

# Andrews Products, Inc.

**WARNING!!**  
**THESE CAMS DO NOT FIT**  
**2007 or 2008 ENGINES!**

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## Installation Instructions: Conversion cams: Roller Chain Drive to '99-'06 Twin 88 engines

We recommend that you read a 2006 DynaGlide factory service manual and carefully follow factory procedures for camshaft removal and replacement. Service manual part number for 2006 DynaGlides is 99481-06.

1. Andrews Products conversion cams operate with 2006 Dyna or 2007 roller cam chain drives and use stock size lobe base circles. Therefore, unless you have modified the cylinder heads, the original stock pushrods will be the correct lengths. If the original pushrods will be reinstalled, removing the fuel tank(s) and rocker boxes will be necessary. Mark the pushrods so they can be replaced in their original locations since not all stock pushrods are the same length.
2. To save installation time by NOT removing fuel tanks and rocker boxes, the stock pushrods can be cut with bolt cutters and then removed in two pieces. EZ-install pushrods can then be installed. They are available in aluminum or chrome moly steel. Andrews Products part numbers for EZ-install pushrods are: 292188 for aluminum and 292088 for steel pushrods.
3. Remove the 10 screws holding outer cam cover. When this cover is reinstalled, there is a specific tightening sequence and torque rating for all 10 screws. **VERY IMPORTANT: Overtightening cover screws can cause aluminum engine case threads to strip.**
4. Before proceeding further, put the transmission in 4th or 5th gear. Remove both spark plugs so there will be no resistance from compression pressure. Now turn the rear wheel and align camshaft timing marks. This will simplify installation of new cams.
5. Remove the crankshaft sprocket retaining bolt and the rear camshaft sprocket retaining bolt. Both the crankshaft sprocket and the rear cam drive sprocket can now be removed. They will be replaced with new sprockets for roller chain cam drive system.
6. Remove the original cams and cam support plate. All four oil pump retaining bolts must also be loosened to permit correct oil pump rotor alignment at the time of reassembly after the cam support plate is in place with the new camshafts. The old cam support plate will be replaced with the new assembly.
7. Converting 1999-2006 silent chain cam drives to the 2006 roller chains requires new parts from HD as well as 2 new camshafts from Andrews Products. The new parts are listed in the HD 2006 Dyna<sup>(R)</sup> parts catalog (#99439-06) which should be available from any HD dealer.

<u>HD Part number</u>	<u>Description</u>
26037-06	Oil pump assembly
25355-06	Cam support plate assembly
4741	Support plate screws
11461	Retaining ring (front cam)
25683-06	Inner roller chain
39969-06	Inner chain tensioner
25675-06	Outer roller chain
39968-06	Outer chain tensioner
25729-06	Spacer (.100 for cam alignment; use as required)
25731-06	Spacer (.110 for cam alignment; use as required)
25734-06	Spacer (.120 for cam alignment; use as required)
25736-06	Spacer (.130 for cam alignment; use as required)
25737-06	Spacer (.140 for cam alignment; use as required)
25738-06	Spacer (.150 for cam alignment; use as required)
25673-06	Crankshaft sprocket (17 teeth)
25728-06 (HD#)	Stock rear cam sprocket (34 teeth) (Only used with 2002 and later engines)
216015 (Andrews #)	Andrews rear cam sprocket (34 teeth) ( <b>Must be used with '99, '00, '01 engines.</b> )

*Parts such as gaskets and screws may be needed to complete the conversion to roller chains.*

See photo on page 3

8. "N" series camshafts from Andrews Products **must be used** for fitting roller chains to earlier engines. *Series "N" cams are similar to 2006 Andrews Dyna cams except that the inner bearing journals are .875 instead of 1.000. Roller chain conversions for '99-'06 engines require .875 diameter inner camshaft bearings fit the right side engine case.*

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9. The new conversion cams, inner chains and the new '06 type support plate can now be assembled as described in the '06 Dyna HD service manual.

10. Again referring to factory service manual, H/D part number 99481-06, the front cam thrust washer should be 0.100 thick. Figure 2 below, shows the .100 thrust washer assembled on the front camshaft.
  11. With the '06 cam support plate and new cams put together, the assembly can be reinstalled back into the engine.
  12. After a trial assembly, alignment of crankshaft sprocket and cam sprocket positions must be checked and adjusted with shims if necessary. See factory manual for proper procedure. Make sure all timing marks are aligned before proceeding!
  13. Installing the new 34T sprocket requires using either the original sprocket spacer or a new spacer from HD if the original is not the correct thickness for your engine. HD makes shims and spacer washers in 6 different thicknesses.  
 HD Part numbers are:
 

25729-06	0.100 inches
25731-06	0.110 inches
25734-06	0.120 inches
25736-06	0.130 inches
25737-06	0.140 inches
25738-06	0.150 inches
- It is **VERY** important that both cams have a **minimum** of .008-.010 end play after installation in cam support plate!  
See figures 1 & 2 below
14. When installing sprocket retaining bolts, use Loctite retaining compound to secure the bolt threads. The sprocket locking tool can be used here. Bolt torque should not exceed 25 ft-lbs for 5/16 x 18 bolts. Bolt torque for splined rear camshafts (3/8 x 24 bolt) should not exceed 35 ft-lbs. Please note that both cam retaining bolts must be rated grade 8. Grade 8 bolts have a 6 pointed star symbol on the top of the bolt heads.
  15. Reinstall the outer cam cover with the 10 cover bolts. Cover bolts must be tightened to a torque specification of 90-120 in-lbs. The service manual shows the correct tightening sequence.
  16. EZ-install pushrods use 2 long ( exhaust), and 2 short (intake) rods. To install, adjust pushrod to shortest length, then position in engine, rocker arm end first. Swing the lower end into lifter. Lengthen pushrod adjuster until all free play is gone. Adjust pushrod 3.5-4 full turns longer (21-24 flats) and tighten locknut. Wait until hydraulic unit bleeds down and repeat procedure on next pushrod. When adjusting pushrods, make sure that cam lobe for that pushrod is on low lift point. Lifter housing covers can be temporarily removed to gain another 1/4 inch of clearance. Short pushrod cover tubes are available from HD. Short pushrod cover tubes make the pushrod adjustment easier. Part numbers are: 17938-83 and 17634-99. You will need 4 of each part number to install a complete set.
  17. For engines with stock pistons and stock heads, 12N\*\*, 21N, 26N, 31N, 37N and 44N cams should be able to bolt in without head work. 50N cams need piston to valve clearances and valve to valve clearances checked. 50N and 55N cams need .620 minimum valve travel and .060 minimum piston to valve clearance. With Andrews Products high lift titanium collars (part# 293110; includes 4 pieces), setting valve spring travel for either of these two higher lift cams will be easier.  
 \*\*12N cams are similar in specifications and performance to stock 88 cams.

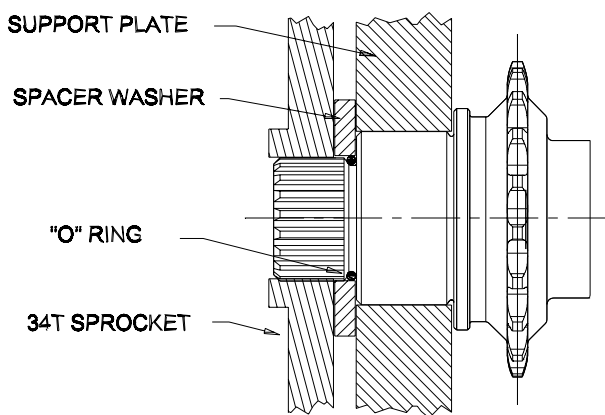


Figure 1: Rear camshaft schematic.

Rear cams manufactured before July, '06, use an "O" ring as shown to align spacer washer. To adjust alignment of 34T rear cam sprocket and 17T crankshaft sprocket, HD spacer washers are available in 6 different sizes.

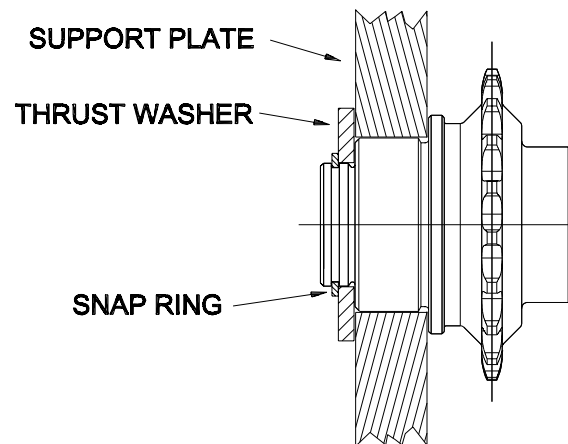
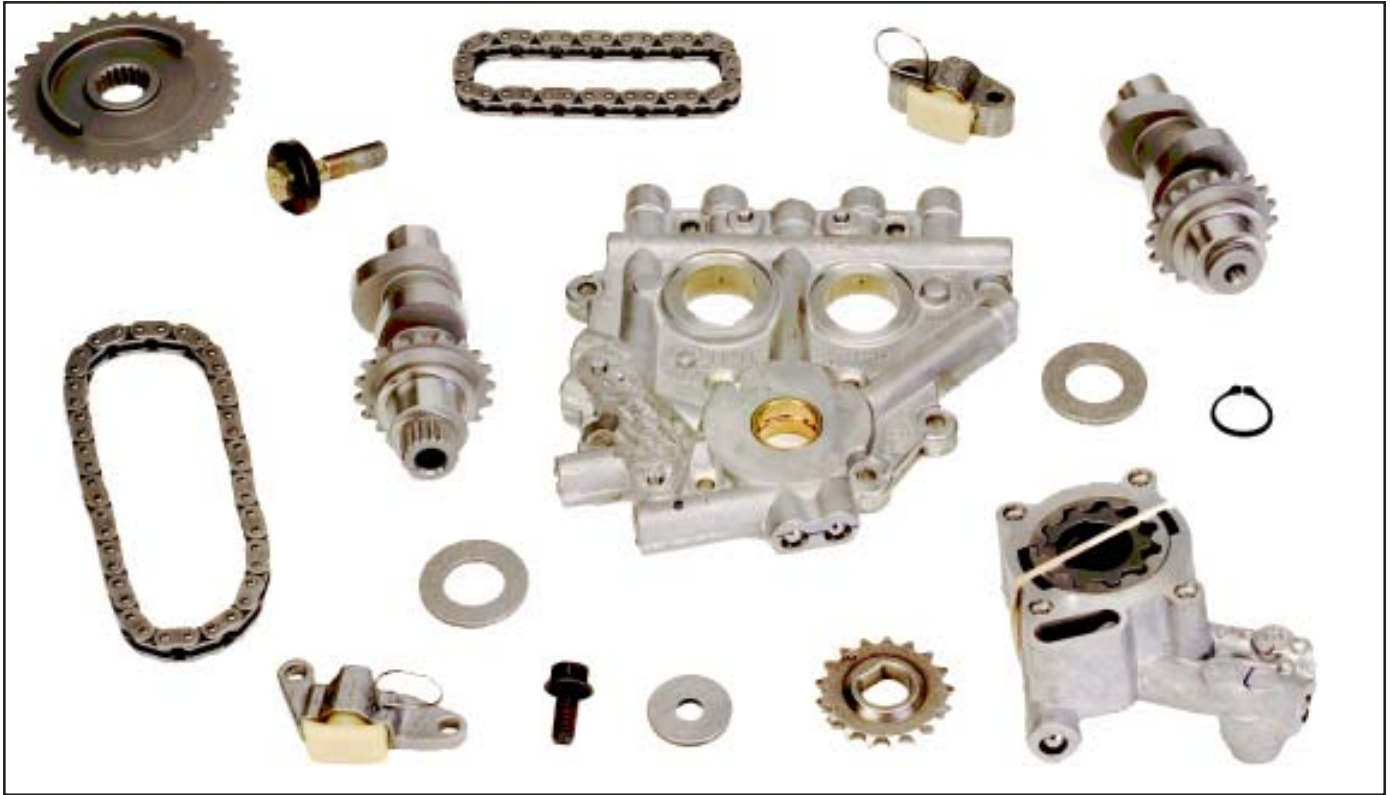


Figure 2: Front camshaft schematic.

The '06 HD DynaGlide service manual, part # 99481-06, page 3-102 specifies a .100 thick thrust washer on the outside end of the front camshaft.



### Andrews Products: Roller Chain Conversion Camshafts

Andrews#	Grind	Timing*	Duration*	Lift	Springs	TDC Lift	Spring Travel
-----	HD Dyna ( '06 fuel inj)	-04/40 41/-02	216 219	.473 .473	Stock -	.087 .110	Stock Stock
216812	12N	02/34 37/05	216 220	.489 .489	Stock -	.091 .106	Stock Stock
216821	21N	10/30 40/08	220 228	.498 .498	Stock -	.134 .121	Stock Stock
216826	26N	11/35 41/09	226 230	.490 .490	Stock -	.138 .120	Stock Stock
216831	31N	10/46 52/08	236 240	.510 .510	Stock -	.131 .120	Stock Stock
216837	37N	18/38 46/14	236 240	.510 .510	Stock -	.174 .148	Stock Stock
216844	44N	21/41 49/17	242 246	.495 .495	Stock -	.182 .158	Stock Stock
216850	50N	20/48 54/18	248 252	.510 .510	Stock -	.184 .168	Stock Stock
216855	55N	22/46 52/20	248 252	.550 .550	Hi-lift -	.197 .181	.620 .620

\*Timing and duration listed for .053 cam lift

**IMPORTANT NOTE for 1999 engines.**  
**If you are converting a 1999 engine to new roller chains, please read the following page!**

## IMPORTANT NOTE for 1999 twin cam engines:

When converting a 1999 engine to new roller chain cams, please note the following!

This page only applies to **early 1999 engines**. To identify the engine as an early 1999, examine the cam support plate as illustrated in the circled area. (figure 1)

If the part number on the left front face of the cam support plate reads: **H-D 25245-99**, the engine is an early 1999.

The part number used on later 1999 engines is: **25245-00**. If your engine is a late '99 (or later), disregard the rest of this page, it is not relevant.



figure 1

Early '99 engines have a different oil supply system than later engines. Note the circled area on the photo (inside engine case to the left of the pinion shaft). (figure 2)

Early '99 engines **do not have** the oil boss shown circled in the photo. For early 99's, it will be necessary to block a matching oil port on the 2007 cam support plate. See figure 3 below.



figure 2

For 2007 cam support plates to operate properly with **early** '99 engines, the circled hole in photo must be permanently blocked. A 1/4 x 20 bottoming tap can be used to cut threads. A **self-locking** socket head set screw will then seal the port. The existing hole is correctly sized for the tap. **Do not drill it larger!** We will send, no charge, set screws (1/4 x 20 x 1/2) if you call us.

After tapping new threads in the support plate, make sure to clean out all metal chips before installing the set screw.

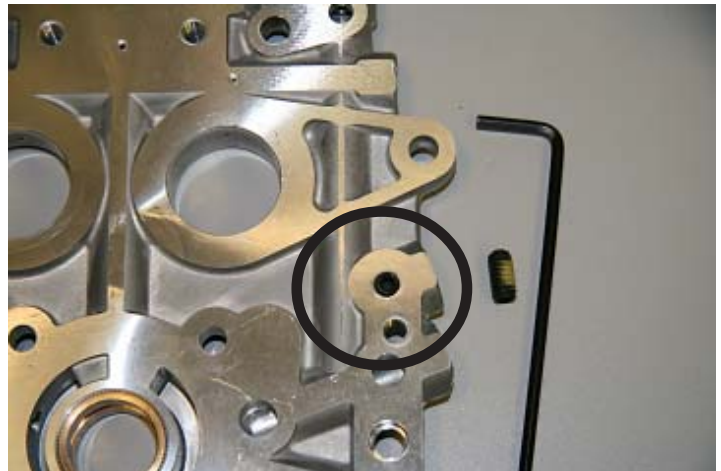


figure3