



PTO Driveline Cutting Guide

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Contents

Section 1 Safety	3
Scope and Purpose	3
Specificity	3
PTO Safety Warnings	3
Section 2 Cutting the Driveline.....	4
Determining Driveline Excess Length.....	4
Marking the PTO to Cut	4
Cutting the PTO	5
De-burr the PTO	7
Clean and Lubricate PTO.....	8
Install PTO.....	9
Figure 1 instructions that are supplied with a GKN brand PTO.....	4
Figure 2 PTO shaft ends installed to mark overlap.....	4
Figure 3 mark overlap length.....	5
Figure 4 cut off length marked.....	5
Figure 5 plastic tube cut.....	5
Figure 6 align end of tube to end of shaft.....	6
Figure 7 use tube to mark the cut length to steel shaft.....	6
Figure 8 shaft is marked to cut off same length as plastic tube.....	6
Figure 9 clamp on the part of the shaft that is being cut off then cut	7
Figure 10 some drivelines have 3 points. Make sure you align the flats when putting the ends back together. ...	7
Figure 11 burrs and shavings must be removed.....	7
Figure 12 burrs removed with a file, grinder and power wire wheel, inside and outside.....	8
Figure 13 push towel into and around shaft to remove shavings.....	8
Figure 14 spread grease in outer shaft	9

Section 1 Safety

Scope and Purpose

This guide is limited to the general procedure of cutting the PTO driveline supplied with your implement to the correct length for use with your tractor. This guide is not a replacement for the manual that is supplied with your PTO driveline, your implement or your tractor.

Specificity

This guide includes photographs of an Antonio Carraro 4400 HST tractor, and a Galfre 130 drum mower used in the example. The procedures for cutting a driveline on a different tractor and implement are the same. Do not use the specific measurements shown here - they will be different for different tractors and implements. The driveline referenced here is made by GKN. Your driveline may be different, but the procedure is the same.

PTO Safety Warnings

Read the manual that is supplied with your PTO before operating the machinery. Failure to follow all safety procedures in the manufactures literature could lead to equipment damage, personal injury or death.

PTO shafts are supplied long because the length of the draw arms on tractors vary. It is typical to have to remove excess length from the PTO before using the implement with your tractor. If you have more than one tractor, it is important to cut the shaft for the tractor you will be using the implement with. Mark the PTO with permanent marker as to which tractor it is to be used with to avoid confusion that could lead to damage. Using a PTO shaft that is too short can cause the PTO to separate during use that could lead to damage, injury or worse.

The PTO shaft must never completely collapse in use, because to do so would put the weight of the implement attached to the tractor pushing against the PTO's of the tractor and implement. The output bearings are not designed for thrust forces pushing the PTO forward into the gearbox, and could cause severe damage. This could be an expensive repair on the tractor if the PTO bearings or gearing were damaged due to an improperly fitted PTO shaft. If you have to lift the implement to attach the PTO, then the PTO shaft is too long and must be cut.

The PTO shaft going to the tractor should have about 1 ½ inches of space to retract when the distance between the splines on the tractor and implement are at minimum. If this is not the case, the PTO must be cut to avoid damaging the tractor or the PTO shaft. If you need to cut the PTO shaft, see the instructions that came with the shaft.

Section 2 Cutting the Driveline

Determining Driveline Excess Length

First, attach the implement to the tractor's 3 point hitch. Adjust the 3 point hitch so that the PTO on the tractor and the implement are at the same height, so the distance between them is at the minimum condition. Attach both ends of the PTO to the tractor and to the implement with the PTO split apart in two pieces (see figure 2). Orient the shafts so that they pass by one another as parallel as possible.

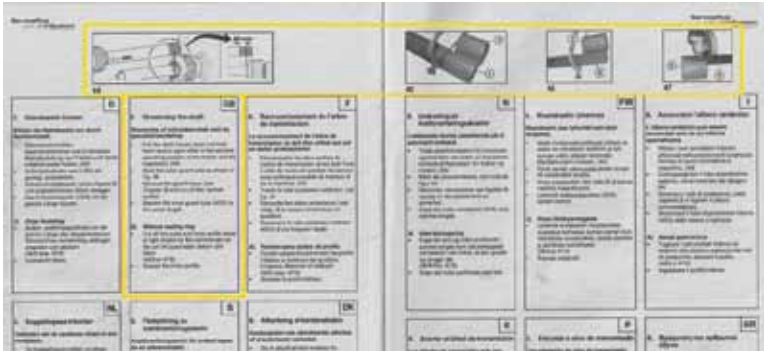


Figure 1 instructions that are supplied with a GKN brand PTO



Figure 2 PTO shaft ends installed to mark overlap

Marking the PTO to Cut

Using a straight edge, transfer a mark from the end of the tube section to the other section as shown here and in the manual that comes with the PTO. This line represents how much the shafts are too long to fit together. The manufacturer of the PTO shafts recommends adding 40mm (about an inch and a half) to the amount to cut off the plastic tube and the steel telescoping tube of each half of the PTO.



Figure 3 mark overlap length

The overlap length is 150mm for this example. Add 40mm to that for our cutoff length. The amount to cut off is 190mm. This example is in metric because the instructions given by the manufacturer of the PTO are in metric.

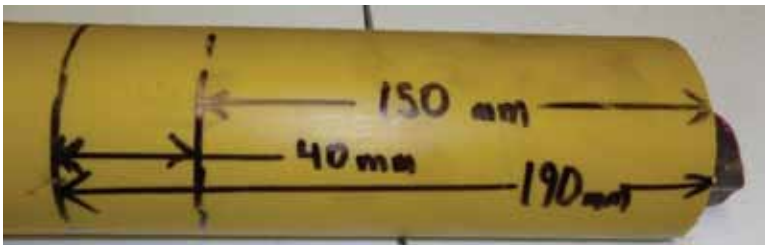


Figure 4 cut off length marked

Cutting the PTO

Cut the 190mm length of plastic tube on one of the shaft ends, leaving the steel shaft inside not cut.



Figure 5 plastic tube cut

Use the cut length of plastic tube to mark the remaining 3 cuts. Align the end of the tube with the end of the shaft.



Figure 6 align end of tube to end of shaft

Use the other end of the tube to mark the cut length on the steel shaft.



Figure 7 use tube to mark the cut length to steel shaft

Now the shaft is marked to cut the same length as the plastic tube.



Figure 8 shaft is marked to cut off same length as plastic tube

When cutting the steel shaft, clamp it in a vise using the discard end to clamp on. The type of saw could be abrasive cut-off, reciprocating with a fine tooth blade for metal, a powered band saw for metal or the common hacksaw shown here. Be careful and wear eye protection.



Figure 9 clamp on the part of the shaft that is being cut off then cut

Repeat the process so that both shaft halves have had the same length removed. If your shaft has 3 points instead of the 2 shown here, look for the one with the flat - it is different than the other two. The ones with the flat must align or they will not fit together.

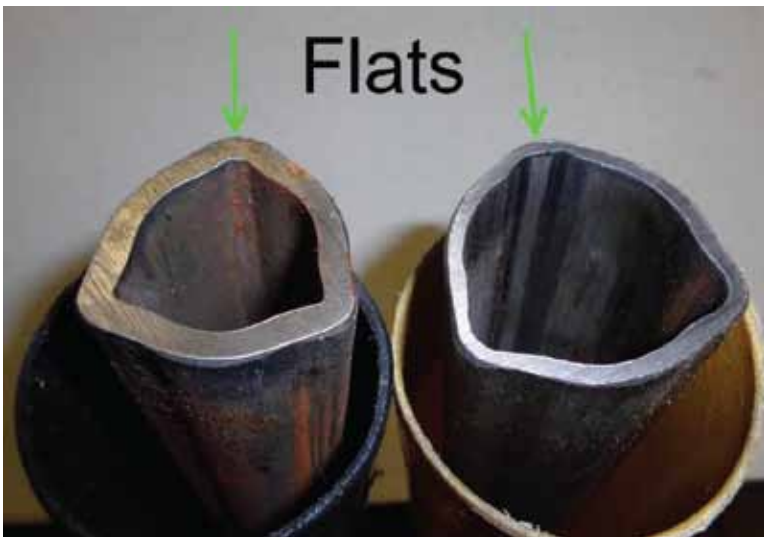


Figure 10 some drivelines have 3 points. Make sure you align the flats when putting the ends back together.

De-burr the PTO

When the cut is complete, there will be shavings and burrs that need to be removed.



Figure 11 burrs and shavings must be removed

Using a file, grinder, wire wheel, flap wheel, grinding disk or sandpaper, de-burr the shafts after you cut them.

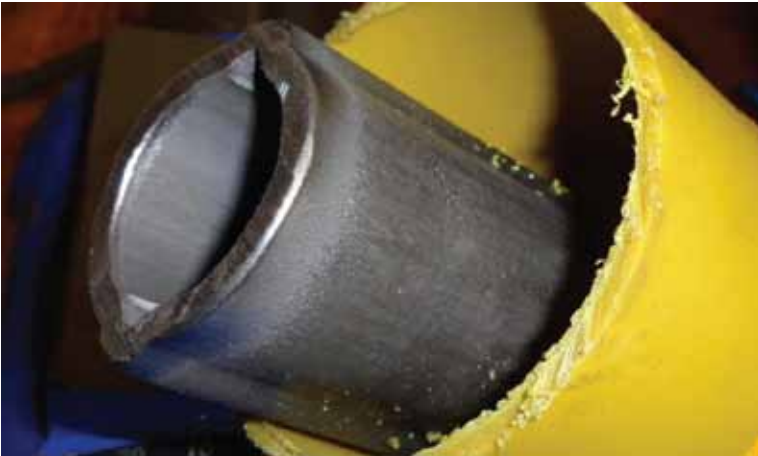


Figure 12 burrs removed with a file, grinder and power wire wheel, inside and outside.

Clean and Lubricate PTO

Before re-assembling the shafts, push a rag down into each shaft and then around the outside with something like a used hacksaw blade, then remove the rag to clear out the debris and shavings.



Figure 13 push towel into and around shaft to remove shavings

Now that both shaft halves are clean inside and out, wipe off that used hacksaw blade and spread some all-purpose grease into the inside of the bigger shaft. The smaller shaft will fit inside the bigger shaft. Spread it out so it does not just get pushed down to the end.



Figure 14 spread grease in outer shaft

Re-assemble the PTO.

Install PTO

After you have cut the PTO driveline to the correct length for your tractor, you will install it on the implement.

The PTO should now fit between the tractor and the implement when the implement end is installed. There should be sufficient clearance to start the end that attaches to the tractor when the PTO splines are at the same height.