

Supplemental Information & Instructions for **837-508 or TT1132 Pulley & 3/8 Inch Belt Kit** Converts TR 2-4 Four Cylinder Engines to 3/8" Fan Belt

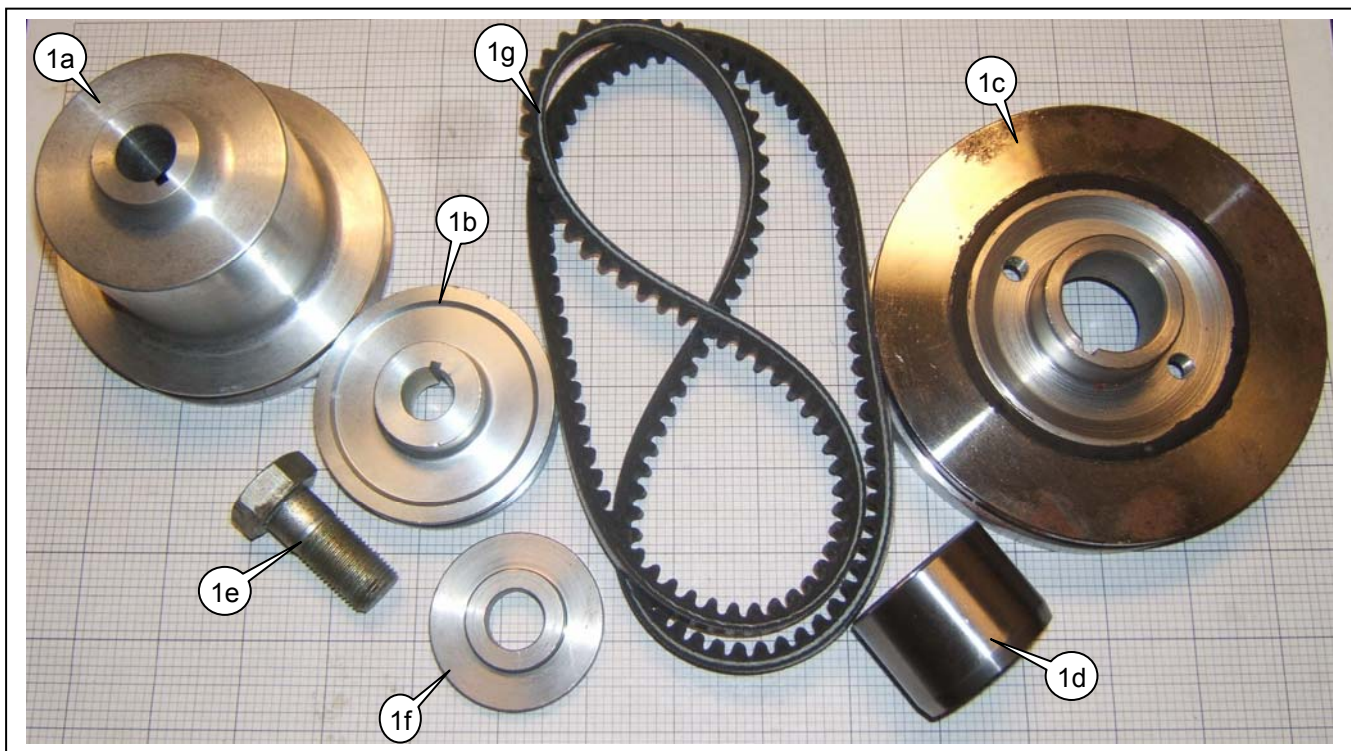
About this Kit

This conversion kit will allow you to use a modern 3/8" cogged belt instead of the more cumbersome OE type fan belt. The kit will fit all 4-cylinder TR engines so long as the water pump pulley is not permanently pressed on. For a short period Unipart sold a water pump fitted with a permanently pressed on pulley. If you have a pump with a pressed on pulley, it will be necessary to replace the pump because you cannot fit the alloy replacement water pump pulley supplied in this kit. If a new pump is needed, consider our uprated pump with the 6-bladed impeller (835-071 or QHQCP170X).

This is a good time to check the water pump, hoses and radiator. It will also be worth considering the fitment of an alternator conversion. Please note that the original fan extension and fan cannot be refitted. We suggest that you install a 12" electric fan kit (231-688 or TT29403).

Please refer to the part numbers and illustration below.

Contents of Kit



Ref	Moss US #	Moss Europe #	Description	Qty	Comments
1a	835-251	105537A	Pulley, Water Pump, Alloy	1	We make this pulley just for this kit
1b	130-370	12G1054	Pulley, Alternator, 2.75", steel	1	
1c			Pulley, Crankshaft	1	No Timing Marks. Vibration damper
1d	NA	TT11322	Spacer, for crankshaft	1	The front seal rides on this spacer
1e	322-950	BH610161	Bolt, Pulley to Crankshaft	1	5/8 UNF X 2IN
1f	NA	TT11321	Washer, Crank Pulley	1	21/32" ID
1g	837-505	GCB10975	Fan Belt, Cogged, 3/8"	1	

Installation Instructions

- 1) Remove water pump, and secure the pump in a bench vise.
- 2) Remove the water pump pulley. *Take care not to damage the threads on the end of the spindle, as this might cost you a new pump.*
- 3) Note: some engines have 3 studs to locate the pump, while others use 2 studs and a long bolt. If you have a pump secured with the long bolt, the bolt must be fitted to the pump prior to fitting the new pulley.
- 4) With the woodruff key facing upwards, slide the new water pump pulley (1a) onto the water pump spindle.
- 5) Check that the pulley rotates freely and clears the body of the pump. *Some pumps have problems due to casting variations which can contact the inside of the pulley. Remove material from the pump as needed.*
- 6) Fit a new plain washer and new locknut. Tighten the locknut to about 16 ft/lbs (no more). Check for free rotation of the pulley again.
- 7) Refit water pump to the water pump housing.
- 8) Carefully inspect the generator mountings to make sure they are in good shape. If they need to be repaired or replaced, this must be done before you proceed.
- 9) Remove the existing pulley from the generator / dynamo. You will re-use the lock washer & nut.
- 10) Slide the new generator pulley (1b) into place, and secure with the lock washer and nut removed in step 8.
- 11) Use a straight edge to verify that the alignment of the generator pulley and the water pump pulley is satisfactory.
- 12) Remove the large bolt securing the fan hub and bottom pulley, doing as little damage as possible.
- 13) We suggest that you consider replacing the timing cover oil seal as part of this conversion (520-000 or 104662), because even if it was not leaking before, disturbing it will often cause it to leak. You will need the timing cover gasket as well (697-110 or 211122).
- 14) Locate the spacer (1d) supplied in the kit. Note the beveled or tapered edge, which will make it easier to push the pulley with the spacer on it through the timing cover seal without damaging the oil seal.
- 15) The spacer needs to be pressed onto the new crankshaft pulley with the beveled or tapered edge AWAY from the pulley. Using a vise with soft jaws (aluminum or brass) squeeze the spacer onto the inner boss of the new crank pulley (1c). Make sure the spacer goes on squarely and that it butts up against the shoulder of the pulley. *While this can be done using a large bench vise with soft jaws, you can take this to a machine shop if you prefer.*
- 16) Rotate the crankshaft until the woodruff key faces upwards, which will help it stay in place. Ensure it is in good condition, and replace it if necessary (327-170 or WKN606). *The new pulley needs to be squeezed onto the crankshaft and requires careful alignment with this key. It has been found very useful to mark the spacer on the crank pulley with a marker pen or pencil precisely in line with the slot for the key. Do not scratch the outer surface of the spacer-it will leak!*
- 17) Use the provided bolt (1e) and washer (1f) and pull the pulley into place on the crankshaft.
- 18) Tighten the bolt to about 60 ft/lbs. *Some people like to use Loctite on the bolt but this might cause future problems if the engine needs to be dismantled. The original bolt was tightened to a higher torque specification because it had a fan and hub extension to secure, and it was fighting against a stiffer belt.*
- 19) Mark TDC on the new crank pulley/vibration damper. *The pulley used in the kit is actually for another application, and it has an inner and outer steel section bonded together with a layer of rubber. It is this construction detail that makes it a vibration damper. These pulleys are made without timing marks which make it possible for us to use it in several different applications. If we made small numbers of pulleys with specific timing marks, the cost would be prohibitive. **Why can't I just put some timing tape on the pulley?** The pulley/damper is 5 1/8 inches in diameter, and we have not found a tape for a damper of this size. If you find one, please let us know.*

Finding Top Dead Center.

- The fastest way to mark top dead center (TDC) on the pulley is to use a piston stop.*
- 20) Pull the plugs, and get a suitable sized socket and long handle to make it easy to rotate the engine.
 - 21) **If the cylinder head is still in place:** It will be necessary to use a piston stop that screws in the spark plug hole. You can make one by knocking the center out of an old spark plug and securing a suitable length of aluminum or brass rod running through the middle of the spark plug. (JB Weld works fine) The rod needs to stick into the cylinder far enough to stop the piston as it comes up in the cylinder. The exact length of the stop does not matter so long as the end is round and smooth and it touches the piston away from the edges. You do not want anything that will mark the top of the piston.
 - 22) **If the head is off:** You can use a plate-style stop or a dial indicator.
 - 23) Rotate the engine slowly "by hand" clockwise until the piston comes to rest against the stop.

- 24) Mark the spot on the pulley immediately under the pointer. *You may find you need to bend the pointer down a little, because the new pulley/damper is slightly smaller in diameter than the original pulley.*
- 25) Rotate the engine counter-clockwise until the piston comes to rest against the stop again.
- 26) Mark the spot on the pulley immediately under the pointer.
- 27) Find the mid-point between the two marks you just made.
- 28) Mark the mid point on the pulley/damper with yellow paint, but do not make a permanent mark yet.
- 29) This spot is Top Dead Center, or TDC.
- 30) Remove the piston stop.
- 31) Rotate the engine to the correct TDC point on the pulley/damper.
- 32) The center of the keyway will be on the bottom.
- 33) The damper is 5.135" in diameter, so we can calculate that $C = \pi d$, or $C = 16.1239$ " Since $360^\circ = 16.1239$ "; $1^\circ = 0.04478$ "
 - a. 4 degrees is 0.17912" (~ 0,179")
 - b. 10 degrees is 0.4478"
- 34) Before you make the TDC mark permanent we suggest you do a quick check to make sure you are on TDC for #1 piston.

Confirming Your TDC

- 35) Spark plugs should still be out.
- 36) First, set the valve clearances using the correct sequence as listed in the manual.
- 37) Move the #1 piston to TDC. (Ignore the pointer and pulley/damper for the time being)
 - a. Put your thumb over the #1 spark plug hole.
 - b. Rotate the crankshaft.
 - c. You will feel the air pressure in #1 cylinder build up as the piston comes up on the compression stroke.
- 38) Around TDC, a few degrees either way, you should see valves 7 and 8 "rock", meaning the exhaust closes and intake opens.
- 39) Check the pointer and see if the pulley/damper is close to your TDC mark – it should be. If it is, make a permanent mark on the pulley/damper at TDC. *A spring loaded center punch works pretty well.*
- 40) You can put a paint mark over the dimple so you can see the mark easily.
- 41) If the pointer is **NOT** on the TDC mark, you have a problem that needs to be sorted out.
- 42) If the valves 7 and 8 are not rocking, your timing chain may be off on the cam gear.
- 43) Once you have marked the crank pulley, fit the new fan belt (1g) and adjust the belt tension, taking care not to over-tighten the belt. The belt should have $\frac{3}{4}$ " to 1" deflection at the mid point of its longest run.

Although we made every effort to make sure that these instructions are comprehensive and easy to follow, it is almost inevitable that there will be issues we have overlooked, or points that could be clearer. We welcome your input. Please use the contact us form on the Moss US Website, and select "Ask a technical or parts related question" as the subject. <http://www.mossmotors.com/AboutMoss/ContactUs.aspx>



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