State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-289
Relating to Exemptions Under Section 27156
of the Vehicle Code

CAMSHAFT MACHINE COMPANY
CAMSHAFTS

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the camshafts, part numbers 115930, 115861, 115890, 115925, 115820, 115850, 115913, 115870, 115912, 115869 and 115911, manufactured by Camshaft Machine Company of 717 Woodworth Road, Jackson, Michigan 49204 has been found not to reduce the effectiveness of the applicable vehicle pollution control system and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1987 and older General Motors vehicles powered with a 267 CID (4.4L) to 400 CID (6.6L) carbureted gasoline engines.

This Executive Order is valid provided that installation instructions for this camshaft will not recommend tuning the vehicle to specifications different from those submitted by Camshaft Machine Company.

Changes made to the design or operating conditions of the camshafts, as exempt by the Air Resources Board, which adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this camshaft using any identification other than that shown in this Executive Order or marketing of this camshaft for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board. Exemption of the camshaft shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order does not constitute any opinion as to the effect the use of this camshaft may have on any warranty either expressed or implied by the vehicle manufacturer.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF CAMSHAFT MACHINE COMPANY'S CAMSHAFTS.

No claim of any kind, such as "Approved by the Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after ten day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination after hearing that grounds for revocation exist.

Executed at El Monte, California, this 5th day of January, 1993.

R. B. Summerfield
Assistant Division Chief
Mobile Source Division

APPENDIX A
EXECUTIVE ORDERS AND CORRESPONDING PART NUMBERS

Distributor	Executive Order	Part Numbers
Camshaft Machine Co.	D-289	115930, 115861, 115890, 115925, 115820, 115850, 115913, 115870, 115912, 115869, 115911
Edelbrock Corporation	D-215-5	312102, 312103
Dana Corporation	D-290	2291730, 2291987
Elgin Industries	D-291	E919P, E923P, E1029P, E1004P, E1005P, E1069P
Federal Mogul Corp.	D-292	CS1138, CS981, CS984
Hi-Tech	D-293	101002, 101003, 275RV, 206
McQuay Norris	D-294	CMR6G, CM5850, CMR6F
Melling Tool Company	D-295	C7S, MTC1, CCR13
Muskegon Products	D-296	MC1730, MC2170, MC1987
Sealed Power Corp.	D-297	CS1003R, CS1014R, CS1028R, CS1002R
TRW, Inc.	D-298	TP187, TP231, TP236, TP256, TP257, TP258
Wolverine/Blue Racer	D-299	WG1158, WG1103, WG1138, WG1127, WG1128, WG1137, WG5042, WG5043, WG5044, WG5071, WG5072

SMALL BLOCK CHEVROLET CAMSHAFT INSTALLATION INSTRUCTIONS

1. Prepare a clean work area and assemble the tools needed for the camshaft installation.

2. Disconnect the battery ground cable and remove the air cleaner assembly.

3. Drain the radiator and engine oil.

4. Disconnect the upper radiator and heater hoses at the intake manifold.

5. Disconnect the crankcase ventilation hoses as required.

6. Disconnect the fuel line, choke cable, accelerator linkage, and transmission downshift cable (on automatics) at the carburetor.

7. Disconnect the vacuum hoses and electrical connections at the carburetor.

8. Disconnect the power brake hose at the carburetor or intake manifold, if applicable.

9. Disconnect the temperature sending switch and the coolant temperature sensor wires.

10. Remove the distributor cap and scribe the rotor position relative to the distributor body.

11. Remove the distributor.

12. As required, remove the oil filler bracket, air cleaner bracket, air conditioner compressor bracket, alternator bracket, and accelerator bellcrank.

13. Remove the manifold-to-head attaching bolts then remove the manifold and carburetor as an assembly.

14. If the manifold is to be replaced, transfer the carburetor (and mounting studs) water outlet and thermostat (use a new gasket), heater hose adapter, EGR valve (use new gasket) and, if applicable TVS switch and choke coil.

15. Remove the valve covers.

16. Loosen the rocker arm adjusting nut so the pushrod can be removed.

17. Once the pushrods have been removed, remove the valve lifters.

18. Remove the fan, pulley, and belt. Remove any power steering and/or AIR pump drive belts. Remove any braces for these pumps which will interfere with cover removal and position the pumps out of the way.

19. Remove the water pump.

20. Remove the crankshaft pulley and harmonic balancer. This allows access to the timing chain cover. Do not attempt to pry or hammer t damper off.

21. Rotate the retaining bolts, and remove the timing cover.

22. Clean the gasket surfaces on the block and front cover.

23. Use a sharp knife to trim any excess oil pan gasket material whi protrudes from the oil pan-to-engine block junction.

24. Crank the engine until the zero marks punched on the timing gear sprockets are closest to one another and in line between shaft centers.

25. Take out the three bolts that hold the camshaft gear to the camshaft. This gear is a light press fit and should come off easily. If it does not come off readily, tap the lower edge of the sprocket lightly with a plastic mallet to dislodge it. It is located by a dowel.

26. The chain comes off with the camshaft gear.

27. Remove the fuel pump and pump pushrod.

28. Install two 7/16-18 X 14in. bolts in the cam bolt holes and pull the cam from the block.

29. Inspect the old cam, lifters, timing components and distributor gear for any signs of abnormal wear. Replace all severly worn components.

30. Inspect the new camshaft to make sure it was not damaged during shipment. Use a quality assembly lube to coat all the lobes and distributor gear. It is a good idea to coat the fuel pump lobe and bearing surfaces as well.

31. Install the two 7/16-18 X 14in. bolts in the cam bolt holes and carefully slide the camshaft into the block. Take time so as not to damage or dislodge the cam bearings in the block.

32. If your engine had a camshaft retaining plate, it should be installed at this time.

33. Align the new camshaft so that the zero marks punched in the cam and crankshaft gear sprockets are closest to one another and in line between shaft centers.

34. Place the cam sprocket, with its chain mounted over it, in position on the front of the camshaft and pull up the three bolts th hold it to the camshaft. After the gear is in place, turn the engin two full revolutions to make certain that the timing marks are in

correct alignment between the shaft centers.

35. Install the pushrods between the rocker arms and the lifters. Make sure the pushrod is properly seated in the lifter and the rocker arm.

36. With the timing marks closest to one another and aligned, the engine is in the number six firing position.

37. At this point the following valves can be adjusted: Exhaust Nos. 2, 5, 6, 7; Intake Nos. 3, 4, 6, 8.

38. Adjust the valves by tightening the adjusting nut until no lash i felt in the pushrod. This is determined by checking push-rod end pla while turning the adjusting nut. When all play has been removed, tur the adjusting nut in 1 full turn.

39. Crank the engine one full revolution (one-half revolution of the camshaft). The timing marks on the camshaft and crankshaft gear will be aligned and furthest from one another. At this point, the remaining valves can be adjusted: Exhaust Nos. 1, 3, 4, 8; Intake Nos 1, 2, 5, 7.

40. Once the valves have been adjusted the camshaft installation is complete and the intake manifold and other components which have been removed should be installed.

41. Apply a 1/8 in. bead of RTV Silicone sealer, G.M. 105236 or the equivalent, to the joint of the oil pan and cylinder block.

42. Install the front cover-to-oil pan seal. Lightly coat the bottom of the seal with engine oil and position over the crankshaft end.

43. Loosely install the front cover upper attaching bolts.

44. Press downward on the cover so that the dowels in the block are aligned with the holes in the cover. While holding the cover in position, tighten the upper attaching bolts alternately and evenly.

45. Install the remaining bolts and tighten the bolts to specification.

46. Install the torsional damper and the water pump.

47. For the other components reverse the removal procedure to install