

AndyMark Toughbox Nano Tube 31, Three 500 Key Shafts, Gear Drive (am-0691) Assembly Instructions



July 2012

Parts needed to make a Toughbox Nano Tube:

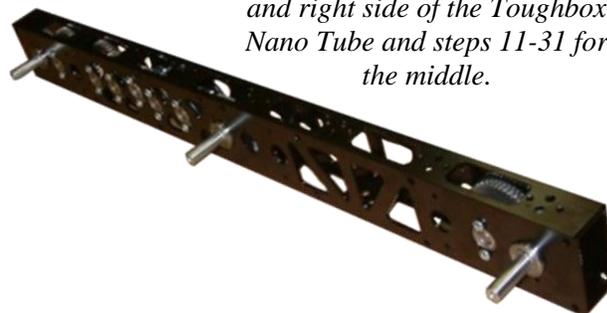
Component	Qty.	Part #
Toughbox Large Cluster Gear	5	am-0149
Toughbox Small Cluster Gear	3	am-0151
Toughbox Large Output Gear	3	am-0150
Toughbox Nano Tube 31"	1	am-0653
500 Key Output Shaft	3	am-0506
$\frac{3}{8}$ " id Flanged, Ball Bearing (FR6ZZ)	7	am-0028
#10-32 x $\frac{3}{8}$ " BHPS	14	am-1028
.145 x .593 x .875 od Nylon Spacer	3	am-1151
External Klipring	3	am-0206
Toughbox Small Hex Shaft	7	am-0152
$\frac{1}{2}$ " id Flanged FR8ZZ Hex-Bore Bearing	3	am-0279
$\frac{3}{8}$ " id Flanged Bearing (FR6)	3	am-0027
$\frac{3}{8}$ " id bearing, shielded (R6ZZ)	7	am-0516
24 Tooth Small Cluster Gear	2	am-0177
0.373" x 0.500" Spacer	2	am-0003
$\frac{1}{2}$ " Nylon Washer	2	am-1001
$\frac{1}{2}$ " Brass Tube	2	am-0712

Tools needed:

14mm Crescent Wrench
Phillips Screwdriver

***Note:** Shown are assembly instructions for a Toughbox Nano Tube using a different shaft and body.

Perform steps 1-10 for the left and right side of the Toughbox Nano Tube and steps 11-31 for the middle.

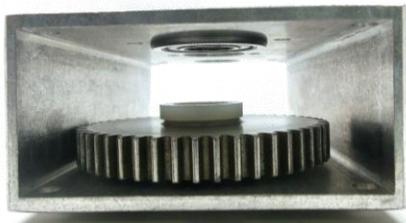


Toughbox Nano Tube Assembly Instructions:

Step 1: Press an FR8ZZ bearing into the nano tube on the bottom side.



Step 3: Place the large output gear so that its flat side will face the FR6 bearing. Put the PVC washer above it.



Step 2: Press in the FR6ZZ to the hold behind the FR8ZZ from the inside of the tube.



Step 4: Push the 500 Key Output Shaft into the bearing.



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Step 5: Slide the large output gear towards the FR8ZZ bearing. Then press the external klipping into the groove shaft. If you're having troubles, use a 14mm crescent wrench.



Step 6: Press an FR6 bearing into the middle hole of the motor side.



Step 7: Insert the large cluster gear with the raised portion facing the FR6 bearing.



Step 8: Insert the small cluster shaft.



Step 9: Insert the small cluster gear with the flat side facing towards the large cluster gear.



Step 10: Press the R6ZZ bearing into the middle hole of the output side. Right beside it, screw in the two #10-32 x 3/8" BHPS.



Step 11: Place five $\frac{3}{8}$ " id shielded ball bearings (FR6ZZ) and then one $\frac{3}{8}$ " id Flanged Bearing from left to right respectively.



Step 13: Insert the large toughbox cluster gear with the embossed part facing down on top of the $\frac{3}{8}$ " id Flanged Ball Bearing FR6ZZ.



Step 15: Slip in the Toughbox Small Cluster Gear.



Step 12: Turn it over and insert the $\frac{1}{2}$ " Hex Bore, Flanged, Shielded Ball Bearing (FR8ZZ-Hex) bearing.



Step 14: Insert the Cluster Shaft.



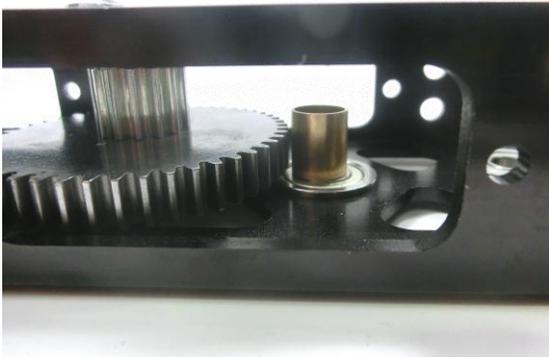
Step 16: Press in a $\frac{3}{8}$ " id shielded bearing (R6ZZ).



Step 17: Screw in two #10-32 x $\frac{3}{8}$ " BHPS.



Step 18: On the next bearing, place the brass spacer.



Step 20: Insert a small toughbox hex shaft and press it in all the way.



Step 22: Place the black spacer on top of the next $\frac{3}{8}$ " id shielded ball bearing (FR6ZZ)



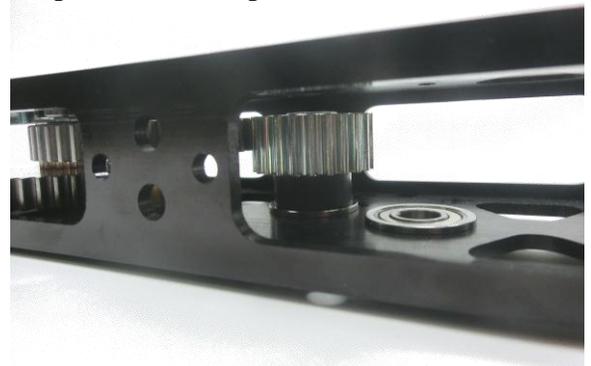
Step 19: Place the large toughbox cluster gear where the flat side faces the brass spacer.



Step 21: Press in a $\frac{3}{8}$ " id shielded bearing (R6ZZ). Then screw in two #10-32 x $\frac{3}{8}$ " BHPS.



Step 23: Place the 24-tooth cluster gear on top of the black spacer.



Step 24: Place the small black washer on top of this assembly.



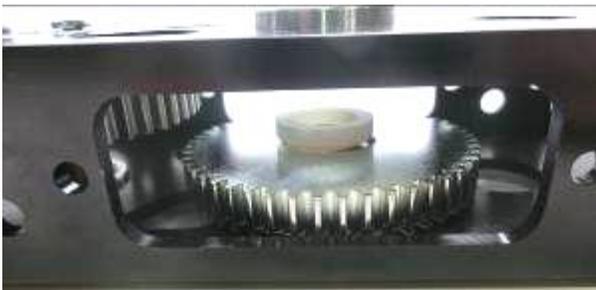
Step 25: Press in a $\frac{3}{8}$ " id shielded bearing (R6ZZ) and screw in the two #10-32 x $\frac{3}{8}$ " BHPS.



Step 27: Repeat steps 18 to 21.



Step 29: Place the small nylon spacer above it.



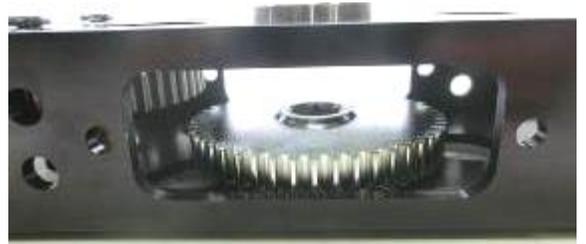
Step 31: Slide the gear and washer to the other side. Insert the e-clip.



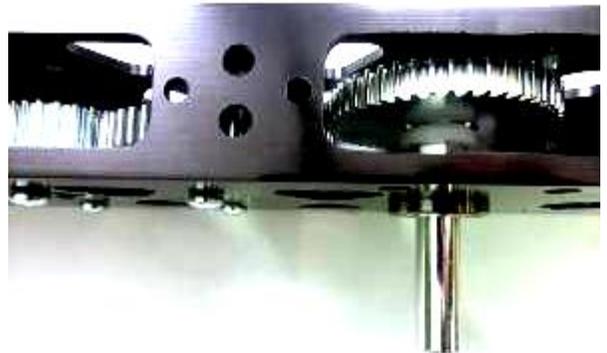
Step 26: Repeat steps 22 to 25 for the following assembly. It should look as shown below.



Step 28: Place the toughobx large cluster gear on top of the $\frac{1}{2}$ " Hex Bore, Flanged, Shielded Ball Bearing (FR8ZZ-Hex) so that its flat side faces down.



Step 30: Insert the 500 Key Output Shaft.



The middle assembly should look as shown:

