TAV (TORQ-A-VERTER)

GENERAL INFORMATION: This is an asymmetrical type torque converter system which means the sheave faces are non-symmetrical. They have different angles. In this case, the movable sheave face is 18° while the stationary sheave face is 2 1/2° for a collective angle of 20 1/2°. Here are some reasons for selecting the asymmetrical concept: The COMET Asymmetric concept operates on an in-line principal with the torque sensing cam in an outboard attitude. Only this system is designed to operate this way, thus providing the proper alignment for the final drive chain to be on the same side of the vehicle as the P.T.O. This offers some very significant advantages to mounting requirements in many cases. The asymmetric concept, having the 18° angle on one side requires less sheave face travel to lift the belt to larger, comparable pitch diameters of the symmetrical system. This makes it possible to force the belt to a diameter within the drive clutch (at high RPM) that exceeds the usual 1:1 ratio of standard systems. The TAV can actually attain an 90:1 or 10% overdrive.

SPECIFICATIONS & GENERAL INFORMATION

![Diagram with specifications]

IMPORTANT!
Torque Converter DRIVE UNIT MUST NOT FLOAT on engine crankshaft. It must be bolted tight against engine crankshaft shoulder. Recommended Torque for bolt: 24 ft. lbs. To 30 ft. lbs. Max.

2 1/2° angle (flat side) of belt must be against the 2 1/2° angle pulley flange (Next to engine).

NOTE:
With torque Converter (Driver-Driven & Belt) mounted on parallel shafts — and the system in the low (Neutral or idle) Position 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.

SYSTEM: TAV30 SERIES
TYPE: ASYMMETRICAL (20 1/2°)
RECOMMENDED H.P.:
MAX: 8 H.P. 2 CYCLE
MAX: 8 H.P. 4 CYCLE
DRIVE BELT: 3/4" TOP WIDTH ASYMMETRICAL TYPE
DRIVE CLUTCH BORE SIZES:
3/4" (3/16 KEY), 1" (1/4 KEY)
DRIVE CLUTCH ENGAGEMENT: 2200 RPM
DRIVEN UNIT DIA. 6"

NOTE: JACKSHAFT
Sprocket ratio must be ample for maximum Torque Converter performance.
#23 - Both spacers next to plate.

Tora-A-Verter
TAV 30

PARTS LIST

<table>
<thead>
<tr>
<th>ITEM NO.</th>
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<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>215730A</td>
<td>7/16&quot;-20 x 2&quot; Mig. Bolt (TAV 30-100)</td>
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<tr>
<td>2</td>
<td>215732A</td>
<td>5/16&quot;-24 x 2&quot; Mig. Bolt (TAV 30-75)</td>
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<tr>
<td>3</td>
<td>205357A</td>
<td>3/8&quot;-24 x 2&quot; Mig. Bolt (TAV 30-75 &amp; TAV-30-100)</td>
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<tr>
<td>4</td>
<td>200702A</td>
<td>3/8&quot; Lock Washer</td>
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<tr>
<td>2</td>
<td>200701A</td>
<td>5/16&quot; Lock Washer</td>
</tr>
<tr>
<td>2</td>
<td>205836A</td>
<td>7/16&quot; Lock Washer</td>
</tr>
<tr>
<td>2</td>
<td>200841A</td>
<td>3/8&quot; I.D. Steel Washer (TAV-30-75)</td>
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<tr>
<td>2</td>
<td>202429A</td>
<td>3/8&quot; I.D. Pilot Washer (TAV-30-100)</td>
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<td>2</td>
<td>215733A</td>
<td>7/16&quot; I.D. Pilot Washer (TAV-30-100)</td>
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<tr>
<td>2</td>
<td>200840A</td>
<td>5/16&quot; I.D. Steel Washer (TAV-30-75)</td>
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The above hardware is included to mount your drive clutch to your engine. It is important that you use the correct bolt and washers to fit your particular engine.

- 4 202090A Drum, Driver
- 4 202437A Drum, Driver (TAV30-100)
- 5 200376A Hub, Driver 3/4" I.D.
- 5 203641A Hub, Driver, Splined, 1" I.D. (TAV30-100)
- 6 200344A Driver Weight Assembly Complete (TAV-30-75)
- 6 21188A Spring, Garter (Blue) (TAV-30-75)
- 7 203515A Sheave, Movabl Half w/Hub, 3/4 Bore
- 8 203515A Sheave, Movabl Half w/Splined Hub, 16" (TAV30-100)
- 9 203515A Sheave, Movabl Half w/Splined Hub, 18" (TAV30-100)
- 10 200399A Bushing, Bronze (Idler Not Used On TAV-30-100)
- 10 203515A Sheave, Stationary, 2 1/2, 3/4 I.D.
- 10 206603A Sheave, Stationary, 2 1/2, 1" I.D. (TAV30-100)
- 11 200389A Spacer, 3/4" I.D.
- 11 202877A Spacer, 1" I.D. (TAV30-100)
- 12 203189A Jam Nut, 5/8-18 x 3/8
- 14 204714A Ring, Retaining
- 15 215650A Cam, Fixed
- 15 A 204332A Button, Insert
- 16 215699A Spring, Green
- 17 215647A Face, Movabl w/Cam
- 18 203942A Bushing
- 19 217512A Face, Fixed w/Post, 5/8 Bore
- 20 209621A 3/16" Sq. x 2 1/4" Key
- 21 11059A 3/16" Sq. x 9/16 Key
- 22 212255A 5/8" Dia. Jackshaft
- 23 200634A Washer, 5/8 I.D., 1" O.D.
- 24 200376A Sprocket, 12T - 35P
- 24 202168A Sprocket, 10T - 40/41P
- 25 215558A Ball Bearing
- 26 200816A Hex Hd Cap Screw, 5/16-24 x 3/4
- 27 200314A Lock Washer, 5/16
- 28 211349A Mounting Bracket w/Bearings
- 29 212277A Ring, Retaining
- 30 200383A Shroud, Plastic
- 31 201721A Decal (Tora-A-Verter)
- 32 201720A Decal (Asymmetric)
- 33 200836A Washer, Belt Spacer, (TAV-30-75 Only)

(Not required on units manufactured after March 1994)

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<tr>
<td>34</td>
<td>215726A</td>
<td>5/16&quot;-24 x 3/4 Soc. Hd. Screw</td>
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* NOTE: Driver Drum & Hub must be well aligned and torqued down tightly.

** To assure proper balance the Springs should be replaced in pairs or the entire Weight Assembly should be replaced.

REPLACEMENT DRIVER UNIT
ORDER # MODEL # DESCRIPTION
*203814A CAT30 - 75 3/4" Bore
*203603A 30C - 100 1" Bore

REPLACEMENT DRIVEN UNIT
ORDER # MODEL # DESCRIPTION
217610A 31D - 62 5/6" Bore

COMPLETE UNIT
ORDER # MODEL # DESCRIPTION
217785A TAV30 - 75 35P 12T 3/4 Bore
217784A TAV30 - 75 40/1410T 3/4 Bore
217789A TAV30 - 100 35P 12T 1" Bore
217790A TAV30- 100 40/14110 1" Bore

*1-1/2" mounting bolt included with replacement clutch must be discarded and 2" mounting bolt from old clutch must be used.

ADJUSTING THE SPRING TENSION
OF THE DRIVEN UNIT

NOTE: By increasing the spring tension of the torque sensing system... the power ratio of the system (Driver and Driven) can be held longer at higher engine r.p.m.'s before it is overcome by the clutch driver.

To shorten the time required for the driven member to attain it's speed ratio, DECREASE the amount of spring tension of the torque sensing cams. This will allow the r.p.m. of the drive clutch to overcome the power ratio of the driven unit at a faster rate in a lower r.p.m. range.
A typical installation of the TORQ-A-VERTER on a DIRECT DRIVE MINI-BIKE

Here is how the Comet TORQ-A-VERTER Functions

**NEUTRAL**

DRIVER - DRIVEN

The asymmetric belt has no engagement during the idling of the engine. The TC30 system is Neutral — with no belt friction and no drag.

**LOW RANGE**

DRIVER - DRIVEN

As the engine throttle is "opened" the Driver pulley flanges begin closing together via centrifugal force. The Drive Belt engages, driving the Driven unit pulley at it's largest diameter. This is the most powerful ratio of the system. (2.7:1)

**INTERMEDIATE RANGE**

DRIVER - DRIVEN

At it's highest speed (overdrive) and lowest load demand, the Driven unit pulley flanges are wide open providing the smallest possible belt contact diameter. The Drive unit pulley flanges, at this point, are closed to provide the largest possible belt contact diameter. In the case of the TC30, the unique asymmetric arrangement of the belt and pulley angles allow the belt to exceed diameters possible with the standard "V" pulley, thus overdrive . . . and in this case that's 10% (.90:1).

**HIGH RANGE-OVERDRIVE**

DRIVER - DRIVEN

As the engine R.P.M. increases, the Driver pulley flanges continue to close together. This action, in turn, is squeezing the belt out to a larger Driver unit diameter. This action is dependent on acceleration and lack of torque load on the Driven element, allowing its pulley flanges to open thus creating a smaller driven unit diameter. If the torque load is increased, this ratio is reversed instantly and smoothly to its requirement. The ratios between low and high of the TORQ-A-VERTER are infinite to meet all demands within its realm of capabilities.

**INSTALLATION INSTRUCTIONS**

**STEP #1**

TOOLS NEEDED

1. 1/2"-9/16" Socket Wrench or Box End Wrench.
2. Chain Breaker.
3. 1/4" Allen Wrench

STEP #1:
Components in kit are layed out in front of machine.

**STEP #2**

**STEP #3: EASY**

STEP #3

Bolt bracket to the four standard tapped holes in the engine crankcase using two Hex Head and two Soc. Head screws supplied. Bracket may be rotated up or down if necessary.

STEP #2: STRIP
Remove old centrifugal clutch.
STEP #4: CHAIN BREAKING
Break chain at proper length to go around sprocket on T.A.V. and final drive sprocket. Join chain by the master link. Move the engine forward or backward for correct tension.

STEP #5: CRANKSHAFT SPACER
Place the spacer (provided with kit) on the crankshaft, to bring the driver clutch in line with the driven unit.

STEP #6: DRIVE CLUTCH
Separate driver, place flat sided sheave on crankshaft. Slip belt over driven unit and over post of driver unit. Install 4 splined hub "D" outboard.
IMPORTANT: BE SURE BRONZE IDLER BUSHING IS IN PLACE on TAV 30-75. TAV 30-100 does not require Bronze Idler Bushing.

STEP #7: BOLT
Place other half of drive on crankshaft. Line up outer cover on the "D" part of the hub, and install 2" retaining bolt and washer.

STEP #8: LAST STEP
Snap the transmission cover over the ears of the mounting plate.

FINISH JOB
Total time was approximately 45 minutes.