

GTC Manufacturing

General Information and Installation Instructions, Release 4

August 2010

TC2 Torque Converter

Asymmetrical System

Superior Performance

GTC Industries

The TC2 is an asymmetrical torque converter system in which the sheave faces have different angles. The system operates with the torque sensing cam in an outboard position allowing for in-line operation of the unit. The primary benefit of this design is that it allows proper alignment of the final drive chain to be on the same side of the vehicle as the torque converter. Moreover, the angle on the movable sheave being set at 18 degrees enables the unit to raise the belt to a larger pitch diameter with less travel of the sheave. This allows the unit to achieve higher overdrive ratios at maximum RPM

Billet Aluminum CNC Technology

Made in USA

- In-Line Operation
- Powerful Low End Torque
- Smooth Shifting on Load Demand
- Infinite High / Low Ratios
- High Performance Overdrive

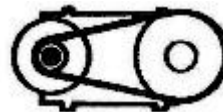
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HIGH PERFORMANCE

The TC2 provides Neutral engagement at Engine Idle. At 2200 RPM, the system engages for a Powerful Low Ratio for great takeoff speed. At Mid Range, the TC2 instantaneously shifts ratios based upon RPM and Load Requirements. Finally, the High Performance Overdrive engages for maximum speed

Neutral .



The Belt is not engaged at idle effectively placing the TC2 in neutral

Low



As the engine throttle is applied, the Driver Pulley begins to engage 2200 RPM. The Drive Belt engages the Driven Pulley at it's largest diameter. This is Low Gear position

Mid Range



As the RPMs increase, the Driver Pulley flanges continue to contract forcing the belt to a larger diameter. This action depends upon RPM and Load. If the load is increased, the process is reversed, forcing the belt to a smaller diameter. This process allows the TC2 to raise and lower the ratios as required between high and low.

High Overdrive



At maximum RPM, the Driven Pulley becomes fully open allowing the smallest possible diameter. At the same time, the Driver Pulley flanges are fully closed forcing the belt to its maximum diameter. This is High Gear Overdrive position

Parts

GTC offers a full line of high quality replacement parts for the TC2 Torque Converter. TC2 parts are also fully compatible with Comet TAV2 Torque Converters

PART#	DESCRIPTION	COMET#
1001	TC2 Torque Converter 3/4" Bore, #35P, 12T	218352A
1002	TC2 Torque Converter 3/4" Bore, #40/41P, 10T	218353A
1003	TC2 Torque Converter 1" Bore, #35P, 12T	218354A
1004	TC2 Torque Converter 1" Bore, #40/41P, 10T	218355A
1005	DRIVER UNIT 3/4"	203814A
1006	DRIVER UNIT 1"	203603A
1007	DRIVEN UNIT 5/8" BORE	217610A
1008	DRIVER MOUNTING BOLT 3/4" CRANKSHAFT	205384A
1009	DRIVER MOUNTING BOLT 1" CRANKSHAFT	215732A
1010	LOCK WASHER, 5/16	200701A
1011	PILOT WASHER 3/8	200840A
1012	PILOT WASHER 5/16	202429A
1013	DRUM DRIVER 3/4"	202090A
1014	DRUM DRIVER 1"	202427A
1015	HUB DRIVER 3/4" 4 SPLINED	203376A
1016	HUB DRIVER 1" 8 SPLINED	203641A
1017	DRIVER WEIGHT ASSY W/SPRINGS	200344A
1018	BLUE GARTER SPRING SET OF 2	011188A
1019	SHEAVE MOVABLE HALF W/HUB 3/4" BORE	200410A
1020	SHEAVE MOVABLE HALF W/HUB 1" BORE	203515A
1021	BUSHING BRONZE (NOT USED ON 1")	200349A
1023	BELT, ASYMMETRIC	203589A
1024	SHEAVE STATIONARY 3/4" BORE	202066A
1025	SHEAVE STATIONARY 1" BORE	206633A
1026	SPACER STEEL 3/4"	200389A
1027	SPACER STEEL 1"	202877A
1028	JAM NUT	203189A
1029	SNAP RING	204714A
1030	FIXED CAM	215650A
1031	SPRING GREEN	215699A
1032	FACE MOVEABLE WITH CAM	215647A
1033	BUTTON INSERT	204332A
1034	BUSHING	203942A
1035	FACE FIXED WITH POST 5/8" BORE	217612A
1036	KEY 3/16" SQ x 2-1/4"	209831A
1037	KEY 3/16" SQ x 9/16"	011059A
1038	JACKSHAFT, 5/8" DIAMETER	212225A
1039	WASHER 5/8"	200834A
1040	SPROCKET 12T 35P	200379A
1041	SPROCKET 10T 40/41P	102168A
1042	BALL BEARING SEALED 5/8"	215558A
1043	SPACER 5/8"	203187A
1044	SNAP RING FOR 5/8" SHAFT	212227A
1045	MOUNTING BRACKET W/BEARINGS AND SPACER	218525A
1046	ENGINE MOUNTING BOLT	217867A
1047	LOCK WASHER 5/16"	200701A
1048	SHROUD PLASTIC W/DECALS	218351A
1049	SCREW, SHROUD MOUNTING	214146A
1050	ROUND DECAL	218513A
1051	LONG DECAL	218514A

Installation Instructions



Step 1

Components to be installed

Unpack and identify the components to be installed: Driver Unit, Driven Unit, Mounting Plate with Bearings pre-installed, Drive Belt, Hardware Package and Jackshaft. Refer to the Component Diagrams

Step 2

Install Mounting Bracket

Bolt the Mounting Bracket (26) to the engine crankcase using the four 1" Hex Bolts (27) and optional Lock Washers (28). The Bracket can be tilted up or down as needed. Some engines may require relocating minor components to facilitate plate installation

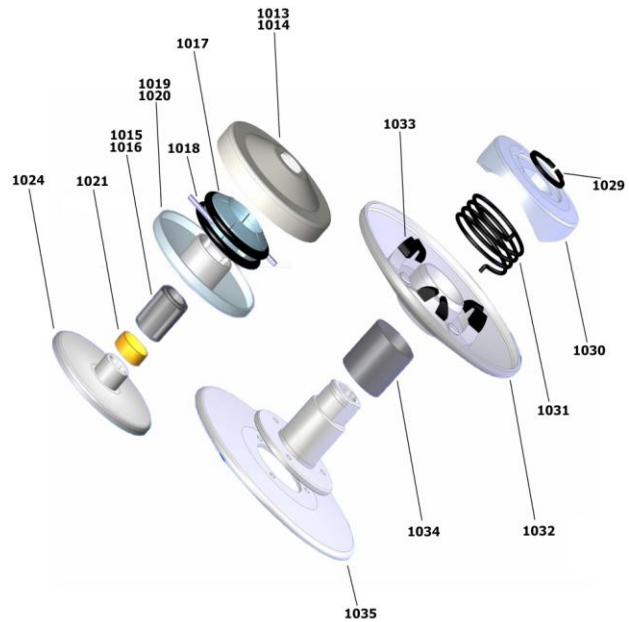


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WARNING

SERIOUS INJURY OR DEATH can result from improper installation or operation of this product. Small vehicles such as Gokarts, Mini Bikes and other engine operated equipment are dangerous to operate. The **USER ASSUMES ALL RISKS** associated with installation and operation of this product. This product should only be installed by a qualified small engine technician. **DO NOT OPERATE THIS PRODUCT WITHOUT PROPER SAFETY DEVICES** installed that are specifically designed for your vehicle or equipment including but not limited to **CHAIN / BELT GUARD (NOT SUPPLIED) AND OTHER PROTECTIVE COVERS (NOT SUPPLIED)**. **DO NOT WEAR LOOSE CLOTHING** or **LONG HAIR** that can become entangled with moving parts of this product. **DO NOT OPERATE THIS PRODUCT WHILE UNDER THE INFLUENCE OF ALCOHOL, DRUGS OR OTHER MEDICATIONS.** **CHILDREN UNDER THE AGE OF 16 SHOULD NOT OPERATE THIS PRODUCT.**

ALL SAFETY INFORMATION IS NOT INCLUDED IN THIS GUIDE. It is not possible or practical to warn users about all hazards associated with operating this product. The user must take responsibility for the safe operation of this product. It is strongly recommended that all users complete an approved safety course such as offered by the ATV Safety Institute or other accredited organizations before operating this product.



COMPLETE TC2 KITS

1001	3/4" BORE	#35P	12T
1002	3/4" BORE	#40/41P	10T
1003	1" BORE	#35P	12T
1004	1" BORE	#40/41P	10T

REPLACEMENT DRIVER

1005	3/4" BORE
1006	1" BORE

REPLACEMENT DRIVEN

1007	5/8" BORE
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Step 3

Install Crankshaft Spacer

Place the spacer (11) onto the engine crankshaft and slide it all the way to the crankcase



Step 4

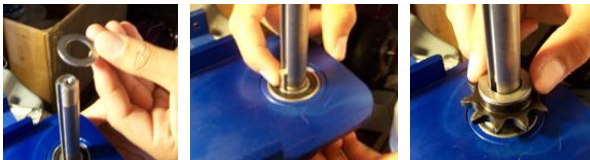
Install the Jackshaft

Slide a 5/8" washer (24) down the Jackshaft to the snap ring. Insert the Jackshaft into the boss from behind and slide it all the way up.

Step 5

Install the Drive Sprocket

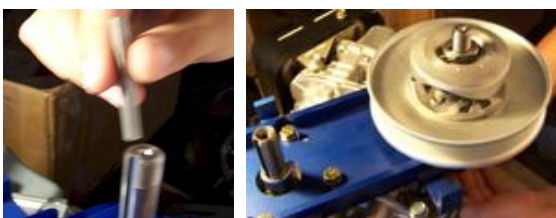
Place a 5/8" washer (24) on the Jackshaft and slide it down to the Bearing on the Mounting Bracket. Place the Small Key (20) onto the Jackshaft and slide it down to the washer (#40/41 sprocket only). Place the Drive Sprocket (23) followed by the second 5/8" washer(22) onto the Jackshaft and slide them down.



Step 6

Install Driven Unit

Place the Long Key onto the Jackshaft and slide it down. Place the Driven Unit on the Jackshaft, line it up with the Key and slide it down. Place the Drive Belt on the Driven Unit. Loosely thread the Jam Nut (12) on the Jackshaft but do not torque it down at this time.



Step 7

Install Driver Unit

Separate the Driver Unit and place the Stationary Sheave Plate (10) on the Engine Crankshaft. Install the Bronze Bushing (9) on the Post (3/4 Drive Unit only). Slip the Drive Belt (8) over the Bushing on the Post of the Drive Unit. Install the Hub (5) with the notches on the Hub facing outward.



Step 8

Install Remainder of Drive Unit

Place the other half of the Drive Unit (6&7) on the Crankshaft. Line up the Outer Cover (4) and install the Mounting Bolt (1), Lock Washer (2) and Pilot Washer (3) and Torque to 14 ft lbs. Torque the Driven Unit to 12 ft lbs. Take care not to over tighten and damage snap ring.



Step 9

Install Final Drive Chain

Break Chain at the proper length and install around the sprockets. Join the chain with the master link. Move the engine to adjust proper chain tension.

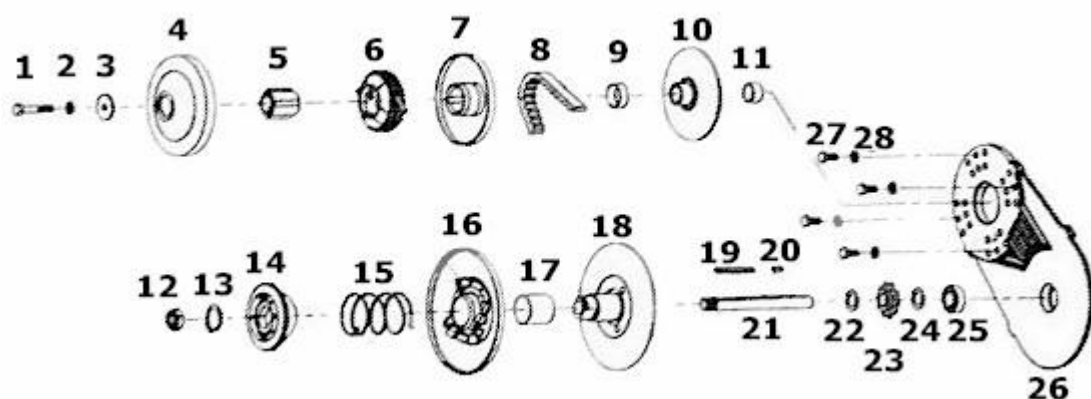
Step 10

Install Chain / Belt Guard (Not Supplied)

DO NOT OPERATE THIS PRODUCT WITHOUT PROPER SAFETY DEVICES installed that are specifically designed for your vehicle or equipment including but not limited to CHAIN / BELT GUARD (NOT SUPPLIED) AND OTHER PROTECTIVE COVERS (NOT SUPPLIED). DO NOT WEAR LOOSE CLOTHING or LONG HAIR that can become entangled with moving parts of this product.

INSTALLATION NOTES: If your engine currently has a Torque Converter installed, you should be able to install the TC2 without any modifications. If you are converting from a Centrifugal Clutch, you may need to make some modifications to install your TC2. The Mounting Bracket pictured in these instructions is supplied with Models 1001 and 1002 for use in engines up to 7hp. Models 1003 and 1004 come with a larger Mounting Bracket (not pictured) for use on 4-13hp engines. The Mounting Brackets fit many manufacturers engines. The Bracket can be tilted up or down as needed. Some engines may require relocating minor components to facilitate installation. The Hex Bolts supplied will fit most engines, however, Manufacturers make changes from time to time and it is not possible to supply correct hardware to mount the TC2 to all manufacturers engines. Some non-standard and imported engines may require the use of different size bolts (not supplied). If this is the case, refer to your engine user guide for bolt dimensions. If this information is not available, then you may have to test a few bolts to determine the correct size. **Notes for the 1" Driver:** Does not use a Bronze Bushing. Be sure the 8-Splined Hub is installed with the key towards the engine

Component Diagram



Converting from a Centrifugal Clutch to a TC2

If your machine uses a Centrifugal Clutch now and you would like to change over to a GTC Torque Converter, the easiest way to determine whether you can easily install a TC2 is to check your centrifugal clutch with the sprocket teeth in the INBOARD position (in between the engine and clutch). If the axle drive sprocket lines up with the clutch sprocket in this position, your torque converter should mount right up. You may have to slide your axle drive sprocket about an inch closer to the motor to get both sprockets lined up properly

IMPORTANT! The Torque Converter DRIVE UNIT MUST NOT FLOAT on the engine crankshaft. It must be bolted tight against the engine crankshaft shoulder. Recommended Torque for bolt - 14 ft. lbs.

The belt should be straight in the sheaves. The belt when straight in the sheaves should also be square to the engine crankshaft and jackshaft.

The center line of crankshaft and the jackshaft must be parallel at all times.

Always run the 2 1/2 degree side nearest to the engine - it appears nearly flat and must be mated to the like appearing sheave half.

Some engines may require that you raise your engine up 2 inches to use a Torque Converter System.