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Camshaft Installation Instructions: H/D 74 & 80 Shovel & Pan Engines

- a. Drive gears on 1977 and later cams are different! They have a 1.97 dia. groove cut into the gear face. Early and late cams drive gears are not interchangeable. Andrews Products makes both versions.
- b. Some shovel engines made to mid 1977 have German inner crankcase cam bearings (H/D part# 9058). If so they will be marked "INA SCE138 GERMANY". They are prone to early failure and can cause camshaft bearing damage. The German parts should be replaced with a Torrington B138 drawn cup needle bearing.
1. Verify that your camshaft is the proper grind by inspecting the stamp on the end of the cam.
2. Remove push rods and engine side cover. Rotate engine to align timing marks before removing old camshaft. Make sure thrust washer (25550-36) and lock washer (25550-57) are removed and accounted for at this time.
3. Measurement between thrust shoulders of new and old cam should be approximately 3.025 inches. If there is a difference, thrust washers of varying thicknesses can be obtained from most H/D dealers. Camshaft end play should be set to .010-.015 inches (.25-.38mm).
4. After reinstalling outer cover (with gasket), remove either tappet block and check camshaft end play to verify that it measures to the recommended .010-.015 inches. Engine should roll freely at this point.
5. On all installations, clearance between the inner engine case and the rear intake cam lobe (closest to the small end) should be checked. Because of possible interference with tip of the rear intake cam lobe some engines will require removing approximately .020 from a casting boss in this area. This can easily be done with a small die grinder and a rotary file. Make sure the inner case is clean out after this operation.
7. For cam grinds J, F, A, AB, BH, and #1 head work is normally not required when working with shovelhead motors. J and #1 grind cams are OK to bolt into a panhead motor. NOTE: For some 80 cu.in. motors ('80 & '81) cams having more than .430 lift require valve spring work for correct spring clearance. Andrews Products medium lift collars (part# 276150) will provide .060 extra spring clearance to easily solve this problem.
8. For engines with low compression (8.0 or less), grinds 1, 2 and 3 have big advantages. They will produce much more power and torque at low RPM. However with high compression pistons, pinging could be a problem.
9. If you have oversized valves, valve to valve clearances should be checked for .050 minimum clearance.
10. For all other cams having lifts higher than .485, installed spring heights must be correctly set up. Andrews Products makes springs and collars for correct installation of all drag and other high lift cams up thru a #14.
11. "B", "6", "7" and "2" grind cams can be installed without machine work using Andrews Products medium lift upper collars (part# 276150). With stock springs and valves, spring travel should measure to about .510".
12. Cam grinds C, D, M, 9, 10, Z, 3 can be installed without machine work using Andrews Products high lift springs (part# 272110) and high lift alloy upper collars (part# 271100). They will permit cams of .600 lift to be installed with proper spring clearance.
13. Cam grinds S82, S84, and S86 require expert engine building experience and machine work for proper installation. These grinds are intended for all out drags with large displacement, highly modified engines. Spring kits for these cams typically require custom setups to match long stem length valves.
14. Andrews Products makes valve guides for early (thru '79) or late ('80-up) in various oversizes. They are made for "K" line oil seals. "K" line seals do a very good job of reducing oil consumption thru valve guides.
15. We also make superlight alloy pushrods for quiet street use as well as steel pushrods for higher output applications. Both styles are available in extra long length. Front exhaust is longest pushrod, rear exhaust is second longest and the intake pushrods are the two shortest.
16. Tappet adjustments are as per H/D for hydraulics and finger spin tight for solid lifters.

TIMING SPECIFICATIONS — H/D 74 & 80 CAMS

GRIND	TIMING	DURATION	VALVE LIFT		SPRING TRAVEL		(TDC) LIFT	
			SHOVEL	PAN	SHOVEL	PAN	SHOVEL	PAN
J	21/41	242	.405	.425	.425	.440	.154	.162
	41/21	242	.405	.425	.425	.440	.154	.162
H	37/45	262	.426	.450	.446	.470	.206	.216
	45/37	262	.426	.450	.446	.470	.206	.216
F	16/48	244	.445	.465	.470	.490	.140	.148
	48/16	244	.445	.465	.470	.490	.140	.148
A2**	19/43	242	.450	.470	.470	.490	.156	.164
	50/18	248	.450	.470	.470	.490	.142	.150
AB	21/43	244	.450	.470	.470	.490	.156	.164
	50/26	256	.450	.470	.470	.490	.170	.180
BH	24/52	256	.450	.470	.470	.490	.156	.164
	52/24	256	.450	.470	.470	.490	.156	.164
B2**	26/50	256	.485	.507	.505	.525	.187	.198
	53/25	258	.485	.507	.505	.525	.176	.186
7**	29/53	262	.510	.535	.530	.555	.206	.217
	59/27	266	.510	.535	.530	.555	.186	.196
C	37/61	278	.525	.550	.545	.570	.234	.245
	61/37	278	.525	.550	.545	.570	.234	.245
D	34/66	280	.550	—	.570	—	.220	—
	66/34	280	.550	—	.570	—	.220	—
M	28/56	264	.590	—	.610	—	.210	—
	56/28	264	.590	—	.610	—	.210	—
9	32/64	276	.530	—	.550	—	.222	—
	64/32	276	.530	—	.550	—	.222	—
10	34/70	284	.580	—	.610	—	.230	—
	70/34	284	.580	—	.610	—	.230	—
Z	36/68	284	.590	—	.610	—	.235	—
	68/36	284	.590	—	.610	—	.235	—
14	30/62	272	.600	—	.620	—	.230	—
	62/30	272	.600	—	.620	—	.230	—

**** (New cam grinds introduced in 2008)**

CAMS FOR LOW COMPRESSION ENGINES

1	16/36	232	.427	—	.446	—	.136	—
	36/16	232	.427	—	.446	—	.136	—
2	15/35	230	.490	—	.512	—	.133	—
	35/15	230	.490	—	.512	—	.133	—
3	23/43	246	.514	—	.545	—	.169	—
	43/23	246	.514	—	.545	—	.169	—

CAMS FOR DRAGS AND HIGH PERFORMANCE

S82	32/60	272	.590	—	.650	—	.237	—
	66/30	276	.590	—	.650	—	.220	—
S84	32/64	276	.630	—	.680	—	.241	—
	70/30	280	.630	—	.680	—	.223	—
S86	34/70	284	.660	—	.730	—	.254	—
	76/32	288	.660	—	.730	—	.235	—

Timing specs taken @ .053 cam lift in crank degrees.
 Maximum lift calculated for Rocker Ratio=1.50-pan, 1.43-shovel
 Spring travel figures are minimums for setting spring travel to coil bind.