

TECHNICAL REPORT

Test Program--Aftermarket PROM Computer Chips

by

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## Test Program--Aftermarket PROM Computer Chips

The following test program was performed from September to November, 1988, at the EPA Motor Vehicle Emissions Laboratory in Ann Arbor, Michigan:

### I. Purpose

The purpose of this test program was to determine the effect of aftermarket Programmable Read-Only Memory computer chips (PROMs) on emissions and fuel economy. Emission tests were conducted on two 1986 Camaros equipped with the standard original equipment manufacturer (OEM) PROM and six aftermarket PROMs.

### II. Executive Summary

The following aftermarket PROMs were tested: Turbo City; Hypertech "Stage I"; Hypertech "Stage III"; Automotive Digital Systems (ADS) "Super Chip-Street"; and two (ADS) "Super Chip-Street/Strip" PROMs.

Although the effect on emissions was quite diverse, in general, the aftermarket PROMs increased HC in bags 1 and 3; increased CO emissions in bags 1, 2, 3 and on the highway test; and had little effect on idle CO, NOx or evaporative emissions. However, the increases were not always sufficient to cause the test vehicles to fail emissions standards given the test vehicles were "low emitters" compared to most in-use cars. One vehicle failed FTP CO standards while equipped with the Turbo City PROM, and both vehicles failed FTP HC and CO standards while equipped with the ADS Street/Strip PROMs. The fact that these in-use vehicles failed emission standards does not mean that all in-use vehicles will fail emissions standards when equipped with these PROMs.

Some PROMS disabled the EGR valve (Hypertech III, ADS Street/Strip) or reduced EGR flow substantially (Turbo City), however the vehicles passed NOx standards in all cases.

Evaporative emissions did not change for any of the aftermarket PROMs because canister purge was not computer controlled for either vehicle.

Three of the six aftermarket PROMs did not cause the test vehicles to fail applicable emission standards. However, the test program did not evaluate the additional deterioration (if any) associated with each aftermarket PROM. The on-road tests performed on one aftermarket PROM indicated that some aftermarket PROMs may have an adverse effect on catalyst deterioration.

On-road tests compared the air/fuel ratio, and the secondary air strategy of the OEM PROM and one aftermarket PROM (the Turbo City PROM). The aftermarket PROM had no effect on secondary air strategy but enriched the air/fuel ratio of the carburetor during idle and low speed operation, conditions which may tend to promote more catalyst thermal deterioration than the OEM PROM. However, to quantify this effect (e.g., by measuring catalyst temperatures associated with several aftermarket PROMs) was beyond the scope of the test program.

The effect of these aftermarket PROMs on fuel economy was quite diverse, ranging from +3.3% to -7.7% (city) and +0.7% to -7.9% (highway). From best to worst fuel economy, the PROMs ranked as follows: ADS "Street," ADS "Street/Strip," Turbo City, Hypertech "Stage I" and Hypertech "Stage III."

### III. Background

Over the past ten years on-board computers have become standard equipment on cars and trucks. The on-board computers use input from various vehicle/engine sensors to optimize the driveability, performance, emission control, and fuel economy of the vehicle. A vital part of the on-board computer is a Programmable Read-Only Memory (PROM) chip which stores calibration information such as vehicle weight, engine size, transmission type, final driven ratio, air/fuel ratio, spark timing, idle speed, EGR operation, secondary air delivery, canister purge operation, torque converter clutch lock-up (automatic transmission vehicles only), shift indicator light operation (manual transmission vehicles only), etc. The PROMs on Ford and most Chrysler vehicles are permanently soldered into the on-board computer, however PROMs on General Motors vehicles are designed to be easily removed.

Recently, several companies have begun marketing aftermarket PROMs for GM vehicles which are intended to improve vehicle performance and acceleration. These aftermarket PROM manufacturers advertise increased power, usually due to enriched air/fuel ratio and advanced spark timing. Some also advertise reduced EGR (Turbo City); disabled EGR (Hypertech III); low speed performance gains (Turbo City); WOT performance gains (Hypertech, ADS Super Chip, Turbo City); delayed torque converter lock-up for automatic transmission vehicles (Hypertech, ADS Super Chip, Turbo City); improved performance without sacrificing driveability or fuel economy (ADS Super Chip). In addition, some PROM manufacturers recommend the use of a 160°F thermostat, claiming increased power (since a cooler thermostat effectively enriches the air/fuel ratio).

#### IV. Test Vehicles

Two 1986 model year Chevrolet Camaros were tested. The vehicles had approximately 20,000 and 26,000 miles showing on their respective odometers. Both vehicles were owned and operated by private individuals prior to the testing and were obtained from in-use sources in the Michigan area.

Prior to emission testing, the vehicles were steam cleaned, inspected and functional checks were performed on the emission control system. Restorative maintenance was performed as necessary to bring the vehicle within manufacturer's specifications. Baseline testing revealed that both vehicles were "low emitters," with HC, CO, NOx and evaporative emission levels approximately one-half of the applicable Federal emission standards. Vehicle parameters are listed below:

<u>EPA Vehicle No.</u>	<u>PCCTP-1</u>	<u>PCCTP-2</u>
Model	1986 Camaro	1986 Z28 Camaro
Engine	305 CID	305 CID
Transmission	Automatic 4-speed	Manual 5-speed
Fuel System	4-V carburetor	4-V carburetor
Engine Family	GIG5.7V4NEA5	GIG5.0V4NTA3
Evaporative Family	6B4H-1A	6B4H-1A
Emission Control Systems	EGR, Air Pump, Ox Cat, TWC, O <sub>2</sub> Sensor	EGR, Air Pump, Ox Cat, TWC, O <sub>2</sub> Sensor
Detonation Sensor	yes	yes
Fuel Recommendation	Unleaded Regular	Unleaded Regular
Axle Ratio	2.73	3.23
Tire Make	Goodyear Eagle GT	Goodyear Eagle GT
Tire Size	P215/65R15	P215/65R15
Mileage (as rec'd)	18,952	25,443
VIN	1G1FP87HGN119669	1G1FP87H3GN138413

For these vehicles, the on-board computer controlled the air/fuel ratio, spark timing, idle solenoid, EGR, air diverter valve, air switching valve, torque converter clutch (automatic vehicle only) and the shift indicator light (manual vehicle only). Vehicle/engine sensors provided input to the computer for exhaust gas oxygen content, coolant temperature, throttle position, barometric pressure, intake manifold pressure, crankshaft position, vehicle speed, engine speed, transmission gear, park/neutral, brakes applied, time, and engine detonation.

V. Aftermarket PROMs

Six PROMs were obtained from the retail market at costs ranging from \$90 to \$145, as shown below:

<u>Test Vehicle</u>	<u>Aftermarket PROM</u>	<u>Cost</u>
PCCTP-1 (automatic)	1. Turbo City "Power Chip" (Z-Industries Inc. - Part No. not supplied)	\$130
	2. Hypertech "Stage I" (Part No. 11641, Serial No. 0041168)	\$135
	3. Hypertech "Stage III" (Part No. 11643, Serial No. 0039351)	\$145
	4. Automotive Digital Systems "Super Chip, Street/Strip" (Part No. 8601-B)	\$ 90
PCCTP-2 (manual)	5. Automotive Digital Systems "Super Chip, Street" (Part No. 8602-A)	\$ 90
	6. Automotive Digital Systems "Super Chip, Street/Strip" (Part No. 8602-B)	\$ 90

The PROM manufacturer's installation instructions and warranty information (if supplied) are contained in Appendix D.

VI. Test Procedure

The vehicles were inspected, preconditioned, and tested like any normal certification test vehicle. Idle CO was measured during the vehicle inspection (as is routinely done for certification tests). A minimum of two FTP's (city and highway tests) were conducted for each aftermarket PROM (using Indolene HO test fuel) in the following sequence:

For the automatic test vehicle:

1. Two baseline FTP's with the OEM PROM.
2. Two FTP's with the Turbo City PROM.
3. Two FTP's with the Hypertech "Stage I" PROM.
4. One baseline FTP with the OEM PROM.
5. Two FTP's with the Hypertech "Stage III" PROM.
6. Two FTP's with the Hypertech "Stage III" PROM and a 160 degree thermostat.
7. One baseline FTP with the OEM PROM.
8. Two FTP's with the ADS "Street/Strip" PROM.
9. Two baseline FTP's with the OEM PROM.

For the manual transmission vehicle:

1. Two baseline FTP's with the OEM PROM.
2. Two FTP's with the ADS "Street" PROM.
3. Two FTP's with the ADS "Street/Strip" PROM.
4. Two baseline FTP's with the OEM PROM.

Both test vehicles were tested at 3625 pounds equivalent test weight (ETW) and 7.6 dynamometer horsepower, the same ETW and horsepower as used to certify the vehicle. The manual transmission vehicle was shifted using the shift indicator light. An extra side cooling fan was used for highway tests only. Premium unleaded test fuel was used throughout the test program, since all PROM manufacturers specified the use of this fuel with their PROMs. For tests conducted prior to October 26, 1988, a dedicated driver and dynamometer were used for each vehicle. For tests conducted after October 26, 1988 it was necessary to use different dynamometers for both vehicles. The dynamometer change had no appreciable effect on emission values for either vehicle or the fuel economy values for the manual vehicle, but it did change the baseline fuel economy values of the automatic vehicle. Therefore a second baseline was established for this vehicle (which was used to evaluate the ADS Street/Strip PROM only).

The PROMs were installed in accordance with the PROM manufacturer's instructions, except that in the case of the Hypertech "Stage III" PROM, the catalyst was not removed. After changing PROMs the vehicle was driven on the road for at least 50 miles to train the PROM, over a variety of speeds including idle, city stop and go, acceleration, deceleration and highway driving modes. The Hypertech "Stage III" PROM was tested with the OEM 195°F thermostat and with a 160°F thermostat, since Hypertech recommends the use of a 160°F thermostat with their Stage II and Stage III PROMs. For the Hypertech Stage III PROM (with the OEM thermostat) it was necessary to retard the initial spark timing of the test vehicle by two degrees to prevent severe detonation.

Evaporative emission tests were conducted for the first half of the test program only. In theory, evaporative emissions were not expected to change, since the canister purge rate was not computer controlled for either test vehicle. After the first few tests revealed no change, evaporative testing was discontinued.

A series of on-the-road tests were performed on the automatic vehicle. The on-road tests compared the air/fuel ratio, the secondary air strategy, and the WOT acceleration of the vehicle while equipped with the OEM PROM and the Turbo City PROM at ambient temperatures of 25°F to 35°F. The air/fuel ratio of the vehicle was measured using an NTK air/fuel ratio meter, model MO-1000, manufactured by NGK Spark Plug Co., Ltd.

## VII. Test Results

The average test results are contained in Tables 1 and 2 in Appendix A and Graphs 1, 2 and 3 in Appendix B. Detailed vehicle specifications and test data logs are contained in Appendix C. In all cases, the emission values shown are actual measured emission values (not including the certification deterioration factors). The 50,000 mile certification deterioration factors for both vehicles are 1.000, 1.000, 1.061 and 0.0 for HC, CO, NOx and evaporative emissions, respectively.

A. Dynamometer Testing - PROM by PROM Results - The effect of these aftermarket PROMs on emissions and fuel economy was quite diverse, as summarized in Tables 1, 2, Graphs 1, 2, 3, and described below:

1. Turbo City - One Turbo City PROM was tested. It increased HC by 33% on the city test; increased CO by 157% on the city test; increased CO by 247% on the highway test; decreased city mpg by 8%; and caused this vehicle to exceed the CO emission standard.

2. Hypertech "Stage I" - One Hypertech "Stage I" PROM was tested. It increased CO by 74% on the city test; increased CO by 186% on the highway test; and decreased city and highway mpg values by 7-8%; but did not cause the vehicle to exceed emission standards.

3. Hypertech "Stage III" - One Hypertech "Stage III" PROM was tested with two different thermostats (160°F and 195°F). The thermostats made very little difference in emissions or fuel economy. The PROM increased CO by 51% on the city test; increased CO by 158% on the highway test; and decreased city and highway mpg values by 8%; but did not cause the vehicle to exceed emission standards.

4. ADS "Street" - One ADS "Super Chip-Street" PROM was tested. It increased NOx by 31% on the city test; increased NOx by 27% on the highway; and increased city mpg by 3%; but did not cause the vehicle to exceed emission standards.

5. ADS "Street/Strip" - Two ADS "Super Chip-Street/Strip" PROMs were tested. The PROMs had similar effects on the automatic and the manual test vehicles; i.e., they increased HC by 68% on the city test; increased CO by 344% on the city test; increased CO by 207% on the highway test; and caused both vehicles to exceed the HC and CO emission standards.

B. Dynamometer Testing - Effect on Emissions and Fuel Economy - The following sections discuss the overall trends of the aftermarket PROMs on each emission constituent and on fuel economy. These trends are also summarized in Tables 1, 2, Graphs 1, 2 and 3.



1. HC Emissions - On the city test, three aftermarket PROMs had little or no effect on HC and three aftermarket PROMs increased HC by an average of 33%, 68% and 88%. The two ADS "Street/Strip" PROMs caused the test vehicles to exceed the HC standard. On the highway test, the aftermarket PROMs had very little effect on HC.

2. CO Emissions - On the city test, one aftermarket PROM had no effect on CO and five aftermarket PROMs increased CO by an average of 51%, 74%, 157%, 318% and 370%. Three aftermarket PROMs caused the test vehicles to exceed the CO standard. On the highway test, all six aftermarket PROMs increased CO by an average of 26%, 146%, 158%, 186%, 247% and 268%.

3. NOx Emissions - On the city test, three aftermarket PROMs decreased NOx by an average of 10%, 10% and 17%; two aftermarket PROMs had little effect on NOx, and one aftermarket PROM increased NOx by an average of 31%. On the highway test, two aftermarket PROMs decreased NOx by an average of 18% and 19%; two aftermarket PROMs had little effect on NOx; and two aftermarket PROMs increased NOx by an average of 26% and 27%.

The EGR valve operation was checked with four of the aftermarket PROMs installed. Three PROMs disabled the EGR valve (Hypertech "Stage III" and both ADS "Street/Strip" PROMs) and one PROM reduced EGR substantially (Turbo City).

4. Evaporative Emissions - The aftermarket PROMs had little or no effect on evaporative emissions because the canister purge was not computer controlled for either test vehicle. Evaporative testing was discontinued midway through the test program.

5. Idle CO Emissions - The aftermarket PROMs had little or no effect on the idle CO values of the test vehicles.

6. Fuel Economy Values - The effect of these aftermarket PROMs on fuel economy was quite diverse, ranging from +3.3% to -7.7% (city) and +0.7% to -7.9% (highway), ref. Graph 3 in Appendix B.

C. On-Road Testing - The OEM PROM and one aftermarket PROM (the Turbo City PROM) were tested. The Turbo City PROM was selected because it was one of the worst case emitters and because the test drivers felt that this PROM caused the vehicle to accelerate quicker on the dynamometer.

The aftermarket PROM enriched the air/fuel ratio during idle and low rpm operation, had little or no effect on WOT air/fuel ratio, and had no effect on secondary air strategy (secondary air being delivered to the exhaust system approximately 95 percent of the time). The richer air/fuel ratio could tend to cause higher average catalyst temperatures. If the peak catalyst temperatures are also increased, there could be a greater tendency for catalyst thermal deterioration with the aftermarket PROM compared to the OEM PROM. However, to quantify this effect (e.g., by measuring catalyst temperatures associated with several aftermarket PROMs) was beyond the scope of the test program. The vehicle accelerated quicker when equipped with the aftermarket PROM.

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# A P P E N D I X

APPENDIX A - Table 1

PROM TESTING - AVERAGE TEST RESULTS

Vehicle PCCTP-1 (1986 Camaro W/305 CID, L4 Transmission, 4V Carburetor)

Test Condition	HC		CO		NOx		MPG		Idle CO Value*	Evap Value*	Comment
	Value*	Change	Value*	Change	Value*	Change	Value*	Change			
FTP (city) TESTS:											
Baseline #1	.27 gpm	-	1.50 gpm	-	.51 gpm	-	18.2	-	0.1%	1.29 g	Passed
Turbo City	.36	+33%	3.86	+157%	.50	- 2%	16.8	-7.7%	0.0	1.18	Failed CO
Stage I	.27	0%	2.61	+ 74%	.46	-10%	17.0	-6.6%	0.0	1.18	Passed
Stage III	.27	0%	2.26	+ 51%	.54	+ 6%	16.8	-7.7%	0.0	NA	Passed (EGR disabled)
(Retarded 2°)											
Stage III	.32	+19%	2.56	+ 71%	.52	+ 2%	17.4	-4.4%	0.0	NA	Passed (EGR disabled)
+ 160° therm.											
Baseline #2	.25	-	1.54	-	.52	-	18.8	-	0.0		
ADS S/S	.42	+68%	6.44	+318%	.43	-17%	18.8	0.0%	0.2	NA	Failed HC, CO (EGR disabled)
APPLICABLE											
STANDARD	.41	-	3.4	-	1.0		NA		NA	2.0	
HIGHWAY TESTS:											
Baseline #1	.05		.72		0.27		30.4				
Turbo City	.08	**	2.50	+247%	.34	+26%	30.6	+0.7%			
Stage I	.05	**	2.06	+186%	.22	-19%	28.0	-7.9%			
Stage III	.05	**	1.86	+158%	.26	- 4%	28.0	-7.9%			
(Retarded 2°)											
Stage III	.04	**	2.09	+190%	.18	-33%	29.0	-4.6%			
+ 160° therm.											
Baseline #2	.04	-	.65	-	.28	-	31.2	-			
ADS S/S	.06	**	1.60	+146%	.23	-18%	30.8	-1.3%			

\*Average emission value of two or more tests (not including deterioration factor)

\*\*No Appreciable Change

KEY:      Baseline #1 = OEM PROM - Average tests prior to 10/26/88 (on dyno #2)  
          Turbo City = Turbo City (Z Industries) PROM  
          Stage I    = Hypertech "Stage I" PROM  
          Stage III   = Hypertech "Stage III" PROM  
          Baseline #2 = OEM PROM - Average tests after 10/26/88 (on dynos #4, #5)  
          ADS S/S    = Automotive Digital Systems "Super Chip, Street/Strip" PROM

APPENDIX A - Table 2

PROM TESTING - AVERAGE TEST RESULTS

Vehicle PCCTP-2 (1986 Z28 Camaro W/305 CID, M5 Transmission, 4V Carburetor)

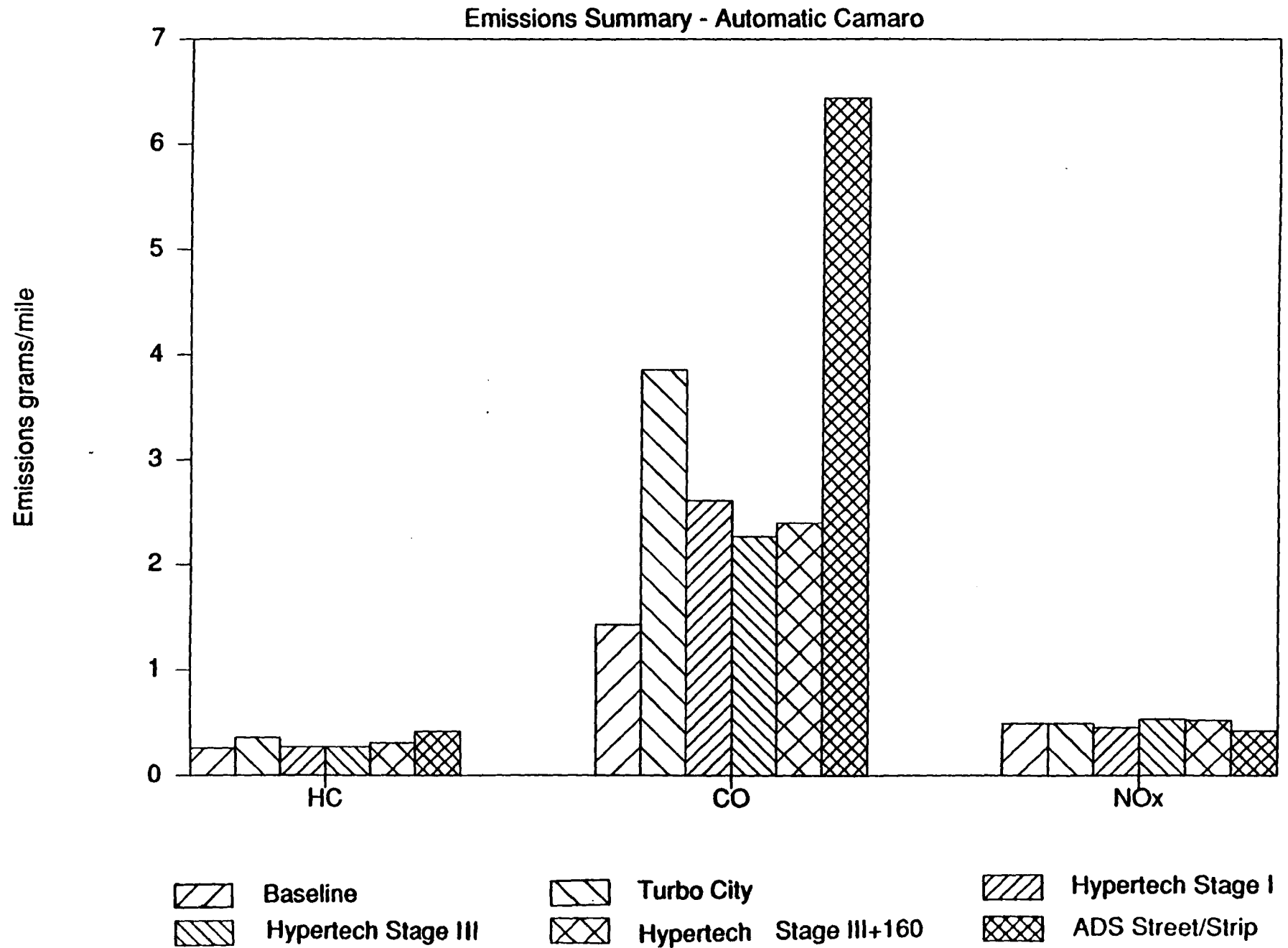
Test Condition	HC		CO		NOx		MPG		Idle CO	Evap	Comment
	Value*	Change	Value*	Change	Value*	Change	Value*	Change	Value*	Value*	
FTP (city) TESTS:											
Baseline	.24 gpm	-	1.62 gpm	-	.52 gpm	-	18.4 mpg	-	0.0%	1.34 g	Passed
ADS Street	.28	+17%	1.70	+ 5%	.69	+31%	19.0	+3.3%	NA	1.42	Passed
ADS S/S	.45	+88%	7.62	+370%	.47	-10%	19.0	+3.3%	0.0%	NA	Failed HC, CO (EGR disabled)
APPLICABLE											
STANDARD	.41	-	3.4	-	1.0		NA		NA	2.0	
HIGHWAY TESTS:											
Baseline	.03 gpm	-	.19 gpm	-	.41 gpm		31.4 mpg	-			
ADS Street	.04	**	.24	+ 26%	.52	+27%	31.2	-0.6%			
ADS S/S	.03	**	.70	+268%	.38	- 7%	31.6	+0.6%			

\*Average emission value of two or more tests (not including deterioration factor)

\*\*No Appreciable Change

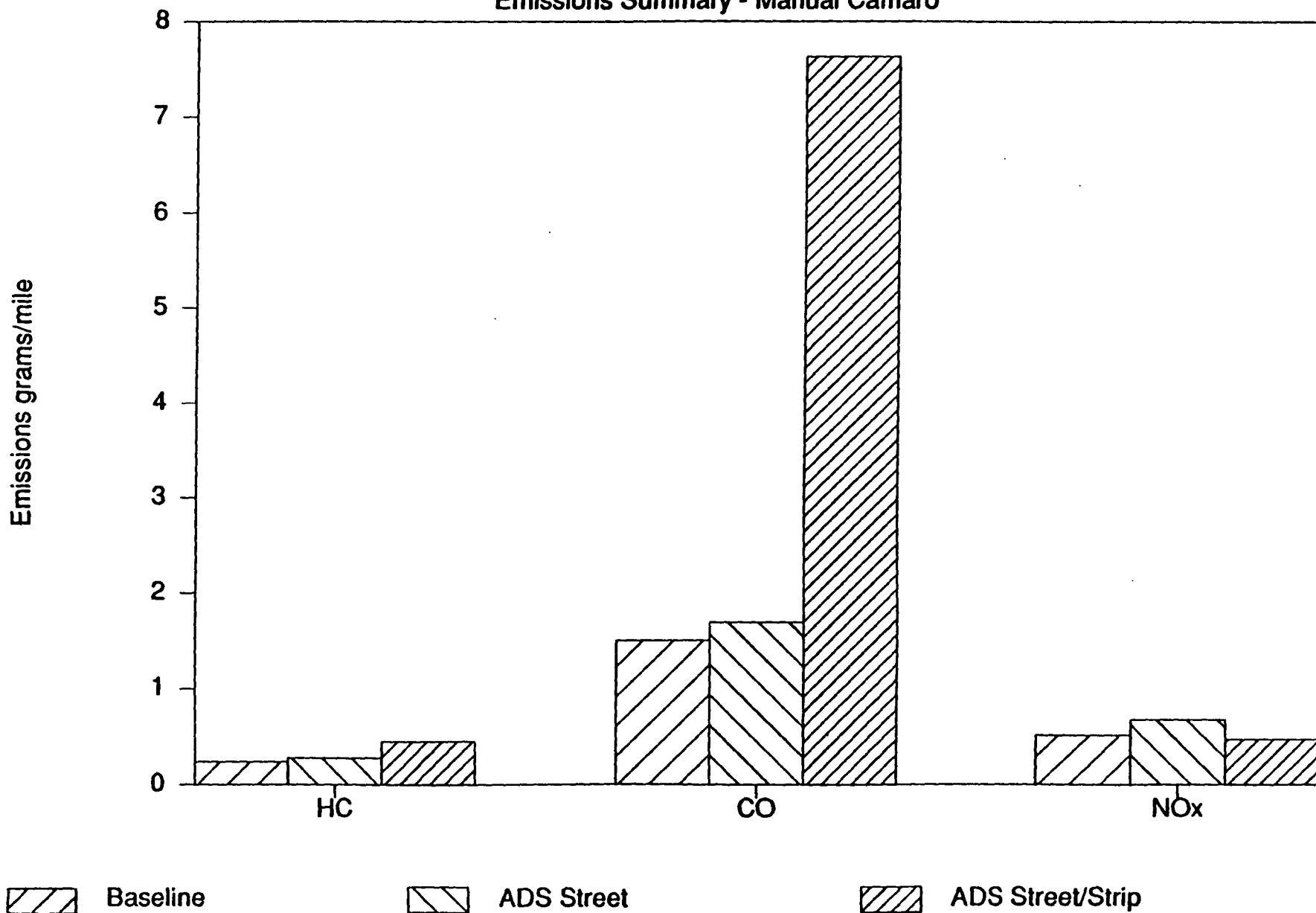
KEY:      Baseline    = OEM PROM - Average of 3 city tests or 5 hwy tests on dynos #1,3,5  
          ADS Street = Automotive Digital Systems "Super Chip, Street" PROM  
          ADS S/S    = Automotive Digital Systems "Super Chip, Street/Strip" PROM

# Prom Testing Program



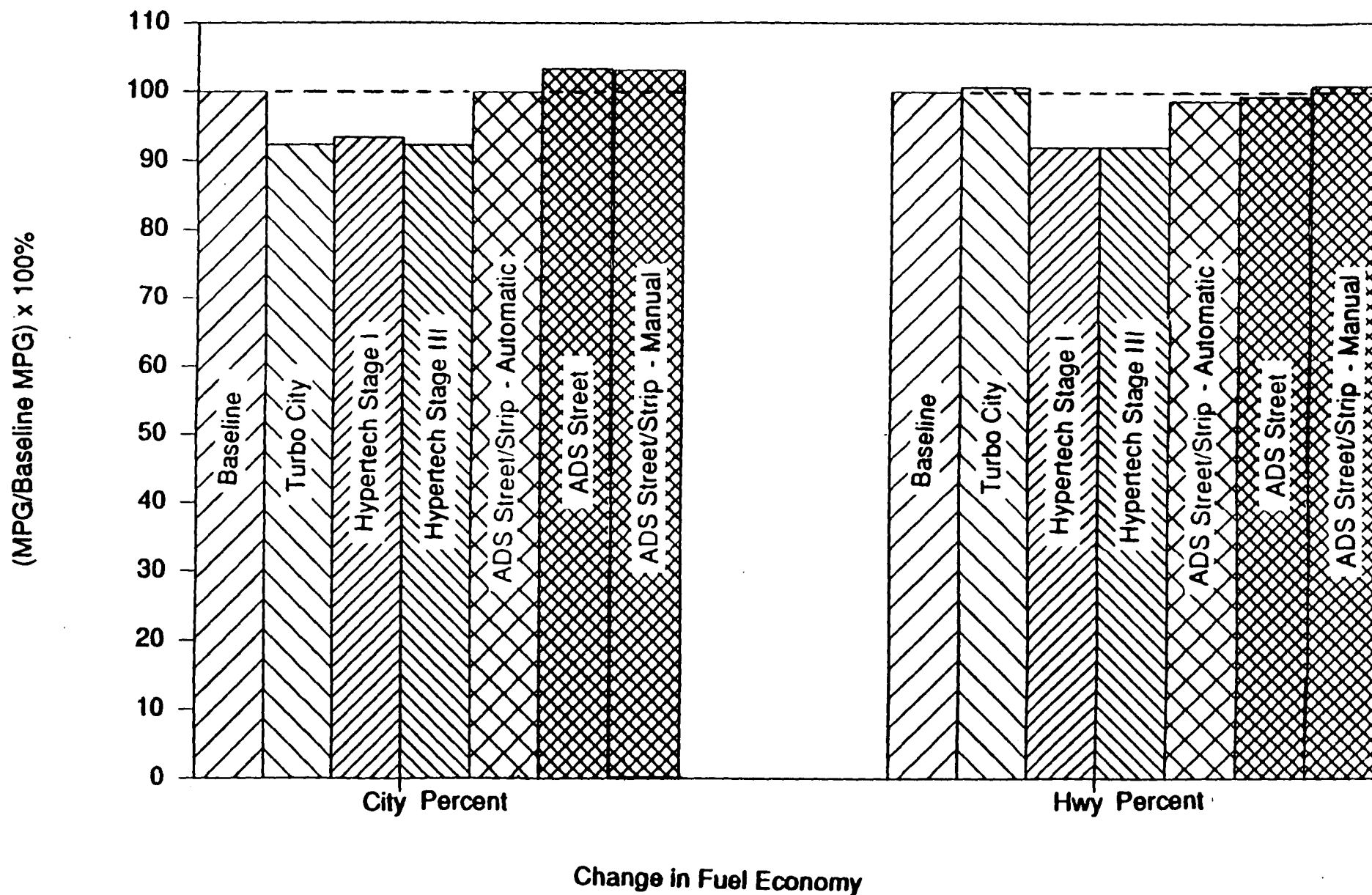
# Prom Testing Program

Emissions Summary - Manual Camaro



# Prom Testing Program

## Fuel Economy Summary





## APPENDIX C

### TEST VEHICLE SPECIFICATIONS AND TEST DATA LOGS

Appendix C contains vehicle specifications for each version of the two test vehicles, followed by a test data log for that particular vehicle/version. The type of PROM is noted in the comments field at the bottom of each vehicle specification report. Six versions of vehicle PCCTP-1 were tested (versions 0, 1, 2, 3, 4 and 5). Three versions of vehicle PCCTP-2 were tested (versions 0, 1 and 2).

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## APPENDIX C

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REPORT TIME: 14:20:39  
DATE: FEB 16, 1989

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VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 09/13/88  
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-----  
VEHICLE SPECIFICATIONS  
-----

MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE	
GENERAL MOTORS		PCCTP-1		0 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER	

VEHICLE TYPE	ACTUAL VEHICLE MODEL	--YEAR-- MDL ACT	DRIVE FULL TANK	AXL WT EMPTY TANK	WT CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FP87HGN119669	86 86	1434P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		

ASSIGNED DF OR DURABILITY VEHICLE ID	ALTERNATE MANUFACTURER	ODOMETER CORRECTION INITIAL	FACTOR	TIRE & RIM SIZES	TIRE SPECIFICATIONS MFR	CONSTR	N	M	PSI	TD
		+	0	1.0000	P215/65R15 GOODYEAR	RADIAL	2	P	2	35 35

-----  
ENGINE SPECIFICATIONS  
-----

DISPLACEMENT	BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLs	FUEL SYSTEM MFR/MODEL	FUEL INJ	TURBO/SUPER CHARGER	COMP. COOLING	COMP. RATIO	COAST DN TM
305.1E	3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE		9.5	18.48

IGNITION TIMING				IDLE % CO				IDLE				ENGINE			
#1	#2	DEG TOL.	RPM	RPM TOL.	GEAR	LEFT	RIGHT	COMB	TOL.	RPM	RPM TOL.	GEAR	FAMILY	SYSTEM	CODE
0			500							500		DRIVE	G1G5.7V4NEA5		UNKNOWN

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DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS  
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AXLE RATIO	N/V RATIO	ODOMETER	A/C INSTALLED	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG MODIF	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE
2.73	25.5	MILES	YES	DUAL REAR	CLOSED	A-3	1-NOT EQUIP	CAN + CHA	UNLEADED (AT EPA-IND 110)

MAIN-TANK CAPACITY VOLUME	AUX.-TANK CAPACITY VOLUME	SHIFT SPEED	SHIFT SCH. ID CITY HWY	EVAPORATIVE EMISSION FAMILY CODE	SALES CLASS
16.2G	6.5G	DO NOT SHIFT MANUALLY	A FTA A HWA	6B4H-1A	49 STATE LIGHT DUTY VEH

-----  
CONTROL SYSTEM TYPES  
-----

EXHAUST RECYCLE	AIR PUMP	OXIDATION CATALYST	THREE-WAY CAT + CLOS
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-----  
VEHICLE SPECIFICATION COMMENTS  
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\* SEE COMMENTS

BLACK CAMARO W/OEM PROM

ACTIVE YEAR	MODEL YEAR
-----	-----
1986	1986

DATE	TEST #	DISP CT FE	ODOM MILES	SYST MILES	IDLE RPM	AMB TEMP	THC	EMISSION RESULTS NMHC	CO	CO2	NOX	EVAP	FE (*OD ADJ)	COMMENTS
*-VERSN: 0 ENG FAM:G1G5.7V4NEA5 INT. VEH. #:18432														
EVAP FAM:6B4H-1A VEHICLE TYPE: 4														
ENG CODE:UNKNOWN														
ETW: 3625 DYNO H.P.: 7.6 TRANS:A3 O/D:2 AXLE:2.73 N/V: 25.5 CD=18.48														
9-20-88	885356		19045	0		77.9	0.052		0.78	290.	0.260	.	30.4	OK HWFE EPA ALT=a RC: 17.92 17.84 17.91
9-20-88	885355	4	19033	0	500	75.5	.	.	.	.	.	.	.	OK CITY EPA ALT=a RC:N VOID - MANUFACTURER GAVE WRONG STARTING INSTRUCTIONS
9-21-88	885365		19076	0		74.6	0.236	0.162	1.36	478.	0.490	1.23	18.4	OK CITY EPA ALT=a RC:
9-21-88	885366		19087	0		75.2	0.051		0.76	295.	0.240	.	29.9	OK HWFE EPA ALT=a RC:
9-22-88	885444		19119	0		75.7	0.292	0.214	1.65	487.	0.510	1.24	18.1	17.76 17.69 17.80 OK CITY EPA ALT=a RC:
9-22-88	885445		19130	0		76.8	0.056		0.78	290.	0.300	.	30.4	OK HWFE EPA ALT=a RC:
10- 4-88	890002		19499	0		79.5	0.244	0.169	1.27	485.	0.500	1.39	18.2	17.76 17.77 17.64 OK CITY EPA ALT=a RC:
10- 4-88	890003		19511	0		78.1	0.047		0.57	288.	0.280	.	30.7	OK HWFE EPA ALT=a RC:
10-21-88	890255		19915	0	690	74.8	0.311	0.232	1.70	481.	0.530	.	18.3	18.03 17.87 17.87 OK CITY EPA ALT=a RC:
10-21-88	890256		19926	0		75.6	0.051		0.92	286.	0.260	.	30.8	MR-2 OK HWFE EPA ALT=a RC:
11- 8-88	890631		20209	0	670	74.9	0.270	0.191	1.83	464.	0.530	.	19.0	CD 17.89 17.77 17.57 17.64 OK CITY EPA ALT=a RC:
11- 8-88	890632		20220	0		75.3	0.043		0.79	278.	0.300	.	31.7	MR-1 OK HWFE EPA ALT=a RC:
11-15-88	890695		20259	0		77.2	0.228	0.155	1.25	472.	0.500	.	18.7	17.89 17.60 17.61 OK CITY EPA ALT=a RC:
11-15-88	890696		20271	0		85.3	0.040		0.51	288.	0.260	.	30.7	MFR OK HWFE EPA ALT=a RC:
QC 18.29 18.47 18.50 HIGH TEMP														

REPORT TIME: 14:20:45  
DATE: FEB 16, 1989

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VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 09/14/88  
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-----  
VEHICLE SPECIFICATIONS  
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MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE	
GENERAL MOTORS		PCCTP-1		1 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER	

VEHICLE TYPE	ACTUAL VEHICLE MODEL	--YEAR-- MDL ACT	DRIVE FULL TANK	AXL WT EMPTY TANK	CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FP87HGN119669	86 86	1434P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		

ASSIGNED DF OR DURABILITY VEHICLE ID		ALTERNATE MANUFACTURER		ODOMETER CORRECTION		TIRE & RIM SIZES		TIRE SPECIFICATIONS		SWL BLT PSI TD	
INITIAL	FACTOR			INITIAL	FACTOR	SIZES	MFR	CONSTR	N M	N M	FT RR DP
+	0	1.0000				P215/65R15	GOODYEAR	RADIAL	2 P	2 S	35 35

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ENGINE SPECIFICATIONS  
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DISPLACEMENT	BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLs	FUEL SYSTEM MFR/MODEL	FUEL INJ	TURBO/SUPER CHARGER	COMP. COOLING	COMP. RATIO	COAST DN TM
305.1E	3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE		9.5	18.48

IGNITION TIMING				IDLE % CO				IDLE				ENGINE				
#1	#2	DEG TOL.	RPM	RPM TOL.	GEAR	LEFT	RIGHT	COMB	TOL.	RPM	RPM	TOL.	GEAR	FAMILY	SYSTEM	CODE
0			500							500			DRIVE	G1G5.7V4NEA5		UNKNOWN

-----  
DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS  
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AXLE RATIO	N/V RATIO	ODOMETER	A/C INSTALLED	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG	MODIF CODE	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE
2.73	25.5	MILES	YES	DUAL REAR	CLOSED	A-3		1-NOT EQUIP	CAN + CHA	UNLEADED (AT EPA-IND HO)

MAIN-TANK CAPACITY VOLUME	AUX.-TANK CAPACITY VOLUME	SHIFT SPEED	SHIFT SCH. CITY	ID HWY	EVAPORATIVE EMISSION FAMILY	EMISSION CODE	SALES CLASS
16.2G	6.5G	DO NOT SHIFT MANUALLY	A FTA	A HWA	6B4H-1A	UNKNOWN	49 STATE LIGHT DUTY VEH

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CONTROL SYSTEM TYPES  
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EXHAUST RECYCLE	AIR PUMP	OXIDATION CATALYST	THREE-WAY CAT + CLOS
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VEHICLE SPECIFICATION COMMENTS  
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\* SEE COMMENTS

BLACK CAMARO W/HYPERTech STAGE I PROM

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 VEHICLE TEST DATA LOG - 15:27:50 JAN 31, 1989  
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MANUFACTURER	VEHICLE ID	SC	CARLINE	CONTROL SYSTEMS EMISSION	EVAP	DISPLACEMENT
GENERAL MOTORS	PCCTP-1	FV	(V)CAMARO	EGR/PMP/OXD/3CL/	CAC	305.1
		ACTIVE YEAR	MODEL YEAR			
		1986	1986			

DATE	TEST #	DISP CT FE	ODOM MILES	SVST MILES	IDLE RPM	AMB TEMP	THC	EMISSION RESULTS				FE (* = OD ADJ)	COMMENTS	
								NMHC	CO	CO2	NOX	EVAP		
*-VERSN: 1		ENG FAM:G1G5.7V4NEA5			EVAP FAM:6B4H-1A			ENG CODE:UNKNOWN				ETW: 3625 DYNO H.P.: 7.6 TRANS:A3 O/D:2		
		INT. VEH. #:18432			VEHICLE TYPE: 4							AXLE:2.73 N/V: 25.5 CD=18.48		
9-29-88	885367		19357		0	74.5	0.297	0.211	2.85	515.	0.470	1.12	17.0	OK CITY EPA ALT=a RC:
9-29-88	885368		19369		0	600	76.2	0.049		2.27	313.	0.220	28.0	OK HWFE EPA ALT=a RC:
														17.91 18.02 17.80 17.69 17.80
9-30-88	885369		19402		0	75.5	0.240	0.161	2.37	516.	0.460	1.24	17.0	OK CITY EPA ALT=a RC:
9-30-88	885370		19413		0	77.3	0.043		1.86	314.	0.210		28.0	OK HWFE EPA ALT=a RC:
														17.96 17.87 17.91

REPORT TIME: 14:20:45  
DATE: FEB 16, 1989

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VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 09/14/88  
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-----  
VEHICLE SPECIFICATIONS  
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MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE	
GENERAL MOTORS		PCCTP-1		2 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER	

VEHICLE TYPE	ACTUAL VEHICLE MODEL	--YEAR--	DRIVE FULL TANK	AXL WT EMPTY TANK	CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FP87HGN119669	86 86	1434P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		

ASSIGNED DF OR DURABILITY VEHICLE ID		ALTERNATE MANUFACTURER		ODOMETER CORRECTION		TIRE & RIM SIZES		TIRE SPECIFICATIONS	
				INITIAL	FACTOR			MFR	CONSTR
				+	0	1.0000 P215/65R15		GOODYEAR	RADIAL 2 P 2 S 35 35

-----  
ENGINE SPECIFICATIONS  
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DISPLACEMENT		BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLs	FUEL SYSTEM MFR/MODEL	FUEL INJ	TURBO/SUPER CHARGER	COMP. COOLING	COAST DN TM
305.1E		3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE	9.5	18.48

IGNITION TIMING		IDLE % CO		IDLE		ENGINE	
#1	#2	DEG TOL.	RPM	LEFT	RIGHT	RPM	CODE
0			500			500	UNKNOWN

-----  
DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS  
-----

AXLE RATIO	N/V RATIO	A/C ODOMETER	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE
2.73	25.5	MILES	DUAL REAR	CLOSED	A-3	1-NOT EQUIP	CAN + CHA	UNLEADED (AT EPA-IND HO)

MAIN-TANK CAPACITY	AUX.-TANK CAPACITY	SHIFT SPEED	SHIFT SCH. CITY	ID HWY	EVAPORATIVE EMISSION FAMILY	SALES CLASS
16.2G	6.5G	DO NOT SHIFT MANUALLY	A FTA	A HWA	6B4H-1A	49 STATE LIGHT DUTY VEH

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CONTROL SYSTEM TYPES  
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EXHAUST RECYCLE	AIR PUMP	OXIDATION CATALYST	THREE-WAY CAT + CLOS
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VEHICLE SPECIFICATION COMMENTS  
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\* SEE COMMENTS

BLACK CAMARO W/TURBO CITY PROM

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 VEHICLE TEST DATA LOG - 15:27:50 JAN 31, 1989  
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MANUFACTURER	VEHICLE ID	SC	CARLINE	CONTROL SYSTEMS EMISSION	EVAP	DISPLACEMENT
GENERAL MOTORS	PCCTP-1	FV	(V)CAMARO	EGR/PMP/OXD/3CL/	CAC	305.1
		ACTIVE YEAR	MODEL YEAR			
		1986	1986			

DATE	TEST #	DISP CT	ODOM FE	SYST MILES	IDLE MILES	AMB RPM	TEMP	THC	EMISSION RESULTS				FE (* = OD)	COMMENTS	
									NMHC	CO	CO2	NOX	EVAP		
*-VERSN: 2		ENG FAM:G1G5.7V4NEA5				EVAP FAM:6B4H-1A				ENG CODE:UNKNOWN				ETW: 3625 DYNO H.P.: 7.6 TRANS:A3 O/D:2	
		INT. VEH. #:18432				VEHICLE TYPE: 4								AXLE:2.73 N/V: 25.5 CD=18.48	
9-26-88	885475		19215		0	74.4	0.336	0.271	3.66	521.	0.480	1.21	16.8	OK CITY EPA ALT=a RC:	
9-26-88	885476		19227		0	74.7	0.079		2.58	286.	0.340	.	30.5	OK HWFE EPA ALT=a RC:	
														CD 17.58 17.61 17.59	
9-27-88	885478		19270		0	79.3	0.080		2.41	284.	0.330	.	30.8	OK HWFE EPA ALT=a RC:	
														17.70 17.56 17.61	
9-27-88	885477		19258		0	74.8	0.383	0.315	4.06	521.	0.530	1.16	16.8	OK CITY EPA ALT=a RC:	

REPORT TIME: 14:20:45  
DATE: FEB 16, 1989

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VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 09/14/88  
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-----  
VEHICLE SPECIFICATIONS  
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MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE	
GENERAL MOTORS		PCCTP-1		3 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER	

VEHICLE TYPE	ACTUAL VEHICLE MODEL	--YEAR-- MDL	ACT MDL	DRIVE FULL TANK	AXL WT EMPTY TANK	CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FP87HGN119669	86	86	1434P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		

ASSIGNED DF OR DURABILITY VEHICLE ID		ALTERNATE MANUFACTURER		ODOMETER CORRECTION		TIRE & RIM SIZES		TIRE SPECIFICATIONS		SWL BLT PSI TD	
INITIAL	FACTOR							MFR	CONSTR	N M	N M FT RR DP
+	0	1.0000	P215/65R15	GOODYEAR	RADIAL	2 P 2 S 35 35					

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ENGINE SPECIFICATIONS  
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DISPLACEMENT	BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLS	FUEL SYSTEM MFR/MODEL	FUEL INJ	TURBO/SUPER CHARGER	COMP. COOLING	COMP. RATIO	COAST DN TM
305.1E	3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE		9.5	18.48

IGNITION TIMING				IDLE % CO				IDLE				ENGINE				
#1	#2	DEG TOL.	RPM	RPM TOL.	GEAR	LEFT	RIGHT	COMB	TOL.	RPM	RPM	TOL.	GEAR	FAMILY	SYSTEM	CODE
02A			500							500			DRIVE	G1G5.7V4NEA5		UNKNOWN

-----  
DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS  
-----

AXLE RATIO	N/V RATIO	ODOMETER	A/C INSTALLED	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG	MODIF CODE	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE
2.73	25.5	MILES	YES	DUAL REAR	CLOSED	A-3		1-NOT EQUIP	CAN + CHA	UNLEADED (AT EPA-IND HO)

MAIN-TANK CAPACITY	TANK VOLUME	AUX.-TANK CAPACITY	TANK VOLUME	SHIFT SPEED	SHIFT SCH. CITY	ID HWY	EVAPORATIVE EMISSION FAMILY	EMISSION CODE	SALES CLASS
16.2G	6.5G			DO NOT SHIFT MANUALLY	A FTA	A HWA	6B4H-1A	UNKNOWN	49 STATE LIGHT DUTY VEH

CONTROL SYSTEM TYPES	
EXHAUST RECYCLE	AIR PUMP
OXIDATION CATALYST	THREE-WAY CAT + CLOS

-----  
VEHICLE SPECIFICATION COMMENTS  
-----

\* SEE COMMENTS

BLACK CAMARO W/HYPERTech STAGE III PROM  
TIMING RETARDED 2 DEGREES TO PREVENT EXCESSIVE SPARK KNOCK



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 VEHICLE TEST DATA LOG - 15:27:50 JAN 31, 1989  
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MANUFACTURER		VEHICLE ID	SC	CARLINE	CONTROL SYSTEMS		DISPLACEMENT
					EMISSION	EVAP	
GENERAL MOTORS		PCCTP-1	FV	(V)CAMARO	EGR/PMP/OXD/3CL/	CAC	305.1
		ACTIVE YEAR	MODEL YEAR				
		1986	1986				

DATE	TEST #	DISP CT	ODOM FE	SYST MILES	IDLE RPM	AMB TEMP	THC	EMISSION RESULTS				FE (*=OD ADJ)	COMMENTS	
								NMHC	CO	CO2	NOX	EVAP		
*-VERSN: 3		ENG FAM:G1G5.7V4NEA5		EVAP FAM:6B4H-1A		ENG CODE:UNKNOWN		ETW: 3625 DYNO H.P.: 7.6 TRANS:A3 O/D:2						
		INT. VEH. #:18432		VEHICLE TYPE: 4		AXLE:2.73 N/V: 25.5 CD=18.48								
10- 7-88	890004		19615	0	550	75.8	0.259	0.178	2.27	524.	0.530	.	16.8	OK CITY EPA ALT=a RC:
10- 7-88	890005		19626	0		77.5	0.053		1.84	315.	0.260	.	27.9	MR-2 OK HWFE EPA ALT=a RC:
10-12-88	890006		19657	0		75.1	0.279	0.201	2.26	522.	0.560	.	16.8	17.64 17.68 17.58 OK CITY EPA ALT=a RC:
10-12-88	890007		19669	0		77.9	0.048		1.88	314.	0.260	.	28.0	MR-2 OK HWFE EPA ALT=a RC:
														17.89 17.85 17.85

REPORT TIME: 14:20:45  
DATE: FEB 16, 1989

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VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 09/14/88  
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-----  
VEHICLE SPECIFICATIONS  
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MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE	
GENERAL MOTORS		PCCTP-1		4 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER	

VEHICLE TYPE	ACTUAL VEHICLE MODEL	--YEAR-- MDL ACT	DRIVE FULL TANK	AXL WT EMPTY TANK	CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FP87HGN119669	86 86	1434P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		

ASSIGNED DF OR DURABILITY VEHICLE ID		ALTERNATE MANUFACTURER		ODOMETER CORRECTION INITIAL	FACTOR	TIRE & RIM SIZES	TIRE SPECIFICATIONS MFR	CONSTR	SWL N	BLT M	PSI M	TD FT	RR	DP
				+	0	1.0000	P215/65R15 GOODYEAR	RADIAL	2	P	2	S	35	35

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ENGINE SPECIFICATIONS  
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DISPLACEMENT	BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLS	FUEL SYSTEM MFR/MODEL	FUEL INJ	TURBO/SUPER CHARGER	COMP. COOLING	COAST DN TM
305.1E	3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE	9.5	18.48

#1	#2	IGNITION TIMING DEG TOL.	RPM TOL.	GEAR	LEFT	RIGHT	IDLE % CO COMB TOL.	RPM	IDLE RPM TOL.	GEAR	FAMILY	ENGINE SYSTEM	CODE
0			500					500		DRIVE	G1G5.7V4NEA5	UNKNOWN	

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DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS  
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AXLE RATIO	N/V RATIO	ODOMETER	A/C INSTALLED	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG	MODIF CODE	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE
2.73	25.5	MILES	YES	DUAL REAR	CLOSED	A-3		1-NOT EQUIP	CAN + CHA	UNLEADED (AT EPA-IND HO)

MAIN-TANK CAPACITY VOLUME	AUX.-TANK CAPACITY VOLUME	SHIFT SPEED	SHIFT SCH. CITY	ID HWY	EVAPORATIVE EMISSION FAMILY	EMISSION CODE	SALES CLASS
16.2G	6.5G	DO NOT SHIFT MANUALLY	A	FTA	A	HWA 6B4H-1A	UNKNOWN 49 STATE LIGHT DUTY VEH

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CONTROL SYSTEM TYPES  
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EXHAUST RECYCLE	AIR PUMP	OXIDATION CATALYST	THREE-WAY CAT + CLOS
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VEHICLE SPECIFICATION COMMENTS  
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\* SEE COMMENTS

BLACK CAMARO W/HYPERTech STAGE III PROM AND 160 DEGREE THERMOSTAT

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 VEHICLE TEST DATA LOG - 15:27:50 JAN 31, 1989  
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MANUFACTURER	VEHICLE ID	SC	CARLINE	EMISSION	EVAP	DISPLACEMENT
GENERAL MOTORS	PCCTP-1	FV	(V)CAMARO	EGR/PMP/OXD/3CL/	CAC	305.1

ACTIVE YEAR	MODEL YEAR
1986	1986

DATE	TEST #	DISP CT FE	ODOM MILES	SYST MILES	IDLE RPM	AMB TEMP	THC	EMISSION RESULTS NMHC	CO	CO2	NOX	EVAP	FE (* = OD ADJ)	COMMENTS
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\*-VERSN: 4 ENG FAM:G1G5.7V4NEA5 EVAP FAM:6B4H-1A ENG CODE:UNKNOWN ETW: 3625 DYNO H.P.: 7.6 TRANS:A3 O/D:2  
 INT. VEH. #:18432 VEHICLE TYPE: 4 AXLE:2.73 N/V: 25.5 CD=18.48

10-14-88	890157		19755	0	625	73.7	0.323	0.240	2.84	511.	0.530	.	17.2	OK CITY EPA ALT=a RC:
10-14-88	890158		19766	0		74.7	0.043		2.15	302.	0.170	.	29.0	OK HWFE EPA ALT=a RC:
10-18-88	890253	4	19798	0		74.2	.		.	.	.	.	.	17.93 17.94 17.84 OK CITY EPA ALT=a RC:N
														MR-2 VOID - TRACE OUT OF TOLERANCE AT 26 SECO NDS
10-18-88	890254		19809	0		75.9	0.043		2.03	304.	0.190	.	28.9	OK HWFE EPA ALT=a RC:
10-19-88	890301		19841	0		74.7	0.318	0.239	2.29	502.	0.520	.	17.5	CD 17.86 17.72 17.81 OK CITY EPA ALT=a RC:

REPORT TIME: 14:20:46  
DATE: FEB 16, 1989

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VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 10/28/88  
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-----  
VEHICLE SPECIFICATIONS  
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MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE	
GENERAL MOTORS		PCCTP-1		5 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER	

VEHICLE TYPE	ACTUAL VEHICLE MODEL	--YEAR-- MDL ACT	DRIVE FULL TANK	AXL WT EMPTY TANK	CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FP87HGN119669	86 86	1434P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		

ASSIGNED DF OR DURABILITY VEHICLE ID		ALTERNATE MANUFACTURER		ODOMETER CORRECTION		TIRE & RIM		TIRE SPECIFICATIONS	
				INITIAL	FACTOR	SIZES	MFR	CONSTR	SWL BLT PSI TD
				+	0	1.0000	P215/65R15	GOODYEAR	RADIAL 2 P 2 S 35 35

-----  
ENGINE SPECIFICATIONS  
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DISPLACEMENT		BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLS	FUEL MFR/MODEL	SYSTEM INJ	FUEL TURBO/SUPER	COMP. COAST
305.1E		3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE	9.5 18.48

IGNITION TIMING				IDLE % CO				IDLE				ENGINE				
#1	#2	DEG TOL.	RPM	RPM TOL.	GEAR	LEFT	RIGHT	COMB	TOL.	RPM	RPM	TOL.	GEAR	FAMILY	SYSTEM	CODE
0			500							500			DRIVE	G1G5.7V4NEA5		UNKNOWN

-----  
DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS  
-----

AXLE RATIO	N/V RATIO	ODOMETER	A/C INSTALLED	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG	MODIF	CODE	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE
2.73	25.5	MILES	YES	DUAL REAR	CLOSED	A-3			1-NOT EQUIP	CAN + CHA	UNLEADED (AT EPA-IND HO)

MAIN-TANK CAPACITY	TANK VOLUME	AUX.-TANK CAPACITY	TANK VOLUME	SHIFT SPEED	SHIFT SCH. CITY	ID HWY	EVAPORATIVE EMISSION FAMILY	EMISSION CODE	SALES CLASS
16.2G	6.5G			DO NOT SHIFT MANUALLY	A FTA	A HWA	6B4H-1A	UNKNOWN	49 STATE LIGHT DUTY VEH

CONTROL SYSTEM TYPES	
EXHAUST RECYCLE	AIR PUMP
OXIDATION CATALYST	THREE-WAY CAT + CLOS

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VEHICLE SPECIFICATION COMMENTS  
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\* SEE COMMENTS

BLACK CAMARO W/ADS SUPER CHIP "STREET/STRIP" PROM

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 VEHICLE TEST DATA LOG - 15:27:50 JAN 31, 1989  
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MANUFACTURER	VEHICLE ID	SC	CARLINE	CONTROL SYSTEMS EMISSION	EVAP	DISPLACEMENT
GENERAL MOTORS	PCCTP-1	FV	(V)CAMARO	EGR/PMP/OXD/3CL/	CAC	305.1

ACTIVE YEAR    MODEL YEAR  
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1986                      1986

DATE	TEST #	DISP CT	ODOM FE	SYST MILES	IDLE MILES	AMB RPM	EMISSION RESULTS TEMP	THC	NMHC	CO	CO2	NOX	EVAP	FE (* = OD ADJ)	COMMENTS
* - VERSN: 5 ENG FAM:G1G5.7V4NEA5      EVAP FAM:6B4H-1A      ENG CODE:UNKNOWN      ETW: 3625 DYNO H.P.: 7.6 TRANS:A3 O/D:2															
INT. VEH. #:18432      VEHICLE TYPE: 4      AXLE:2.73 N/V: 25.5 CD=18.48															
11- 3-88	890541		20065	0	615	76.0	0.432	0.360	6.74	461.	0.410	.	18.8		OK CITY EPA ALT=a RC:
11- 3-88	890542		20076	0		77.3	0.056		1.49	286.	0.240	.	30.7		OK HWFE EPA ALT=a RC:
														17.98	17.77 17.61 17.83 17.72
11- 4-88	890543		20110	0		74.4	0.417	0.348	6.15	458.	0.450	.	18.9		OK CITY EPA ALT=a RC:
11- 4-88	890544		20121	0		75.8	0.058		1.72	283.	0.220	.	31.0		OK HWFE EPA ALT=a RC:
QC 17.96 17.86 17.66															

REPORT TIME: 14:21:10  
DATE: FEB 16, 1989

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VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 09/23/88  
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-----  
VEHICLE SPECIFICATIONS  
-----

MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE	
GENERAL MOTORS		PCCTP-2		0 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER	

VEHICLE TYPE	ACTUAL VEHICLE MODEL	--YEAR--	FULL TANK	AXL WT EMPTY TANK	CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FP87H3GN138413	86 86	1404P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		

ASSIGNED DF OR DURABILITY VEHICLE ID	ALTERNATE MANUFACTURER	ODOMETER CORRECTION		TIRE & RIM SIZES		TIRE SPECIFICATIONS		SWL	BLT	PSI	TO			
		INITIAL	FACTOR			MFR	CONSTR					N	M	M
		+	0	1.0000	P215/65R15	GOODYEAR	RADIAL	2	P	2	S	35	35	

-----  
ENGINE SPECIFICATIONS  
-----

DISPLACEMENT	BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLs	FUEL SYSTEM MFR/MODEL	FUEL INJ	TURBO/SUPER CHARGER	COOLING	COMP. RATIO	COAST DN TM
305.1E	3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE		9.5	18.48

IGNITION TIMING				IDLE % CO				IDLE				ENGINE				
#1	#2	DEG TOL.	RPM	RPM TOL.	GEAR	LEFT	RIGHT	COMB	TOL.	RPM	RPM	TOL.	GEAR	FAMILY	SYSTEM	CODE
0			700		NEUTRAL								NEUTRAL	G1G5.0V4NTA3		UNKNOWN

-----  
DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS  
-----

AXLE RATIO	N/V RATIO	ODOMETER	A/C INSTALLED	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG	MODIF	CODE	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE
3.23	27.2	MILES	YES	DUAL REAR	CLOSED	M-5		M39	3-EQ-SHIFTED	CAN + CHA	UNLEADED (AT EPA-IND HO)

MAIN-TANK CAPACITY	TANK VOLUME	AUX.-TANK CAPACITY	TANK VOLUME	SHIFT SPEED	SHIFT SCH. CITY	ID HWY	EVAPORATIVE EMISSION FAMILY	EMISSION CODE	SALES CLASS
16.2G	6.5G			SHIFT INDICATOR LIGHT	A FTS	A HWS	6B4H-1A	UNKNOWN	49 STATE LIGHT DUTY VEH

-----  
CONTROL SYSTEM TYPES  
-----

EXHAUST RECYCLE	AIR PUMP	OXIDATION CATALYST	THREE-WAY CAT + CLOS
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-----  
VEHICLE SPECIFICATION COMMENTS  
-----

\* SEE COMMENTS

WHITE Z28 CAMARO W/OEM PROM

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 VEHICLE TEST DATA LOG - 15:27:50 JAN 31, 1989  
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MANUFACTURER	VEHICLE ID	SC	CARLINE	CONTROL SYSTEMS EMISSION	EVAP	DISPLACEMENT
GENERAL MOTORS	PCCTP-2	FV	(V)CAMARO	EGR/PMP/OXD/3CL/	CAC	305.1
		ACTIVE YEAR	MODEL YEAR			
		1986	1986			

DATE	TEST #	DISP CT FE	ODOM MILES	SYST MILES	IDLE RPM	AMB TEMP	THC	EMISSION RESULTS				FE (*OD ADJ)	COMMENTS	
								NMHC	CO	CO2	NOX	EVAP		
*-VERSN: 0		ENG FAM:G1G5.0V4NTA3		EVAP FAM:6B4H-1A		ENG CODE:UNKNOWN		ETW: 3625		DYNO H.P.: 7.6		TRANS:M5 O/D:2		
		INT. VEH. #:18472		VEHICLE TYPE: 4				AXLE:3.23		N/V: 27.2		CD=18.48		
9-28-88	885506		25504	0	750	77.9	0.232	0.149	1.34	479.	0.530	1.34	18.4	OK CITY EPA ALT=a RC:
9-28-88	885508		25515	0		75.6	0.038		0.20	288.	0.430	.	30.7	OK HWFE EPA ALT=a RC:
9-29-88	885507		25546	0		74.5	0.249	0.168	1.67	490.	0.510	1.35	18.0	17.91 18.02 18.02 OK CITY EPA ALT=a RC:
9-29-88	885509		25557	0		76.7	0.035		0.32	289.	0.440	.	30.6	18.05 18.15 18.19 OK HWFE EPA ALT=a RC:
11- 1-88	890540		26041	0		76.1	0.031		0.10	276.	0.390	.	32.1	18.05 18.15 18.19 OK HWFE EPA ALT=a RC:
11- 1-88	890539 4		26030	0	770	75.4	.		.	.	.	.	.	18.86 18.89 18.88 OK CITY EPA ALT=a RC:N
BAG 2 BACKGROUND VALUES USED FOR BAG 3														
VEHICLE MISFUELED FOR PREP														
VOID VEHICLE FUELED INCORRECTLY FOR PRE														
P ALSO BAG 3 NOT READ BY ANALYZER														
11- 9-88	890633		26063	0		75.0	0.035		0.14	274.	0.420	.	32.3	OK HWFE EPA ALT=a RC:
11-30-88	890913		26110	0	650	75.1	0.253	0.170	1.84	471.	0.520	.	18.7	18.51 18.62 18.46 52384 OK CITY EPA ALT=a RC:
11-30-88	890914		26121	0		75.8	0.033		0.19	284.	0.390	.	31.2	MR-6 OK HWFE EPA ALT=a RC:
1 18.55 2 18.58 3 18.60														

REPORT TIME: 14:21:12  
DATE: FEB 16, 1989

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VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 09/23/88  
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-----  
VEHICLE SPECIFICATIONS  
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MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE	
GENERAL MOTORS		PCCTP-2		1 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER	

VEHICLE TYPE	ACTUAL VEHICLE MODEL	MDL	ACT	DRIVE FULL TANK	AXL WT EMPTY TANK	CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FP87H3GN138413	86	86	1404P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		

ASSIGNED DF OR DURABILITY	VEHICLE ID	ALTERNATE MANUFACTURER	ODOMETER CORRECTION INITIAL	FACTOR	TIRE & RIM SIZES	TIRE SPECIFICATIONS MFR	CONSTR	N	M	BLT	PSI	TD
+	0	1.0000	P215/65R15	GOODYEAR	RADIAL 2 P 2 S 35 35							

-----  
ENGINE SPECIFICATIONS  
-----

DISPLACEMENT	BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLs	FUEL SYSTEM MFR/MODEL	FUEL INJ	TURBO/SUPER CHARGER	COOLING	COMP. RATIO	COAST DN TM
305.1E	3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE		9.5	18.48

#1	#2	IGNITION TIMING DEG TOL.	RPM	RPM TOL.	GEAR	LEFT	RIGHT	IDLE % CO COMB TOL.	RPM	RPM	IDLE TOL.	GEAR	FAMILY	ENGINE SYSTEM	CODE
0		700			NEUTRAL						NEUTRAL		GIG5.0V4NTA3	UNKNOWN	

-----  
DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS  
-----

AXLE RATIO	N/V RATIO	ODOMETER	A/C INSTALLED	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG MODIF	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE
3.23	27.2	MILES	YES	DUAL REAR	CLOSED	M-5	M39	3-EQ-SHIFTED	CAN + CHA UNLEADED (AT EPA-IND HO)

MAIN-TANK CAPACITY VOLUME	AUX.-TANK CAPACITY VOLUME	SHIFT SPEED	SHIFT SCH. CITY	ID HWY	EVAPORATIVE EMISSION FAMILY	EMISSION CODE	SALES CLASS
16.2G	6.5G	SHIFT INDICATOR LIGHT	A FTS	A HWS	6B4H-1A	UNKNOWN	49 STATE LIGHT DUTY VEH

-----  
CONTROL SYSTEM TYPES  
-----

EXHAUST RECYCLE	AIR PUMP	OXIDATION CATALYST	THREE-WAY CAT + CLOS
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-----  
VEHICLE SPECIFICATION COMMENTS  
-----

\* SEE COMMENTS

WHITE Z28 CAMARO W/ADS SUPER CHIP "STREET" PROM



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 VEHICLE TEST DATA LOG - 15:27:50 JAN 31, 1989  
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MANUFACTURER	VEHICLE ID	SC	CARLINE	CONTROL SYSTEMS EMISSION	EVAP	DISPLACEMENT
GENERAL MOTORS	PCCTP-2	FV	(V)CAMARO	EGR/PMP/OXD/3CL/	CAC	305.1
		ACTIVE YEAR	MODEL YEAR			
		1986	1986			

DATE	TEST #	DISP CT FE	ODOM MILES	SYST MILES	IDLE RPM	AMB TEMP	THC	EMISSION RESULTS				FE (*OD ADJ)	COMMENTS
								NMHC	CO	CO2	NOX	EVAP	
*-VERSN: 1		ENG FAM:G1G5.0V4NTA3			EVAP FAM:6B4H-1A			ENG CODE:UNKNOWN				ETW: 3625 DYNO H.P.: 7.6 TRANS:M5 O/D:2	
		INT. VEH. #:18472			VEHICLE TYPE: 4							AXLE:3.23 N/V: 27.2 CD=18.48	
10- 4-88	890008	4	25660	0		.0						.00	OK CITY EPA ALT=a RC:N VOID TEST CANCELLED BECAUSE REQUESTED D RIVER WAS NOT AVAILABLE A CERT SPECIAL PROJECT
10- 5-88	890009		25670	0		75.8	0.301	0.224	1.91	463.	0.690	1.42	19.0
10- 5-88	890011		25682	0		77.0	0.036		0.24	282.	0.490		31.4
10- 7-88	890010		25730	0		77.5	0.036		0.24	285.	0.540		31.1
10- 7-88	890065		25719	0		75.8	0.262	0.187	1.50	467.	0.690		18.9
													CD WAIVED PER D GOOD OK HWFE EPA ALT=a RC: 17.90 18.00 18.09 OK CITY EPA ALT=a RC: MR-4

REPORT TIME: 14:21:12  
DATE: FEB 16, 1989

VEHICLE SPECIFICATION REPORT - (REPORT) - DATE OF ENTRY : 09/23/88

# VEHICLE SPECIFICATIONS

MANUFACTURER		VEHICLE ID / VER		REPRESENTED CARLINE		MODEL CODE		DRIVE CODE		SOURCE					
GENERAL MOTORS		PCCTP-2		2 12025		SEDAN		REAR DRIVE STR. LEFT		PRIVATE OWNER					
VEHICLE TYPE	ACTUAL VEHICLE MODEL	--YEAR-- MDL	ACT MDL	DRIVE FULL TANK	AXL WT EMPTY TANK	CURB WEIGHT	INERTIA CLASS	EQUIV. TEST WEIGHT	H.P. METHOD	ETW C.D. VEH	SIDE FAN	OD CD	ACT DN HP	AC HP	RUNNING CHG NUMBER
NON-CER	1G1FPB7H3GN138413	86	86	1404P	P	3373P	3500P	3625P	COASTDOWN	3625		2	7.6		
ASSIGNED DF OR DURABILITY VEHICLE ID		ALTERNATE MANUFACTURER		ODOMETER CORRECTION INITIAL FACTOR		TIRE & RIM SIZES		TIRE SPECIFICATIONS MFR		CONSTR N M FT RR DP					
				+ 0 1.0000		P215/65R15		GOODYEAR		RADIAL 2 P 2 S 35 35					

# ENGINE SPECIFICATIONS

DISPLACEMENT	BORE	STROKE	RATED HP	ENGINE TYPE	ENGINE CONFIGURATION	NO. CYL.	NO. CARBS	TOTAL BBLs	FUEL SYSTEM MFR/MODEL	FUEL INJ	TURBO/SUPER CHARGER	COMP. COOLING	COAST DN TM		
305.1E	3.74E	3.48E	160	OTTO SPARK	V-BLOCK	8	1	4	ROCHESTER	NO	NONE	9.5	18.48		
IGNITION TIMING		IDLE % CO		IDLE		ENGINE									
#1	#2	DEG TOL.	RPM	RPM TOL.	GEAR	LEFT	RIGHT	COMB	TOL.	RPM	RPM TOL.	GEAR	FAMILY	SYSTEM	CODE
0			700		NEUTRAL							NEUTRAL	G1G5.0V4NTA3		UNKNOWN

# DRIVE TRAIN AND CONTROL SYSTEM SPECIFICATIONS

AXLE RATIO	N/V RATIO	ODOMETER	A/C INSTALLED	EXHAUST TYPE	CRANKCASE SYSTEM	TRANSMISSION CONFIG	MODIF CODE	SHIFT INDIC. LIGHT	EVAPORATION SYSTEM	FUEL TYPE	
3.23	27.2	MILES	YES	DUAL REAR	CLOSED	M-5	M39	3-EQ-SHIFTED	CAN + CHA	UNLEADED (AT EPA-IND HO)	
MAIN-TANK CAPACITY VOLUME		AUX.-TANK CAPACITY VOLUME		SHIFT SPEED		SHIFT SCH. ID CITY HWY		EVAPORATIVE EMISSION FAMILY CODE		SALES CLASS	
16.2G	6.5G			SHIFT INDICATOR LIGHT		A FTS A HWS		6B4H-1A		UNKNOWN 49 STATE LIGHT DUTY VEH	

# CONTROL SYSTEM TYPES

EXHAUST RECYCLE AIR PUMP OXIDATION CATALYST THREE-WAY CAT + CLOS

# VEHICLE SPECIFICATION COMMENTS

\* SEE COMMENTS

WHITE Z28 CAMARO W/ADS SUPER CHIP "STREET/STRIP" PROM

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 VEHICLE TEST DATA LOG - 15:27:50 JAN 31, 1989  
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MANUFACTURER	VEHICLE ID	SC	CARLINE	CONTROL SYSTEMS EMISSION	EVAP	DISPLACEMENT
GENERAL MOTORS	PCCTP-2	FV	(V)CAMARO	EGR/PMP/OXD/3CL/	CAC	305.1

ACTIVE YEAR    MODEL YEAR

1986                    1986

DATE	TEST #	CT	FE	DISP MILES	ODOM MILES	SYST MILES	IDLE RPM	AMB TEMP	THC	EMISSION RESULTS				FE (•=OD ADJ)	COMMENTS
										NMHC	CO	CO2	NOX	EVAP	
*--VERSN: 2 ENG FAM:G1G5.0V4NTA3    EVAP FAM:6B4H-1A    ENG CODE:UNKNOWN    ETW: 3625 DYNO H.P.: 7.6 TRANS:M5 O/D:2															
INT. VEH. #:18472    VEHICLE TYPE: 4    AXLE:3.23 N/V: 27.2 CD=18.48															
10-27-88	890159			25897	0	750	76.9	0.484	0.413	6.78	452.	0.490	.	19.1	OK CITY EPA    ALT=a RC:
10-27-88	890160			25908	0		76.0	0.032		0.73	281.	0.350	.	31.4	OK HWFE EPA    ALT=a RC:
															C/D 18.67 18.74 18.71
10-28-88	890171			25938	0		76.9	0.424	0.350	8.47	451.	0.450	.	19.0	OK CITY EPA    ALT=a RC:
10-28-88	890172			25949	0		77.3	0.035		0.67	277.	0.410	.	31.9	OK HWFE EPA    ALT=a RC:
															18.67 18.68 18.70



P.O. BOX 6010  
ORANGE, CA 92667-1010  
(714) 639-4933

DIRECTIONS FOR INSTALLATION  
Of The  
Replacement Computer POWER Chip  
For 1983-85 ~~Corvettes~~

*Camaro*

*Camaro*

The On-Board Computer in 1983-85 ~~Corvettes~~ is located under the dash on the passenger side. To remove, unscrew the two 10 ml. hex head nuts and lightly pull the Computer out. The wiring is long enough so that it can lie on the floor. DO NOT UNDO ANY OF THE WIRING. Looking at the stock chip, notice that the chip is in a plastic holder. Remove or unplug the Chip Holder along with the Chip and replace it with the NEW Computer POWER Chip. To put the On-Board Computer back in place, put the door back on to the Computer then lift the Computer back into place. Replace the two 10 ml. hex head nuts and GO FOR IT!

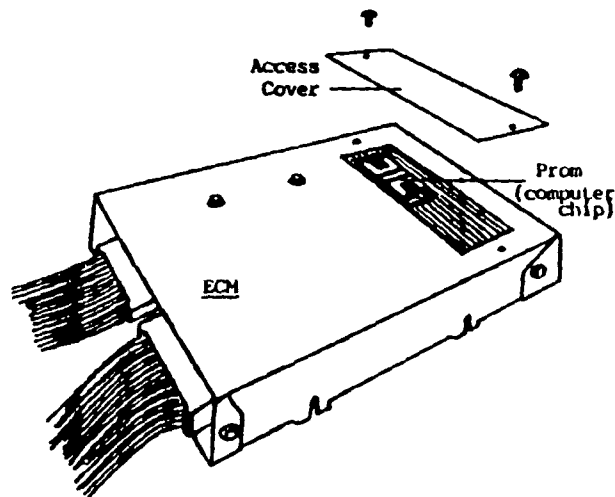
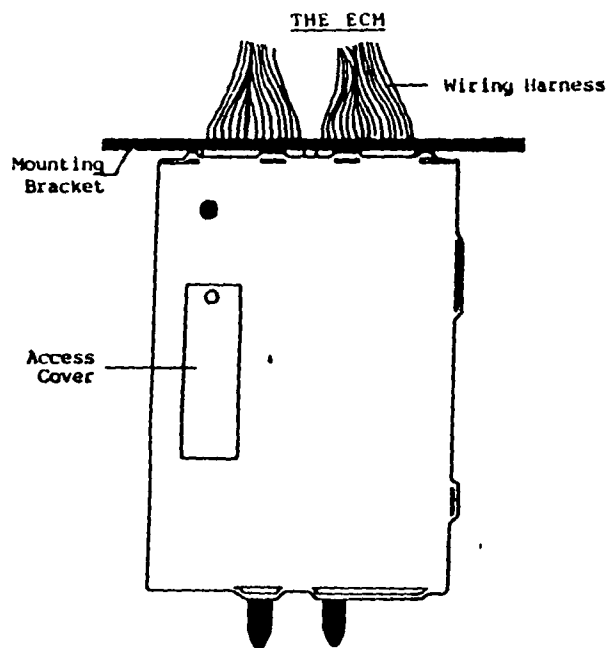


(Turbo City shall have no liability for any damages to customer or any other party arising out of, or in connection with use of the product. Turbo City, Inc. shall have no liability for any damage to customers automobile or any other vehicle or property.)

1984-1987  
HYPERTECH™ POWER CHIP™ INSTALLATION INSTRUCTIONS  
©1986,1987

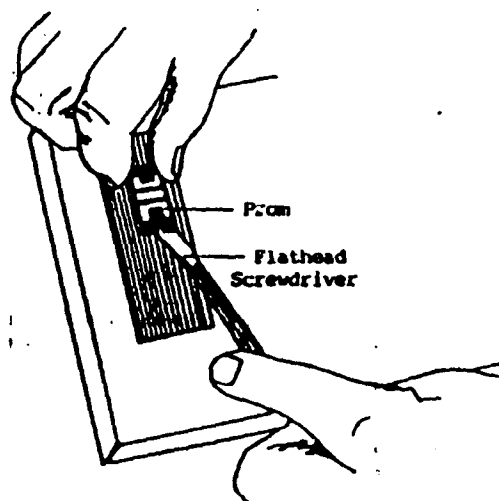
The HYPERTECH POWER CHIP expertly dyno tunes your engine for maximum performance. In order to get the best results the timing must be at its original factory setting.

1. Make sure ignition is off.
2. Locate the computer (i.e., the E.C.M., or Electronic Control Module) (See E.C.M. Locations on back)
3. Locate the screws which hold the E.C.M. in place and remove them. In most cases, it's easier to remove the screws that hold the mounting bracket to the car, and leave the E.C.M. bolted to the bracket.
4. The computer can now be dropped down from under the dash, or pulled out from the kick panel for easier access. Normally, there is no need to disconnect the harness. But, if the harness is too short, first disconnect the battery and then disconnect the harness.



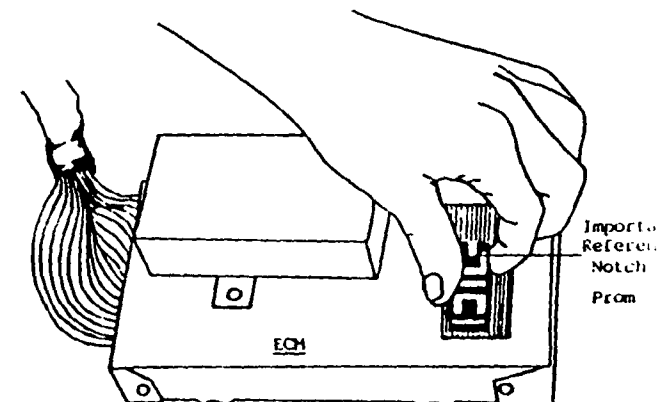
5. Remove the access cover (small plate held on by two screws) to expose the computer chip.
6. BEFORE REMOVING THE CHIP, COMPARE IT'S MOUNTING POSITION IN THE COMPUTER WITH YOUR NEW HYPERTECH CHIP. This notch matches a similar notch in the socket. It is absolutely essential that the new chip be installed with this notch in exactly the same location in the computer. Installing the chip with the notch at the wrong end will destroy the chips' electronics. Most, but not all chips will only go one way, so look carefully before removing the old chip.

REMOVING STOCK PROM



7. Take a small screwdriver (or similar small tool) with end of blade dimensions approximately 1/8" wide by 1/32" thick.
8. Place blade at Prom carrier reference end between edge of opening in case and the underside of one protruding lips of the carrier. Using a prying action, force the side of the carrier up as far as possible.
9. Repeat step 8 for both lips at opposite end of carrier.
10. Grasp the PROM unit carrier between thumb and forefinger. Gently rock the carrier from side to side while applying a firm upward force and remove the PROM.

INSTALLING THE HYPERTECH POWER CHIP



11. Place the new chip carefully over the socket, with the notch in the carrier lined up with the notch in the socket, exactly as the original chip was installed. Gently press on the plastic carrier (in which the chip is mounted) to install the chip in the socket. Use only enough force to press it in all the way.
12. After making sure the new Power Chip is firmly in place, start the engine and make sure the check engine light doesn't come on indicating a problem.
13. Re-install access cover and re-mount computer.

# ECM LOCATIONS

Be sure to use only the best available premium fuel.

The spark calibration contained in your new HYPERTECH Chip is designed to produce the maximum power possible using gasoline having at least a pump octane of 91. However, the true octane of fuel varies from area to area, different cities are located at different elevations above sea level (resulting in different barometric pressures) and, finally, the degree markings on your harmonic balancer (by which you adjust your engine timing) can be off several degrees due to manufacturing tolerances. Because of these random factors, the last and most important step is to check for detonation. After warming the engine, make a full throttle run and listen for "ping" or spark knock. If ping is present, retard the ignition timing 1 or 2 degrees and repeat the test. The idea is to retard the ignition until ping just disappears.

Place your "stock" chip in the static proof Packaging which contained your new HYPERTECH Chip to insure that it will not be harmed by static electricity, and store it in a safe place so that you can return your car to "stock" at any time, if you have any problems or questions, please call us. Our technical people will be happy to help you.

1. When using the Stage 2 power chip a 160° thermostat must be used.

2. When using the Stage 3 power chip, (our off road chip) a 160° thermostat must be used and we recommend for best results that no catalytic mufflers are to be used.

legal for sale or use in California on pollution controlled motor vehicles.

L. HYPERTECH COMPUTER CHIPS ARE COPYRIGHT 1986.

<u>BUICK</u>		
<u>YEAR</u>	<u>MODEL</u>	<u>LOCATION</u>
1984-87	Regal T-type/GM	Behind kick panel (passenger side)
<u>CHEVROLET</u>		
1981	Camaro	In center console
1982-87	Camaro	Under dash (passenger side)
1985-86	Cavalier	Behind glove compartment
1985-87	Celebrity	Behind glove compartment
1981-82	Corvette	Behind driver's seat next to battery
1984-87	Corvette	Under dash (passenger side)
1982-87	Monte Carlo*	Behind kick panel (passenger side)
1984-87	S10/GMC S15	Under dash (passenger side)
1986-87	Astro Van	Behind kick panel (passenger side)
* Caprice, El Camino, Impala, Malibu, same location		
<u>OLDSMOBILE</u>		
1983-87	Hurst 442	Behind kick panel (passenger side)
<u>PONTIAC</u>		
1984-87	Fiero	In center console (shoulder level)
1981	Firebird	In center console
1982-87	Firebird	Under dash (passenger side)
1985-87	6000	Behind glove compartment
1981-86	Grand Prix*	Behind kick panel (passenger side)
* Bonneville, Parisienne same location		

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HYPERTECH, INC., a Tennessee corporation ("HYPERTECH"), warrants to the original purchaser only ("customer") that, at the time of delivery of the Product, and for a period of ninety (90) days thereafter, the Product will be free of defects in parts or workmanship which substantially affect the Product's performance, and the Product will conform to the written specifications and description of the Product provided to Customer.

The extent of HYPERTECH's liability under this warranty shall be limited to the prompt correction or replacement, at HYPERTECH's option, at no cost to Customer, of any defective part of the Product which HYPERTECH determines to be necessary, provided written notice of such defect is given to HYPERTECH during the warranty period.

This warranty shall not apply if (i) the Product, or any part thereof, is not used in accordance with HYPERTECH's instructions; (ii) the Product, or any part thereof, is altered, modified or converted without the written approval of HYPERTECH; or (iii) the Product is damaged or rendered unserviceable by accident, negligence, misuse, theft, vandalism, fire, water or other peril, malfunction of equipment, or otherwise.

THE FOREGOING IS A LIMITED WARRANTY AND IT IS THE ONLY WARRANTY MADE BY HYPERTECH. THE PURCHASER MUST COMPLETE AND MAIL TO HYPERTECH, INC. THE WARRANTY CARD WITHIN THIRTY (30) DAYS FOR WARRANTY TO APPLY. FAILURE TO DO SO VOIDS ALL THE EXPRESS WARRANTIES HEREIN SET FORTH. HYPERTECH MAKES AND CUSTOMER RECEIVES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND THERE ARE EXPRESSLY EXCLUDED ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. HYPERTECH SHALL HAVE NO LIABILITY WITH RESPECT TO ITS OBLIGATIONS UNDER THIS AGREEMENT FOR CONSEQUENTIAL, EXEMPLARY OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, EVEN IF IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. REGARDLESS OF THE FORM OF THE CLAIM, HYPERTECH'S LIABILITY FOR ANY DAMAGES TO CUSTOMER OR ANY OTHER PARTY SHALL IN NO EVENT EXCEED THE AMOUNT PAID BY THE CUSTOMER FOR SUCH PRODUCT. THIS STATED EXPRESS WARRANTY IS IN LIEU OF ALL LIABILITIES OR OBLIGATIONS OF HYPERTECH FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE DELIVERY, USE OR PERFORMANCE OF THE PRODUCT.

### RETURNED MERCHANDISE

Merchandise may be returned only if prior approval has been granted by HYPERTECH.

All merchandise returned for credit must be in perfect condition and will be inspected at time of receipt. It should be returned prepaid and insured and will be subject to a 15% handling charge. Credit only will be given; No Cash Refunds.

All merchandise returned for warranty consideration, inspection, repair, etc. must be sent prepaid and insured. Included must be the sender's name, address, telephone number and a note explaining the nature of the problem and work to be done.

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REV. 11-87

## WARRANTY CARD

Not legal for sale or use  
in California or New  
Jersey on pollution controlled motor vehicles.

PART NUMBER \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

NAME \_\_\_\_\_ AGE \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE ( ) \_\_\_\_\_

CAR MAKE \_\_\_\_\_

ENGINE SIZE \_\_\_\_\_

TRANSMISSION — MANUAL ☐ AUTOMATIC ☐

INDUCTION SYSTEM — M.F.I. ☐ T.B.I. ☐ T.P.I. ☐ CARBURETOR ☐

DATE POWER CHIP WAS PURCHASED \_\_\_\_\_

DEALER DISTRIBUTOR NAME \_\_\_\_\_

LOCATION \_\_\_\_\_

### WHAT INFLUENCED YOU TO PURCHASE A POWER CHIP?

PRICE ☐ TELEVISION ☐ SPEED SHOP ☐ FRIEND ☐ OTHER ☐

MAGAZINE ADVERTISEMENT ☐ \_\_\_\_\_

NAME OF MAGAZINE \_\_\_\_\_

# WARRANTY INFORMATION

# IMPORTANT

Place  
Stamp  
Here

**HYPERTECH**  
HIGH PERFORMANCE TECHNOLOGY™  
**2104 Hillshire Circle**  
**Memphis, Tennessee**  
**38134**

ATT: WARRANTY DEPT.

MAGAZINE ADVERTISEMENT

Page 4 of 7

# Automotive Digital Systems

\* Same Instructions  
for both "Street"  
and "Street/Strip"  
PROMs

## SUPER CHIP INSTALLATION INSTRUCTIONS \*

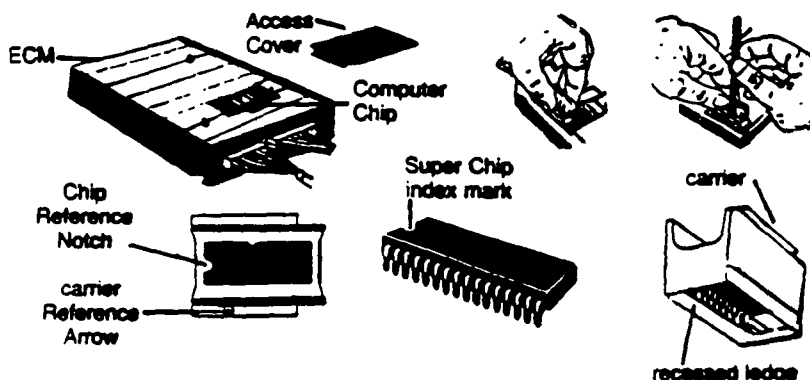
© 1987 A.D.S.

1. Make sure ignition switch is off.
2. Locate the Electronic Control Module (ECM) (under dashboard or behind passenger side kick-panel or shifter console).
3. Remove the screws attaching (ECM) computer mounting bracket to vehicle.
4. The (ECM) computer connectors should only be removed if necessary to reach chip access panel.
5. Remove the screws holding the access panel to expose computer chip.
6. Notice index mark on the chip and chip carrier. Your success depends on installing the new Super Chip in exact position as the old chip.
7. Using a small flat-bladed screwdriver, gently and evenly pry the chip carrier up until you can grasp it with fingers. While lifting upwards on the carrier, rock it back and forth until it's free from the (ECM).
8. Remove the chip from the carrier, making note of the index notch. Now install the Super Chip with the bottom of the pins even with the recessed ledge of chip carrier. Also, make note of the index notch. (NOTE: Most 1984 to 1987 chips will not have to be removed from the old carrier because A.D.S. supplies carrier with the new Super Chip.)
9. Place carrier with installed Super Chip over the socket in (ECM).
10. If the carrier did not go all the way down or would not line up with the socket, you may have made a mistake. Recheck the index marks and repeat steps 8 and 9 as needed.
11. If carrier and socket are lined up correctly and the Super Chip index mark is correct, seat the Super Chip in the socket by pressing down firmly on the center of the chip until the chip seats in socket.
12. Replace chip access cover and reinstall (ECM) computer back in vehicle.
13. If the "check engine" light comes on, check the following causes.
 

• Improper seated Super Chip .....	Reseat the Super Chip.
• Bent pins on Super Chip .....	Gently straighten pins
• Broken pins on Super Chip .....	Replace Super Chip
• Incorrect or defective Super Chip .....	Replace Super Chip
• Super Chip installed backwards .....	Replace Super Chip

### IMPORTANT

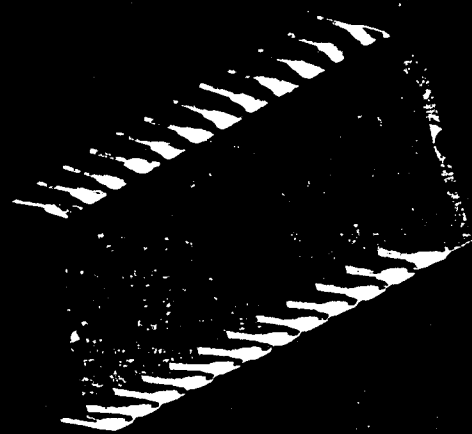
The SUPER CHIP is designed to maximize your car's performance, so it is very important to use the best available gasoline, with the highest octane rating in your area. If clutter occurs, you may need to retard your engine's timing to compensate for the lower octane fuel.



Note: The Chip Reference Notch should be going in the same direction as the Reference Arrow is pointing.



Optimizes timing and air/fuel mixture for peak acceleration  
at all RPM's  
Delays torque converter lock-up maximizing horsepower  
output with faster RPM shifting  
Improved performance without sacrificing driveability  
or economy  
Easy to install in 15 minutes. Will not damage factory data  
chip. Complete instructions included  
Limited 5 year warranty. See back panel for details



One of the most important developments in the automotive industry was the introduction of computerized engine-controlled vehicles. Today, most automobiles are controlled by an on-board computer. The on-board computer, "the brain", reacts to data input constantly received from various sensors located on the car's engine. It then makes decisions affecting fuel delivery, ignition spark advance, torque converter lock-up, EGR, etc. The removable factory data chip within the on-board computer

provides programmed instructions to make these decisions.

The ADS Super Chip™ reprograms these instructions to improve your car's performance. ADS discovered that quicker acceleration is obtained by adjusting the timing curve and air/fuel mixture. Faster RPM shifting is achieved through delaying torque converter lock-up, which maximizes horsepower output. ADS Super Chip™ improves performance without sacrificing driveability or economy.

The program for each ADS Super Chip™ is electronically tailored for each individual model application. Each application is thoroughly tested under real driving

conditions with state of the art 5th wheel road and track testing equipment. ADS engineers bring you Hi-technology performance in each ADS Super Chip™.



1. Locate computer under dash or behind passenger side kick panel.
2. Remove computer access panel.
3. Remove the factory "DATA" chip and replace with the ADS Hi-performance Super Chip™.

Complete instructions inside

All ADS Super Chips are warranted to be free from defects in material and workmanship. The extent of this limited warranty is in effect for a period of 5 years from date of purchase. This warranty becomes void if the product shows evidence of improper installation, neglect, or abuse. This warranty limits any implied warranty, and no company, organization, or person may assume any other liability in connection with the sale of this product. In no event will ADS be liable for special or consequential damages, with the exception of states that do not allow the exclusion or limitation of incidental damages.

Premium gasoline required. Not legal for sale or use in California on pollution controlled vehicles.

AUTOMOTIVE DIGITAL SYSTEMS HIGHWAY 155 SOUTH TYLER, TEXAS 75703  
1987