



RUGGED LABOR SAVING EQUIPMENT SINCE 1995

**IMPORTANT INFORMATION ABOUT SLIP CLUTCH
ATTACHMENT, ADJUSTMENT, TROUBLESHOOTING, and
MAINTENANCE**

**Failure to read and follow this information
completely will Void Your Warranty and/or may
cause Terminal Damage to the PTO driveline,
Clutch, Tiller, or Tractor.**

SLIP CLUTCH IS NOT FACTORY SET

- Attaching PTO Driveline Slip Clutch**
- Sizing PTO Shaft**
- Adjusting PTO Driveline Slip Clutch**
- Troubleshooting PTO Driveline Slip Clutch**
- Maintenance of PTO Driveline Slip Clutch**



OPERATION & PARTS MANUAL

***Please read these instructions before using. Always grease all fittings and be sure to
always check and fill with oil before operating! Retain this manual for future use.***



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RUGGED LABOR SAVING EQUIPMENT SINCE 1995 83371 Melton Rd, Creswell OR 97426

Value Leader



Attaching PTO Driveline Slip Clutch

After completing the assembly of your tiller and greasing the PTO driveline.

DO NOT OPERATE TILLER UNTIL YOU HAVE COMPLETED ALL STEPS OF CLUTCH ADJUSTMENT, PAGE 6

- For IGN and FTL Series an Adaptor may have been provided.



IGN SERIES



FTL SERIES

-For TL Series tiller a PTO adaptor may have been provided.

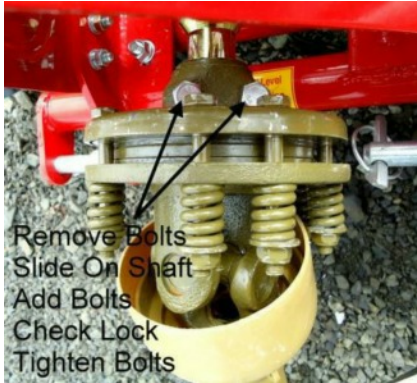


TL SERIES



TL Series Adaptor Attached

- Remove both Bolts, Nuts, and Washers from Slip Clutch
- Slide on to Shaft or Adaptor
- Attach both Bolts, Nuts, and Washers
- Before tightening, pull back on clutch to ensure that bolts are engaging the lock point on shaft.
- Tighten Nuts



Attach other end to tractor.

You may find the PTO compressed length to be too long to attach to your tractor.



See steps for Sizing PTO Shaft, unfortunately you must have slip clutch attached correctly to determine if resizing of shaft is required and by how much.

Sizing PTO Shaft

Because each tractor manufacture may use a different Lift Bar length for any given tractor HP/Tire Combo it is sometimes necessary to re-size the PTO shaft you received with your tiller.

First be sure you have followed the steps above for attaching the slip clutch end to the tiller. With the Slip Clutch side attached to tiller, and you are unable to attach the other end of driveline to the tractor you will need to resize the driveline.

- Separate the 2 drivelines
- Attach the Slip Clutch end to Tiller and other end to the tractor
- Holding them next to each other, mark on the female side of PTO shaft (largest diameter) where the Control Point on the male side meets the female side.



- On Female Side measure from the Mark to the end of the plastic shield. We Measured 3 3/4"



-To determine the length to cut from Male side subtract $1 \frac{3}{4}$ " from the distance measured above. $3 \frac{3}{4}$ " - $1 \frac{3}{4}$ " = 2". If less then 0" then do not cut male side.

-Mark the Male shaft from the end of the plastic shield the determined amount. On ours it was 2"



-Cut the plastic shields

-Using the plastic shields as a guide cut the same amount off the shaft.

-Use a File to deburr both shafts, clean all chips, burrs, and filings before reassembling.

Now reattach the Driveline.



Cut to Fit

Adjusting PTO Driveline Slip Clutch

SLIP CLUTCH IS NOT FACTORY SET

FAILURE TO ADJUST MAY RESULT IN DAMAGE TO TINES, TILLER, TRACTOR, DRIVELINE, CLUTCH

There are many aspects which control the needed spring tension for the slip clutch to work properly. The steps below will describe the basic adjustments of the slip clutch. This is a trial and error set-up process. You may find that the tension adjustment may need to be changed each time you use your tiller based on changing soil conditions, tractor being used, ambient temperature, and existing wear of the clutch parts or tiller tines.

WITH TRACTOR OFF AND KEY IN POCKET

-Loosen all 8 Bolts & Nuts on the clutch until the springs are free.

-Make sure the clutch slips

-Tighten all 8 Nuts until the nut begins to push the springs up against the flange, try first by hand, if a tool is required do it slowly so you can observe when the springs push against the flange. **OVERTIGHTENING MAY CAUSE DAMAGE TO TINES, TILLER, TRACTOR, DRIVELINE, OR CLUTCH**

-Now go test your tiller, at normal operating RPM, for no more than 6' of traveled distance with tines in ground tilling. If you see smoke coming from the clutch or hear loud noise from the clutch before you finish traveling 6', **STOP** the clutch is slipping.

-If it doesn't slip in the ground you are tilling then you are done.

To be sure check the slip clutch housing temperature, by touch if it is hot then it was slipping. Be sure to observe the clutch often as you begin to till for smoke, noise, and heat.

-If it was slipping, allow it to **COOL** before adjusting and attempting to till again. If you adjust before allowing it to cool you could terminally damage any of the moving parts of clutch, tiller, or tractor, as this may cause it to be overtightend.

-After it has cooled, tighten the Nuts $\frac{1}{4}$ turn. Then test tiller again as noted above. OVERTIGHTENING MAY CAUSE DAMAGE TO TINES, TILLER, TRACTOR, DRIVELINE, OR CLUTCH
-Repeat these steps until you are comfortable that the slip clutch is not slipping under the normal operation of your tractor and the conditions in which you will be tilling.

There are many factors that may cause a need for you to adjust the clutch during operations in any given day, including soil conditions and ambient air temperature. *You should check the slip clutch on a regular basis for smoke, noise, and build up of heat. Failure to do this may result in Terminal Failure of the Clutch, Tiller, or Tractor.* OVERTIGHTENING MAY CAUSE DAMAGE TO TINES, TILLER, TRACTOR, DRIVELINE, OR CLUTCH

Always check Slip Clutch Adjustment before Tilling on a different day, in different soil, with a different tractor, or a change in temperature. OVERTIGHTENING MAY CAUSE DAMAGE TO TINES, TILLER, TRACTOR, DRIVELINE, OR CLUTCH

Troubleshooting PTO Driveline Slip Clutch

Slip Clutch is Hot to Touch – Slip Clutch is slipping – Re Adjust Spring Tension – **ALLOW IT TO COOL FIRST!**

Slip Clutch is Smoking – Slip Clutch is slipping – Re Adjust Spring Tension – **ALLOW IT TO COOL FIRST!**

Slip Clutch is Seized – Take Apart and Clean – Replace Damaged or Worn Parts

Broken/Twisted Tines – Slip Clutch is Over tightened/Seized – See Clutch Adjustment Page 6

I broke A Tine, Why?

Everything is going great until I heard a big Bang!

Everything is ok, because we have set our slip clutch.

I go back and see what was hit, I find a buried, rock, brick, pipe, truck axle, or etc....

I see that 1 tine is broken or twisted, WHY?

In reality it was only taking 14hp (arbitrary number, but realistic) to drive the tiller in the soil conditions. If we have that slip clutch set to transfer 30hp then when that one tine hit the brick, rock, pipe or axle it transferred the other 16hp to that one tine until the clutch slipped. In essence the clutch was too tight for an obstruction that was not removed before tilling. You cannot always be aware of a buried obstruction, and sometimes tines are going to break before the clutch slips and protects the gearbox and tractor.

Maintenance of PTO Driveline Slip Clutch

Grease Universal Joint every 8 – 16 hours of operation depending on debris in your working environment.

Check the Slip Clutch every 20 hours of operation for worn, damaged, or broken parts.

After seasonal storage, Re-Adjust your Slip Clutch before you use it and check Universal Joint for missing, loose, damaged, or worn parts.

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