



SMALL BLOCK CHEVY STANDARD CAM INSTALLATION INSTRUCTIONS

P/N's

251000-0002 SBC Gear Drive 1/2 Cam Hub

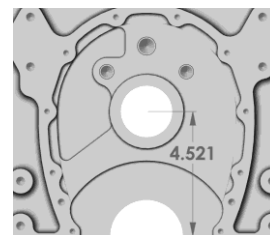
251000-0003 SBC Gear Drive 5/8 Cam Hub

******DUE TO MANUFACTURING TOLERANCES OF THE CAM, CRANK AND GEAR DRIVE, RCD RECOMMENDS THE CAM BE DEGREED FOR OPTIMUM PERFORMANCE. PLEASE REFER TO THE CAM MANUFACTURE FOR THE CAM SPECS AND PROCEDURE******

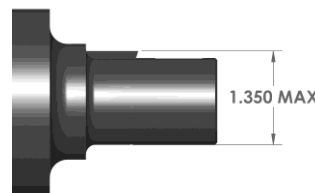
1. Remove contents from package and check parts against the bill-of-materials to confirm the kit is complete and that you have all of the parts and kits that you ordered. Before starting the installation read through the instructions and have all of the tools and parts you will need for installation. If you have any questions please call for clarification.

NOTE: The front cover assembly is pre-assembled with the idler gear, pan seal and "O" ring gasket. The idler gear and bearing assembly is pre-lubricated and must be re-lubricated during disassembly or engine rebuilds. Idler gear axle bolts #357131-12 have been installed with red Loctite and torqued to 335 in-lbs (28 ft-lbs). For removal the bolts need to be warmed to about 350 degrees max to soften the Loctite.

CAUTION: IF YOU SUSPECT THAT YOUR BLOCK HAS BEEN LINE BORED CHECK THE DIMENSION FROM THE CRANK TO CAM. Standard cam measurement should be 4.521". If it is less than 4.518" you will need to order undersized crank gear.



2. Test install the cover assembly onto the block. **DO NOT** use any gaskets! The cover should fit snugly on the dowel pins. Use (4) 1/4-20 x 0.875 long 12pt cover bolts #356325-14 and (4) 1/4 AN washers #352503-14 on both sides of the dowel pins to snug the cover against the block. Be sure there are no gaps between the cover and the block. Be sure the idler gear axle #251011-03 is not touching the block and that the idler gear turns smoothly. If there is any interference it will be necessary to relieve the block. Remove cover after block interference inspection.
3. Install the woodruff key #345510-10 into the crank by pushing it in with a "C" clamp or water pump pliers with soft aluminum strips over the jaws. Be sure the key is completely seated and the top is parallel to the crank surface. Measure from the top of the woodruff key to the opposite side of the crank. This dimension can not be more than 1.350" inches. If it is greater you will have to carefully grind or file the top of the key. The top edges on the key should have a .010" to .020" radius or chamfer.





4. Install crank gear. The back side of the crank gear #250521-09 has a 1.80" counter bore. ***Be sure this will fit over the diameter of the crank behind the shoulder that the gear seats against.*** On some cast or forged cranks there is some parting line flash in this area that must be removed. If everything looks good apply some oil or anti-seize to the key and crank diameter where the gear fits and push the gear onto the crank.

NOTE: When the gear is seated against the shoulder there may be about 1/8" of the key protruding from the front of the gear. This is OK as it will line up with the keyway in the damper or crank hub.

5. Install the cam hub. Using some grease stick the thrust bearing assembly #350590-65 to the back of the cam hub #251026-02. Be sure the black part of the thrust bearing goes against the cam hub. Bolt the cam hub #251026-02 to the camshaft using (3) 5/16-18 x 1.0 long 12pt bolts #356331-16 and (3) 5/16 MS washers #352503-05. Use light oil on the threads and under the heads of the bolts. Push the hub onto the pin and start it over the front cam journal. Carefully tighten the bolts evenly, so as to not bind the cam hub on the end of the cam. The cam hub should fit tight on the pin and over the end of the cam journal for approx. 1/8" inch. Torque bolts to 335 in-lbs (28 ft-lbs) max.
6. Rotate the cam until the dowel pin is in the 3:00 o'clock position when looking at the front of the engine. Rotate the crankshaft with the gear such that #1 piston is at TDC. The woodruff key in the crank gear should be inline with #1 cylinder.
7. Install the cam gear #250521-65 on to the cam hub with 2 or 3 of the 1/4-28 x .57 long hex bolts #357625-09 and thin 1/4 AN washers #352515-04. Line up the dot on the cam hub to the appropriate cam timing number or line up the dash/dot on the outer of the cam gear, as per Fig: #1. Snug the cam gear bolts and apply light pressure toward the back of the engine on the cam hub and be sure it rotates freely.

NOTE: Sometimes the oil galley plugs around the front cam bearing are not installed deep enough. If there is interference here, the plugs can be removed and the threads cut deeper or simply leave them installed and grind them off.

8. Install the cover assembly. First rotate the idler gear until the dots are at about 7:30 and 11:00 o'clock. Align the idler gear dots to the crank gear dot and to the cam gear dot or timing number on the gear teeth. Slide the cover on over the dowel pins and secure with (10) 1/4-20 x 0.875 long 12pt and (10) 1/4 AN washers. Starting with the four around the dowel pins, snug the bolts down evenly. Maximum torque 160 in-lbs (13.5 ft-lbs).

NOTE: You may want to use blue Loctite on the cover bolts.

NOTE: If you have an aluminum block, RCD has a stud kit available #xxxxxx-xx.



9. With all dots lined up Fig: #1 the cam should be at theoretical zero. Install the remaining $\frac{1}{4}$ -28 x 0.57 long hex bolts #357625-09 and thin $\frac{1}{4}$ AN washers #352515-04 with some light oil under the head of the bolts and threads. Maximum torque 180 in-lbs (15 ft-lbs).

NOTE: You may want to use blue Loctite on the cam gear bolts, if so do NOT put oil on the threads.

10. Install seal housing. The seal housing #250540-05 and crank seal #351505-44 are pre-assembled. Slip the "O" ring #351550-38 over the 2.625" diameter of the seal housing. Install the seal housing assembly in the cover with (6) $\frac{1}{4}$ -20 x 0.50 flat head bolts #356925-08. Lube the treads with a little light oil and torque to a maximum of 160 in-lbs (13.5 ft-lbs).

NOTE: We do not recommend using any Loctite on flat head bolts.

NOTE: Put a little light grease or oil on the crank seal before pushing on the crank hub or damper.

11. Setting the cam thrust. Install one of the hardened thrust washers #350592-36 over the 1.00" diameter nose of the cam hub (the hardened washers measure .031" thick). Next slip on the thrust bearing #350590-36 and second hardened washer. Leave the "O" ring off and test install the cam gear cover. Lube threads and snug all of the bolts. Using a dial indicator measure the total end play of the cam.

NOTE: If you are using the plain cam gear cover you will need to measure the end play from the back of the cam (with soft plug removed) or through the distributor drive hole in the valley.

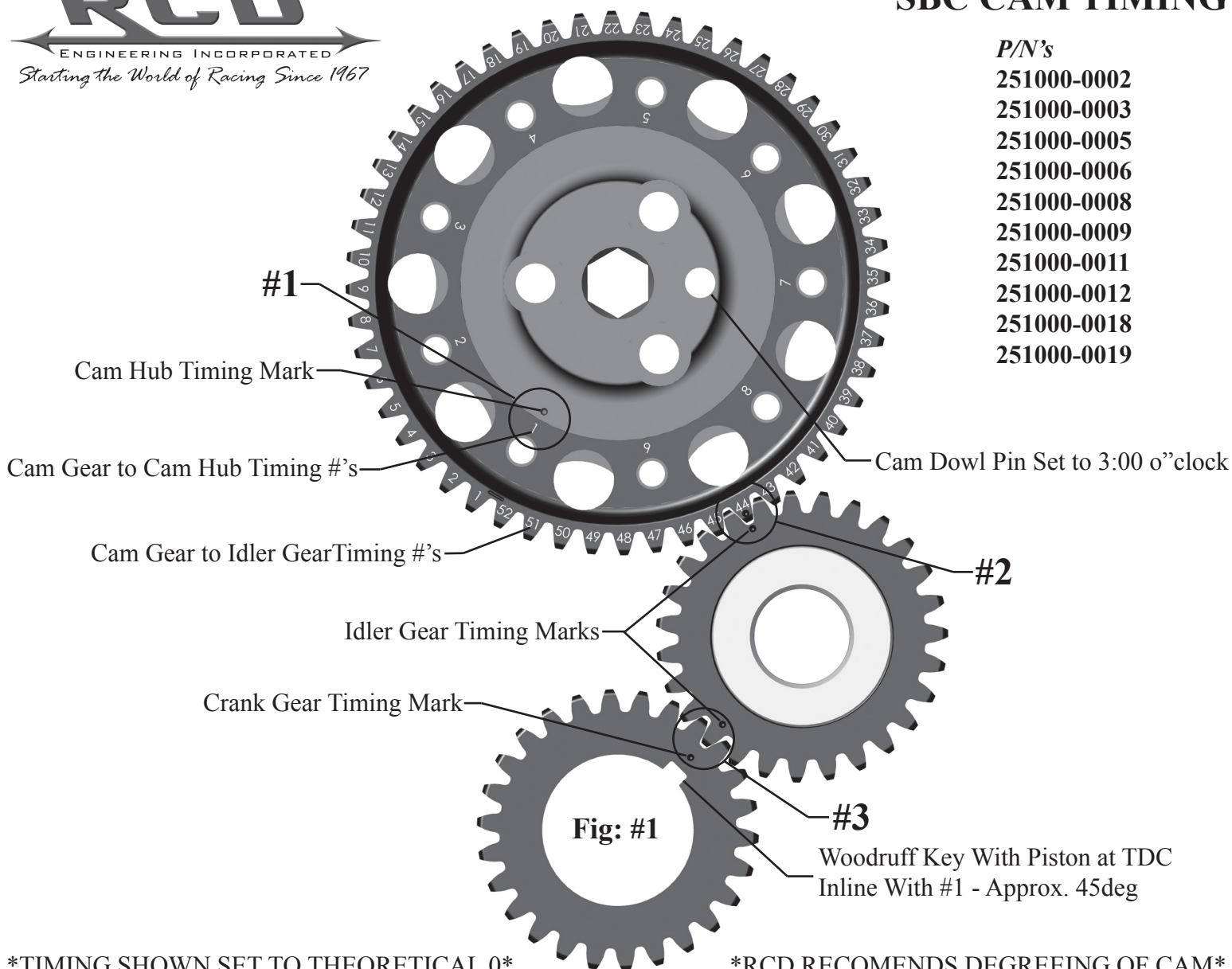
Remove the cam gear cover thrust bearing and both hardened washers. Select the appropriate shims from the thrust shim kit #350597-0002 to set the cam end play at 0.003 to 0.005. From the shims you have selected, pick the thickest one to put on first, the rest you have selected may go on in any order. Slip on one of the hardened washers, the thrust bearing and then the other hardened washer. Some light grease will help hold all of these pieces in place.

12. Install cam gear cover. Maximum torque on these bolts 160 in-lbs (13.5 ft-lbs).

RCD has a pointer kit, water pump spacers, ported water blocks and many other accessories for the front of your SBC.

P/N's

- 251000-0002**
- 251000-0003**
- 251000-0005**
- 251000-0006**
- 251000-0008**
- 251000-0009**
- 251000-0011**
- 251000-0012**
- 251000-0018**
- 251000-0019**



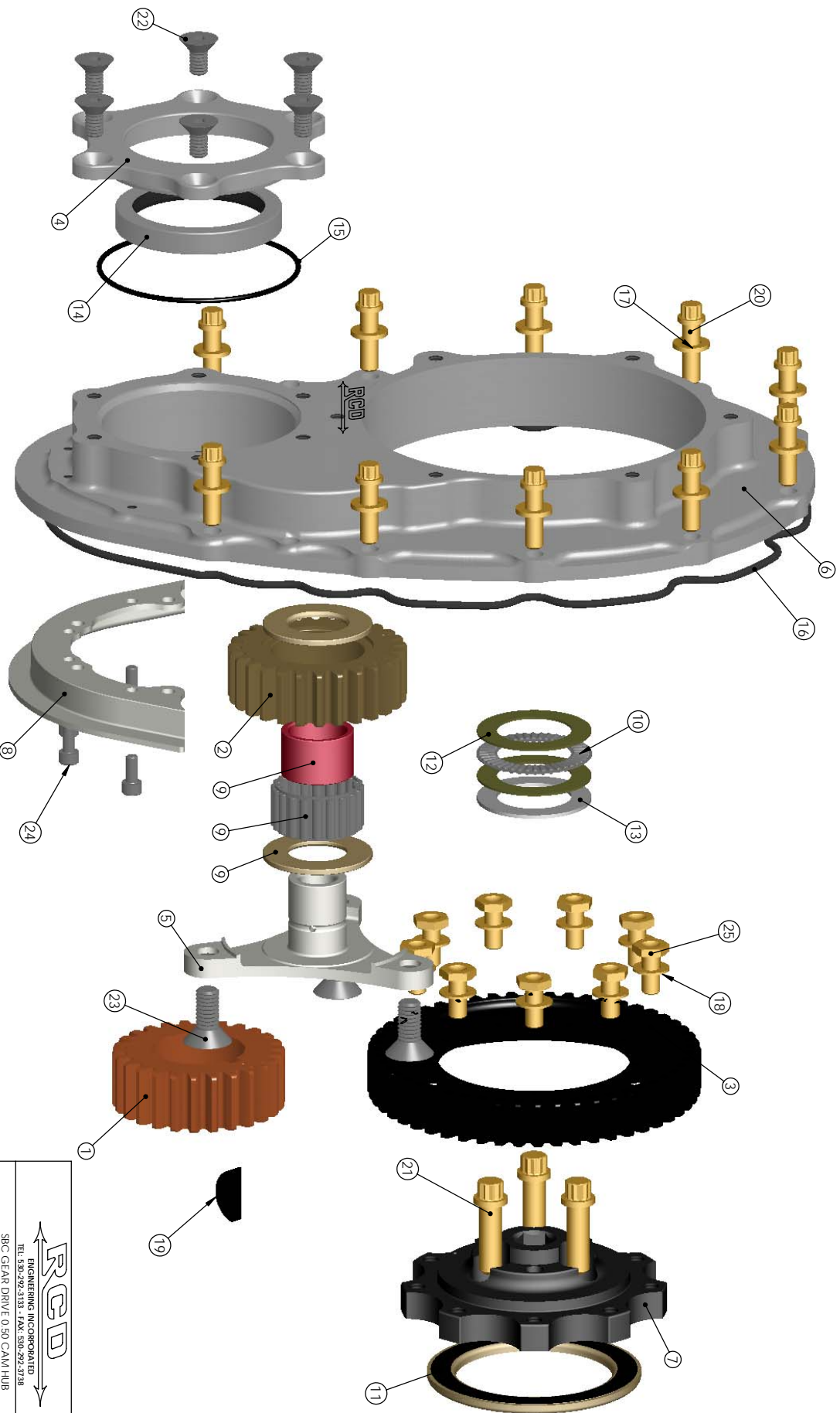
TIMING SHOWN SET TO THEORETICAL 0

RCD RECOMENDS DEGREEING OF CAM

Cam Timing		#1 Cam Gear/Hub Alignment		#2 Cam/Idler Gear Alignment		#3 Idler/Crank Gear Alignment	
Degrees		Cam Gear #	Cam Hub	Cam Gear Tooth #	Idler Gear	Idler Gear	Crank Gear
0.77	Advance	5	Dot	15	Dot	Dot	Dot
1.54	Advance	9	Dot	38	Dot	Dot	Dot
2.31	Advance	4	Dot	9	Dot	Dot	Dot
3.08	Advance	8	Dot	32	Dot	Dot	Dot
3.85	Advance	3	Dot	3	Dot	Dot	Dot
4.62	Advance	7	Dot	26	Dot	Dot	Dot
5.38	Advance	2	Dot	49	Dot	Dot	Dot
6.15	Advance	6	Dot	20	Dot	Dot	Dot
0	0	1 or Dash	Dot	44 or Dot	Dot	Dot	Dot
-0.77	Retard	6	Dot	21	Dot	Dot	Dot
-1.54	Retard	2	Dot	50	Dot	Dot	Dot
-2.31	Retard	7	Dot	27	Dot	Dot	Dot
-3.08	Retard	3	Dot	4	Dot	Dot	Dot
-3.85	Retard	8	Dot	33	Dot	Dot	Dot
-4.62	Retard	4	Dot	10	Dot	Dot	Dot
-5.38	Retard	9	Dot	39	Dot	Dot	Dot
-6.15	Retard	5	Dot	16	Dot	Dot	Dot

ITEM	PART NO.	DESCRIPTION	Default /QTY
1	250521-09	CRANK SBC STD BORE Z6T 12DP REV1	1
2	250521-36	IDLER GEAR SBC 27T 12DP REV1	1
3	250521-65	CAM GEAR 52 TOOTH 12 DP 9 HOLE VERNIER	1
4	250540-05	SEAL HOUSING SBC STD	1
5	251011-03	IDLER GEAR BRACKET WITH BUILT IN AXLE SMALL BLOCK CHEVY	1
6	251016-03	GEAR DRIVE COVER SBC STD CAM	1
7	251026-02	CAM HUB 9 HOLE WITH 5 HEX SBC REV1	1
8	251031-01	PAIN RAIL SMALL BLOCK CHEVY GEAR DRIVE COVER AND WET BELT	1
9	350555-20	47 X 20 X 19.8 ROLLER BRG	1
10	350590-36	1.00 X 1.562 X 0.078 NEEDLE THRUST BRG	1
11	350590-65	2.125 X 2.895 X 0.141 ONE PC THRUST BRG W-RACES	1
12	350592-36	TRA-1625 THRUST WASHER	2
13	350597-0002	1.00 X 1.562 THRUST SHIM KIT	1

ITEM	PART NO.	DESCRIPTION	Default /QTY
14	351505-44	1.75 X 2.25 X 0.313 SEAL NEOPRENE 1 LIP	1
15	351550-38	038 "O" RING 0.07 X 2.625	1
16	351569-15	O-RING ROPE SBC WET BELT DRIVE REAR	1
17	352503-04	1/4 AN WASHER	10
18	352515-04	1/4 AN WASHER 0.03 THK	9
19	354510-10	WOODRUFF KEY	1
20	356325-14	1/4-20 X 0.875 12PT	10
21	356331-16	5/16-18 X 1.0 12PT	3
22	356925-08	1/4-20 X 0.50 FHCS	6
23	357131-12	0.3125-18 X 0.75 TORX FLAT HEAD BOLT	3
24	357308-06	8-32 X 0.375 SHCS	4
25	357625-09	1/4-28 X .566 HEX HEAD BOLT	9



RCGD
ENGINEERING INCORPORATED

TEL: 530-292-3133 FAX: 530-292-3738

SBC GEAR DRIVE 0.50 CAM HUB

PART. NO. 251000-0002

C SHEET 1 OF 2

