the unit is in motion. Always lower snowblower to the ground. If necessary to service snowblower in raised position, securely support with stands or suitable blocking before working underneath. Do not rely on hydraulically supported devices for your safety. They can settle suddenly, leak down, or be accidentally lowered
7. Do not attempt to service machine, clear obstructions or unclog the snowblower with the engine running. Always shut off engine and allow all motion to cease.
8. The manufacturer will not claim responsibility for fitment of unapproved parts and/or accessories and any damages as a result of their use.
9. Make sure all shields and guards are securely in place following all service, cleaning, or repair work.
10. Do not modify or alter this snowblower or any of its components or operating functions. If you have questions concerning modifications, consult with your dealer.
11. Do not operate a snowblower that is defective or has missing parts. Make sure that all recommended maintenance procedures are completed before operating the snowblower.
12. Check all controls regularly and adjust where necessary. Make sure that the brakes are evenly adjusted.
13. Periodically check all nuts and bolts for tightness, especially wheel hub and rim nuts.

MAINTENANCE



WARNING

To avoid serious personal injury:

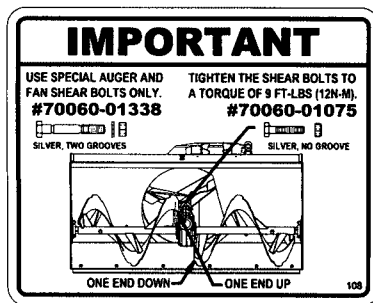
- Before cleaning, adjusting or repairing the snowblower: bring the tractor to a complete stop, lower the implement shut off the engine and remove the ignition key.
- Never park the tractor inside a building where an open flame or sparks are present. Allow the engine to cool down before storing in any enclosure.
- Run the snowblower a few minutes after blowing snow to prevent freeze up of auger and fan.
- Provide adequate blocking before working under the snowblower when in raised position.

Gearbox

When servicing the gearbox, the tightness of the casing must be restored. To do so, apply a layer of silicone to the casing before closing it. Allow the silicone to cure for at least 24 hours before filling it with oil.

Shearbolts (Figure 7)

1. Always use a special grade 5 shear bolt, (70060-01075) on fan (item 1) and special grade 5 two grooved shear bolts, silver plated (70060-01338) on the auger sections (item 2) as shown on decal 70060-01340 (item 3).
2. Check shear bolts at frequent intervals for proper tightness to be sure the snowblower is in safe working condition. Torque must be at 9 lbs-ft (12 N-M).



70060-01340
(657301)

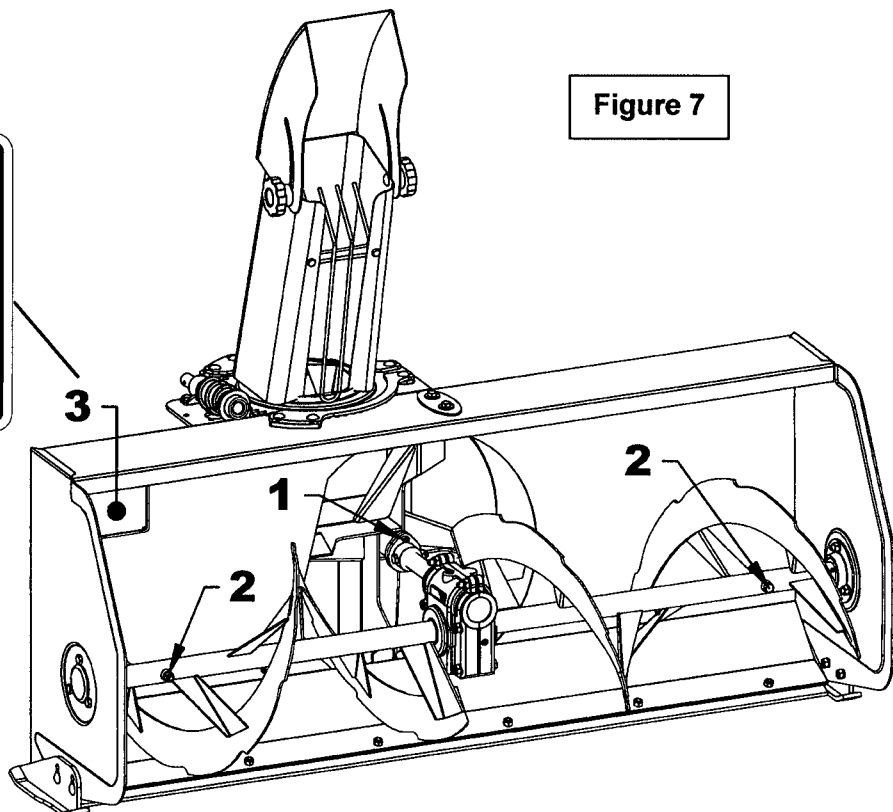
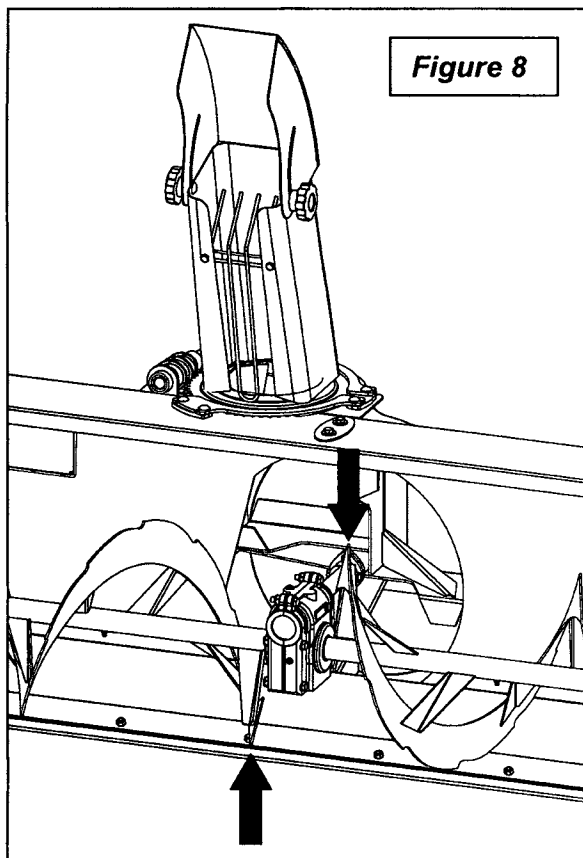


Figure 7

MAINTENANCE

Auger Repositioning (Figure 8)

After shear bolt breakage on one of the augers, make sure to reposition the augers as shown on the figure below.

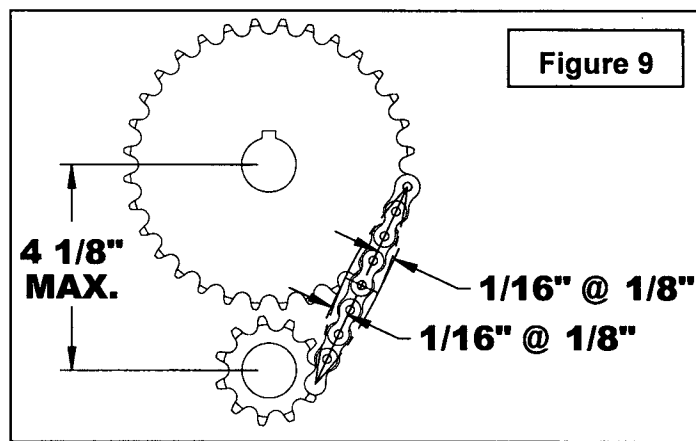


Drive Chain Tension Adjustment (Figure 9)

IMPORTANT: The chain must be adjusted after the first 8 hours of operation and every 24 hours of operation after that.

Remove the driveline guard. Loosen the four bolts securing the reduction box to the snowblower. Adjust chain to obtain a deflection of between 1/16" and 1/8". Tighten the 4 bolts of the reduction box and reinstall the driveline guard.

Measure the distance between the two sprockets. If it's greater than 4 1/8" replace the chain or connection problems will occur and cause premature wear of the drive system.



MAINTENANCE

IMPORTANT: Perform the required maintenance below without taking into account the intervals given in the following circumstances:

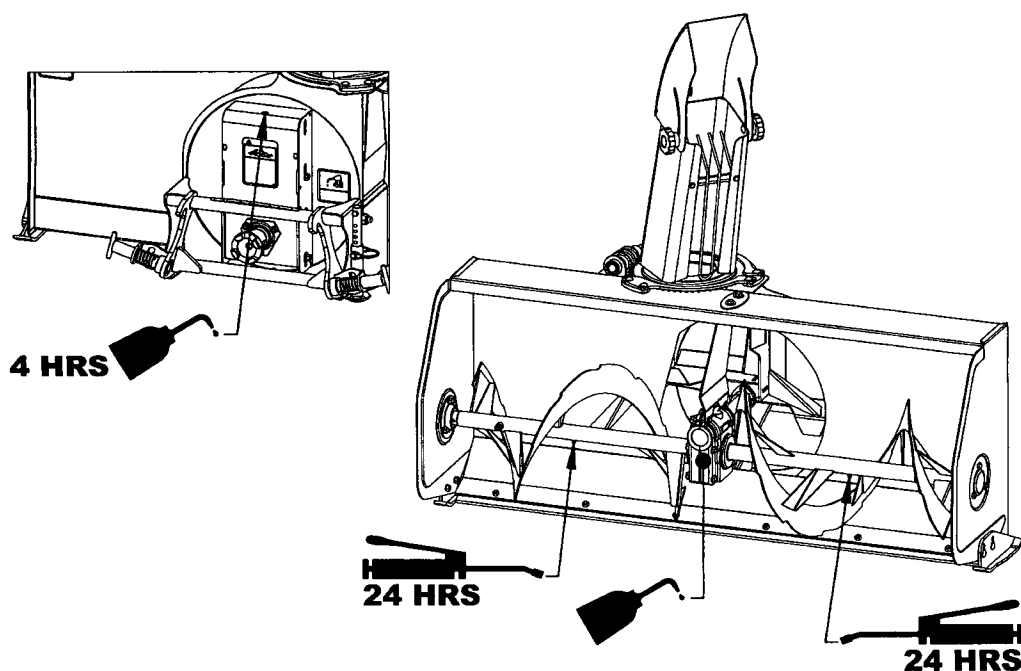
- At least once a year if the snowblower is used less than 20 hours annually.
- After each storage period.
- After each wash

MAINTENANCE SCHEDULE		
DESCRIPTION	INTERVAL	REQUIRED MAINTENANCE
Hardware	After the first 8 hours of operation	Tighten all nuts and bolts according to the Torque Specification Table.
	40 hours of operation	
Connection points	Before each equipment connection	Visual inspection of the clutch shaft, hydraulic/electric connectors and the hitch connection points. Clean if necessary
Connection system	After the first 8 hours of operation	Visual inspection. Tighten, repair or replace if necessary.
	40 hours of operation	

LUBRICATION

Use a grease gun and lubricate as follows:

DESCRIPTION	INTERVAL	REQUIRED LUBRICATION
Drive chain	4 hours And after each operation	Lubricate with chain saw lubricant
Auger	24 hours of operation or at least once a year	Inject grease in grease fitting of each auger section
Gearbox	Monthly	Check oil level. If needed, add AGMA 5EP extreme pressure oil, SAE 80W90 gear oil or equivalent



TROUBLESHOOTING

PROBLEM	CORRECTIVE MEASURES
1. Auger and fan not turning	<ul style="list-style-type: none"> • Check if an object is blocking the auger or fan • Check that PTO is engaged • Check that the drive system is in the engaged position • Check if chain is broken • Check if shearbolts are broken and replace if necessary • Gearbox lacking oil and is seized. Replace gearbox.
2. Snow is not being ejected from the chute	<ul style="list-style-type: none"> • Check if the fan is turning, refer to problem # 1 • Check if the snow output is obstructed, unclog with a 36" stick
3. Snowblower clogs up easily	<ul style="list-style-type: none"> • Engine is not at full RPM • Check that the chute is not obstructed • Reduce travel speed
4. Snow doesn't enter the snowblower properly	<ul style="list-style-type: none"> • Engine is not at full RPM • Check if shearbolts are broken and replace if necessary • Check auger positions. (refer to section Operation)
5. Snow is not thrown very far	<ul style="list-style-type: none"> • Engine is not at full RPM • Reduce travel speed • Check that the chute is not obstructed
6. Snowblower will not connect to the hitch	<ul style="list-style-type: none"> • Check that the connection system is not obstructed • Chain is too long and the distance center/center of the sprockets is higher than 4 1/8" (see Maintenance section) • Check that the « T » pins are in the locked position • The connection system is in the engaged position.

STORAGE

STORAGE

Before storing the snowblower, certain precautions should be taken to protect it from deterioration.

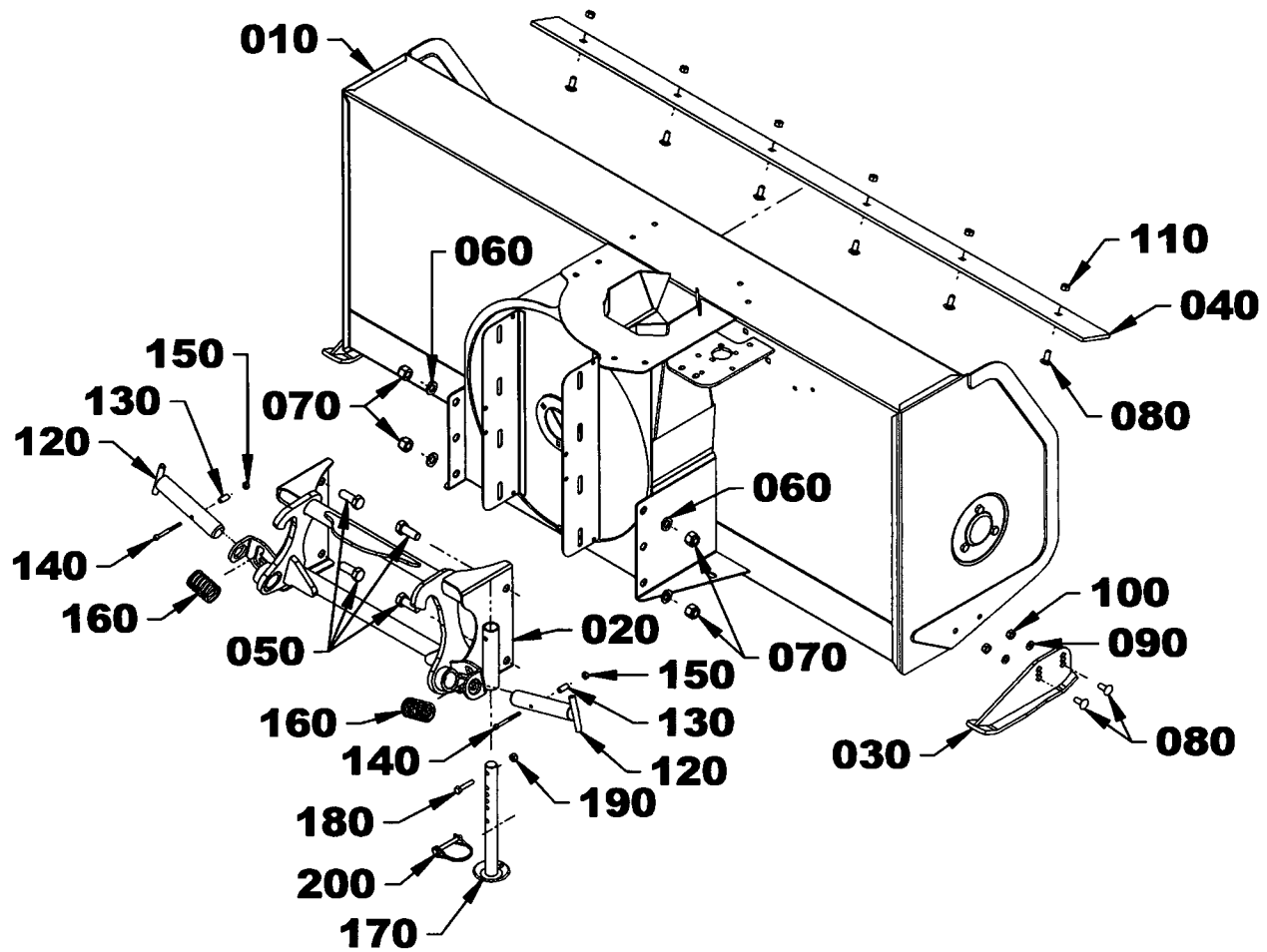
1. Clean the subframe and snowblower thoroughly.
2. Make all the necessary repairs.
3. Replace all safety signs that are damaged, lost, or otherwise become illegible. If a part to be replaced has a label on it, obtain a new safety label from your dealer and install it in the same place as on the removed part.
4. Repaint all parts from which paint has worn or peeled.
5. Lubricate the snowblower as instructed under "**Lubrication**" section.
6. When the snowblower is dry, oil all moving parts. Apply oil liberally to all surfaces to protect against rust.
7. Store in a dry place.

PARTS

SNOWBLOWER - REAR				
REF.	PART #	QTY	DESCRIPTION	CODE
010	77700-05883	1	Housing	670910
020	77700-08347	1	Female hitch 4pt hitch "A" shape	671566
030	77700-05889	2	Skid shoe	670918
040	70060-03528	1	Cutting edge	659862
050	75599-01525	4	Hex. bolt $\varnothing 1/2$ "NC x 1 1/4" Gr.5 PTD	0100069
060	75599-33015	4	Lockwasher $\varnothing 1/2$ " PTD	1200006
070	75599-31915	4	Nylon insert nut $\varnothing 1/2$ "NC PTD	1000011
080	70060-04188	10	Carriage bolt 5/16"NC x 3/4" PTD	0300002
090	75599-33012	4	Lockwasher 5/16" PTD	1200003
100	75599-31012	4	Hex. nut $\varnothing 5/16$ "NC PTD	0900002
110	70001-00794	6	Stover nut $\varnothing 5/16$ "NC PTD	1100002
120	77700-07045	2	"T" pin $\varnothing 1$ " x 5 1/4" PTD	671331
130	77700-04108	2	Lock dowel	670111
140	77700-07094	2	Allen socket head capscrew 10-24 x 2"	0800055
150	77700-00991	2	Nylon insert nut 10-24 PTD	1000002
160	77700-06630	2	Compression spring. $\varnothing 1.026$ "ID x 1 3/4"	2200048
170	77700-08332	1	Parking stand $\varnothing 3/4$ x 8 3/8" LG	671568
180	75599-01125	1	Hex. bolt $\varnothing 1/4$ "NC x 1 1/4" Gr.5 PTD	0100005
190	75599-31911	1	Nylon insert nut $\varnothing 1/4$ "NC PTD	1000003
200	70060-01929	1	Round wire lock pin $\varnothing 1/4$ " X 1 3/4"	1900006

PARTS

SNOWBLOWER - REAR

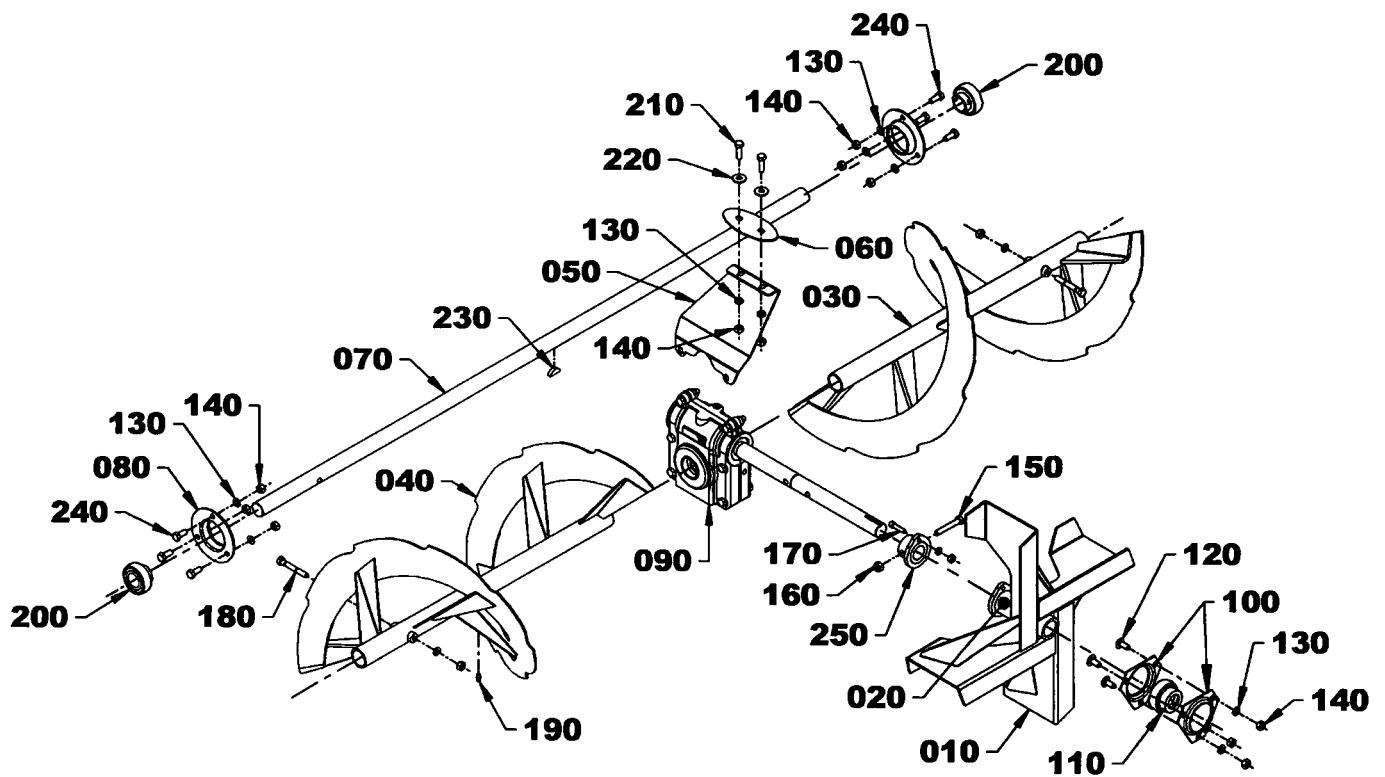


PARTS

SNOWBLOWER - FRONT				
REF.	PART #	QTY	DESCRIPTION	CODE
010	77700-05886	1	Fan including the 2 bushings 70060-02757	670915
020	70060-02757	2	Oilite bushings	4300055
030	70060-01906	1	Auger - RH	666737
040	70060-01907	1	Auger - LH	666738
050	70060-01680	1	Gearbox support	657492
060	77700-05890	1	Reinforcement plate	670919
070	70060-03527	1	Output shaft	660390
080	70060-01409	2	Bearing flange	657334
090	70060-02191	1	Gearbox CCW	4500037
100	70060-01426	2	Triangular bearing flange - 3 holes	656589
110	70060-70339	1	Bearing with locking collar	665495
120	70060-04188	3	Carriage bolt 5/16" x 3/4" gr.5 PTD	0300002
130	75599-33012	11	Lockwasher 5/16" PTD	1200003
140	75599-31012	11	Hex. nut 5/16" NC PTD	0900002
150	77700-04112	1	Hex. bolt 5/16" NC x 2", gr.8 PTD	0100024
160	75599-31912	1	Nylon insert nut 5/16"NC PTD	1000005
170	70060-01075	1	Shearbolt 1/4" NC x 1 1/4" gr. 5 incl. lockwasher and nut PTD	656053
180	70060-01338	2	Shearbolt 5/16" NC x 2 1/4" gr. 5, two grooves incl. lockwasher and nut	657295
190	70060-00940	2	Grease fitting	654106
200	70060-70338	2	Bearing with setscrew	665494
210	75599-01220	2	Hex. bolt 5/16" NC x 1" gr.5 PTD	0100019
220	75599-32012	2	Flat washer 5/16" (3/8" int.) PTD	1400003
230	70060-01306	1	Woodruff key 1/4" x 7/8"	655967
240	75599-01215	6	Hex. bolt 5/16"NC x 3/4" gr.5 PTD	0100018
250	70060-01287	1	Shear plate	655874

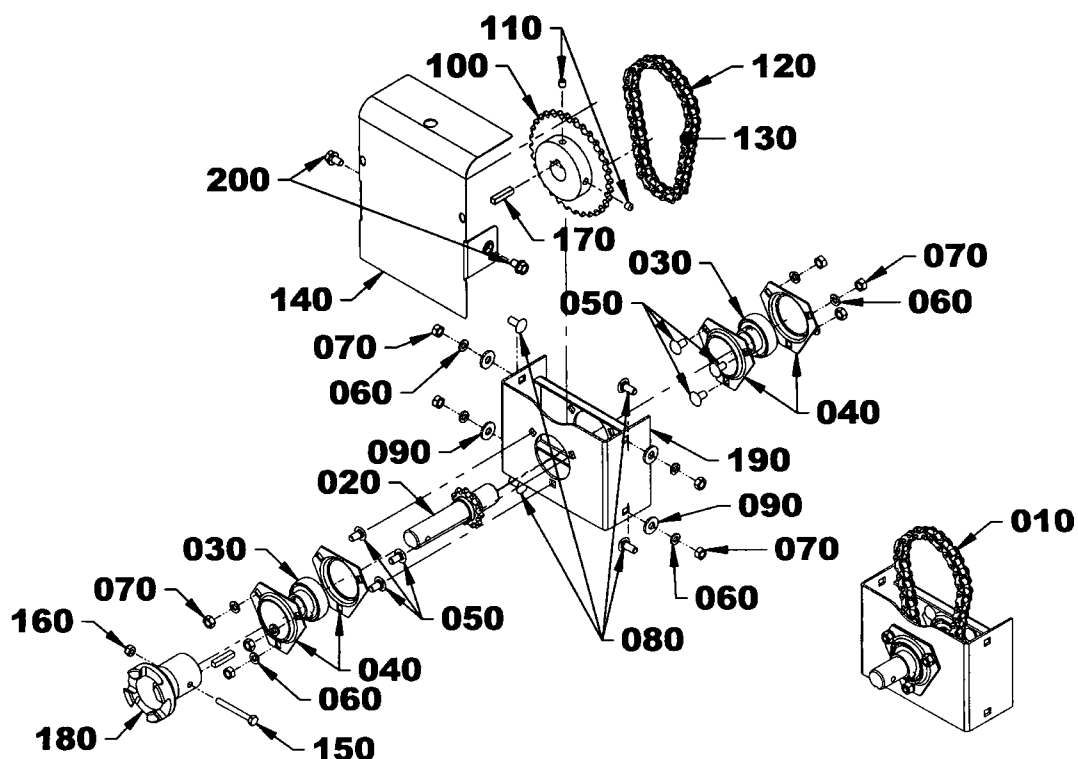
PARTS

SNOWBLOWER - FRONT



PARTS

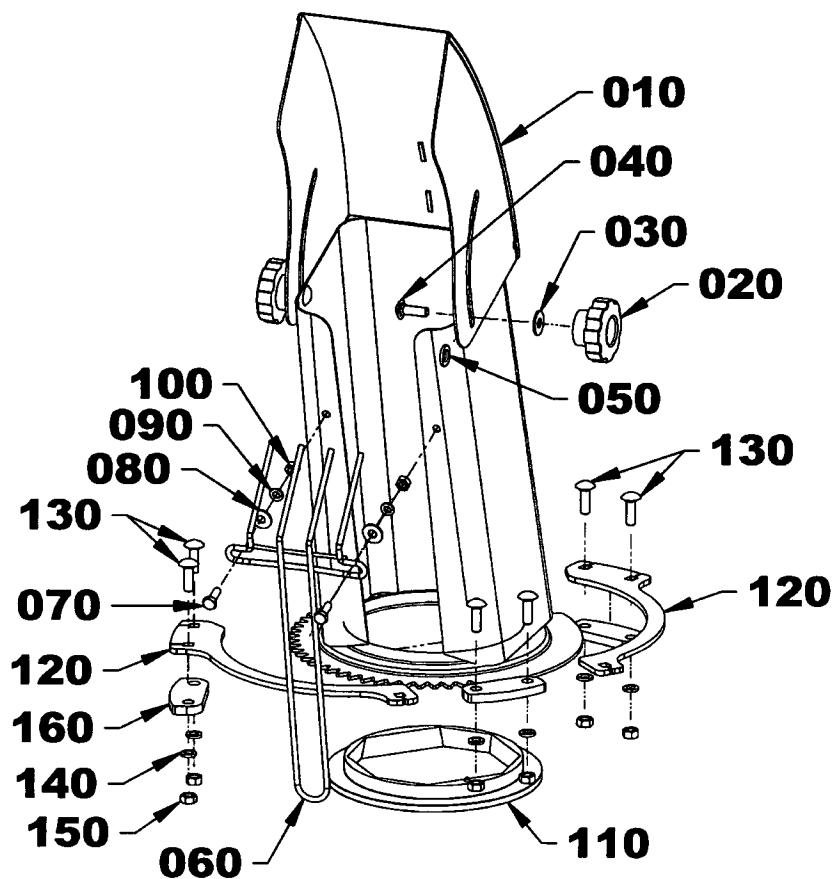
REDUCTION BOX				
REF.	PART #	QTY	DESCRIPTION	CODE
010	70060-01422	1	Reduction box ass'y inc. bearings	657353
020	70060-01424	1	Drive shaft with sprocket (H40C11)	657250
030	70060-70338	2	Ball bearing with setscrew	665494
040	70060-01426	4	Triangular bearing flange - 3 holes	656589
050	70060-00787	6	Carriage bolt 5/16"NC x 5/8" gr. 5 PTD	0300001
060	75599-33012	10	Lockwasher 5/16"	1200003
070	75599-31012	10	Hex. nut 5/16"	0900002
080	70060-04188	4	Carriage bolt 5/16"NC x 3/4" gr. 5 PTD	0300002
090	75599-32012	4	Flat washer 3/8" hole	1400003
100	70060-01274	1	Sprocket (40B32) (incl. setscrew)	656543
110	77700-00701	2	- Allen setscrew 5/16"NC x 5/16"	0500009
120	70060-01275	1	Chain #40 x 38 links incl. connecting link	656570
130	70060-01427	1	- Connecting link	656178
140	77700-08348	1	Driveline shield	671569
150	75599-03145	1	Hex. bolt 1/4"NC x 2 1/4" gr. 5 PTD	0100011
160	75599-31911	1	Nylon insert nut 1/4"NC	1000003
170	70060-00814	2	Key 1/4" x 1/4" x 1 1/4"	654643
180	77700-07655	1	Female clutch shaft	4700319
190	70060-01423	1	Reduction box	657355
200	70060-01993	2	Serrated flange bolt 5/16NC x 1/2", gr.5 PTD	0200065



PARTS

CHUTE AND DEFLECTOR

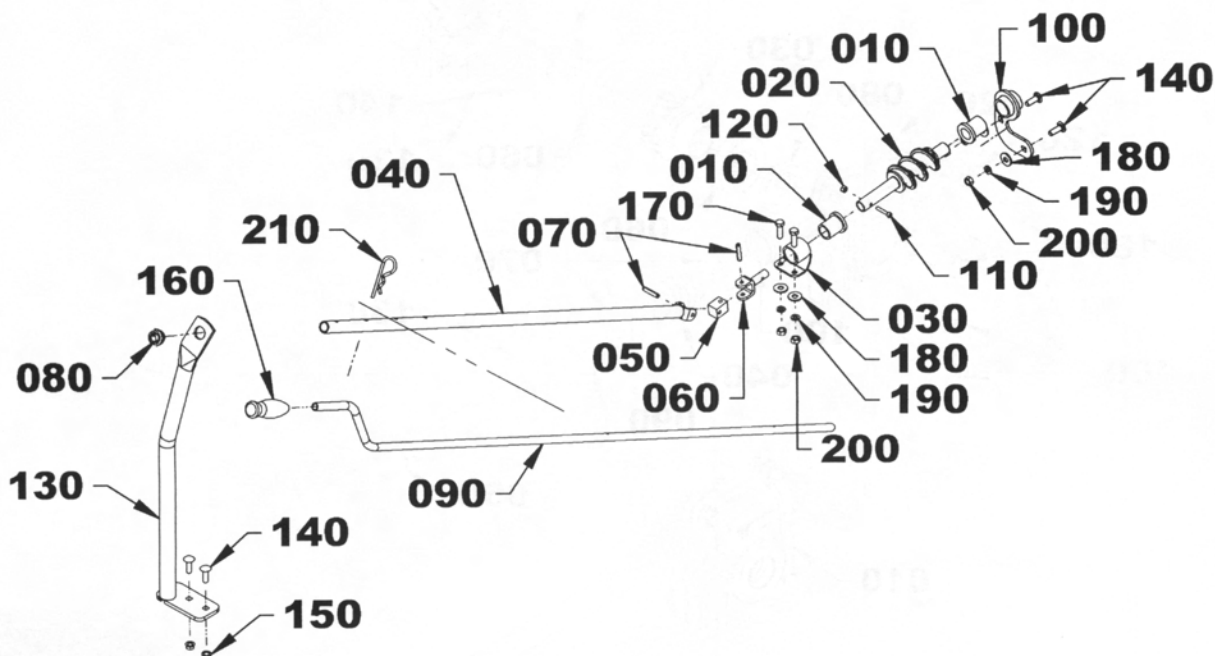
REF.	PART #	QTY	DESCRIPTION	CODE
010	77700-08328	1	Chute assembly w/ decals	671642
020	70060-01419	2	Knob 5/16"NC	657309
030	70060-03052	2	Flat washer nylon 11/32" dia.	658467
040	70001-00793	2	Carriage bolt 5/16"NC x 1" gr.5 PTD	0300003
050	70060-03053	2	Flat washer nylon 7/16" dia.	658468
060	70060-01358	1	Hand guard	657308
070	75599-01115	2	Bolt hex. 1/4"NC x 3/4" gr.5 PTD	0100003
080	75599-32011	2	Flat washer 1/4" (5/16" hole) PTD	1400002
090	75599-33011	2	Lockwasher 1/4" PTD	1200002
100	75599-31011	2	Nut hex. 1/4"NC PTD	0900001
110	70060-01357	1	Rotation bushing	657338
120	77700-01738	2	Retaining plate	669245
130	70001-00793	6	Carriage bolt 5/16" x 1"NC	0300003
140	75599-33012	6	Lockwasher 5/16" PTD	1200003
150	75599-31012	6	Nut hex 5/16"NC PTD	0900002
160	77700-05891	3	Shim PTD	670920



PARTS

MANUAL CHUTE ROTATION

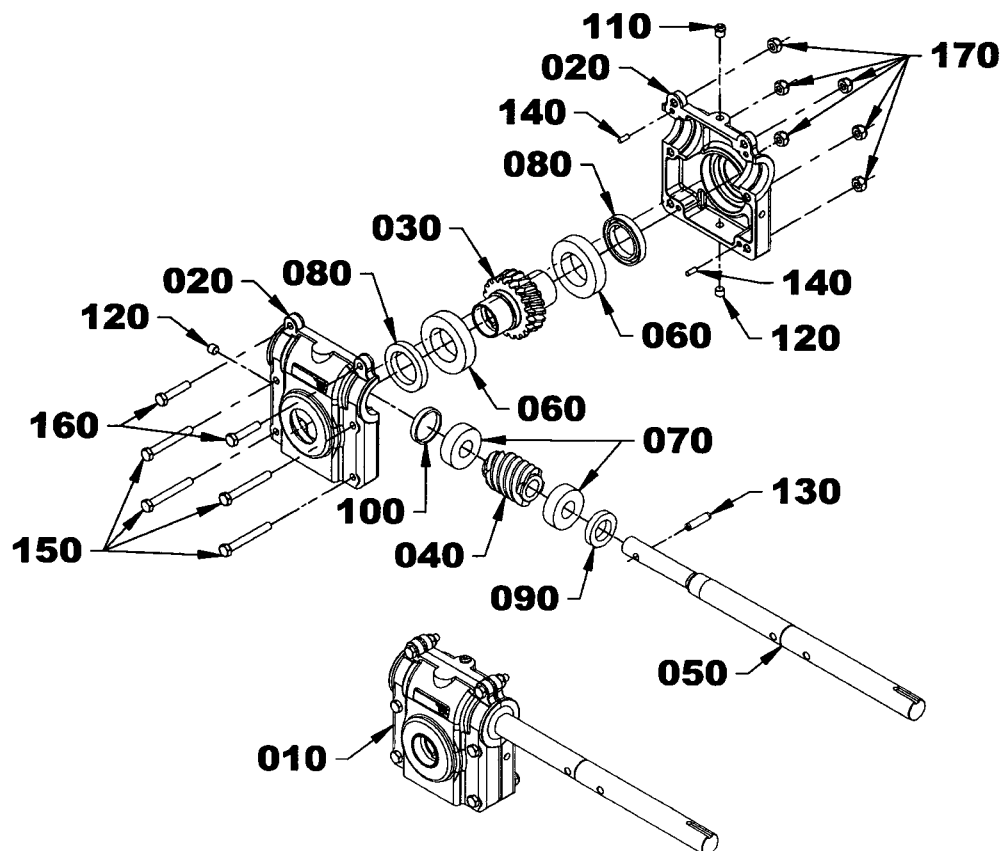
REF.	PART #	QTY	DESCRIPTION	CODE
010	70060-01350	2	Plastic bushing 1 5/16"	657335
020	70001-00683	1	Rotation worm	665037
030	77700-05887	1	Rear rotation worm support	670916
040	70001-00682	1	Rotation tube assembly (incl.#5-6-7)	665041
050	70060-03417	2	- Universal block	658193
060	70060-03416	1	- Rotation yoke	659595
070	77700-02237	2	- Spring pin 1/4 X 1 1/4	1600015
080	70060-01352	1	Plastic grommet	657390
090	70060-02109	1	Handle	667014
100	77700-05931	1	Front rotation bracket	671118
110	70060-02583	1	Allen socket head capscrew 10-24 NC x 1"	0800009
120	77700-00991	1	Plastic bushing 1 5/16"	1000002
130	77700-08329	1	Handle support	671567
140	70001-00793	4	Carriage bolt 5/16" x 1"NC	0300003
150	70060-02135	2	Serrated flange nut 5/16" NC, PTD	0900036
160	70060-01318	1	Plastic handle 1/2" x 3" lg	656797
170	75599-01220	2	Bolt hex. 5/16"NC x 1" lg, gr. 5, PTD	0100019
180	75599-32012	4	Flat washer 5/16" int. PTD	1400003
190	75599-33012	4	Lockwasher 5/16", PTD	1200003
200	75599-31012	4	Nut hex 5/16"NC PTD	0900002
210	70060-04187	1	Hairpin 4mm x 80mm PTD	1800002



PARTS

GEARBOX – 70060-02191

REF.	PART #	QTY	DESCRIPTION	CODE
010	70060-02191	1	Worm gearbox assembly	4500037
020	70060-01913	1	Casing kit	4500021
030	N/A	1	Gear	---
040	N/A	1	Worm gear	---
050	70060-02190	1	Driving shaft	4500036
060	70060-03797	2	Bearing	661147
070	70060-01908	2	Bearing	663234
080	70060-01066	1	Seal kit (item 8 and 9)	665775
090	N/A	2	Seal	---
100	70060-03800	1	Cap	661150
110	70060-00840	1	Breather 1/8" NPT, 5 PSI, PTD	654927
120	70060-01428	2	Plug 1/8" NPT, PTD	656090
130	70060-01909	1	Spring pin 5/16" dia. x 1 1/4" lg.	663243
140	70060-01910	2	Dowel pin 3/16" dia. x 1/2" lg.	663245
150	77700-01718	4	Hex. bolt 5/16" NC x 2 1/2" lg., PTD	0100026
160	75599-01230	2	Hex. bolt 5/16" NC x 1 1/2" lg., PTD	0100021
170	75599-31912	6	Nylon insert locknut 5/16" NC, PTD	1000005



AVAILABLE OPTIONS

HYDRAULIC CHUTE ROTATION

BX2818

ELECTRIC CHUTE ROTATION

BX2819

HYDRAULIC CHUTE DEFLECTOR

BX2821

ELECTRIC CHUTE DEFLECTOR

BX2820

HARD PLASTIC CUTTING EDGE
AND SKID SHOES

BX2817

HARD PLASTIC SKID SHOES

BX5444

HARD PLASTIC CUTTING EDGE

BX5445

DRIFT CUTTERS

GR2714







TORQUE SPECIFICATION TABLE

GENERAL SPECIFICATION TABLE

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

Note: These values apply to fasteners as received from supplier dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly disulphide greases or other extreme pressure lubricants are used. These values apply to dry conditions; under lubricated conditions reduce by 25% the torques in this table.

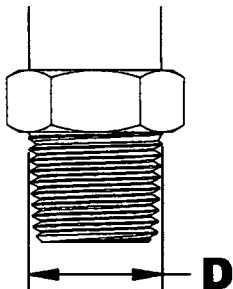
BOLT HEAD IDENTIFICATION

INCHES Bolt Size	 Grade 2		 Grade 5		 Grade 8		METRIC Bolt Size	 Class 5.8		 Class 8.8		 Class 10.9	
	in-tpi ¹	N-m ²	lbs-ft ³	N-m	lbs-ft	N-m		lbs-ft	mm,pitch ⁴	N-m	lbs-ft	N-m	lbs-ft
1/4" – 20NC	7.4	5.6	11	8	16	12	M 5 X 0.8	4	3	6	5	9	7
1/4" – 28NF	8.5	6	13	10	18	14	M 6 X 1	7	5	11	8	15	11
5/16" – 18NC	15	11	24	17	33	25	M 8 X 1.25	17	12	26	19	36	27
5/16" – 24NF	17	13	26	19	37	27	M 8 X 1	18	13	28	21	39	29
3/8" – 16NC	27	20	42	31	59	44	M10 X 1.5	33	24	52	39	72	53
3/8" – 24NF	31	22	47	35	67	49	M10 X 0.75	39	29	61	45	85	62
7/16" – 14NC	43	32	67	49	95	70	M12 X 1.75	58	42	91	67	125	93
7/16" – 20NF	49	36	75	55	105	78	M12 X 1.5	60	44	95	70	130	97
1/2" – 13NC	66	49	105	76	145	105	M12 X 1	90	66	105	77	145	105
1/2" – 20NF	75	55	115	85	165	120	M14 X 2	92	68	145	105	200	150
9/16" – 12NC	95	70	150	110	210	155	M14 X 1.5	99	73	155	115	215	160
9/16" – 18NF	105	79	165	120	235	170	M16 X 2	145	105	225	165	315	230
5/8" – 11NC	130	97	205	150	285	210	M16 X 1.5	155	115	240	180	335	245
5/8" – 18NF	150	110	230	170	325	240	M18 X 2.5	195	145	310	230	405	300
3/4" – 10NC	235	170	360	265	510	375	M18 X 1.5	220	165	350	260	485	355
3/4" – 16NF	260	190	405	295	570	420	M20 X 2.5	280	205	440	325	610	450
7/8" – 9NC	225	165	585	430	820	605	M20 X 1.5	310	230	650	480	900	665
7/8" – 14NF	250	185	640	475	905	670	M24 X 3	480	355	760	560	1050	780
1" – 8NC	340	250	875	645	1230	910	M24 X 2	525	390	830	610	1150	845
1" – 12NF	370	275	955	705	1350	995	M30 X 3.5	960	705	1510	1120	2100	1550
1 1/8" – 7NC	480	355	1080	795	1750	1290	M30 X 2	1060	785	1680	1240	2320	1710
1 1/8" – 12NF	540	395	1210	890	1960	1440	M36 X 3.5	1730	1270	2650	1950	3660	2700
1 1/4" – 7NC	680	500	1520	1120	2460	1820	M36 X 2	1880	1380	2960	2190	4100	3220
1 1/4" – 12NF	750	555	1680	1240	2730	2010	<div><div>1 in-tpi = nominal thread diameter in inches-threads per inch</div><div>2 N-m = newton-meters</div><div>3 lbs-ft= pounds-foot</div><div>4 mm x pitch = nominal thread diameter in millimeters x thread Pitch</div></div>						
1 3/8" – 6NC	890	655	1990	1470	3230	2380							
1 3/8" – 12NF	1010	745	2270	1670	3680	2710							
1 1/2" – 6NC	1180	870	2640	1950	4290	3160							
1 1/2" – 12NF	1330	980	2970	2190	4820	3560							

*Torque tolerance +0%, -15% of torquing values. Unless otherwise specified use torque values listed above

ADAPTER INSTALLATION PROCESS

NPT THREAD IDENTIFICATION & TORQUE



D		Identification of adapter	Number of turns to do after manual tightening
in	mm		
0.375	9.5	1/8 NPT	2.0 - 3.0
0.500	12.5	1/4 NPT	2.0 - 3.0
0.625	15.9	3/8 NPT	2.0 - 3.0
0.780	19.8	1/2 NPT	2.0 - 3.0
0.988	25.1	3/4 NPT	2.0 - 3.0
1.236	31.4	1 NPT	1.5 - 2.5
1.583	40.2	1 1/4 NPT	1.5 - 2.5
1.823	46.3	1 1/2 NPT	1.5 - 2.5

RECOMMENDED ASSEMBLY

The method used to assemble fittings with NPT threads is done in two stages. First firmly tighten by hand then tighten once again according to the number of turns listed in the above table. The following steps are recommended to minimize the risks of leaks and/or damages to the parts.

STEP 1: Inspect threads and tapping to make sure they are clean.

STEP 2: Measure the diameter (D) of the adapter and take note of the size taken.

STEP 3: Apply a sealant/lubricant product to the NPT threads (teflon covered threads are preferable to other lubricating products). If PTFE tape (teflon) is used, make between 1.5 or 2 turns clockwise, when viewed by the fitting end, keeping free the two first threads.

CAUTION: More than 2 turns can cause distortion or cracks in the orifice.

STEP 4: Tighten the fitting manually.

STEP 5: Screw the fitting the number of turns listed on the above table making sure that in the case of an elbow fitting the end is aligned to the desired position to connect the tube or hose. **Never unscrew a fitting to obtain the proper alignment.**

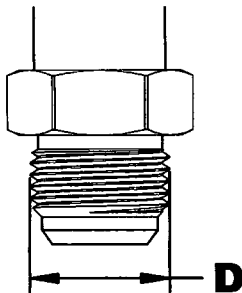
STEP 6: If a leak is detected after having followed the preceding instructions, check that the threads are not damaged and the number of seated threads is fulfilled (see details in next paragraph).

If the threads are damaged, replace the fitting. If the tapping is damaged, retap if possible or replace the part.

Usually, the number of threads seated is between 3.5 and 6. If the range is different it would indicate that the fitting was tightened too much or not enough or that the tightening was not within thread tolerances. If the fitting is not tight enough, tighten but never more than one turn. If it's too tight, control the threading and tapping and replace the section that has threads that are not within tolerances.

ADAPTER INSTALLATION PROCESS

JIC THREAD IDENTIFICATION & TORQUE



D		Identification of adapter	TORQUE	
in	mm		lbs-ft	N-m
-	-	5/16 JIC	6-7	8-10
-	-	3/8 JIC	6-9	8-12
0.433	11	7/16 JIC	9-12	12-16
0.496	12.6	1/2 JIC	14-15	19-21
0.559	14.2	9/16 JIC	18-20	24-27
0.740	18.8	3/4 JIC	27-39	37-53
0.870	22.1	7/8 JIC	36-63	49-85
1.055	26.8	1 1/16 JIC	65-88	88-119
1.185	30.1	1 3/16 JIC	75-103	102-140
1.307	33.2	1 5/16 JIC	85-113	115-153
1.618	41.1	1 5/8 JIC	115-133	156-180
1.870	47.5	1 7/8 JIC	125-167	169-226
2.492	63.3	2 1/2 JIC	190-258	258-350

JIC flare fittings seal with metal to metal contact between the flared nose of the fitting and the flared tube face in the female connection.

The minimum torque values listed are to provide a benchmark that give optimum results for leak free connections. Actual torque values should be based on individual application.

NOTE: Do not apply thread sealant (teflon tape) on the JIC threads.

Leaks can result from vibration, thermal cycling and from loads being supported by the connection (i.e. using the fitting in the connection to support mechanical loads).

IMPORTANT: Use the lowest torque value from the chart when wet torquing.

RECOMMENDED ASSEMBLY

STEP 1: Inspect for possible contamination or damage from shipping or handling. Sealing surface should be smooth.

STEP 2: Lubricate the threads and the entire surface of the cone with hydraulic fluid or a light lubricant.

STEP 3: Align mating components for hand connection and turn flare nut until sealing surfaces make full contact.

STEP 4: Torque nut to the values shown in the above table.

STEP 5: When torquing nut onto a straight flared fitting, it may be necessary to also place a wrench on the flared fitting wrench pad to prevent it from turning during assembly.

ALTERNATE ASSEMBLY METHOD

STEP 1: Inspect for possible contamination or damage from shipping or handling. Sealing surface should be smooth.

STEP 2: Lubricate the threads and the entire surface of the cone with hydraulic fluid or a light lubricant.

STEP 3: Align mating components for hand connection and turn flare nut until sealing surfaces make full contact.

STEP 4: Lightly wrench tighten the nut until there is resistance.

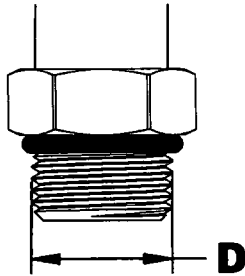
STEP 5: Place a wrench on wrench pad next to nut as near the 6 o'clock position as possible.

STEP 6: Place second wrench on nut as near the 3 o'clock position as possible.

STEP 7: Turn nut clockwise to no less than the 4 o'clock position, but no more than the 6 o'clock position. Required rotation generally decreases as size increases.

ADAPTER INSTALLATION PROCESS

ORB (O-RING BOSS) THREAD IDENTIFICATION & TORQUE



D		Identification of adapter	TORQUE	
in	mm		lbs-ft	N-m
-		3/8 ORB	8-9	12-13
0.433	11	7/16 ORB	13-15	18-20
0.496	12.6	1/2 ORB	14-15	19-21
0.559	14.2	9/16 ORB	23-24	32-33
0.740	18.8	3/4 ORB	40-43	55-57
0.870	22.1	7/8 ORB	43-48	59-64
1.055	26.8	1 1/16 ORB	68-75	93-101
1.185	30.1	1 3/16 ORB	83-90	113-122
1.307	33.2	1 5/16 ORB	112-123	152-166
1.618	41.1	1 5/8 ORB	146-161	198-218
1.870	47.5	1 7/8 ORB	154-170	209-230
2.492	63.3	2 1/2 ORB	218-240	296-325

SAE O-rings (O-Ring Boss) are straight thread fittings that seal using an O-ring between the thread and the wrench flats of the fitting. The O-ring seals against the machined seat on the female port.

O-ring fittings can be either adjustable or non-adjustable. Non adjustable fittings are screwed into a port where no alignment is needed. Adjustable fittings can be oriented in a specific direction.

Fittings with O-rings offer advantages over metal-to-metal fittings. Under or over-tightening any fitting can allow leakage, but all-metal fittings are more susceptible to leakage because they must be tightened to a higher and narrower torque range. This makes it easier to strip threads or crack or distort fitting components, which prevents proper sealing.

NOTE: Do not apply thread sealant (teflon tape) on the ORB threads.

Leaks can also result from vibration, thermal cycling and from loads being supported by the connection (i.e. using the fitting in the connection to support mechanical loads).

IMPORTANT: Use the lowest torque value from the chart when wet torquing.

RECOMMENDED ASSEMBLY **ORB (O-RING) NON-ADJUSTABLE**

STEP 1: Inspect all components for damage or contamination.

STEP 2: Lubricate O-ring and threads on fitting with your hydraulic system fluid.

STEP 3: Turn fitting into port until finger tight, then torque to the value shown in the following table.

NOTE: Use the lowest torque value from the chart when wet torquing.

RECOMMENDED ASSEMBLY **ORB (O-RING) ADJUSTABLE**

STEP 1: Inspect all components for damage or contamination.

STEP 2: Lubricate O-ring and threads on fitting with your hydraulic system fluid.

STEP 3: Looking at fitting from the male ORB end, turn manually the nut as far as possible from the O-ring.

STEP 4: Using wrench, turn fitting into port until the washer touches thread nearest wrench pad.

STEP 5: Back off fitting counterclockwise not exceeding one revolution until it is oriented in the correct position.

STEP 6: Place wrench on the wrench pad of fitting to prevent fitting from turning, and torque nut to the value shown in the above table.

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