

Northwest Tiller "D" Series Gear Case Lube and Maintenance

1. Recommended gear case oil is Texas Refinery Company #890 Gear Lube 85w/140.
2. Or use a good quality "Grade 5" oil 85w/140.
3. Keep top torque tube bearing reservoir filled with grease as it is the only means of lubricant to this bearing.
 - A: Hold finger with pressure in on breater while filling reservoir until grease appears.
4. Keep pinion nut snugged up to prevent hammering of bearings. Torque setting of pinion nut is 180 inch pounds. Check daily in your preventive maintenance program.
5. Watch for oil leaks or moisture around gear case and main rotor shaft. Always be aware of different or strange noises.
6. Change oil as needed.
 - A: If gear case becomes extremely heated which may break down oil.
 - B: When color of oil becomes black or smells burnt.
7. We recommend gear case cooler on machines that run excessively hot due to:
 - A: Depth of tiller being run
 - B: Speeds of tiller
 - C: Amount of horse power
 - D: Soil conditions
8. Recommended Seasonal inspection of torque tube bearings.
 - A: Watch for wash boarding or unusual wear patterns on bearing or cone.



Grease Breather Vent
Hold Pressure down while
pumping grease. When filled
Grease will appear here or
underneath side of belt sheeve.

Oil Fill Spout
Fill to Mark on Dip Stick



Grease Zirk

Gear Case Vent

Keep Wedge Nuts Tight

Northwest Tiller Lube Program

Please take a few minutes to get to know your machine by reading your owner's manual. The information is valuable and will help your tiller last longer.

Read the decals and learn where lubrication is required, how often you will need to lubricate and what kind of lubrication is needed.

Lubricating Points

1.	P.T.O. lubricating points	4hrs	2 places
2.	Center Drive Unit	4hrs	2 places
3.	Slap Idlers and Idlers	4hrs	1 place
4.	Gear Case Top Bearing	4hrs	1 place
5.	End Bearing	4hrs	1 place
6.	Dual Drive Center Bearing on Rotor Shaft	4hrs	2 places
7.	SD5000 Tension Unit Bearings and Shaft	4hrs	4 places
8.	Gear Case Oil Level	Daily as needed	
9.	Guage Wheels or Mesh Roller Brackets	4hrs	1 place

L1.



Grease Zirk
Implement and Tractor

L2.



Grease will appear here when back bearing is filled full.

Northwest Tiller Lube Program



Grease Zirk Inside Hole

Grease will appear here when filled.



L3.



Grease will appear here when filled.



L3.



Grease will appear from breather or up under bottom side of belt sheave

Gear case air vent
Oil level and filler tube



L4.



Grease zirk is inside the hole



L5.

Northwest Tiller Lube Program

L6.



L7.



L7.



L7.

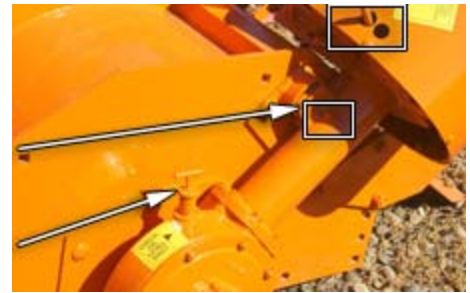


L7.



Gear case vent
Oil level and filler tube

L8.



Belt Replacement

"RB" & "D" Tiller

1. Remove center drive guard by removing the four bolts on front side and slide guard to remove.
2. Remove the Bolts from the gear case guard.
3. Release the tension on the belts by loosening the nut and backing it off. Then loosen the tension rod.
4. Move the center drive assembly by sliding it over toward the gear case.
5. Remove the spring bolts and nuts from the idler unit.
6. If the machine has slap idlers, remove the front bolt holding guards and grooved idler completely. Loosen rear bolt until there is enough room for belts to slide out. (If it is a new style, remove cotter pin in rear and remove the roll.)
7. The complete belt system can now be removed.
8. If possible place idler unit into a bench vise.
9. Dissassemble idler unit by bending back lock tabs and remove the outer nuts.
10. Remove lock tab and guard.
11. Cut wire on the opposite side, loosen grooved idler bolt. Remove the bolt from flat idler and remove flat idler from unit.
12. Check condition of the grooved and flat idler.
13. Replace belts and remount flat idler.
14. Replace the rear bolt finger tight.
15. Replace the guard and lock tab.
16. Replace the idler nuts and tighten down (be sure that they go into holes in the guard as they should nuts.)
17. Tighten both nuts and bend over lock tabs.
18. Tighten rear bolts and replace the wire between them.
19. Replace idler unit onto the tiller.
20. Replace springs and bolts that hold unit to the tiller.
21. Place the belts onto the sheaves and reverse the procedure from removing them from the machine.
22. Replace the guards.
23. Tighten the spring bolt nuts until they bottom out.
24. Re-tension belts and see manual for belt break in procedure. (Pages O&M 5-6)

A Video on Belt Replacement is Available Upon Request.

Belt Replacement

"RB" & "D" Tiller

Suggested Tool List

1/2" Drive Ratchet
9/16" Shallow 1/2" Drive Socket
3/4" Shallow 1/2" Drive Socket
1/2" Combination Box Open End Wrench
Wire Cutters
5/8" Cold Chisel
7/8" Deep Socket 1/2" Drive
1/2" Drive 1/2" Shallow Socket

1/2" Drive 10" Extension
5/8" Shallow 1/2" Drive Socket
15/16" Shallow 1/2" Drive Socket
1 1/8" Combination Box Open End Wrench
Screw Driver (Flat Head)
5' Prybar
15/16" Deep Socket 1/2" Drive
4lb Hammer

Belt.1



Remove the Center Drive Guard.

Belt.2



Remove bolts (4) on front side.

Belt.3



Slide from guard strap on back of tub.
See Center Drive - exploded drawing on page C/1.

Belt Replacement

"RB" & "D" Tiller

Belt.4



Remove Gear Case Sheave Guard.

There will be 5 or 6 bolts depending on the size of the gear case. Smaller units have only 5 bolts.

Belt.5



Release the tension on the belts by loosening the jam nut and backing it off. Then loosen the tension rod.

Tension Rod

Jam Nut

Belt.6



Move the Center Drive Assembly by sliding it over towards the gear case thus loosening belt tension.

Belt.7



Remove Spring Bolts and Nuts.

Belt Replacement

"RB" & "D" Tiller

Belt.8



Remove Belts and Idler Assembly.

Belt.9



Dis-Assemble the Idler Assembly.
Fold Back Lock Tabs.

Belt.10



Remove Nuts.

Belt.11



Remove Lock Tab Strip.

Belt Replacement

"RB" & "D" Tiller

Belt.12



Remove Guard.

Belt.13



Cut holding wire on rear bolts and remove the bolts.

Belt.14



Remove Grooved Idler.

Belt.15



Remove Flat Idler.

Belt Replacement

"RB" & "D" Tiller

Belt.16



Check Grooved Idler For Wear.

Used - When worn the ridges become sharp and will cut the belts.

New - Ridges are about 1/8" thick.

Belt.17



Check Flat Idler For Wear.

Used - May force belts to track improperly

New - Smooth, no grooves.

Belt.18



Remount Grooved Idler.

Belt.19



Make sure all belt numbers are the same.

Different numbers mean different lengths and all belts must be the same length.

Belt Replacement

"RB" & "D" Tiller

Belt.20



Put New Belts On Idler Assembly.

Belt.21



Remount Flat Idler.

Belt.22



Remount Guard.

Set Idlers so guard will fit over bolt ends.

Belt.23



Remount Lock Tab.

Belt Replacement

"RB" & "D" Tiller



Remount Nuts.

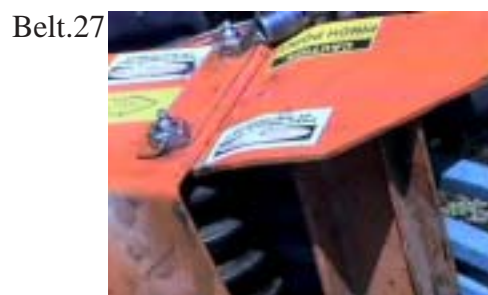
End of shaft will be nearly flush with nut.
Shoulder of nut seats thru lock tab.
Secure nuts tightly.



Tighten Back Bolts.



Run retaining wire through holes (2 or 3 strands).
Twist to prevent loosening.
This keeps the bolts from backing out.



Re-fold Lock Tabs.

Belt Replacement

"RB" & "D" Tiller



Make sure there is a slot on the underside of the Idler post.

Look underneath or remove post to make sure slot is there.



The slot should go up against the sidewall.
In some cases you may want to grind a bolt so it will sit flush with the sidewall (on older units).

This slot provides for belt adjustment.

This is a new feature within the last five years. It helps provide better belt adjustment and longer belt life.



Remount Idler Assembly - Spring Bolt Up.

Northwest Tiller suggests that you insert the upper springbolt before mounting idler assembly to provide something to hold onto. This also makes it easier to install.



Spring Bolt Tack Weld.

Belt Replacement

"RB" & "D" Tiller

Belt.32



Spring Bolt Down.

Belt.33



There are rings on both the top side and the bottom side for the springs to sit in.

Make sure springs rest in these rings.

Belt.34



Place Belts On Center Drive Sheave.

Always use Northwest Belts. Other off-the-shelf brands have a cord structure with only a few large diameter reinforced cords. Northwest Tiller Belts feature smaller and more numerous cords for better performance and longevity. They are designed to take the twist and wrap around the pulley to provide maximum contact.

Belt.35



Tighten Spring Bolts till they bottom on the tack weld shown in Belt. 31. Make sure they are tightened evenly so one side does not get pulled up higher than the other.

Back off each nut 1/2 turn.

Your springs are now set.

Belt Replacement

"RB" & "D" Tiller

Belt.36



Tension Belts using belt tensioner.

Belt.37



Testing Tension.

There should be about 1/4" to 1/2" deflection.

Belt.38



Lock Down Jam Nut on Tension rod.

Belt.39



Remount Center Drive Guard.

Hook the lip of the center drive guard over the lip of the guard strap so the center drive guard is held in position.

Belt Replacement

"RB" & "D" Tiller

Belt.40



Replace the bolts on Center Drive Guard.

Belt.41



Remount Sheave Guard underneath the idler yoke.

Belt.42



Place the corner bolts so they are facing inside. This will prevent them from catching on trees, shrubs, clothing, etc. The other bolts may be mounted however you prefer.

On Smaller Gearcases there will be 5 bolts.

On Larger Gearcases there will be 6 bolts.

Belt.43



Checking Belt Ride.

Run tiller, raise so blades are clear of ground.

Belts should Track on centers of grooved Idler (As they run over Flat Idler).

Belt Replacement

"RB" & "D" Tiller

Belt.44



If running high side or low side of Grooved Idler loosen 1/2" Nut on idler post.

Belt.45



Bump the idler assembly slightly, pivoting Idler Assembly right or left to center belts in Grooved Idler.

Repeat process until belts are running true (center of Grooved Idler as they leave Idler Assembly).

Belt.46



Retighten Post Bolt.

New belts must be broken in as follows.

Run tiller 100 feet and re-adjust the tension on the belts.

Adjust tension to 10lb pressure. Under pressure they should drop as far as the bottom side of the next belt. Recheck running position of Belts leaving Grooved Idler.

Repeat 5 times.

Recheck belts every four hours.

End of Season Preventive Maintenance And Storage

Proper end of season preventive maintenance and storage ensures longer implement life.

Off-season Care

1. Lubricate all bearings
2. Loosen tension on belts.
3. Preventive maintenance steps:
Check
 - for loose belts & nuts*
 - gearcase pinion nut*
 - belts and sheave wear*
 - wedge bolts on gearcase*
 - center drive bearings*
 - PTO universals*
 - for oil leaks or moisture spots*
 - for worn, broken, or loose blades or rotors*
 - mesh roller brackets and bearings*
4. Place implement under cover or cover with a tarp.

Remember your off-season is an excellent time to complete tiller repairs or gearcase repairs

Before next season

1. Retension belts and replace oil in gearcase if necessary.