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DOT-HS-805 237

POTENTIAL OF
SPARK IGNITION AND
DIESEL ENGINES,
ENGINE CATALOG AND PERFORMANCE ANALYSIS

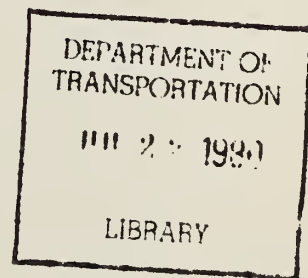
James A. Kidd, Jr.
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U.S. Department of Transportation
Research and Special Programs Administration
Transportation Systems Center
Cambridge MA 02142



MARCH 1980
FINAL REPORT

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for
U.S. DEPARTMENT OF TRANSPORTATION
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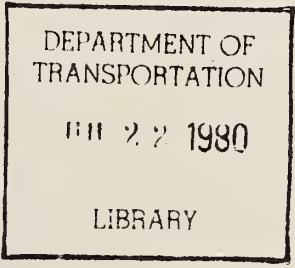
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DOT-TSC-NHTSA-
79-39

1. Report No. DOT-HS-805 237		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle POTENTIAL OF SPARK IGNITION AND DIESEL ENGINES, ENGINE CATALOG AND PERFORMANCE ANALYSIS				5. Report Date March 1980	
				6. Performing Organization Code	
7. Author(s) James A. Kidd, Jr. and Joseph J. Rogowicz				8. Performing Organization Report No. DOT-TSC-NHTSA-79-39	
9. Performing Organization Name and Address U.S. Department of Transportation, Research and Special Programs Administration Transportation Systems Center, Cambridge MA 02142				10. Work Unit No. (TRAIS) HS027/R0404	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Research and Development Washington DC 20590				13. Type of Report and Period Covered Final Report	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract Detailed specifications and EPA certification data for 134 automotive production engines (60 domestic and 74 imported) which are used in the United States and several preproduction engines are provided. When available, experimentally derived performance data are included for fuel consumption and pre- and post-catalyst emissions (carbon monoxide, hydrocarbons, and oxides of nitrogen) at steady-state engine operating modes. The fuel economy data are employed in four different engine assessment methodologies.					
17. Key Words BSFC Curve Comparisons, Time Distribution Matrix, Engine Scaling with VEHSIM, Maximum Engine Brake Horsepower				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22161	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 638	22. Price



PREFACE

This report, DOT-TSC-NHTSA-79-39, is one of a series of companion reports to DOT-TSC-NHTSA-79-52 "Potential of Spark Ignition Engine, 1979 Summary Source Document"* and also to DOT-TSC-NHTSA-79-38 "Potential of Diesel Engine, 1979 Summary Source Document."** It presents the specifications and steady state fuel consumption and emissions maps for a number of 1975 through 1978 production, automobile and light truck engines. It compares the efficiency and weight of several engines.

This report is a deliverable under PPA HS-027 "Support for Research and Analysis in Auto Fuel Economy and Related Areas."

*"Potential of Spark Ignition Engine, 1979 Summary Source Document," by T. Trella, R. Zub and R. Colello, Report No. DOT-TSC-NHTSA-79-52, March, 1980.

**"Potential of Diesel Engine, 1979 Summary Source Document," by T. Trella, Report No. DOT-TSC-NHTSA-79-38, March, 1980.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures				Approximate Conversions from Metric Measures			
Symbol	What You Know	Multiply by	To Find	Symbol	What You Know	Multiply by	To Find
LENGTH							
in	inches	2.5	centimeters	mm	millimeters	0.04	inches
ft	feet	30	centimeters	cm	centimeters	0.4	inches
yd	yards	0.9	meters	m	meters	3.3	feet
mi	miles	1.6	kilometers	km	kilometers	0.6	miles
AREA							
m ²	square inches	6.5	square centimeters	cm ²	square centimeters	0.16	square inches
ft ²	square feet	0.09	square meters	m ²	square meters	1.2	square yards
yd ²	square yards	0.8	square meters	km ²	square kilometers	0.4	square miles
mi ²	square miles	2.6	square kilometers	ha	hectares (10,000 m ²)	2.6	acres
	acres	0.4	hectares				
MASS (weight)							
oz	ounces	28	grams	g	grams	0.035	ounces
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds
	short tons (2000 lb)	0.9	tonnes	t	tonnes (1000 kg)	1.1	short tons
VOLUME							
teaspoon	teaspoons	6	milliliters	ml	milliliters	0.03	fluid ounces
fl oz	fluid ounces	15	milliliters	l	liters	2.1	pints
cup	cup	30	milliliters	qt	quarts	1.06	gallons
pt	pints	0.24	liters	m ³	cubic meters	0.26	gallons
qt	quarts	0.47	liters	m ³	cubic meters	35	cubic feet
gal	gallons	0.96	liters	m ³	cubic meters	1.3	cubic yards
cu ft	cubic feet	3.8	liters				
cu yd	cubic yards	0.03	cubic meters				
		0.76	cubic meters				
TEMPERATURE (exact)							
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature

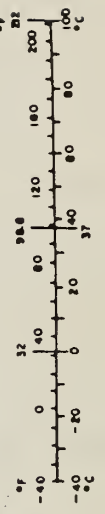


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1. INTRODUCTION

This document contains data for engines used currently in passenger automobiles, light trucks and vans. The information includes engine specifications, their respective Environmental Protection Agency certification data, and available steady-state engine maps.

Twenty five of the steady-state engine tests (fuel consumption and regulated emissions) were generated for the U.S. Department of Transportation, Transportation Systems Center, Energy Technology Branch by the U.S. Department of Energy, Bartlesville Energy Technology Center.* General Motors provided three sets of engine performance data; Ricardo Consulting Engineers provided data for three pre-production engines.**

The document is manufacturer specific. For each manufacturer, engines are sequenced in order of ascending CID. For each engine, a set of specifications is given followed by its EPA certification data and available performance analysis information (in reverse chronological order).

The catalog contains a total of 134 engines. Of these, 60 are produced by domestic manufacturers as follows: twenty-two General Motors, fourteen Fords, twelve Chrysler, six American Motors, and four International Harvester. Seventy-four (including three pre-production) engines are manufactured by foreign companies.

* At the time of testing, this facility was designated as Bartlesville Energy Research Center (BERC), and is so referenced on the applicable tables. (See page 5-8, for example.)

** Sources are indicated within the document.

2. TEST PROCEDURES AND MEASUREMENTS

Bartlesville Energy Technology Center employed the following test procedures. A mean-tolerance engine was mounted on a test stand and coupled to an eddy-current dynamometer. Except for a fan, the engine was complete. The radiator was replaced by a cooling tower; generally an alternator was included, but it was not wired into the electrical system. If an engine was tested with a catalytic converter, precatalyst and post-catalyst emissions data are given. Engine break-in on the dynamometer consisted of approximately 40 hours of engine operation at various speeds and loads designed to simulate road/load conditions. Details of a representative break-in schedule are shown in Table 2-1. The tests are designed to determine fuel consumption and emissions (carbon monoxide, hydrocarbons, and oxides of nitrogen) at steady-state operating modes. Relevant instrumentation is listed in Table 2-2.

The following equations were used in calculating power, air/fuel ratio, absolute humidity, and mass emission rates of carbon monoxide (CO), unburned hydrocarbons (HC), and oxides of nitrogen (NO_x):

1. Partial pressure of water vapor in intake air (millimeters of mercury):

$$P = \exp \left[18.717 - \frac{7308.1}{393 + D} \right]$$

where D = Dew point, °F

2. Absolute humidity (grains* moisture per pound dry air):

$$H = \frac{4347.8(P)}{B - P}$$

where B = Barometric pressure, mm Hg

* Grain = $1.428 (10)^{-4}$ pounds.

TABLE 2-1. ENGINE BREAK-IN SCHEDULE

Simulated Vehicle speed, mph	Engine speed, rpm	Manifold vacuum, in. Hg	Fraction of time in mode
0	Idle	15.0	1/10
one complete cycle	20	1,350	"
	30	1,600	"
	40	1,950	"
	50	2,250	"
	25	1,500	"
	35	1,800	"
	45	2,050	"
	55	2,550	"
	60	2,750	"

Time per cycle = 2-1/2 hours.

Mileage per cycle = 90 miles.

Number of cycles = 16

Total mileage accumulated over the 40 hour break-in period = 1,440 miles.

TABLE 2-2. INSTRUMENTATION

PARAMETER AND UNITS	MEASURING DEVICE
Torque foot-pounds	Baldwin Lima Hamilton strain gauge load cell; Daytronics indicator
Fuel Rate pounds/hour	Fluidyne positive displacement fuel flow meter
Carbon Monoxide (CO) percent	Beckman Non-Dispersive Infrared
Carbon Dioxide (CO ₂) percent	Beckman Non-Dispersive Infrared
Oxygen (O ₂) percent	Beckman polarographic detector
Hydrocarbons .. (HC) parts/million	Custom built, heated, flame ionization detector
Oxides of Nitrogen (NO _x) parts/million	Thermo-Electron chemiluminescent detector

3. Humidity correction factor (dimensionless):

$$K_H = \frac{1}{1 - 0.0047(H - 75)}$$

Note: This factor is used to correct the NO_x mass emission rate to a standard humidity of 75 grains moisture per pound dry air.

4. Stoichiometric air/fuel ratio (dimensionless):

$$\text{AF}_s = \frac{69 \left(2 + \frac{x}{2} - y \right)}{\text{MW}_{\text{fuel}}}$$

where x = hydrogen-carbon atomic ratio of fuel

y = oxygen-carbon atomic ratio of fuel

MW_{fuel} = fuel molecular weight per carbon atom
= $12.01115 + 1.00797x + 15.9994y$

5. Hydrogen concentration in raw exhaust (percent):

$$H_2 = \frac{x(\text{CO})(\text{CO} + \text{CO}_2)}{2(\text{CO} + 3\text{CO}_2)}$$

where CO = Carbon monoxide concentration (percent)

CO_2 = Carbon dioxide concentration (percent)

Note: This equation assumes a water-gas shift equilibrium constant

$$\frac{(\text{CO})(\text{H}_2\text{O})}{(\text{CO}_2)(\text{H}_2)} = 3$$

6. Correction factor for emission concentrations from wet basis to dry basis (dimensionless):

$$C_w = 1 + \frac{\left(\frac{x}{2}\right)(\text{CO} + \text{CO}_2) - H_2}{100}$$

Note: In these tests only HC is measured on a wet basis. All other species are measured on a dry basis.

7. Air/Fuel ratio (Dimensionless):

$$AF = \frac{AF_s}{2 + \frac{x}{2} - y} \left[\frac{\left(1 + \frac{x}{2} - y\right)(CO) + \left(2 + \frac{x}{2} - y\right)(CO_2) + 2(O_2) + \frac{NO_x}{10^4} - 11_2}{CO + CO_2 + C_w \left(\frac{HC}{10^4}\right)} \right]$$

where O_2 = oxygen concentration (percent)

NO_x = oxides of nitrogen (ppm)

HC = unburned hydrocarbon concentration (ppmC)

8. Exhaust flow (pounds per hour):

$$M_{EX} = M_F(1 + AF)$$

where M_F = fuel flow rate (pounds per hour)

9. Carbon monoxide mass emission rate (grams per hour):

$$M_{CO} = \frac{M_{EX}}{C_w} \left(\frac{CO}{100} \right) \left(\frac{MW_{CO}}{MW_{EX}} \right) 453.59237$$

where MW_{CO} = molecular weight of CO (=28.01115)

MW_{EX} = molecular weight of exhaust gas (=28.967)

10. Unburned hydrocarbon mass emission rate (grams per hour):

$$M_{HC} = M_{EX} \left(\frac{HC}{10^6} \right) \left(\frac{MW_{HC}}{MW_{EX}} \right) 453.59237$$

where MW_{HC} = molecular weight per carbon atom of HC

= $12.01115 + 1.00797x + 15.9994y$

11. Oxides of nitrogen mass emission rate (grams per hour):

$$M_{NO_x} = \frac{M_{EX}}{C_w} \left(\frac{NO_x}{10^6} \right) \left(\frac{MW_{NO_x}}{MW_{EX}} \right) (K_H) 453.59237$$

where MW_{NO_x} = molecular weight of NO_2 (=46.0028)

12. Power (brake horsepower corrected to a standard barometric pressure of 736.6 mm Hg and a standard temperature of 85° F):

$$HP = \frac{N(T)}{5252.113} \left(\frac{736.6}{B - P} \right) \sqrt{\frac{t + 460}{545}}$$

Where N = engine speed (revolutions per minute)

T = brake torque (foot-pounds)

t = air temperature (°F)

Ref. 1-20

3. DISCUSSION OF DATA AND DATA FORMAT

Engine maps are topographical representations which display an engine's operational envelope and its performance characteristics within that envelope. The contoured structure of the engine performance maps enhances the conceptualization of how engine operational parameters interact and facilitates the analysis of these interfacing variables. This chapter discusses engine map derivation and the types of maps presented within this document.

The engine performance maps are derived from the results of curve fitting test data. Most of the test data is available in the engine test reports which are listed in Section 11.1, References 11.1 through 11.20.

The data curve fitting program utilizes the least squares method to produce equations which approximate various engine parameters. The data for each specific parameter at a given engine test speed is represented as a function of brake horsepower.

Fuel flow uses:

$$Y = \sum_0^4 C_n X^n$$

Carbon monoxide (CO), hydrocarbons (HC), and oxides of nitrogen (NO_x) use:

$$\ln Y = \sum_0^n C_n X^n$$

with $n = 5, 5,$ and 7 respectively. Note that, although the magnitudes of carbon monoxide and hydrocarbon emissions are different (CO exceeds HC), $n = 5$ for both CO+HC because they share similar graphical characteristics. Ref. 11.1.21.

The engine maps display a dependent variable as a function of one or two independent variables. The following maps are presented:

FUEL MAPS

$$\text{BSFC} = f(\text{BHP}, \text{RPM})$$

$$\text{Minimum BSFC}^* = f(\text{BHP})$$

$$\text{BSFC} = f(\text{BMEP}, \text{PS})$$

EMISSIONS MAPS

$$\text{Engine out BSCO} = f(\text{BMEP}, \text{PS})$$

$$\text{Exhaust (post catalyst) BSCO} = f(\text{BMEP}, \text{PS})$$

$$\text{Engine out BSHC} = f(\text{BMEP}, \text{PS})$$

$$\text{Exhaust (post catalyst) BSHC} = f(\text{BMEP}, \text{PS})$$

$$\text{Engine out BSNO}_x = f(\text{BMEP}, \text{PS})$$

$$\text{Exhaust (post catalyst) BSNO}_x = f(\text{BMEP}, \text{PS})$$

Notes:

BSFC = Brake Specific Fuel Consumption

Engine Out Emissions = Emissions as measured out of engine and prior to exhaust system entry

BSCO = Brake Specific Carbon Monoxide

BSHC = Brake Specific Hydrocarbons

BSNO_x = Brake Specific Nitrogen Oxides

BMEP = Brake Mean Effective Pressure.

PS = Piston Speed

*The minimum BSFC curves can be derived directly from the BSFC = f(BHP, RPM) map. They display an optimum (minimum fuel consumption) path through the preceding engine map. This path assumes the use of an ideal continuously variable ratio transmission.

4. ENGINE PERFORMANCE COMPARISONS

4.1 GENERAL

The chapters representing individual manufacturers provide separate information for each engine. This chapter draws the empirical information together and facilitates the comparison of various engine performance characteristics. The engine data analysis is accomplished through four methodologies:

1. Minimum BSFC Curve Comparisons
2. Percent Time Distribution Matrix Assessment
3. Engine Scaling with Vehicle Simulation
4. Engine Weight vs. Maximum Engine Brake Horsepower.

Each methodology represents a different approach to comparing engine performance. Because the different comparison techniques use separate criteria for assessment, the results should be considered with respect to the mode of operation represented within each separate methodology. Therefore, results are not directly transferable from one section to another.

4.2 MINIMUM BSFC CURVE COMPARISONS

Minimum BSFC curves are aggregated into the following categories: spark ignition engines with four, six, and eight cylinders by model year, and diesel engines. A rotary engine is included with the four cylinder spark ignition engines. The BSFC "fishhook" curves represent a potential (minimum fuel consumption) path through a $BSFC = f(BHP, RPM)$ performance map. Such optimum tracking assumes the utilization of an ideal continuously variable ratio transmission with an electronic feedback control system. (See Figures 4-1 to 4-9.)

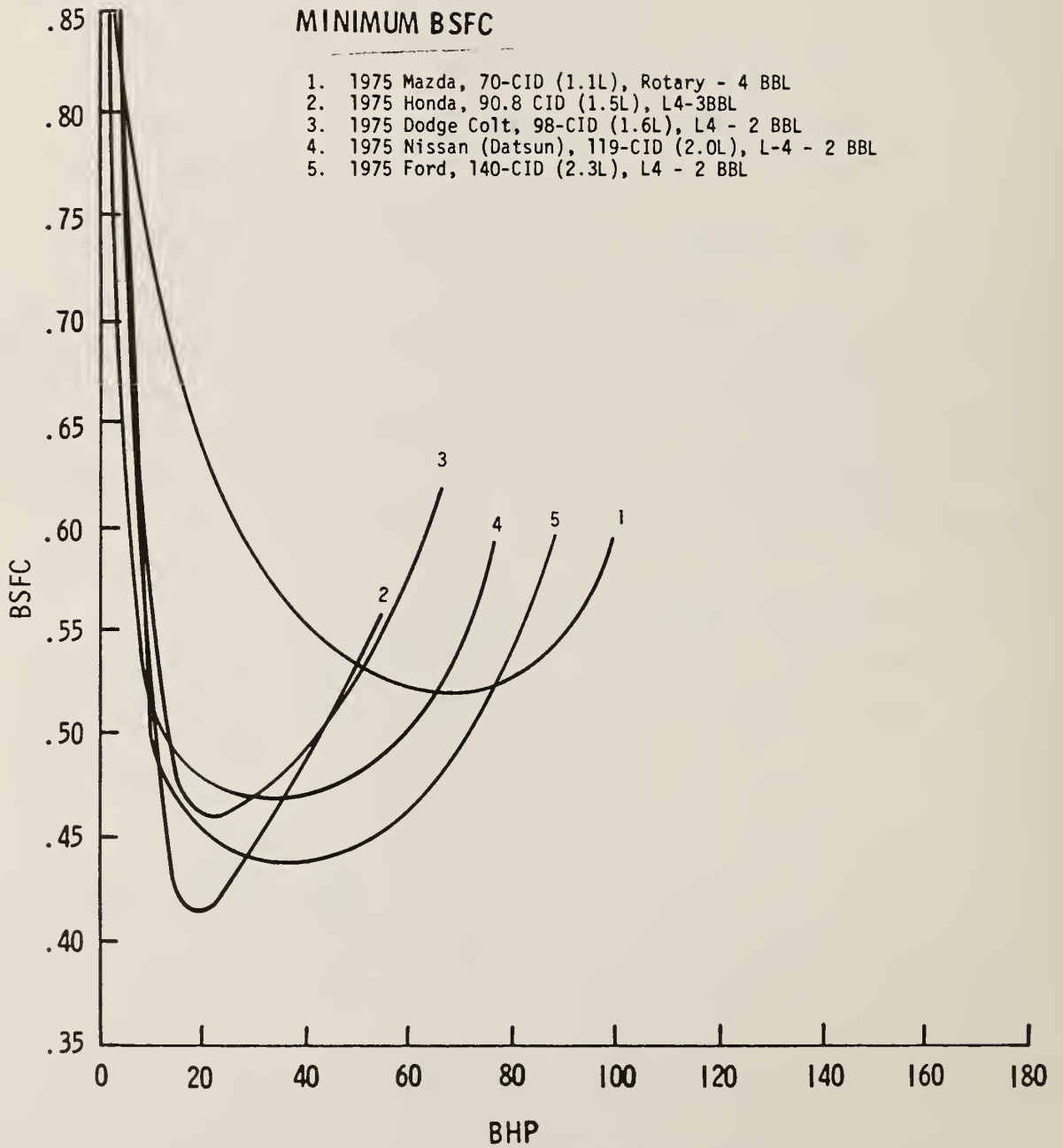


FIGURE 4-1 1975 4-CYLINDER ENGINES

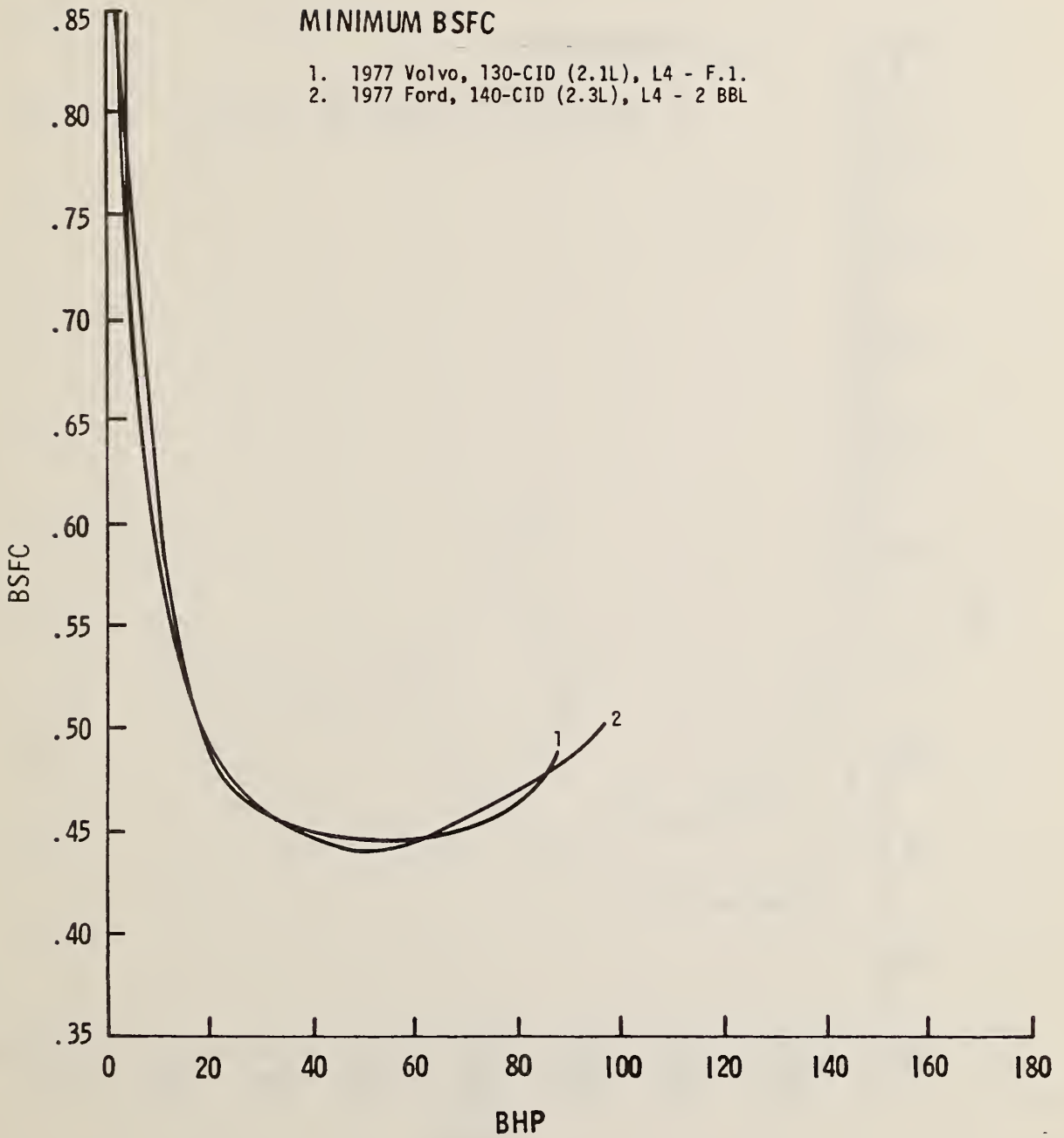


FIGURE 4-2 1977 4-CYLINDER ENGINES

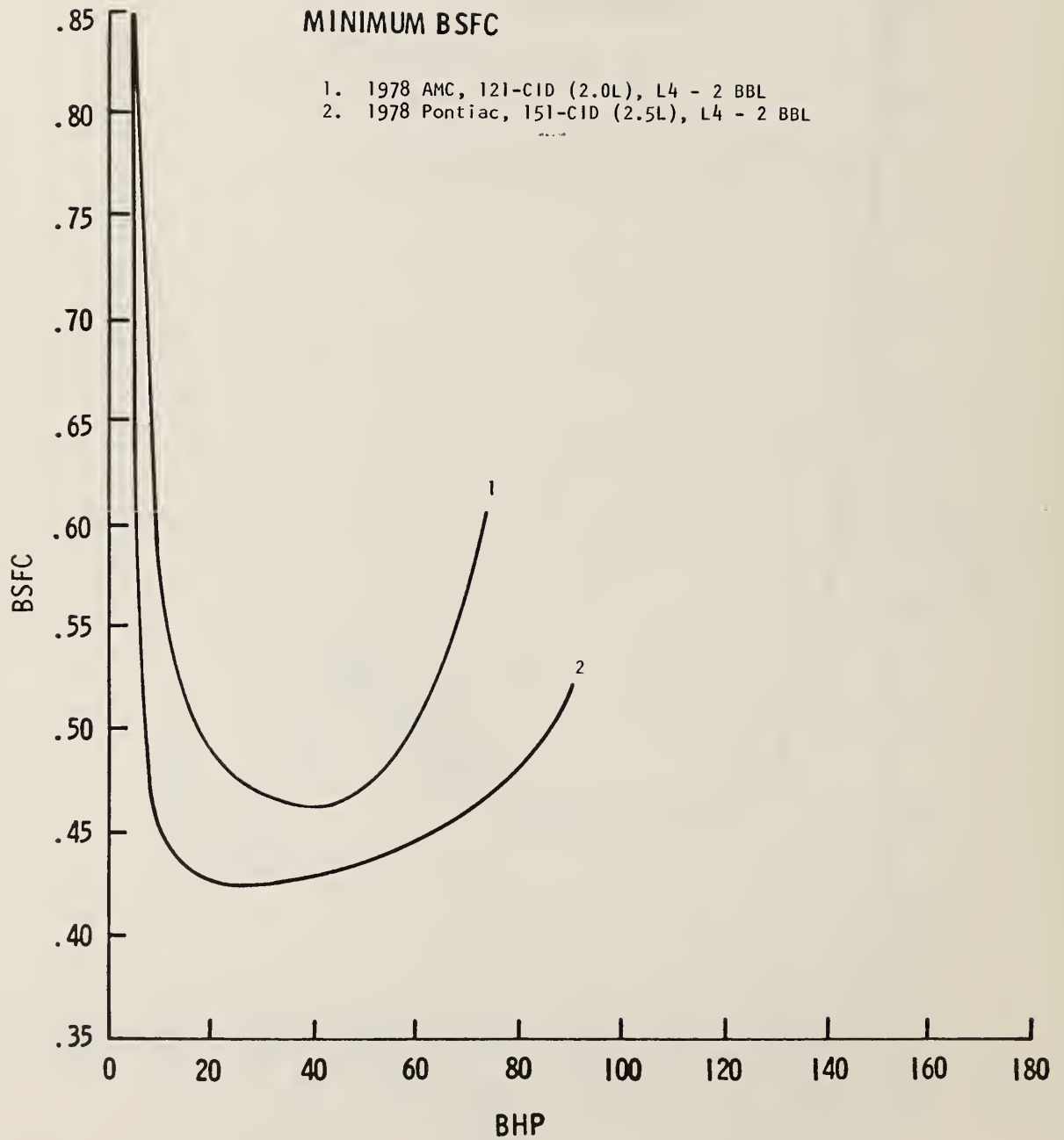


FIGURE 4-3 1978 4-CYLINDER ENGINES

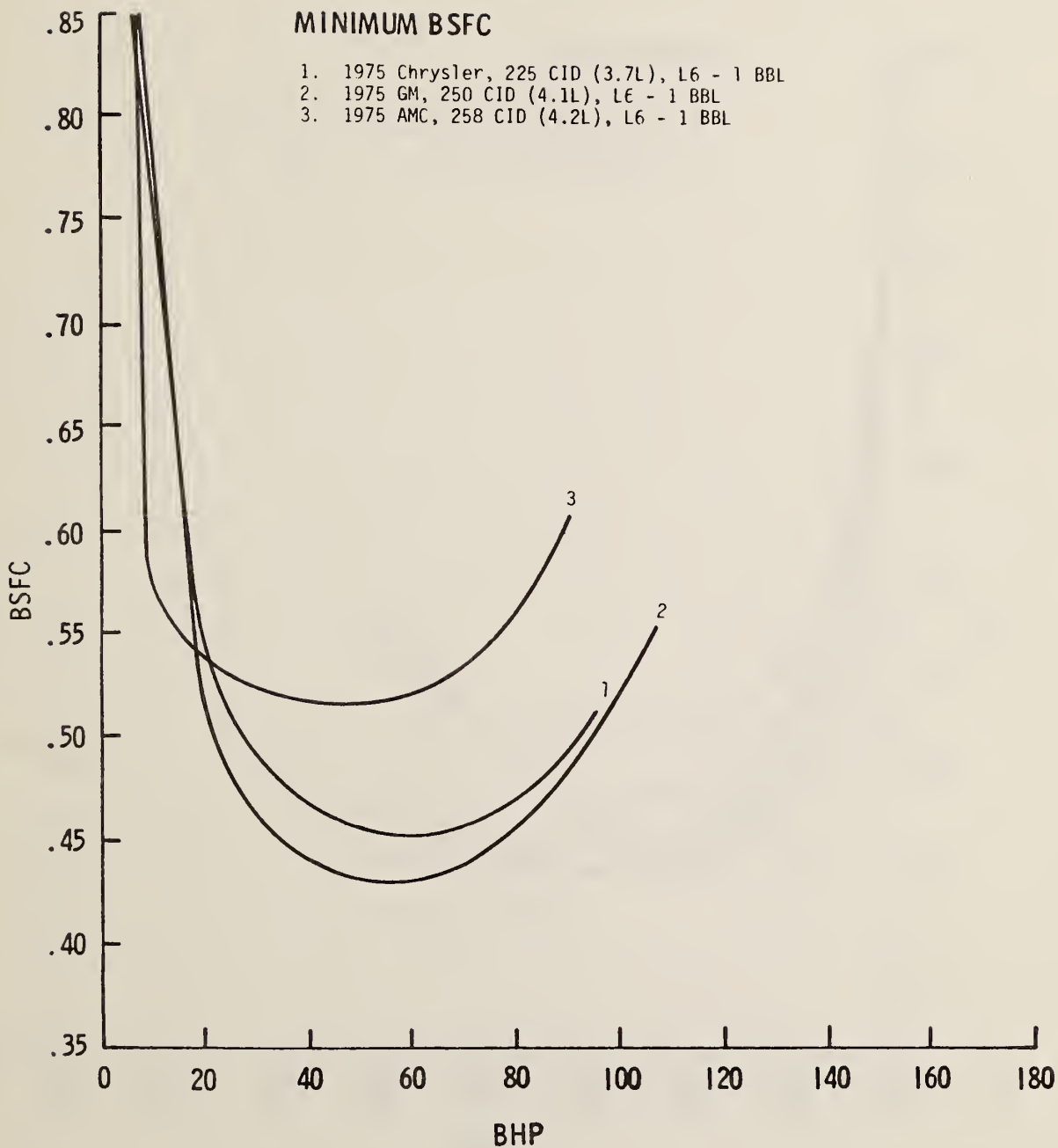


FIGURE 4-4 1975 6-CYLINDER ENGINES

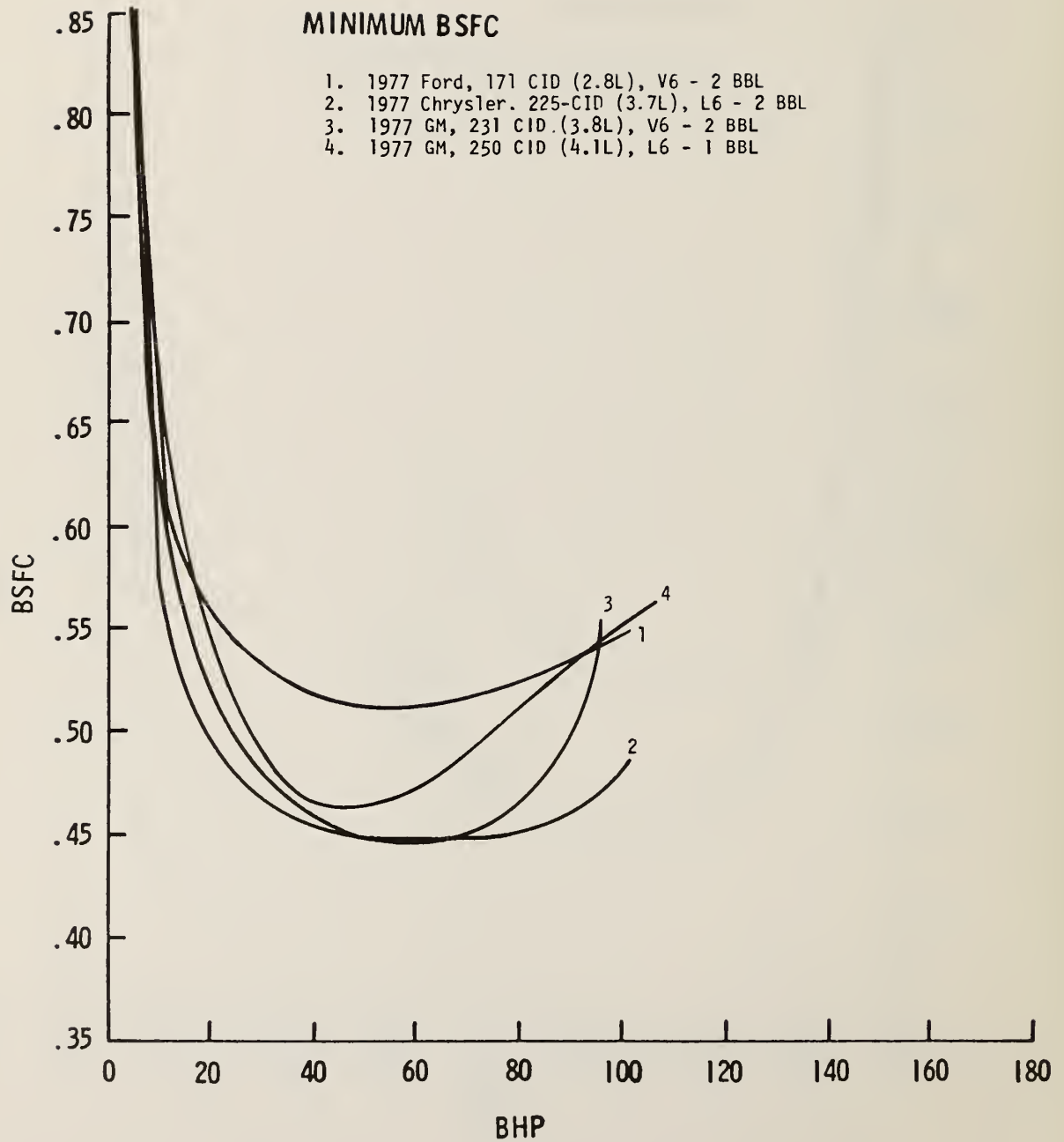


FIGURE 4-5 1977 6-CYLINDER ENGINES

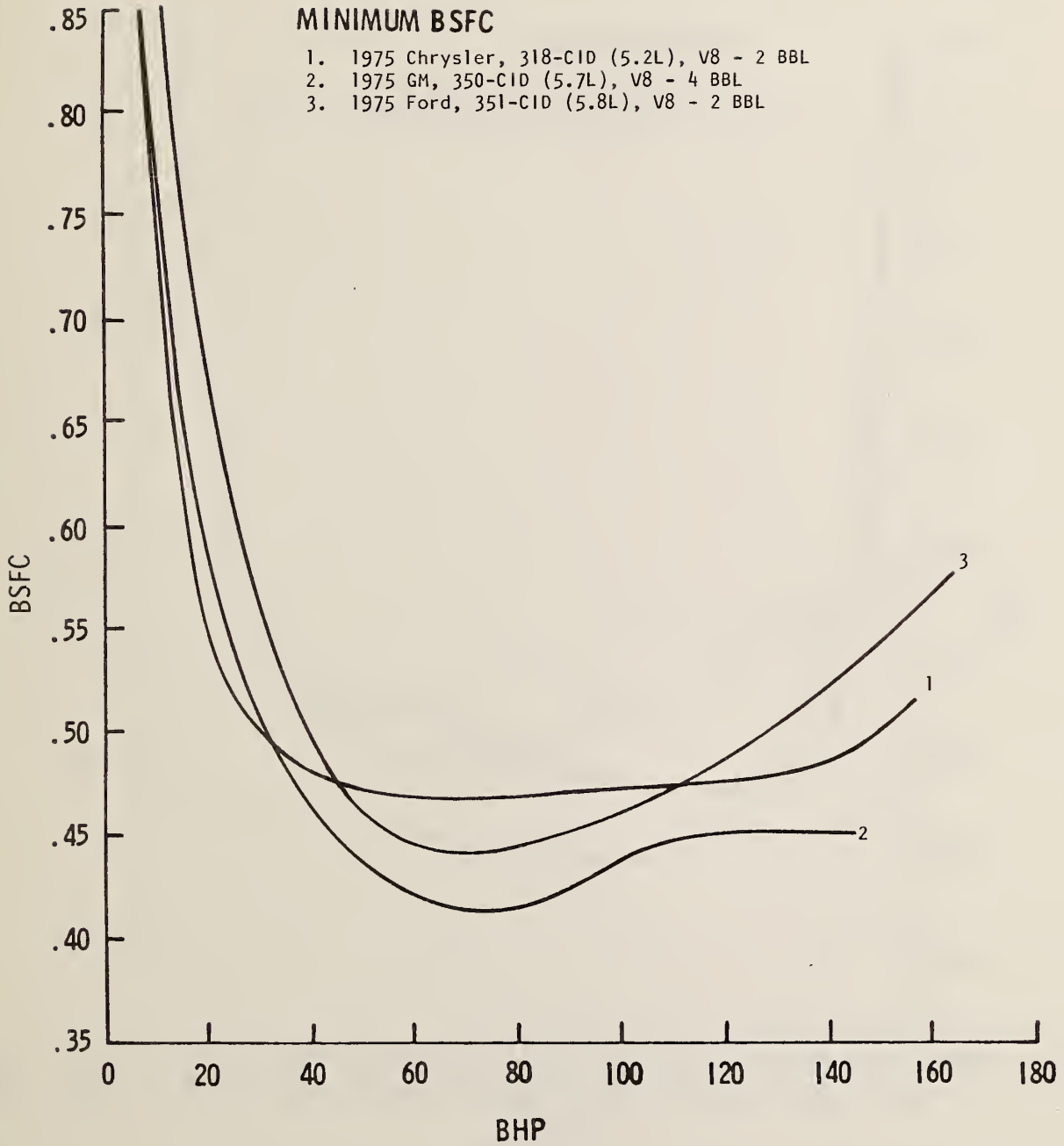


FIGURE 4-6 1975 8-CYLINDER ENGINES

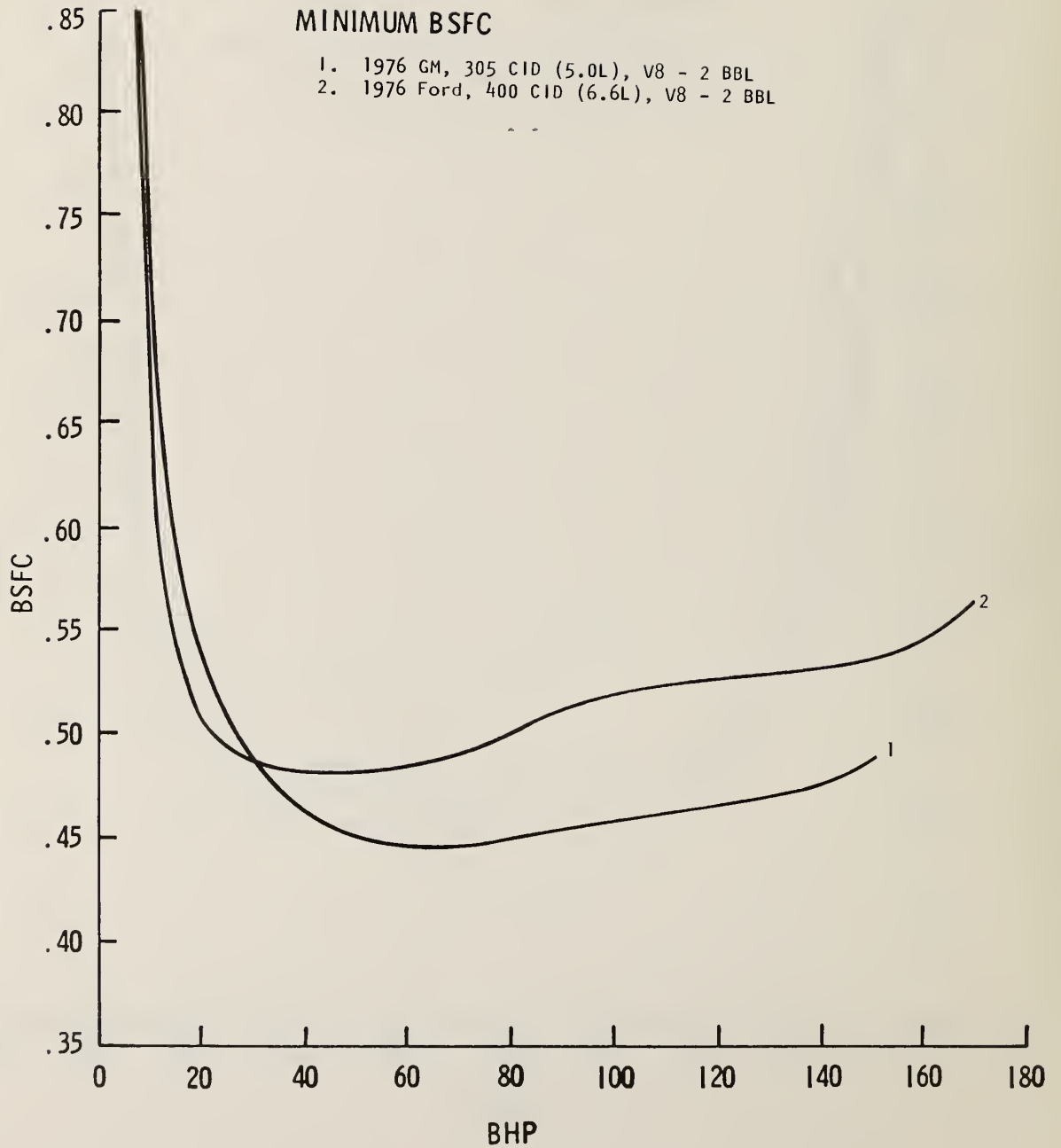


FIGURE 4-7 1976 8-CYLINDER ENGINES

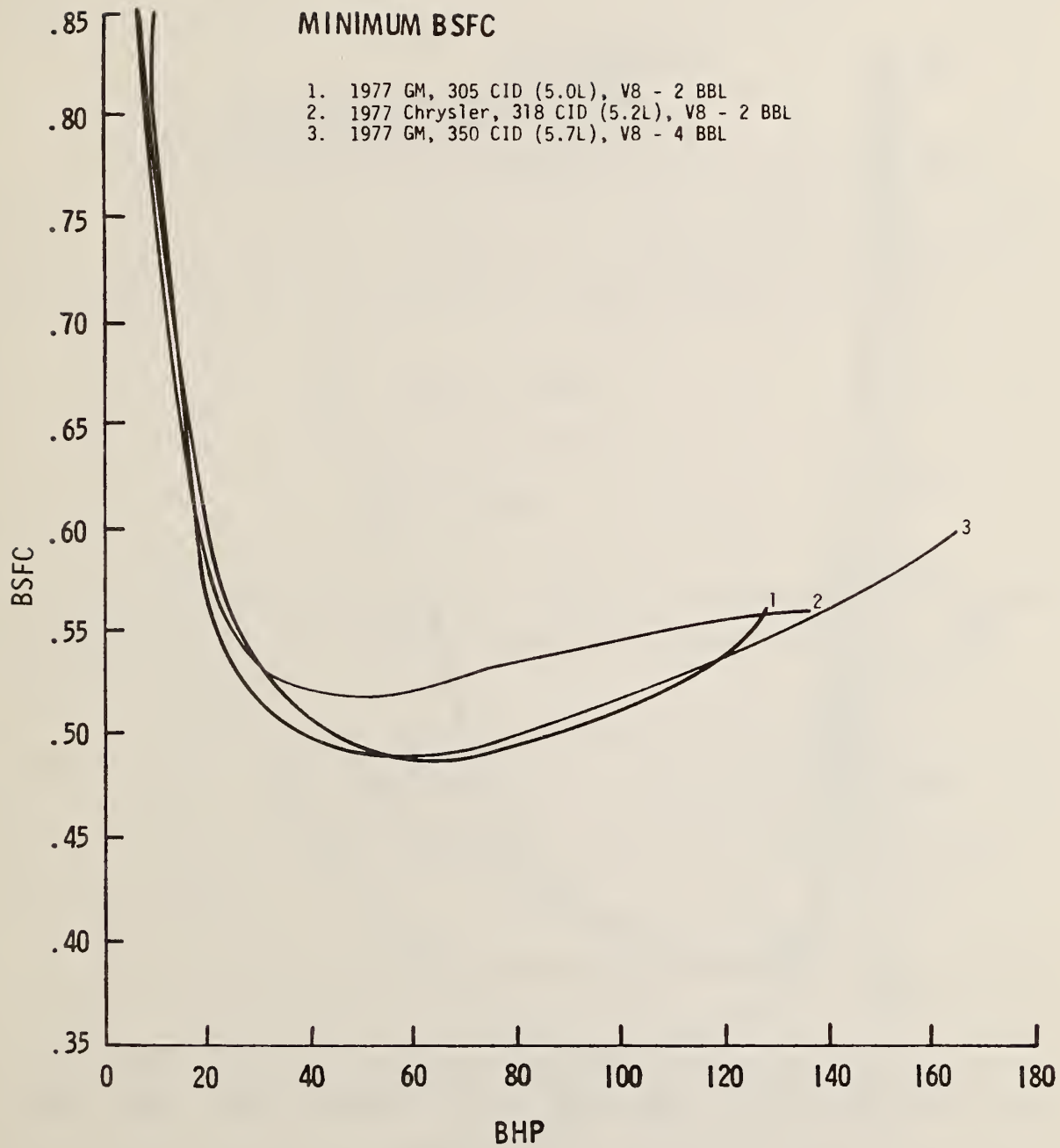


FIGURE 4-8 1977 8-CYLINDER ENGINES

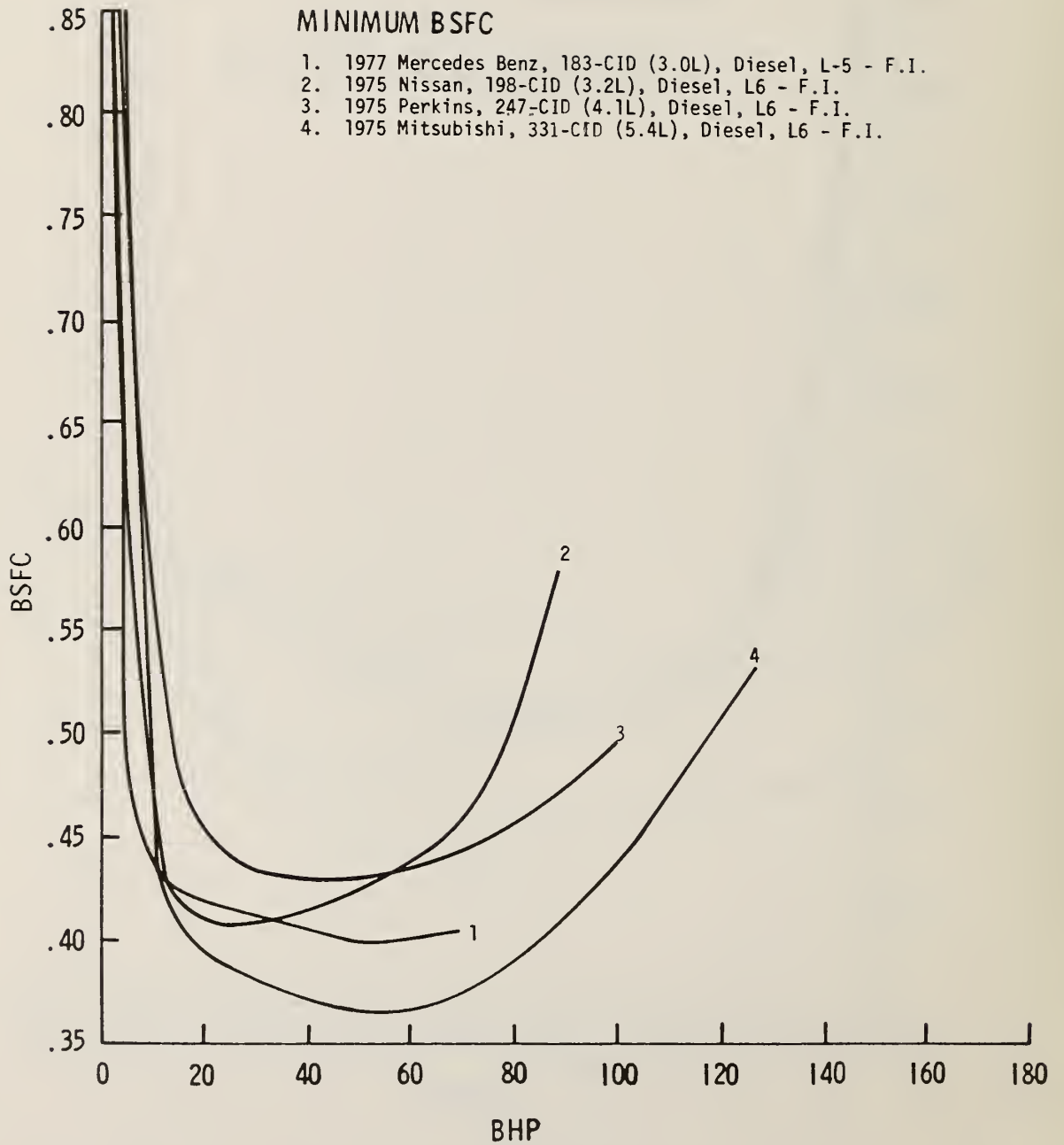


FIGURE 4-9 FUEL INJECTED DIESEL ENGINES

4.3 PERCENT TIME DISTRIBUTION MATRIX ASSESSMENT

Twenty-eight engine minimum BSFC curves are aggregated into five vehicular groups: subcompact, compact, mid-size, full size, and light truck. These aggregations are made by placing each engine into a representative vehicle inertia weight class. Engine and vehicle matching is done by approximating:

$$\frac{\text{Maximum Engine BHP}}{\text{Vehicle Inertia Weight}} = .03$$

A percent time distribution matrix is generated for each inertia weight class for both the EPA Urban and EPA Highway drive cycles. For each cycle a primary and secondary brake horsepower design point will be determined by using weighted averaging:

$$\frac{\sum_{1}^{5} (\text{BHP})(\% \text{ time})}{\sum_{1}^{5} (\% \text{ time})} .$$

This procedure results in a primary and secondary BHP design point which represent maximum areas of utilization on the time distribution matrix.

Thus, four design points are generated for each inertia weight class. Because a large percentage of the total urban drive cycle time is spent at idle, this will be considered the secondary design point for that cycle and will not be shown on the minimum BSFC curve aggregations.

The five vehicle classes and their respective design points are listed in Table 4-1).

Because brake horsepower is a dynamic quantity, the actual instantaneous BHP requirement will change substantially with various driving conditions. Since there are minimum BSFC plots for each engine which is aggregated into a vehicle inertia weight class, the cross over points (minimum BSFC curves with design points and, when appropriate, minimum BSFC curves with other minimum BSFC curves) and lapse rates can be used to compare several engines. See Figures 4-10 through 4-14.

TABLE 4-1. VEHICLE CLASSES AND DESIGN POINTS

VEHICLE CLASSES	INERTIA WEIGHT (lbs)	URBAN DRIVE CYCLE		HIGHWAY DRIVE CYCLE	
		Primary Design Point (BHP)	Secondary Design Point (BHP)	Primary Design Point (BHP)	Secondary Design Point (BHP)
Subcompact	2000	7.0	Idle	16.5	10.5
Compact	2500	7.0	Idle	16.5	10.5
Mid-Size	3500	7.1	Idle	19.5	13.5
Full Size	4000	7.2	Idle	22.5	16.5
Light Truck	4500	7.2	Idle	25.5	16.5

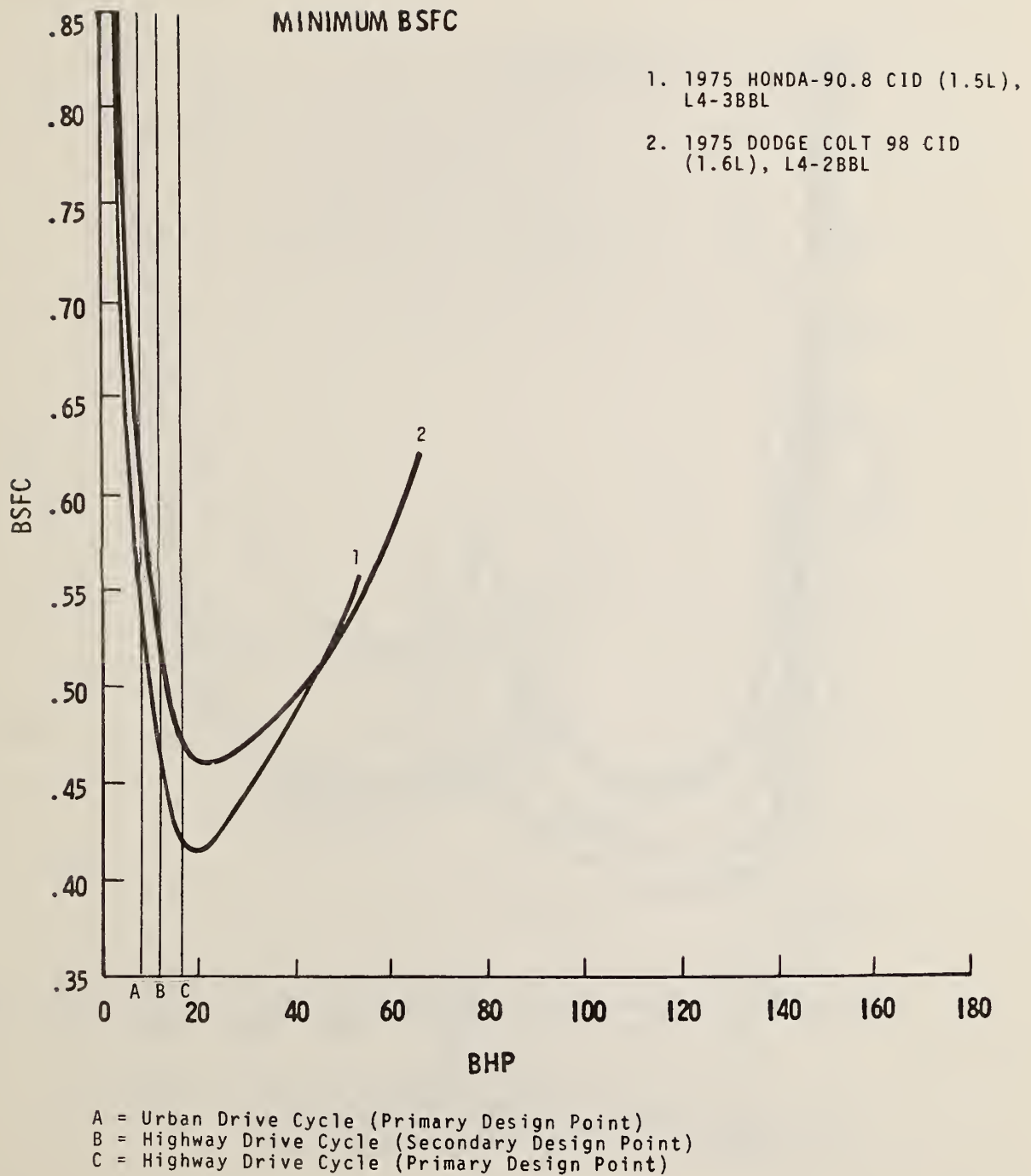


FIGURE 4-10 2000 POUND INERTIA WEIGHT CLASS

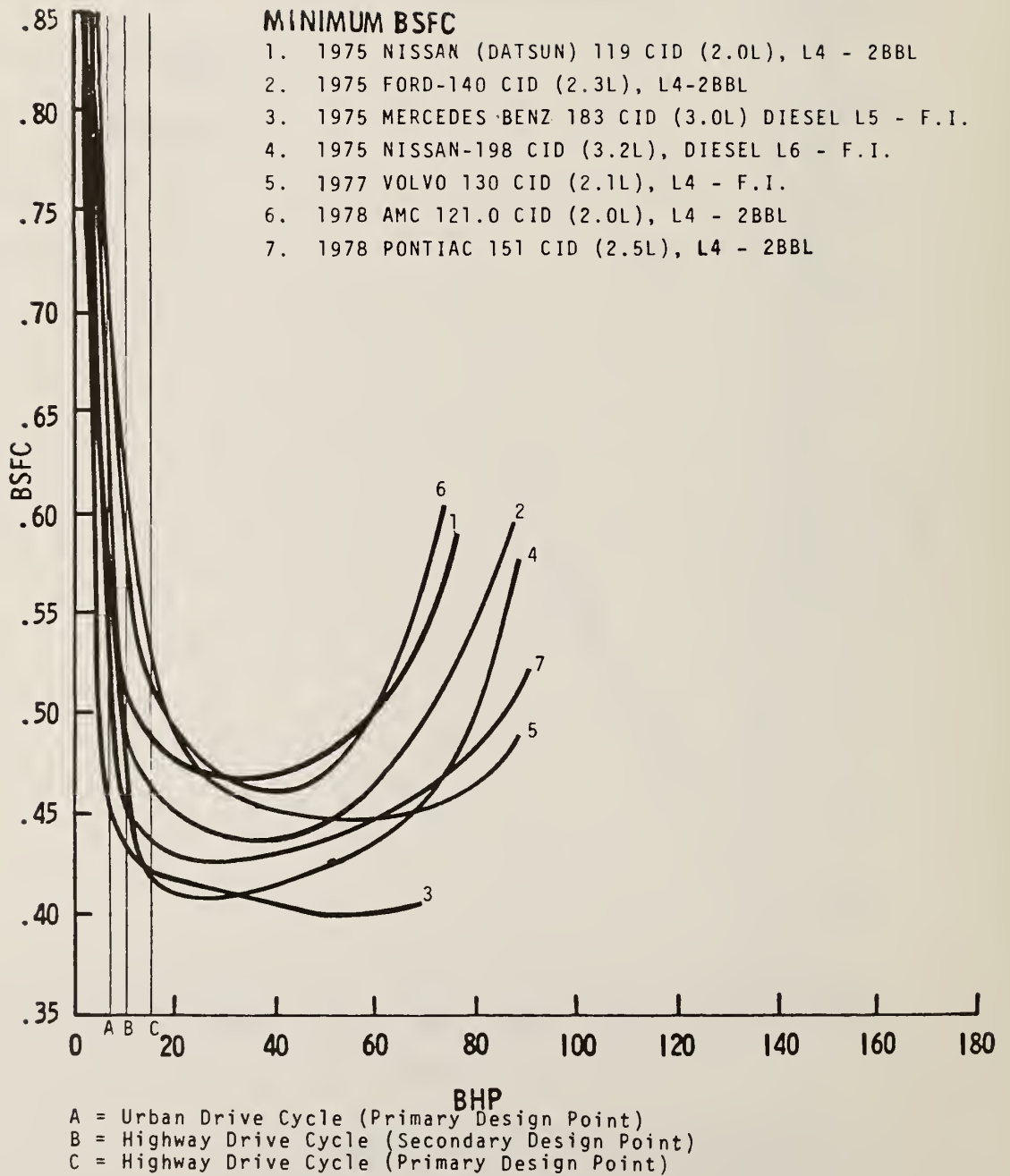


FIGURE 4-11 2500 POUND INERTIA WEIGHT CLASS

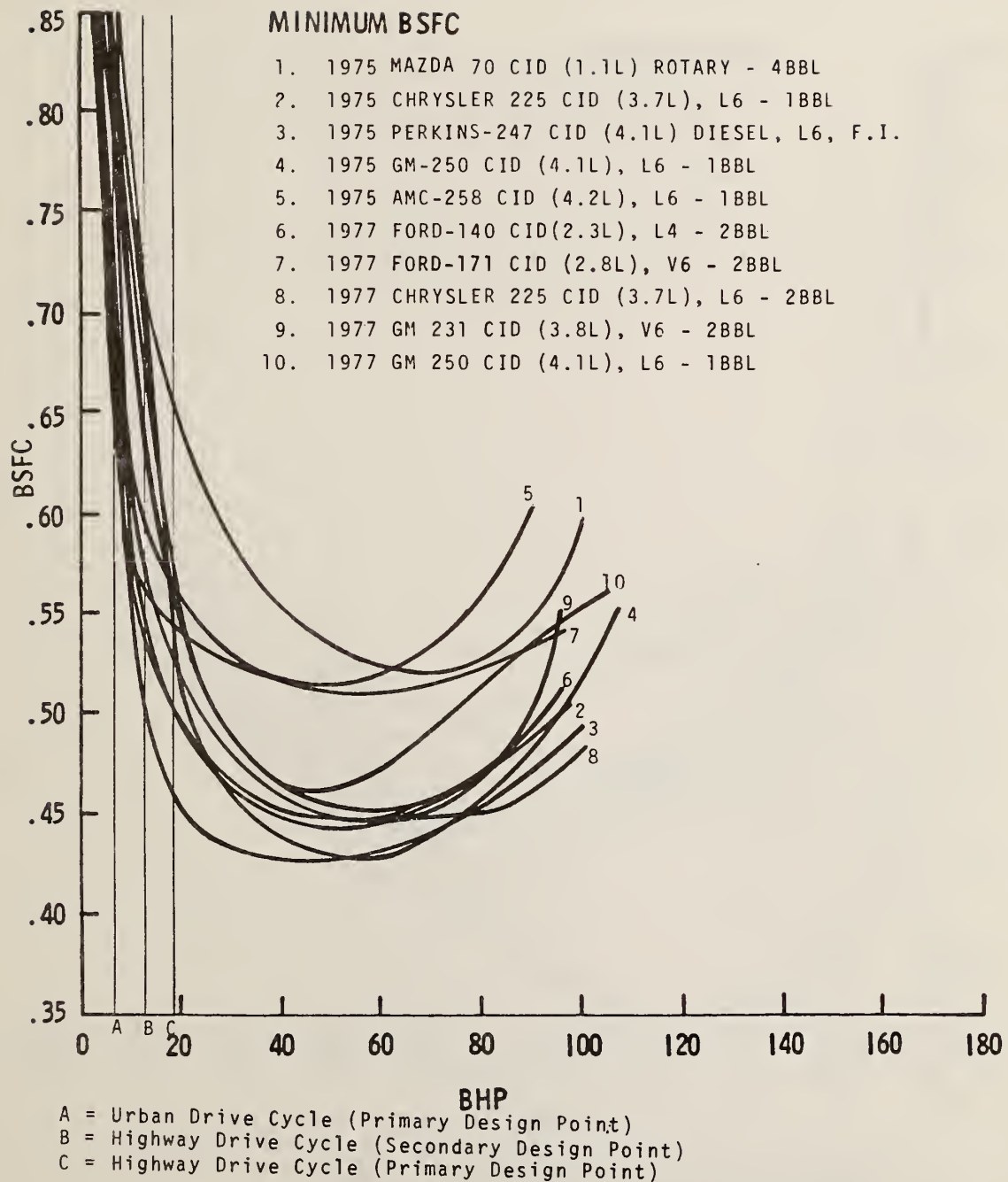


FIGURE 4-12 3500 POUND INERTIA WEIGHT CLASS

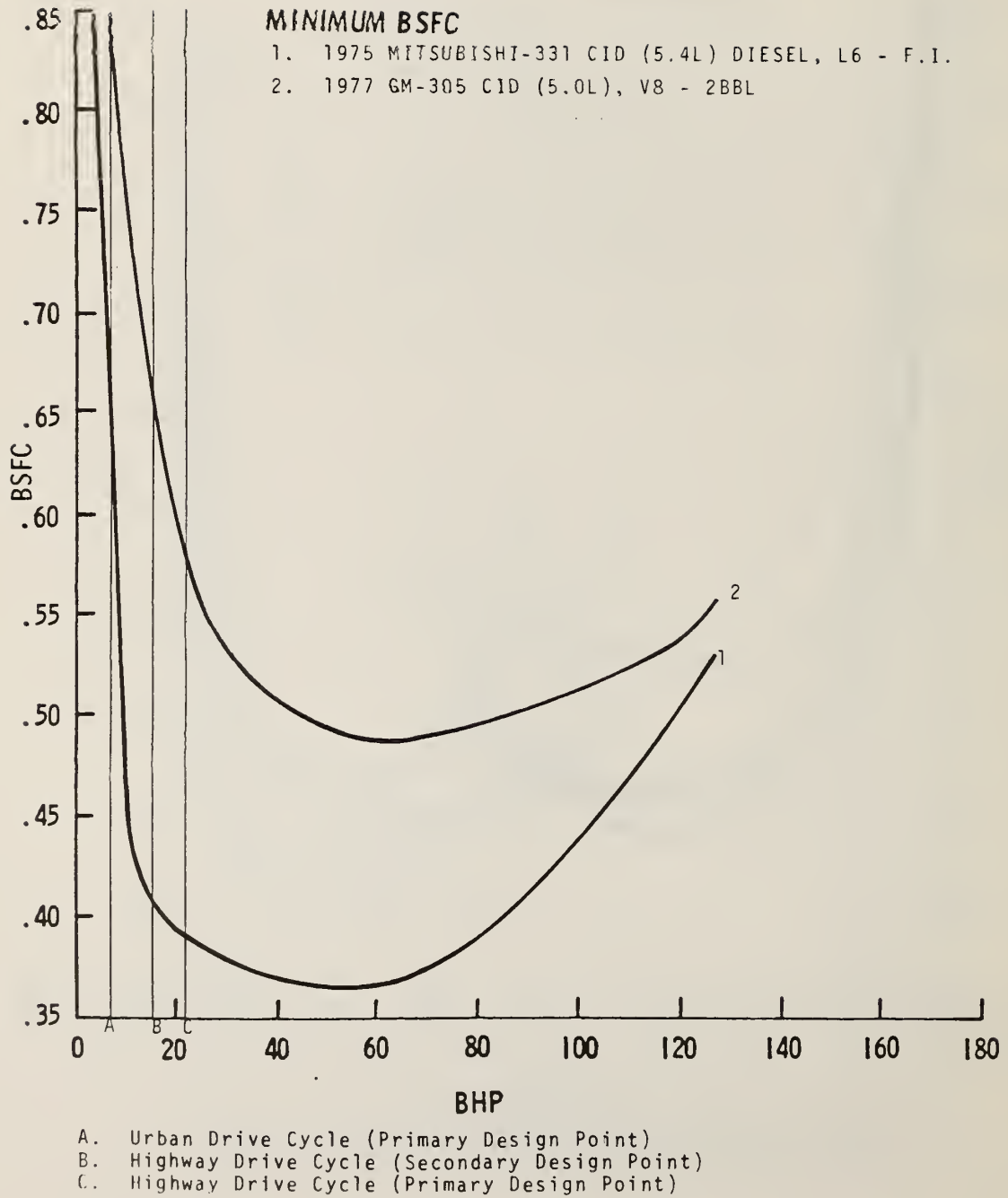


FIGURE 4-13 4000 POUND INERTIA WEIGHT CLASS

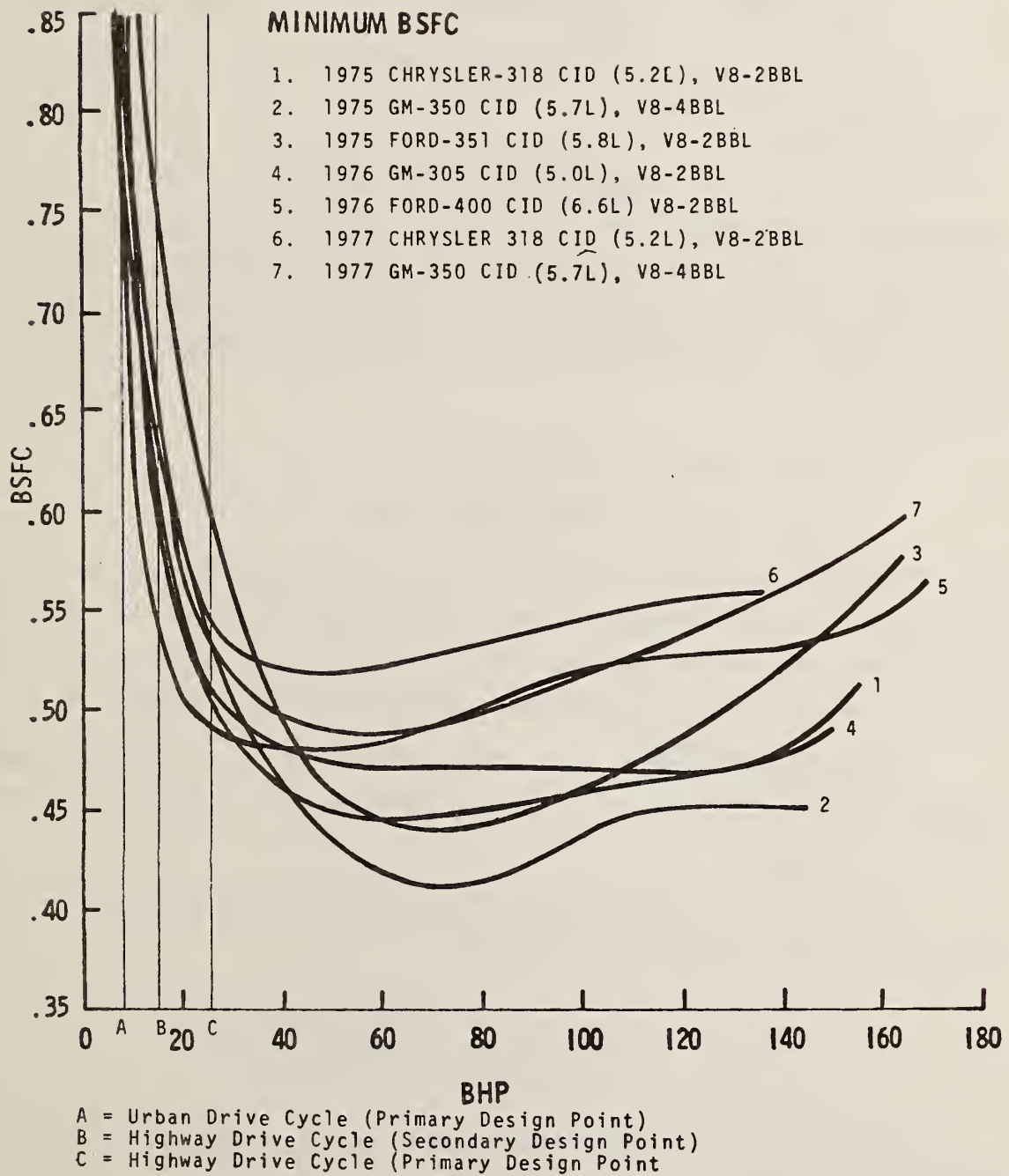


FIGURE 4-14 4500 POUND INERTIA WEIGHT CLASS

4.4 ENGINE SCALING WITH VEHICLE SIMULATION

The third aspect of the engine data analysis employs TSC's vehicle simulation computer program.

The aforementioned full size (4000 pound) and subcompact (2000 pound) vehicles will be used for the following assessment.

The midpoint of these inertia weight classes is 3000 pounds.

Using

$$\frac{\text{Maximum Engine BHP}}{\text{Vehicle Inertia Weight}} = 0.03$$

indicates that a BHP of 90 should be used for separating the available engines into their appropriate group. However, because the test data would produce a skewed distribution with nineteen of the twenty-eight tested engines falling into the 4000 lb class, the divisions will be:

1. Those engines with BHP \leq 100
2. Those engines with BHP $>$ 100.

This division produces a distribution of sixteen engines in the 2000 pound inertia weight class and twelve engines in the 4000 pound inertia weight class. This more uniform engine distribution allows a more comprehensive and reasonable assessment to be made.

Maintaining $\frac{\text{BHP}}{\text{IWT}} = .03$, engines in the first category are normalized to 60 BHP and those in the second category are normalized to 120 BHP.

Engine CID in the 2000 pound inertia weight class is normalized using the following relation:

$$\text{CID}_{\text{Scaled}} = \frac{(\text{CID}_{\text{Actual}})(60)}{\text{BHP}_{\text{Actual}}}$$

Those engines in the 4000 pound inertia weight class are normalized using:

$$\text{CID}_{\text{Scaled}} = \frac{(\text{CID}_{\text{Actual}})(120)}{\text{BHP}_{\text{Actual}}}$$

Using the scaled engines and their respective inertia weight classes, VEHSIM simulated the Urban and Highway EPA drive cycles. Composite fuel economy is given by:

$$\text{MPG}_{\text{Composite}} = \frac{1}{\frac{.45}{\text{MPG}_{\text{Highway}}}} + \frac{1}{\frac{.55}{\text{MPG}_{\text{Urban}}}}$$

Engines are aggregated by model year and listed by descending composite MPG in Tables 4-2 and 4-3. Because the BSFC fishhook curves used in Sections 4.1 and 4.2 are developed assuming the use of an ideal CVRT and the composite fuel economy figures are produced by a simulation program taking a vehicle with a conventional transmission over two drive cycles, a direct correlation between low BSFC curves and high MPG estimates should not be anticipated.

TABLE 4-2. SUB-COMPACT VEHICLE (2,000 POUND INERTIA WEIGHT CLASS; ALL ENGINES HAVE BHP \leq 100)

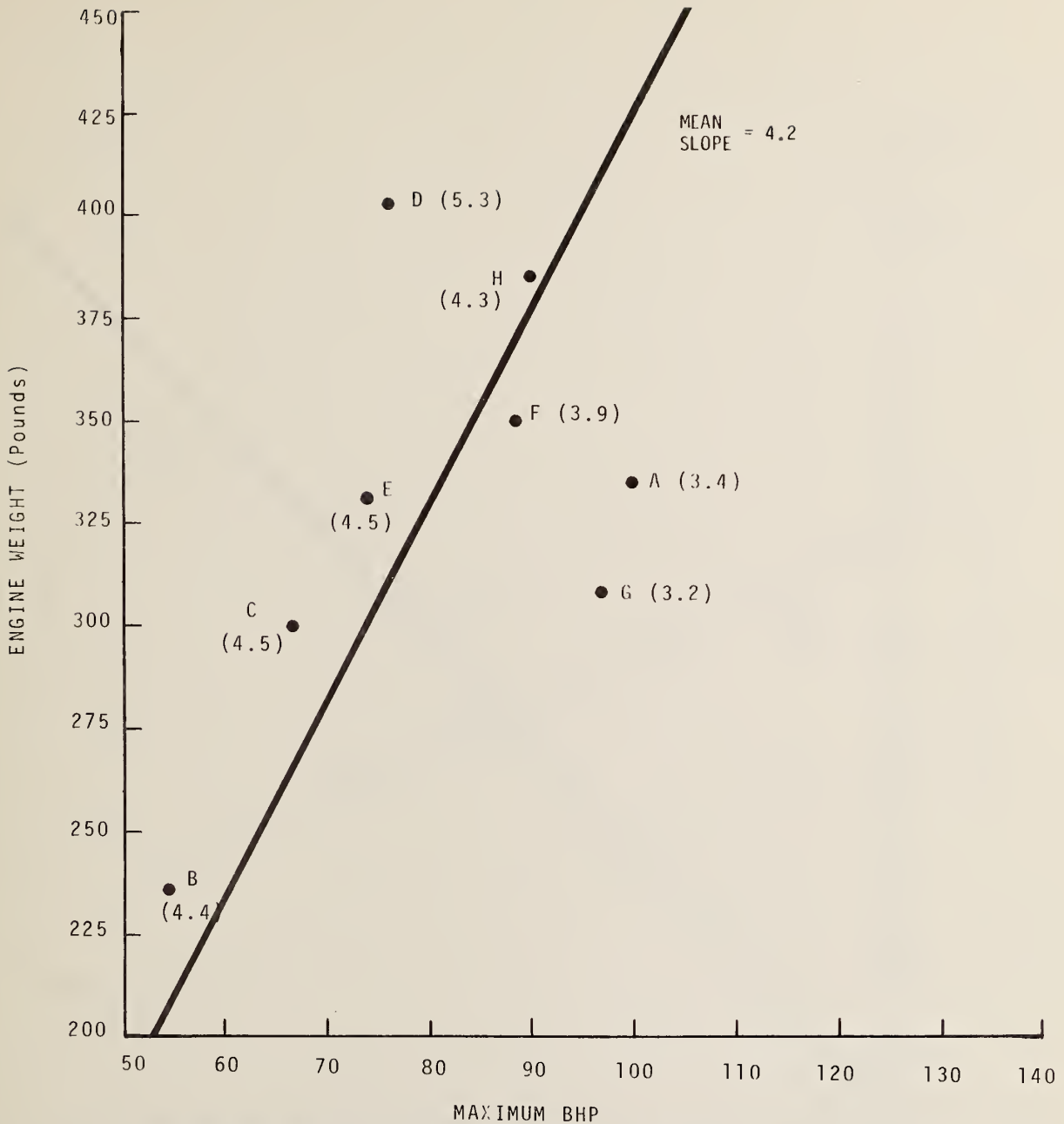
1978 MODEL YEAR		Actual CID	Scaled CID	Actual BHP	Scaled BHP	Composite MPG
Manufacturer	Carburetion					
General Motors	2V	151.0	100.7	90.0	60.0	36.3
American Motors	2V	121.0	98.1	74.0	60.0	29.7
1977 MODEL YEAR		Actual CID	Scaled CID	Actual BHP	Scaled BHP	Composite MPG
Ford	2V	140.0	86.6	97.0	60.0	38.0
Volvo	F.I.	130.0	87.6	89.0	60.0	32.8
General Motors	2V	231.0	145.9	95.0	60.0	27.8
Ford	2V	171.0	108.0	95.0	60.0	27.7
1975 MODEL YEAR (NO 1976 engines)		Actual CID	Scaled CID	Actual BHP	Scaled BHP	Composite MPG
Ford	2V	140.0	95.5	88.0	60.0	34.5
Chrysler	2V	98.0	87.3	67.0	60.0	32.6
Honda CVCC	3V	90.8	102.8	53.0	60.0	30.9
Mercedes Benz Diesel	F.I.	183.0	159.1	69.0	60.0	31.0
Chrysler-Nissan Diesel	F.I.	198.0	133.5	89.0	60.0	30.0
Nissan (Datsun)	2V	119.1	94.0	76.0	60.0	29.5
Chrysler	1V	225.0	136.4	99.0	60.0	27.9
Mazda Rotary	4V	70.0	42.0	100.0	60.0	27.1
Perkins Diesel	F.I.	247.0	148.2	100.0	60.0	26.4
American Motors	1V	258.0	170.1	91.0	60.0	24.7

TABLE 4-3. FULL SIZE VEHICLE (4,000 POUND INERTIA WEIGHT CLASS; ALL ENGINES HAVE BHP > 100)

1977 MODEL YEAR		Actual CID	Scaled CID	Actual BHP	Scaled BHP	Composite MPG
Manufacturer	Carburetion					
General Motors	1 V	250.0	288.5	104.0	120.0	22.7
General Motors	4 V	350.0	251.5	167.0	120.0	19.6
Chrysler	2 V	225.0	264.7	102.0	120.0	19.4
General Motors	2 V	305.0	288.2	127.0	120.0	19.1
Chrysler	2 V	318.0	286.9	133.0	120.0	18.1
1976 MODEL YEAR						
General Motors	2 V	305.0	244.0	150.0	120.0	20.7
Ford	2 V	400.0	284.0	169.0	120.0	16.1
1975 MODEL YEAR						
Chrysler- Mitsubishi Diesel	F.I.	331.0	312.8	127.0	120.0	25.2
General Motors	4 V	350.0	293.7	143.0	120.0	19.7
Chrysler	2 V	318.0	244.6	156.0	120.0	19.6
Ford	2 V	351.0	256.8	164.0	120.0	17.6
General Motors	1 V	250.0	283.0	106.0	120.0	16.7

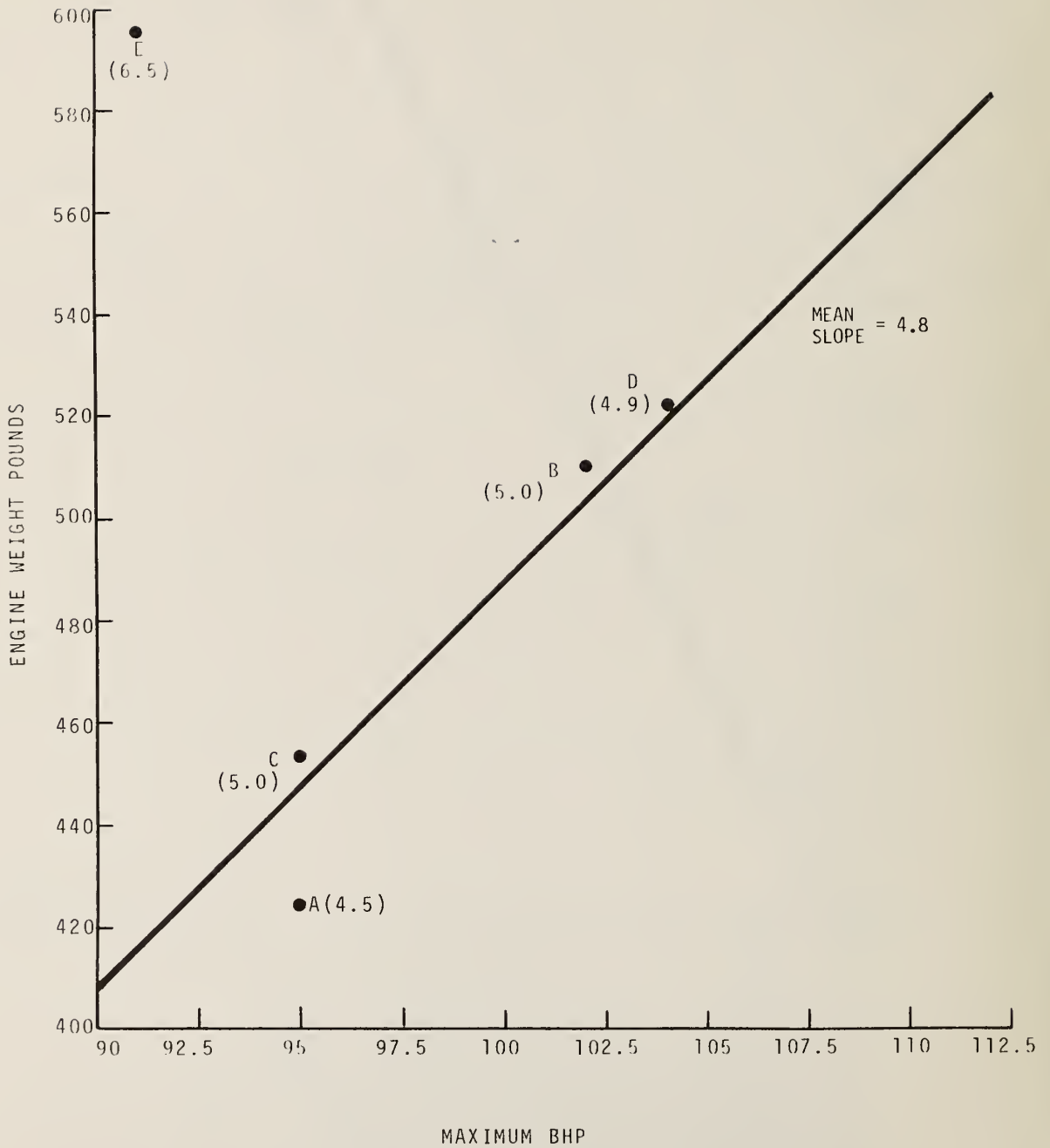
4.5 ENGINE WEIGHT VS. MAXIMUM ENGINE BRAKE HORSEPOWER

The final section of the data analysis discussion considers engine efficiency in terms of engine weight vs. maximum available brake horsepower. Weight includes normal engine accessories such as the alternator, electrical harness, etc., but does not include the cooling fan, radiator, or manual transmission flywheel. A comparative slope was generated from the mean of the weight/BHP ratios. Engines are aggregated as follows: four cylinder and rotary (Figure 4-15), six cylinder (Figure 4-16), eight cylinder (Figure 4-17), and diesel (Figure 4-18).



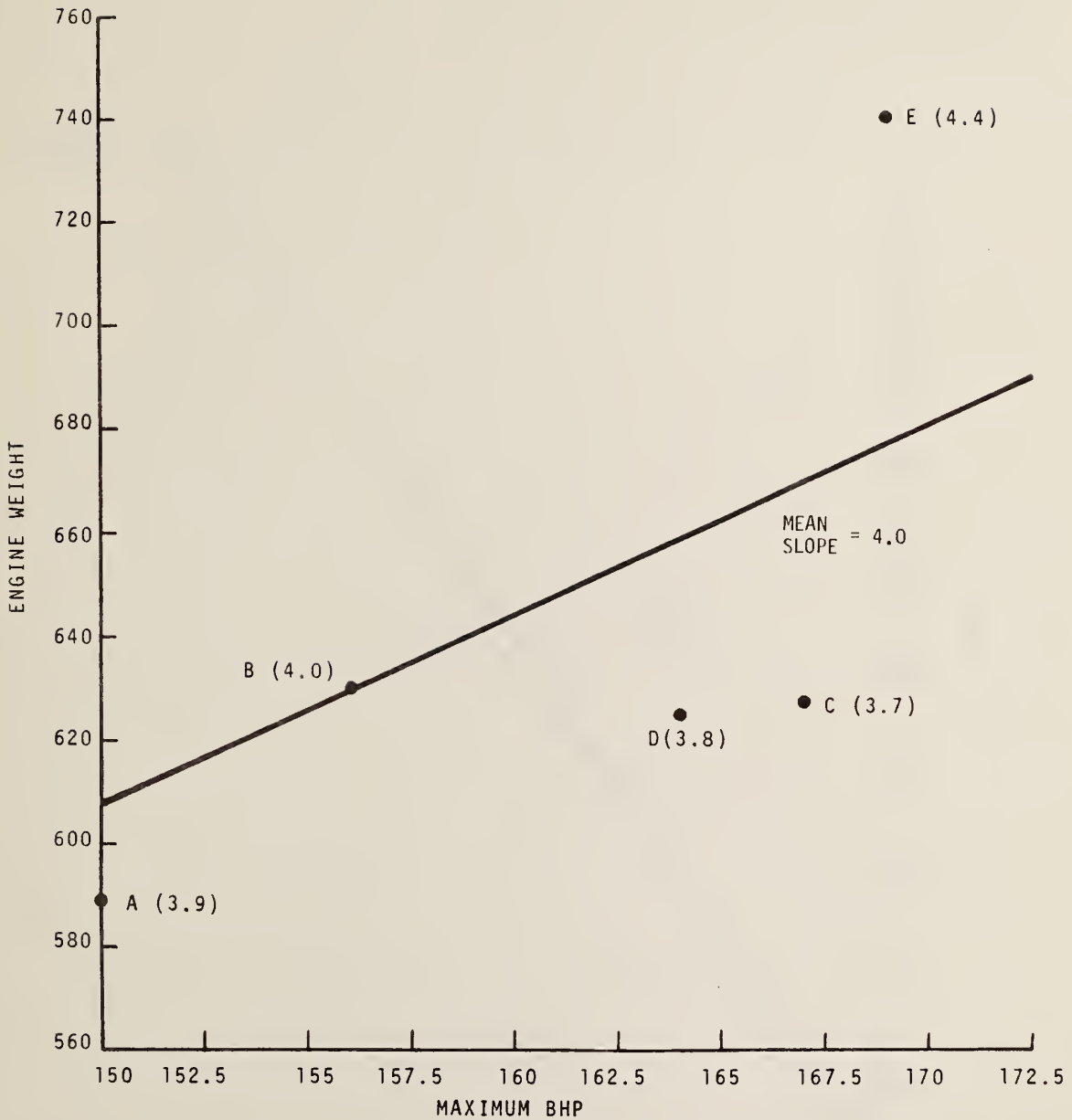
- A = 1975 Mazda 70 CID (1.1L), Rotary - 4BBL
- B = 1975 Honda CVCC 90.8 CID (1.5L), L4 - 3BBL
- C = 1975 Dodge Colt 98 CID (1.6L), L4 - 2BBL
- D = 1975 Nissan (Datsun) 119 CID (2.0L), L4 - 2BBL
- E = 1978 AMC 121.0 CID (2.0L), L4 - 2 BBL
- F = 1977 Volvo 130 CID (2.1L), L4 - F.I.
- G = 1977 Ford 140 CID (2.3L), L4 - 2BBL
- H = 1978 Pontiac 151 CID (2.5L), L4 - 2BBL

FIGURE 4-15 ENGINE WEIGHT VS. MAXIMUM ENGINE BHP PLUS (WEIGHT/BHP) - FOUR-CYLINDER AND ROTARY ENGINES



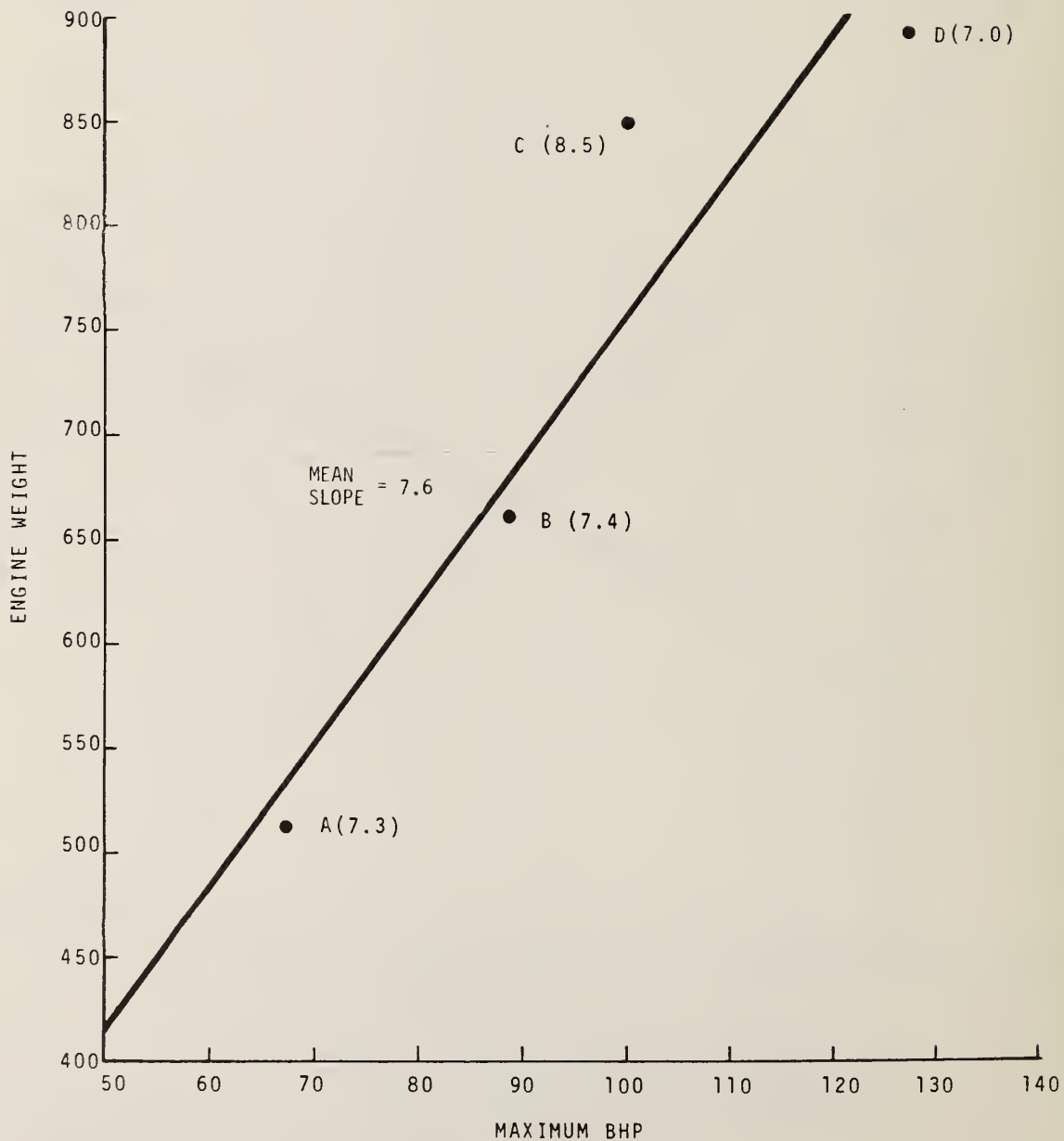
- A = 1977 Ford 171 CID (2.8L), V6 - 2BBL
- B = 1977 Chrysler 225 CID (3.7L), L6 - 2BBL
- C = 1977 General Motors 231 CID (3.8L), V6 - 2BBL
- D = 1977 General Motors 250 CID (4.1L), L6 - 1BBL
- E = 1975 AMC 258 CID (4.2L), L6 - 1BBL

FIGURE 4-16 ENGINE WEIGHT VS. MAXIMUM ENGINE BHP PLUS (WEIGHT/BHP) - SIX-CYLINDER ENGINES



- A = 1976 General Motors 305 CID (5.0L), V8 - 2BBL
- B = 1975 Chrysler 318 CID (5.2L), V8 - 2BBL
- C = 1977 General Motors 350 CID (5.7L), V8 - 4BBL
- D = 1975 Ford 351 CID (5.8L), V8 - 2BBL
- E = 1976 Ford 400 CID (6.6L), V8 - 2BBL

FIGURE 4-17 ENGINE WEIGHT VS. MAXIMUM ENGINE BHP PLUS (WEIGHT/BHP) - EIGHT-CYLINDER ENGINES



- A = 1975 Mercedes Benz 183CID (3.0L), L5 - F.I.
 B = 1975 Chrysler-Nissan 198 CID (3.2L), L6 - F.I.
 C = 1975 Perkins 247 CID (4.1L), L6 - F.I.
 D = 1975 Mitsubishi 331 CID (5.4L), L6 - F.I.

FIGURE 4-18 ENGINE WEIGHT VS. MAXIMUM ENGINE BHP PLUS (WEIGHT/BHP) - DIESEL ENGINES

5. GENERAL MOTORS CORPORATION*

This chapter contains specifications and Environmental Protection Agency Certification data for General Motors' passenger car and light truck engines, which are sequenced by ascending CID. When available, associated engine performance analysis information is provided in reverse chronological order.

* See Section 11.2 for References

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	293/133.3	
No. of Cylinders	4	
Bore, in.	3.23	
Stroke, in.	2.98	
Displacement, in ³	98	
Compression Ratio	8.6	
Horsepower, BHP at RPM	63 BHP 4800 RPM	63 BHP 4800 RPM
Torque, ft-lb at RPM	82 ft-lb 3200 RPM	82 ft-lb 3200 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.5303-1.5405	
Intake Valve Lift, in.	.3866	
Exhaust Valve Diameter, in.	1.2547-1.2650	
Exhaust Valve Lift, in.	.3886	
Intake Valve Opens, deg BTC	28	
Intake Valve Closes, deg ABC	76	
Intake Valve Duration, deg	284	
Exhaust Valve Opens, deg BBC	72	
Exhaust Valve Closes, deg ATC	32	
Exhaust Valve Duration, deg	284	
Valve Overlap, deg	60	
Distributor Type	High energy ignition system	
Idle Speed, RPM	*	*
Timing, degrees	M-8 BTC A-8 BTC	M-8 BTC A-8 BTC
Fuel System Type	Carburetor - 1 BBL down draft	
Choke Type	Electrical	
Carburetor Barrel Diameter, in.	1.38	
Vehicle Emission Control Systems	Catalytic converter EGR	Air Injection Catalytic Converter EGR
NOTES:	Ref. 20	
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation		
* Data not available		

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-98 CID (1.6 L) - 1 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x		
Chevette	A3	2250	3.70	56.	N0	8.8	0.32	7.80	331.	1.09	0.02	1.30	264.	1.31	33	29
Chevette	A3	2250	4.11	63.	N0	8.8	0.64	10.00	342.	1.30	0.14	6.90	265.	1.11	32	28
Chevette	A3	2500	3.70	56.	N0	9.4	0.95	12.70	333.	1.05	0.04	2.10	273.	2.18	32	28
Chevette	A3	2500	4.11	63.	N0	9.4	0.35	7.50	411.	1.33	0.03	0.60	301.	2.55	29	24
Chevette	M4	2250	3.70	56.	N0	8.8	0.58	8.30	271.	1.28	0.05	2.00	215.	0.90	91	35
Chevette	M4	2250	4.11	63.	N0	8.8	0.69	13.90	293.	1.49	0.05	3.80	233.	0.81	37	31
Chevette	M4	2500	3.70	56.	N0	9.4	0.60	12.20	285.	1.26	0.09	5.20	217.	0.73	39	33
Chevette	M4	2500	4.11	63.	N0	9.4	0.73	9.40	319.	1.65	0.05	1.20	244.	1.84	36	30

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-98 CID (1.6 L) - 1 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Chevette	A3	2250	3.70	56.7	N0	8.8	0.27	3.30	382.	0.92	23	0.02	0.0	297.	1.04	30	26
Chevette	A3	2500	3.70	56.5	N0	9.4	0.29	2.70	417.	1.25	21	0.02	0.0	310.	1.04	29	21
Chevette	A3	2500	4.11	63.0	N0	9.4	0.29	4.10	443.	0.96	20	0.01	0.10	335.	0.94	26	22
Chevette	M4	2250	3.70	56.7	N0	8.8	0.33	4.90	317.	0.94	27	0.04	0.20	245.	0.97	36	31
Chevette	M4	2250	4.11	63.0	N0	8.8	0.34	5.60	342.	0.94	25	0.04	0.20	251.	1.22	35	29
Chevette	M4	2500	3.70	56.7	N0	9.4	0.44	6.90	325.	1.06	26	0.04	0.20	250.	1.17	35	30
Chevette	M4	2500	4.11	63.0	N0	9.4	0.34	5.00	355.	1.07	24	0.03	0.30	260.	1.03	34	28

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	385/175	
No. of Cylinders	4	
Bore, in.	4.00	
Stroke, in.	3.00	
Displacement, in ³	151.	
Compression Ratio	8.3	
Horsepower, BHP at RPM	85 BHP 4400 RPM	85 BHP 4400 RPM
Torque, ft-lb at RPM	123 ft-lb 2800 RPM	123 ft-lb 2800 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.720	
Intake Valve Lift, in.	.406	
Exhaust Valve Diameter, in.	1.500	
Exhaust Valve Lift, in.	.406	
Intake Valve Opens, deg BTC	33	
Intake Valve Closes, deg ABC	81	
Intake Valve Duration, deg	294	
Exhaust Valve Opens, deg BBC	76	
Exhaust Valve Closes, deg ATC	38	
Exhaust Valve Duration, deg	294	
Valve Overlap, deg	71	
Distributor Type	High energy ignition system	
Idle Speed, RPM	*	*
Timing, degrees	M-14 BTC A-14 BTC	M-14 BTC A-14 BTC
Fuel System Type	Carburetor - 2 BBL down draft	
Choke Type	Electric	
Carburetor Barrel Diameter, in.	Primary: 1.24	Secondary 1.40
Vehicle Emission Control Systems	Catalytic converter EGR Early Fuel Evapora- tion	*

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-151 CID (2.5 L) - 2 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Sunbird	A3	3000	2.73	39.9	NO	8.2	0.41	5.80	374.	1.28	23	0.07	0.50	286.	1.60	31	26
Sunbird	A3	3000	3.08	45.0	YES	9.0	0.40	6.20	397.	1.66	22	0.07	0.30	296.	1.96	30	25
Pheonix	A3	3500	3.42	46.1	NO	10.2	0.41	7.30	388.	1.60	22	0.07	0.50	311.	1.98	28	25
Pheonix	A3	3500	3.42	46.1	YES	11.2	0.49	11.40	446.	1.60	19	0.07	1.70	350.	2.56	25	21
Sunbird	M4	3000	2.73	39.9	NO	8.2	1.31	11.90	334.	1.04	24	0.09	1.50	249.	2.45	35	28
Sunbird	M4	3000	2.73	40.4	NO	10.3	0.91	8.60	341.	1.47	25	0.09	0.80	256.	3.12	34	28
Sunbird	M4	3000	3.08	45.0	NO	8.2	0.92	8.00	372.	1.27	23	0.09	0.80	265.	1.75	33	27
Sunbird Wagon	M4	3000	3.08	45.5	YES	9.9	0.64	7.40	383.	1.89	22	0.06	0.70	272.	2.48	32	26
Sunbird	M5 w/OD	3000	2.73	39.9	NO	8.2	0.69	7.10	319.	1.79	27	0.10	1.00	221.	2.55	40	31
Sunbird	M5 w/OD	3000	3.23	46.6	YES	9.0	0.92	7.30	360.	1.49	24	0.10	0.50	249.	1.82	36	28

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-151 CID (2.5 L) - 2 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂
Sunbird	M5 w/OD	3000	3.23	47.2	N0	8.2	0.83	9.10	352.	1.28	0.08	0.40	246.	1.81	36	28
Sunbird	M5 w/OD	3000	3.23	47.9	N0	10.3	0.75	6.00	367.	1.85	0.08	0.40	260.	2.34	34	27

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS
CALIFORNIA CERTIFICATION DATA NOT AVAILABLE

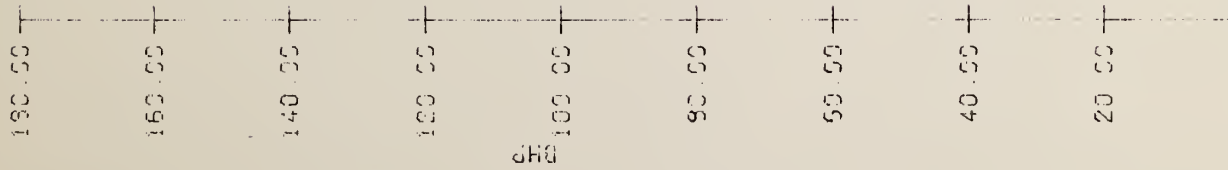
1978 PONTIAC 151 CID (2.5L) - 2BBL

Engine tested by BERG.

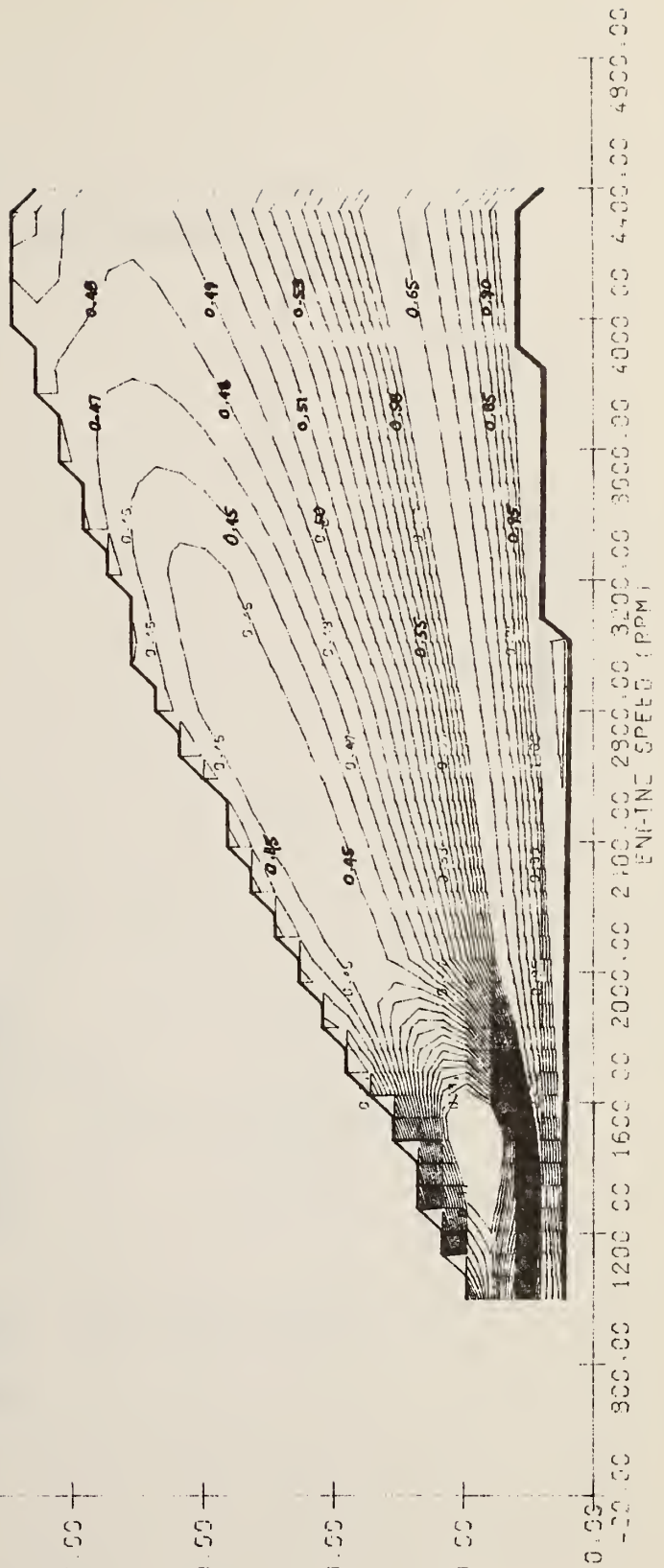
Engine certified for: 49 states, passenger cars, automatic transmission.

BSFC (LB/RHP-HR)

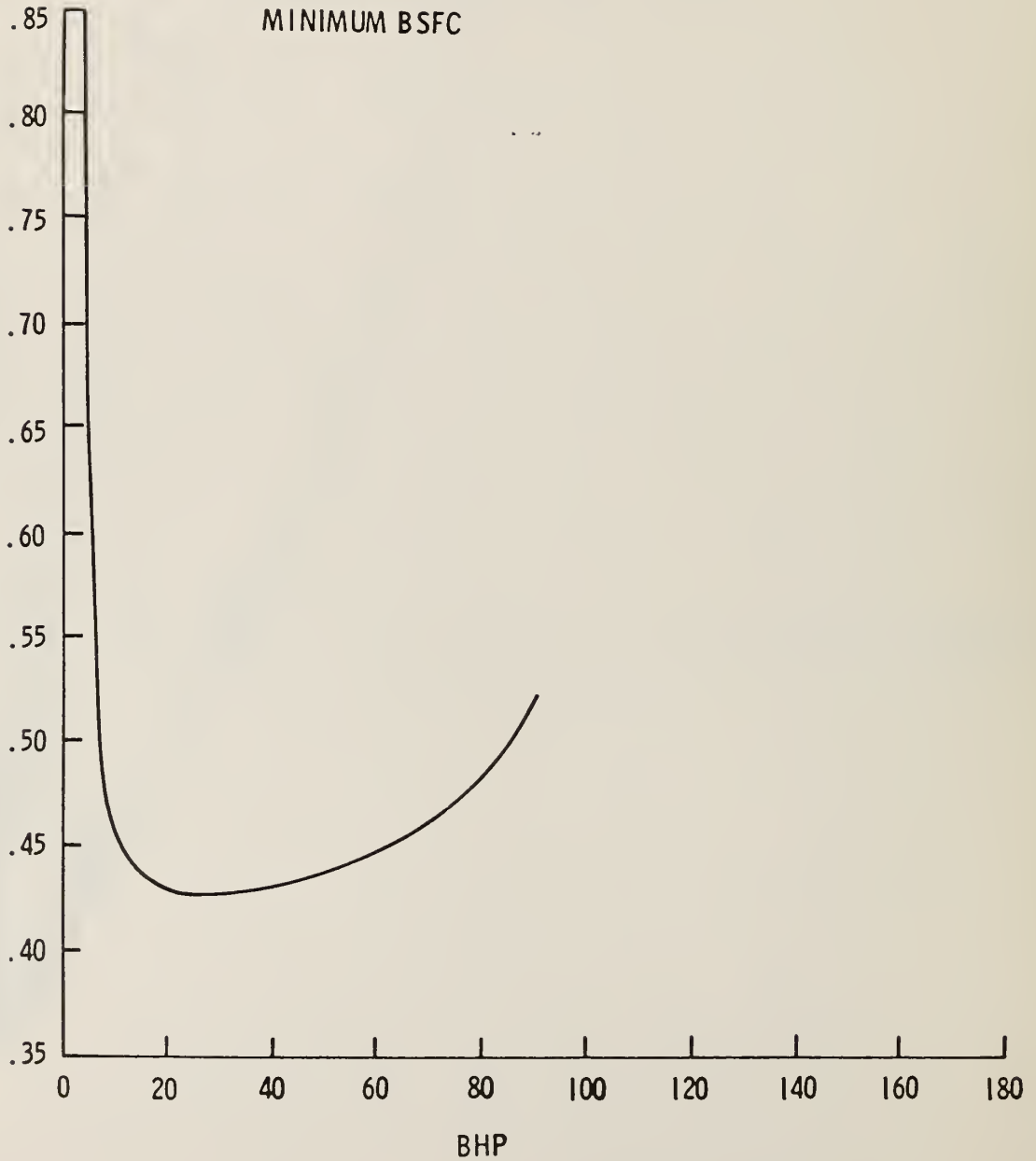
1978 PONTI 151.0 CID-2 95L



BSFC

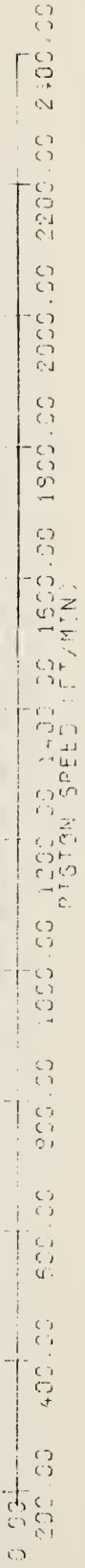
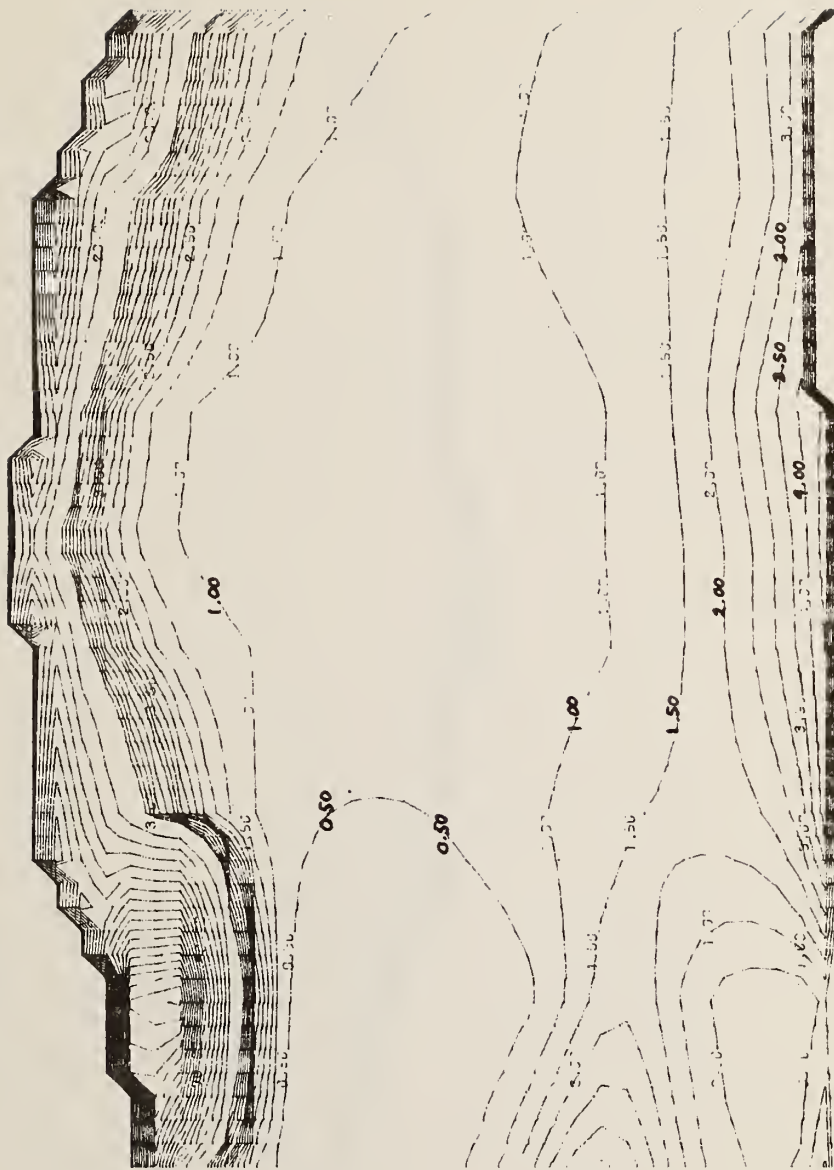


1978 PONTIAC 151 CID (2.5L), L4-2 BBL



7E-5500 (CMV/DHP-HR)

1978 PONTI 191.0 CID-2 524



E-BSHC 5M.P.400 (HP)

1579 PONTI 15.10 010-0 FSL

100.00

150.00

200.00

250.00

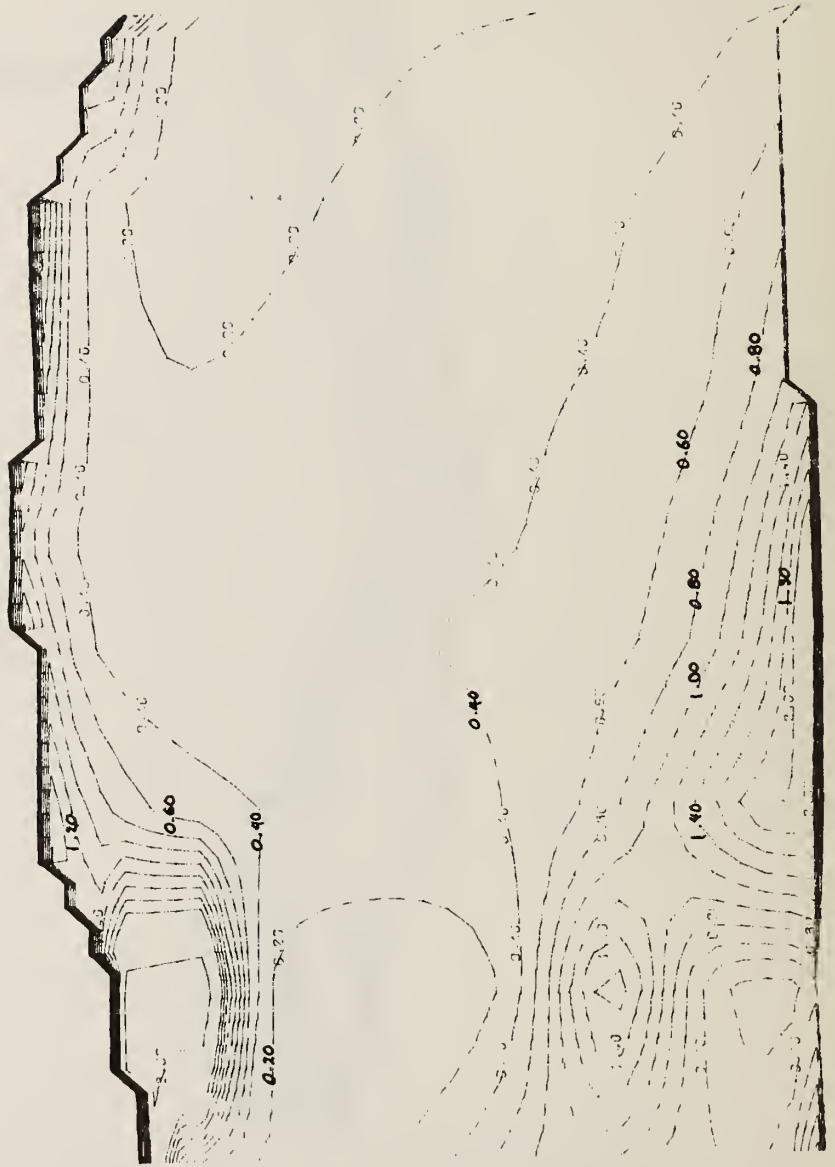
300.00

350.00

400.00

500.00

600.00

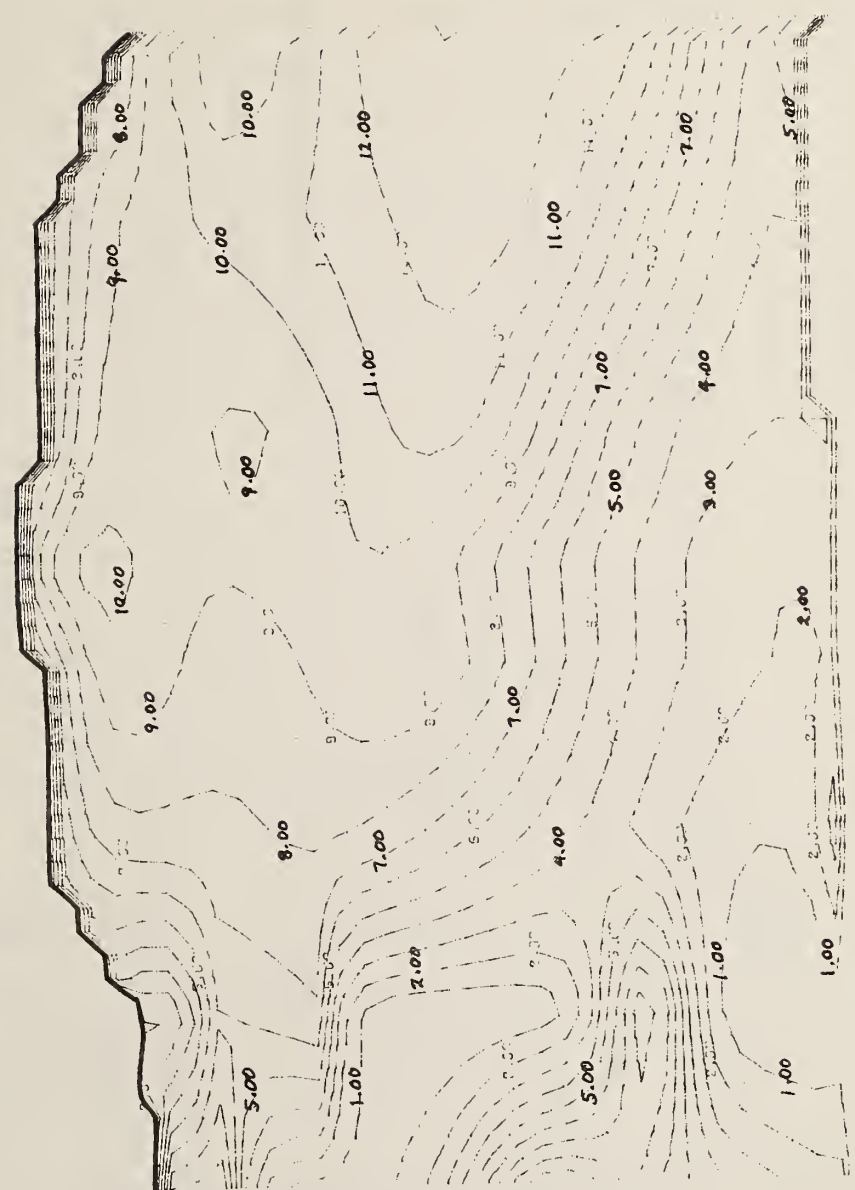


1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00
PUMP SPEED (RPM)

1-1000X (5M/B4P-400)

1978 PONTI 151.0 CID-2 95L

180.00 +
160.00 +
140.00 +
120.00 +
100.00 +
80.00 +
60.00 +
40.00 +
20.00 +



180.00 160.00 140.00 120.00 100.00 80.00 60.00 40.00 20.00
 200.00 400.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00

RPM
 PISTON SPEED (FT/MIN.)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	454/206	
No. of Cylinders	6	
Bore, in.	3.50	
Stroke, in.	3.40	
Displacement, in ³	196.	
Compression Ratio	8.0	
Horsepower, BHP at RPM	90 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	165 ft-lb 2000 RPM	N/A ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.625	
Intake Valve Lift, in.	.323	
Exhaust Valve Diameter, in.	1.425	
Exhaust Valve Lift, in.	.366	
Intake Valve Opens, deg BTC	18	
Intake Valve Closes, deg ABC	48	
Intake Valve Duration, deg	246	
Exhaust Valve Opens, deg BBC	68	
Exhaust Valve Closes, deg ATC	29	
Exhaust Valve Duration, deg	277	
Valve Overlap, deg	47	
Distributor Type	High energy ignition system	
Idle Speed, RPM	*	N/A
Timing, degrees	M-15 BTC A-15 BTC	N/A
Fuel System Type	Carburetor - 2 BBL downdraft	
Choke Type	Electric	
Carburetor Barrel Diameter, in.	1.4375	
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel Evaporation	N/A
NOTES:	Ref. 20	
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation		
* = Data not available		

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-196 CID (3.2 L) - 2 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Monza	M5 w/OD	3000	2.73	40.4	YES	11.3	0.59	5.90	469.	1.41	18	0.06	0.60	302.	1.84	29	22
Monza	M5 w/OD	3500	2.73	39.4	YES	8.3	0.65	6.50	458.	1.40	19	0.07	0.60	267.	1.33	33	23
Monza	M5 w/OD	3500	2.93	43.3	YES	8.6	0.80	8.60	461.	1.56	19	0.06	0.50	282.	1.79	31	23

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	450/204	
No. of Cylinders	6	
Bore, in.	3.50	
Stroke, in.	3.48	
Displacement, in ³	200.	
Compression Ratio	8.2	
Horsepower, BHP at RPM	95 * BHP 3800 RPM	N/A BHP RPM
Torque, ft-lb at RPM	160 ft-lb 2000 RPM	N/A ft-lb RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.595-1.605	
Intake Valve Lift, in.	.373	
Exhaust Valve Diameter, in.	1.375-1.385	
Exhaust Valve Lift, in.	.410	
Intake Valve Opens, deg BTC	34	
Intake Valve Closes, deg ABC	86	
Intake Valve Duration, deg	300	
Exhaust Valve Opens, deg BBC	38	
Exhaust Valve Closes, deg ATC	52	
Exhaust Valve Duration, deg	320	
Valve Overlap, deg	86	
Distributor Type	High Energy Ignition System	
Idle Speed, RPM	*	N/A
Timing, degrees	M-8 BTC A-8 BTC	N/A
Fuel System Type	Carburetor - 2 BBL - downdraft	
Choke Type	Electric	
Carburetor Barrel Diameter, in.	1.375	
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel-Evaporation	N/A
NOTES:	Ref. 20	
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation		
* = Data not available		

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-200 CID (3.3 L) - 2 BRL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Malibu	A3	3500	2.73	36.3	NO	9.7	0.90	13.40	416.	1.55	20	0.05	0.30	330.	1.36	27	23
Malibu	A3	3500	2.73	38.1	YES	10.7	0.42	8.10	472.	1.34	18	0.03	0.10	365.	1.15	24	21
Malibu	A3	3500	2.73	36.3	NO	9.7	0.50	4.90	407.	1.72	21	0.03	0.10	301.	1.35	29	24
Malibu Wagon	M3	3500	2.73	37.0	YES	12.3	0.68	8.50	427.	1.72	20	0.04	0.30	318.	1.94	28	23

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 GMC-200 CID (3.3 L) - 2 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
EL Camino	A3	3500	2.73	36.3	N0	10.6	0.75	11.20	446.	1.62	19	0.03	0.10	339.	1.52	26	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	454/206	
No. of Cylinders	6	
Bore, in.	3.80	
Stroke, in.	3.40	
Displacement, in ³	231.	
Compression Ratio	8.0	
Horsepower, BHP at RPM	105 BHP 3400 RPM	105 BHP 3400 RPM
Torque, ft-lb at RPM	185 ft-lb 2000RPM	185 ft-lb 2000RPM
Exhaust System Type	Single w/Crossover	
Intake Valve Diameter, in.	1.625	
Intake Valve Lift, in.	.383	
Exhaust Valve Diameter, in.	1.425	
Exhaust Valve Lift, in.	.366	
Intake Valve Opens, deg BTC	17	
Intake Valve Closes, deg ABC	73	
Intake Valve Duration, deg	270	
Exhaust Valve Opens, deg BBC	68	
Exhaust Valve Closes, deg ATC	29	
Exhaust Valve Duration, deg	277	
Valve Overlap, deg	46	
Distributor Type	High energy ignition system	
Idle Speed, RPM	*	*
Timing, degrees	A-15 BTC	*
Fuel System Type	Carburetor - 2 BBL downdraft	
Choke Type	Electric	
Carburetor Barrel Diameter, in.	1.4375	
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel Evapora- tion Ref. 20	Air Injection Catalytic Converter Early Fuel Evapora- tion EGR Ref. 20

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-231 CID (3.8 L) - 2 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	Hwy MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Regal	A3	3500	2.41	32.7	YES	10.7	0.66	10.70	434.	1.56	0.05	0.30	322.	1.66	23	23	
Monte Carlo	A3	3500	2.41	32.7	YES	10.7	0.49	8.40	474.	1.83	0.05	0.60	311.	1.89	23	21	
Delta 88	A3	4000	2.73	33.9	YES	11.3	0.47	9.90	509.	1.84	0.05	0.30	360.	1.80	25	20	
Skyhawk	M3	4000	3.08	41.5	YES	10.6	0.66	7.80	543.	1.88	0.06	0.20	360.	2.73	25	19	
Skyhawk	M4	3500	2.93	42.8	YES	8.6	0.72	10.40	571.	1.21	0.05	0.60	328.	1.07	27	19	
Sunbird Wagon	M5 w/OD	3000	2.93	92.8	YES	9.9	0.56	7.60	515.	0.89	0.07	0.50	303.	0.93	29	21	
Skyhawk	M5 w/OD	3500	2.93	42.8	YES	8.6	0.58	6.70	521.	1.21	0.06	0.50	297.	1.07	30	21	

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-231 CID (3.8 L) 2 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Skyhawk	A3	3500	2.56	37.4	YES	8.6	0.38	8.30	508.	0.61	17	0.03	0.40	375.	0.46	24	19
Century	A3	3500	2.73	37.0	YES	10.7	0.40	6.50	552.	0.66	16	0.05	0.30	397.	0.38	22	18
Regal	A3	3500	2.73	37.0	YES	10.7	0.40	6.70	561.	0.72	16	0.06	0.0	397.	0.57	22	18
Skyhawk	A3	4000	2.56	33.5	YES	12.7	0.37	7.60	575.	0.92	15	0.03	0.40	498.	0.64	20	17
LeSabre	A3	4000	2.73	35.4	YES	11.3	0.35	7.50	579.	0.96	15	0.04	0.40	435.	0.62	20	17
Starfire	M5 w/OD	3500	2.93	43.3	YES	8.6	0.32	3.20	553.	1.06	16	0.05	0.0	318.	0.96	28	20
Firebird	A3	4000	2.56	33.2	YES	9.8	0.46	8.50	578.	0.85	15	0.05	0.60	405.	0.57	22	17

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

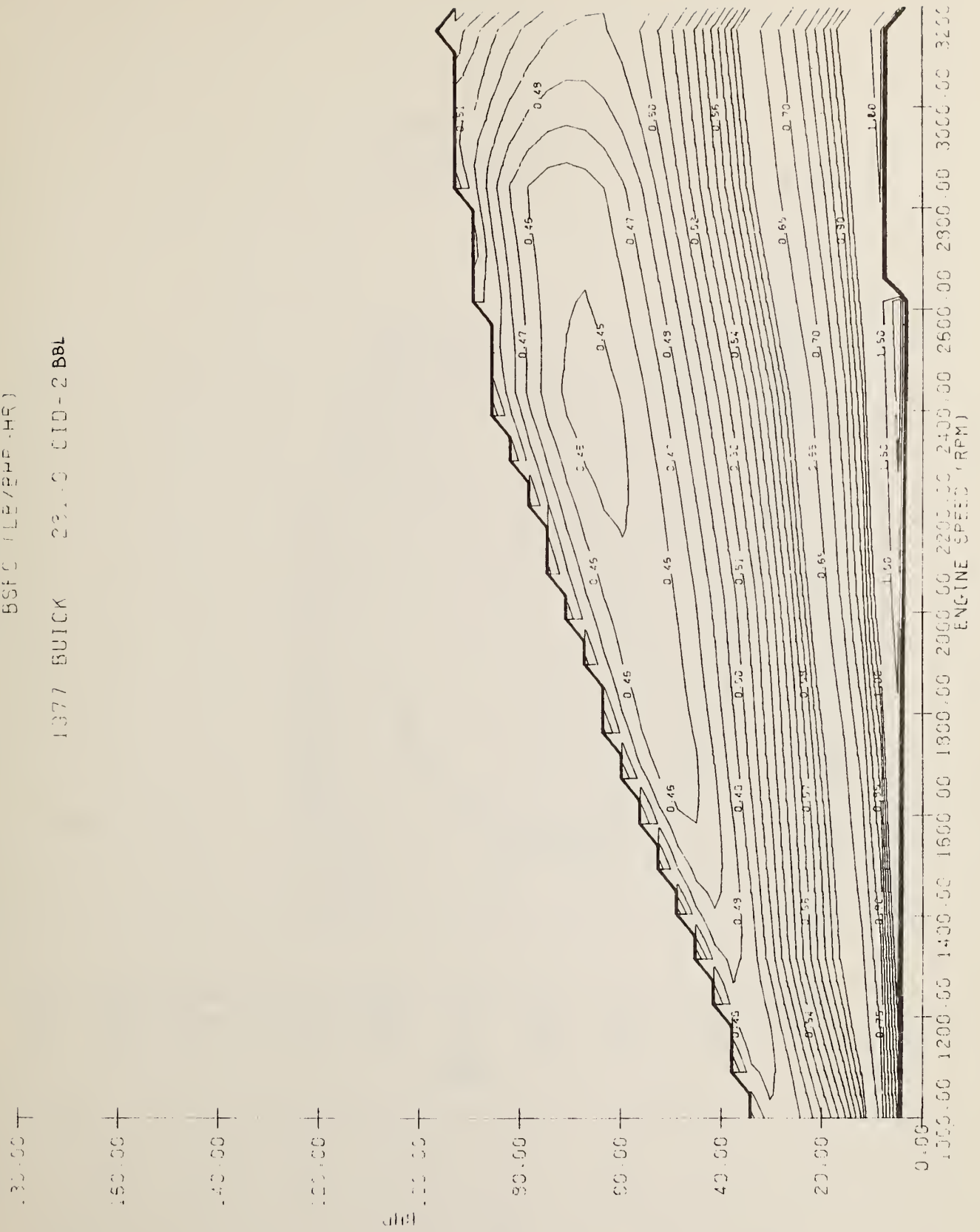
1977 BUICK 231 CID (3.8L) - 2BBL

Engine tested by BERC .

Engine certified for: 49 states, passenger cars, automatic transmission.

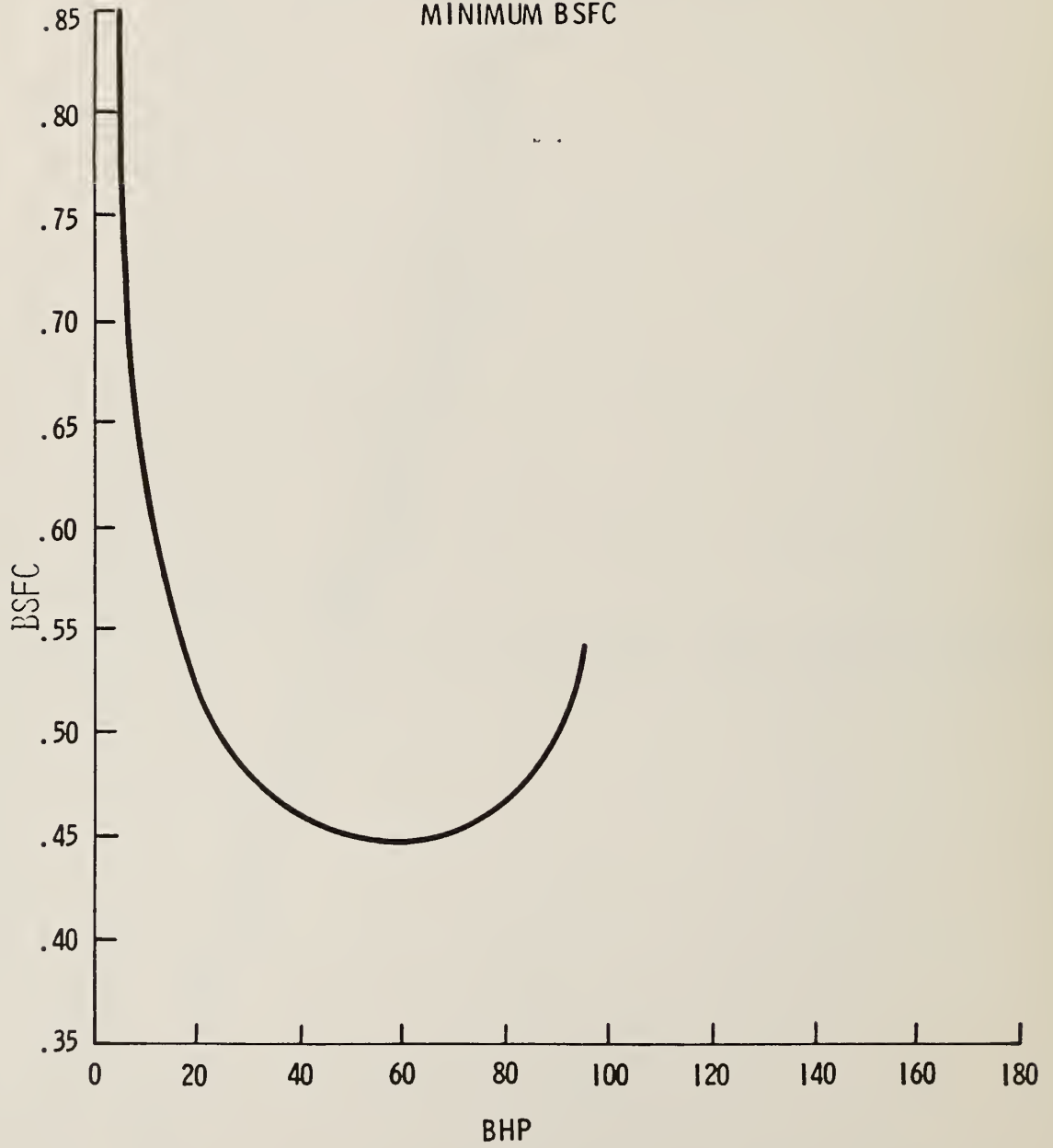
BSPC (LB/HP-HR)

1977 BUICK 231.0 CID-2 BBL



1977 GM 231 CID (3.8L), V6 - 2BBL

MINIMUM BSFC



BSPC (LB/BHP-HR)
 1977 BUICK 231.0 CID-288L



1-5300 (GM/BHP-HR)
 1977 BUICK 231.0 CID-2BBL

180.00

150.00

140.00

120.00

100.00

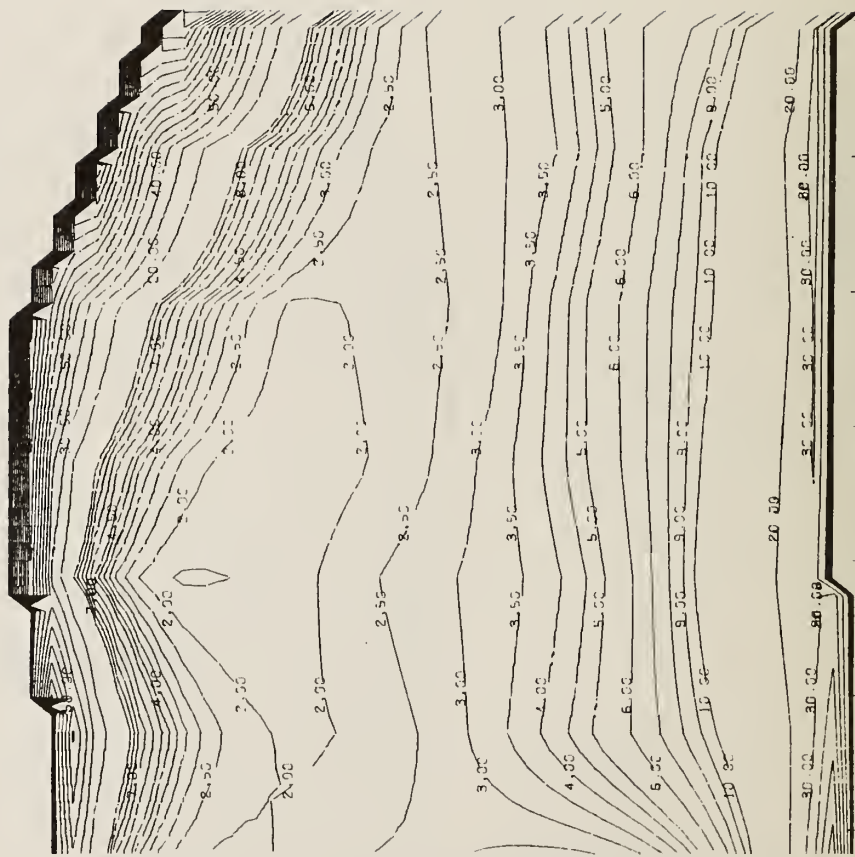
80.00

50.00

40.00

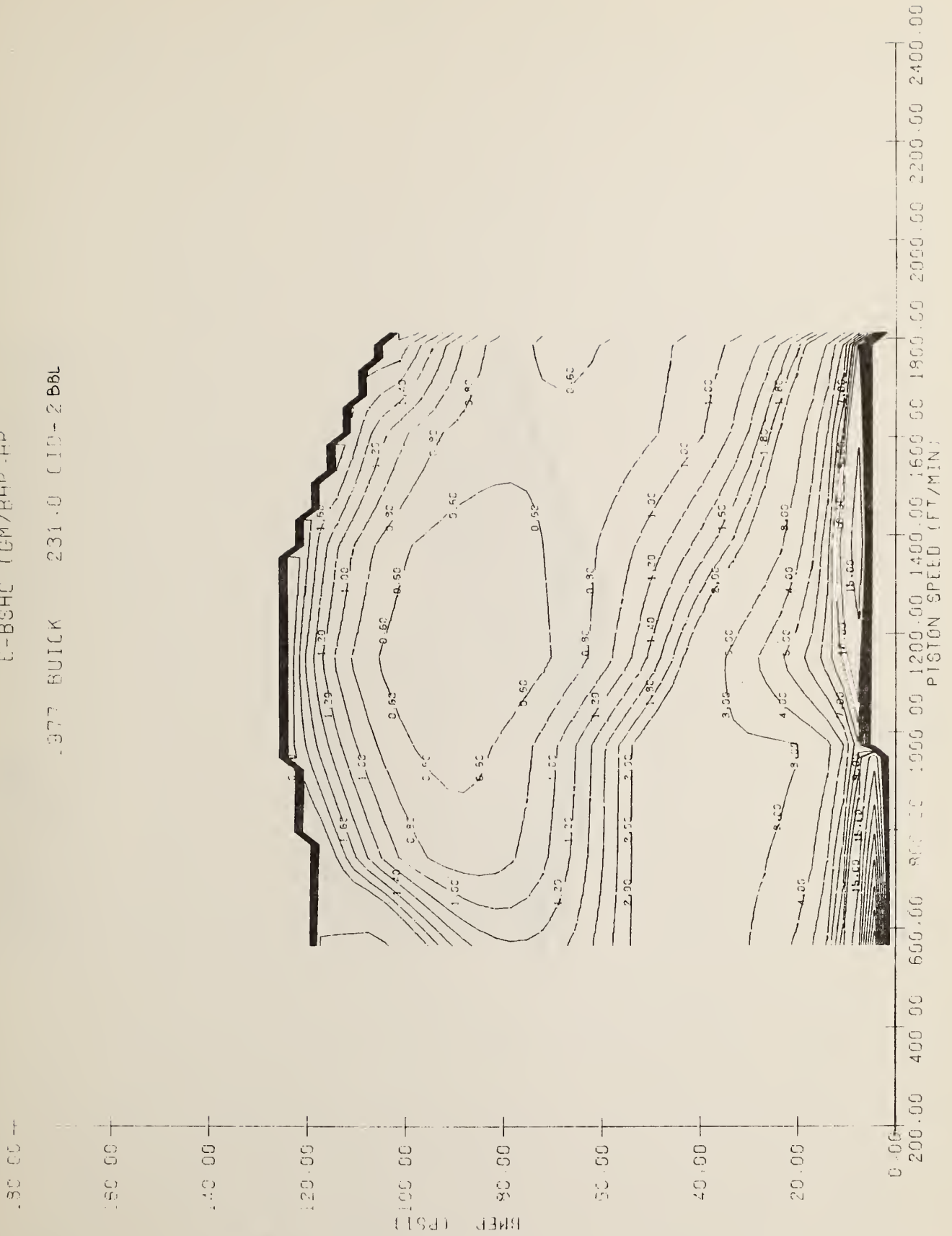
20.00

0.00

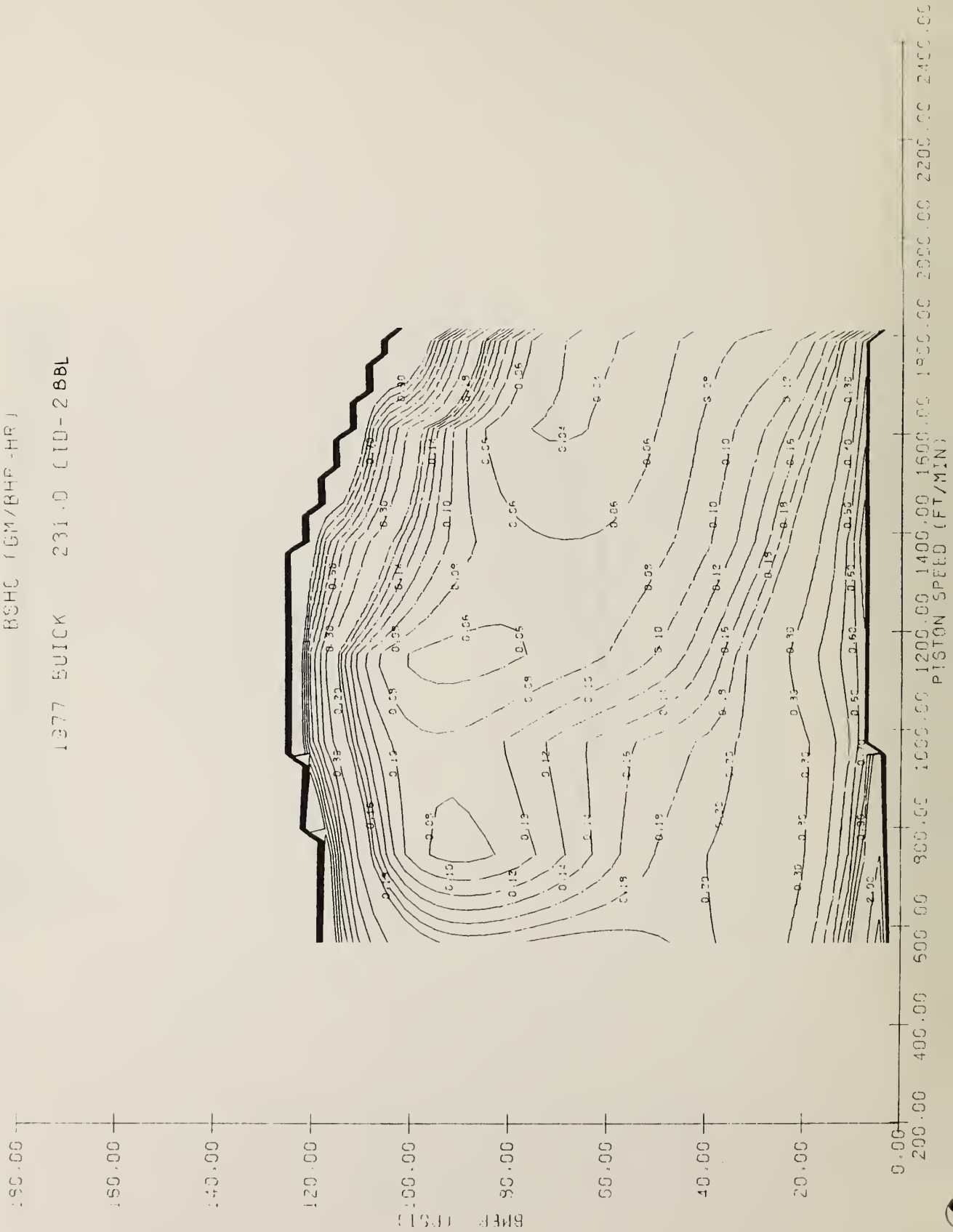


E-B5HC (GM/BHP-HP)

.977 BUICK 231.0 CID-2 BBL



B5HC (GM/BHP-HR)
 1377 SUICK 231.0 CID-2.88L



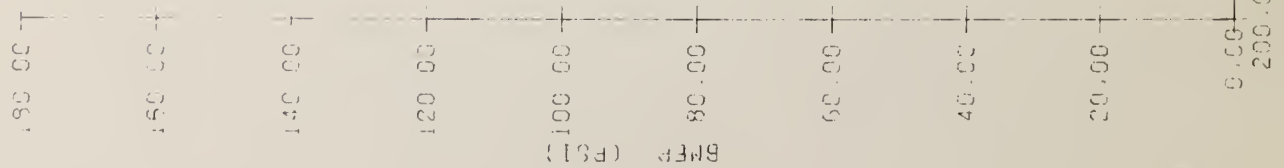
E-BONDY (GM/BHP-HR)

1977 BUICK 231-0 (10-7)BBL



B5N0X (GM/BHP (HR)

1977 BUICK 231.0 (10-2 DBL



ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	522/237	
No. of Cylinders	6	
Bore, in.	3.875	
Stroke, in.	3.53	
Displacement, in ³	250	
Compression Ratio	8.1	
Horsepower, BHP at RPM	110 BHP 3800 RPM	110 BHP 3800 RPM
Torque, ft-lb at RPM	190 ft-lb 1600 RPM	190 ft-lb 1600 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.715-1.725	
Intake Valve Lift, in.	.3880	
Exhaust Valve Diameter, in.	1.495-1.505	
Exhaust Valve Lift, in.	.4051	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	48	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	64	
Exhaust Valve Closes, deg ATC	50	
Exhaust Valve Duration, deg	294	
Valve Overlap, deg	66	
Distributor Type	High Energy Ignition System	
Idle Speed, RPM	A-600 D	A-500 D
Timing, degrees	M-6 BTC A-10 BTC	M-6 BTC A-6 BTC
Fuel System Type	Carburetor - 1 BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel Evapora tion Ref. 20	Catalytic Converter EGR Air Injection Early Fuel Evapora tion Ref. 20

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-250 CID (4.1 L) - 1 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Nova	A3	3500	2.73	36.3	NO	10.2	0.59	10.00	471.	1.42	18	0.08	0.90	354.	1.87	25	21
Chevrolet	A3	4000	2.73	33.9	YES	11.3	0.47	8.90	536.	1.36	16	0.04	0.60	393.	1.79	22	18
Chevrolet	A3	4000	2.73	33.9	YES	11.3	0.40	6.30	543.	1.44	16	0.04	0.20	391.	1.52	23	18
Nova	A3	4000	2.73	36.2	YES	12.7	0.70	12.70	513.	1.65	17	0.08	1.30	384.	1.80	23	19
Camaro	A3	4000	2.73	36.3	YES	9.8	0.65	13.40	510.	1.47	17	0.07	1.00	367.	1.67	24	19
Camaro	A3	4000	2.73	36.3	NO	8.9	0.68	11.70	508.	1.50	17	0.09	1.10	360.	1.49	24	20
Nova	M3	3500	2.73	36.2	YES	12.3	0.52	5.80	458.	1.84	19	0.04	0.10	343.	3.30	26	21
Camaro	M3	4000	2.73	36.3	YES	9.8	0.65	9.00	464.	1.33	18	0.03	0.20	320.	2.32	28	22
Nova	M3	4000	2.73	36.3	YES	10.6	0.61	5.90	487.	1.76	18	0.06	0.40	335.	2.42	26	21

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC 250 CID (4.1 L) - 1 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Nova	A3	3500	2.73	36.3	YES	11.2	0.23	2.10	577.	1.14	15	0.04	0.0	433.	1.05	20	17
Chevrolet	A3	4000	2.73	33.9	YES	11.3	0.23	2.30	598.	0.91	15	0.03	0.0	446.	0.84	20	17
Nova	A3	4000	2.73	36.2	YES	12.7	0.31	4.60	594.	1.06	15	0.04	0.0	457.	0.97	19	16
Camaro	A3	4000	2.73	36.3	YES	9.8	0.27	2.00	561.	1.24	16	0.05	0.0	412.	0.94	22	18

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 GMC 250 CID (4.1 L) - 1 BBL

VEH. MODEL	TRANS.	I. W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂
Pickup	A3	4000	3.08	35.0	N0	12.0	0.42	7.50	501.	2.30	0.03	0.30	383.	2.76	23	19
Van	A3	4500	3.07	36.0	N0	12.7	0.46	9.40	566.	2.69	0.04	0.70	408.	3.57	22	18
Pickup	M3	4000	3.08	38.0	N0	12.0	0.52	8.70	506.	2.32	0.02	0.30	368.	2.21	24	20
Pickup	M3	4000	3.73	47.0	N0	12.0	0.60	8.10	548.	2.76	0.02	0.10	414.	2.78	21	18
Pickup	M3	4500	3.08	38.0	N0	12.7	0.61	8.20	536.	1.97	0.03	0.20	388.	1.72	23	19
Pcikup	M4	4500	3.73	47.0	N0	12.7	0.63	10.20	579.	2.04	0.03	0.10	453.	2.01	20	17

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 GMC-250 CID (4.1 L) - 1 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Pickup	A3	4000	3.08	35.0	N0	18.5	0.27	5.00	608.	1.71	14	0.03	0.0	510.	2.21	17	16
Van	A3	4500	3.07	36.3	N0	18.5	0.32	6.20	655.	1.72	13	0.05	0.0	536.	1.77	16	15
Pickup	M3	4000	3.07	38.6	N0	18.5	0.42	3.80	59.1	1.44	15	0.06	0.0	452.	2.13	20	17
Pickup	M3	4500	3.07	38.6	N0	18.5	0.44	3.40	618.	1.75	14	0.07	0.10	467.	2.27	19	16

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

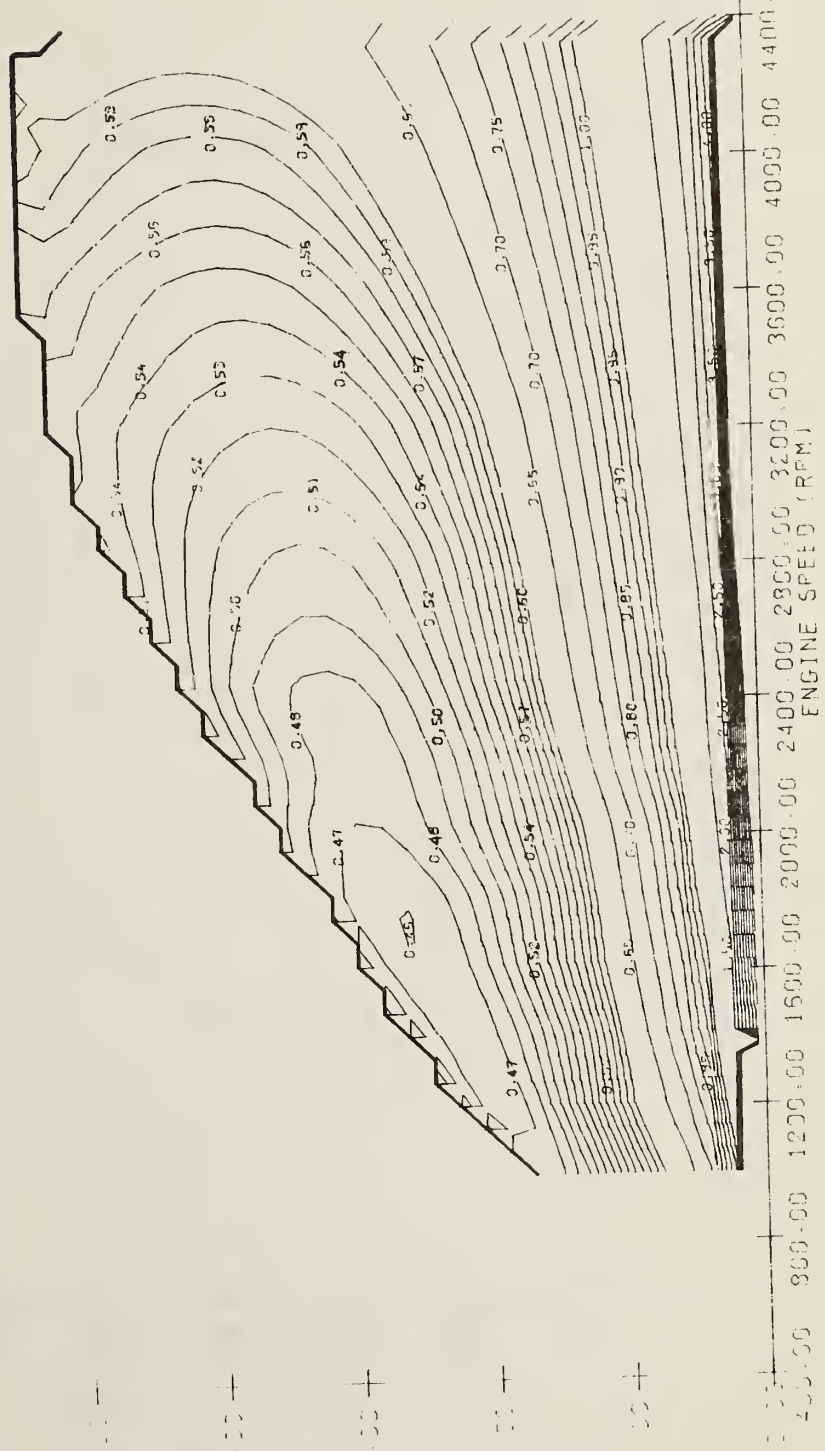
d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1977 GM 250 CID (4.1L) - 1BBL

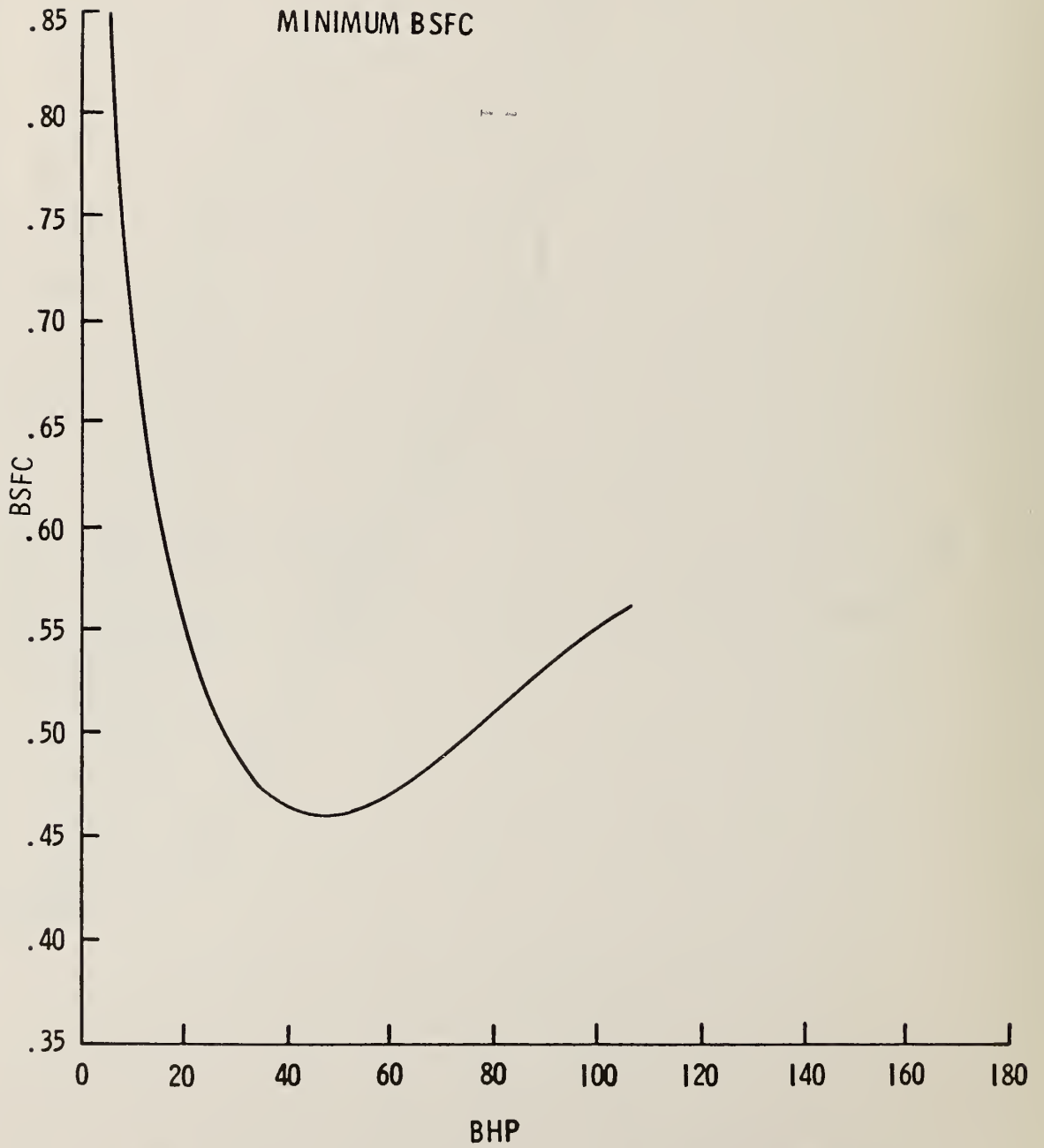
Tested by General Motors.

Engine certified for 49 states, light trucks and vans, automatic transmission.

BSFC (LB/BHP-HR)
1977 GM 250.C CID- 1BBL



1977 GM 250 CID (4.1 L), L6 - 1BBL



BSFC (LB/BHP-HR)
 1977 GM 250.0 CID-1BBL



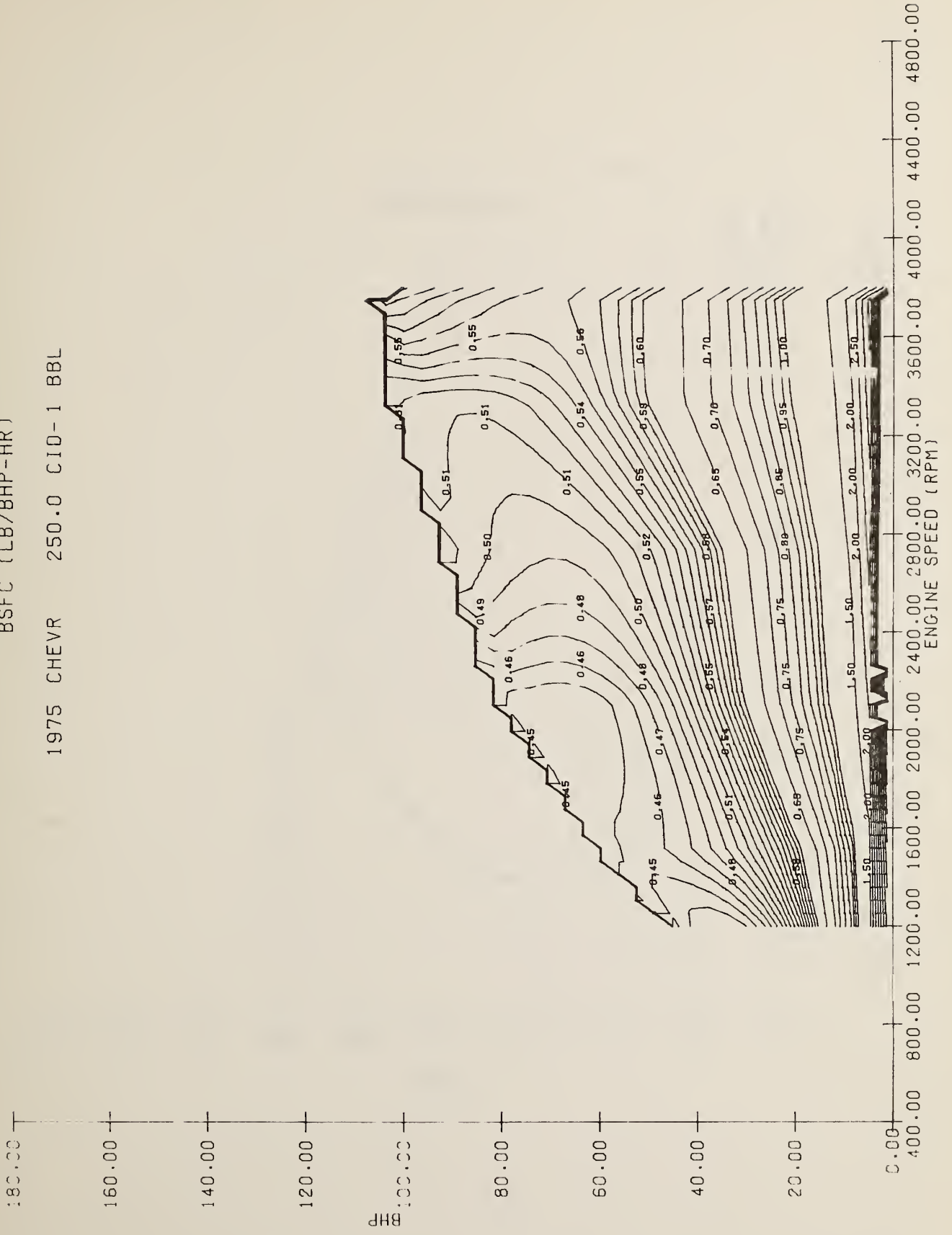
1975 CHEVROLET 250 CID (4.1L) - 1BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

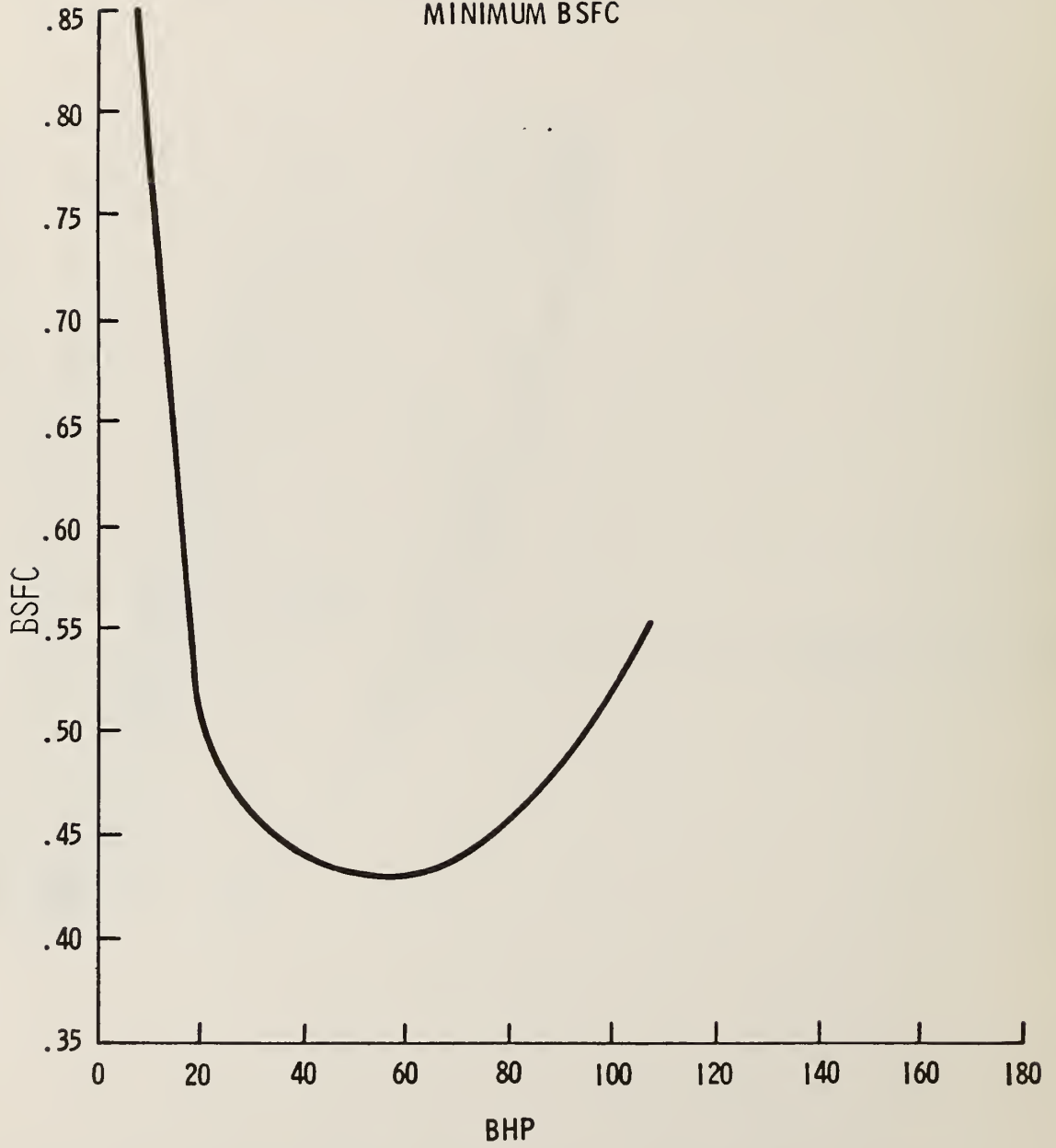
BSFC (LB/BHP-HR)

1975 CHEVR 250.0 C10-1 BBL



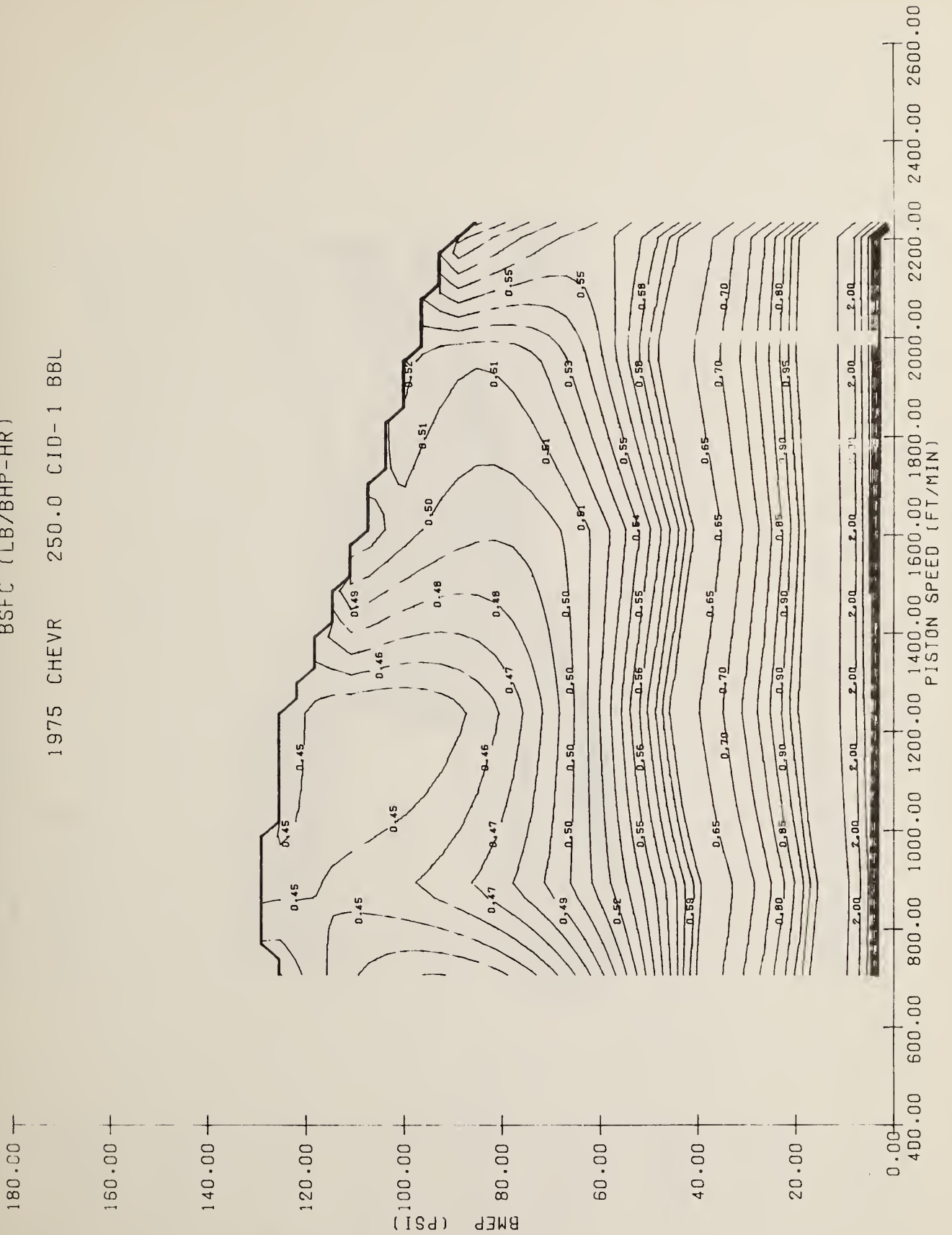
1975 GM-250 CID(4.1L), L6-1BBL

MINIMUM BSFC



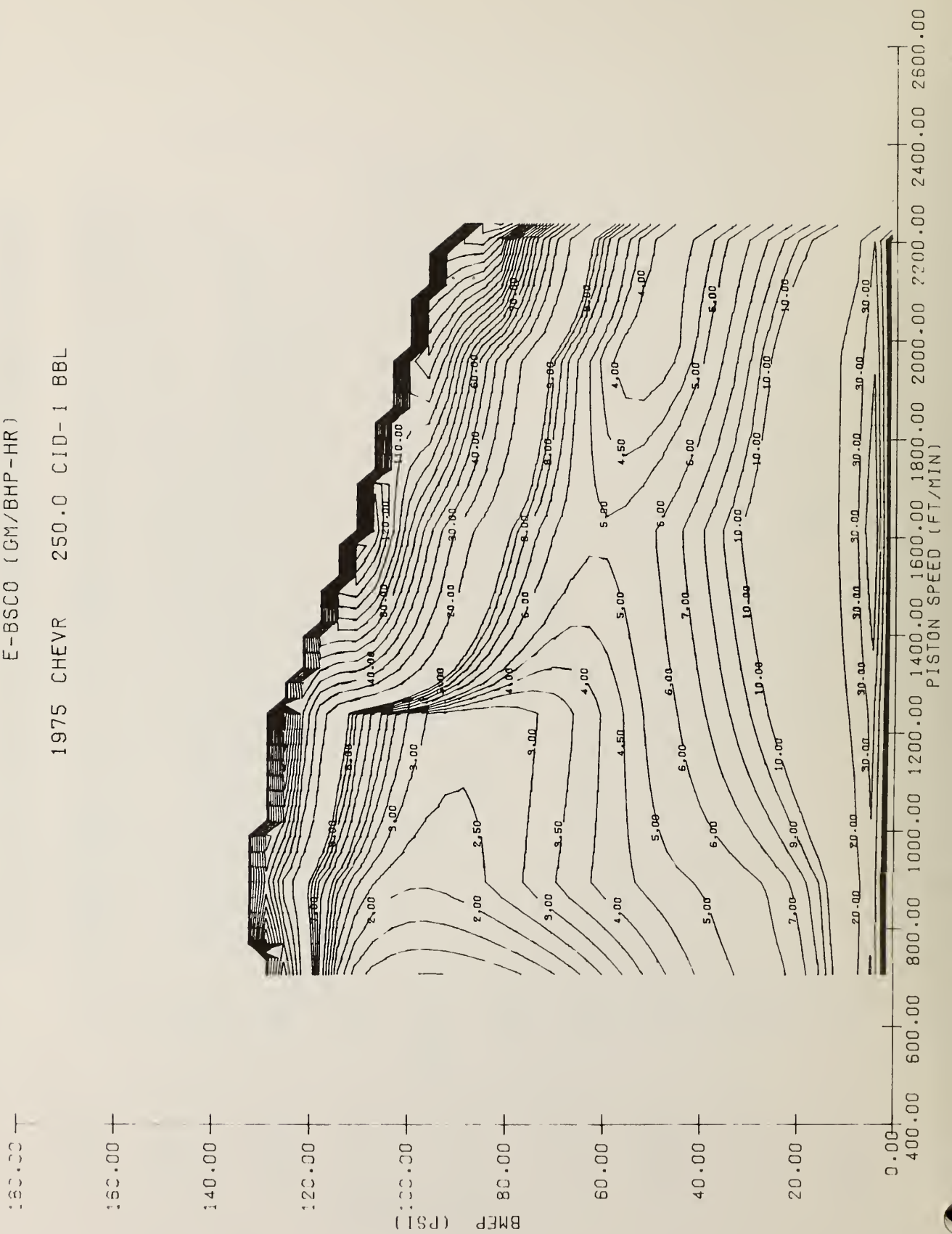
BSFC (LB/BHP-HR)

1975 CHEVR 250.0 CID-1 BBL

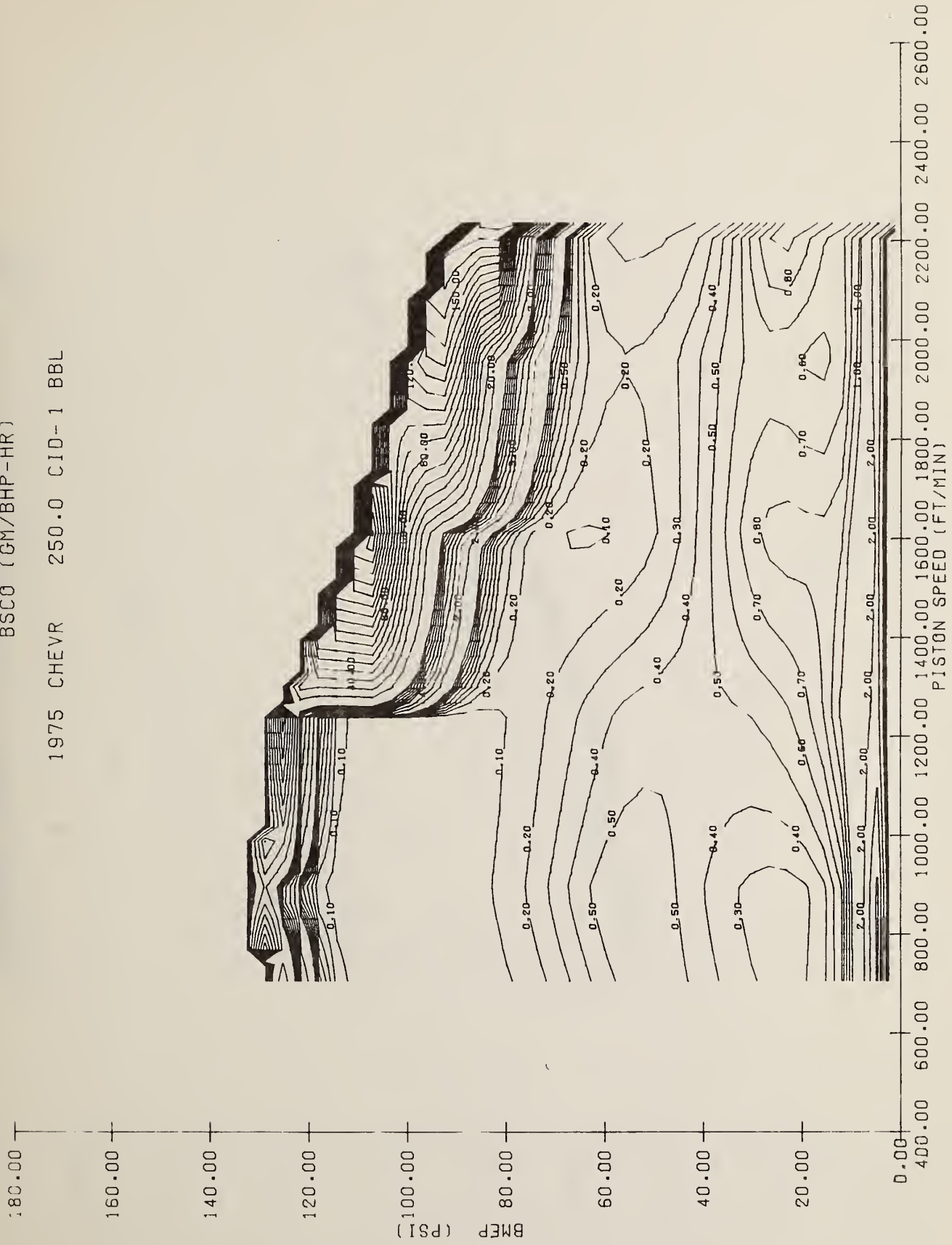


E-BSCO (GM/BHP-HR)

1975 CHEVR 250.0 CID-1 BBL

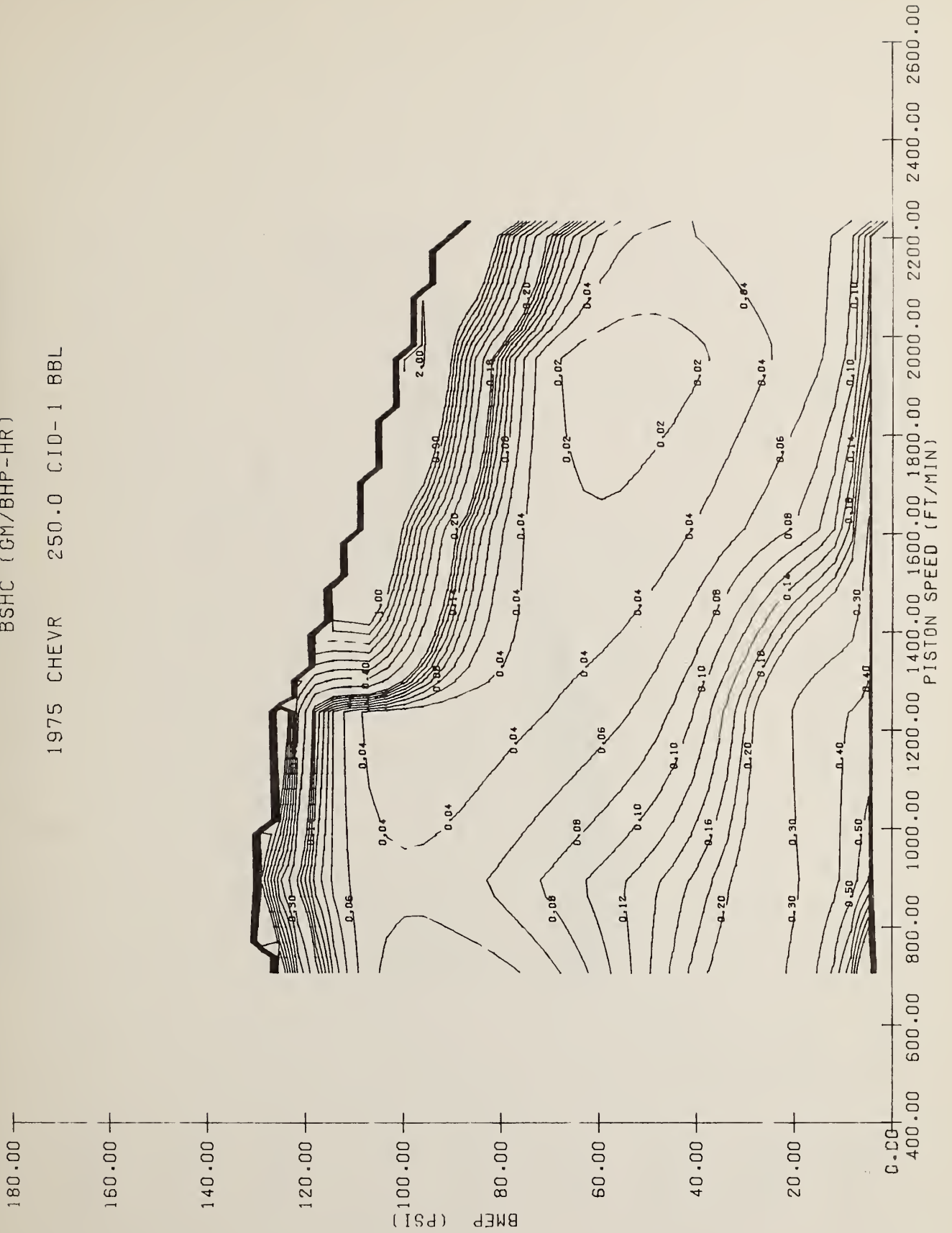


BSCO (GM/BHP-HR)
1975 CHEVR 250.0 CID--1 BBL



BSHC (GM/BHP-HR)

1975 CHEVR 250.0 CID-1 BBL



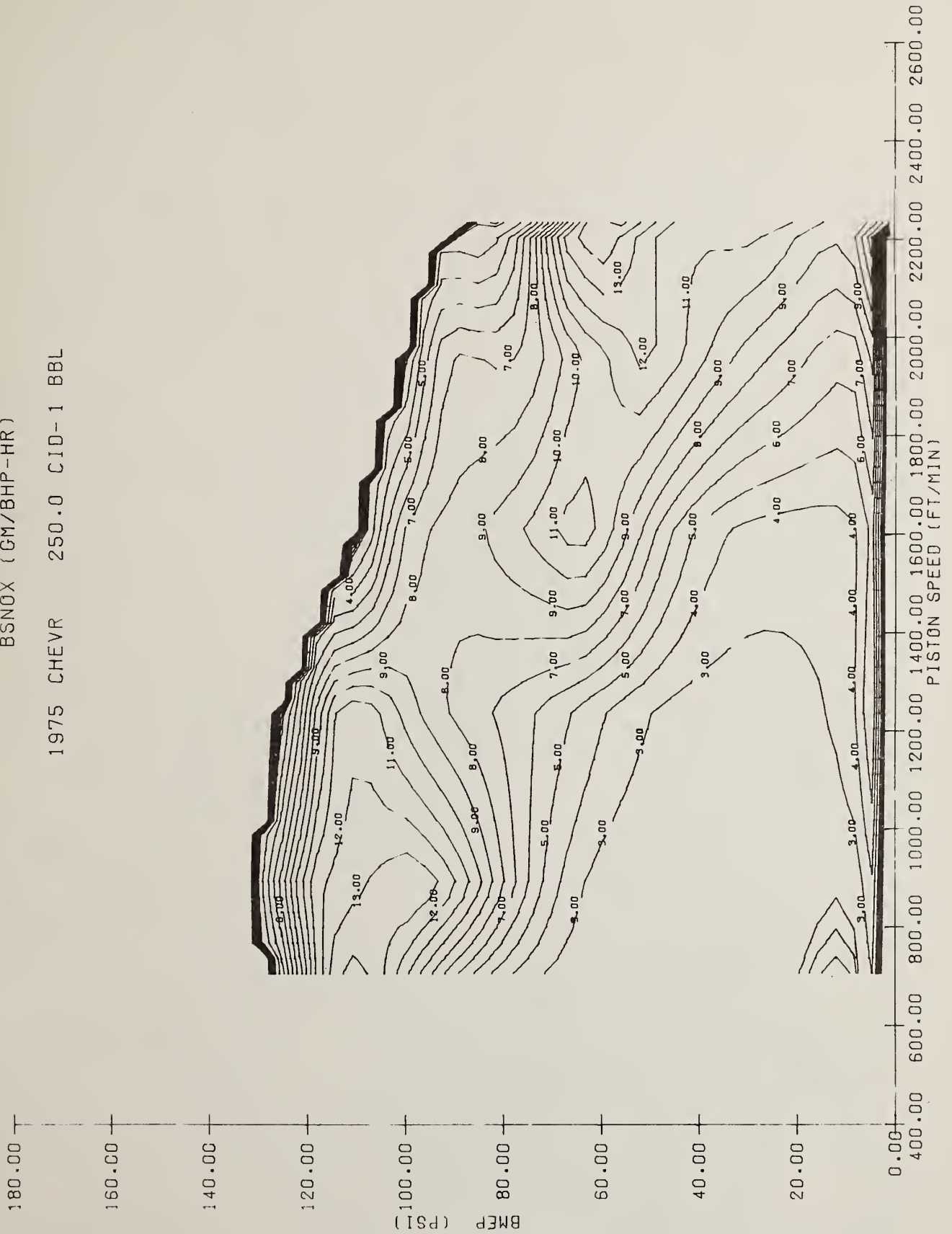
E-BSNOX (GM/BHP-HR)

1975 CHEVR 250.0 CID-1 BBL



BSNOX (GM/BHP-HR)

1975 CHEVR 250.0 CID-1 BBL



ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	522/237	
No. of Cylinders	6	
Bore, in.	3.875	
Stroke, in.	3.53	
Displacement, in ³	250.	
Compression Ratio	8.1	
Horsepower, BHP at RPM	110 BHP 3800 RPM	90 BHP 3600 RPM
Torque, ft-lb at RPM	190 ft-lb 1600 RPM	175 ft-lb 1600 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.715-1.725	
Intake Valve Lift, in.	.3880	
Exhaust Valve Diameter, in.	1.495-1.505	
Exhaust Valve Lift, in.	.4051	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	48	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	64	
Exhaust Valve Closes, deg ATC	50	
Exhaust Valve Duration, deg	294	
Valve Overlap, deg	66	
Distributor Type	High Energy Ignition System	
Idle Speed, RPM	A-600 D	A-500 D
Timing, degrees	A-8 BTC @ 600 RPM	A-6 BTC @ 600 RPM
Fuel System Type	Carburetor - 1 BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	Engine Modifications Catalytic Converter EGR	Air Injection Catalytic Converter EGR
NOTES: A = Automatic transmission M = Manual transmission EGR = Exhaust gas recirculation D = Drive	Ref. 20	

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1977* GMC-Checker-250 CID (4.1 L) - 1 BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Checker	A3	4000	3.07	38.0	N0	12.0	0.66	13.30	528.	16	1.77	0.05	0.80	406.	1.95	22	18

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data not available
California Certification Data Not Available

1978 GMC-260 CID (4.3 l) - 2 BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	3.5	
Stroke, in.	3.385	
Displacement, in ³	260	
Compression Ratio	7.5	
Horsepower, BHP at RPM	110 BHP 3400 RPM	110 BHP 3400 RPM
Torque, ft-lb at RPM	205 ft-lb 1800 RPM	205 ft-lb 1800 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.522 \pm .005	
Intake Valve Lift, in.	.395	
Exhaust Valve Diameter, in.	1.300 \pm .005	
Exhaust Valve Lift, in.	.400	
Intake Valve Opens, deg BTC	14	
Intake Valve Closes, deg ABC	48	
Intake Valve Duration, deg	242	
Exhaust Valve Opens, deg BBC	56	
Exhaust Valve Closes, deg ATC	14	
Exhaust Valve Duration, deg	250	
Valve Overlap, deg	28	
Distributor Type	Transistorized	
Idle Speed, RPM	A-550	A-550
Timing, degrees	A-18 @ 1100 RPM	A-18 @ 1100 RPM
Fuel System Type	Carburetor - 2bbl downdraft	
Choke Type	Automatic - (Bi-Metal Coil)	
Carburetor Barrel Diameter, in.	1.375	
Vehicle Emission Control Systems	Catalytic Converter EGR Ref. 20	Air Injection EGR Catalytic Converter Ref. 20

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* Data Not Available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 260 CID (4.3 L) - 2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Cutlass	A3	3500	2.29	31.0	Yes	10.7	0.41	4.50	451.	1.47	19	0.05	0.20	332.	1.38	27	22
Cutlass	A3	3500	2.93	39.9	Yes	10.7	0.39	4.30	511.	1.59	17	0.05	0.20	411.	1.60	22	19
Delta 88	A3	4000	2.56	33.2	Yes	11.3	0.44	3.90	477.	1.80	18	0.05	0.40	356.	2.22	25	21
Cutlass	M5 w/OD	3500	2.56	34.9	Yes	10.7	0.98	9.80	420.	1.72	20	0.12	2.30	303.	2.08	29	23

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 260 CID (4.3 L) - 2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂		
Cutlass	A3	3500	2.29	31.0	Yes	10.7	0.20	2.40	511.	17	0.06	0.0	360.	1.51	25	20

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1978 GMC - 301 CID (4.9 L) - 2BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg		*
No. of Cylinders		8
Bore, in.		4.00
Stroke, in.		3.00
Displacement, in ³		301.
Compression Ratio		8.2
Horsepower, BHP at RPM	139 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	235 ft-lb 2000 RPM	N/A ft-lb RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.		1.7201
Intake Valve Lift, in.		.3642
Exhaust Valve Diameter, in.		1.500
Exhaust Valve Lift, in.		.3642
Intake Valve Opens, deg BTC	M-27	A-31
Intake Valve Closes, deg ABC	M-67	A-81
Intake Valve Duration, deg	M-274	A-292
Exhaust Valve Opens, deg BBC	M-62	A-64
Exhaust Valve Closes, deg ATC	M-32	A-30
Exhaust Valve Duration, deg	M-274	A-274
Valve Overlap, deg	M-59	A-61
Distributor Type	Transistorized	
Idle Speed, RPM	A-550	N/A
Timing, degrees	A-12 BTC	N/A
Fuel System Type	Carburetor - 2bbl downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.		1.218
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel Evaporation Ref. 20	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data Not Available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 301 CID (4.9 L) - 2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
LeMans	A3	3500	2.29	31.0	NO	9.7	0.54	5.50	4.01	1.51	18	0.06	0.10	350.	1.55	25	20
Pontiac	A3	4000	2.41	29.9	YES	11.3	0.51	5.20	519.	1.50	17	0.07	0.30	365.	1.80	24	20
Safari Wagon	A3	4500	2.56	31.8	YES	12.0	0.70	8.80	587.	1.53	15	0.08	0.50	424.	2.04	21	17

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1978 GMC - 301 CID (4.9 L) - 4BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.00	
Stroke, in.	3.00	
Displacement, in ³	301.	
Compression Ratio	8.2	
Horsepower, BHP at RPM	150 BHP 4000 RPM	N/A BHP RPM
Torque, ft-lb at RPM	239 ft-lb2000 RPM	N/A ft-lb RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.7201	
Intake Valve Lift, in.	.3642	
Exhaust Valve Diameter, in.	1.500	
Exhaust Valve Lift, in.	.3642	
Intake Valve Opens, deg BTC	14	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	248	
Exhaust Valve Opens, deg BBC	41	
Exhaust Valve Closes, deg ATC	27	
Exhaust Valve Duration, deg	248	
Valve Overlap, deg	41	
Distributor Type	Transistorized	
Idle Speed, RPM	A=550	N/A
Timing, degrees	A-12 BTC @ 750 RPM	N/A
Fuel System Type	Carburetor - 4bbl downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	Primary: 1.218	Secondary: 2.250
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel Evaporation Ref. 20	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 301 CID (4.9 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Grand Prix	A3	3500	2.41	32.7	Yes	10.7	0.46	5.90	512.	1.80	17	0.06	0.50	370.	2.21	24	20
LeMans	A3	3500	2.41	32.7	No	9.7	0.62	6.00	496.	1.28	18	0.10	0.04	361.	1.49	24	20

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1978 GMC - 305 CID (5.0 L) - 2BBL

ENGINE PARAMETER	49 STATES			CALIFORNIA		
Engine Wt. lbs/kg	624/284					
No. of Cylinders	8					
Bore, in.	3.736					
Stroke, in.	3.48					
Displacement, in ³	305					
Compression Ratio	8.4					
Horsepower, BHP at RPM	145	BHP 3800	RPM	145	BHP 3800	RPM
Torque, ft-lb at RPM	245	ft-lb2400	RPM	245	ft-lb2400	RPM
Exhaust System Type	Single					
Intake Valve Diameter, in.	1.715-1.726					
Intake Valve Lift, in.	.3727					
Exhaust Valve Diameter, in.	1.495-1.505					
Exhaust Valve Lift, in.	.4100					
Intake Valve Opens, deg BTC	28					
Intake Valve Closes, deg ABC	64					
Intake Valve Duration, deg	272					
Exhaust Valve Opens, deg BBC	78					
Exhaust Valve Closes, deg ATC	30					
Exhaust Valve Duration, deg	288					
Valve Overlap, deg	58					
Distributor Type	High energy ignition system					
Idle Speed, RPM	*			*		
Timing, degrees	M-4 BTC	A-6BTC		M-4 BTC	A-6BTC	
Fuel System Type	Carburetor - 2bbl downdraft					
Choke Type	Automatic					
Carburetor Barrel Diameter, in.	1.69					
Vehicle Emission Control Systems	Catalytic Converter			Air Injection		
	EGR			Catalytic Converter		
	Early Fuel Evaporation			EGR		
	Ref. 20			Early Fuel Evapora- tion		
				Ref. 20		

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 305 CID (5.0 L) 2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		HC	CO	CO ₂			NO _x	NO _x
Malibu	A3	3500	2.29	30.4	No	9.7	0.44	8.10	501.	1.87	17	0.0	0.80	358.	1.67	25	20
Firebird	A3	4000	2.41	31.3	Yes	9.8	0.53	11.10	520.	1.03	16	0.06	1.50	386.	1.00	23	19
Chevrolet	A3	4000	2.41	31.3	Yes	11.3	0.52	14.10	523.	1.21	16	0.04	0.40	402.	1.51	22	18
Camaro	A3	4000	2.41	32.0	Yes	9.8	0.52	10.00	532.	1.30	16	0.05	0.80	394.	1.23	22	18
Camaro	A3	4000	2.41	32.0	No	8.9	0.51	10.20	530.	1.12	16	0.05	0.60	391.	1.05	23	19
Chevrolet Wagon	A3	4500	2.56	31.7	Yes	12.0	0.49	9.70	603.	1.46	14	0.05	1.70	447.	1.52	20	16
Monte Carlo	M4	3500	2.73	37.0	Yes	10.7	0.85	8.40	539.	1.30	16	0.06	0.60	387.	1.42	23	18
Monza	M4	3500	3.08	44.7	Yes	8.6	0.61	5.10	583.	1.33	15	0.04	0.40	413.	2.00	21	17
Nova	M4	4000	3.08	41.7	Yes	10.6	0.77	7.40	592.	1.63	15	0.06	0.40	422.	2.05	21	17

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 305 CID (5.0 L) - 2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Malibu	A3	3500	2.29	30.4	Yes	10.7	0.26	4.20	607.	0.82	14	0.04	0.40	426.	1.06	21	17
Grand Prix	A3	3500	2.73	38.1	Yes	10.7	0.21	2.20	647.	0.85	14	0.04	0.10	466.	1.25	19	16
Chevrolet	A3	4000	2.41	29.9	No	10.3	0.30	4.70	665.	0.87	13	0.06	0.20	478.	0.85	18	15
Camaro	A3	4000	2.41	32.0	Yes	13.2	0.30	4.40	663.	1.11	13	0.08	0.30	469.	1.66	19	15
Cutlass Wagon	A3	4000	2.73	38.1	Yes	11.1	0.24	4.30	677.	0.71	13	0.03	0.0	482.	0.98	18	15

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 GMC 305 CID (5.0 L) 2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Pickup	A3	4500	2.73	31.5	Yes	14.0	0.79	7.70	583.	2.51	15	0.05	0.60	437.	2.78	20	17
Pickup	A3	4500	2.73	34.7	Yes	14.0	0.61	7.40	590.	2.60	15	0.09	2.40	478.	2.57	18	16
Pickup	A3	4500	3.40	42.8	Yes	14.0	0.46	4.20	608.	2.62	14	0.05	0.50	500.	2.95	18	16
Van	M3	4000	3.07	37.6	No	12.0	1.17	11.20	542.	1.31	16	0.06	0.90	405.	2.03	22	18
Van	M3	4000	3.42	43.5	No	12.0	0.96	12.60	572.	1.45	15	0.07	2.40	454.	1.67	19	17
Van	M3	4500	3.08	37.6	No	12.7	0.80	7.30	564.	1.47	15	0.07	0.60	425.	2.01	21	17
Van	M3	4500	3.40	43.5	Yes	14.0	0.89	8.00	600.	2.68	14	0.05	0.30	456.	3.84	19	16

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

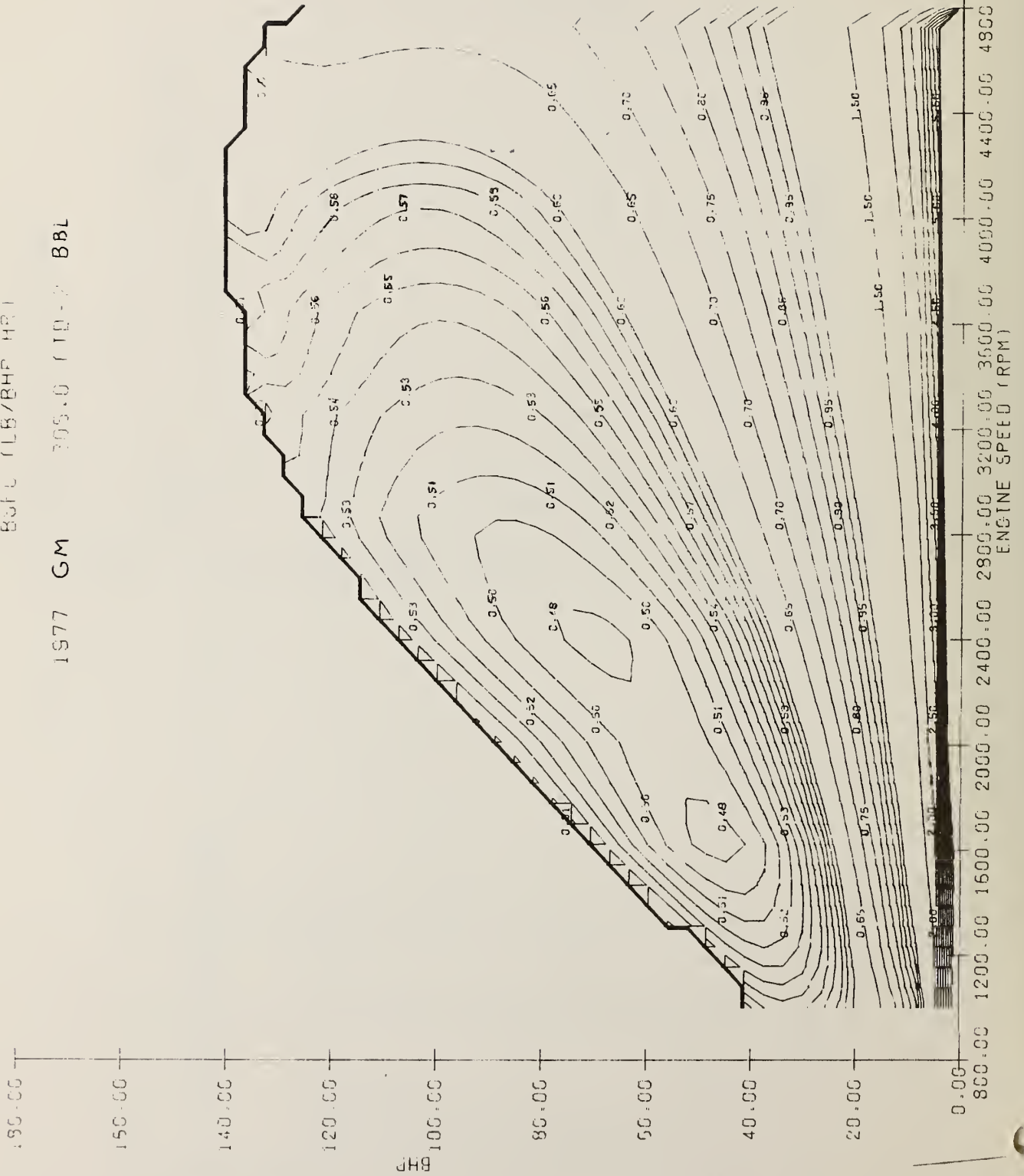
1977 GM 305 CID (5.0L) - 2BBL

Engine tested by General Motors.

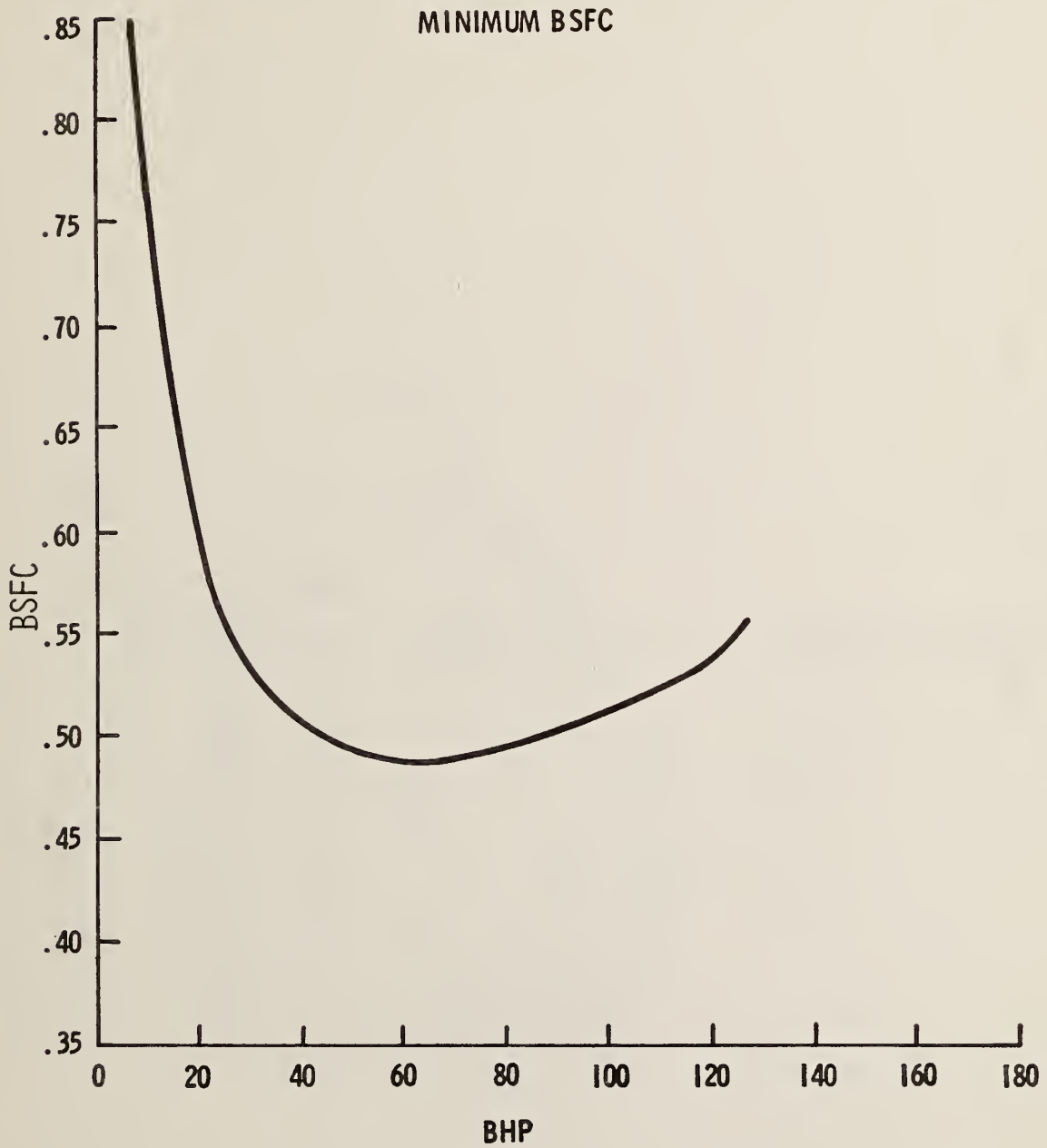
Engine certified for: 49 states, light trucks and vans, automatic transmission.

Bafu (LB/BHP HR)

1977 GM 305.0 (10-2) BBL



1977 GM-305 CID(5.0L), V8-2BBL



BSFC (LB/BHP HR)
 1977 GM 305.0 CID-2 BBL

150.00 +

140.00 +

120.00 +

100.00 +

BMEP (PSI)

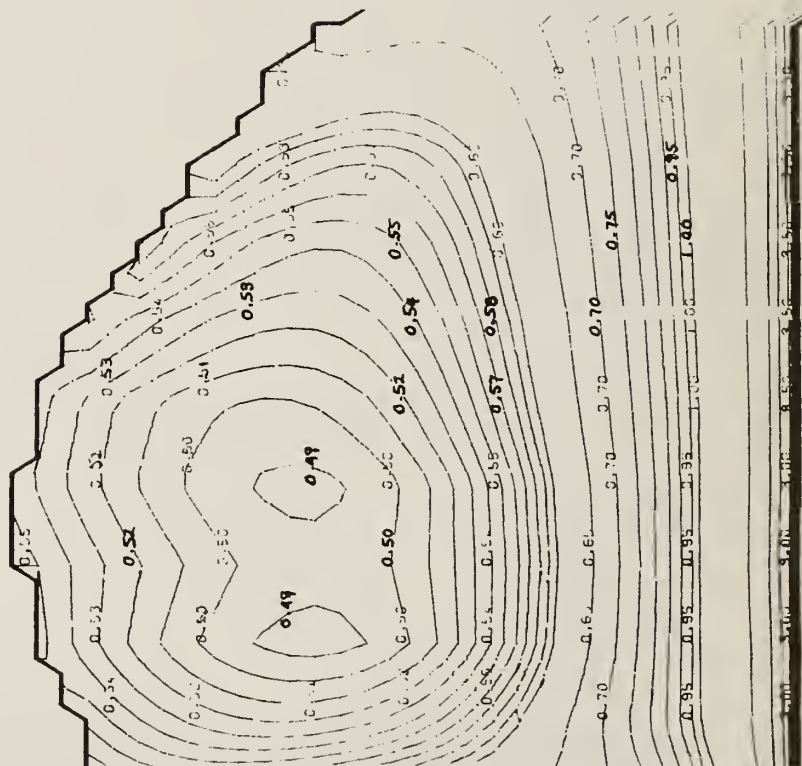
80.00 +

60.00 +

40.00 +

20.00 +

0.00 +



0.00 + 400.00 800.00 1200.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00
 PISTON SPEED (RPM)

1976 CHEVROLET 305 CID (5.0L) - 2BBL

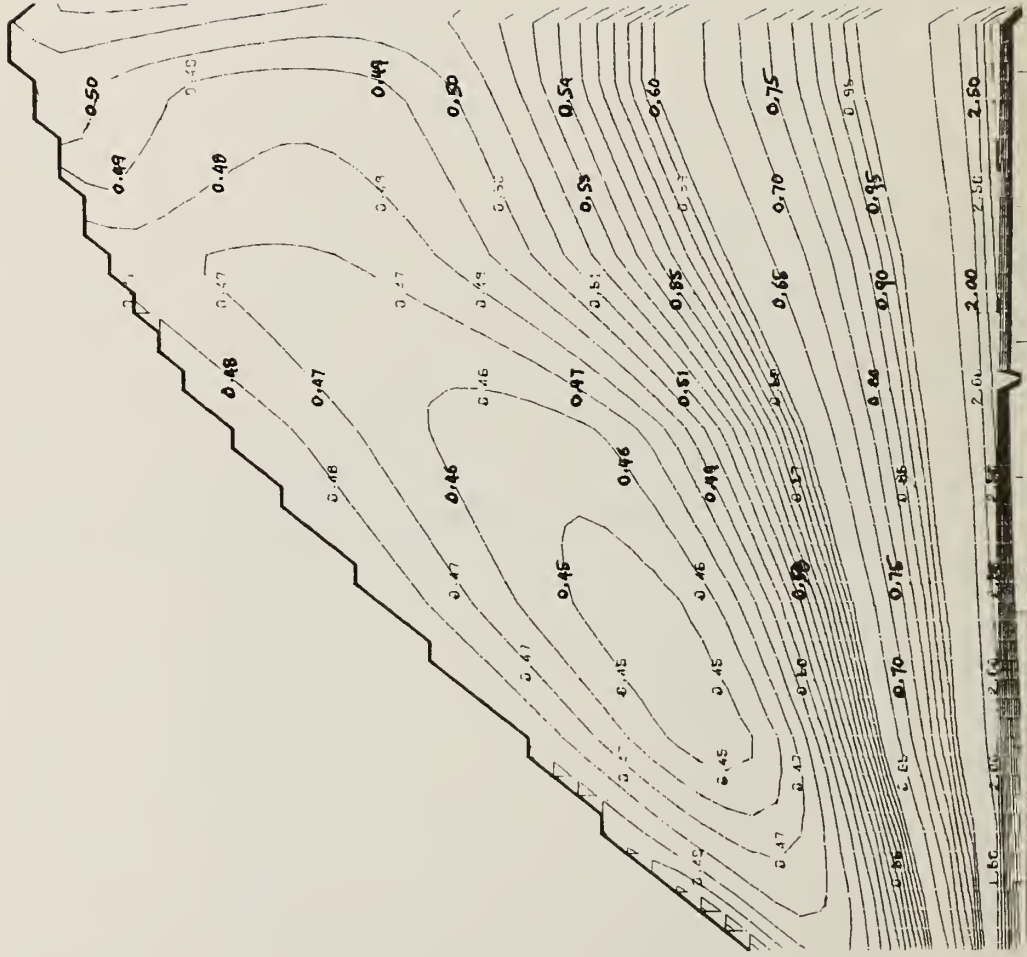
Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

BSFC 11.6/540-HP

1976 CHEV 305.0 (IP-288)

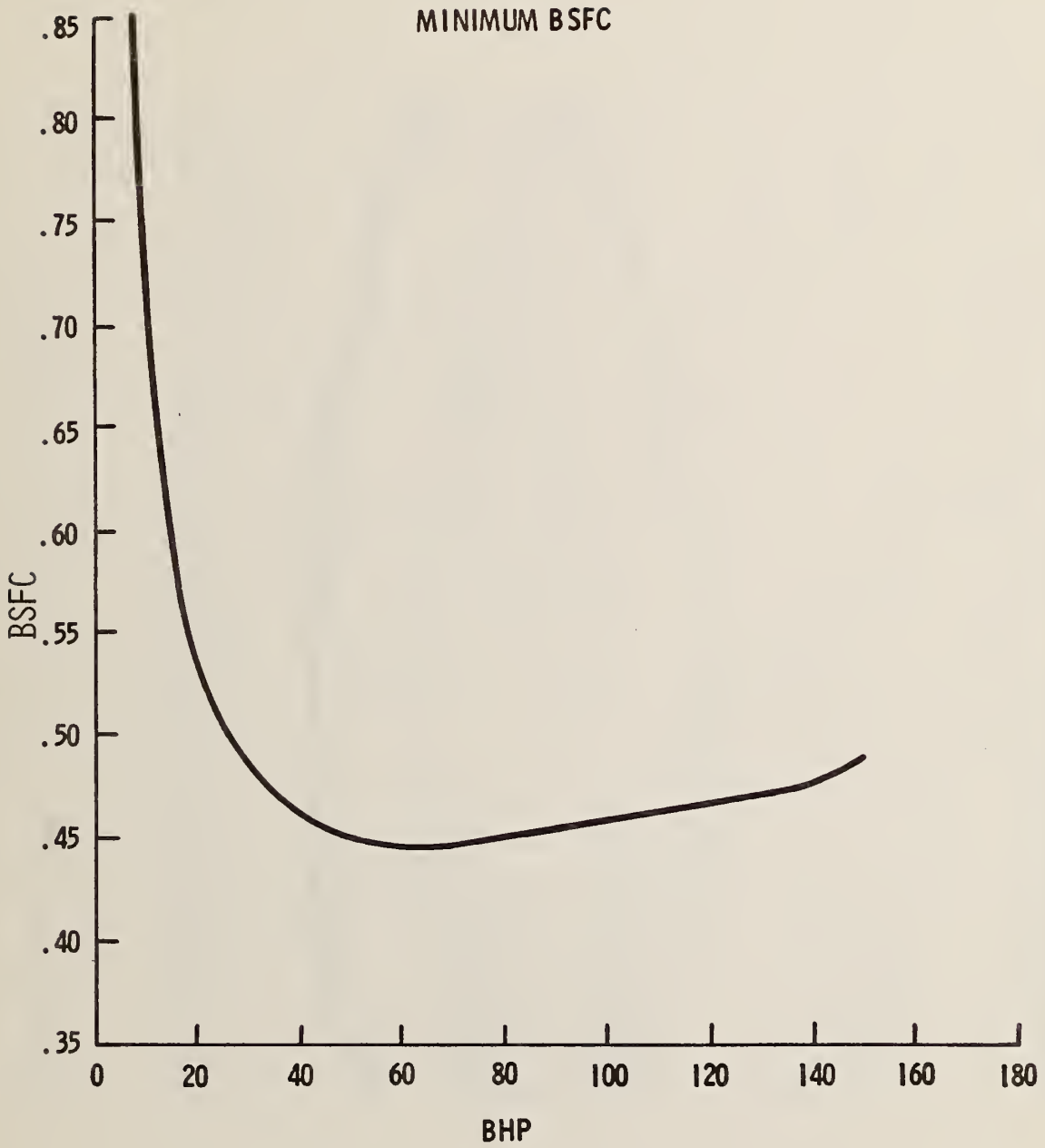
180.00 +
160.00 +
140.00 +
120.00 +
100.00 +
80.00 +
60.00 +
40.00 +
20.00 +



0 00
400 00
800 00
1200 00
1600 00
2000 00
2400 00
2800 00
3200 00
3600 00
4000 00
4400 00
4800 00

ENGINE SPEED (RPM)

1976 GM 305CID (5.0L), V8-2BBL

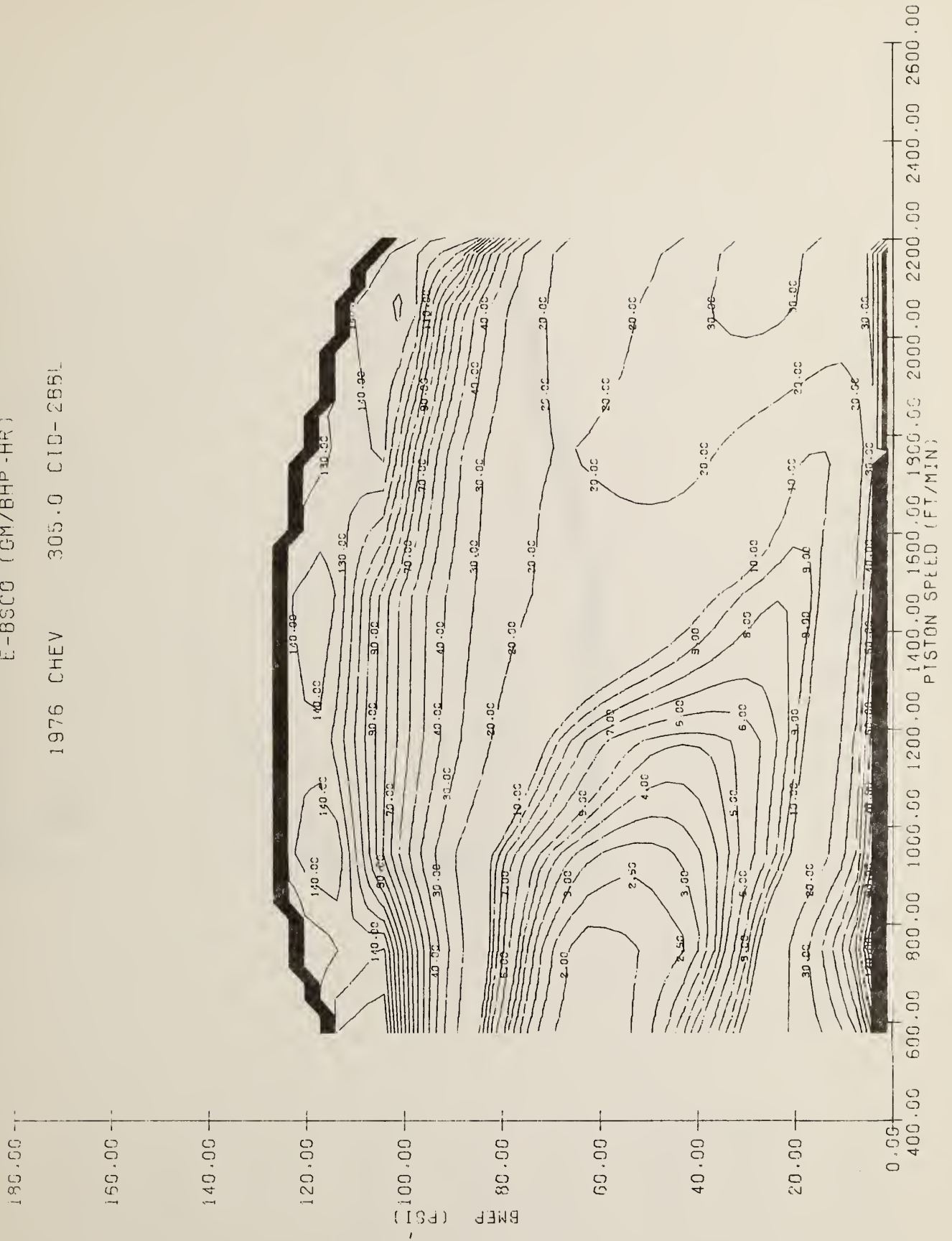


BSFC (LB/BHP-HR)
 1975 CHEV 305.0 CID-2BBL



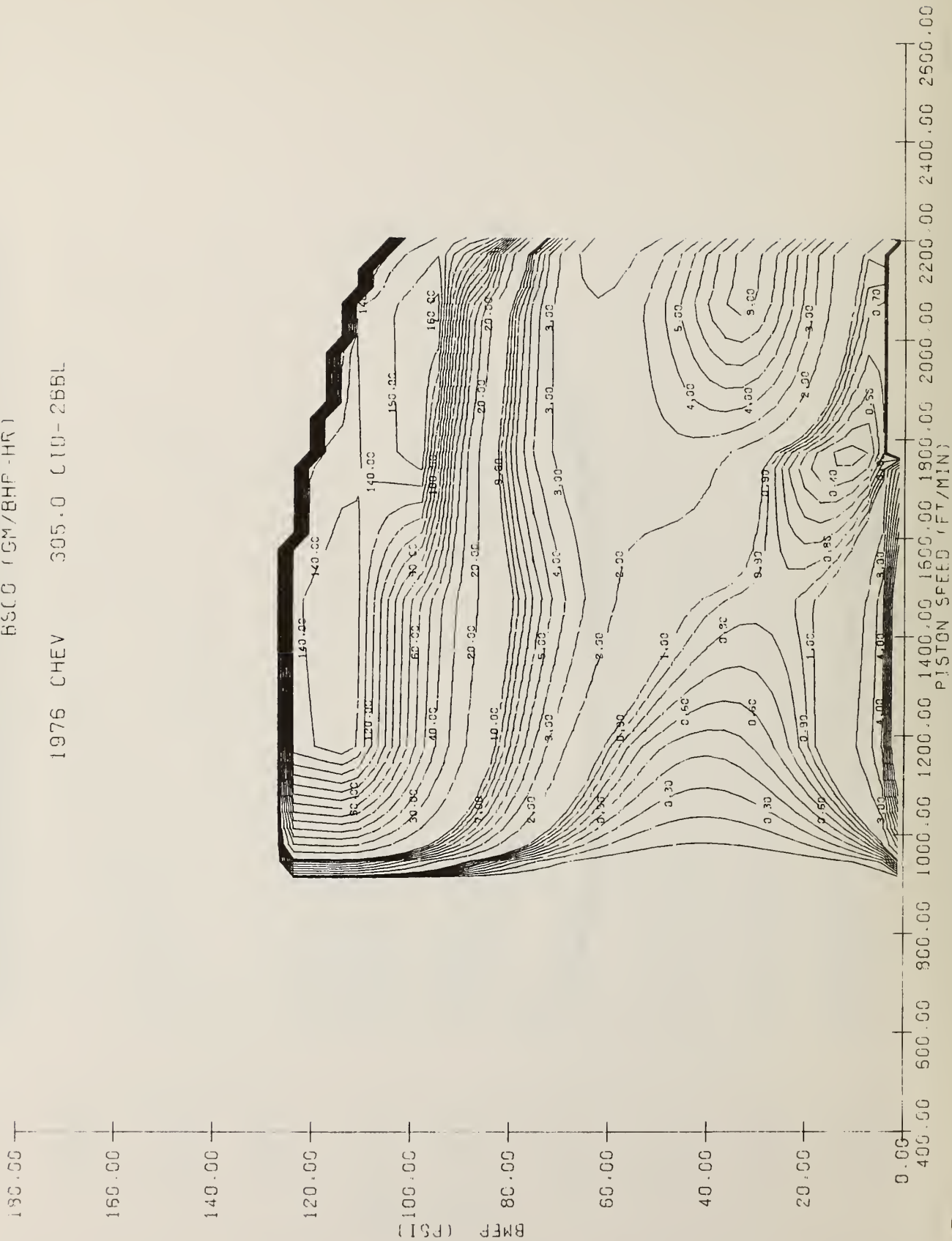
E-BSCG (GM/BHP-HR)

1976 CHEV 305.0 CID-285L



BSCG (CM/BHP-HR)

1976 CHEV 305.0 CID-2BBL



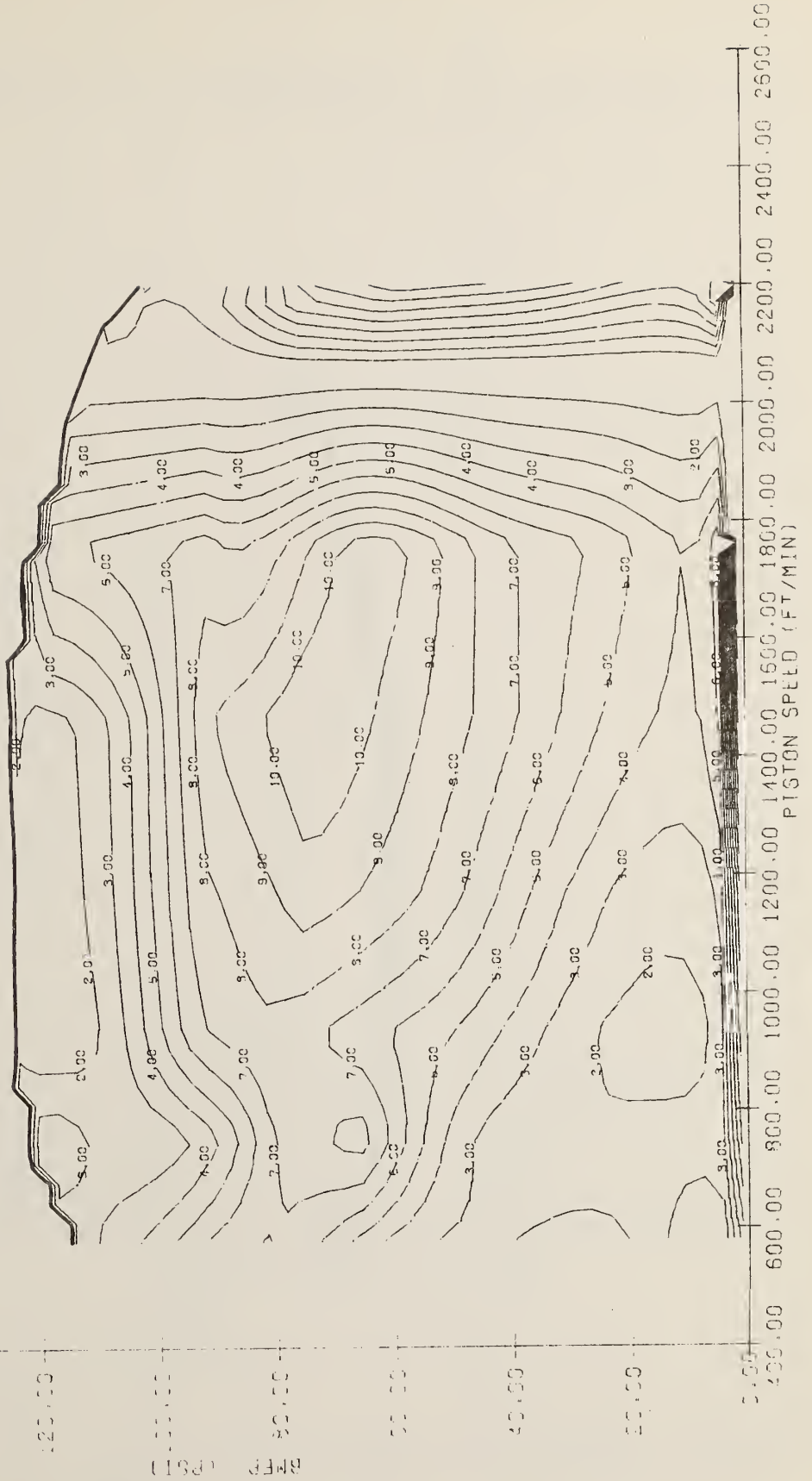
BSHC (GM/BHP-HR)

1975 CHEV 305.0 CID-266L



E-BSNOX (GM/BHP-HR)

1976 CHEV 305.0 C10-285L



BUNOX (CM/RPH) HP
 1975 CHEV 305.0 CID-084

180.00 +

160.00 +

140.00 +

120.00 +

100.00 +

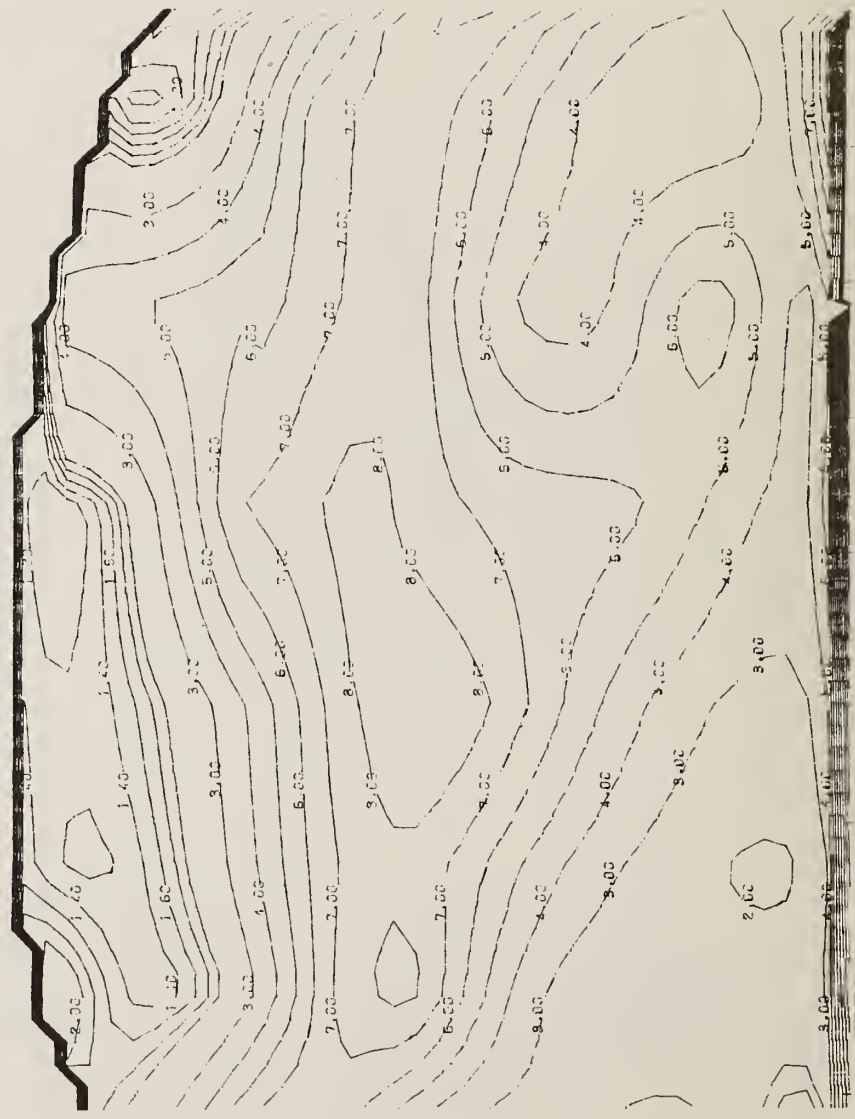
80.00 +

60.00 +

40.00 +

20.00 +

0.00



400.00 500.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2100.00 2500.00
 PISTON SPEED (FT/MIN)

1978 GMC - Checker - 305 CID (5.0 L) - 2BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	624/284	
No. of Cylinders	8	
Bore, in.	3.736	
Stroke, in.	3.48	
Displacement, in ³	305	
Compression Ratio	8.4	
Horsepower, BHP at RPM	145 BHP 3800 RPM	145 BHP 3800 RPM
Torque, ft-lb at RPM	245 ft-lb2400 RPM	245 ft-lb2400 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.715-1.725	
Intake Valve Lift, in.	.3727	
Exhaust Valve Diameter, in.	1.495-1.505	
Exhaust Valve Lift, in.	.4100	
Intake Valve Opens, deg BTC	28	
Intake Valve Closes, deg ABC	64	
Intake Valve Duration, deg	272	
Exhaust Valve Opens, deg BBC	78	
Exhaust Valve Closes, deg ATC	30	
Exhaust Valve Duration, deg	288	
Valve Overlap, deg	58	
Distributor Type	High energy ignition system	
Idle Speed, RPM	A-500	A-500
Timing, degrees	A-4BTC @ Idle	A-4BTC @ Idle
Fuel System Type	Carburetor - 2bbl downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	Engine modifications Catalytic Converter EGR Ref. 20	Catalytic Converter EGR

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1977* GMC - Checker - 305 CID(5.0 L) - 2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Checker	A3	4500	3.07	38.0	YES	14.0	0.59	13.00	609.	1.35	14	0.06	3.50	464.	1.24	19	16

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*1978 Data not available
California Certification Data Not Available

1978 GMC - 305 CID (5.0 L) - 4BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	590/268	
No. of Cylinders	8	
Bore, in.	3.75	
Stroke, in.	3.5	
Displacement, in ³	305	
Compression Ratio	8.5	
Horsepower, BHP at RPM	160 BHP 4000 RPM	N/A BHP RPM
Torque, ft-lb at RPM	235 ft-lb 2400 RPM	N/A ft-lb RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.715-1.725	
Intake Valve Lift, in.	.3727	
Exhaust Valve Diameter, in.	1.495-1.505	
Exhaust Valve Lift, in.	.4100	
Intake Valve Opens, deg BTC	28	
Intake Valve Closes, deg ABC	64	
Intake Valve Duration, deg	272	
Exhaust Valve Opens, deg BBC	78	
Exhaust Valve Closes, deg ATC	30	
Exhaust Valve Duration, deg	288	
Valve Overlap, deg	58	
Distributor Type	Transistorized	
Idle Speed, RPM	A-550	N/A
Timing, degrees	A-4 BTC	N/A
Fuel System Type	Carburetor - 4 BBL downdraft	
Choke Type	Automatic - bi metal coil	
Carburetor Barrel Diameter, in.	Primary: 1.375	Secondary: 2.290
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel Evaporation Ref. 20	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

FGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 305 CID (5.0 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Regal	A3	3500	2.29	31.0	YES	11.1	0.50	9.10	544.	1.35	16	0.06	0.30	388.	1.53	23	18
Century Wagon	A3	4000	2.41	32.7	YES	11.1	0.51	6.90	563.	1.29	15	0.06	1.00	407.	1.53	22	16
Cutless Wagon	A3	4000	2.73	37.2	YES	12.5	0.40	4.40	580.	1.69	15	0.07	0.90	412.	2.31	21	17

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1978 GMC - 350 CID (5.7 L) - 4BBL

Ref. 12

ENGINE PARAMETER	49 STATES			CALIFORNIA		
Engine Wt. lbs/kg	627/285					
No. of Cylinders	8					
Bore, in.	4.00					
Stroke, in.	3.48					
Displacement, in ³	350					
Compression Ratio	8.2					
Horsepower, BHP at RPM	170	BHP	3800 RPM	170	BHP	3800 RPM
Torque, ft-lb at RPM	270	ft-lb	2400 RPM	270	ft-lb	2400 RPM
Exhaust System Type	Single					
Intake Valve Diameter, in.	1.935-1.945					
Intake Valve Lift, in.	3900					
Exhaust Valve Diameter, in.	1.495-1.505					
Exhaust Valve Lift, in.	4100					
Intake Valve Opens, deg BTC	28					
Intake Valve Closes, deg ABC	72					
Intake Valve Duration, deg	280					
Exhaust Valve Opens, deg BBC	78					
Exhaust Valve Closes, deg ATC	30					
Exhaust Valve Duration, deg	288					
Valve Overlap, deg	58					
Distributor Type	High Energy Ignition System					
Idle Speed, RPM	Not available			Not available		
Timing, degrees	M-6	BTC	A-6	BTC	M-6	BTC A-8
Fuel System Type	Carburetor - 4 bbl downdraft					
Choke Type	Automatic					
Carburetor Barrel Diameter, in.	Primary: 138			Secondary: 2.25		
Vehicle Emission Control Systems	Catalytic Converter EGR *Early Fuel-Evaporation *Air Injection Ref. 20			Air Injection Catalytic Converter EGR *Early Fuel-Evaporation Ref. 20		

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Not applicable for all models

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Delta 88	A3	4000	2.41	31.3	YES	11.3	0.49	6.10	533.	1.77	16	0.04	0.40	392.	2.41	23	19
Delta 88	A3	4000	3.08	40.0	YES	11.3	0.80	9.30	573.	1.53	15	0.06	0.40	459.	2.87	19	17
Olds 98	A3	4500	3.08	39.2	YES	12.5	0.65	8.30	612.	1.63	14	0.07	0.70	459.	2.77	19	16
Electra	A3	4000	2.41	29.9	NO	12.0	0.40	5.40	554.	1.60	16	0.04	0.10	395.	1.31	22	18
Chevrolet	A3	4000	2.41	31.3	YES	11.3	0.47	5.70	572.	1.74	15	0.04	0.0	414.	1.81	21	17
LeSabre	A3	4000	3.08	40.0	NO	10.3	0.46	6.60	570.	1.55	15	0.03	0.0	456.	1.96	19	17
Electra	A3	4500	2.41	30.5	YES	12.5	0.29	3.80	570.	1.68	15	0.03	0.10	402.	1.57	22	18
Chevrolet Wagon	A3	4500	2.56	31.7	YES	12.0	0.42	6.60	635.	1.79	14	0.06	0.60	459.	1.56	19	16
Estate Wagon	A3	4500	3.08	39.2	YES	12.0	0.04	8.00	619.	2.04	14	0.04	0.10	479.	2.48	18	16
Corvette	M4	4000	3.36	42.7	YES	11.1	0.72	3.40	645.	1.63	14	0.05	0.40	465.	1.85	19	16

5-82

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Olds 98	A3	4500	2.41	30.6	YES	12.5	0.40	4.40	580.	1.69	15	0.07	0.90	412.	2.31	21	17
Corvette	A3	4000	3.55	45.1	YES	11.1	0.78	3.00	742.	1.81	12	0.08	0.0	560.	2.05	16	13
Corvette	M4	4000	3.70	47.1	YES	11.1	0.73	2.40	742.	1.83	12	0.05	0.0	530.	2.52	17	14
Camaro	M4	4000	3.73	47.4	YES	9.8	0.63	5.10	607.	1.84	14	0.04	0.20	467.	1.70	19	16

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Delta 88	A3	4000	2.41	30.6	YES	11.3	0.26	4.20	594.	1.38	15	0.05	0.0	406.	1.70	22	17
Riviera	A3	4500	2.41	30.6	YES	12.5	0.29	4.80	634.	1.12	14	0.06	0.30	437.	1.43	20	16
Firebird	A3	4000	2.41	30.6	NO	8.9	0.28	3.10	656.	1.02	13	0.03	0.30	466.	0.72	19	15
Omega	A3	4000	2.41	31.1	YES	10.6	0.27	3.10	685.	0.89	13	0.02	0.10	490.	0.75	18	15
Corvette	A3	4000	3.55	45.1	YES	11.1	0.24	1.60	719.	1.35	12	0.03	0.0	567.	1.52	16	14
Chevrolet Wagon	A3	4500	2.56	31.7	YES	12.0	0.32	2.40	718.	1.10	12	0.04	0.0	525.	0.93	17	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L) - 4BBL

VEH. MODEL	TRANS.	I.M. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Pickup	A3	4500	2.73	31.5	NO	12.7	0.38	6.80	638.	2.01	14	0.05	0.80	465.	1.84	19	16
Pickup	A3	4500	3.08	38.6	YES	14.0	0.36	5.30	671.	1.63	13	0.02	0.0	525.	1.78	17	15
Van	A3	5000	2.73	33.4	YES	14.7	0.41	5.00	679.	2.31	13	0.06	1.10	511.	2.82	17	15
Van	M3	5000	3.42	43.5	YES	14.7	0.71	4.60	657.	2.01	13	0.08	0.60	518.	2.14	17	15
Pickup	M4	4500	3.40	42.8	YES	14.0	0.96	12.30	619.	2.13	14	0.05	1.40	488.	2.60	18	15

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

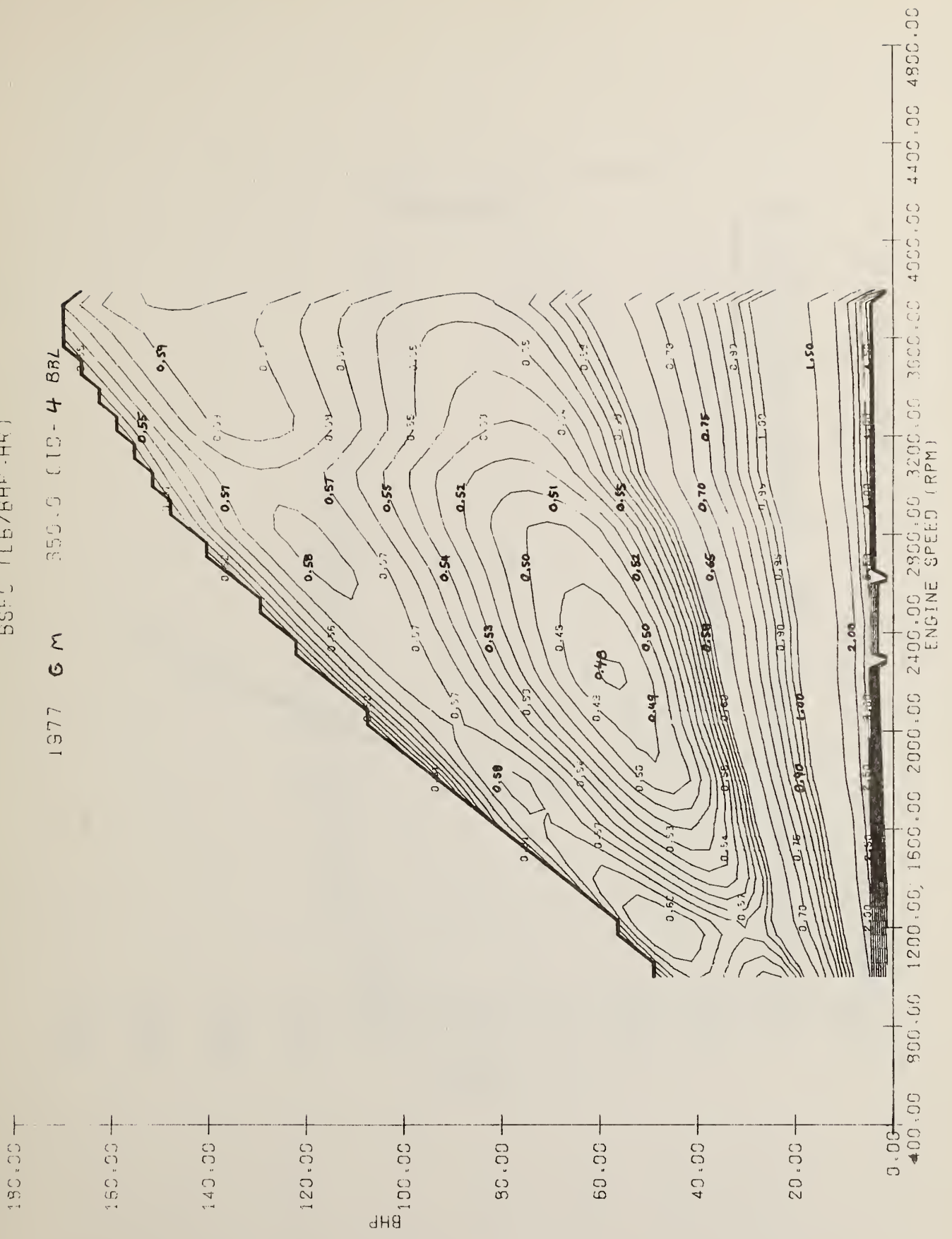
1977 GM 350 CID (5.7L) - 4BBL

Engine tested by General Motors.

Engine certified for: 49 states, 4000 pound inertia weight class.
Passenger cars, automatic transmission.

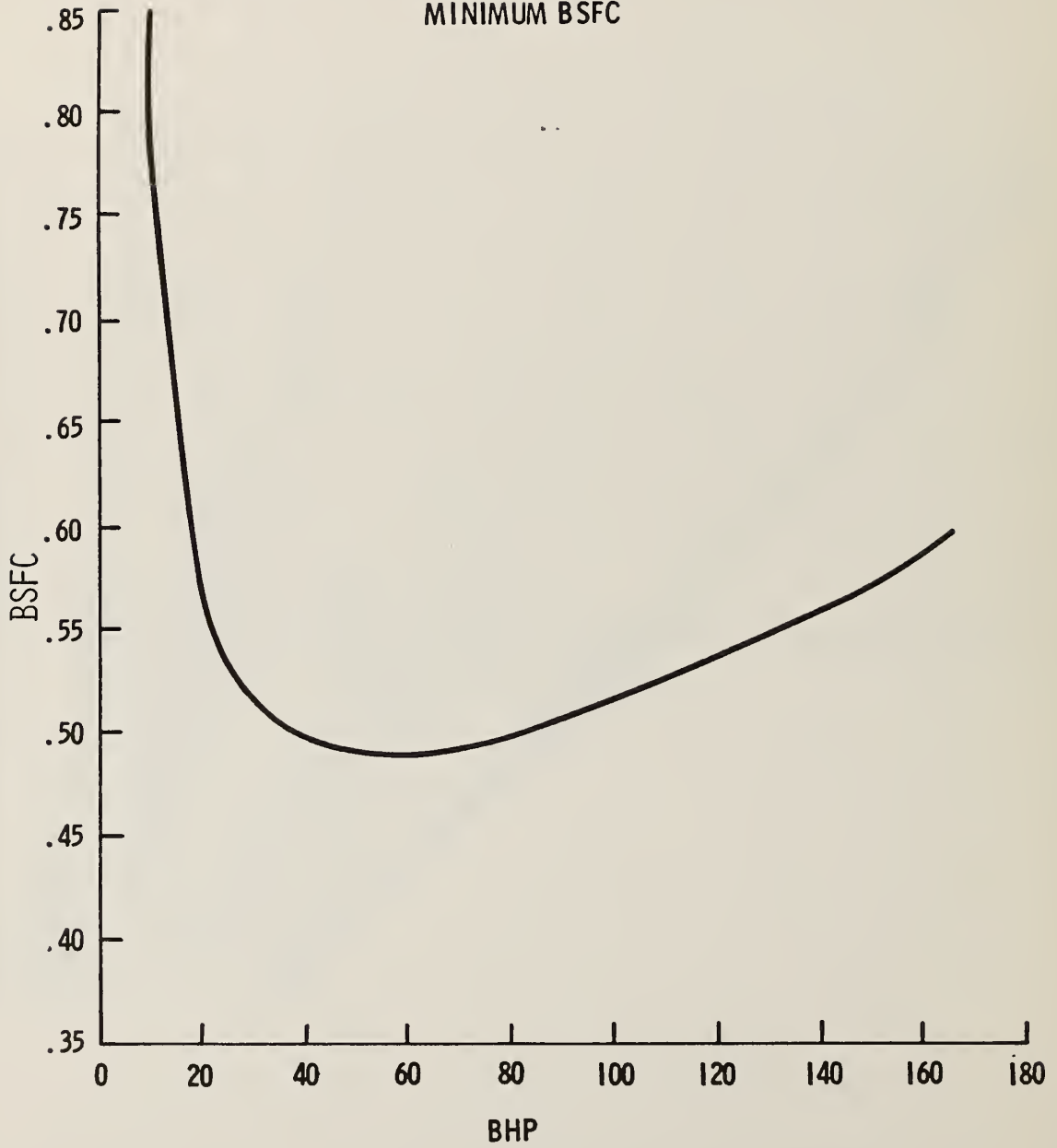
BSFC (LB/BHP-HR)

1977 G M 350.0 (10-4 BBL



1977 GM-350 CID (5.7L), V8-4BBL

MINIMUM BSFC



60FC (LB/BHP-HR)

1977 GM 350.0 CID 4 BBL

180.00 —

160.00 —

140.00 —

120.00 —

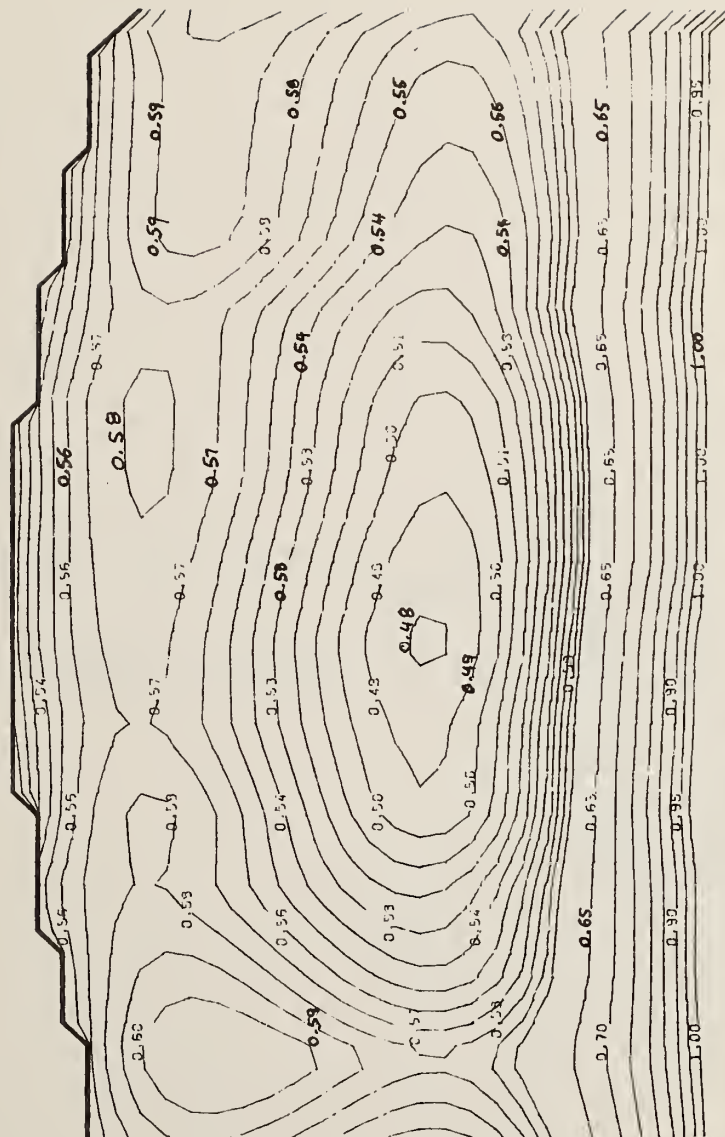
100.00 —

80.00 —

60.00 —

40.00 —

20.00 —



0.00 —

400.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00

PISTON SPEED (FT/MIN)

1975 CHEVROLET 350 CID (5.7L) - 4BBL

Engine tested by BERC.

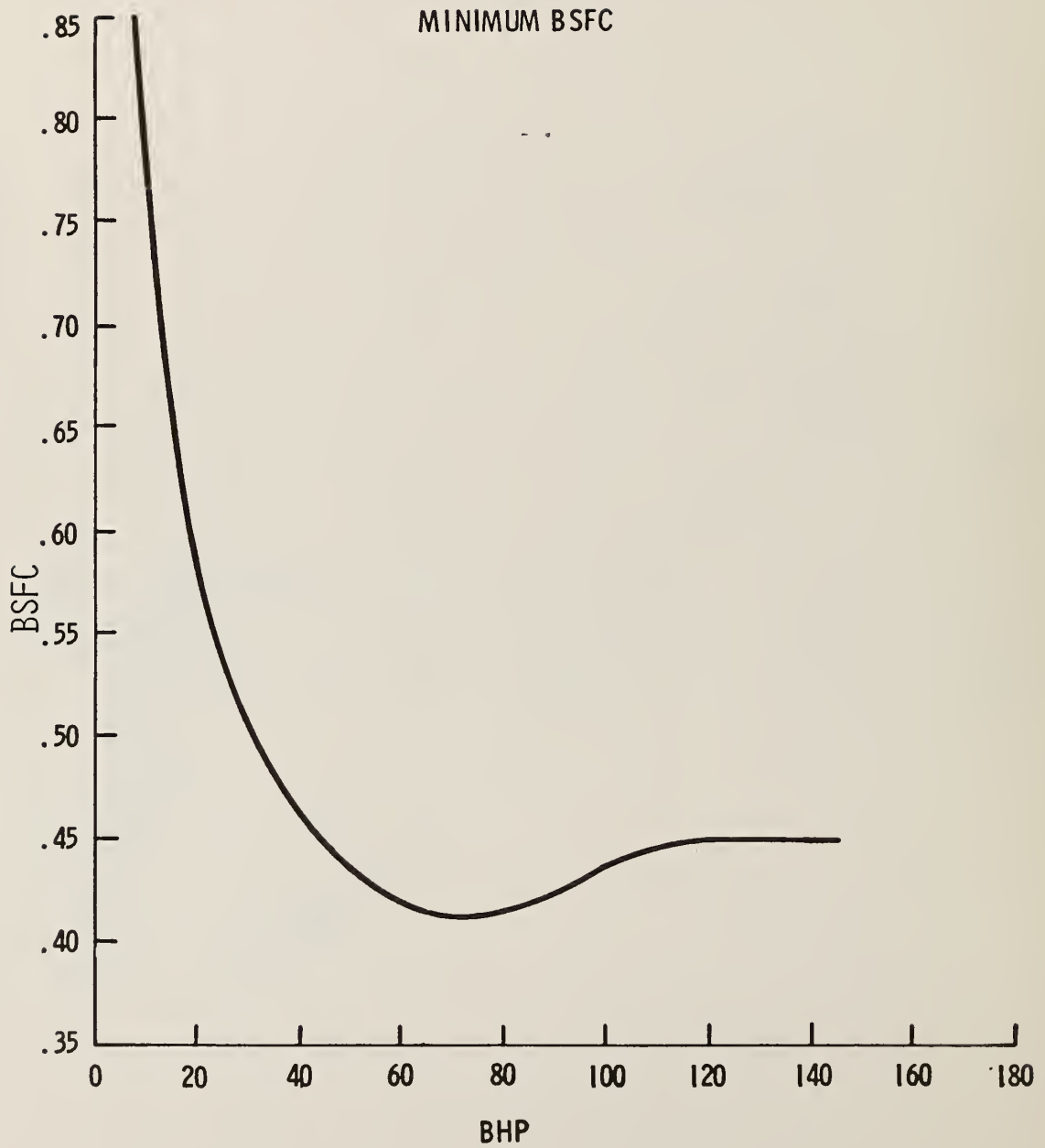
Engine certified for: 49 states, passenger cars, automatic transmission.

1975 HEIR 350 0 10 488L

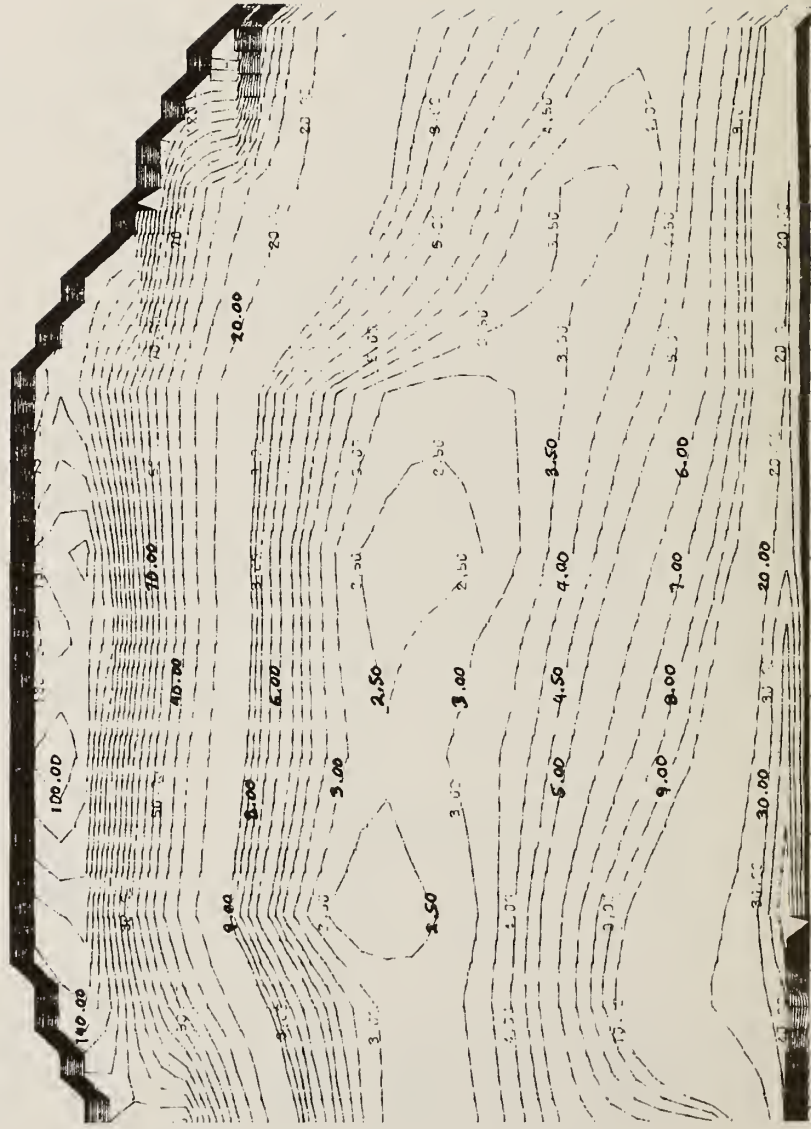


900 00 1200 00 1500 00 2000 00 2400 00 2800 00 3200 00 3600 00 4000 00 4400 00 4800 00
 (MOUNTAIN SPECTRO-REMO)

1975 GM-350 CID(5.7L), V8-4BBL

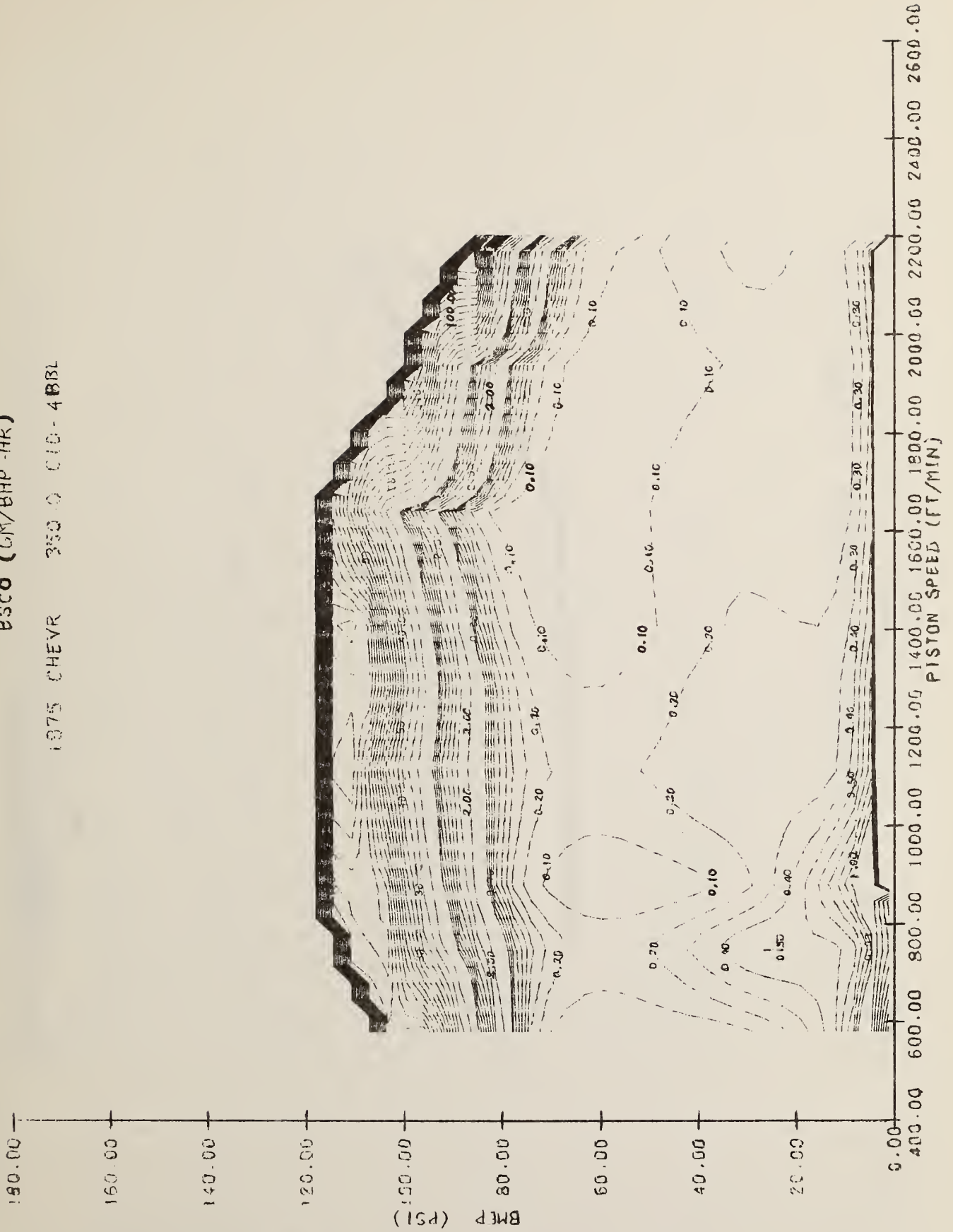


E BSCG
 1975 CHEV 350 G 10 4B8L

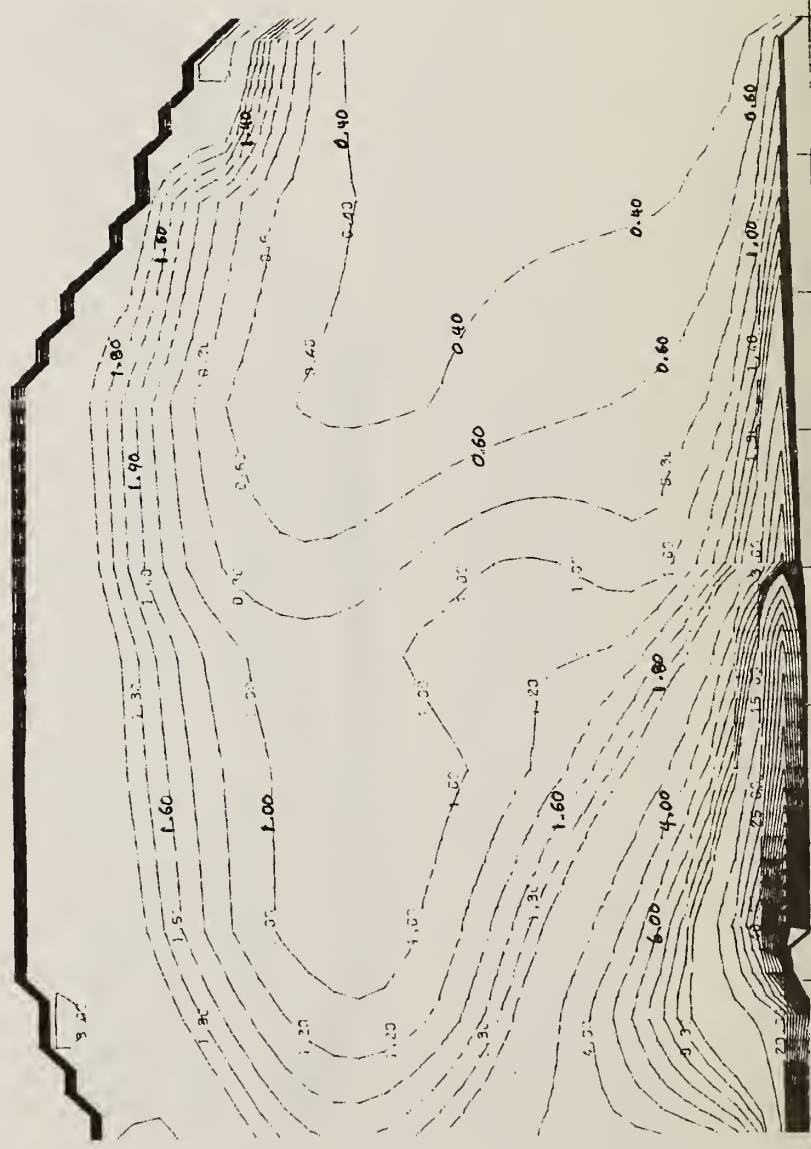


BSCO (GM/BHP-HR)

1075 CHEVR 350 0 C10-4BBL



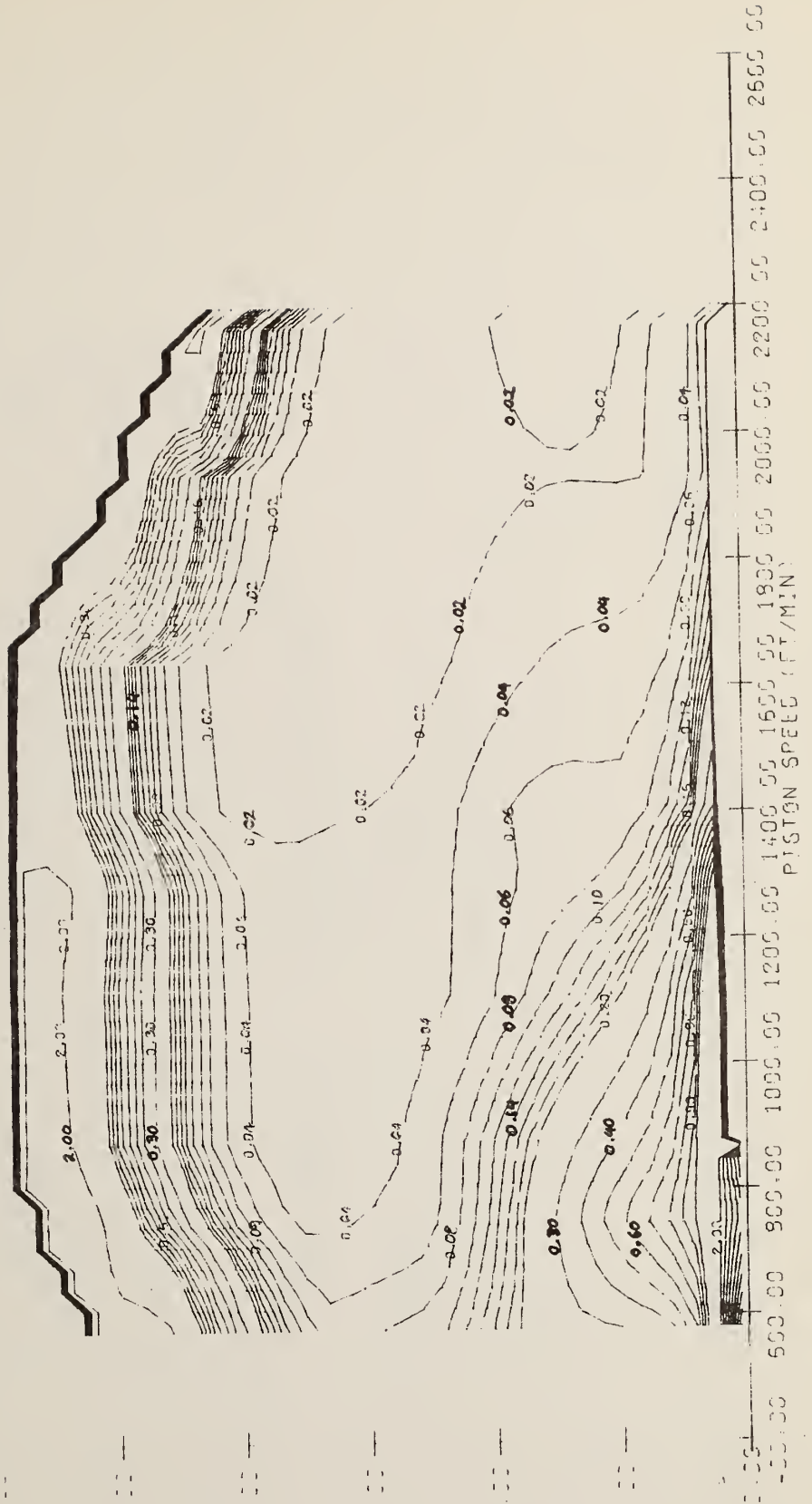
F BSHC 1147BHP-400
 1975 CHEVR 350.0 C10-4BBL



400 500 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600
 PISTON SPEED (FT/MIN)

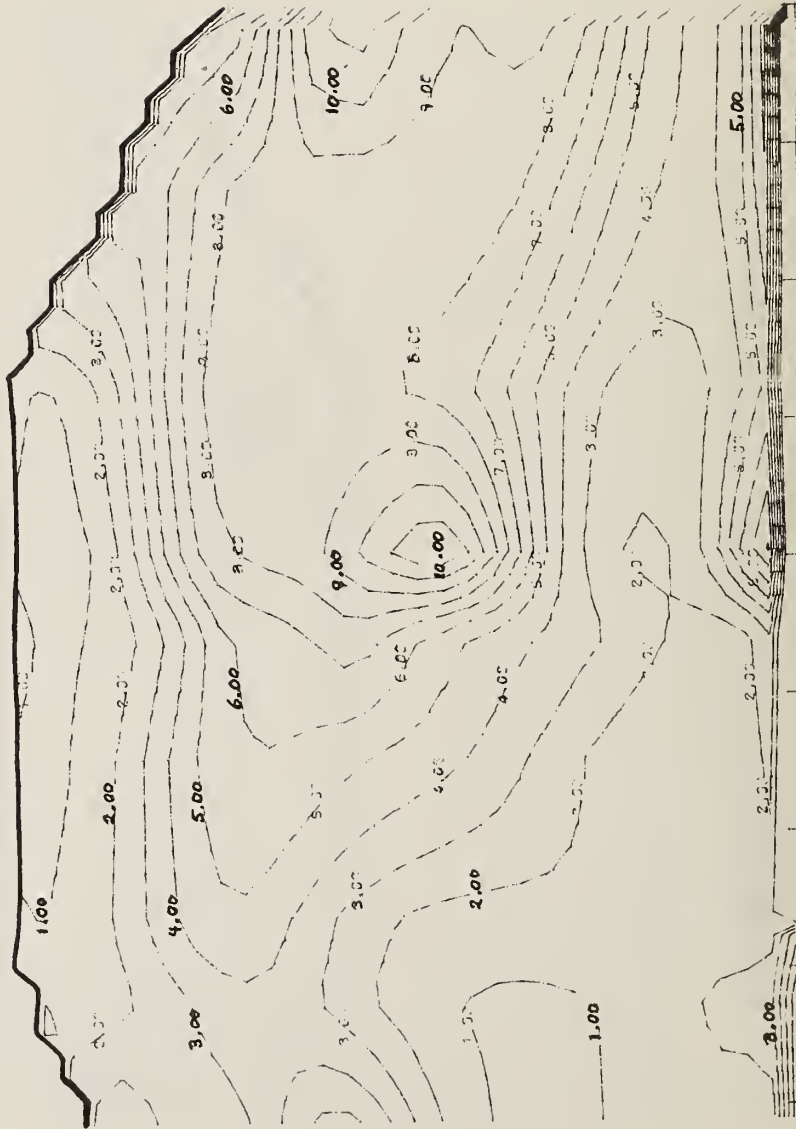
BSHC 100/8HP (HR)

1575 CHEVR 350 0 (10-408L)



E-BSNOX 1000RHP HP

1975 CHEVR 350 C / 11 4BBL



0.00
400.00 600.00 800.00 1000.00 1200.00 1400.00 1500.00 1600.00 1800.00 1900.00 2000.00 2200.00 2400.00 2600.00
PISTON SPEED (FT/MIN)

SNOW (GM @ 4) H₂O

1975 CHEVRÉ 350.0 (1) 4BBL

150.00

140.00

130.00

120.00

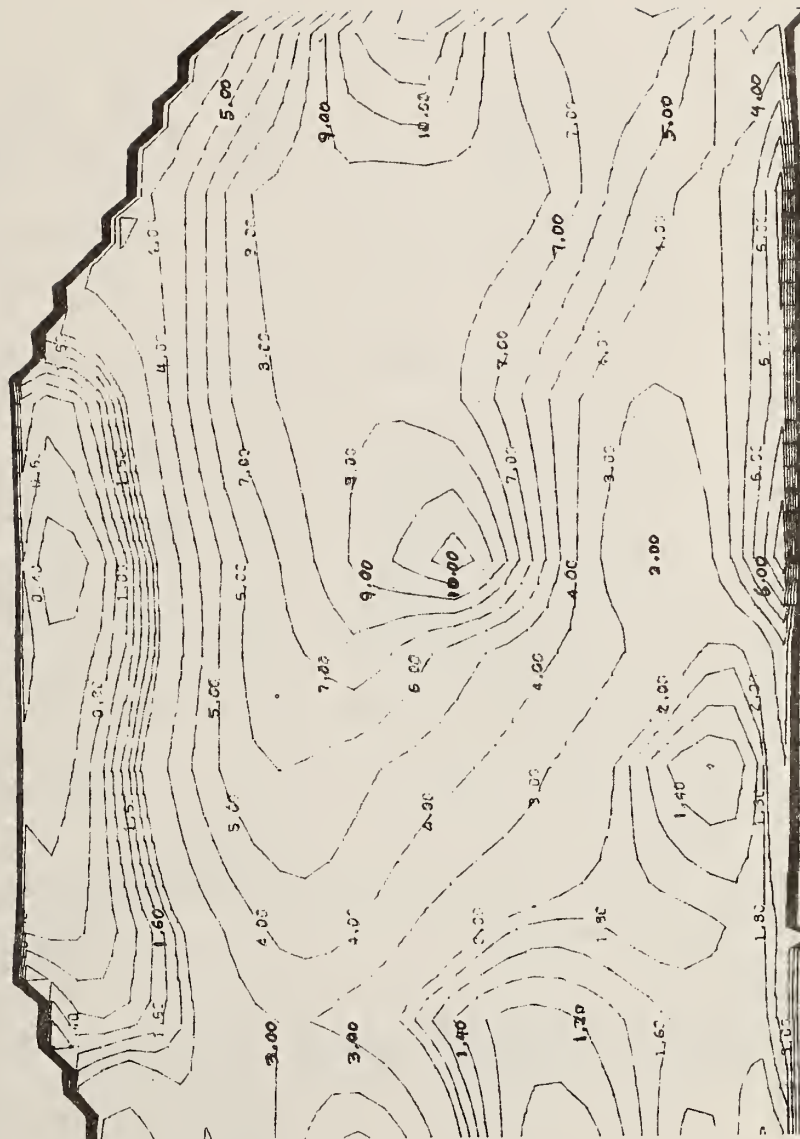
100.00

80.00

60.00

40.00

20.00



2600.00 2400.00 2200.00 2000.00 1900.00 1800.00 1600.00 1400.00 1200.00 1050.00 900.00 800.00 600.00
PISTON SPEED (FT/MIN)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	627/285	
No. of Cylinders	8	
Bore, in.	4.00	
Stroke, in.	3.48	
Displacement, in ³	350	
Compression Ratio	8.2	
Horsepower, BHP at RPM	160 BHP 3800 RPM	160 BHP 3800 RPM
Torque, ft-lb at RPM	260 ft-lb 2400RPM	260 ft-lb 2400RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.935-1.945	
Intake Valve Lift, in.	.390	
Exhaust Valve Diameter, in.	1.495-1.505	
Exhaust Valve Lift, in.	.4100	
Intake Valve Opens, deg BTC	28	
Intake Valve Closes, deg ABC	72	
Intake Valve Duration, deg	280	
Exhaust Valve Opens, deg BBC	78	
Exhaust Valve Closes, deg ATC	30	
Exhaust Valve Duration, deg	288	
Valve Overlap, deg	58	
Distributor Type	High energy ignition system	
Idle Speed, RPM	A-500	A-500
Timing, degrees	A-8BTC @ Idle	A-8BTC @ Idle
Fuel System Type	Carbureter-4BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	Primary: 1.38	Secondary: 2.25
Vehicle Emission Control Systems	Air Injection Catalytic Converter Engine Modifications EGR	Air Injection Catalytic Converter EGR
NOTES:	Ref. 20	Ref. 20

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 GMC-Checker - 350 CID (5.7 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x	NO _x
Checker	A3	4500	3.07	38.0	YES	14.0	0.20	1.00	696.	1.33	13	0.03	0.0	567.	1.33	16	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 GMC-Checker - 350 CID (5.7 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Checker	A3	4500	3.07	38.8	YES	14.0	0.20	1.00	696.	1.33	13	0.03	0.0	567.	1.33	16	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.057	
Stroke, in.	3.385	
Displacement, in ³	350	
Compression Ratio	8.0	
Horsepower, BHP at RPM	170 BHP 4200 RPM	170 BHP 4200 RPM
Torque, ft-lb at RPM	270 ft-lb 2000 RPM	270 ft-lb 2000 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.880-1.870	
Intake Valve Lift, in.	.400	
Exhaust Valve Diameter, in.	1.507-1.497	
Exhaust Valve Lift, in.	.400	
Intake Valve Opens, deg BTC	22	
Intake Valve Closes, deg ABC	72	
Intake Valve Duration, deg	274	
Exhaust Valve Opens, deg BBC	70	
Exhaust Valve Closes, deg ATC	38	
Exhaust Valve Duration, deg	280	
Valve Overlap, deg	30	
Distributor Type	High Energy Ignition	
Idle Speed, RPM	A-600 D	A-600 D
Timing, degrees	A-10 BTC	A-8 BTC
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Air Injection Catalytic Converter EGR Ref. 20	Fuel Injection Air Injection Catalytic Converter EGR Ref. 20

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

D = Drive

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L) - Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Cruiser Wagon	A3	5000	2.73	33.9	YES	11.8	0.64	1.50	481.	1.62	21	0.49	0.90	337.	1.23	30	24
Seville	A3	4500	2.56	32.6	YES	10.1	0.49	6.30	635.	1.47	14	0.09	0.0	447.	2.19	20	16

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L) - Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Seville	A3	4500	2.56	32.6	YES	10.1	0.32	5.10	783.	0.97	11	0.05	0.20	478.	0.80	18	14
Seville	A3	4500	2.56	32.6	YES	10.1	0.32	3.80	722.	1.17	12	0.05	0.0	447.	1.17	20	15
Seville	A3	4500	3.08	39.2	YES	10.1	0.31	3.60	768.	1.19	11	0.04	0.0	487.	1.65	18	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.057	
Stroke, in.	3.385	
Displacement, in ³	350	
Compression Ratio	225	
Horsepower, BHP at RPM	120 BHP 3600 RPM	120 BHP 3600 RPM
Torque, ft-lb at RPM	220 ft-lb 1600 RPM	220 ft-lb 1600 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.870-1.880	
Intake Valve Lift, in.	.375	
Exhaust Valve Diameter, in.	1.627-1.617	
Exhaust Valve Lift, in.	.376	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	38	
Intake Valve Duration, deg	234	
Exhaust Valve Opens, deg BBC	64	
Exhaust Valve Closes, deg ATC	17	
Exhaust Valve Duration, deg	261	
Valve Overlap, deg	33	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Ref. 20	Fuel Injection Ref. 20

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L) - Diesel - Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Delta 88	A3	4500	2.41	30.6	YES	11.8	0.64	1.50	481.	1.62	21	0.49	0.90	337.	1.23	30	24
Custom Cruiser Wagon	A3	5000	2.73	33.9	YES	11.3	1.08	1.80	525.	1.60	19	0.63	1.20	376.	1.32	27	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L) - Diesel Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Delta 88	A3	4500	2.41	30.6	YES	11.8	0.64	1.50	481.	1.62	21	0.49	0.90	337.	1.23	30	24
Cruiser wagon	A3	5000	2.73	33.9	YES	11.3	1.08	1.80	525.	1.60	19	0.63	1.20	376.	1.32	27	22

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 GMC- 350 CID (5.7 L) Diesel-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Pickup	A3	4500	2.76	31.5	YES	14.0	0.88	1.80	489.	1.56	21	0.52	1.10	354	1.23	28	24
Pickup	A3	5000	2.76	34.7	YES	14.7	0.80	1.70	513.	1.55	20	0.71	1.30	371.	1.22	27	22
Pickup	A3	5000	3.40	42.8	YES	14.7	0.76	1.60	513.	1.79	20	0.67	1.20	406.	1.49	25	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 GMC - 350 CID (5.7 L), Diesel-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x
Pickup	A3	4500	2.76	31.5	YES	14.0	0.68	1.70	477.	1.39	0.41	1.00	349.	1.17	29	24
Pickup	A3	5000	2.76	31.5	YES	14.7	0.67	1.60	500.	1.64	0.49	1.00	363.	1.23	28	23
Pickup	A3	5000	2.76	42.8	YES	14.7	0.80	1.80	505.	1.59	0.68	1.30	412.	1.32	24	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	A-298.2/136	M-286.9/130
No. of Cylinders	8	
Bore, in.	4.1212	
Stroke, in.	3.750	
Displacement, in ³	400	
Compression Ratio	7.7	
Horsepower, BHP at RPM	180 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	325 ft-lb 1600 RPM	N/A ft-lb RPM
Exhaust System Type	Single w/crossover, dual tailpipes	
Intake Valve Diameter, in.	2.113-2.107	
Intake Valve Lift, in.	.364	
Exhaust Valve Diameter, in.	1.663-1.657	
Exhaust Valve Lift, in.	.364	
Intake Valve Opens, deg BTC	A-29	M-21
Intake Valve Closes, deg ABC	A-55	M-73
Intake Valve Duration, deg	A-264	M-274
Exhaust Valve Opens, deg BBC	A-62	M-77
Exhaust Valve Closes, deg ATC	A-22	M-41
Exhaust Valve Duration, deg	A-264	M-298
Valve Overlap, deg	A-51	M-62
Distributor Type	Transistorized	
Idle Speed, RPM	A-500 D	N/A
Timing, degrees	A-16 BTC	N/A
Fuel System Type	Carburetor - 4 BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	Primary: 1.218	Secondary: 2.250
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel-Evaporation Ref. 20	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 400 CID (6.6 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Firebird	A3	4000	2.56	32.6	YES	9.5	0.50	7.00	609.	1.37	14	0.15	3.90	452.	0.97	19	16
Pontiac	A3	4500	2.41	30.6	YES	11.8	0.39	4.00	612.	1.86	14	0.04	0.20	459.	2.03	19	16
Safari Wagon	A3	4500	2.56	31.7	YES	12.0	0.27	3.50	683.	1.55	13	0.05	0.30	493.	1.39	18	15
Safari Wagon	A3	4500	2.56	31.8	YES	12.0	0.59	9.50	648.	1.31	13	0.06	0.60	478.	1.61	18	15

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	A-298/136	M-286.9/130
No. of Cylinders	8	
Bore, in.	4.1212	
Stroke, in.	3.750	
Displacement, in ³	400.	
Compression Ratio	8.1	
Horsepower, BHP at RPM	220 BHP 4000 RPM	N/A BHP RPM
Torque, ft-lb at RPM	320 ft-lb 2800 RPM	N/A ft-lb RPM
Exhaust System Type	Dual	
Intake Valve Diameter, in.	2.113-2.107	
Intake Valve Lift, in.	.364	
Exhaust Valve Diameter, in.	1.663-1.657	
Exhaust Valve Lift, in.	.364	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	78	
Intake Valve Duration, deg	274	
Exhaust Valve Opens, deg BBC	79	
Exhaust Valve Closes, deg ATC	39	
Exhaust Valve Duration, deg	298	
Valve Overlap, deg	55	
Distributor Type	Transistorized	
Idle Speed, RPM	M-775 N A-600 D	N/A
Timing, degrees	M-18 BTC A-18 BTC	N/A
Fuel System Type	Carburetor - 4 BBL downdraft	
Choke Type	Data not available	
Carburetor Barrel Diameter, in.	Primary: 1.218	Secondary: 2.250
Vehicle Emission Control Systems	Catalytic Converter EGR Early Fuel Evaporation Ref. 20	N/A

NOTES:

N = Neutral

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*High performance

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 400 CID (6.6 L) - W72 - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x	
Firebird	A3	4000	3.23	41.9	NO	8.9	0.47	5.20	664.	1.69	13	0.04	0.20	530.	1.42	17	15	
Firebird	M4	4000	3.42	43.5	YES	9.5	0.53	4.80	724.	1.25	12	0.03	0.10	537.	1.46	16	14	

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.351	
Stroke, in.	3.385	
Displacement, in ³	403	
Compression Ratio	7.9	
Horsepower, BHP at RPM	185 BHP 3600 RPM	185 BHP 3600 RPM
Torque, ft-lb at RPM	320 ft-lb 2000 RPM	320 ft-lb 2000 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.880-1.850	
Intake Valve Lift, in.	.400	
Exhaust Valve Diameter, in.	1.627-1.617	
Exhaust Valve Lift, in.	.400	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	250	
Exhaust Valve Opens, deg BBC	64	
Exhaust Valve Closes, deg ATC	20	
Exhaust Valve Duration, deg	264	
Valve Overlap, deg	36	
Distributor Type	Transistorized	
Idle Speed, RPM	A-550 D	A-550 D
Timing, degrees	A-20 BTC @ 1100 RPM	A-20 BTC @ 1100 RPM
Fuel System Type	Carburetor - 4 BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	Primary: 1.218	Secondary: 2.250
Vehicle Emission Control Systems	Catalytic Converter EGR	Air Injection Catalytic Converter EGR
NOTES:	Ref. 20	Ref. 20

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 403 CID (6.6 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Delta 88	A3	4000	2.41	30.6	YES	11.3	0.49	6.10	594.	1.38	15	0.06	0.20	421.	1.60	21	17
01ds 98	A3	4500	2.41	30.6	YES	12.5	0.47	5.70	620.	1.82	14	0.06	0.10	454.	1.96	20	16
Toronado	A3	5000	2.73	33.4	YES	9.5	0.60	4.00	659.	1.68	13	0.11	0.40	472.	1.64	19	15
Toronado	A3	5000	3.07	37.6	YES	9.5	0.52	4.40	685.	1.61	13	0.09	0.60	518.	1.67	17	14

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC - 403 CID (6.6 L) - 4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Firebird	A3	4000	2.56	32.6	YES	9.5	0.32	4.80	622.	1.31	14	0.06	0.0	447.	1.15	20	16
Firebird	A3	4000	3.23	42.5	YES	13.2	0.35	4.30	681.	1.39	13	0.06	0.0	555.	1.61	16	14
Riviera	A3	4500	2.41	30.6	YES	12.5	0.38	5.60	656.	1.20	13	0.07	0.0	462.	1.32	19	15
Riviera	A3	4500	2.41	30.6	YES	11.8	0.38	6.40	644.	1.17	14	0.06	0.0	447.	1.15	20	16
Safari Wagon	A3	4500	3.23	41.1	YES	12.0	0.34	4.30	734.	1.13	12	0.07	0.20	584.	1.43	15	13
Toronado	A3	5000	2.73	33.4	YES	9.5	0.33	5.80	742.	1.28	12	0.07	0.0	508.	1.20	17	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1978 GMC-425 CID (7.0 L)-4BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.082	
Stroke, in.	4.060	
Displacement, in ³	425	
Compression Ratio	8.2	
Horsepower, BHP at RPM	180 BHP at 4000 RPM	180 BHP at 4000 RPM
Torque, ft-lb at RPM	320 ft-lb at 2000 RPM	320 ft-lb at 2000 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	2.00	
Intake Valve Lift, in.	.457	
Exhaust Valve Diameter, in.	1.625	
Exhaust Valve Lift, in.	.473	
Intake Valve Opens, deg BTC	11	
Intake Valve Closes, deg ABC	90	
Intake Valve Duration, deg	281	
Exhaust Valve Opens, deg BBC	63	
Exhaust Valve Closes, deg ATC	34	
Exhaust Valve Duration, deg	277	
Valve Overlap, deg	44	
Distributor Type	Transistorized-Electronic	
Idle Speed, RPM	A-600	A-600
Timing, degrees	A-18 BTC @ 1600 RPM	A-18 BTC @ 1600 RPM
Fuel System Type	Carburetor-4BBL downdraft	
Choke Type	Electric-Oil Pressure Signal-Temp. Signal	
Carburetor Barrel Diameter, in.	Primary: 1.375	Secondary: 2.25
Vehicle Emission Control Systems	Air Injection Catalytic Converter Early Fuel Evaporation EGR Ref. 20	Air Injection Catalytic Converter Early Fuel Evaporation EGR Ref. 20

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-425 CID (7.0 L) -4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Cadillac	A3	5000	3.08	38.2	YES	14.7	0.47	5.00	883.	1.08	10	0.03	0.0	629.	1.06	14	11
Eldorado	A3	5500	2.73	32.7	YES	8.5	0.22	4.20	918.	1.57	10	0.03	0.30	583.	1.36	15	11
Cadillac	A3	4500	2.28	29.0	YES	12.5	0.51	7.20	669.	1.96	13	0.04	0.10	466.	1.83	19	15

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-425 CID (7.0L) -4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Cadillac	A3	4500	2.73	33.9	YES	12.5	0.32	3.00	814.	1.04	11	0.04	0.0	569.	0.96	16	13
Cadillac	A3	4500	2.73	34.7	YES	12.5	0.32	2.60	793.	1.07	11	0.04	0.0	567.	1.05	16	13
Cadillac	A3	5000	2.73	33.9	YES	12.7	0.30	3.40	802.	1.22	11	0.06	0.0	556.	1.20	16	13
El dorado	A3	5500	2.73	32.7	YES	8.5	0.20	5.30	917.	1.29	10	0.03	1.30	594.	1.14	15	11

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1978 GMC-425 CID (7.0 L)-Fuel Injection

Ref. 19

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.082	
Stroke, in.	4.060	
Displacement, in ³	425	
Compression Ratio	8.2	
Horsepower, BHP at RPM	195 BHP at 3800 RPM	195 BHP at 3800 RPM
Torque, ft-lb at RPM	320 ft-lb at 2400 RPM	320 ft-lb at 2400 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	2.00	
Intake Valve Lift, in.	.457	
Exhaust Valve Diameter, in.	1.625	
Exhaust Valve Lift, in.	.473	
Intake Valve Opens, deg BTC	11	
Intake Valve Closes, deg ABC	90	
Intake Valve Duration, deg	281	
Exhaust Valve Opens, deg BBC	63	
Exhaust Valve Closes, deg ATC	34	
Exhaust Valve Duration, deg	277	
Valve Overlap, deg	44	
Distributor Type	Transistorized-Electronic	
Idle Speed, RPM	A-650	A-650
Timing, degrees	A-18BTC @ 1400RPM	A-18BTC @ 1400 RPM
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Air Injection Catalytic Converter Fuel Injection EGR Ref. 20	Air Injection Catalytic Converter Fuel Injection EGR Ref. 20

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-425 CID (7.0 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Cadillac	A3	4500	2.28	29.0	YES	12.5	0.61	11.00	681.	1.34	13	0.05	0.0	479.	1.29	18	15
Cadillac	A3	5000	2.28	28.3	YES	14.7	0.64	12.90	717.	1.49	12	0.06	0.10	503.	1.29	18	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 GMC-425 CID (7.0 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Cadillac	A3	4500	2.28	29.0	YES	12.5	0.36	5.40	758.	1.00	12	0.06	0.0	502.	0.75	18	14
Cadillac	A3	5000	2.28	28.3	YES	14.7	0.30	3.90	766.	1.25	12	0.05	0.0	507.	1.39	18	14

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

6. FORD MOTOR COMPANY *

This chapter contains specifications and Environmental Protection Agency certifications data for Ford's passenger car and light truck engines, which are sequenced by ascending CID. When available, associated engine performance analysis information is provided in reverse chronological order.

* See Section 11.3 for references.

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	260/118 Ref. 17	
No. of Cylinders	4	
Bore, in.	3.19	
Stroke, in.	3.07	
Displacement, in ³	98	
Compression Ratio	8.5	
Horsepower, BHP at RPM	66 BHP 5200 RPM	66 BHP 5200 RPM
Torque, ft-lb at RPM	88 ft-lb 3200 RPM	88 ft-lb 3200 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.553-1.545	
Intake Valve Lift, in.	.353	
Exhaust Valve Diameter, in.	1.239	
Exhaust Valve Lift, in.	.353	
Intake Valve Opens, deg BTC	29	
Intake Valve Closes, deg ABC	63	
Intake Valve Duration, deg	272	
Exhaust Valve Opens, deg BBC	71	
Exhaust Valve Closes, deg ATC	21	
Exhaust Valve Duration, deg	272	
Valve Overlap, deg	50	
Distributor Type	Breakerless	
Idle Speed, RPM	M-850 RPM	M-850 RPM
Timing, degrees	M-12 BTC@ Idle	M-12 BTC@ Idle
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	Automatic-electric assist	
Carburetor Barrel Diameter, in.	1.260	
Vehicle Emission Control Systems	Air Injection Catalytic Converter EGR Ref 13	Air Injection Catalytic Converter EGR Ref 13

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 98 CID (1.6L) 2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYN. HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Fiesta	M4	2000	3.58	51	N0	5.4	0.42	5.70	254.	1.75	34	0.04	0.0	194.	2.90	46	38

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 98 CID (1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Fiesta	M4	2000	3.58	51.0	NO	5.4	0.29	2.10	295.	1.20	30	0.04	0.0	200.	1.26	44	35
Fiesta	M4	2000	3.58	51.0	YES	5.4	0.20	2.60	292.	1.17	30	0.04	0.0	208.	1.64	43	35

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	M-383/174 A-308/140	
No. of Cylinders	4	
Bore, in.	3.781	
Stroke, in.	3.126	
Displacement, in ³	140	
Compression Ratio	9.0	
Horsepower, BHP at RPM	88 BHP 4800 RPM	88 BHP 4800 RPM
Torque, ft-lb at RPM	118 ft-lb 2800RPM	118 ft-lb 2800RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.740 - 1.730	
Intake Valve Lift, in.	.4000	
Exhaust Valve Diameter, in.	1.510 - 1.490	
Exhaust Valve Lift, in.	.4000	
Intake Valve Opens, deg BTC	22	
Intake Valve Closes, deg ABC	66	
Intake Valve Duration, deg	268	
Exhaust Valve Opens, deg BBC	64	
Exhaust Valve Closes, deg ATC	24	
Exhaust Valve Duration, deg	268	
Valve Overlap, deg	46	
Distributor Type	Breakerless DuraSpark II	
Idle Speed, RPM	M-850N A-800D	M-850N A-800D
Timing, degrees	M-6BTDC A-20 BTDC	M-6BTDC A-20 BTDC
Fuel System Type	Carburetor - 2BBL Downdraft	
Choke Type	Automatic (Electrically operated)	
Carburetor Barrel Diameter, in.	Primary: 1.26; Secondary: 1.417	
Vehicle Emission Control Systems	Catalytic converter Air injection EGR Engine Modifications	Catalytic Converter Air injection EGR Engine Modifications

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

N = Neutral

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 140 CID (2.3L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO P (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Pinto	M4	2750	2.73	40.0	N0	9.9	0.49	2.80	343.	1.98	25	0.13	0.20	244.	2.74	36	29
Fairmont	M4	3000	3.08	42.0	N0	8.8	1.23	9.90	388.	1.32	22	0.19	0.80	263.	2.50	34	26
Mustang II	M4	3000	3.18	46.0	N0	9.4	0.46	1.80	379.	1.46	23	0.13	0.30	268.	2.18	33	27
Mustang II	M4	3000	3.18	46.0	N0	9.4	0.53	2.20	372.	1.37	24	0.14	0.10	264.	2.21	34	27
Pinto Wagon	M4	3000	3.18	47.0	N0	10.3	0.55	4.40	388.	1.43	22	0.12	0.10	273.	2.34	32	26
Fairmont	A3	3000	3.08	42.0	N0	8.8	0.52	14.00	383.	1.31	22	0.05	0.70	266.	2.22	33	26

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 140 CID (2.3L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Fury	A3	2000	3.18	46.0	N0	9.7	0.17	2.40	425.	0.75	21	0.01	0.0	302.	0.84	29	24
Mustang II	A3	3000	3.18	46.0	N0	9.4	0.24	2.30	519.	0.69	17	0.07	0.10	368.	0.59	24	20
Pinto Wagon	A3	3000	3.18	46.0	N0	9.7	0.24	5.00	438.	0.82	20	0.02	0.0	334.	1.40	26	22
Pinto	M4	2750	2.73	40.0	N0	9.7	0.40	1.60	350.	0.66	25	0.02	0.20	257.	0.90	34	29
Fairmont	M4	3000	3.08	43.0	N0	10.3	0.31	3.10	454.	0.95	19	0.11	0.40	292.	1.12	30	23
Mustang II	M4	3000	3.18	45.0	N0	9.4	0.32	2.80	464.	1.05	19	0.08	0.30	300.	1.17	30	23
Robert Wagon	M4	3000	3.18	46.0	N0	10.3	0.37	2.20	394.	0.66	22	0.02	0.20	289.	0.81	31	25

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1977 FORD 140 CID (2.3L) - 2BBL

Engine tested by BERC.

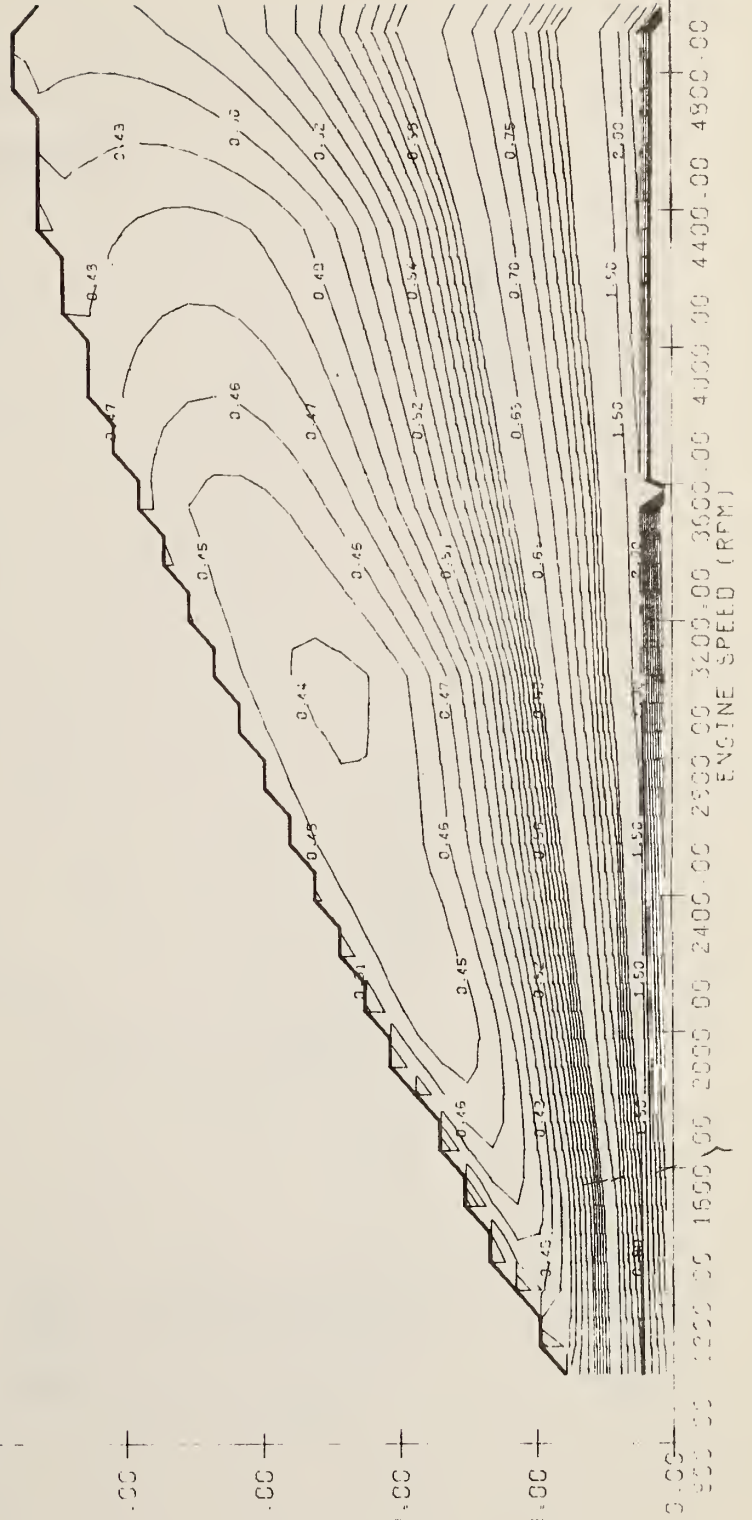
Engine certified for: 49 states, passenger cars, automatic transmission.

BSFC (LB/BHP-HR)

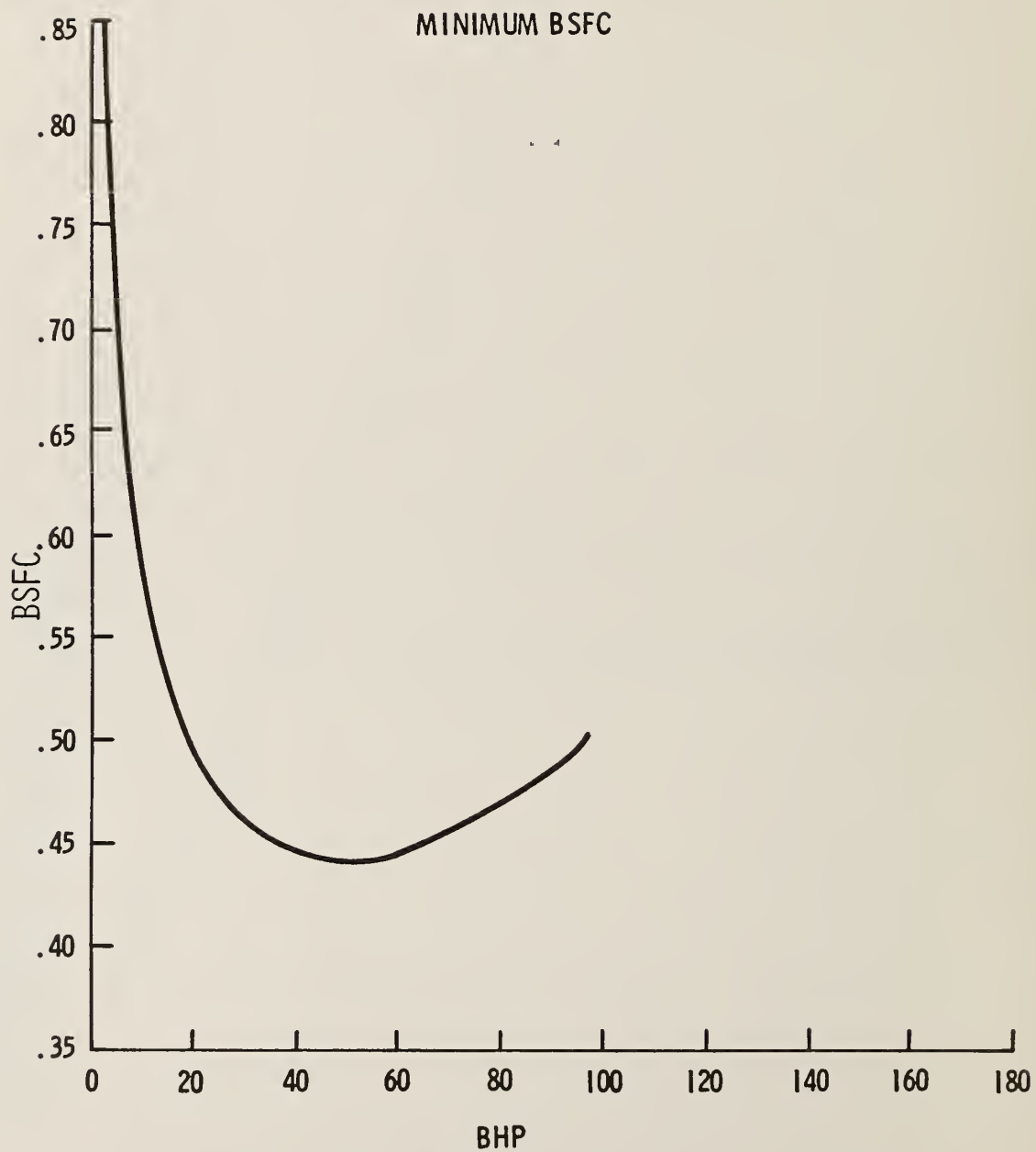
1977 FORD 140.0 CID-2BBL

180.00 +
160.00 +
140.00 +
120.00 +
100.00 +
80.00 +
60.00 +
40.00 +
20.00 +
0.00

BHP

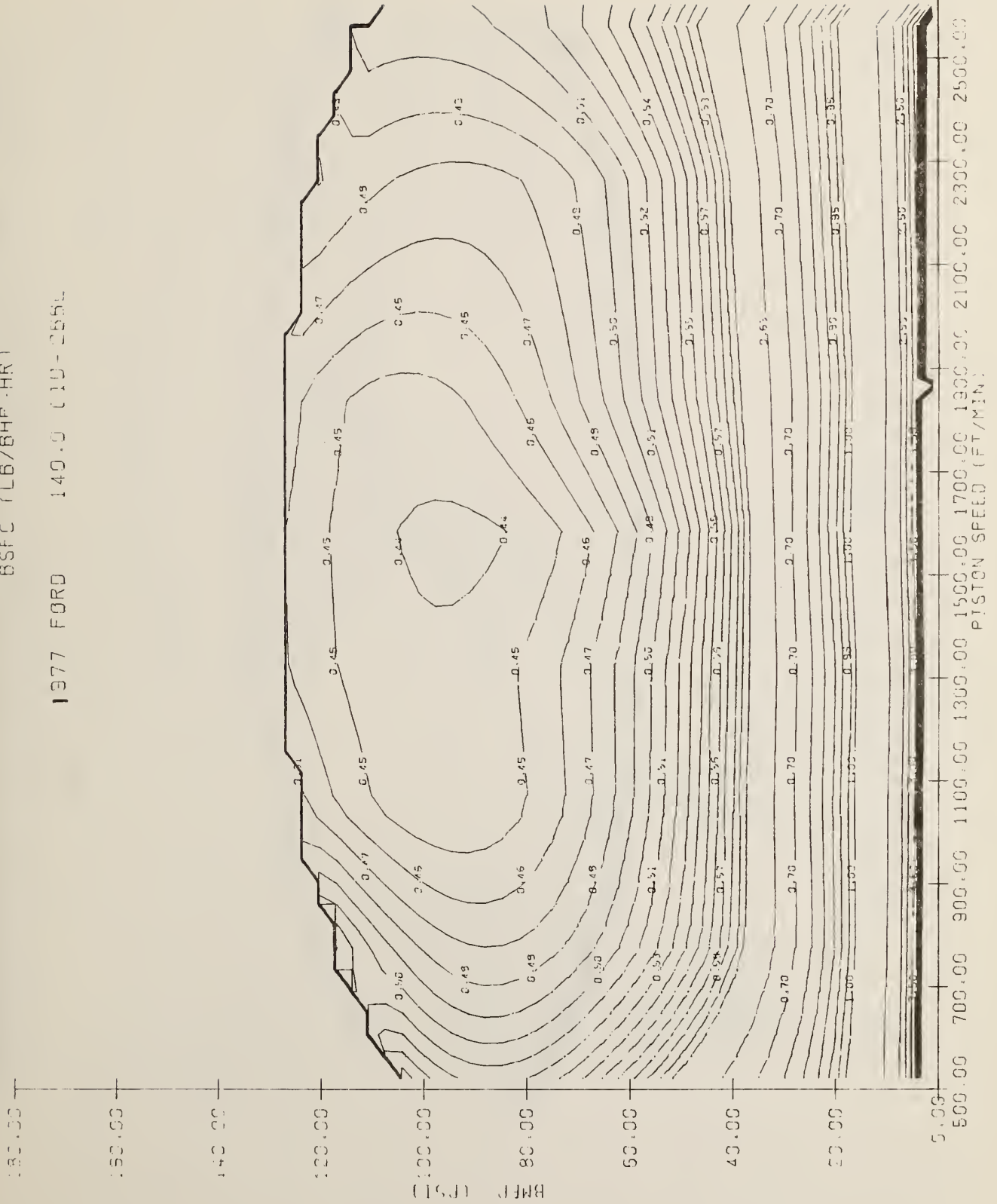


1977 Ford-140 CID (2.3L), L4-2BBL



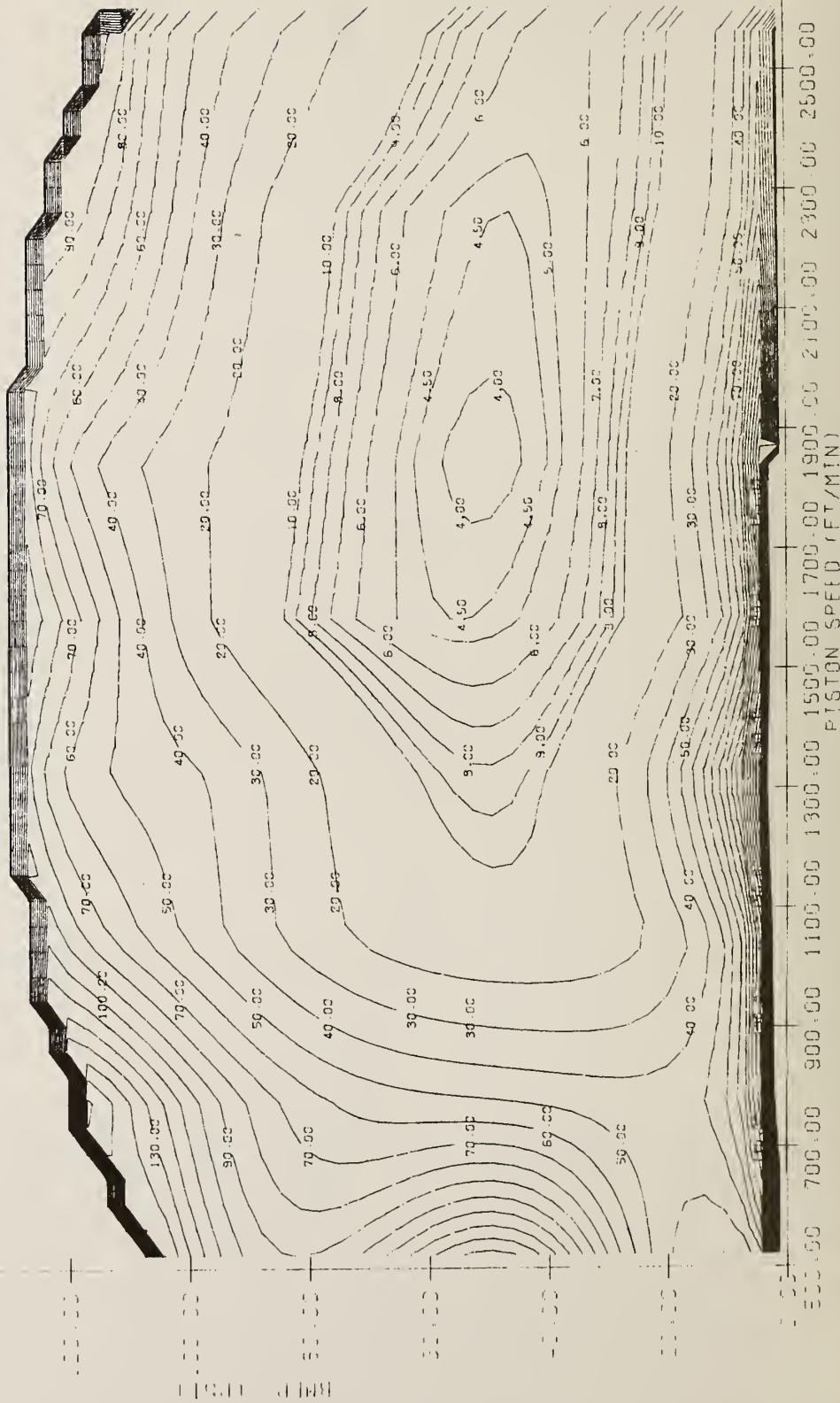
BSFC (LB/BHP·HR)

1977 FORD 140.0 (10-255L)



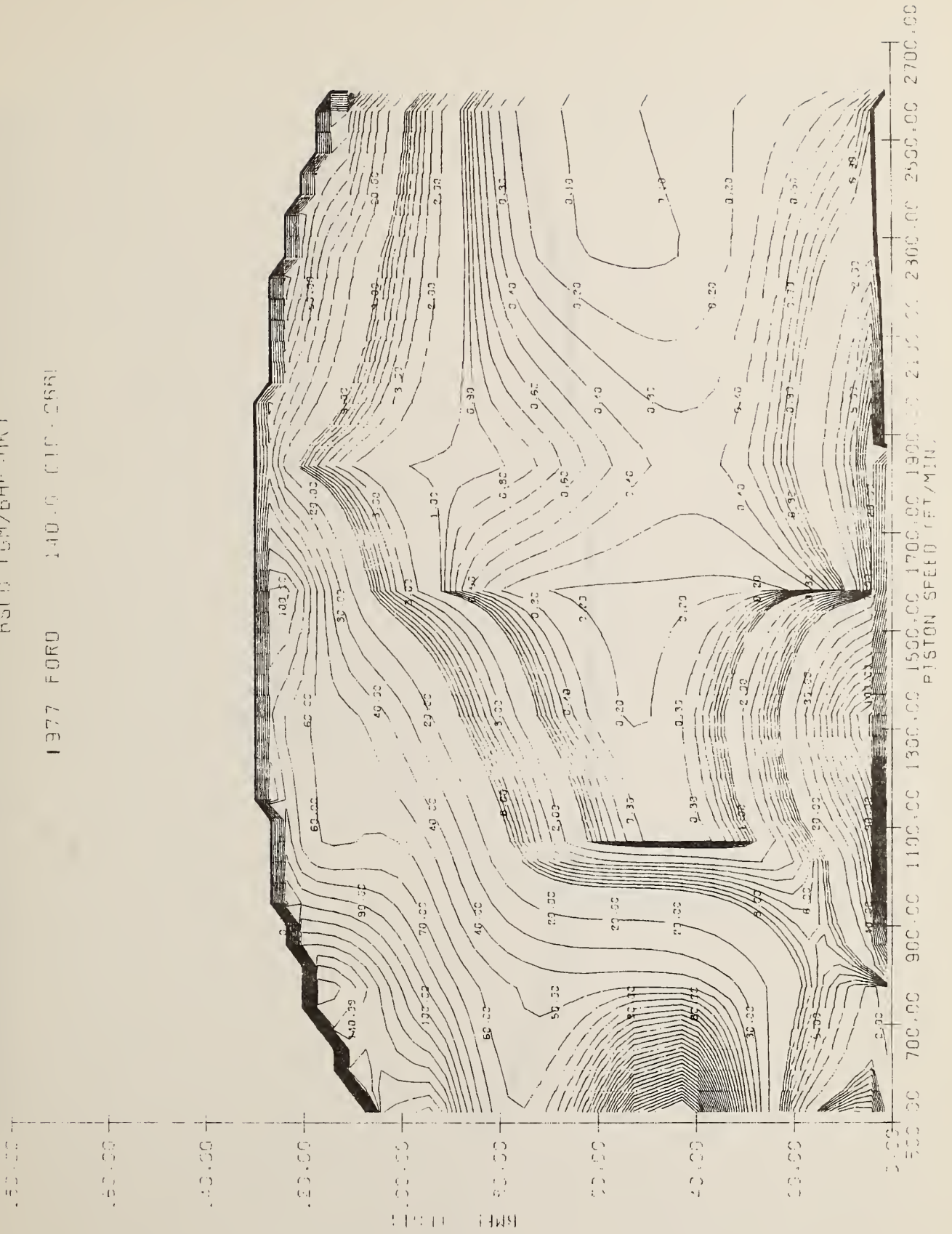
F-8500 (GM/BHP HR)

1977 FORD 140.6 CID CRB



ASTM (GM/6HF-11K)

1977 FORD 140.6 (1P-2BR)



E-BSHC (GM/6HP-HR)
1977 FORD 140.0 CID-255L



F-BENOX (GM BHP HR)

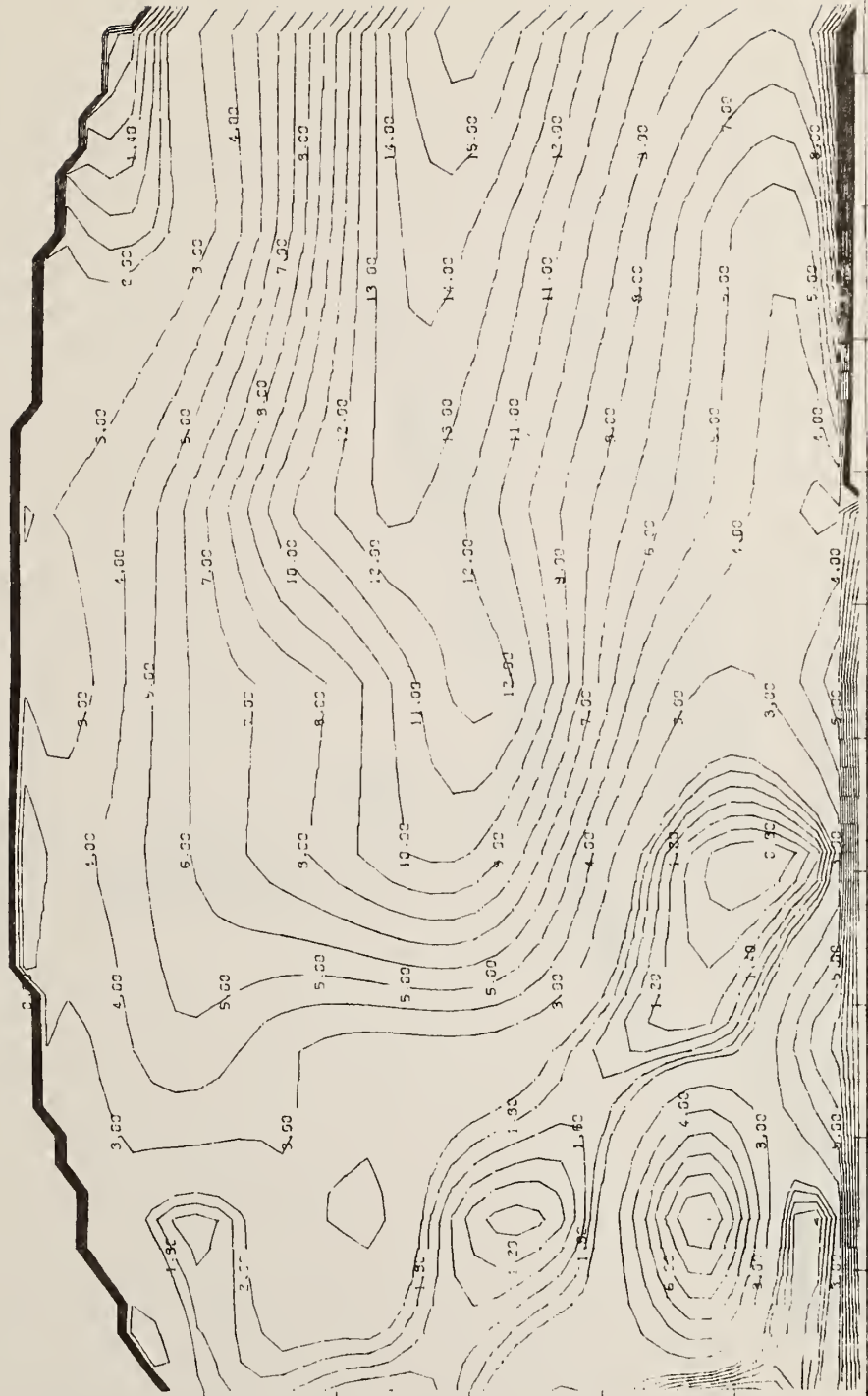
1977 FORD 140 V (10-285)



BSNGX (GM/BHP-HR)

1977 FORD 140.0 (10-258L)

180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00



2700.00
2500.00
2300.00
2100.00
1900.00
1700.00
1500.00
1300.00
1100.00
900.00
700.00
500.00

PISTON SPEED (FT/MIN)

1975 FORD 140 CID (2.3L) - 2BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic
transmission.

BSFC (LB/BHP HR)

1975 FORD 140.0 CID 2 561

0.3000

0.3500

0.4000

0.4500

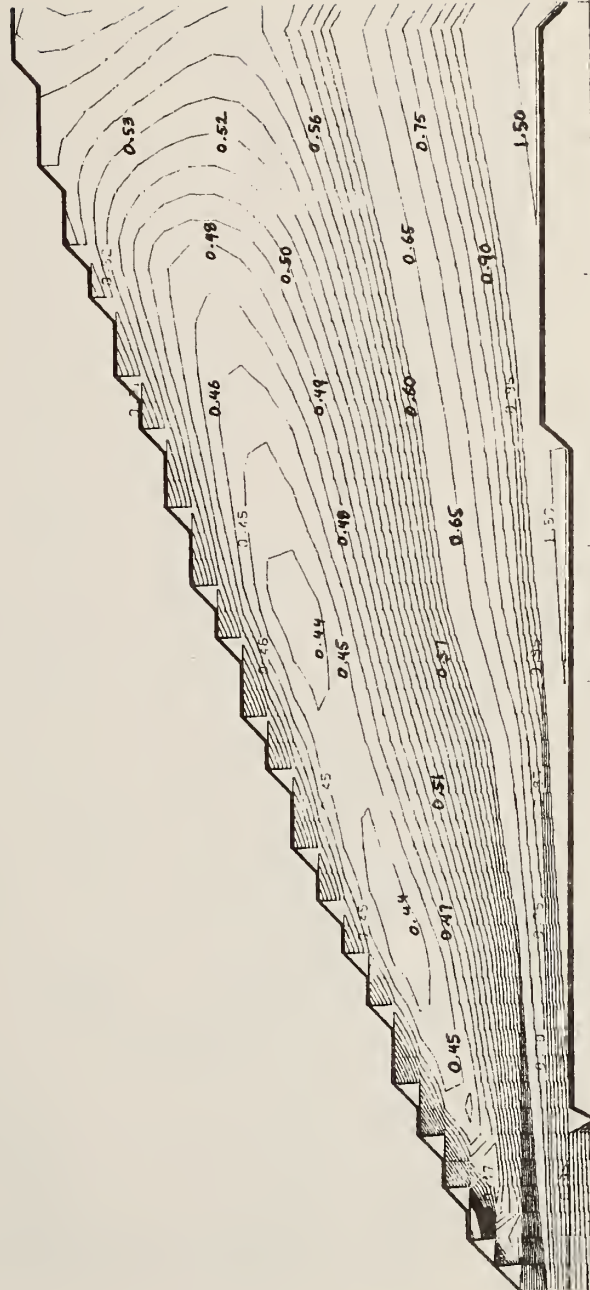
BHP

30.00

35.00

40.00

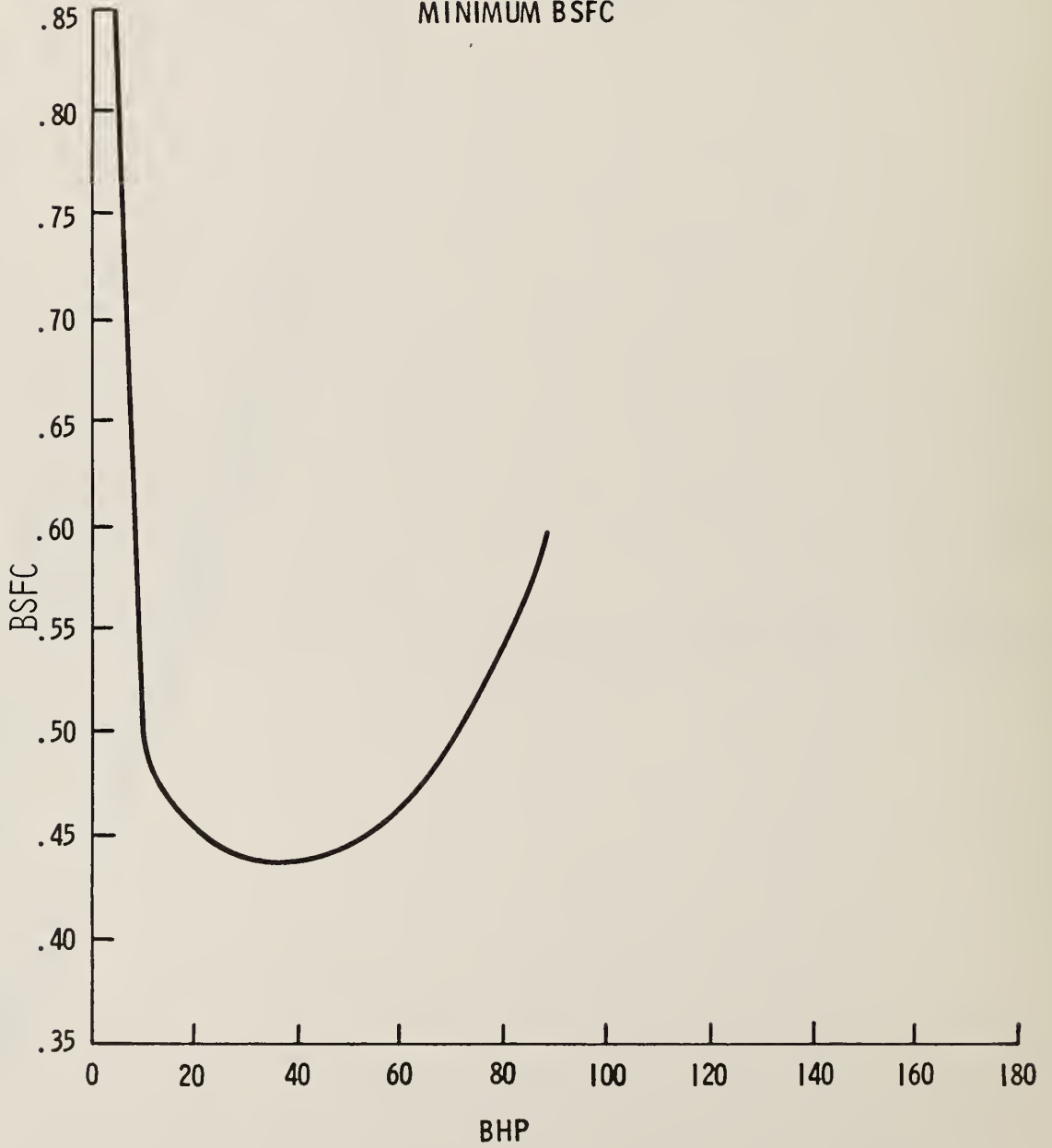
45.00



1200.00 1500.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00 4800.00 5200.00
ENGINE SPEED (RPM)

1975 Ford-140 CID (2.3L), L4-2BBL

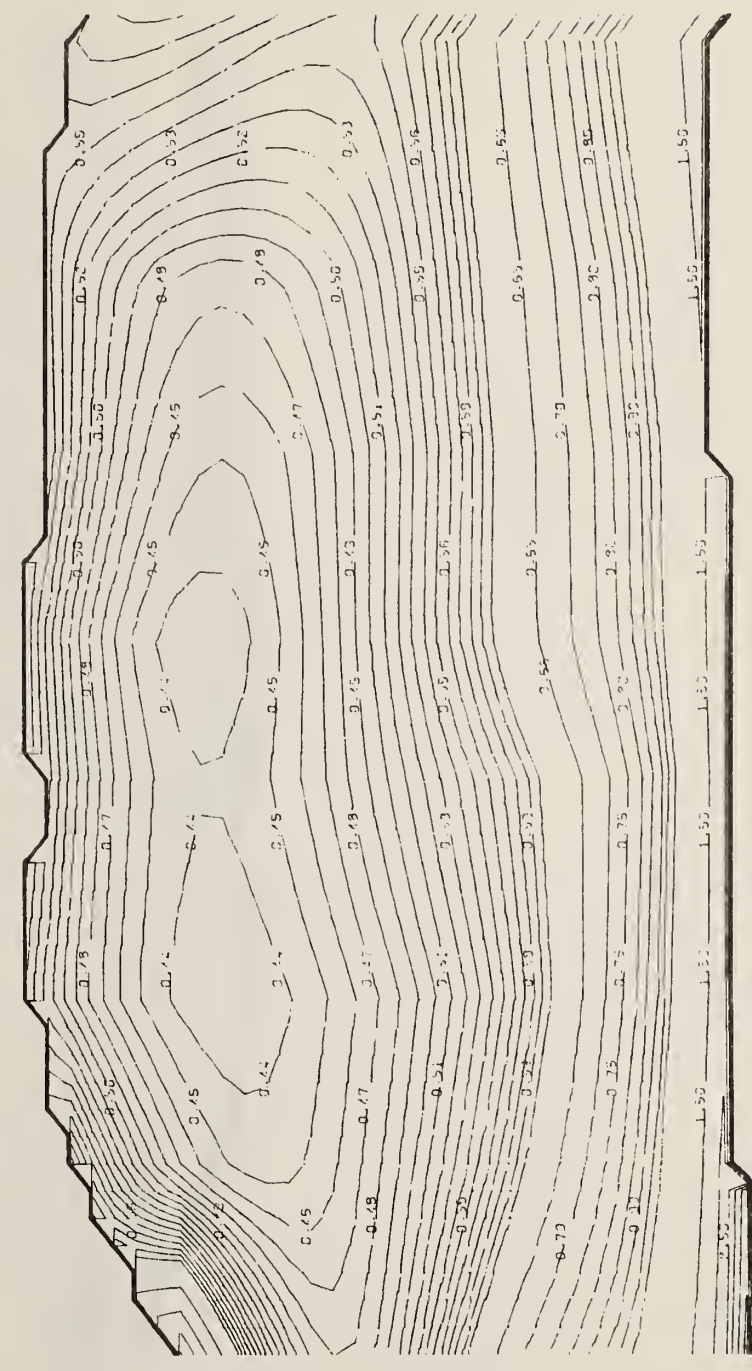
MINIMUM BSFC



BSFC (LB/BHP-HR)

1375 FORD 140 0 (10-2 55)

150.00 +
100.00 +
50.00 +
0.00 +
-50.00 +
-100.00 +
-150.00 +



BHP (PSI)

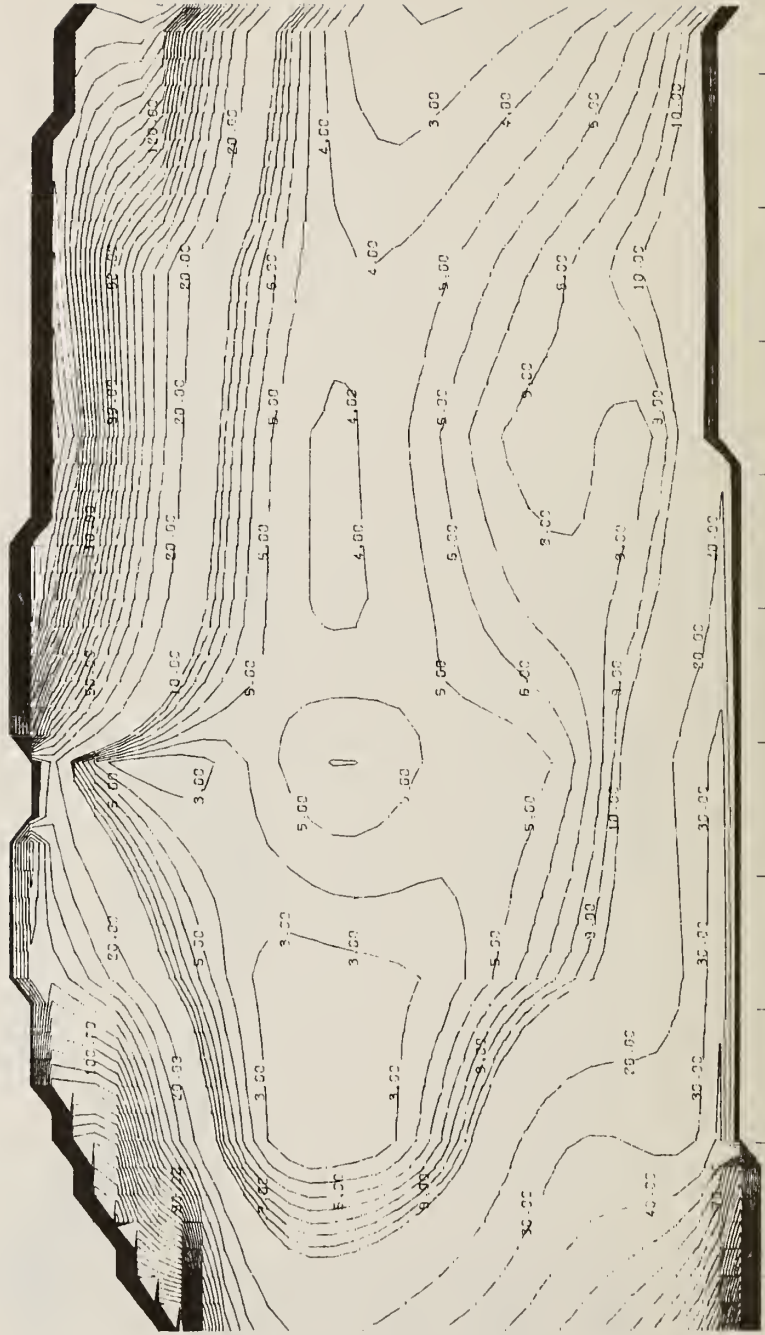
2600.00
2400.00
2200.00
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
0.00
Piston Speed (FT/MIN)

BSCG (CM/BHP-HR)

1975 FORD 1400 CID-2 BBL

180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00

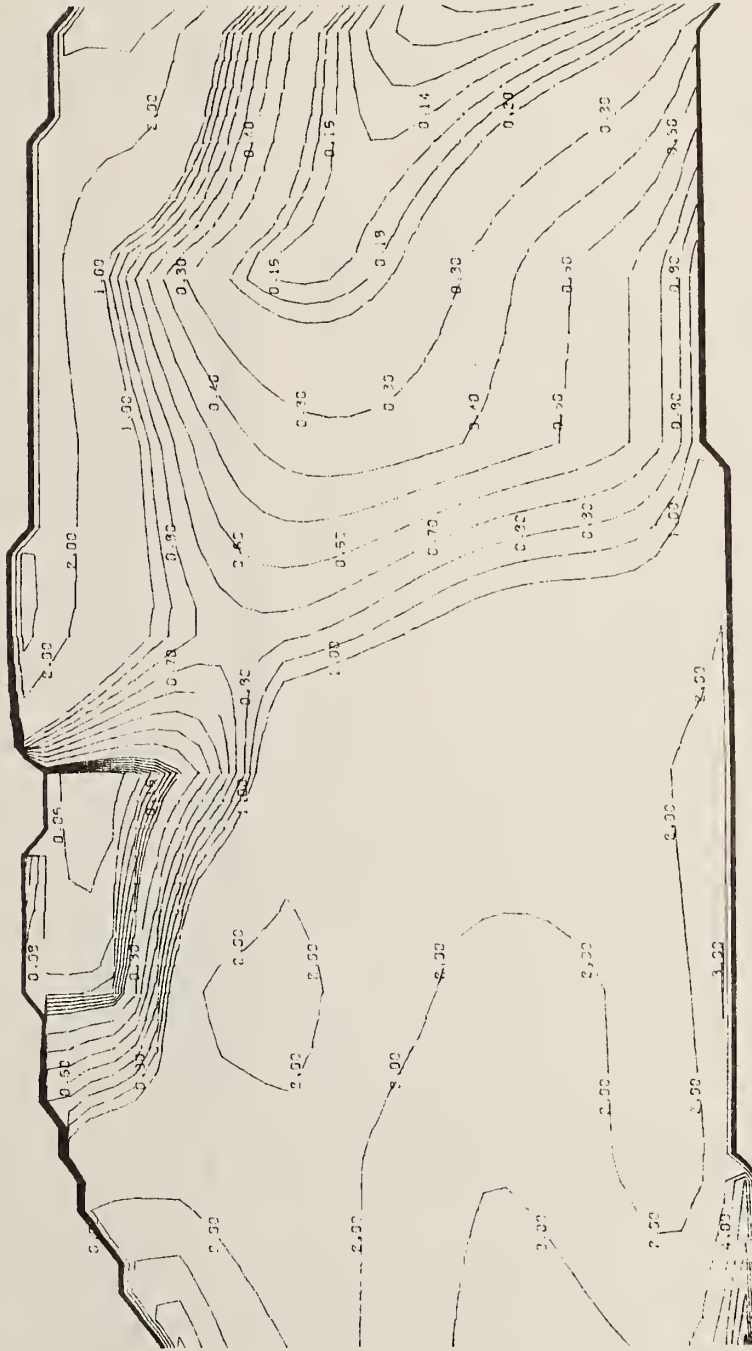
BMEP (PSI)



400.00 500.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00
PISTON SPEED (FT/MIN)

BSHC (GM BHF HR)

1975 FORD 140.0 L10-2 BBL



2000
1500
1000
500
0
500
1000
1500
2000

BSHC (GPH/HR)

2500
2000
1500
1000
500
0
500
1000
1500
2000
2500

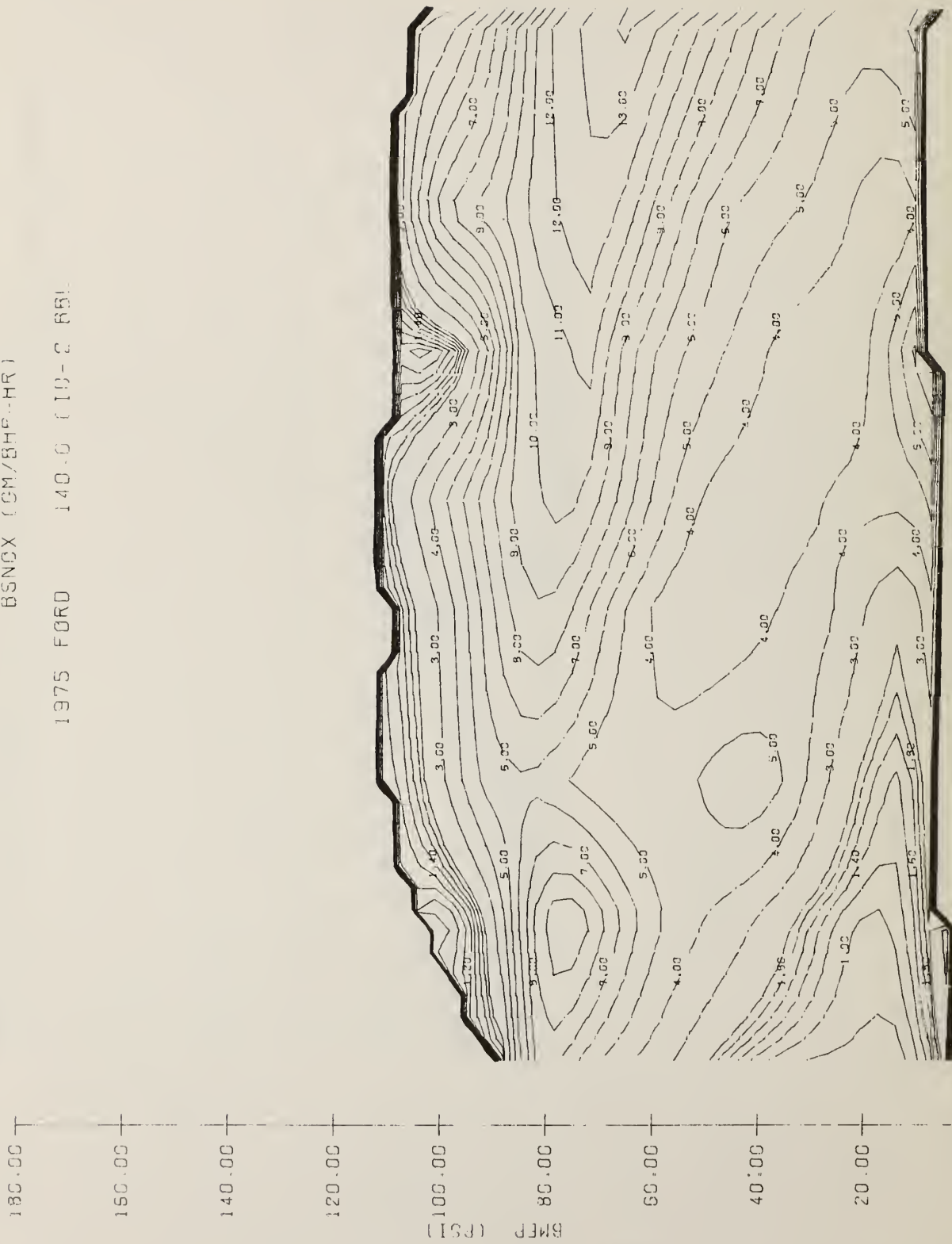
0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05 1.10 1.15 1.20 1.25 1.30 1.35 1.40 1.45 1.50 1.55 1.60 1.65 1.70 1.75 1.80 1.85 1.90 1.95 2.00

2500 2000 1500 1000 500 0 500 1000 1500 2000 2500

0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05 1.10 1.15 1.20 1.25 1.30 1.35 1.40 1.45 1.50 1.55 1.60 1.65 1.70 1.75 1.80 1.85 1.90 1.95 2.00

BSNGX (CM/BHP-HR)

1975 FORD 140.0 (10-2 BBL)



180.00
150.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
400.00 500.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00
PISTON SPEED (FT/MIN)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	M-442/201	A-425/193
No. of Cylinders	6	
Bore, in.	3.66	
Stroke, in.	2.70	
Displacement, in ³	171	
Compression Ratio	8.7	
Horsepower, BHP at RPM	90 BHP 4200 RPM	N/A BHP RPM
Torque, ft-lb at RPM	143 ft-lb 2200 RPM	N/A ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.735	
Intake Valve Lift, in.	.400	
Exhaust Valve Diameter, in.	1.500	
Exhaust Valve Lift, in.	.400	
Intake Valve Opens, deg BTC	22	
Intake Valve Closes, deg ABC	66	
Intake Valve Duration, deg	268	
Exhaust Valve Opens, deg BBC	64	
Exhaust Valve Closes, deg ATC	24	
Exhaust Valve Duration, deg	268	
Valve Overlap, deg	46	
Distributor Type	Brakerless	
Idle Speed, RPM	M-850N A-800D	N/A
Timing, degrees	M-10BTDC A-12BTDC	N/A
Fuel System Type	Carburetor-2BBL Downdraft	
Choke Type	Automatic (Electrically Operated)	
Carburetor Barrel Diameter, in.	1.564	
Vehicle Emission Control Systems	Catalytic Converter Air Injection Engine Modifications EGR	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

N = Neutral

D = Drive

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 171 CID (2.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Pinto Wagon	A3	3000	3.40	50.0	Yes	11.3	0.62	5.20	485.	1.17	18	0.14	0.0	402.	0.61	22	20
Mustang II	A3	3500	3.40	49.0	Yes	10.3	0.63	6.60	541.	1.13	16	0.15	0.60	433.	0.60	20	18
Mustang II	M4	3500	3.00	43.0	Yes	12.3	0.55	8.60	439.	1.40	20	0.13	1.00	387.	1.11	26	22

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1977 FORD 171 CID (2.8L) - 2BBL

Tested by BERC.

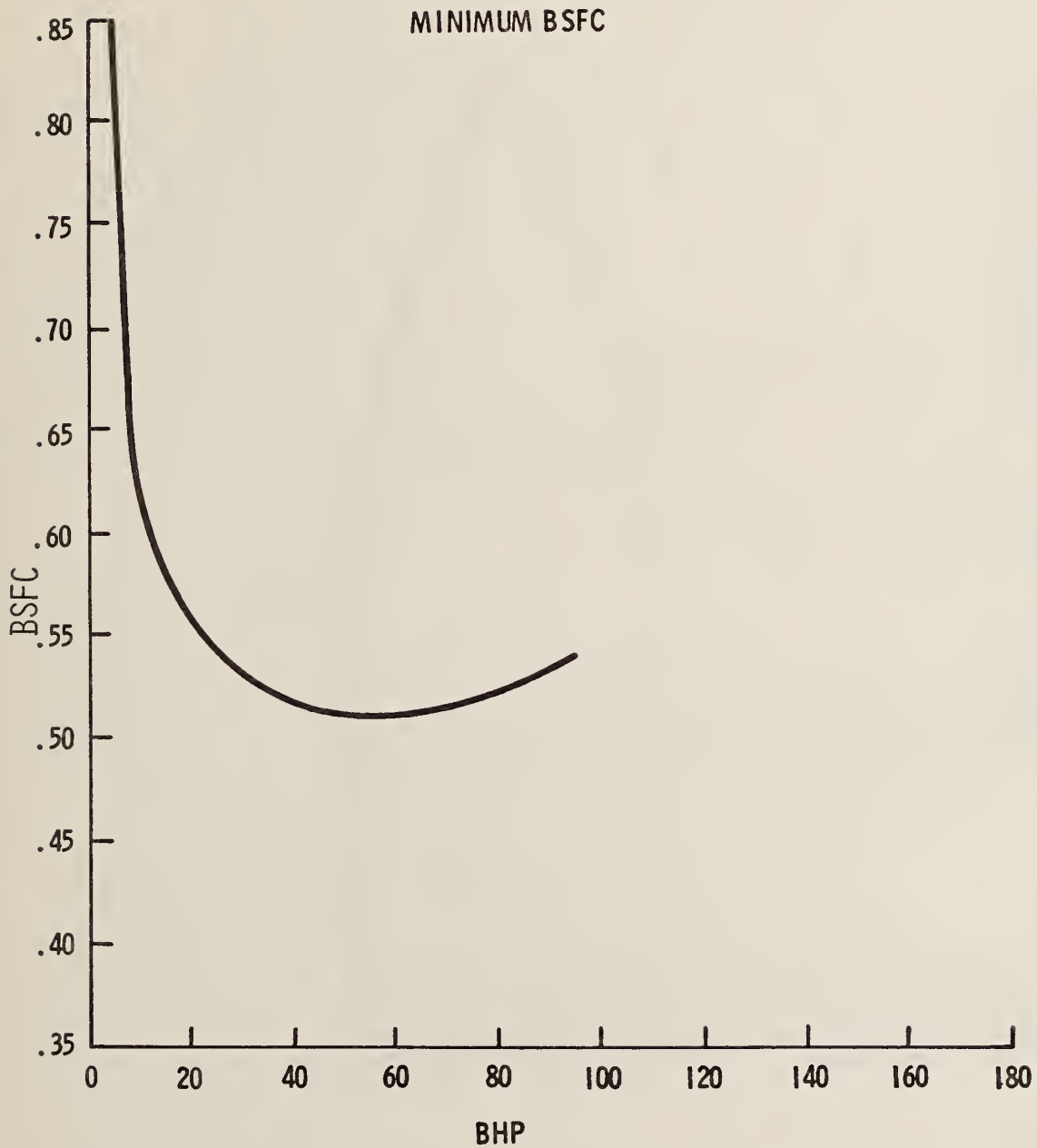
Engine certified for: 49 states, passenger cars, automatic transmission.

BSFC (LB/BHP HR)

1977 FORD 171.0 CID 268L



1977 Ford-171 CID(2.8L), V6-2BBL



BSFC (LB/BHP HR)

1977 FORD 171.0 (10 2BB)

180.00 +

150.00 +

140.00 +

120.00 +

100.00 +

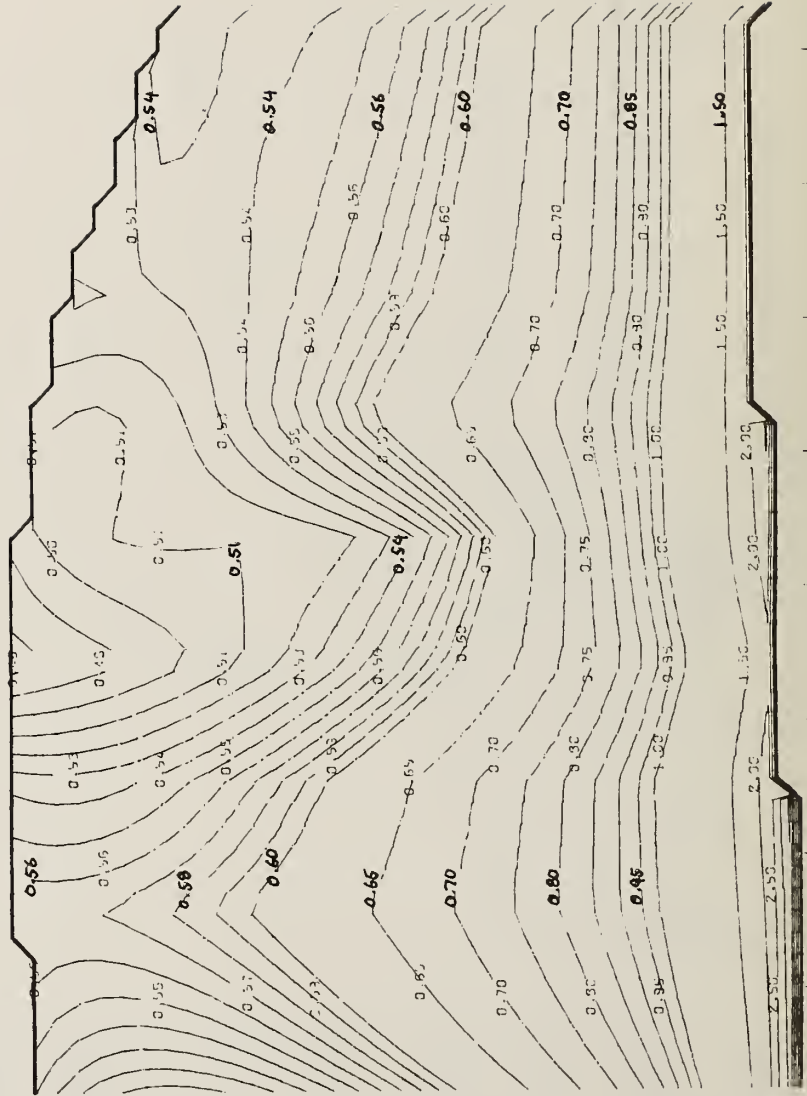
80.00 +

60.00 +

40.00 +

20.00 +

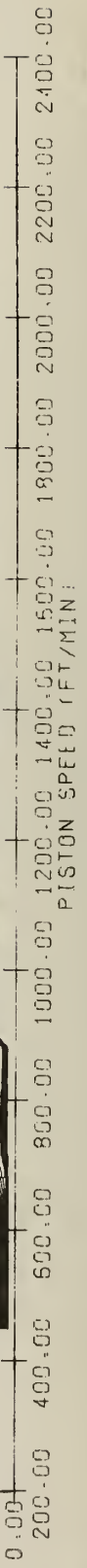
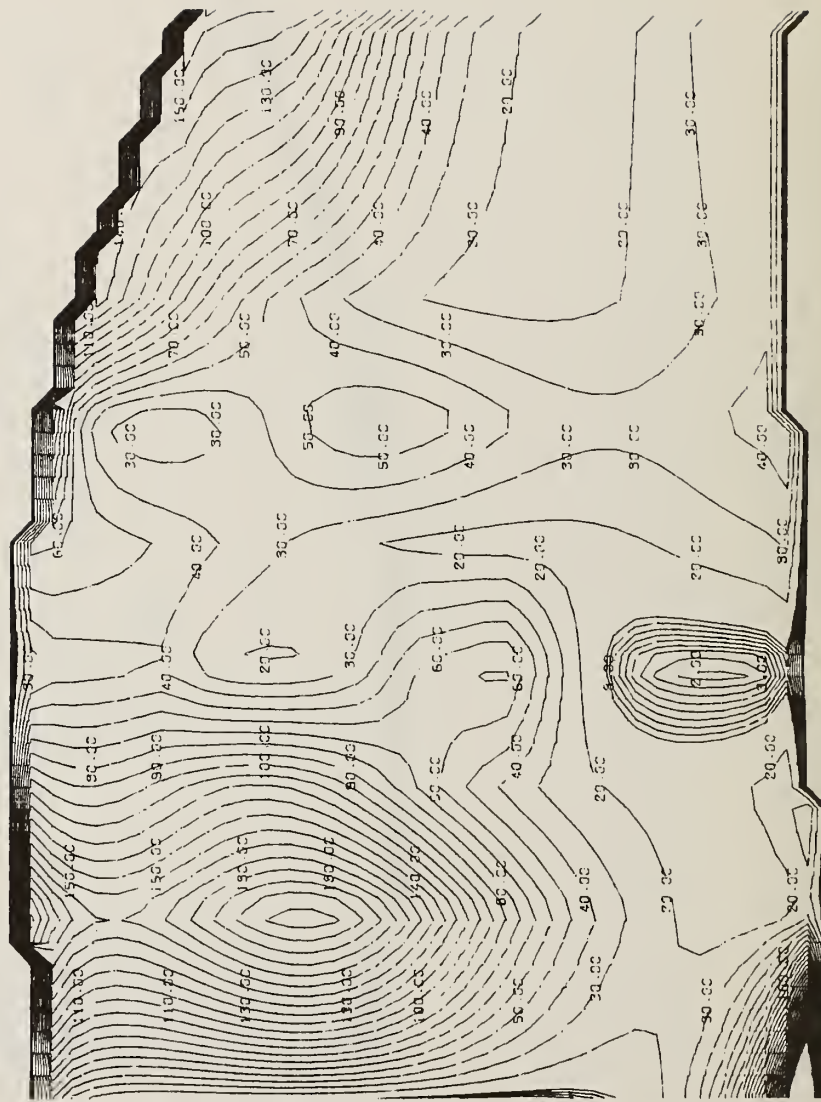
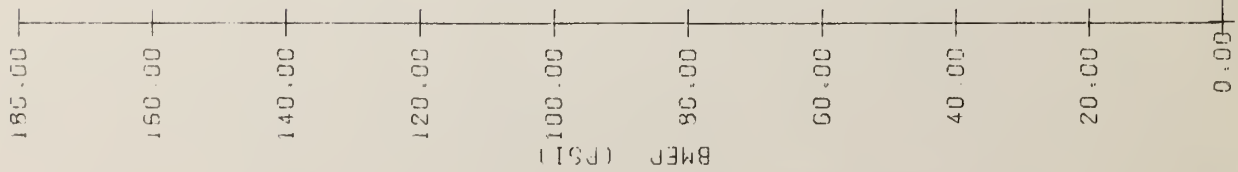
BMEP (PSI)



0.00 + 200.00 400.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00
 PISTON SPEED (FT/MIN)

BSCU (GM/BHP-HR)

1977 FORU 171.0 (10-268L)



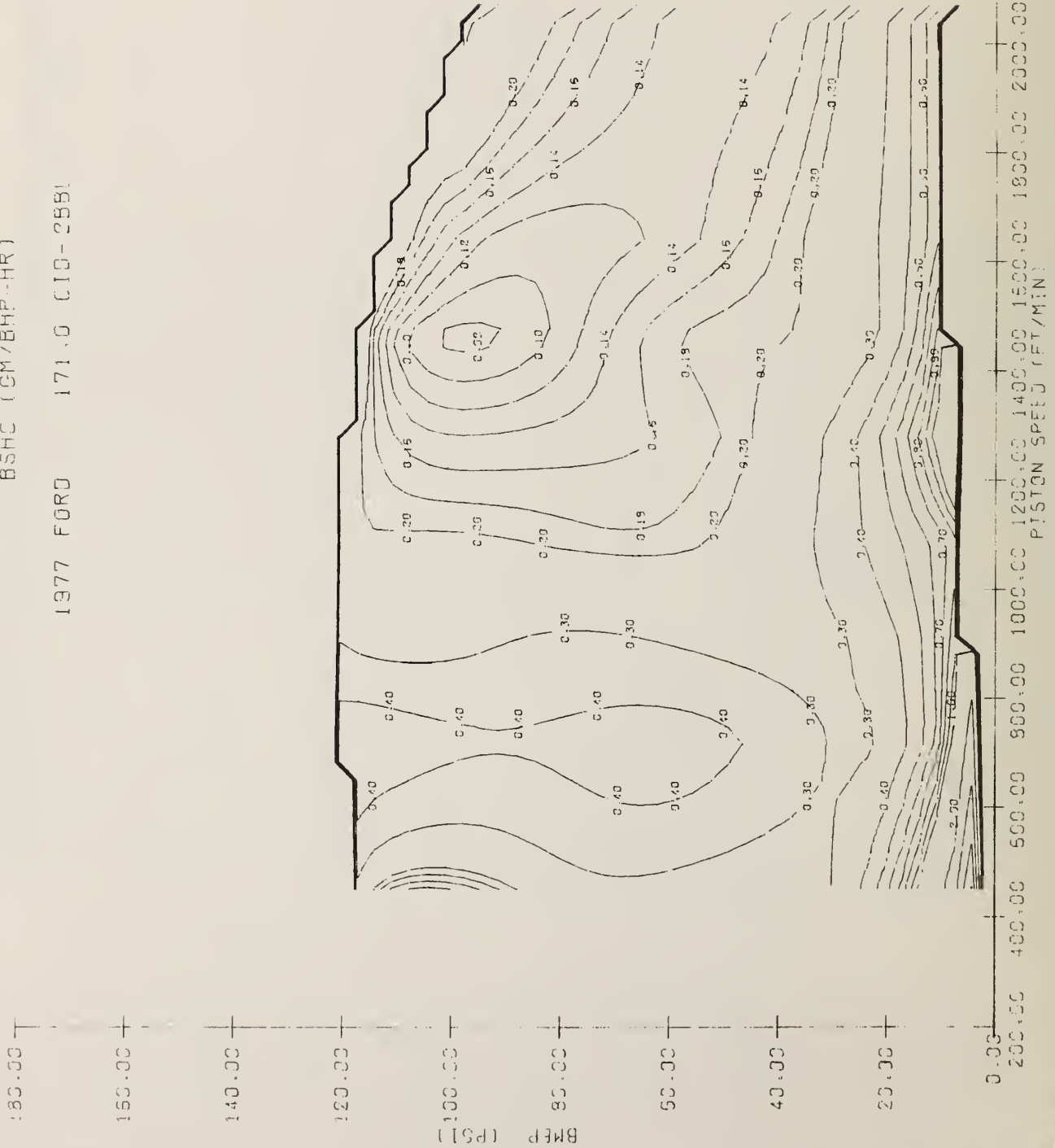
E-RSHE (GM/BHP-HR)

1977 FORD 171.0 CID-268L



B5HC (GM/BHP-HR)

1977 FORD 171.0 (10-255)



E-BENDX (CM/BHP HP)

1977 FORD 171 G CID V8EE1

100.00 +

120.00 +

140.00 +

160.00 +

180.00 +

200.00 +

220.00 +

240.00 +

260.00 +



0.00 +
 200.00 400.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00
 PISTON SPEED (FT/MIN)

BSNIX (CM/BHF-4R)

1977 FORD 171.0 C10-285L

180.00

160.00

140.00

120.00

100.00

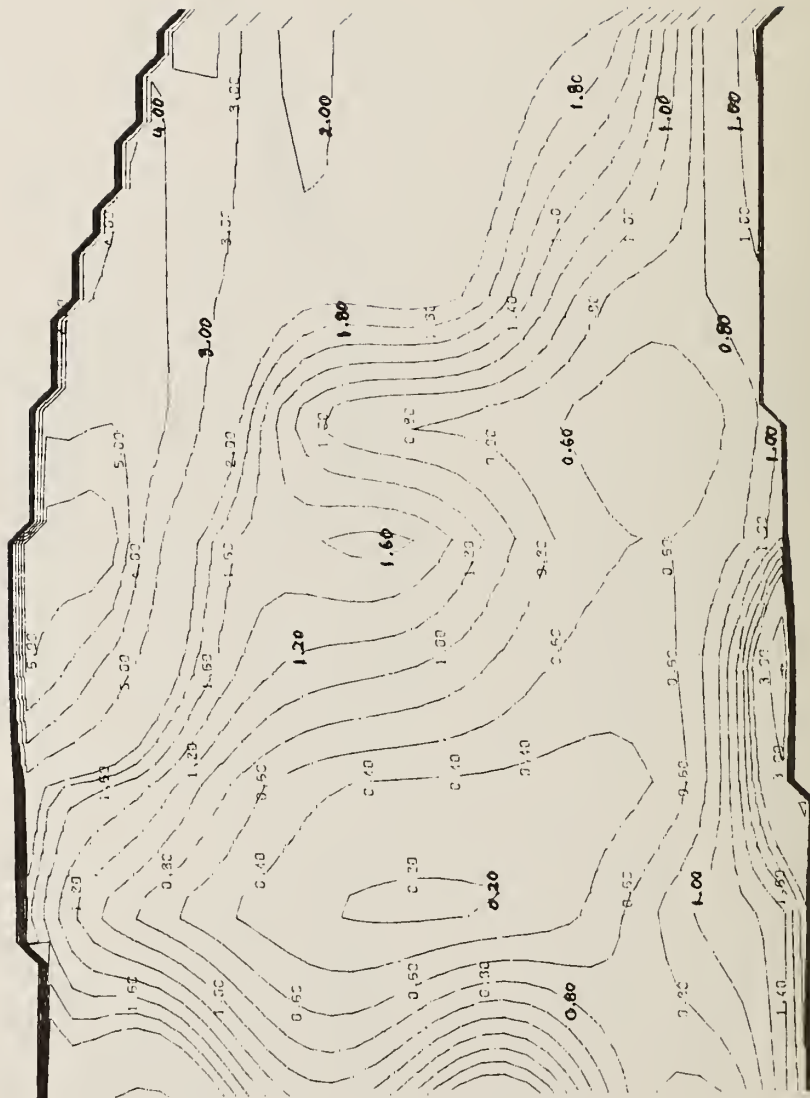
80.00

60.00

40.00

20.00

0.00



200.00 400.00 500.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00
PISTON SPEED (FT/MIN)

1978 Ford - 171 CID (2.8L)-2BBL, Variable Venturi

Ref. 7

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	M-442/201	A-425/193
No. of Cylinders		6
Bore, in.		3.66
Stroke, in.		2.70
Displacement, in ³		171
Compression Ratio		8.7
Horsepower, BHP at RPM	N/A BHP RPM	90 BHP 4200 RPM
Torque, ft-lb at RPM	N/A ft-lb RPM	143 ft-lb 2200 RPM
Exhaust System Type		Single
Intake Valve Diameter, in.		1.735
Intake Valve Lift, in.		.400
Exhaust Valve Diameter, in.		1.500
Exhaust Valve Lift, in.		.400
Intake Valve Opens, deg BTC		22
Intake Valve Closes, deg ABC		66
Intake Valve Duration, deg		268
Exhaust Valve Opens, deg BBC		64
Exhaust Valve Closes, deg ATC		24
Exhaust Valve Duration, deg		268
Valve Overlap, deg		46
Distributor Type		Brakerless
Idle Speed, RPM	N/A	A-600D
Timing, degrees	N/A	A-6 BTDC
Fuel System Type		2BBL Carburetor-Variable Venturi
Choke Type		Automatic (Electrically Operated)
Carburetor Barrel Diameter, in.		1.564
Vehicle Emission Control Systems	N/A	Engine Modifications Catalytic Converter Air Injection EGR

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 171 CID (2.8L)-2BBL - Variable Venturi

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Mustang II	A3	3500	3.40	49.0	Yes	10.3	0.40	5.60	553.	1.33	16	0.09	0.10	391.	1.40	23	15
Mustang II	M4	3500	3.00	43.0	Yes	12.3	0.45	6.80	496.	1.41	18	0.09	0.30	354.	1.43	25	20

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	M-383/174	A-308/140
No. of Cylinders	6	
Bore, in.	3.682	
Stroke, in.	3.126	
Displacement, in ³	200	
Compression Ratio	8.5	
Horsepower, BHP at RPM	85 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	154 ft-lb 1600 RPM	N/A ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.760 - 1.742	
Intake Valve Lift, in.	.367	
Exhaust Valve Diameter, in.	1.399 - 1.381	
Exhaust Valve Lift, in.	.367	
Intake Valve Opens, deg BTC	20	
Intake Valve Closes, deg ABC	52	
Intake Valve Duration, deg	254	
Exhaust Valve Opens, deg BBC	59	
Exhaust Valve Closes, deg ATC	15	
Exhaust Valve Duration, deg	254	
Valve Overlap, deg	35	
Distributor Type	Breakerless DuraSpark II	
Idle Speed, RPM	M-800N A-650D	N/A
Timing, degrees	M-10BTDC A-10 BTDC	N/A
Fuel System Type	Carburetor - 1BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	Engine Modifications Air Injection Catalytic Converter EGR	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

N = Neutral

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 200 CID (3.3L)-1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Fairmont	A3	3000	3.08	43.0	Yes	9.7	0.54	12.90	441.	1.17	19	0.11	7.00	330.	0.63	22	
Zephyr	A3	3500	3.08	43.0	Yes	9.7	0.52	8.60	477.	1.81	18	0.12	4.10	371.	1.00	20	
Fairmont	M3	3000	2.73	37.0	Yes	11.3	0.59	4.90	420.	1.79	21	0.24	0.10	307.	2.65	24	
Zephyr Wagon	M3	3500	2.73	38.0	Yes	9.3	0.97	7.00	448.	1.48	19	0.25	0.10	304.	1.69	23	

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	M-383/174	A-308/140
No. of Cylinders	6	
Bore, in.	3.682	
Stroke, in.	3.126	
Displacement, in ³	200	
Compression Ratio	8.5	
Horsepower, BHP at RPM	N/A BHP RPM	94 BHP * RPM
Torque, ft-lb at RPM	N/A ft-lb RPM	* ft-lb * RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.760 - 1.742	
Intake Valve Lift, in.	.367	
Exhaust Valve Diameter, in.	1.399 - 1.381	
Exhaust Valve Lift, in.	.367	
Intake Valve Opens, deg BTC	20	
Intake Valve Closes, deg ABC	52	
Intake Valve Duration, deg	254	
Exhaust Valve Opens, deg BBC	59	
Exhaust Valve Closes, deg ATC	15	
Exhaust Valve Duration, deg	254	
Valve Overlap, deg	35	
Distributor Type	Breakerless Duraspark II	
Idle Speed, RPM	N/A	
Timing, degrees	N/A	
Fuel System Type	Carburetor - 2 BBL downdraft Ref. 15	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	N/A	Air Injection EGR Catalytic Converter Ref. 15

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 200 CID (3.3)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Fairmont	A3	3000	3.08	43.0	N0	9.7	0.34	3.50	483.	1.27	18	0.12	0.0	379.	1.76	23	20

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	422/191.4 Ref. 17	
No. of Cylinders	6	
Bore, in.	3.68	
Stroke, in.	3.91	
Displacement, in ³	250	
Compression Ratio	8.5	
Horsepower, BHP at RPM	97 BHP 3200 RPM	97 BHP 3200 RPM
Torque, ft-lb at RPM	210 ft-lb 1400RPM	210 ft-lb 1400RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.760 - 1.742	
Intake Valve Lift, in.	.367	
Exhaust Valve Diameter, in.	1.399 - 1.381	
Exhaust Valve Lift, in.	.367	
Intake Valve Opens, deg BTC	18	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	252	
Exhaust Valve Opens, deg BBC	57	
Exhaust Valve Closes, deg ATC	17	
Exhaust Valve Duration, deg	254	
Valve Overlap, deg	35	
Distributor Type	Breakerless Duraspark II	
Idle Speed, RPM	M-800N A-600D	M -N.A.* A-600D
Timing, degrees	M-4BTDC A-14BTDC	M -N.A.* A-6BTDC
Fuel System Type	Carburetor - 1BBL Downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	Air Injection Engine Modifications Catalytic Converter EGR	Air Injection Engine Modifications EGR Catalytic Converter

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*Manual transmission not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	473/215 Ref. 17	
No. of Cylinders	6	
Bore, in.	4.00	
Stroke, in.	3.98	
Displacement, in ³	300	
Compression Ratio	8.9	
Horsepower, BHP at RPM	119 BHP 3200 RPM	N/A BHP RPM
Torque, ft-lb at RPM	252 ft-lb 1600RPM	N/A ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	N/A
Timing, degrees	*	N/A
Fuel System Type	Carburetor-1BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air Injection Catalytic Converter EGR	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford - 300 CID (4.9L)-1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Pickup	A3	4000	2.75	32.0	N0	12.0	0.80	9.80	478.	2.06	18	0.12	1.10	368.	1.86	24	20
Pickup	A3	4000	2.75	32.0	N0	12.0	0.59	10.10	513.	2.28	17	0.12	1.70	379.	2.42	23	19
Pickup	A3	4500	2.75	32.0	N0	12.7	1.01	14.00	495.	2.50	17	0.15	1.80	384.	1.97	23	19
Pickup	A3	4500	2.75	32.0	N0	12.7	0.83	19.60	520.	1.72	16	0.21	5.10	391.	2.00	22	18
Van	A3	4500	3.25	42.0	N0	12.7	0.77	18.90	559.	1.49	15	0.13	2.30	456.	2.19	19	17
Pickup	M3	4000	2.75	32.0	N0	12.0	0.90	11.30	413.	2.15	20	0.09	0.60	296.	2.15	30	24
Pickup	M3	4000	2.75	35.0	N0	12.0	0.79	13.50	464.	1.24	18	0.14	1.80	336.	1.27	26	21
Van	M3	4500	2.74	34.0	N0	12.7	0.67	7.90	483.	1.93	18	0.08	0.40	343.	1.84	26	21
Van	M3	3400	3.24	42.0	Yes	12.7	0.97	14.50	565.	1.87	15	0.14	1.60	397.	2.15	22	17

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	480/218 Ref. 17	
No. of Cylinders	8	
Bore, in.	4.001	
Stroke, in.	3.00	
Displacement, in ³	302	
Compression Ratio	8.4	
Horsepower, BHP at RPM	139 BHP at 3600 RPM	N/A BHP at RPM
Torque, ft-lb at RPM	250 ft-lb at 1600 RPM	N/A ft-lb at RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.79 - 1.773	
Intake Valve Lift, in.	.382	
Exhaust Valve Diameter, in.	1.460 - 1.442	
Exhaust Valve Lift, in.	.398	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	48	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	57	
Exhaust Valve Closes, deg ATC	19	
Exhaust Valve Duration, deg	256	
Valve Overlap, deg	35	
Distributor Type	Breakerless Dura Spark II	
Idle Speed, RPM	M-500N A-600D	N/A
Timing, degrees	M-4BTDC A - 14 BTDC	N/A
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.564	
Vehicle Emission Control Systems	Air injection Engine Modification EGR Catalytic Converter	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

N = Neutral

D = Drive

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford 302 CID (5.0L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Fairmont	A3	3500	2.47	33.0	Yes	9.7	0.69	6.30	534.	1.77	16	0.16	0.10	373.	1.06	24	19
Granada	A3	3500	2.47	33.0	Yes	9.5	0.58	3.90	530.	1.78	16	0.15	0.0	375.	1.18	24	19
Fairmont	A3	3500	2.47	34.0	Yes	9.7	0.60	4.90	535.	1.69	16	0.19	0.10	391.	1.47	23	19
Fairmont	A3	3500	2.47	34.0	Yes	9.7	0.55	5.30	542	1.63	16	0.15	0.70	388.	1.39	23	19
Granada	A3	4000	2.47	33.0	Yes	9.5	0.82	8.10	534.	1.57	16	0.18	0.40	380.	1.20	23	19
Versailles	A3	4000	2.50	33.0	Yes	13.2	0.61	3.70	576.	1.52	15	0.12	0.10	429.	1.93	21	17
Ford	A3	4500	2.75	35.0	Yes	10.5	0.57	4.00	597.	1.99	15	0.17	0.10	401.	1.50	22	17
LTD II	A3	4500	2.75	35.0	Yes	12.0	0.44	3.60	608.	1.53	14	0.14	0.10	436.	1.80	20	16
Ford	A3	4500	2.75	35.0	Yes	10.5	0.58	3.50	590.	1.78	15	0.18	0.20	418.	1.72	21	17
Monarch	M4	3500	3.00	32.0	Yes	9.5	0.92	6.10	543.	1.73	16	0.33	0.20	328.	1.66	27	20

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford-302 CID (5.0L)-2BBL (Continued)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Mustang II	M4	3500	3.00	43.0	Yes	10.3	0.71	5.80	552.	1.71	16	0.32	0.30	410.	2.89	22	18
Monarch	M4	4000	3.00	32.0	Yes	9.5	0.71	4.30	434.	1.85	16	0.24	0.10	326	2.08	27	20
Mustang II	A3	3500	2.79	40.0	Yes	12.3	0.76	11.80	566.	1.77	15	0.13	0.20	412.	1.99	22	17
Mustang II	A3	3500	2.79	40.0	Yes	10.3	0.68	4.70	552.	1.80	16	0.12	0.30	412.	1.52	22	18

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1978 Ford-302 CID (5.0L)-2BBL-Variable Venturi Ref. 6

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	480/218 Ref. 17	
No. of Cylinders	8	
Bore, in.	4.001	
Stroke, in.	3.00	
Displacement, in ³	302	
Compression Ratio	8.1	
Horsepower, BHP at RPM	N/A BHP RPM	133 BPH 3600 RPM
Torque, ft-lb at RPM	N/A ft-lb RPM	243 ft-lb 1600 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.791-1.773	
Intake Valve Lift, in.	.382	
Exhaust Valve Diameter, in.	1.460-1.442	
Exhaust Valve Lift, in.	.398	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	48	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	57	
Exhaust Valve Closes, deg ATC	19	
Exhaust Valve Duration, deg	256	
Valve Overlap, deg	35	
Distributor Type	Breakerless DuraSpark II	
Idle Speed, RPM	N/A	600
Timing, degrees	N/A	6 BTDC
Fuel System Type	2BBL Carburetor-Variable Venturi	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.564	
Vehicle Emission Control Systems	N/A	Air Injection Engine Modifications EGR Catalytic Converter

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford 302 CID(5.0L)-2BBL-Variable Venturi

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Fairmont	A3	3500	2.73	37.0	Yes	9.7	0.30	1.60	546.	1.32	16	0.11	0.0	428.	1.27	21	18
Mustang II	A3	3900	3.00	43.0	Yes	10.3	0.43	2.40	647.	1.17	14	0.09	0.0	465.	1.50	19	16
Granada	A3	4000	2.47	33.0	Yes	9.5	0.22	0.50	584.	1.46	15	0.08	0.0	390.	1.21	23	18

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford 302 CID(5.0L)-2BBL-Variable Venturi

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Pickup	M3	4000	2.75	32.0	N0	19.0	0.66	8.80	620.	1.82	14	0.18	1.30	457.	3.84	19	16
Pickup	M3	4000	2.75	35.0	N0	19.0	0.45	5.80	617.	1.50	14	0.19	0.20	447.	3.24	20	16
Pickup	M3	4000	2.75	36.0	N0	19.0	0.54	8.80	627.	1.19	14	0.24	0.20	457.	3.09	19	16

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$N = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	625/284	
No. of Cylinders	8	
Bore, in.	4.00	
Stroke, in.	3.50	
Displacement, in ³	351	
Compression Ratio	8.0	
Horsepower, BHP at RPM	145 BHP 3400 RPM	145 BHP 3400 RPM
Torque, ft-lb at RPM	273 ft-lb 1800 RPM	273 ft-lb 1800 RPM
Exhaust System Type	Single "Y" System	
Intake Valve Diameter, in.	2.041	
Intake Valve Lift, in.	.428	
Exhaust Valve Diameter, in.	1.6545	
Exhaust Valve Lift, in.	.432	
Intake Valve Opens, deg BTC	17	
Intake Valve Closes, deg ABC	59	
Intake Valve Duration, deg	256	
Exhaust Valve Opens, deg BBC	65	
Exhaust Valve Closes, deg ATC	27	
Exhaust Valve Duration, deg	272	
Valve Overlap, deg	44	
Distributor Type	Breakerless	
Idle Speed, RPM	650D	625 D
Timing, degrees	*	16 BTDC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.56	
Vehicle Emission Control Systems	Catalytic Converter Engine Modifications EGR Air Injection	Catalytic Converter Engine Modifications EGR Air Injection

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

"M" engine designator indicates Cleveland, Ohio manufacturing plant

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford-351(M)CID(5.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
LTD II	A3	4500	2.50	31.0	Yes	11.4	0.37	7.60	656.	1.07	13	0.09	0.20	444.	1.91	20	16
LTD II	A3	4500	2.50	31.0	Yes	11.4	0.35	4.80	619.	1.57	14	0.10	0.0	430.	1.88	21	16
Ford	A3	5000	2.47	31.0	YES	10.5	0.47	9.00	646.	1.55	13	0.15	0.70	428.	2.26	21	16

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 Ford 351(M) CID (5.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Pickup	A3	4500	2.75	34.0	Yes	14.0	0.53	3.40	647.	3.10	14	0.11	0.0	399.	3.44	22	16
Pickup	M3	4500	3.00	37.0	Yes	14.0	1.16	12.10	625.	2.05	14	0.21	0.40	452.	5.05	20	16

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50 MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	625.3/284	
No. of Cylinders	8	
Bore, in.	4.00	
Stroke, in.	3.50	
Displacement, in ³	351	
Compression Ratio	8.3	
Horsepower, BHP at RPM	144 BHP 3200 RPM	N/A BHP RPM
Torque, ft-lb at RPM	277 ft-lb 1600 RPM	N/A ft-lb RPM
Exhaust System Type	Single "Y" System	
Intake Valve Diameter, in.	1.782	
Intake Valve Lift, in.	.419	
Exhaust Valve Diameter, in.	1.451	
Exhaust Valve Lift, in.	.419	
Intake Valve Opens, deg BTC	23	
Intake Valve Closes, deg ABC	53	
Intake Valve Duration, deg	256	
Exhaust Valve Opens, deg BBC	58	
Exhaust Valve Closes, deg ATC	18	
Exhaust Valve Duration, deg	256	
Valve Overlap, deg	41	
Distributor Type	Breakerless	
Idle Speed, RPM	650D	N/A
Timing, degrees	4BTDC	N/A
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.56	
Vehicle Emission Control Systems	Engine Modifications EGR Air Injection Catalytic Converter	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

"W" engine designator indicates Windsor, Ontario manufacturing plant

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford 351(W) CID (5.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DY/NO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Ford	A3	4500	2.47	30.0	Yes	10.5	0.87	14.80	562	1.49	15	0.09	0.90	385.	1.81	23	18
Ford	A3	4500	2.47	30.0	Yes	10.5	0.72	10.40	559.	1.83	15	0.09	0.80	383.	2.19	23	18
Ford	A3	4500	2.47	31.0	Yes	12.0	0.56	10.00	614.	1.89	14	0.10	0.70	417.	2.13	21	17

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 Ford 351(W) CID (5.8L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				Hwy MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Van	A3	4500	2.75	34.0	N0	12.7	0.71	10.40	639.	2.46	14	0.15	0.0	445.	2.46	20	16
Van	A3	4500	2.75	35.0	N0	12.7	0.57	9.50	638.	2.33	14	0.14	0.0	463.	2.04	19	16
Van	A3	4500	3.25	42.0	N0	12.7	0.73	8.90	666.	2.67	13	0.16	0.10	511.	2.56	17	15
Van	M3	4500	3.25	42.0	N0	12.7	0.82	11.70	615.	2.17	14	0.14	0.50	491.	1.78	18	15
Van	M4 w/O.D	4500	3.00	28.0	N0	12.7	0.88	11.00	590.	1.89	14	0.17	0.50	404.	2.07	22	17

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 Ford 351(W) CID (5.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Van	A3	4500	2.75	34.0	Yes	19.0	0.45	3.90	755.	1.83	12	0.18	0.10	532.	2.53	17	13
Van	A3	4500	3.25	42.0	Yes	19.0	0.48	4.80	786.	1.72	11	0.15	0.70	599.	2.84	15	13

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

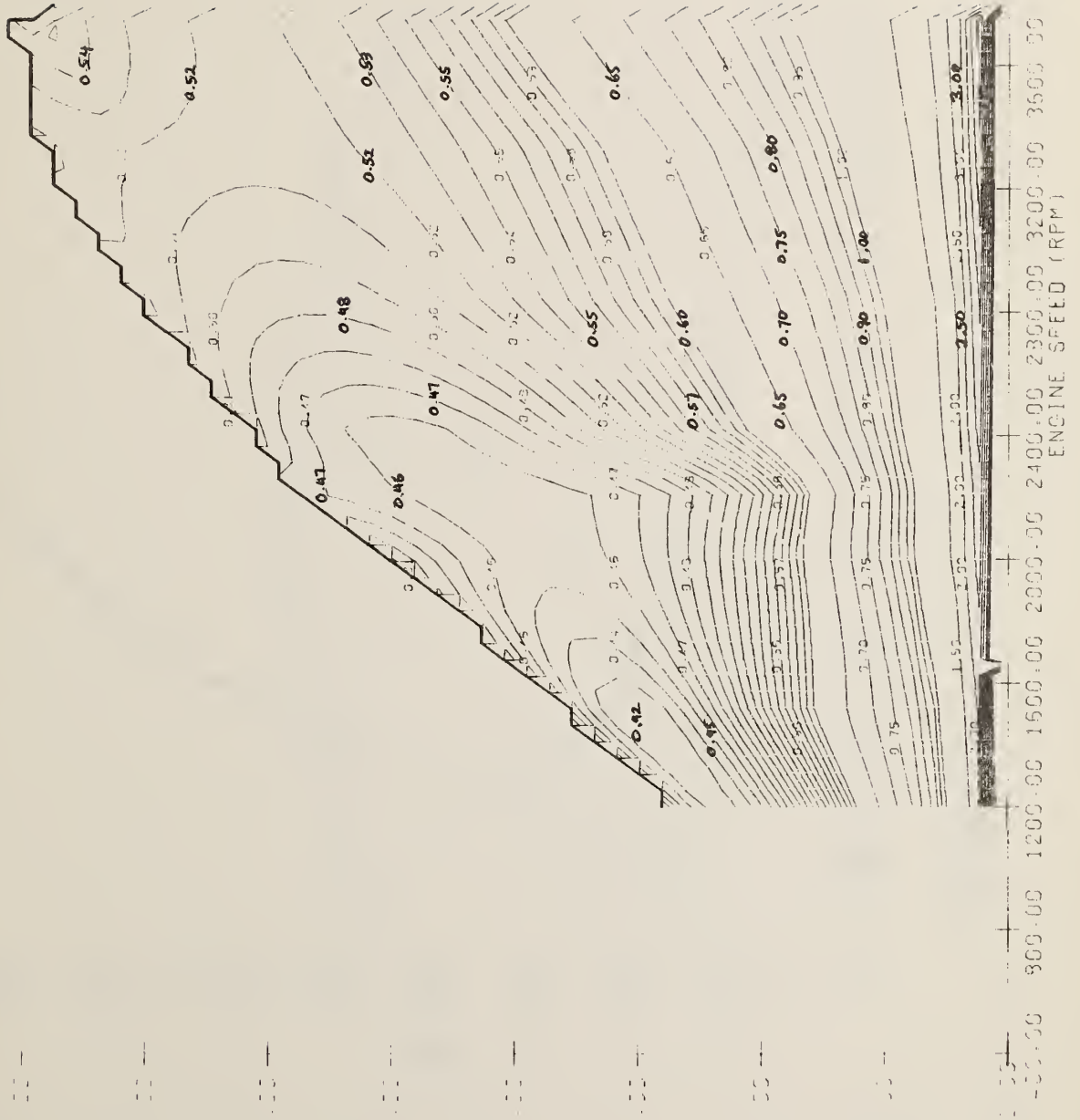
1975 FORD 351(W) CID (5.7L) - 2BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic
transmission.

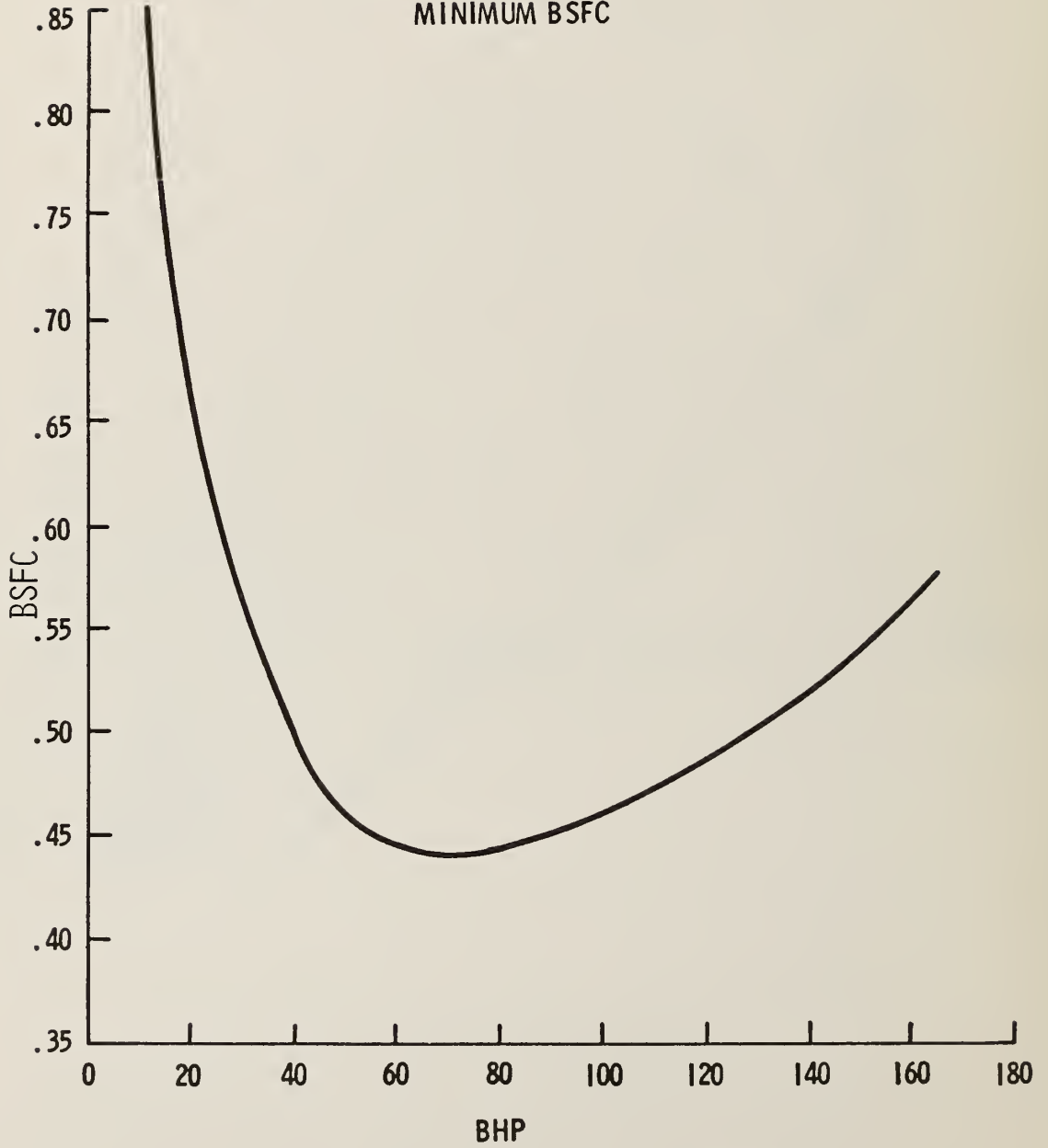
BSFC 11.676447-11.1

1975 FORD 351-C 110 2 BBL



1975 Ford-351 CID(5.8L), V8-2BBL

MINIMUM BSFC

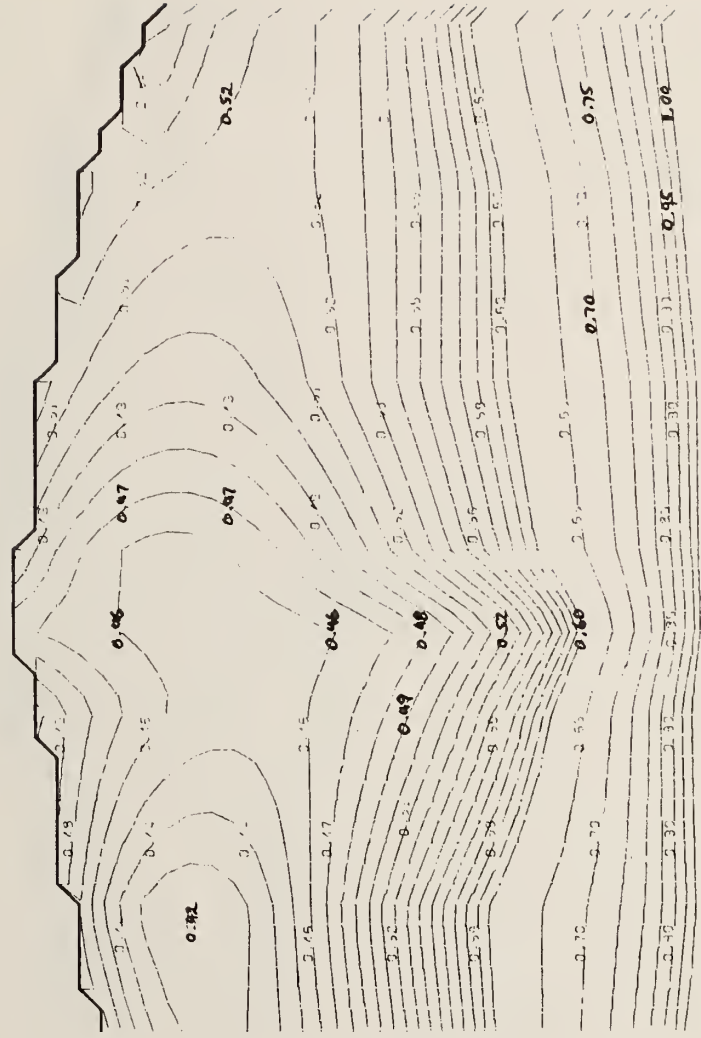


BSFL (LB/BHP HR)

1275 FORD 351.0 (10 2 BBL

130.00 +
150.00 +
140.00 +
120.00 +
100.00 +
80.00 +
60.00 +
40.00 +
20.00 +

CFM (51)



400.00 +
600.00 +
800.00 +
1000.00 +
1200.00 +
1400.00 +
1600.00 +
1800.00 +
2000.00 +
2200.00 +
2400.00 +
2600.00 +
2800.00 +
3000.00 +

PISTON SPEED (FT/MIN)

BS16 (GM/EEH/HE)
 1975 FORD 351U CID-C BBL

160.00 +

150.00 +

140.00 +

120.00 +

100.00 +

90.00 +
 BMEP

60.00 +

40.00 +

20.00 +

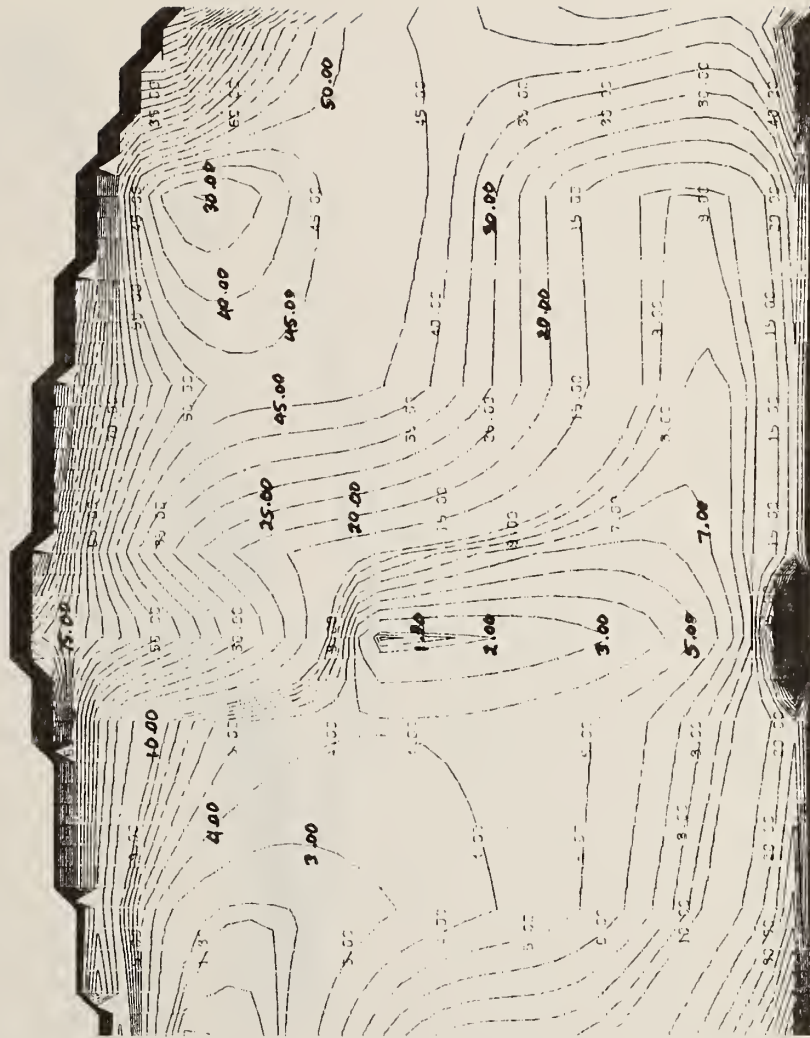


0.00 +
 400.00 500.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2500.00
 PISTON SPEED (RPM)

E-60HC (GM/BHP-HR)

1.37 FURD 351.0 (10-2 BBL

50.00
40.00
30.00
20.00
10.00
0.00



0.00
400.00 500.00 600.00 800.00 1000.00 1200.00 1400.00 1500.00 1800.00 2000.00 2200.00 2400.00 2600.00
PISTON SPEED (FT/MIN)

63HC 17M/BHP 4P

1975 FORD 351 6 CID 1 BBL

180.00 +

160.00 +

140.00 +

120.00 +

100.00 +

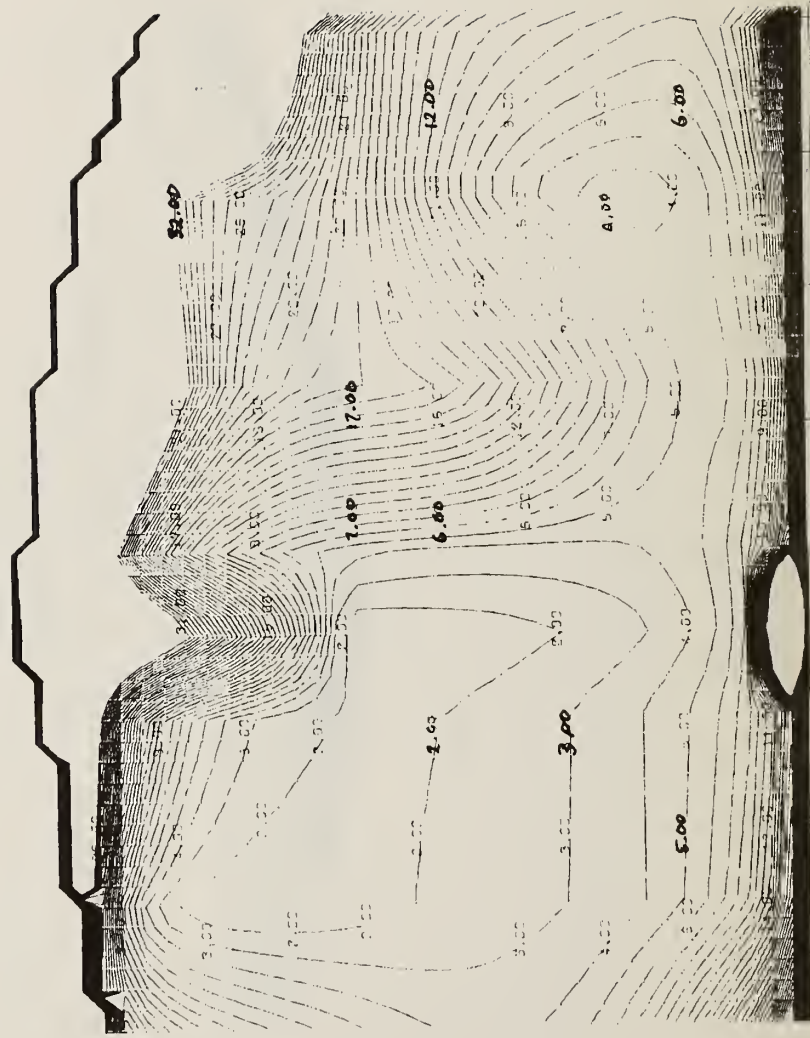
90.00 +

80.00 +

40.00 +

20.00 +

BMEP (PSI)



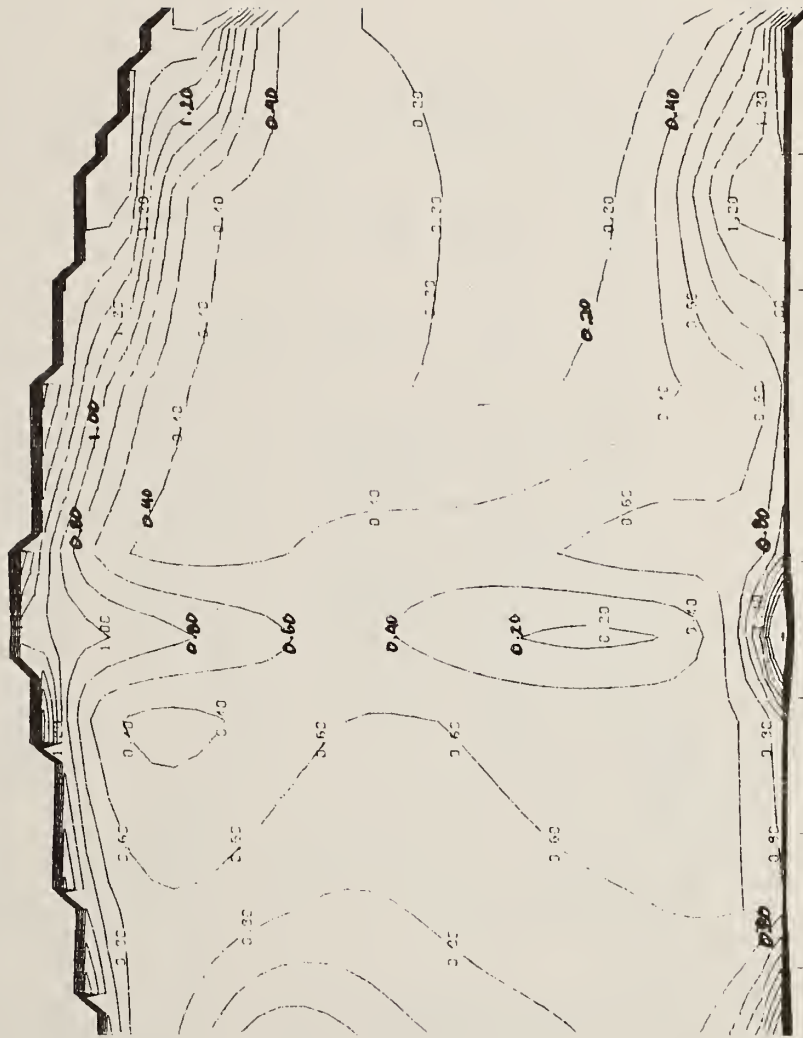
180.00 + 160.00 + 140.00 + 120.00 + 100.00 + 90.00 + 80.00 + 40.00 + 20.00 + 0.00 + 400.00 500.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00
PISTON SPEED (FT/MIN)

ENGINE (547, BHP - HR)

1975 FORD 351-C CID-2 BBL

300.00 +
200.00 +
100.00 +
0.00 +
-100.00 +
-200.00 +
-300.00 +
-400.00 +
-500.00 +

BMEP (PSI)



2500.00
2400.00
2300.00
2200.00
2100.00
2000.00
1900.00
1800.00
1700.00
1600.00
1500.00
1400.00
1300.00
1200.00
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
-200.00
-300.00
-400.00
-500.00

PISTON SPEED (FT/MIN)

1978 Ford 400 CID (6.6L)-2BBL

Ref 10

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	740/336	
No. of Cylinders	8	
Bore, in.	4.00	
Stroke, in.	4.00	
Displacement, in ³	400	
Compression Ratio	8	
Horsepower, BHP at RPM	166 - BHP 3800 RPM	166 BHP 3800 RPM
Torque, ft-lb at RPM	319 ft-lb 1800 RPM	319 ft-lb 1800 RPM
Exhaust System Type	Single "Y" System	
Intake Valve Diameter, in.	2.041	
Intake Valve Lift, in.	.427	
Exhaust Valve Diameter, in.	1.6545	
Exhaust Valve Lift, in.	.433	
Intake Valve Opens, deg BTC	17	
Intake Valve Closes, deg ABC	59	
Intake Valve Duration, deg	256	
Exhaust Valve Opens, deg BBC	65	
Exhaust Valve Closes, deg ATC	27	
Exhaust Valve Duration, deg	272	
Valve Overlap, deg	44	
Distributor Type	Breakerless DuraSpark II	
Idle Speed, RPM	575	600
Timing, degrees	13 BTDC	16 BTDC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.56	
Vehicle Emission Control Systems	Engine Modifications Air Injection Catalytic Converter EGR	Engine Modifications Air Injection Catalytic Converter EGR

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford-400 CID (6.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
LTD II	A3	4500	3.00	38.0	Yes	11.4	0.45	3.10	672.	1.60	13	0.16	0.10	526.	1.56	17	15
Ford	A3	5000	2.47	31.0	Yes	10.5	0.31	3.60	664.	1.62	13	0.12	0.0	441.	1.43	20	16
Continental Mark V	A3	5000	2.75	34.0	Yes	12.3	0.39	2.20	708.	1.89	12	0.10	0.0	509.	1.82	17	14
Mercury	A3	5000	2.75	34.0	Yes	9.7	0.54	3.60	682.	1.48	13	0.24	0.20	488.	1.40	18	15
Ford Wagon	A3	5000	3.00	37.0	Yes	11.1	0.57	5.20	718.	1.29	12	0.13	0.10	524.	1.66	17	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford-400 CID (6.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Mercury	A3	4500	2.75	34.0	Yes	11.4	0.27	3.00	758.	0.95	12	0.08	0.10	500.	7.17	18	14
Mercury	A3	5000	2.75	34.0	Yes	9.7	0.25	3.90	770.	0.98	11	0.07	0.20	503.	1.16	18	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 Ford-400 CID (6.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Pickup	A3	4500	2.75	32.0	Yes	14.0	1.40	12.40	653.	1.95	13	0.13	0.10	455.	2.66	20	15
Pickup	A3	4500	3.25	40.0	Yes	14.0	1.01	9.80	714.	2.45	12	0.11	0.10	557.	3.68	16	14

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1976 FORD 400 CID (6.6L) - 2BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

SSFC (LB/RHP (HP))

1975 FORD 400 9 CID 2 BBL

180.00 +

160.00 +

140.00 +

120.00 +

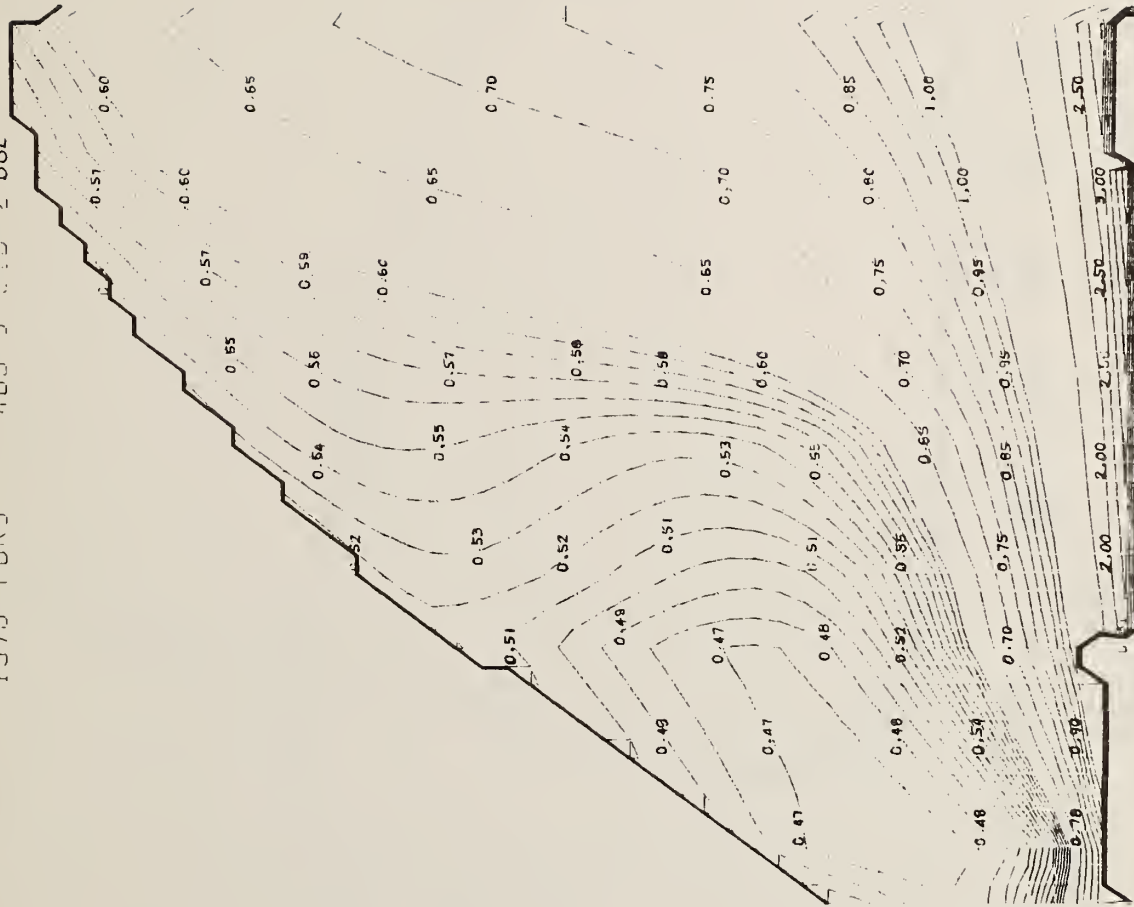
100.00 +

90.00 +

80.00 +

40.00 +

20.00 +



0.95 +

0.90 +

0.85 +

0.80 +

0.75 +

0.70 +

0.65 +

0.60 +

0.55 +

0.50 +

0.45 +

0.40 +

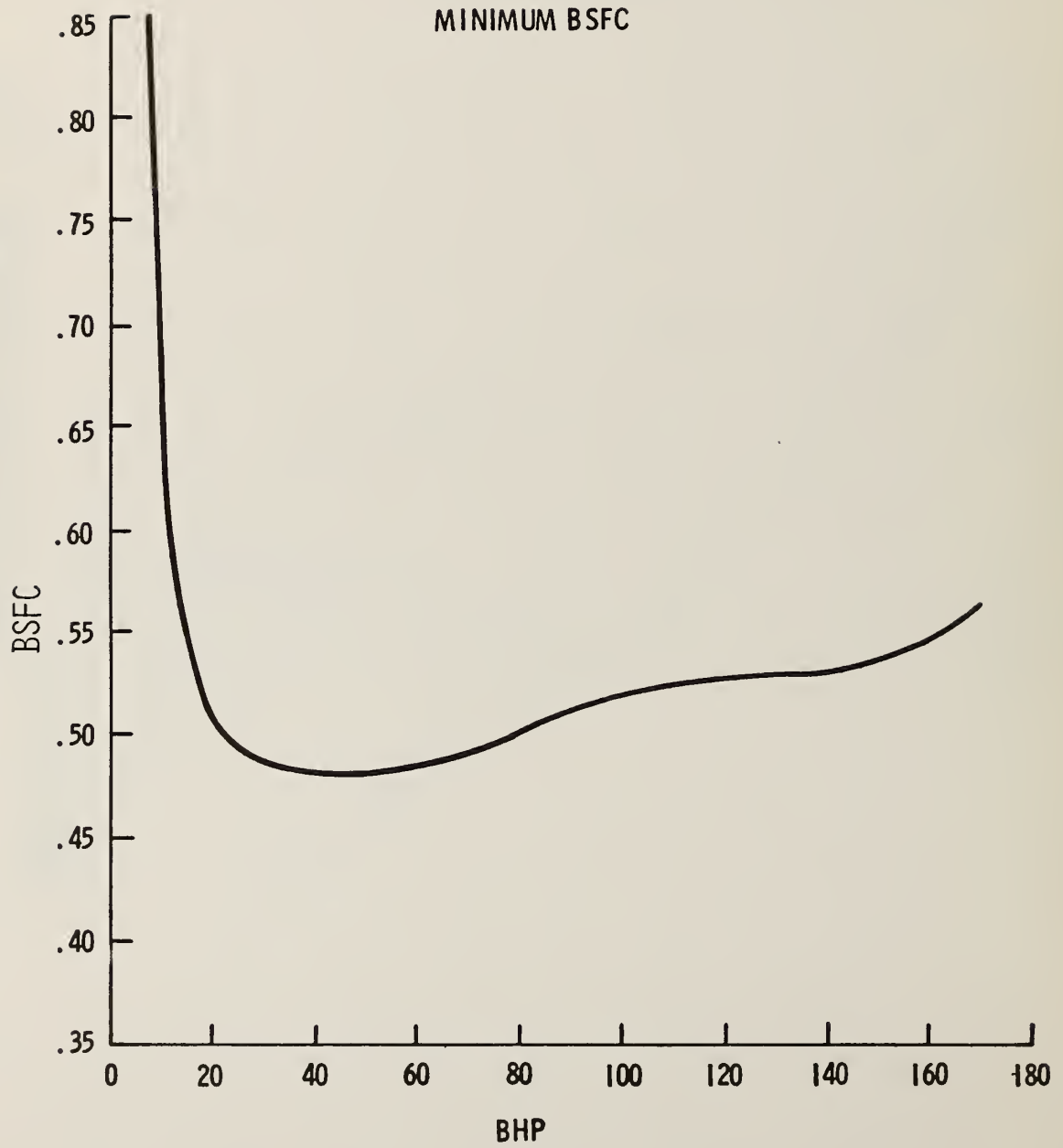
0.35 +

0.30 +

0.25 +

0.20 +

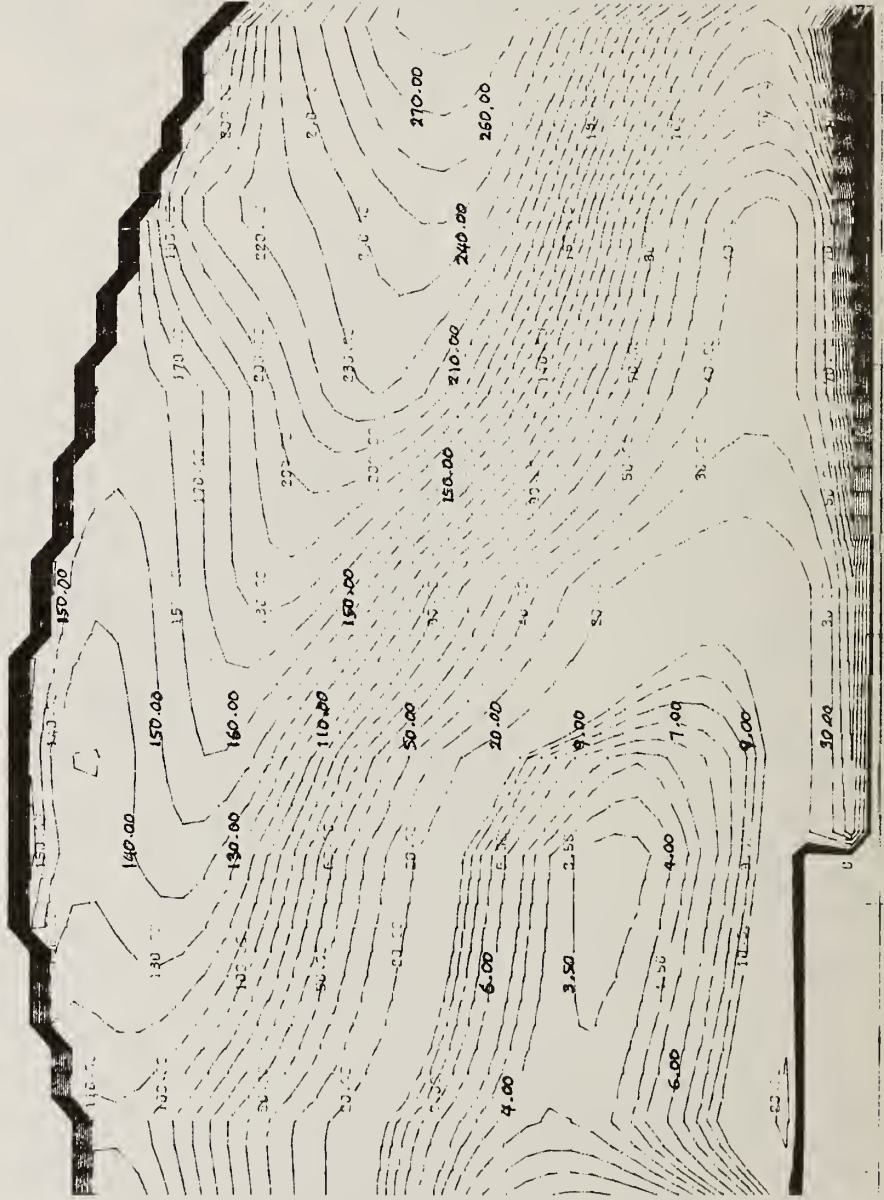
1976 Ford-400 CID (6.6L), V8-2BBL



E 8500 10M/BHP/HRI

1975 FURS AUG 5 CIE 2 88L

100.00 +
 150.00 +
 200.00 +
 250.00 +
 300.00 +
 350.00 +
 400.00 +
 450.00 +
 500.00 +

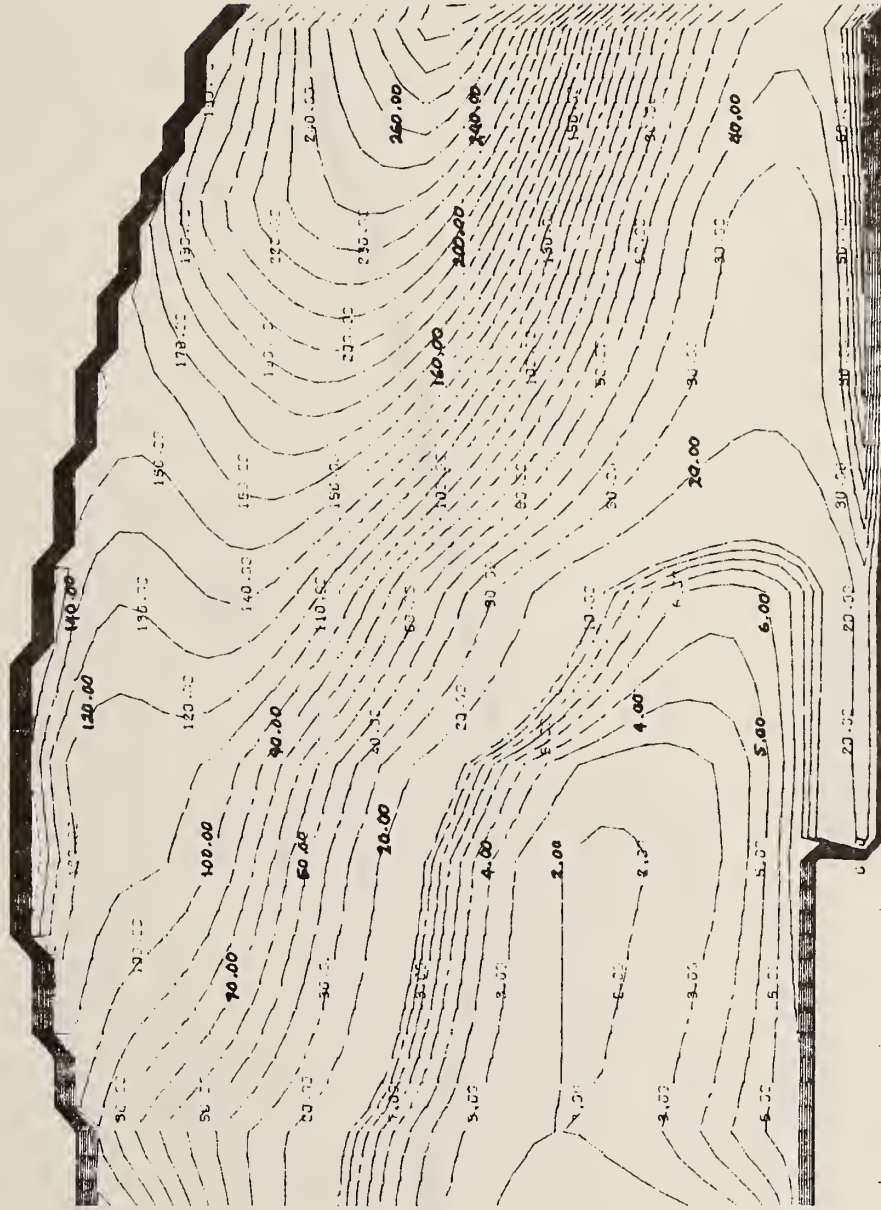


500.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00
 PISTON SPEED (FT/MIN)

BSES (GM/BHP HR)

1976 FORD 400.0 CID-2 BBL

180.00
150.00
120.00
90.00
60.00
30.00
0.00
400.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00



F-B SHE 1 CM/BHP HP

1975 FORD 460 E CIE-2 BBL

190.00 +

150.00 +

140.00 +

120.00 +

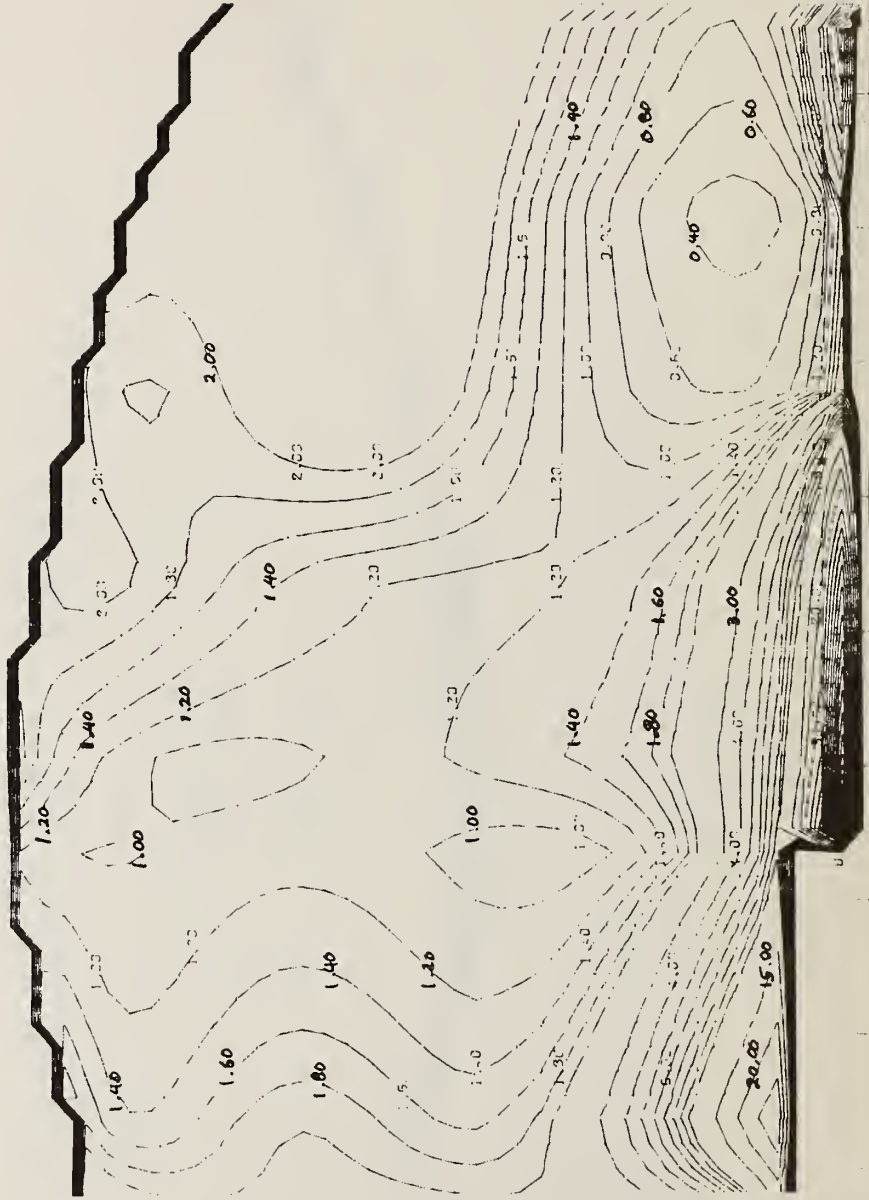
100.00 +

90.00 +

50.00 +

40.00 +

20.00 +

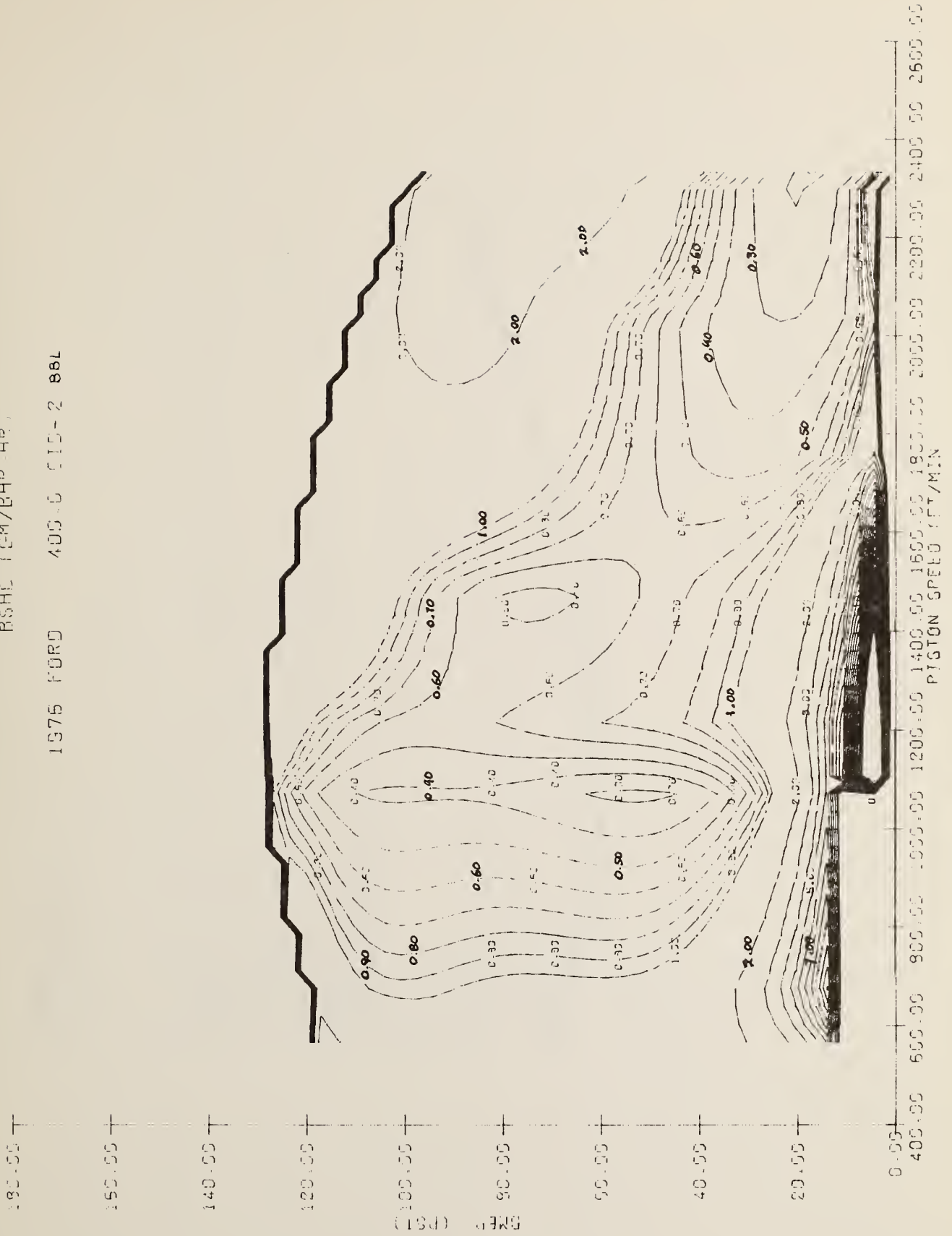


0.00 +

400.00 500.00 600.00 700.00 800.00 900.00 1000.00 1100.00 1200.00 1300.00 1400.00 1500.00 1600.00 1700.00 1800.00 1900.00
PISTON SPEED (FT/MIN)

BSHE (EM/BHP-HR)

1976 FORD 400-0 C15-2 BBL



F-BGNX 1GM/BHP-HR)

1376 FURD 400-C CID-2 BEL

100.00 +

150.00 +

200.00 +

300.00 +

400.00 +

500.00 +

600.00 +

700.00 +

800.00 +



RPM (PSI)

0.00 100.00 200.00 300.00 400.00 500.00 600.00 700.00 800.00 900.00 1000.00 1100.00 1200.00 1300.00 1400.00 1500.00 1600.00 1700.00 1800.00 1900.00 2000.00 2100.00 2200.00 2300.00 2400.00 2500.00
PISTON SPEED (FT/MIN)

6UNOX (CM/BHP-HR)

1576 FORD 400.0 CID-2 BBL

150.00 +

100.00 +

50.00 +

0.00 +

100.00 +

200.00 +

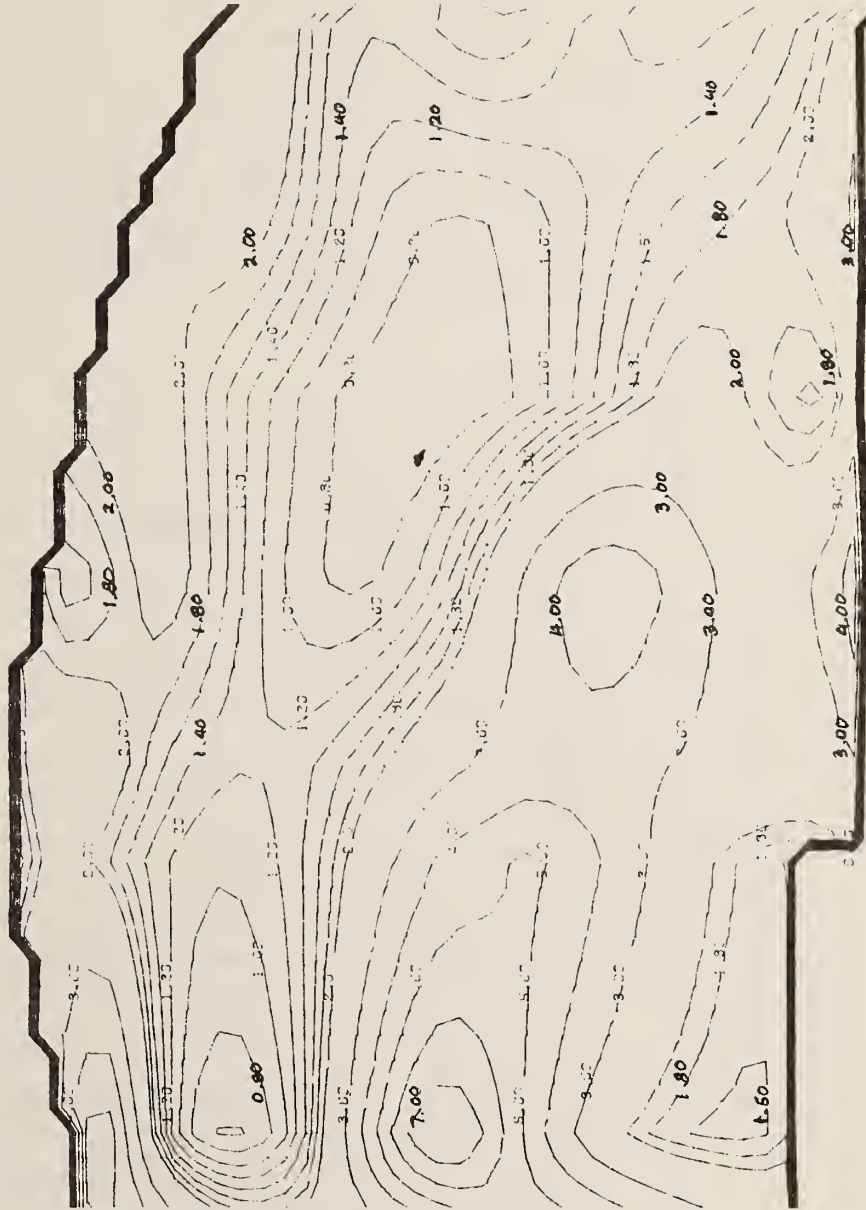
300.00 +

400.00 +

500.00 +

600.00 +

700.00 +



400.00 500.00 600.00 700.00 800.00 900.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00
PISTON SPEED (FT/MIN)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	824/375	
No. of Cylinders	8	
Bore, in.	4.36	
Stroke, in.	3.85	
Displacement, in ³	460	
Compression Ratio	8.0	
Horsepower, BHP at RPM	210 BHP 4200 RPM	N/A BHP RPM
Torque, ft-lb at RPM	357 ft-lb 2200 RPM	N/A ft-lb RPM
Exhaust System Type	Dual or Single "Y" System	
Intake Valve Diameter, in.	2.0825	
Intake Valve Lift, in.	.437	
Exhaust Valve Diameter, in.	1.6535	
Exhaust Valve Lift, in.	.481	
Intake Valve Opens, deg BTC	8	
Intake Valve Closes, deg ABC	68	
Intake Valve Duration, deg	256	
Exhaust Valve Opens, deg BBC	62	
Exhaust Valve Closes, deg ATC	28	
Exhaust Valve Duration, deg	270	
Valve Overlap, deg	36	
Distributor Type	Breakerless DuraSpark II	
Idle Speed, RPM	5800	N/A
Timing, degrees	16 BTDC (10 BTDC*)	N/A
Fuel System Type	Carburetor-4BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	Primary: 1.44 Secondary 1.97	
Vehicle Emission Control Systems	Engine Modifications Air Injection Catalytic Converter EGR	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

* For engines built after July 15, 1978

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford-460 CID (7.5L)-4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				Hwy MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Continental Mark V	A3	5000	2.50	31.0	Yes	12.3	0.73	6.90	831.	1.26	10	0.05	0.20	531.	2.20	17	13
Ford	A3	5000	2.50	31.0	Yes	9.7	0.38	4.70	744.	1.00	12	0.11	0.30	495.	1.42	18	14
Ford	A3	5000	2.50	31.0	Yes	12.3	0.32	5.20	730.	0.92	12	0.06	0.0	507.	1.24	18	14
Continental Mark V	A3	5000	2.75	34.0	Yes	12.3	0.38	4.50	777.	1.37	11	0.05	0.10	567.	1.43	16	13
Continental Mark V	A3	5000	2.75	34.0	Yes	12.3	0.38	2.40	792.	1.35	11	0.06	0.20	518.	1.24	17	13
Ford	A3	5000	2.75	34.0	Yes	9.7	0.38	3.40	780.	1.20	11	0.04	0.10	530.	1.11	17	13
Ford Wagon	A3	5500	2.50	30.0	Yes	11.1	0.40	7.20	790.	1.32	11	0.08	1.20	520.	1.61	17	13
Ford Wagon	A3	5500	2.50	30.0	Yes	11.1	0.43	8.10	841.	1.39	10	0.07	1.10	537.	2.16	16	12
Ford	A3	5500	2.50	31.0	Yes	12.3	0.39	6.80	744.	1.05	12	0.06	0.0	503.	1.13	18	14
Lincoln Continental	A3	5500	2.50	31.0	Yes	13.0	0.31	5.60	759.	0.99	12	0.04	1.00	502.	1.05	18	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Ford-460 CID (7.5L)-4BBL (Continued)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Ford	A3	5500	2.75	34.0	Yes	11.1	0.38	3.80	792.	7.34	11	0.05	0.30	544.	1.10	16	13
Ford Wagon	A3	5500	2.75	34.0	Yes	11.1	0.35	4.10	790.	1.23	11	0.05	0.70	544.	1.50	16	13
Ford	A3	5500	2.75	34.0	Yes	9.7	0.25	3.90	770.	0.98	11	0.07	0.20	503.	1.16	18	14

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

7. CHRYSLER CORPORATION *

This chapter contains specifications and Environmental Protection Agency certification data for Chrysler's passenger car and light truck engines, which are sequenced by ascending CID. When available, associated engine performance analysis information is provided in reverse chronological order.

* See Section 11.4 for references.

1977* CHRYSLER - MITSUBISHI - 97.5 CID (1.6L)-2BBL Ref. 1

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	300/136	
No. of Cylinders	4	
Bore, in.	3.028	
Stroke, in.	3.386	
Displacement, in ³	97.4	
Compression Ratio	8.5	
Horsepower, BHP at RPM	73 BHP 5200 RPM	M 80 BHP 5500 RPM A 78
Torque, ft-lb at RPM	89 ft-lb 3500 RPM	M 87 ft-lb 3500 RPM A 83
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.496	
Intake Valve Lift, in.	.374	
Exhaust Valve Diameter, in.	1.220	
Exhaust Valve Lift, in.	.374	
Intake Valve Opens, deg BTC	24 A+M	A 19
Intake Valve Closes, deg ABC	64 A+M	A 69
Intake Valve Duration, deg	268 A+M	A 268
Exhaust Valve Opens, deg BBC	67 A+M	A 62
Exhaust Valve Closes, deg ATC	21 A+M	A26
Exhaust Valve Duration, deg	268 A+M	A268
Valve Overlap, deg	45	
Distributor Type	Breaker Point	
Idle Speed, RPM	800-900 A+M	M 900-1000 A 800-900
Timing, degrees	5 BTC	5 ATC
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	Primary: 1.102	Secondary: 1.259
Vehicle Emission Control Systems	Engine modifications Air induction EGR	Engine modifications Thermal reactor EGR Air induction

NOTES:

- A = Automatic transmission
- M = Manual transmission
- EGR = Exhaust gas recirculation
- * = 1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

(Ref. 2)

1978 Chrysler-Mitubishi-97.5 CID (1.6L)-2BBL

E. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Arrow	A3	2500	3.54	54.9	N0	9.4	0.46	5.80	297.	1.61	29	0.11	0.30	233.	1.81	38	32
Challenger	A3	2750	3.91	56.4	N0	9.9	0.41	7.80	319.	1.71	27	0.09	0.80	254.	2.25	35	30
Charger	M4	2250	3.31	49.7	N0	8.8	0.69	3.80	245.	1.57	35	0.18	0.30	190.	1.99	46	39
Charger	M4	2500	3.45	53.3	N0	9.4	0.46	7.80	264.	0.96	32	0.09	0.70	214.	2.07	41	36
Arrow	M4	2500	3.91	58.7	N0	9.4	0.70	3.80	296.	1.29	29	0.17	0.50	226.	1.46	39	33
Arrow	M5 w/OD	2500	4.22	54.1	N0	9.4	0.89	7.90	290.	1.68	29	0.09	0.50	224.	1.71	39	33
Sebring	M5 w/OD	2750	4.22	50.4	N0	9.9	0.64	6.40	292.	1.81	29	0.09	0.50	223.	2.00	40	33

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

(Ref. 3)

1978 Chrysler-Mitubishi-97.5 CID (1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Arrow	A3	2500	3.54	54.9	N0	9.4	0.34	5.10	309.	1.02	28	0.08	0.10	249.	1.34	36	31
Sapporo	A3	2750	3.91	56.4	N0	9.9	0.24	7.60	336.	0.98	25	0.06	1.20	278.	1.45	32	28
CoIt	M4	2250	3.91	58.7	N0	8.8	0.34	4.00	268.	1.01	32	0.08	1.10	209.	1.29	42	32
Arrow	M4	2500	3.91	58.7	N0	9.4	0.28	3.00	320.	1.00	27	0.06	0.40	235.	1.30	38	31
Arrow	M5 w/OD	2500	4.22	53.7	N0	9.4	0.36	7.10	300.	1.32	28	0.04	1.00	231.	1.49	38	32
Challenger	M5 w/OD	2750	4.22	50.4	N0	9.9	0.38	5.70	327.	1.06	26	0.08	0.60	249.	1.46	35	30

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1975 COLT 97.5 CID (1.6L) - 2BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars.

831.0 (L/R/BHP-HR)

1075 CGLT 97.5 (10-2 BBL)

180.00

160.00

140.00

120.00

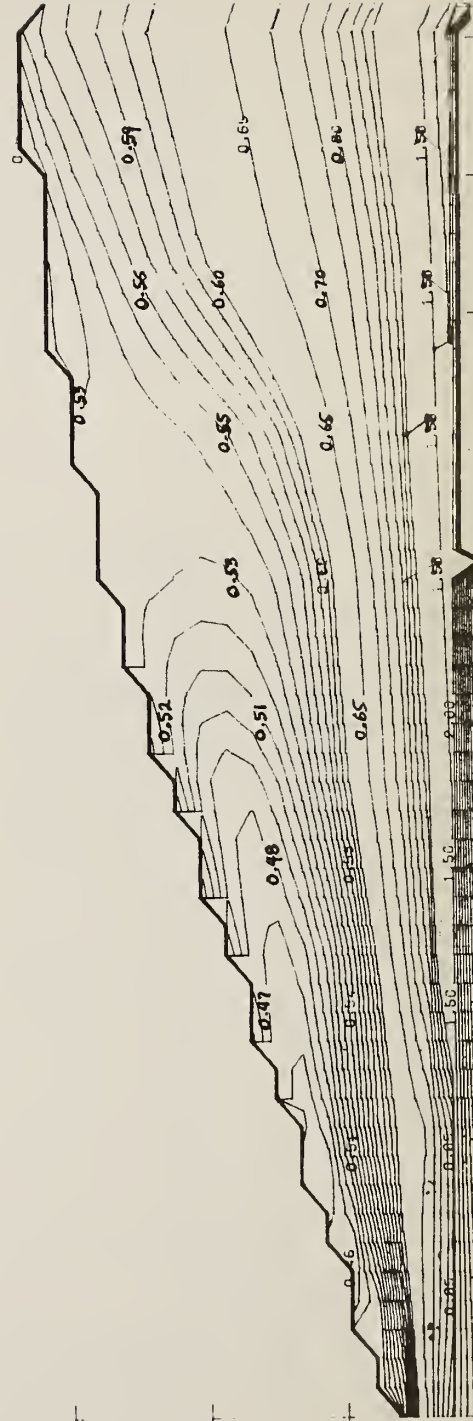
100.00
BHP

80.00

60.00

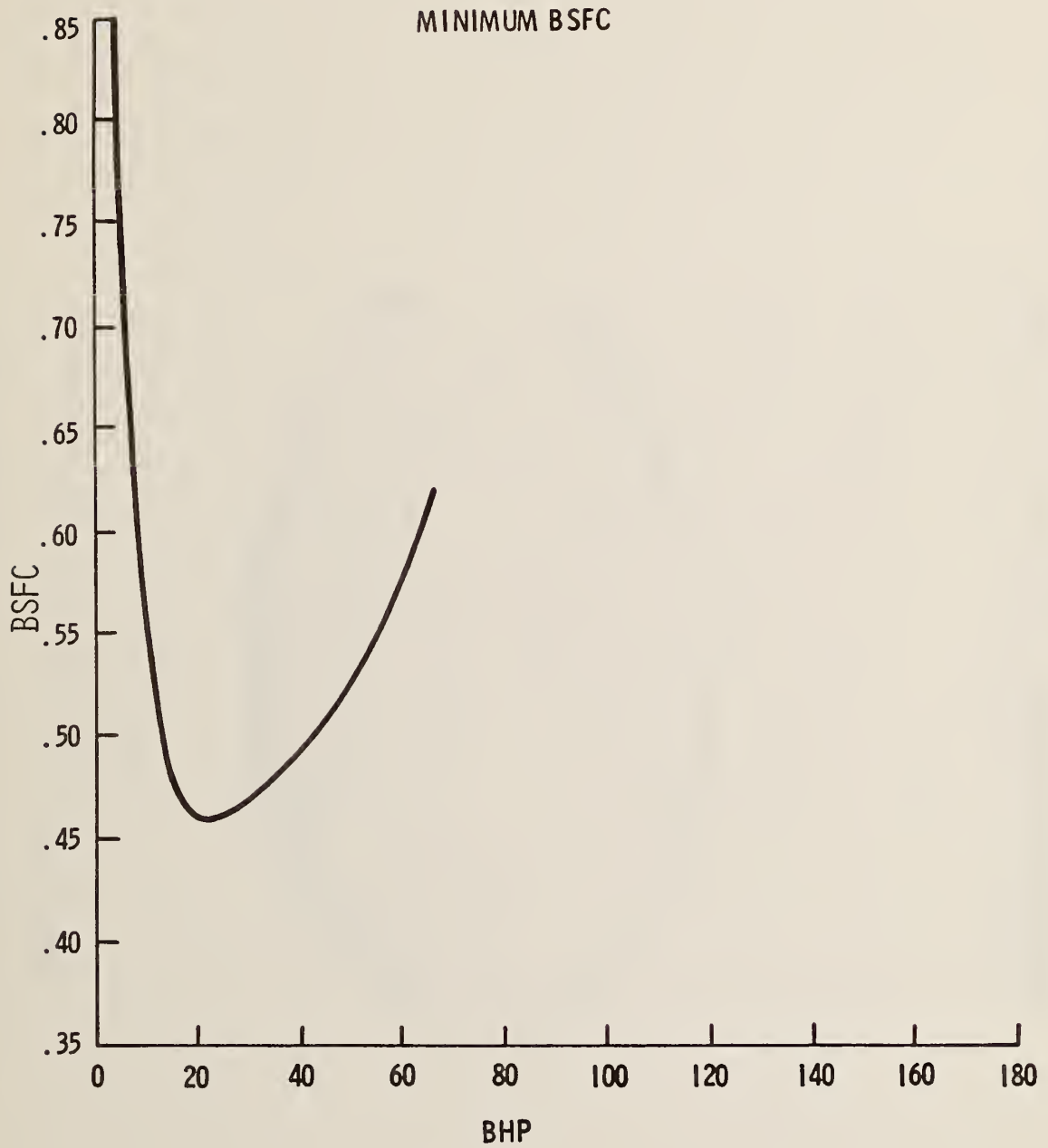
40.00

20.00



0.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00 4800.00 5200.00 5600.00
ENGINE SPEED (RPM)

1975 Dodge Colt 97.5 CID (1.6L), L4-2BBL



BSFC (LL/MHP) HP

1975 1011 97.5 CID 2 BB4

50 00 +

40 00 +

30 00 +

20 00 +

10 00 +

0 00 +

10 00 +

20 00 +

30 00 +



0 50 +

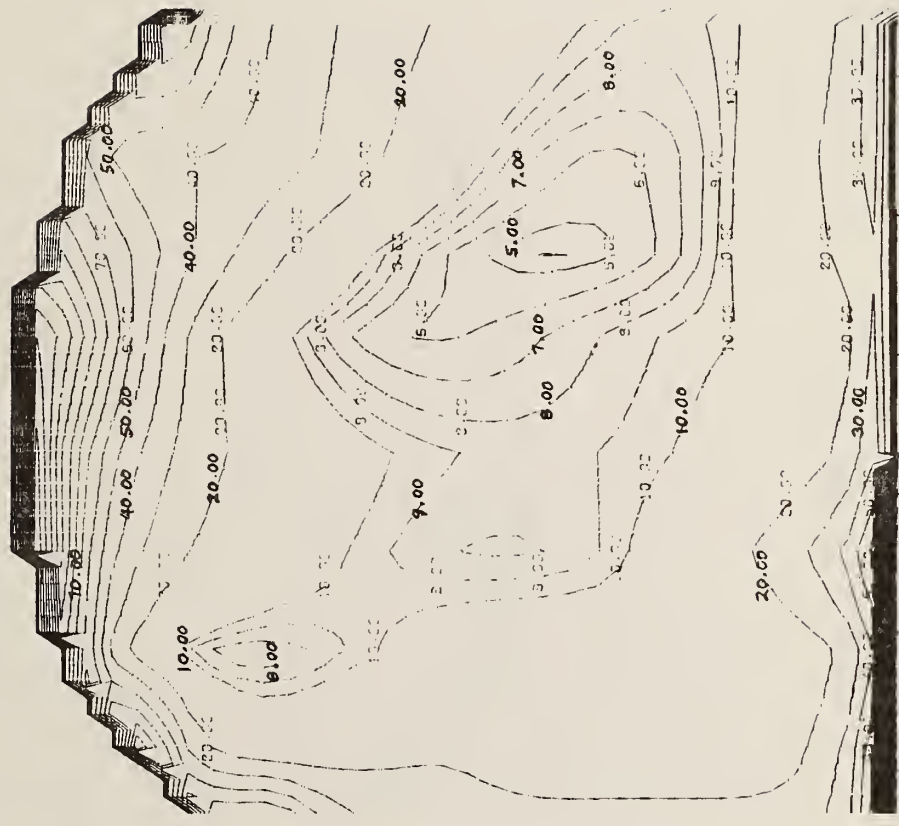
400 00 800 00 1200 00 1600 00 2000 00 2400 00 2800 00 3200 00 3600 00 4000 00 4400 00

PISTON SPEED (FT/MIN)

F-1050 10-17-64 H.P. HB

1975 COLT 97.5 (10-2 BBL)

180.00 —
160.00 —
140.00 —
120.00 —
100.00 —
80.00 —
60.00 —
40.00 —
20.00 —



0.00 + 400.00 800.00 1200.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00

PISTON SPEED (FT/MIN)

10000 RPM/REV RR

1975 COLT .37 S&W 110-0 BB4

150.00 ---

140.00 ---

100.00 ---

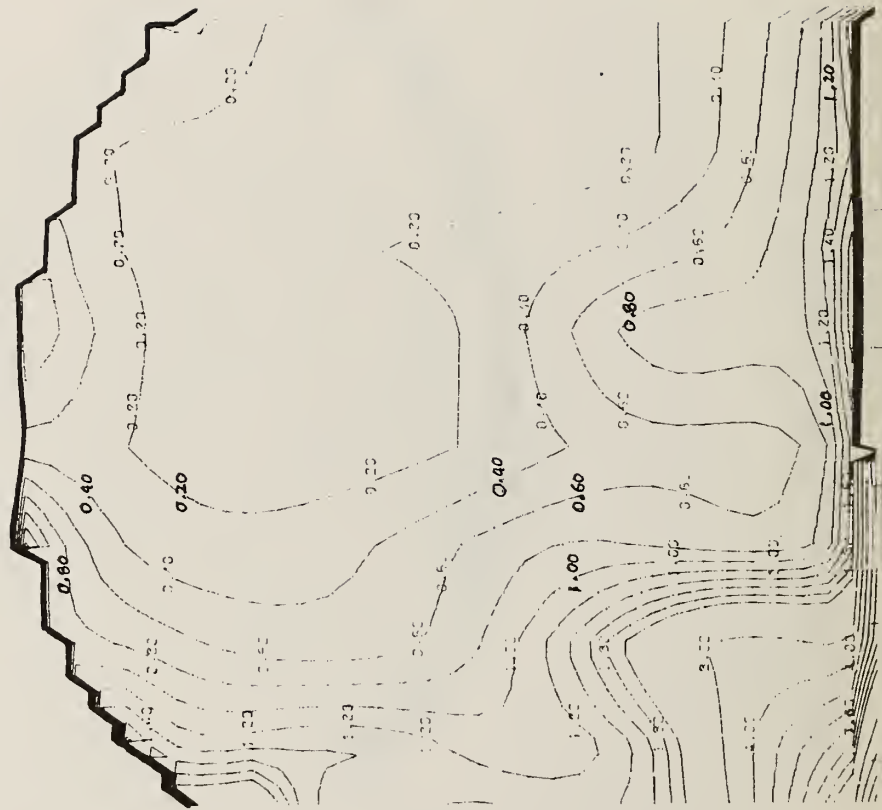
100.00 ---

50.00 ---

50.00 ---

40.00 ---

20.00 ---



0.00 --- 400.00 800.00 1200.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00
PISTON SPEED (FT/MIN)

1175 COLT 97.5 CID 2 BBL

120.00 +
 100.00 +
 80.00 +
 60.00 +
 40.00 +
 20.00 +
 0.00

BRP LPS



0.00 400.00 800.00 1200.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00

PISTON SPEED (FT/MIN)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.13	
Stroke, in.	3.40	
Displacement, in ³	104.7	
Compression Ratio	8.2	
Horsepower, BHP at RPM	75 BHP 5600 RPM	BHP RPM
Torque, ft-lb at RPM	90 ft-lb 3200 RPM	ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	1.34	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	1.22	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	*
Intake Valve Closes, deg ABC	*	*
Intake Valve Duration, deg	*	*
Exhaust Valve Opens, deg BBC	*	*
Exhaust Valve Closes, deg ATC	*	*
Exhaust Valve Duration, deg	*	*
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Catalytic converter EGR Air aspirator	Air pump EGR Main catalytic conv. Small catalytic conv. near exhaust manifold
Certification Data Not Available	Ref. 5	Ref. 5

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation * = Data not available

1975 Chrysler - Nissan 198 CID (3.2L), Diesel - F.I.

ENGINE PARAMETER	49 STATES		CALIFORNIA	
Engine Wt. lbs/kg	* 662/300			
No. of Cylinders	L6			
Bore, in.	3.27			
Stroke, in.	3.94			
Displacement, in ³	198			
Compression Ratio	22:1			
Horsepower, BHP at RPM	96 BHP	RPM	BHP	RPM
Torque, ft-lb at RPM	137.5 ft-lb	RPM	ft-lb	RPM
Exhaust System Type	*			
Intake Valve Diameter, in.	*			
Intake Valve Lift, in.	*			
Exhaust Valve Diameter, in.	*			
Exhaust Valve Lift, in.	*			
Intake Valve Opens, deg BTC	*			
Intake Valve Closes, deg ABC	*			
Intake Valve Duration, deg	*			
Exhaust Valve Opens, deg BBC	*			
Exhaust Valve Closes, deg ATC	*			
Exhaust Valve Duration, deg	*			
Valve Overlap, deg				
Distributor Type	N/A			
Idle Speed, RPM	650			
Timing, degrees	*			
Fuel System Type	Fuel injection			
Choke Type	*			
Carburetor Barrel Diameter, in.	N/A			
Vehicle Emission Control Systems				
Certification Data Not Available				

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

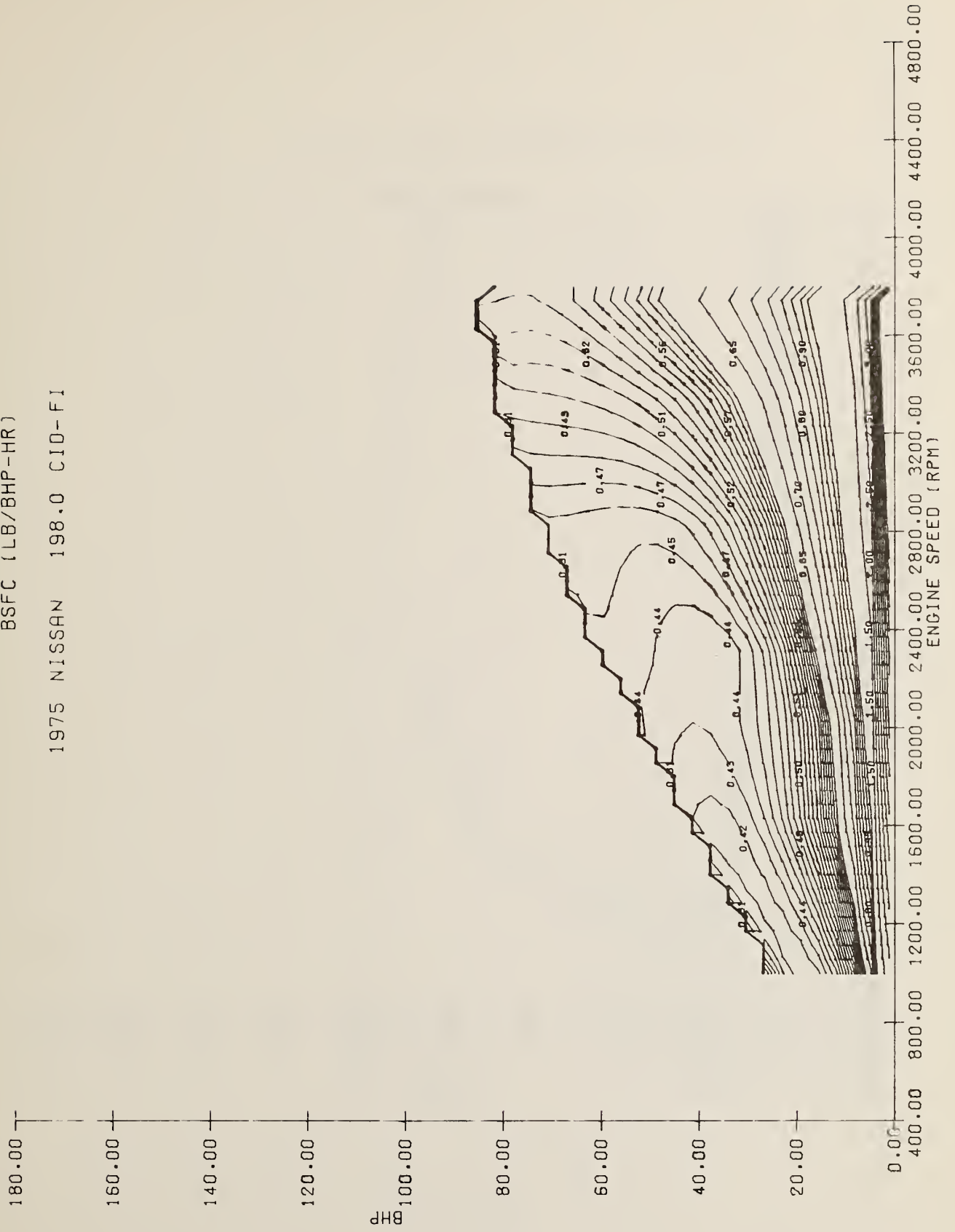
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1975 CHRYSLER-NISSAN 198 CID (3.2L), Diesel-F.I.

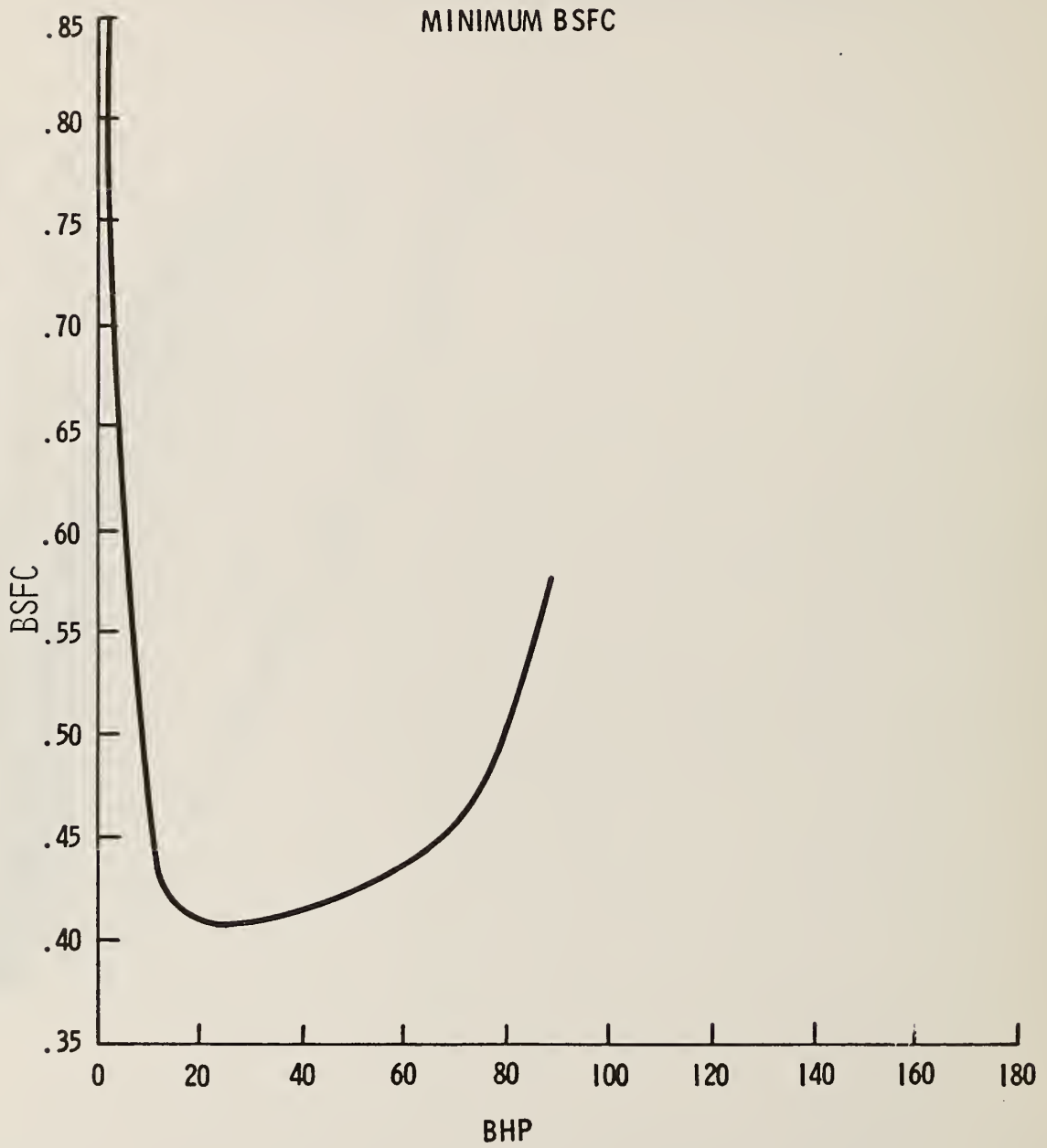
Engine tested by BERC.

BSFC (LB/BHP-HR)

1975 NISSAN 198.0 CI0-FI

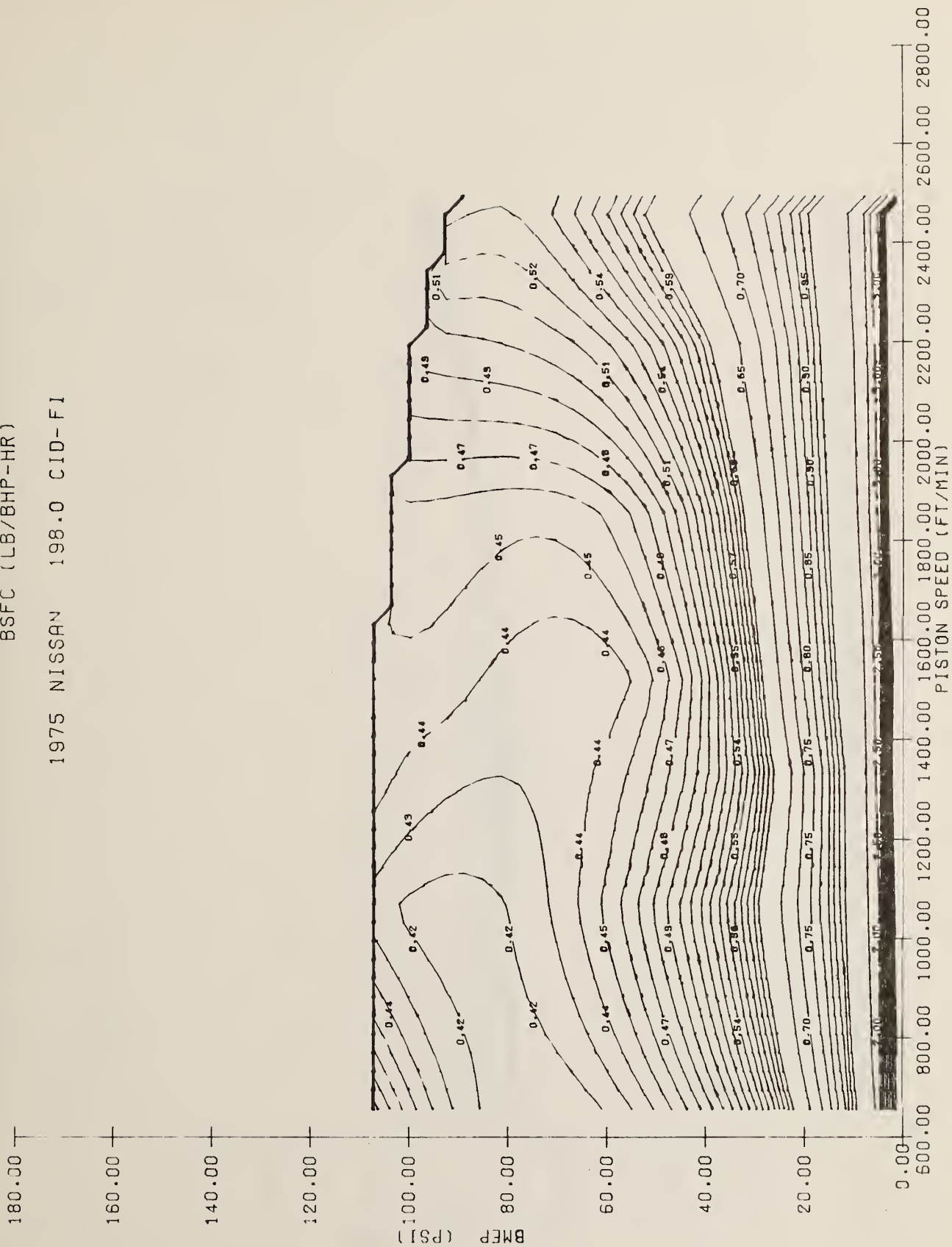


1975 Nissan-198 CID(3.2L) Diesel, L6-F.I.



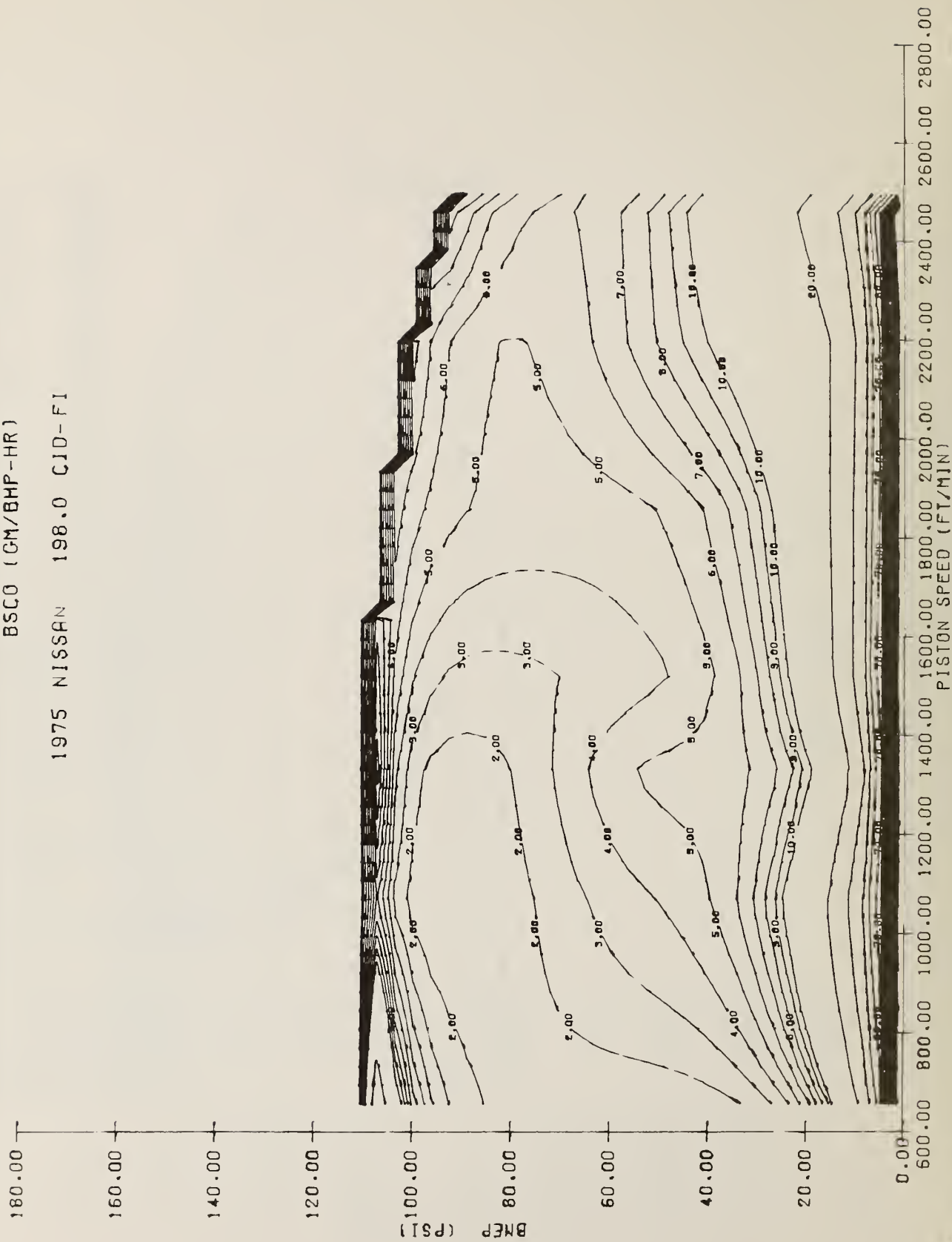
BSFC (LB/BHP-HR)

1975 NISSAN 198.0 CID-FI

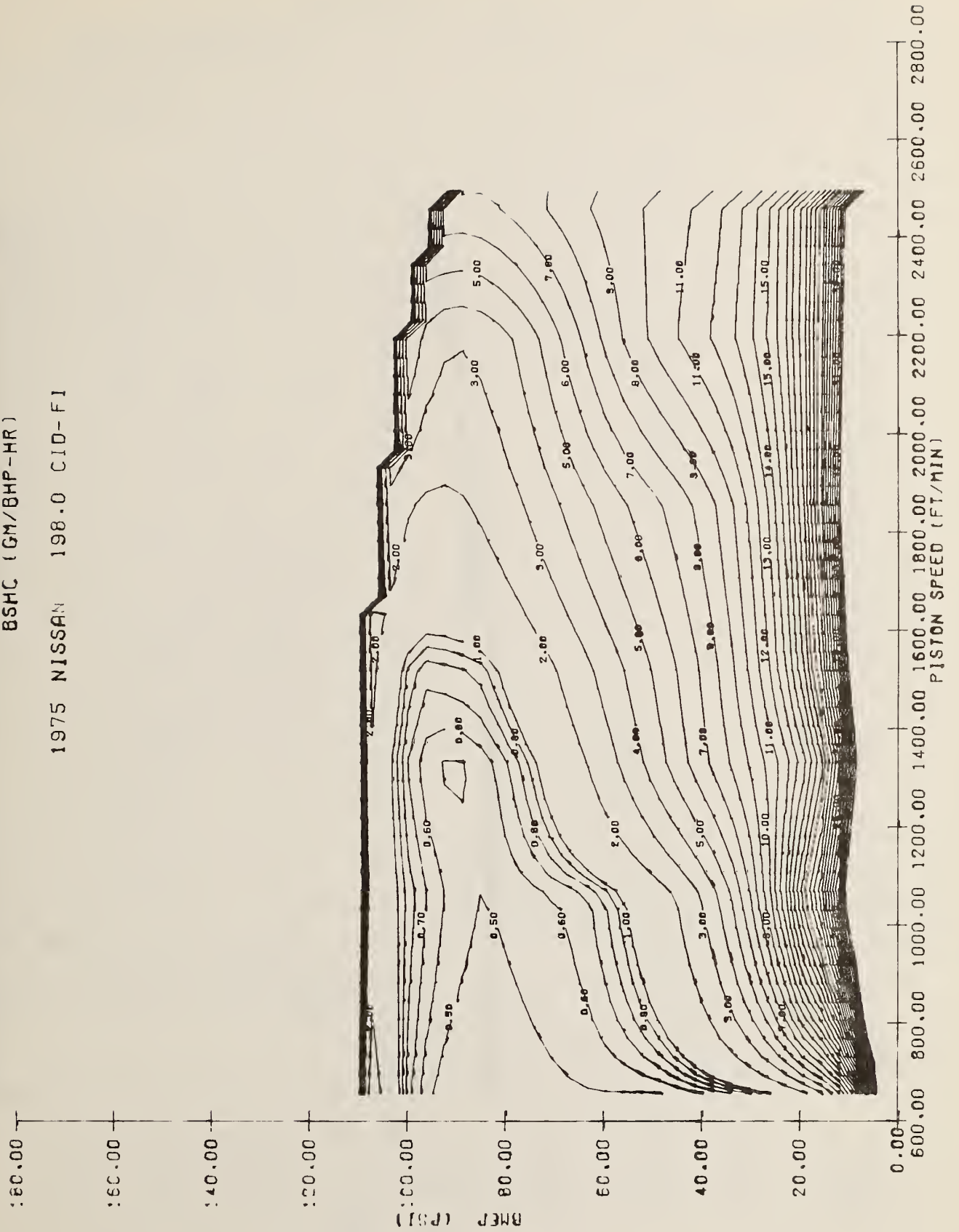


BSC0 (CM/BHP-HR)

1975 NISSAN 198.0 CID-FI

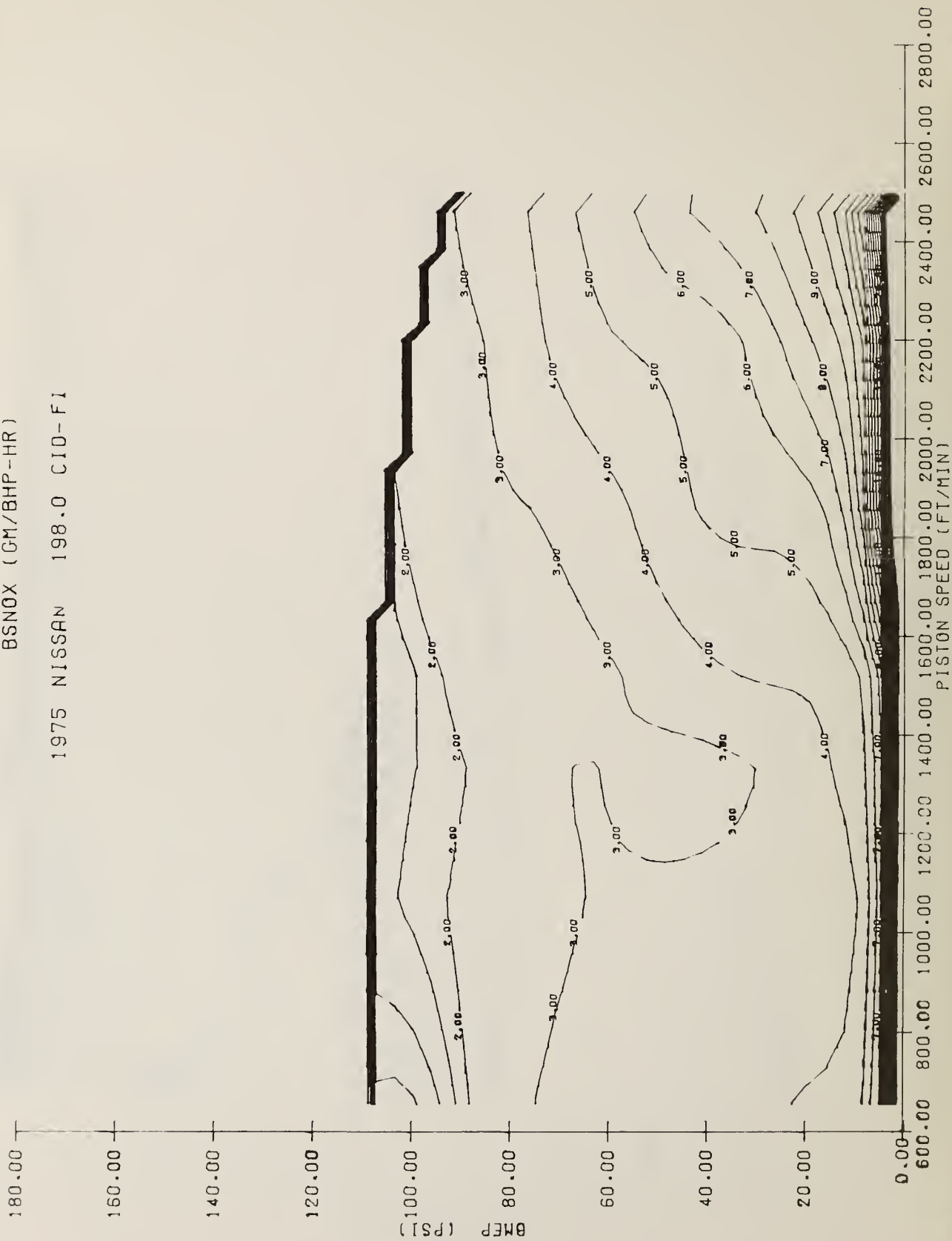


BSHC (GM/BHP-HR)
 1975 NISSAN 198.0 CID-FI



BSNOX (GM/BHP-HR)

1975 NISSAN 198.0 CID-FI



ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	510/232	
No. of Cylinders	6	
Bore, in.	3.40	
Stroke, in.	4.125	
Displacement, in ³	225	
Compression Ratio	8.4	
Horsepower, BHP at RPM	100 BHP 3600 RPM	90 BHP 3600 RPM
Torque, ft-lb at RPM	170 ft-lb 1600 RPM	160 ft-lb 1600 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.62	
Intake Valve Lift, in.	.406	
Exhaust Valve Diameter, in.	1.36	
Exhaust Valve Lift, in.	.414	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	48	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	54	
Exhaust Valve Closes, deg ATC	10	
Exhaust Valve Duration, deg	244	
Valve Overlap, deg	26	
Distributor Type	Breakerless	
Idle Speed, RPM	700	750
Timing, degrees	12 BTC	8 BTC
Fuel System Type	Carburetor - 1BBL downdraft	
Choke Type	Automatic, Electric Assist	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	Air injection EGR Catalytic converter Engine modifications	Air injection EGR Catalytic converter Engine modifications

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler-225 CID(3.7L) -1BBL

(Ref. 7)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	Hwy MPG	COMB- INED MPG		
							HC	CO	CO ₂	NO _x	HC	CO				CO ₂	NO _x
Aspen	A3	3500	2.71	34.3	N0	11.2	0.66	9.00	463.	1.63	18	0.13	2.40	342.	0.81	26	21
Fury	A3	4000	2.71	33.1	N0	12.0	0.82	13.00	488.	1.44	17	0.15	2.90	366.	1.00	24	20
Aspen	A3 w/ lockup	3500	2.71	35.9	N0	11.2	0.76	12.30	421.	1.13	20	0.33	10.20	308.	0.57	27	23
Volare	A3 w/ lockup	3500	2.71	37.5	N0	11.2	0.88	11.10	426.	1.56	20	0.17	3.50	322.	0.81	27	23
Volare	M3	3500	3.21	43.9	N0	11.2	0.84	12.20	433.	1.56	20	0.08	0.80	355.	2.87	26	22
Volare	M4 w/OD	3500	3.21	31.2	N0	9.3	1.06	13.10	418.	1.89	20	0.08	0.90	273.	3.06	32	24
Volare	M3	3500	3.21	44.0	N0	9.3	0.86	11.90	440.	1.51	19	0.10	1.40	326.	2.29	27	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1975 CHRYSLER 225 CID (3.7L) - 1BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

BSFL 116/8HP-HP

1975 CHRYC 225 U (15-1 55)

150.00 +

140.00 +

130.00 +

120.00 +

100.00 +
SHP

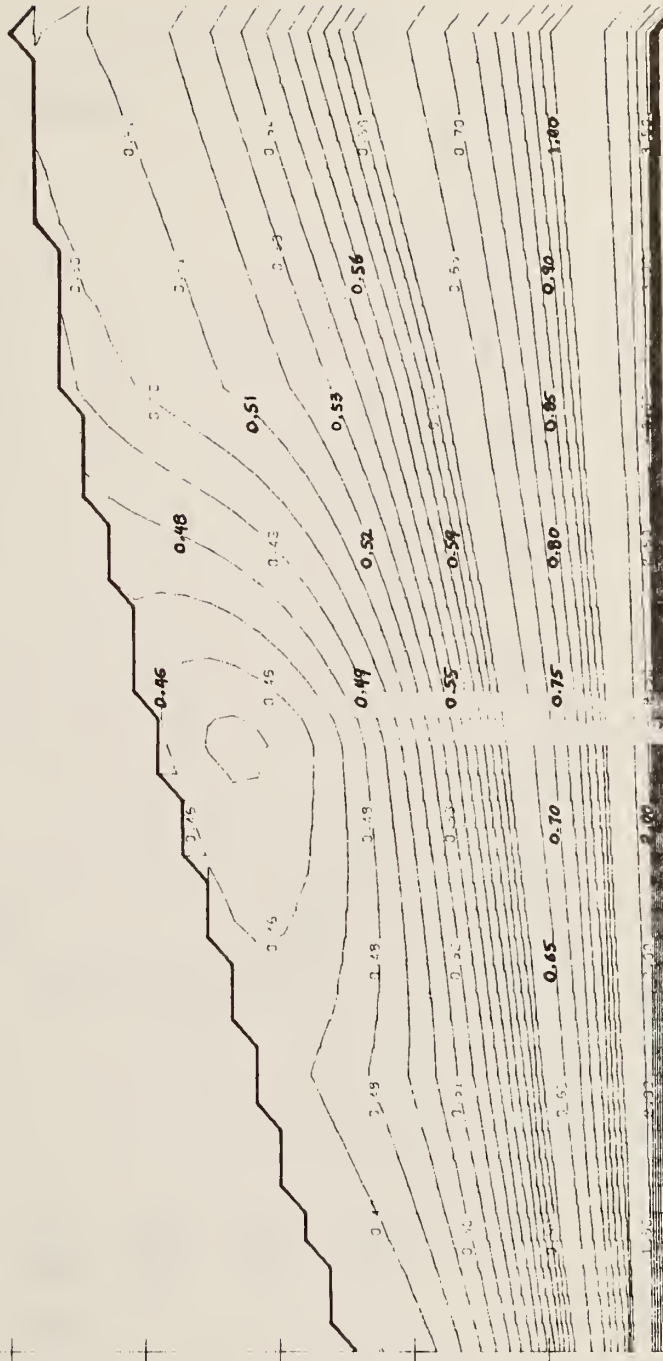
90.00 +

80.00 +

70.00 +

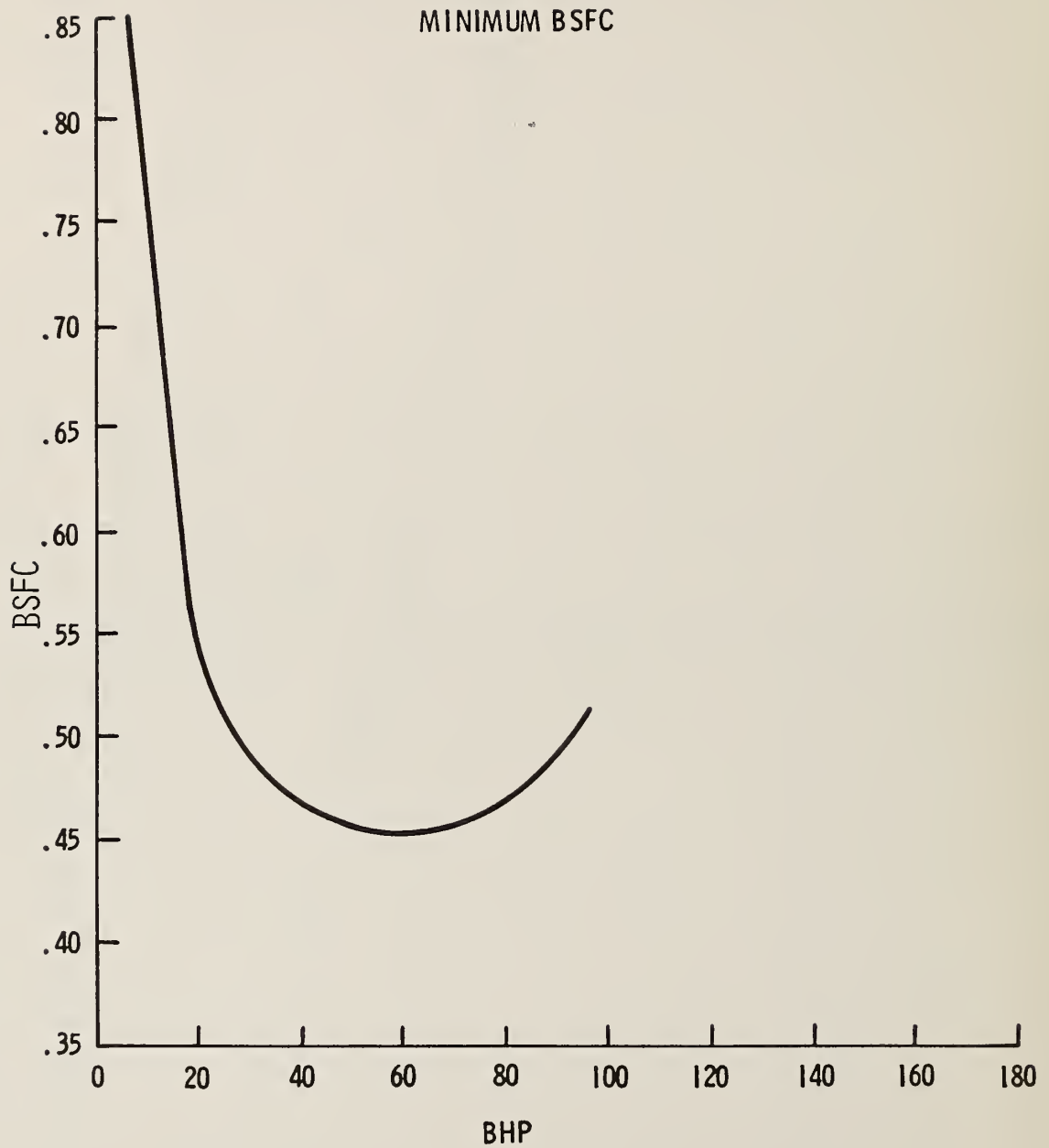
60.00 +

50.00 +



1600.00 1800.00 2000.00 2200.00 2400.00 2500.00 2800.00 3000.00 3200.00 3400.00 3600.00
ENGINE SPEED (RPM)

1975 Chrysler 225 CID (3.7L), L6-188L



BSFC (LB/BHP-HR)

1975 CHRYS 225 0 CID-1 BBL

180.00 —

160.00 —

140.00 —

120.00 —

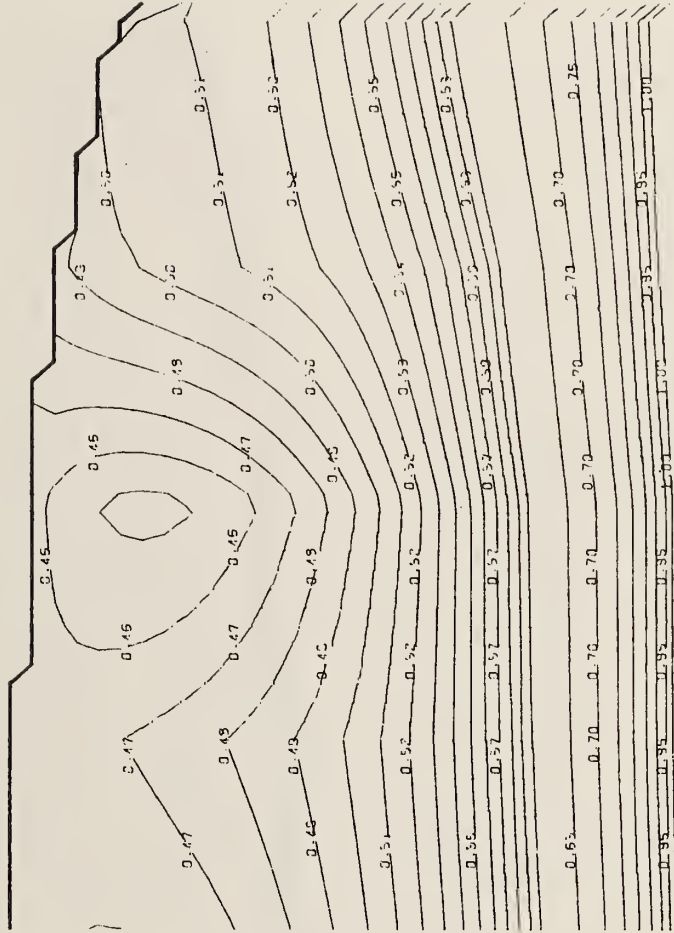
100.00 —

80.00 —

60.00 —

40.00 —

20.00 —



0.00 —

600.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00 2800.00 3000.00

PISTON SPEED (FT/MIN)

E-BS00 (CM/BHP-HR)

1975 CHRYS 225 3 CID-1 BBL

150.00

160.00

140.00

100.00

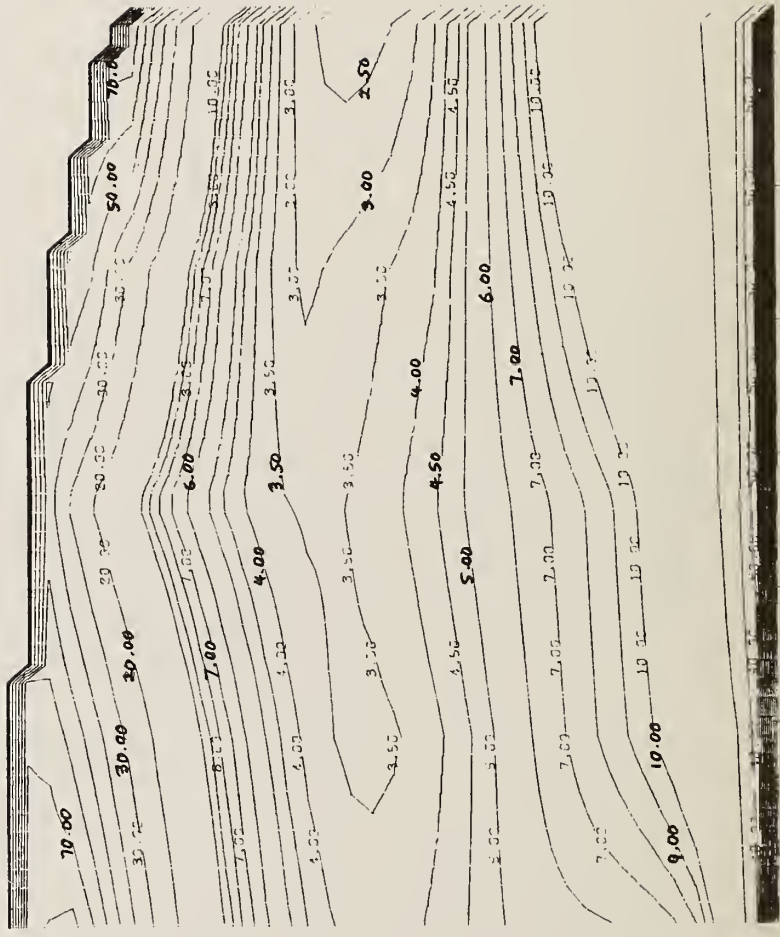
100.00

90.00

60.00

40.00

20.00



3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0

3000.00 2800.00 2600.00 2400.00 2200.00 2000.00 1800.00 1600.00 1400.00 1200.00 1000.00 800.00 600.00 400.00 200.00 0.00

PISTON SPEED (RPM)

E BQHC TEMPERATURE

1975 CHRYS 2000 3000 RPM

120.00 +

140.00 +

160.00 +

180.00 +

200.00 +

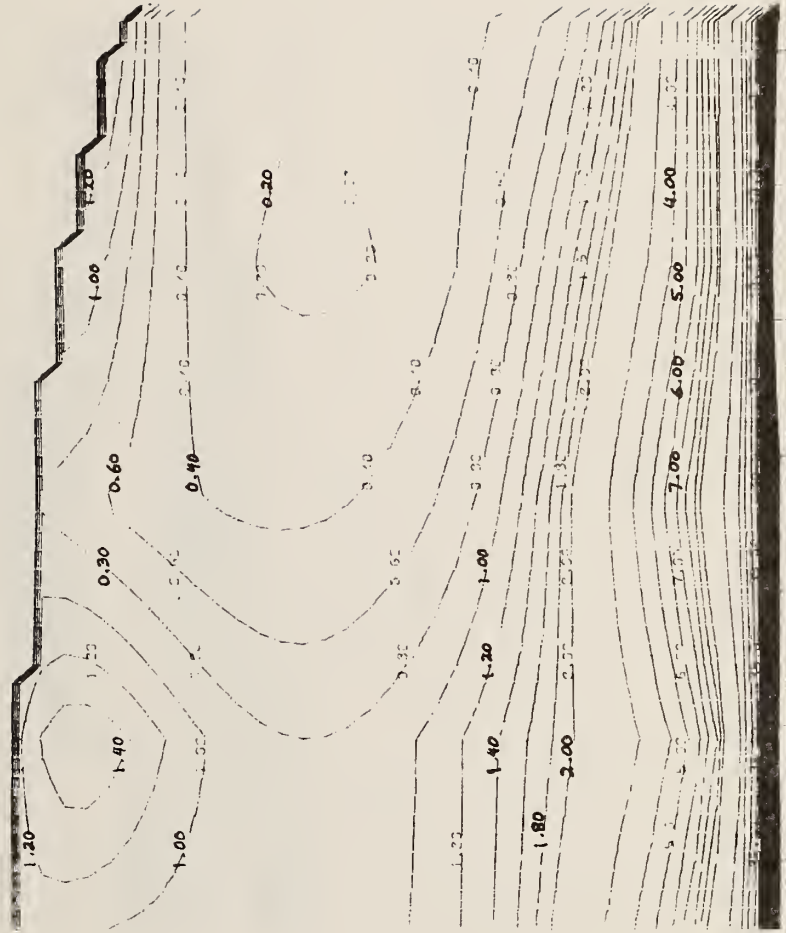
220.00 +

240.00 +

260.00 +

280.00 +

300.00 +



250.00 1055.00 1200.00 1400.00 1600.00 1800.00 1950.00 2000.00 2200.00 2400.00 2500.00 2600.00 2800.00 3000.00

PURISTON SPEED (FT/MIN)

B5HC (CM/BHP-HR)

1975 CHRYS 225.3 CID-1 BEL

180.00

160.00

140.00

120.00

100.00

80.00

60.00

40.00

20.00

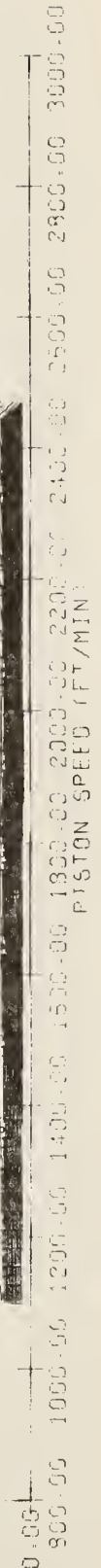
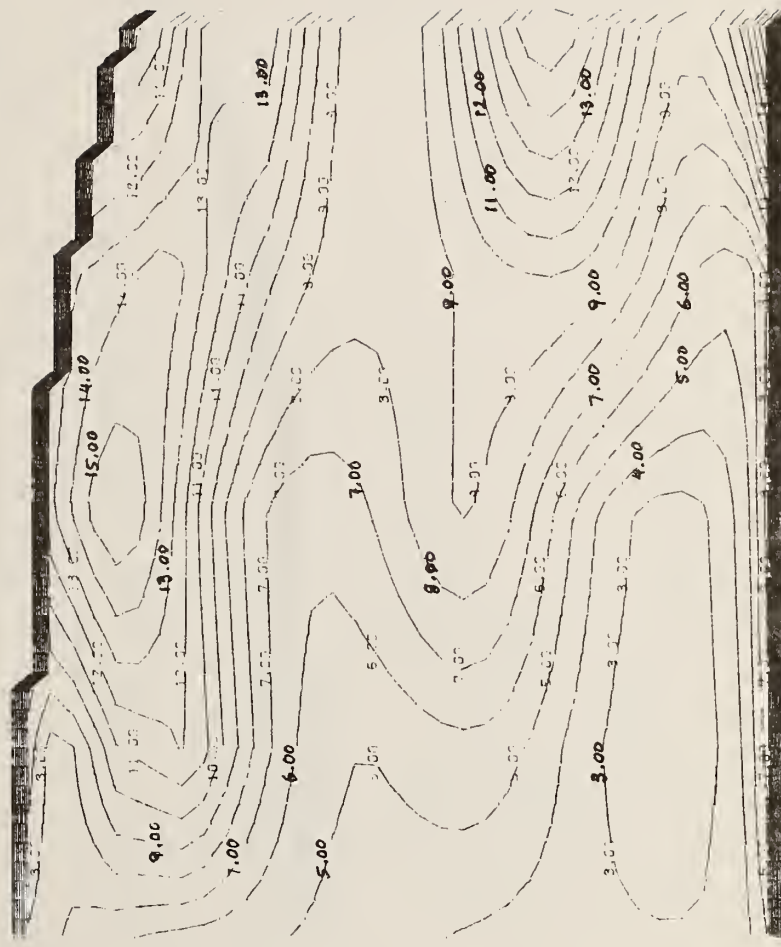
0.00



800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2500.00 2600.00 2800.00 3000.00
PISTON SPEED (FT/MIN)

F-BSDIX (GM/BHP-HR)

1975 CHRYS 225 J CID-1 65



BSNDX (CM, BHP -HR)

1975 CHRYG 225.0 012-1 BBL

160.00 +

150.00 +

140.00 +

130.00 +

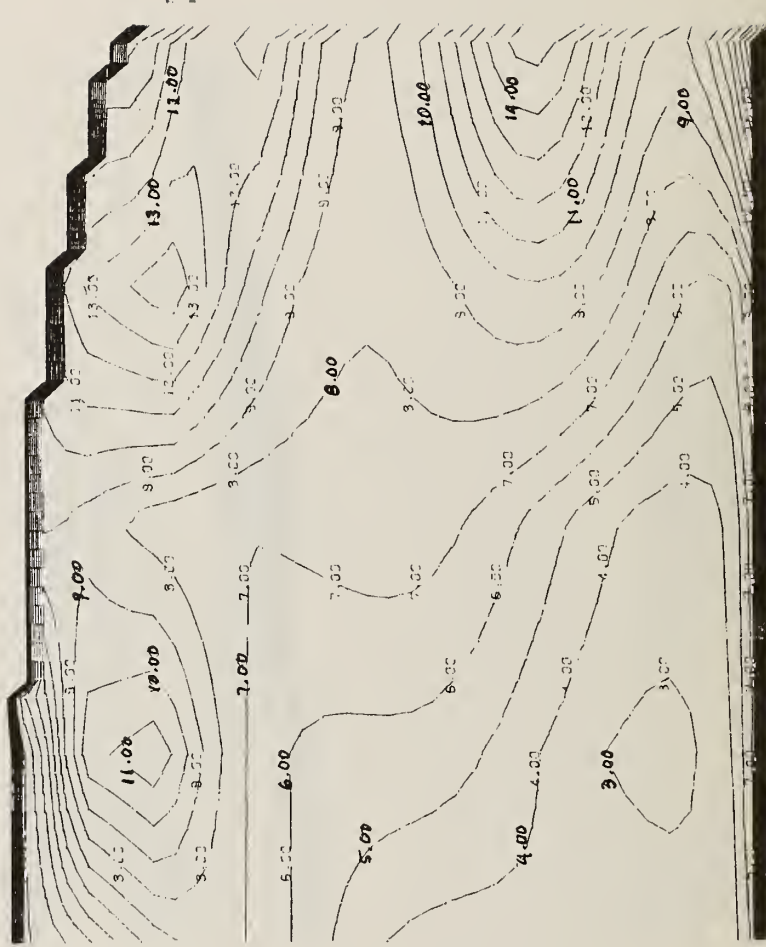
120.00 +

110.00 +

100.00 +

90.00 +

80.00 +



1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00 2800.00 3000.00
PISTON SPEED (FT./MIN)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	510/232	
No. of Cylinders	6	
Bore, in.	3.40	
Stroke, in.	4.125	
Displacement, in ³	225	
Compression Ratio	8.4	
Horsepower, BHP at RPM	110 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	180 ft-lb 2000 RPM	N/A ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.62	
Intake Valve Lift, in.	.406	
Exhaust Valve Diameter, in.	1.36	
Exhaust Valve Lift, in.	.414	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	48	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	54	
Exhaust Valve Closes, deg ATC	10	
Exhaust Valve Duration, deg	244	
Valve Overlap, deg	26	
Distributor Type	Breakerless	
Idle Speed, RPM	700	N/A
Timing, degrees	12 BTC	N/A
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	Automatic, electric assist	
Carburetor Barrel Diameter, in.	1.44	
Vehicle Emission Control Systems	Air injection EGR Catalytic converter Engine modifications	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler-225 CID(3.7L) -2BBL

(Reference)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x	
Volare Wagon	A3	4000	2.71	35.3	YES	13.2	0.67	9.70	525.	1.76	16	5.00	412.	1.14	18	
Aspen Wagon	A3	4000	2.71	36.0	NO	12.0	0.70	13.00	490.	1.30	17	2.50	376.	0.99	20	
Aspen	A3 w/ lockup	3500	2.94	39.0	NO	11.2	0.64	10.30	468.	1.81	18	0.30	338.	2.08	21	
Aspen	A3 w/ lockup	3500	2.94	39.9	YES	12.3	0.78	14.10	471.	1.19	18	0.90	353.	2.16	21	
Aspen Wagon	M4 w/OD	3500	3.21	31.1	YES	10.2	0.66	8.70	482.	1.43	18	1.30	316.	1.74	21	
Aspen Wagon	M4 w/OD	4000	3.21	29.7	YES	13.2	0.99	13.90	499.	1.84	17	4.70	344.	1.89	20	

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$N = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 Chrysler-225 CID(3.7L) -2BBL

(Ref. 11)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYN0 HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Pickup	A3	4000	3.55	41.0	N0	12.0	0.60	8.40	571.	1.80	15	0.03	0.10	477.	1.44	19	16
Van	M3	4000	3.55	46.0	N0	12.0	0.39	5.00	593.	1.60	15	0.07	0.20	414.	2.36	21	17
Pickup	M4	4000	3.55	41.0	N0	18.0	0.44	5.00	677.	1.91	13	0.04	0.30	500.	2.24	18	15

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

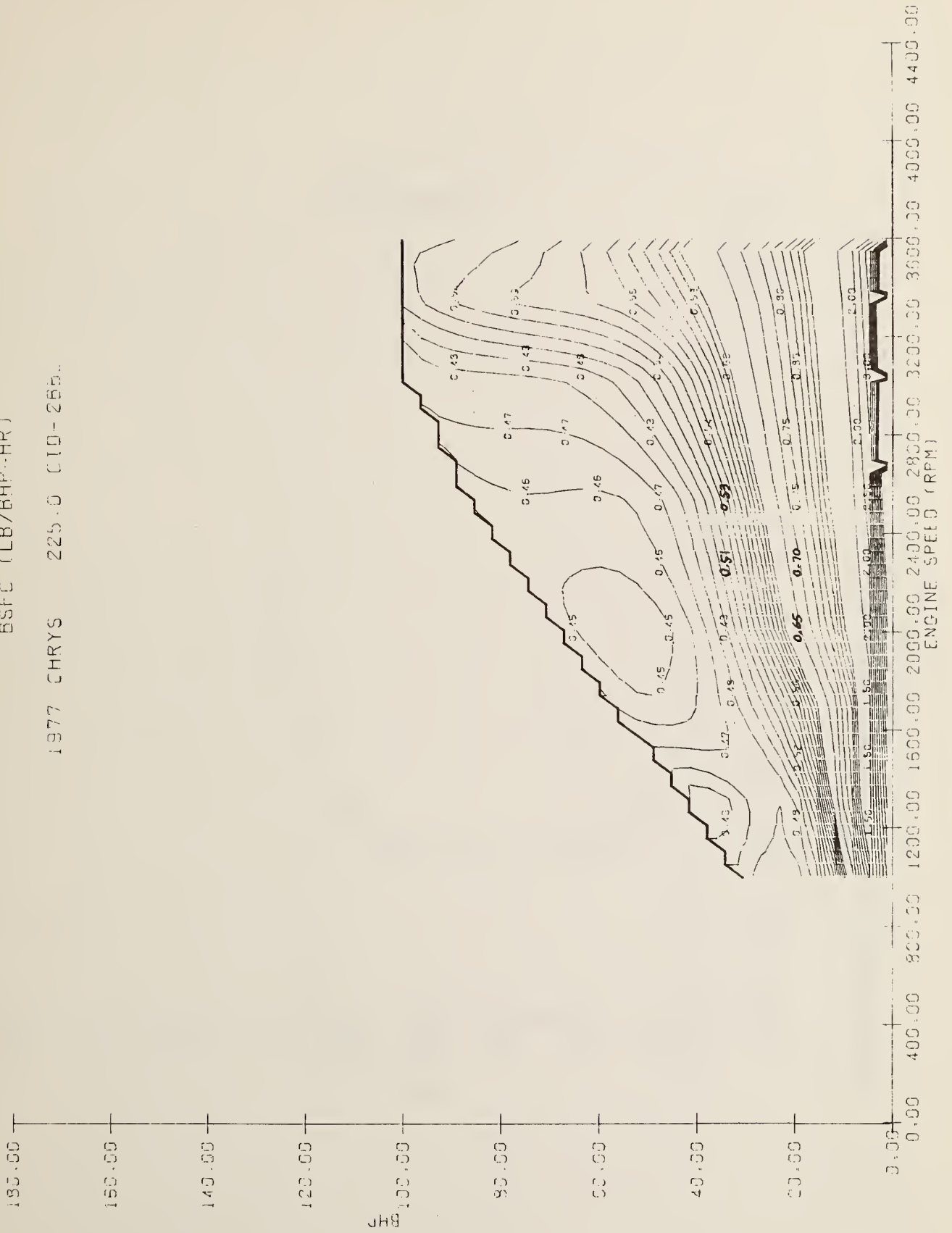
1977 CHRYSLER 225 CID (3.7L) - 2BBL

Tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

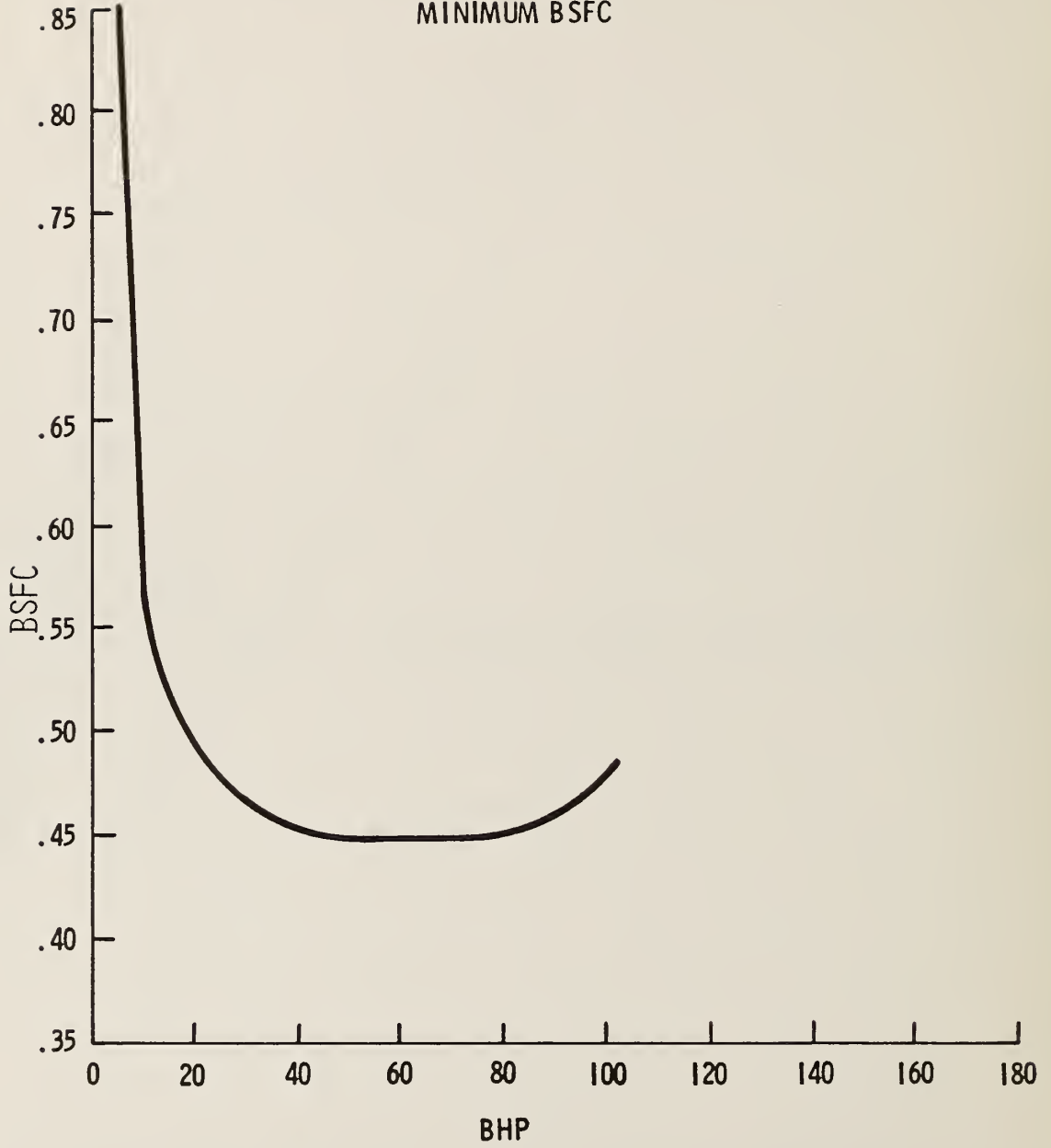
BSFC (LB/BHP-HR)

1977 CHRYSLER 225.0 CID-265.



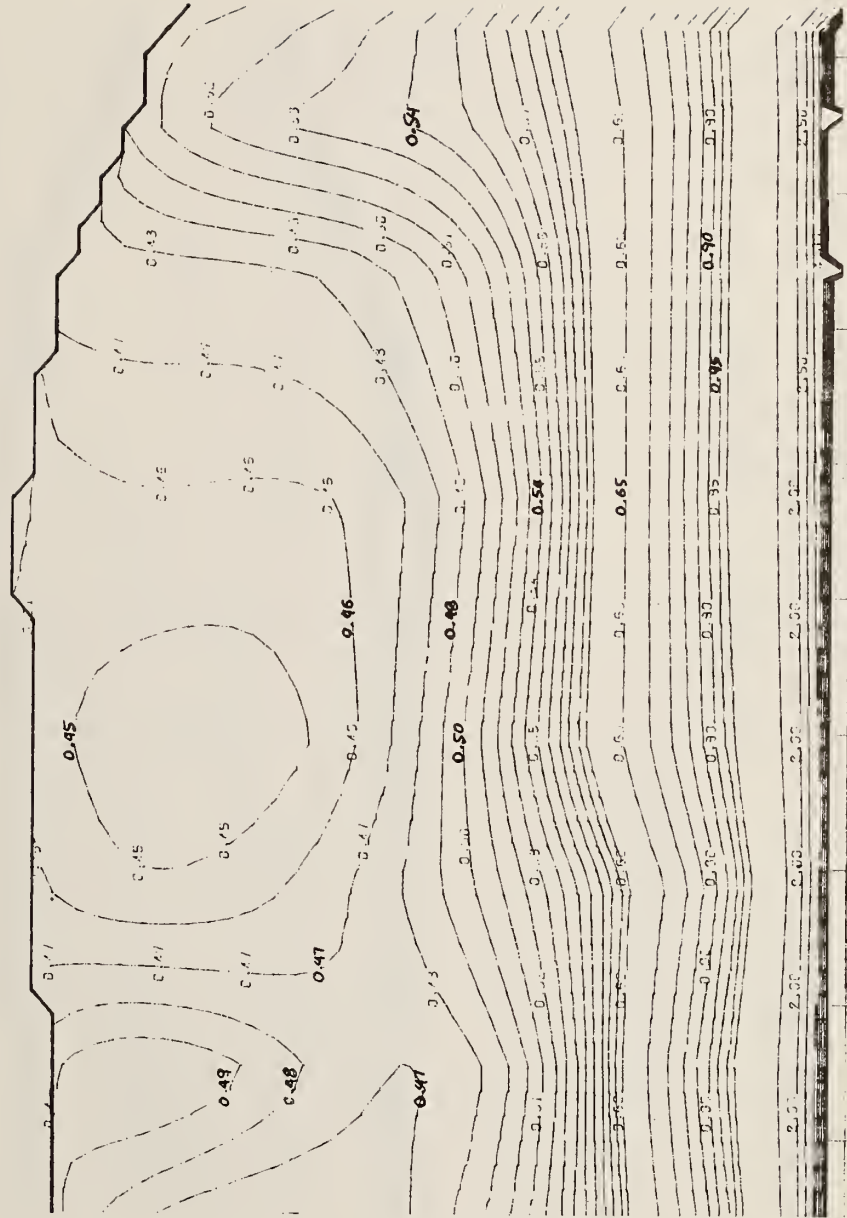
1977 Chrysler 225 CID (3.7L), L6-2BBL

MINIMUM BSFC



BSFC (LB/BHP-HR)

1977 CHRYSLER 225.0 (10-2RBL)



2800.00 +

2600.00 +

2400.00 +

2200.00 +

2000.00 +

1800.00 +

1600.00 +

1400.00 +

1200.00 +

1000.00 +

2800.00 2600.00 2400.00 2200.00 2000.00 1800.00 1600.00 1400.00 1200.00 1000.00 900.00

PISTON SPEED (FT/MIN)

E-6500 10M (BHP) HR

1977 CHRYSLER 225.0 (110-285)

130.00 F

140.00 F

140.00 F

120.00 F

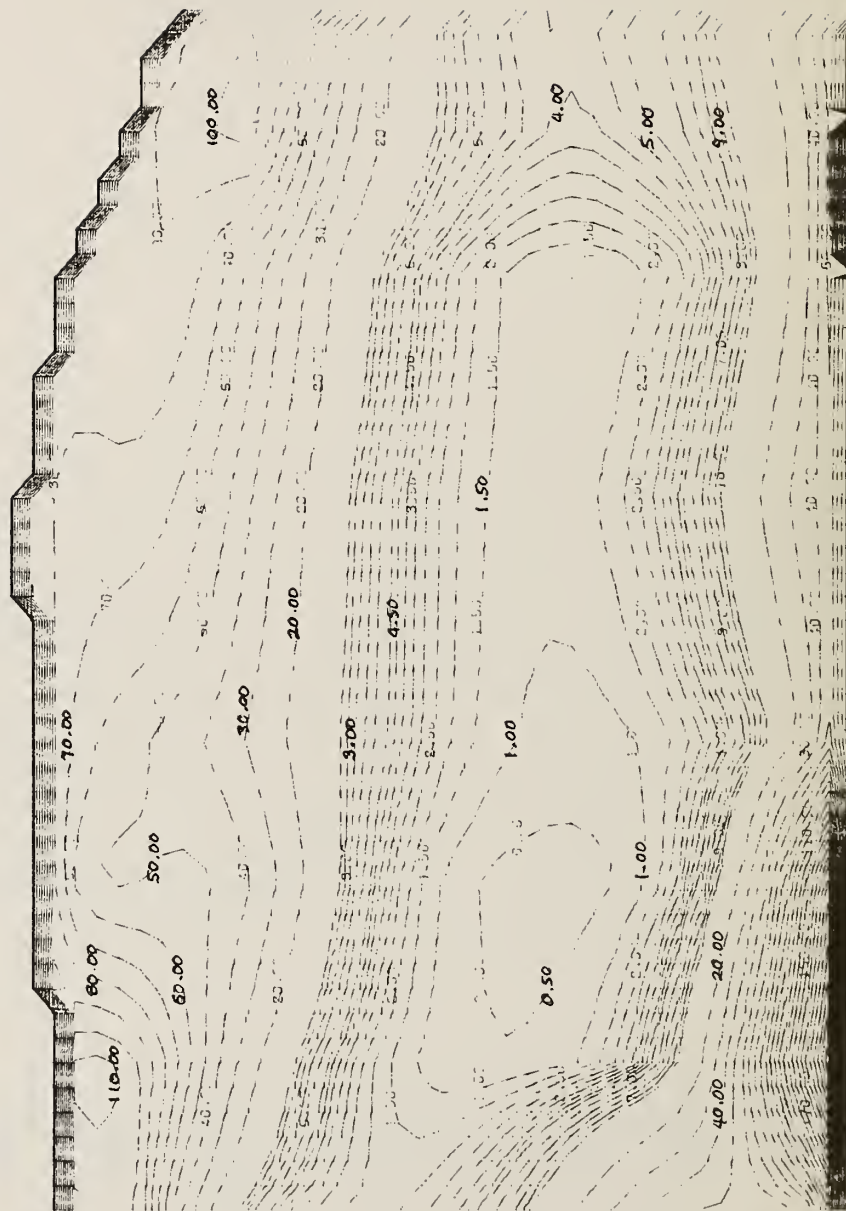
100.00 F

90.00 F

80.00 F

40.00 F

20.00 F



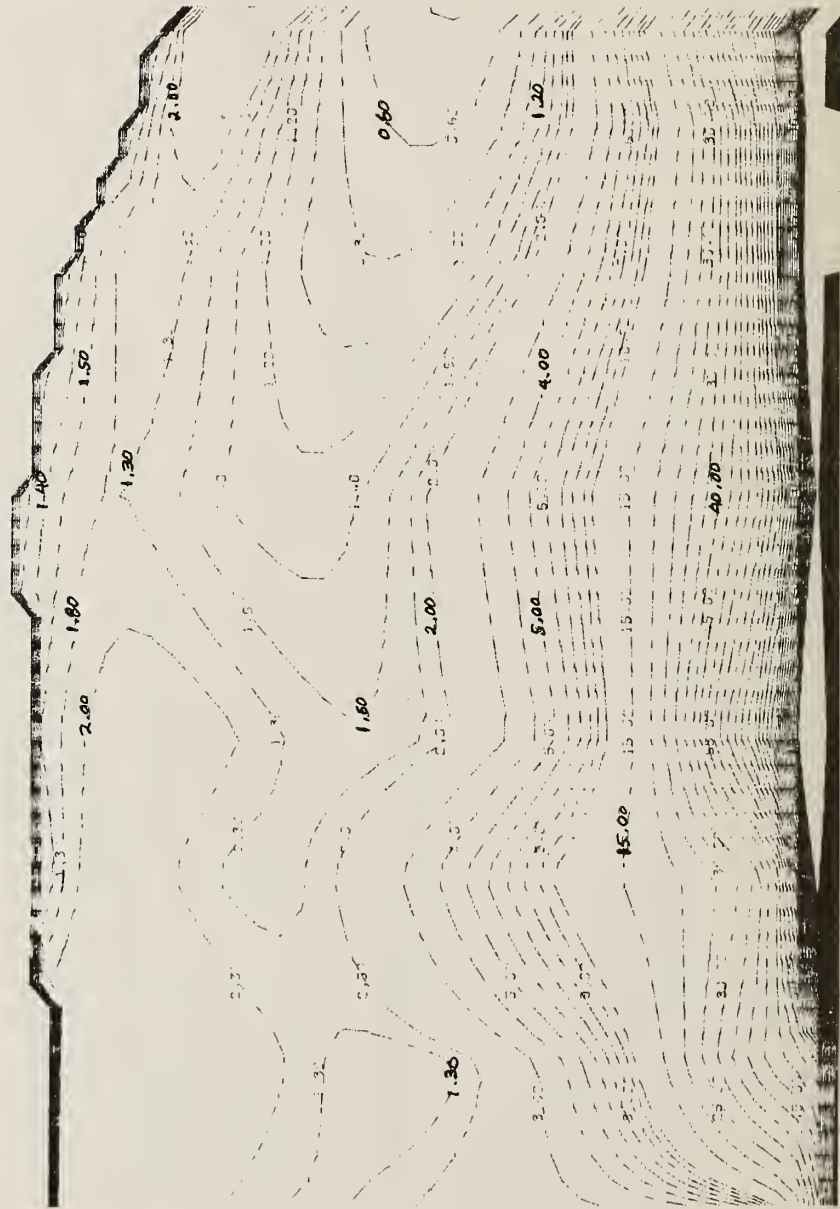
0.00 F

600 00 800 00 1000 00 1200 00 1400 00 1600 00 1800 00 2000 00 2200 00 2400 00 2600 00 2800 00
RPM
PISTON SPEED (FT/MIN)

C-BSHC 10M1B...

1977 CHRYSLER 225.0

180 00 TT
160 00 TT
140 00 TT
120 00 TT
100 00 TT
80 00 TT
60 00 TT
40 00 TT
20 00 TT
0 00 TT



1800 00
1600 00
1400 00
1200 00
1000 00
800 00
600 00
400 00
200 00
0 00

PISTON SPEED (FT/MIN)

BSHC (M 242 HR)

1977 CHRY\$ 225.0 CID-8871

180.00

160.00

140.00

120.00

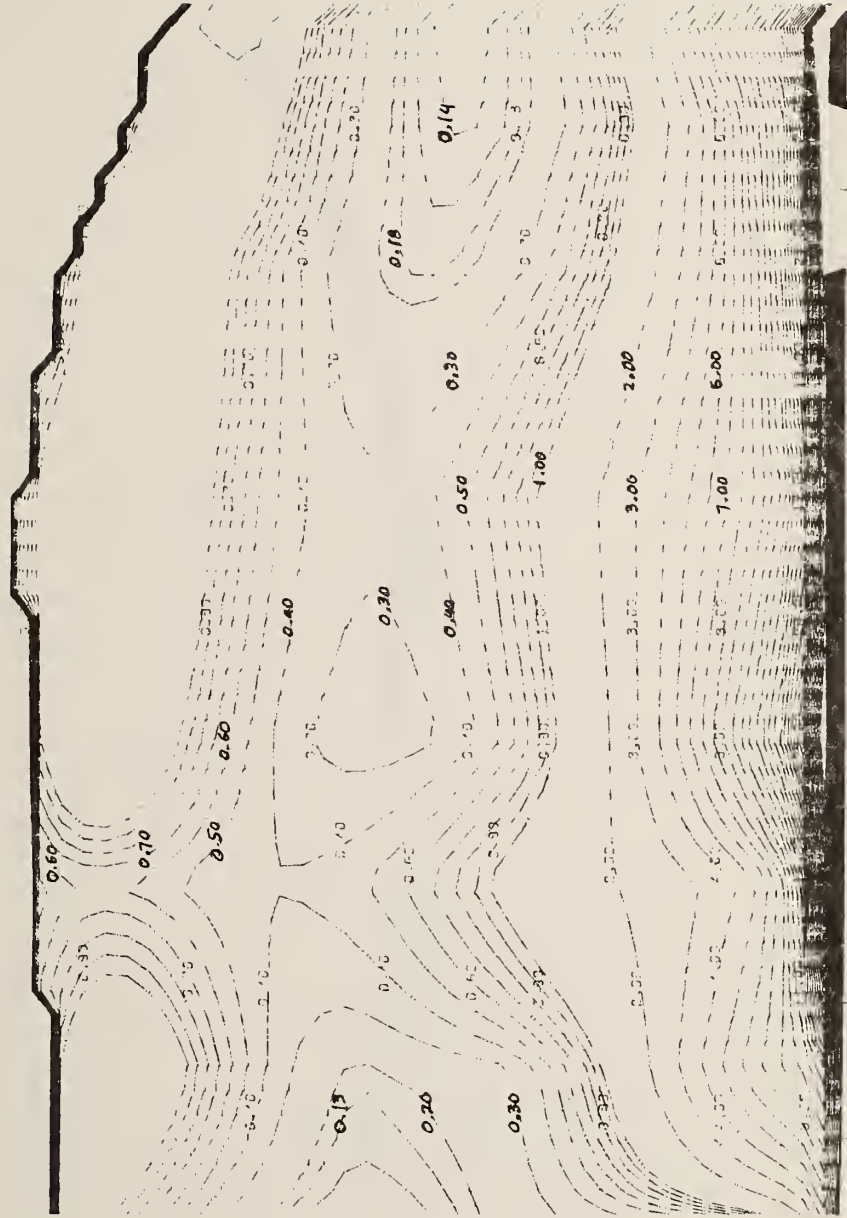
100.00

80.00

60.00

40.00

20.00



180.00 160.00 140.00 120.00 100.00 80.00 60.00 40.00 20.00
0 500 1000 1500 2000 2500 3000
PISTON SPEED (FT/MIN)

BSNOX (100/FEET/HR)

1977 CHRYS 225.0 111-086L



ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	630/286	
No. of Cylinders	8	
Bore, in.	3.91	
Stroke, in.	3.31	
Displacement, in ³	318	
Compression Ratio	8.5	
Horsepower, BHP at RPM	140 BHP 4000 RPM	N/A BHP RPM
Torque, ft-lb at RPM	245 ft-lb 1600 RPM	N/A ft-lb RPM
Exhaust System Type	Single w/Crossover	
Intake Valve Diameter, in.	1.78	
Intake Valve Lift, in.	.373	
Exhaust Valve Diameter, in.	1.50	
Exhaust Valve Lift, in.	.400	
Intake Valve Opens, deg BTC	10	
Intake Valve Closes, deg ABC	50	
Intake Valve Duration, deg	240	
Exhaust Valve Opens, deg BBC	52	
Exhaust Valve Closes, deg ATC	16	
Exhaust Valve Duration, deg	248	
Valve Overlap, deg	26	
Distributor Type	Breakerless	
Idle Speed, RPM	700	N/A
Timing, degrees	16 BTC	N/A
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	Automatic, electric assist	
Carburetor Barrel Diameter, in.	1.44	
Vehicle Emission Control Systems	Air injection EGR Catalytic converter Engine modifications	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler - 318 CID(5.2L)-2BBL

(Ref. 13)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Volare	A3	4000	2.71	37.4	YES	11.3	0.41	6.50	641.	1.54	14	0.09	1.80	437.	1.87	20	16
Fury	A3	4500	2.71	33.1	YES	14.0	0.53	9.20	644.	1.79	13	0.10	1.40	449.	2.54	20	16
Volare Wagon	A3 w/ lockup	4000	2.45	31.9	YES	13.2	0.73	13.90	551.	1.37	15	0.08	1.50	407.	1.79	22	18
Fury	A3 w/ lockup	4500	2.71	34.6	YES	11.4	0.65	13.90	609.	1.32	14	0.90	0.80	420.	1.96	21	16
Diplomat	A3 w/ lockup	4500	2.71	35.2	YES	14.0	0.51	9.40	628.	1.00	14	0.09	1.30	426.	2.13	21	16
Fury	A3 w/ lockup	4500	2.71	35.2	YES	14.0	0.56	10.50	621.	1.48	14	0.09	1.30	430.	2.06	20	16
Volare	M4 W/OD	4000	2.94	27.7	YES	13.2	0.56	9.50	596.	1.18	14	0.11	1.10	365.	2.41	24	18
Volare	W/OD	4000	2.94	27.7	YES	10.4	0.66	9.20	578.	1.13	15	0.09	0.90	335.	2.16	26	19

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1977 CHRYSLER 318 CID (5.2L) - 2BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

BSFC (LB/BHP--HR)

1977 CHRYS 318.0 CID-2BBL

190.00

180.00

140.00

120.00

100.00
SHP

80.00

60.00

40.00

20.00

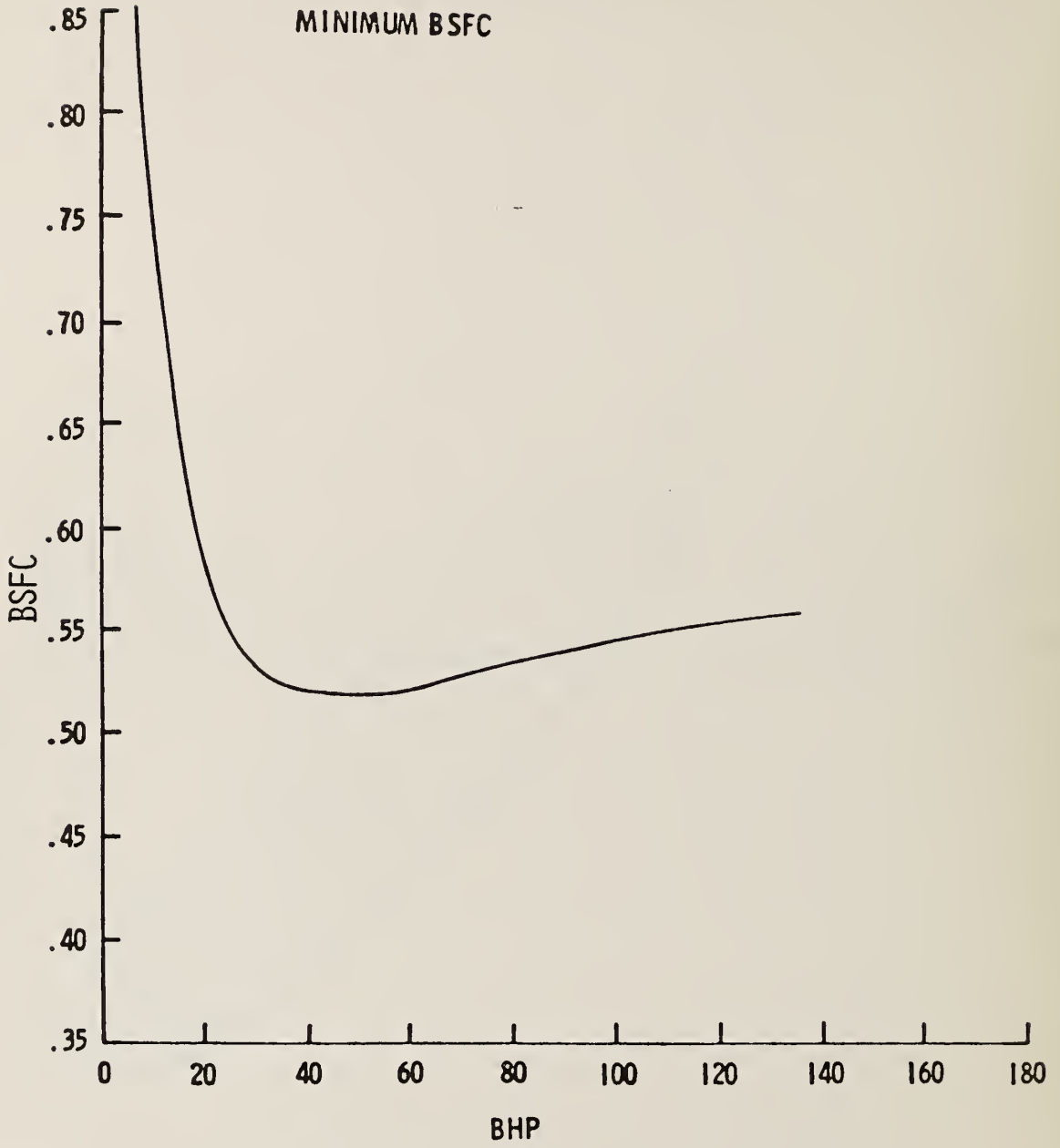
0.00



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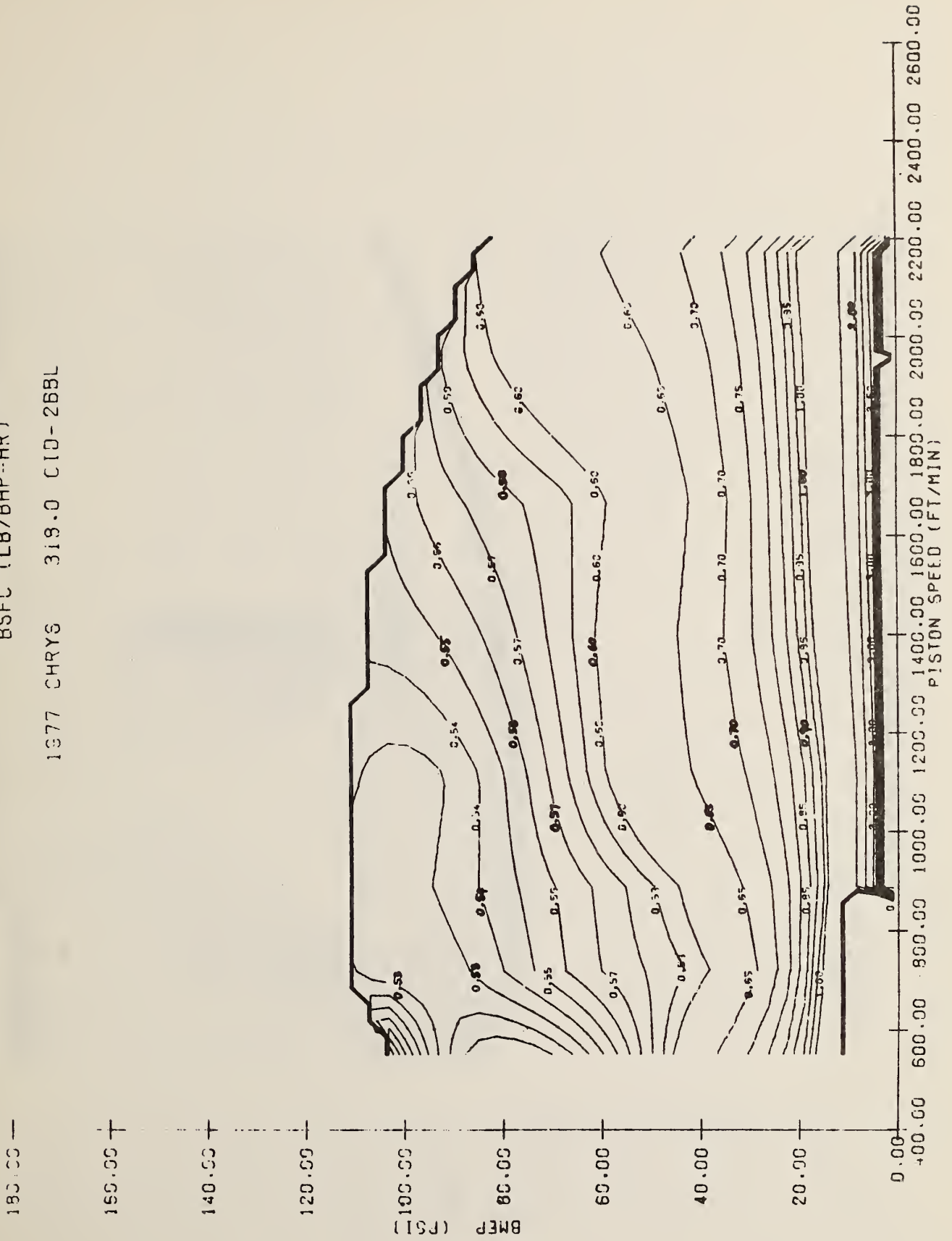
ENGINE SPEED (RPM)

1977 Chrysler 318 CID (5.2L), V8 - 288L



BSFC (LB/BHP--HR)

1977 CHRYSLER 318.0 CID-268L



E-BSCO (CM/BHP-HR)

1977 CHRYS 318.0 CID-288L

180.00

150.00

140.00

120.00

100.00
BMEP (PSI)

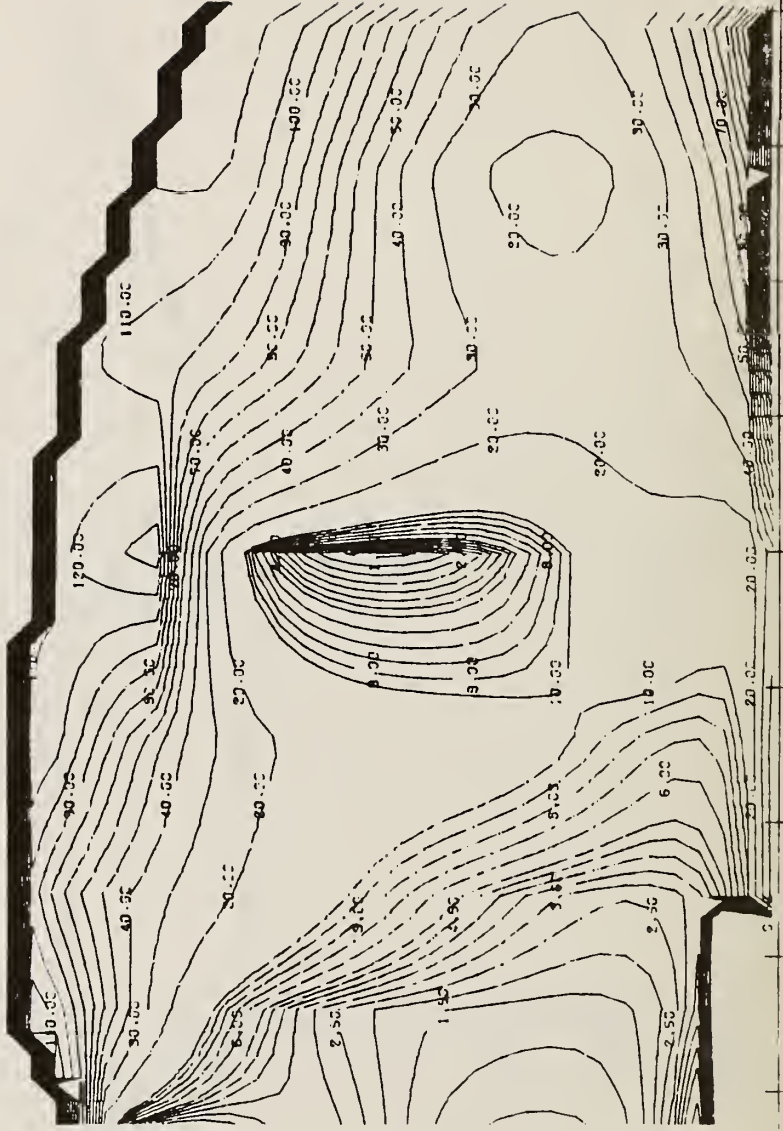
80.00

60.00

40.00

20.00

0.00



1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00
PISTON SPEED (FT/MIN)

E-BSHC (GM/BHP--HR)

1977 CHRYS 318.0 CID-268L

180.00

160.00

140.00

120.00

100.00

80.00

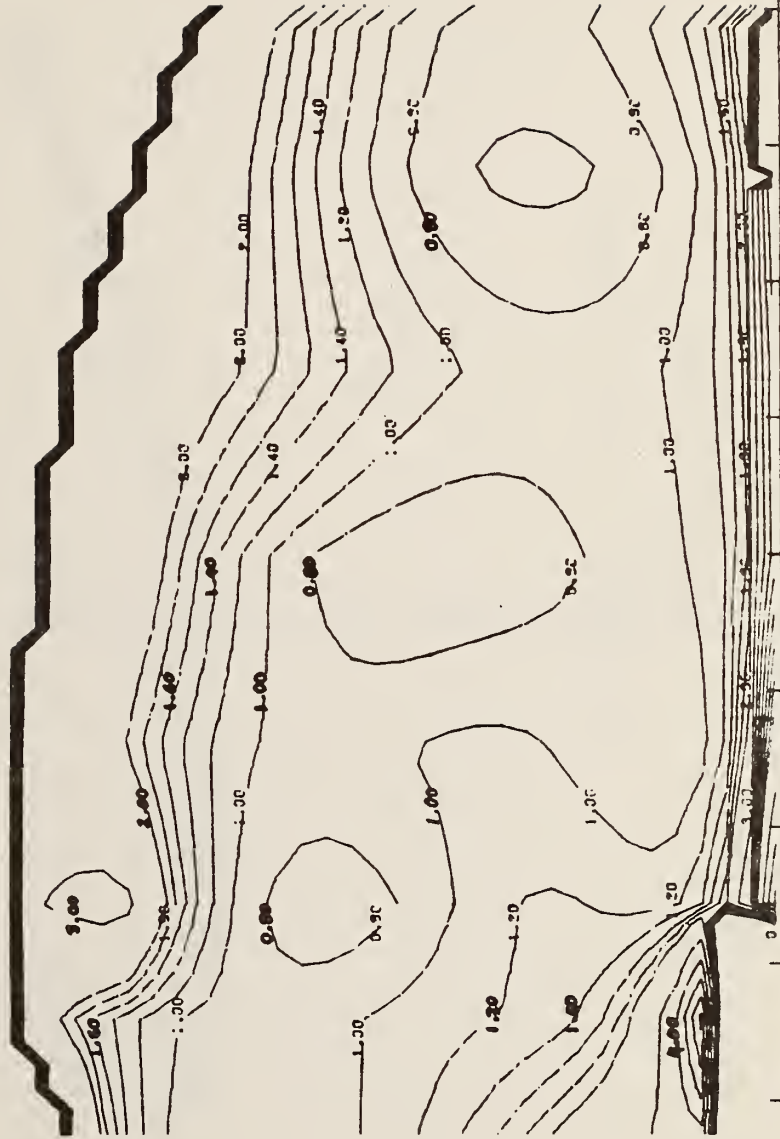
60.00

40.00

20.00

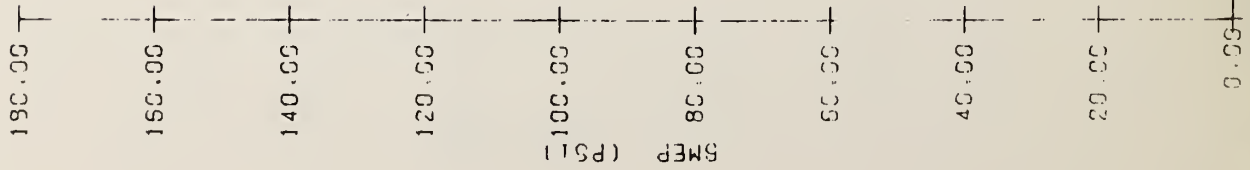
0.00

BMEP (PSI)



E-BSNOX (GM/BHP-HR)

1377 CHRYS 319.0 CIU-268L



1975 CHRYSLER 318 CID (5.2L) - 2BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

8500 (LB/EHP-HR)

1975 CHRYSLER P.P.C. (10-2 89)

180.00 +

160.00 +

140.00 +

120.00 +

100.00 +
HP

80.00 +

60.00 +

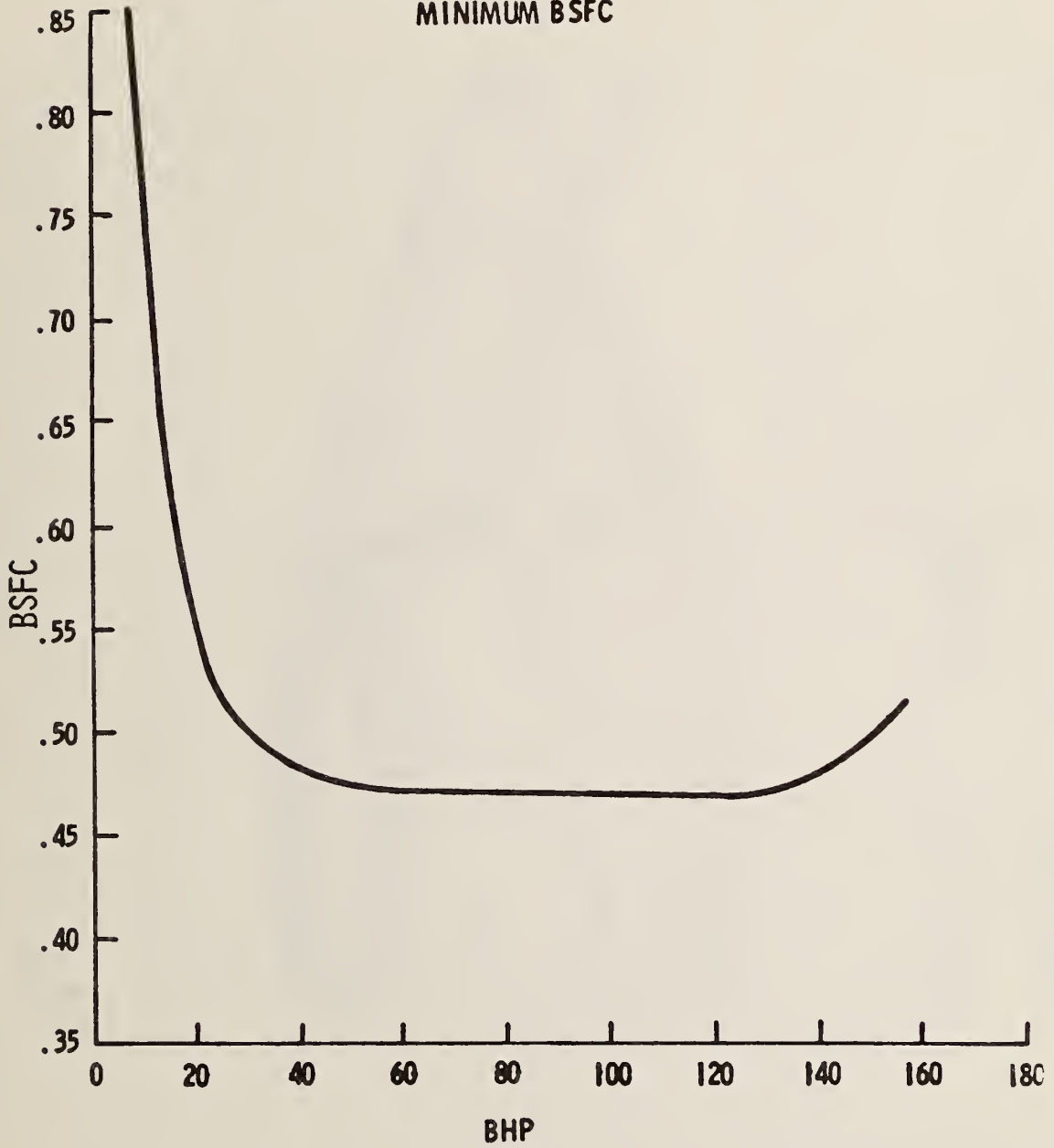
40.00 +

20.00 +



100.00 955 90 1200.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00 4800.00
ENGINE SPEED (RPM)

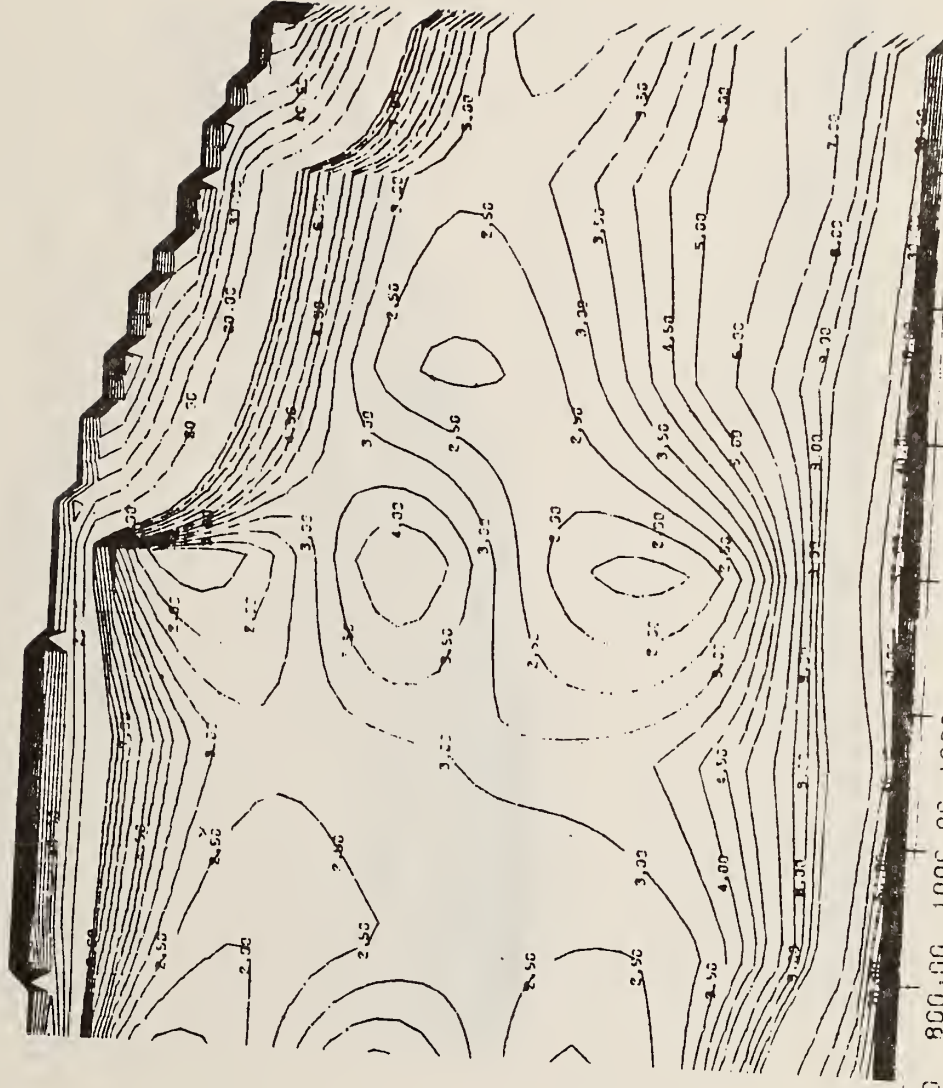
1975 CHRYSLER-318 CID (5.2L), V8-2BBL
MINIMUM BSFC



F-B5C0 (GM/BHP-HR)

1975 CHRYSLER 318-0 CID-2 BBL

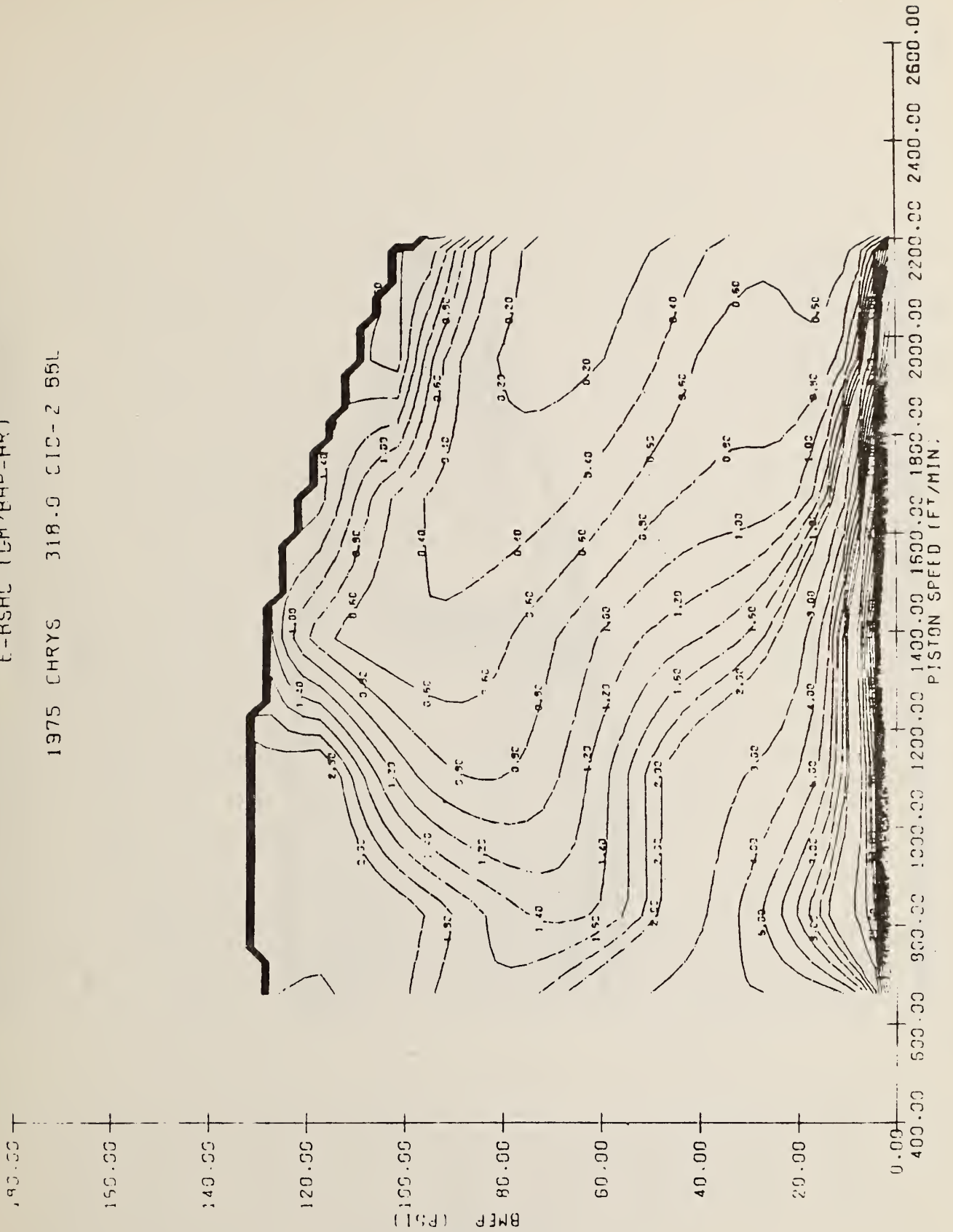
60.00 +
 50.00 +
 40.00 +
 30.00 +
 20.00 +
 10.00 +
 0.00 +
 -10.00 +
 -20.00 +
 -30.00 +
 -40.00 +
 -50.00 +
 -60.00 +



400.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00
 PISTON SPEED (FT/MIN)

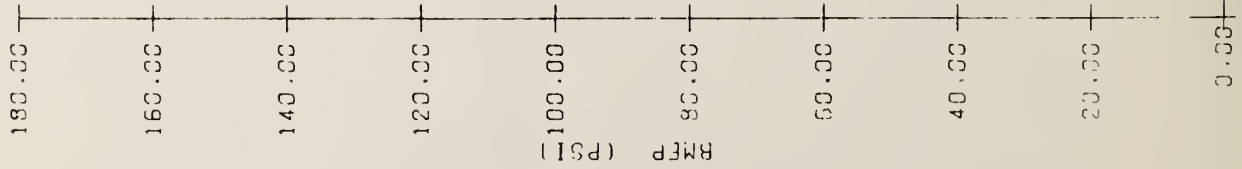
E-RSHC (GM/EHP-HR)

1975 CHRYS 318.0 CIC-2 55L



BSHC (CM/BHP·HR)

1975 CHRYS 319.5 CID-2 BBL



E-BSNOX (CM/BHP-HR)

1975 CHRYS 318.0 CID-2 BBL

180.00 —

160.00 —

140.00 —

120.00 —

100.00 —

80.00 —

60.00 —

40.00 —

20.00 —

0.00 —



BMEP (PSI)

400.00 500.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2500.00
PISTON SPEED (FT/MIN)

BSNOX (GM/BHP-HR)

1975 LHRYS 318.0 CIU-2 B8L

180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00

BHP (PSI)



2500.00 2400.00 2200.00 2000.00 1900.00 1800.00 1600.00 1400.00 1200.00 1000.00 800.00 600.00 400.00 200.00 0.00

PISTON SPEED (FT/MIN)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	630/286	
No. of Cylinders	8	
Bore, in.	3.91	
Stroke, in.	3.31	
Displacement, in ³	318	
Compression Ratio	8.5	
Horsepower, BHP at RPM	N/A BHP RPM	155 BHP 4000 RPM
Torque, ft-lb at RPM	N/A ft-lb RPM	245 ft-lb 1600 RPM
Exhaust System Type	Single w/Crossover	
Intake Valve Diameter, in.	1.78	
Intake Valve Lift, in.	.373	
Exhaust Valve Diameter, in.	1.50	
Exhaust Valve Lift, in.	.400	
Intake Valve Opens, deg BTC	10	
Intake Valve Closes, deg ABC	50	
Intake Valve Duration, deg	240	
Exhaust Valve Opens, deg BBC	52	
Exhaust Valve Closes, deg ATC	16	
Exhaust Valve Duration, deg	248	
Valve Overlap, deg	26	
Distributor Type	Breakerless	
Idle Speed, RPM	N/A	750
Timing, degrees	N/A	16 BTC
Fuel System Type	Carburetor - 4BBL downdraft	
Choke Type	Automatic, electric assist	
Carburetor Barrel Diameter, in.	Primary: 1.38	Secondary: 2.25
Vehicle Emission Control Systems	N/A	Air injection EGR Catalytic converter Engine modifications
Not certified for 49 states		

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler - 318 CID (5.2L)-4BBL

(Ref. 15)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x	NO _x
Fury	A3 w/ lockup	4000	2.71	37.4	YES	10.4	0.29	2.40	653.	1.14	14	0.08	0.10	402.	2.34	22	16
Fury	A3 w/ lockup	4000	2.71	34.3	YES	14.0	0.27	2.50	677.	1.22	13	0.07	0.20	425.	2.57	21	16
Fury	A3 w/ lockup	4500	2.71	35.7	YES	14.0	0.27	3.30	673.	1.45	13	0.09	0.50	428.	3.48	21	16

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1975 Chrysler-Mitsubishi 331 CID (5.4L), Diesel-F.I.

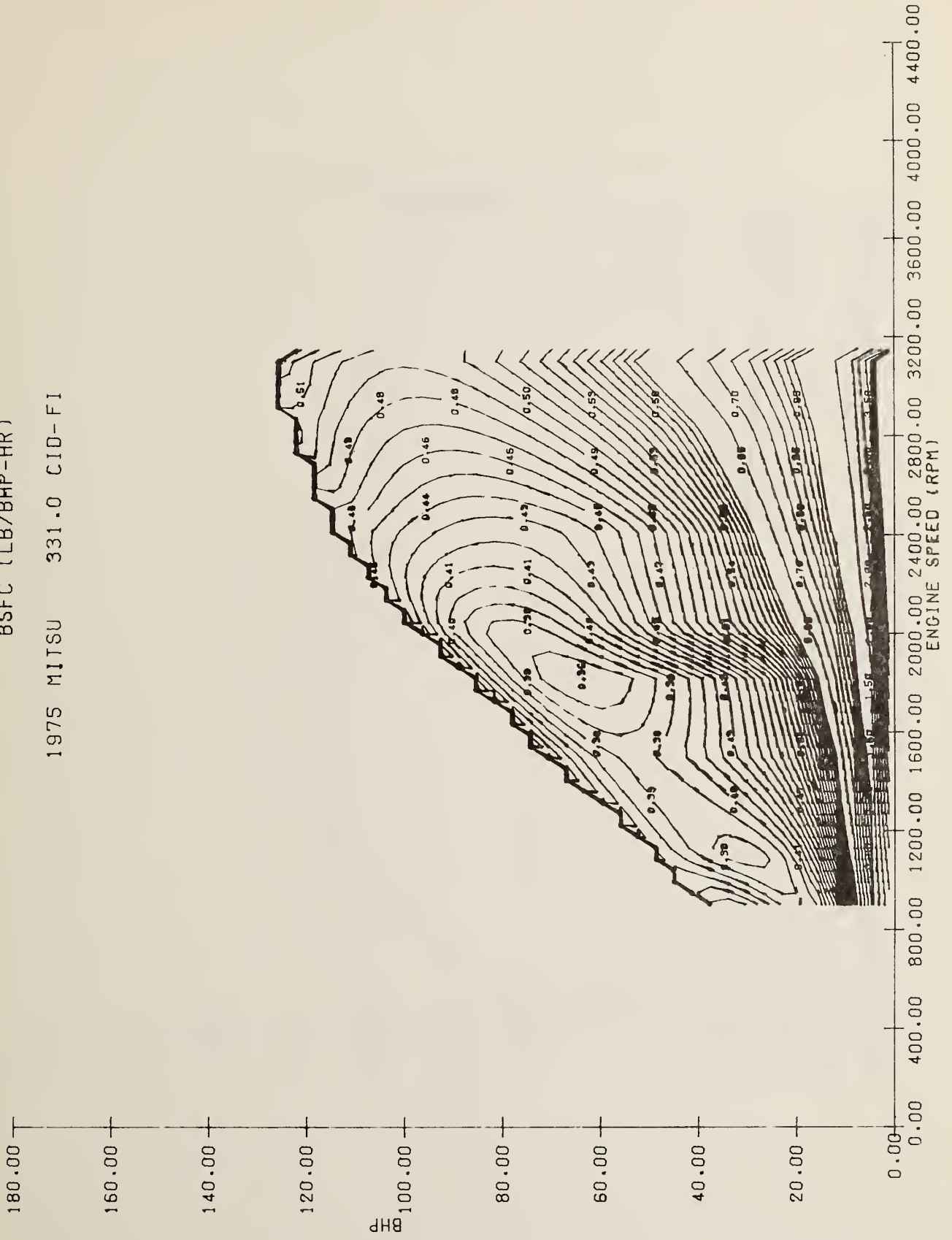
ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	895/405	
No. of Cylinders	L6	
Bore, in.	3.86	
Stroke, in.	4.72	
Displacement, in ³	331.4	
Compression Ratio	19.1	
Horsepower, BHP at RPM	135 BHP 3150 RPM	BHP RPM
Torque, ft-lb at RPM	253 ft-lb 2000 RPM	ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	1.889	
Intake Valve Lift, in.	0.012	
Exhaust Valve Diameter, in.	1.535	
Exhaust Valve Lift, in.	0.012	
Intake Valve Opens, deg BTC	30	
Intake Valve Closes, deg ABC	66	
Intake Valve Duration, deg	276	
Exhaust Valve Opens, deg BBC	66	
Exhaust Valve Closes, deg ATC	30	
Exhaust Valve Duration, deg	276	
Valve Overlap, deg	60	
Distributor Type	N/A	
Idle Speed, RPM	800	
Timing, degrees	Injection 15° BTC	
Fuel System Type	Fuel injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems		
Certification data not available		
NOTES:		
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation	* = Data not available	
	Ref. 26	

1975 CHRYSLER-MITSUBISHI 331 CID (5.4L), Diesel-F.I.

Engine tested by BERC.

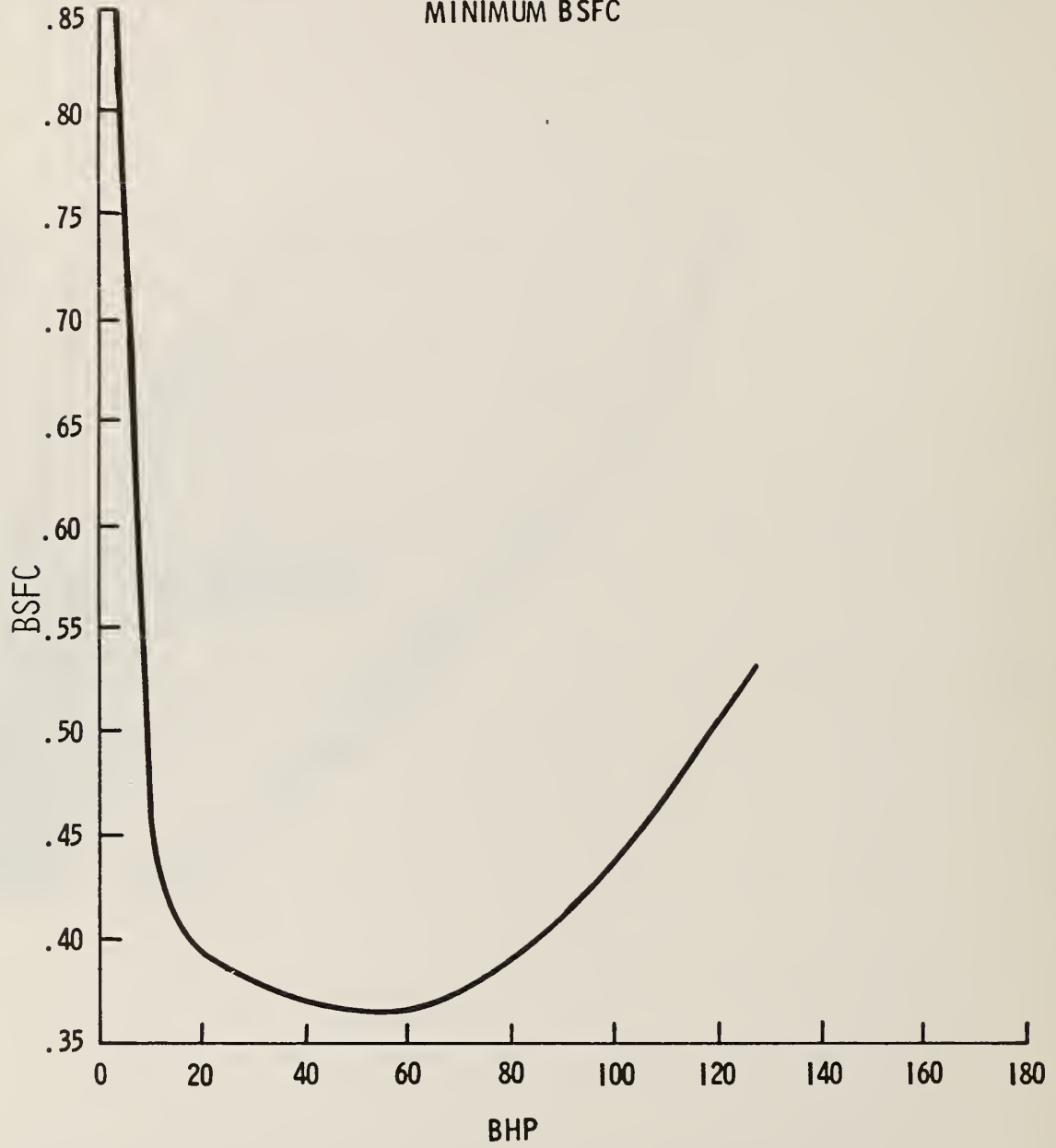
BSFC (LB/BHP-HR)

1975 MITSUBISHI 331.0 CID-FI



1975 Mitsubishi-331 CID(5.4) Diesel, L6-F.I.

MINIMUM BSFC

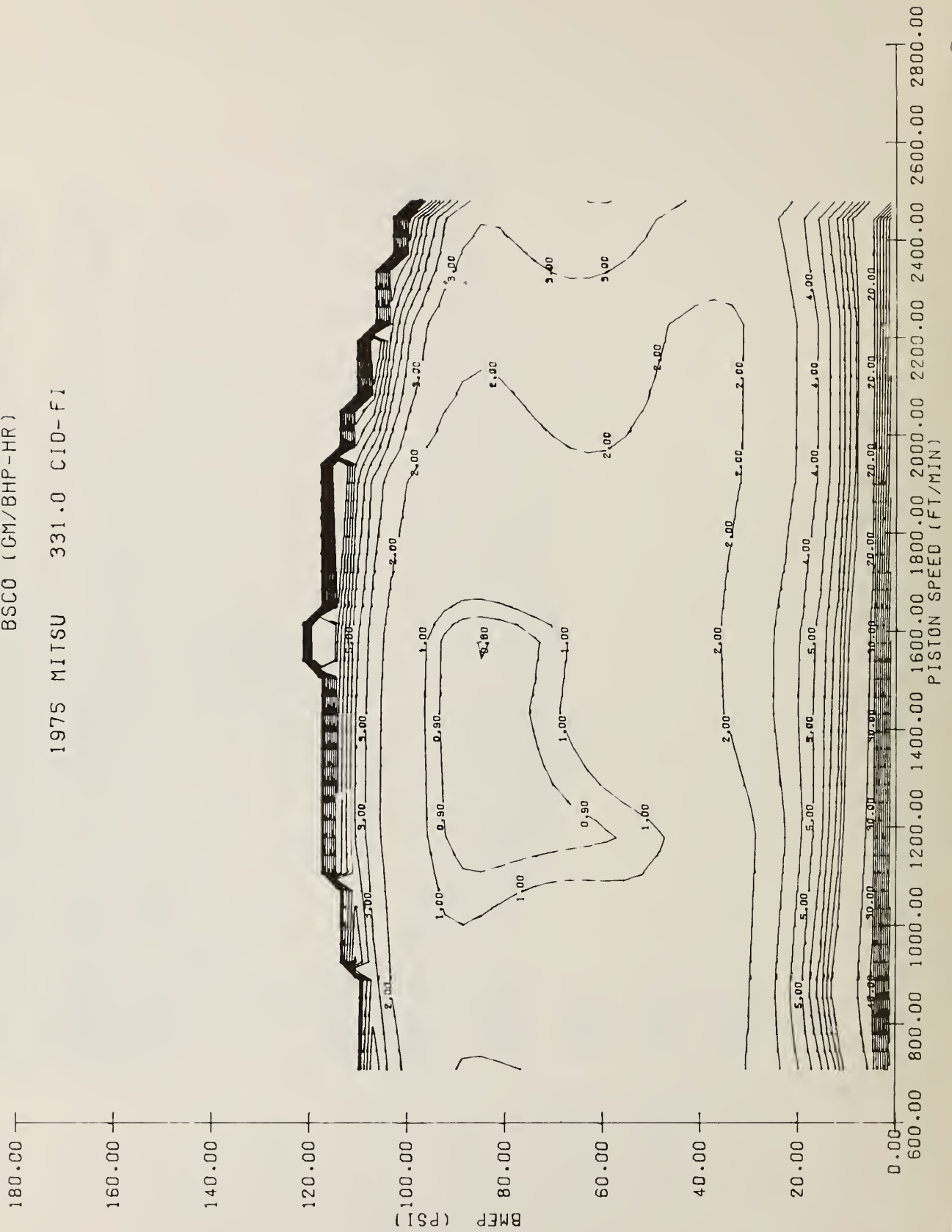


BSFC (LB/BHP-HR)
1975 MITSU 331.0 CID-FI



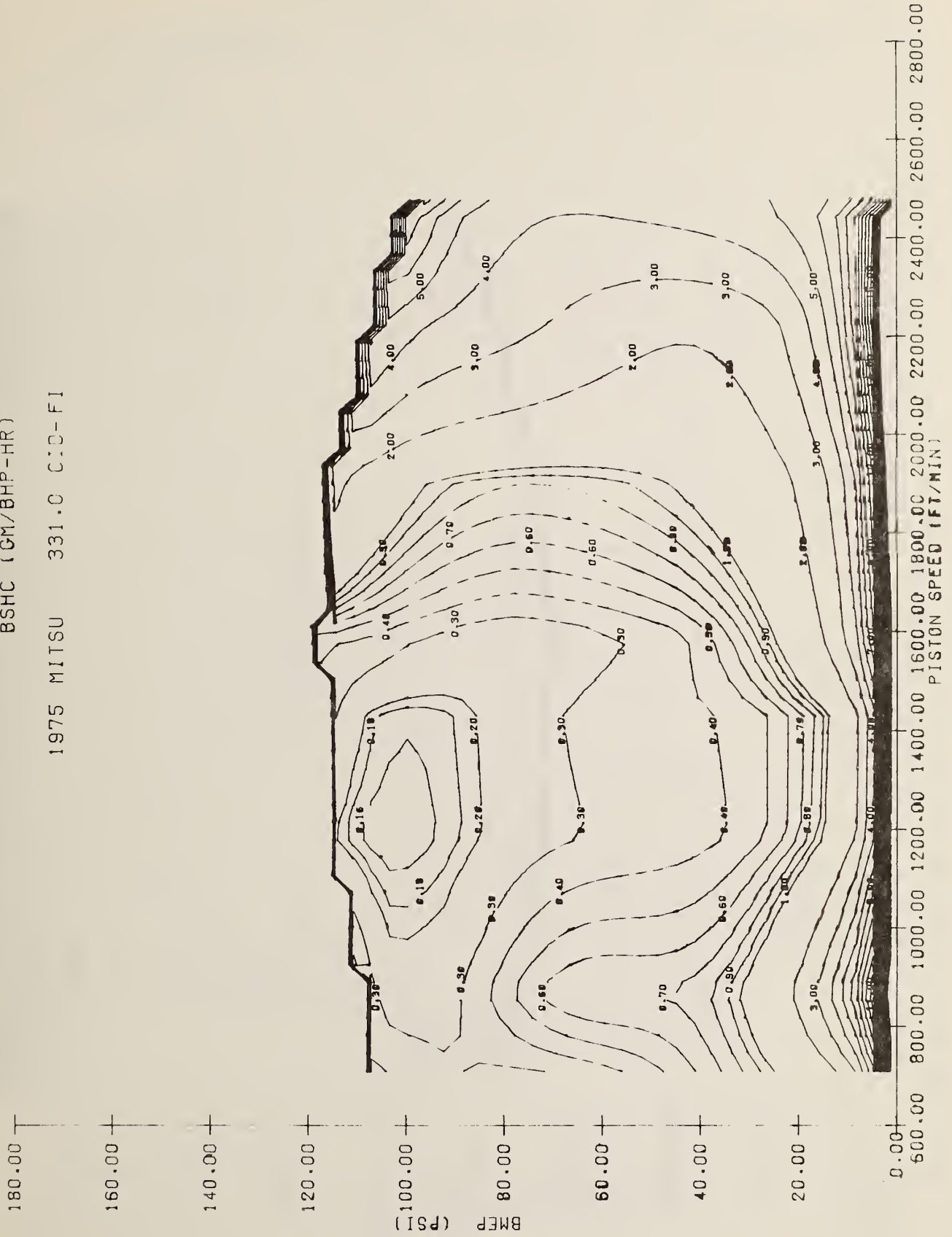
BSCO (GM/BHP-HR)

1975 MITSU 331.0 CID-FI



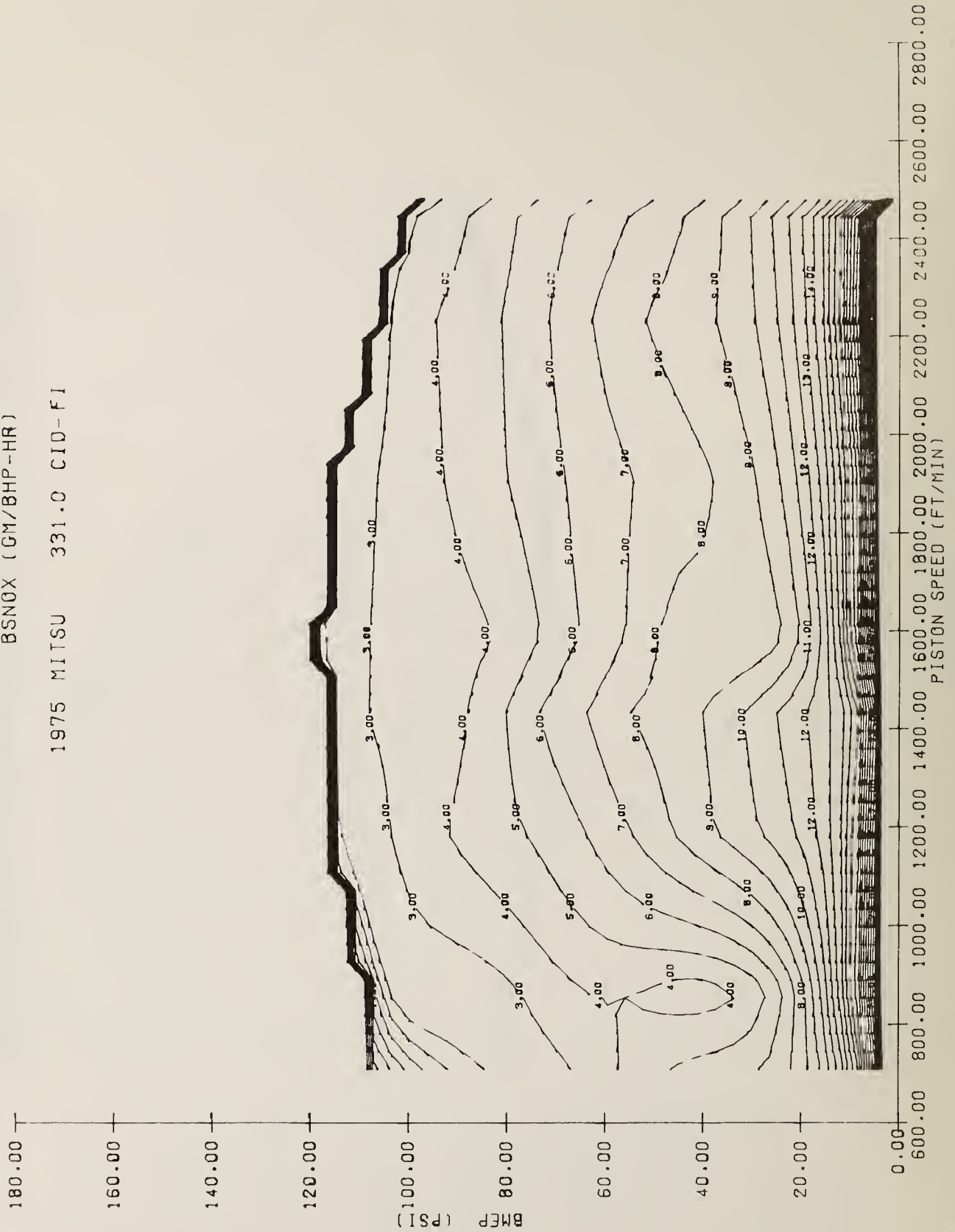
BSHC (GM/BHP-HR)

1975 MITSU 331.0 C10-F1



BSNOX (GM/BHP-HR)

1975 MITSU 331.0 CID-FI



ENGINE PARAMETER	49 STATES.	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.0	
Stroke, in.	3.58	
Displacement, in ³	360	
Compression Ratio	8.4	
Horsepower, BHP at RPM	155 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	270 ft-lb 2400 RPM	N/A ft-lb RPM
Exhaust System Type	Single w/Crossover	
Intake Valve Diameter, in.	1.88	
Intake Valve Lift, in.	.410	
Exhaust Valve Diameter, in.	1.60	
Exhaust Valve Lift, in.	.410	
Intake Valve Opens, deg BTC	18	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	252	
Exhaust Valve Opens, deg BBC	57	
Exhaust Valve Closes, deg ATC	15	
Exhaust Valve Duration, deg	252	
Valve Overlap, deg	33	
Distributor Type	Breakerless	
Idle Speed, RPM	750	N/A
Timing, degrees	20 BTC	N/A
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	Automatic, electric assist	
Carburetor Barrel Diameter, in.	1.56	
Vehicle Emission Control Systems	Air injection Catalytic converter Engine modifications EGR	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation * = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler-360 CID (5.9L) -28BL

(Ref. 17)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Monaco	A3	4500	3.21	42.2	YES	14.0	0.48	7.70	687.	1.95	13	0.05	0.40	530.	3.60	17	14
Fury	A3 w/ lockup	4000	2.45	33.8	YES	10.4	0.60	10.00	589.	1.53	15	0.09	1.00	396.	2.72	22	17
Fury	A3 w/ lockup	4500	2.45	29.9	YES	14.0	0.55	12.00	597.	1.75	14	0.11	1.80	406.	3.51	22	17
Le Baron	A3 w/ lockup	4500	2.45	31.8	YES	12.1	0.67	11.40	589.	1.37	15	0.11	0.30	390.	3.33	23	17
Charger SE/ Magnum/XE	A3 w/ lockup	4500	2.45	32.3	YES	14.0	0.62	11.10	605.	1.73	14	0.07	2.20	417.	3.32	21	17
Fury Wagon	A3 w/ lockup	5000	2.71	33.1	YES	14.7	0.60	12.60	658.	1.45	13	0.13	2.50	451.	2.81	20	15
Chrysler	A3 w/ lockup	5000	2.71	33.4	YES	11.3	0.63	10.80	680.	1.71	13	0.06	0.90	445.	2.52	20	15

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 Chrysler-360 CID (5.9L)-2BBL (Ref. 18)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Pickup	A3	4000	2.71	31.3	YES	13.2	1.31	15.30	634.	1.91	13	0.27	1.70	435.	3.84	20	16
Pickup	A3	4500	2.71	33.8	YES	14.0	0.67	9.80	735.	2.20	12	0.20	1.70	457.	3.28	19	14
Van	A3	4500	2.71	35.1	YES	14.0	0.70	14.70	758.	1.94	11	0.16	1.80	475.	3.84	18	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.0	
Stroke, in.	3.58	
Displacement, in ³	360	
Compression Ratio	8.0	
Horsepower, BHP at RPM	175 BHP 4000 RPM	160 BHP 3600 RPM
Torque, ft-lb at RPM	260 ft-lb 2400 RPM	265 ft-lb 1600 RPM
Exhaust System Type	Single w/Crossover	
Intake Valve Diameter, in.	1.88	
Intake Valve Lift, in.	.410	
Exhaust Valve Diameter, in.	1.60	
Exhaust Valve Lift, in.	.410	
Intake Valve Opens, deg BTC	18	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	252	
Exhaust Valve Opens, deg BBC	57	
Exhaust Valve Closes, deg ATC	15	
Exhaust Valve Duration, deg	252	
Valve Overlap, deg	33	
Distributor Type	Breakerless	
Idle Speed, RPM	750	750
Timing, degrees	16 BTC	6 BTC
Fuel System Type	Carburetor - 4BBL downdraft	
Choke Type	Automatic, electric assist	
Carburetor Barrel Diameter, in.	Primary: 1.38	Secondary: 2.25
Vehicle Emission Control Systems	EGR Catalytic converter Engine modifications Air injection	EGR Catalytic converter Engine modifications Air injection

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation * = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler-360 CID (5.9L)-4BBL (Ref. 20)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Volare	A3	4000	2.71	34.6	YES	13.2	0.21	2.70	789.	1.83	11	0.06	0.10	482.	2.76	18	14
Aspen	A3	4000	3.21	44.4	YES	10.4	0.32	5.90	850.	1.46	10	0.03	0.10	528.	2.34	17	13
Fury	A3	4500	2.71	33.1	YES	14.0	0.26	4.30	784.	1.85	11	0.06	0.10	476.	3.88	19	14
Fury	A3	4500	3.21	41.0	YES	14.0	0.45	8.40	845.	1.66	10	0.06	0.30	535.	2.86	17	12

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler-360 CID (5.9L)-4BBL

(Ref. 21)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Volare	A3	4000	3.21	43.6	YES	13.2	0.36	4.20	757.	1.21	12	0.05	0.30	582.	1.52	15	13
Monaco wagon	A3 w/ lockup	4500	2.71	34.6	YES	10.4	0.29	5.30	760.	1.20	12	0.05	0.30	476.	1.33	19	14
Chrysler	A3 w/ lockup	5000	2.71	33.4	YES	11.3	0.35	5.80	744.	1.48	12	0.07	1.00	448.	1.45	20	14
Monaco wagon	A3 w/ lockup	5000	2.71	33.4	YES	14.7	0.26	4.20	780.	1.41	11	0.04	0.30	505.	1.43	18	13

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.34	
Stroke, in.	3.38	
Displacement, in ³	400	
Compression Ratio	8.2	
Horsepower, BHP at RPM	190 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	305 ft-lb 3200 RPM	N/A ft-lb RPM
Exhaust System Type	Single w/Crossover	
Intake Valve Diameter, in.	2.08	
Intake Valve Lift, in.	.434	
Exhaust Valve Diameter, in.	1.74	
Exhaust Valve Lift, in.	.430	
Intake Valve Opens, deg BTC	20	
Intake Valve Closes, deg ABC	60	
Intake Valve Duration, deg	260	
Exhaust Valve Opens, deg BBC	70	
Exhaust Valve Closes, deg ATC	18	
Exhaust Valve Duration, deg	268	
Valve Overlap, deg	38	
Distributor Type	Breakerless	
Idle Speed, RPM	750	N/A
Timing, degrees	20 BTC	N/A
Fuel System Type	Carburetor - 4BBL downdraft	
Choke Type	Automatic, electric assist	
Carburetor Barrel Diameter, in.	Primary: 1.50	Secondary: 2.25
Vehicle Emission Control Systems	Catalytic converter	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler-400 CID (6.6L)-4BBL (Ref. 23)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	COMB- INED MPG		
							HC	CO	CO ₂	NO _x	HC	CO			CO ₂	NO _x
Monaco	A3	4500	3.21	42.3	YES	14.0	0.48	8.60	802.	1.29	0.06	1.10	611.	2.47	14	12
Monaco wagon	A3	5000	3.21	39.9	YES	14.7	0.52	8.00	833.	1.38	0.05	0.50	624.	2.97	14	12
Monaco	A3 w/ lockup	4500	2.45	31.2	YES	10.4	0.63	10.10	669.	1.61	0.09	0.90	424.	2.37	21	16
Cordoba	A3 w/ lockup	4500	2.45	31.2	YES	13.1	0.53	6.10	699.	1.66	0.08	0.80	435.	2.25	20	15
Chrysler	A3 w/ lockup	5000	2.71	33.4	YES	11.3	0.79	8.40	753.	1.40	0.03	0.80	481.	1.64	18	14

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.31	
Stroke, in.	3.75	
Displacement, in ³	440	
Compression Ratio	8.2	
Horsepower, BHP at RPM	195 BHP 3600 RPM	185 BHP 3600 RPM
Torque, ft-lb at RPM	320 ft-lb 2000 RPM	310 ft-lb 2400 RPM
Exhaust System Type	Single w/Crossover	
Intake Valve Diameter, in.	2.08	
Intake Valve Lift, in.	.434	
Exhaust Valve Diameter, in.	1.74	
Exhaust Valve Lift, in.	.430	
Intake Valve Opens, deg BTC	20	
Intake Valve Closes, deg ABC	60	
Intake Valve Duration, deg	260	
Exhaust Valve Opens, deg BBC	70	
Exhaust Valve Closes, deg ATC	18	
Exhaust Valve Duration, deg	268	
Valve Overlap, deg	38	
Distributor Type	Breakerless	
Idle Speed, RPM	750	750
Timing, degrees	12 BTC	12 BTC
Fuel System Type	Carburetor - 4BBL downdraft	
Choke Type	Automatic, electric assist	
Carburetor Barrel Diameter, in.	Primary: 1.50	Secondary: 2.25
Vehicle Emission Control Systems	Air injection EGR Engine modifications Catalytic converter	Air injection EGR Engine modifications Catalytic converter

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation * = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Chrysler-440 CID (7.2L)-4BBL (Ref. 25)

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Chrysler	A3	5500	2.71	33.4	YES	11.3	0.52	5.00	856.	1.56	10	0.09	0.30	511.	1.88	17	13
Chrysler	A3	5500	2.71	33.6	YES	14.0	1.39	6.10	986.	1.75	9	0.12	0.50	575.	1.46	15	11
Plymouth	A3	5000	2.71	34.6	YES	14.7	0.95	7.50	909.	1.22	10	0.07	0.30	603.	1.55	15	11
Fury	A3	5000	3.21	41.0	YES	14.7	0.48	3.90	945.	1.41	9	0.02	0.10	639.	1.73	14	11

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

8. AMERICAN MOTORS CORPORATION *

This chapter contains specifications and Environmental Protection Agency certifications data for America Motors' passenger car and light truck engines, which are sequenced by ascending CID. When available, associated engine performance analysis information is provided in reverse chronological order.

* See Section 11.5 for references.

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	332/150.6	
No. of Cylinders	4	
Bore, in.	3.4055	
Stroke, in.	3.228	
Displacement, in ³	121	
Compression Ratio	8.2	
Horsepower, BHP at RPM	80 BHP 5000 RPM	80 BHP 5000 RPM
Torque, ft-lb at RPM	105 ft-lb 2800 RPM	105 ft-lb 2800 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.496 - 1.484	
Intake Valve Lift, in.	.402	
Exhaust Valve Diameter, in.	1.299 - 1.287	
Exhaust Valve Lift, in.	.382	
Intake Valve Opens, deg BTC	41.8	
Intake Valve Closes, deg ABC	77.8	
Intake Valve Duration, deg	299.5	
Exhaust Valve Opens, deg BBC	75.3	
Exhaust Valve Closes, deg ATC	63.3	
Exhaust Valve Duration, deg	318.6	
Valve Overlap, deg	105	
Distributor Type	Breaker point	
Idle Speed, RPM	M-900N A-800D	M-900N A-800D
Timing, degrees	M-12BTC A-12BTC	M-12BTC A-12BTC
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	Integral automatic (full electric)	
Carburetor Barrel Diameter, in.	Primary: 1.26	Secondary: 1.42
Vehicle Emission Control Systems	Air Injection Catalytic Converter EGR	Air Injection Catalytic Converter EGR
NOTES:	Ref. 7	Ref. 7

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

N = Neutral

D = Drive

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 AMC-121 CID (2.0L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Gremlin	A3	3000	3.31	44.5	N0	10.3	0.43	7.70	421.	1.75	20	0.04	0.30	306.	2.24	29	24
Gremlin	M4	2750	3.08	41.4	N0	9.9	0.94	9.50	376.	1.16	22	0.01	0.40	251.	1.55	35	27
Gremlin	M4	3000	3.31	46.1	N0	10.3	0.80	6.90	406.	1.55	21	0.08	0.30	267.	1.96	33	25

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

California Certification data is not available

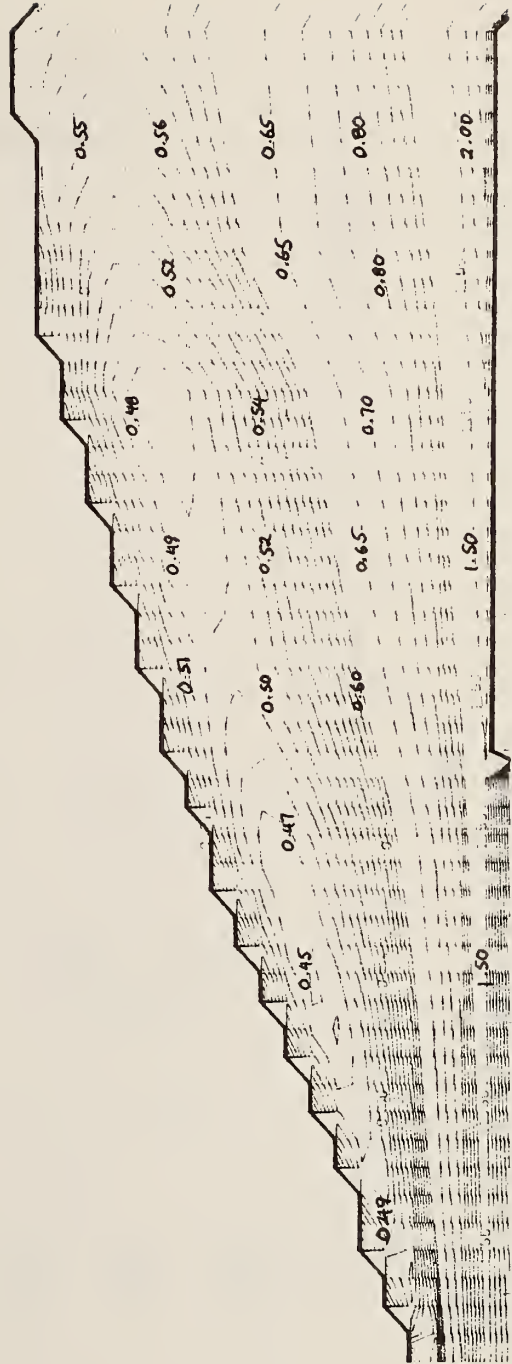
1978 AMC 121 CID (2L) - 2BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

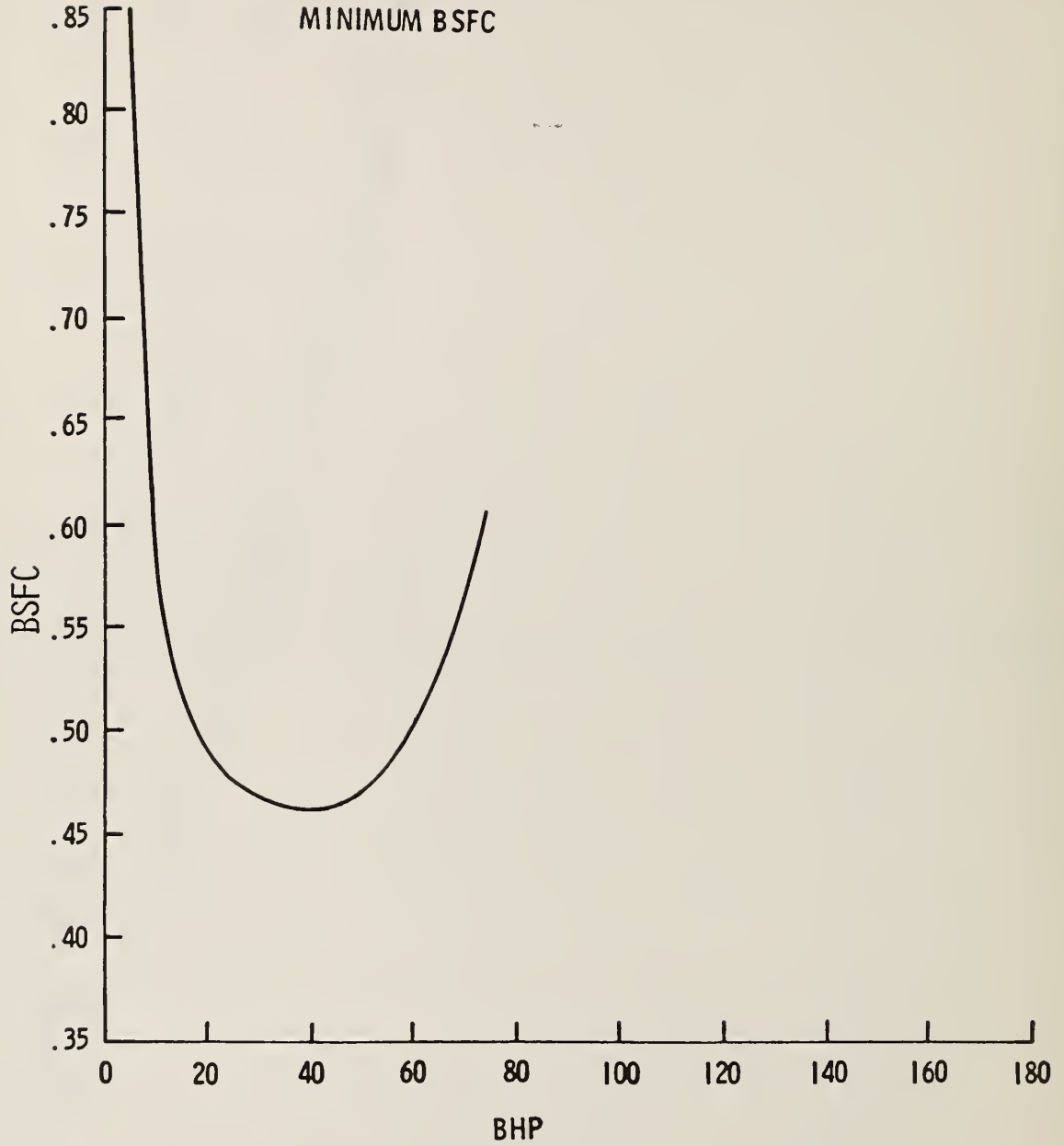
BSFC 121.0 (48)

1079 AM 121.0 115-0 SE



1200.00 1500.00 1000.00 1100.00 1200.00 1300.00 1400.00 1500.00
 1079 AM 121.0 115-0 SE
 BSFC 121.0 (48)

1978 AMC 121.0 CID (2.0L), L4 - 2BBL



BSFC 1075HP-HR

1978 AMC 121.0 HP-0.10

180.00

160.00

140.00

120.00

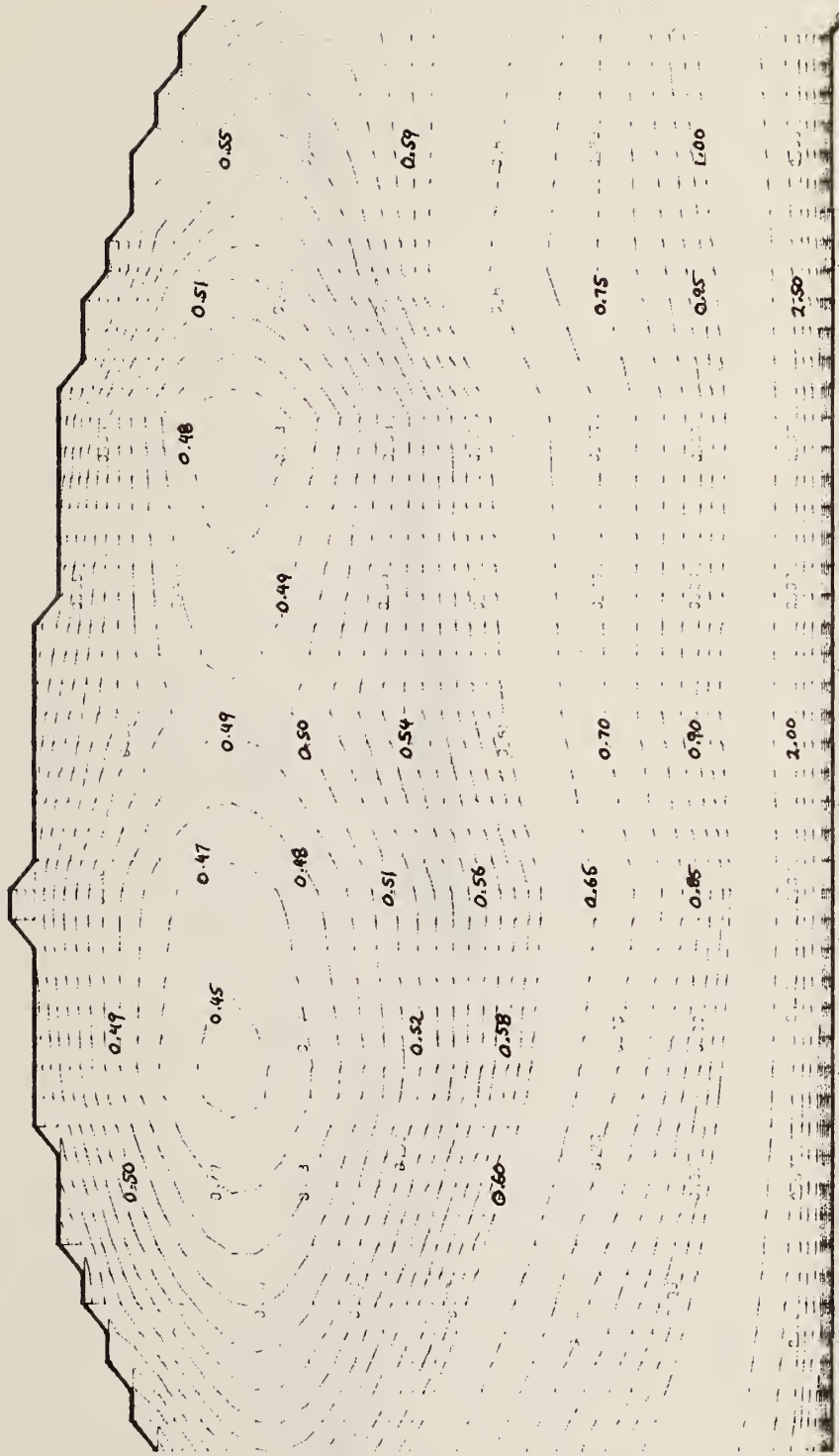
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 1900.00 2000.00 2100.00 2200.00 2300.00 2400.00 2500.00 2600.00
 2700.00 2800.00 2900.00 3000.00 3100.00 3200.00 3300.00 3400.00
 3500.00 3600.00 3700.00 3800.00 3900.00 4000.00 4100.00 4200.00
 4300.00 4400.00 4500.00 4600.00 4700.00 4800.00 4900.00 5000.00
 5100.00 5200.00 5300.00 5400.00 5500.00 5600.00 5700.00 5800.00
 5900.00 6000.00 6100.00 6200.00 6300.00 6400.00 6500.00 6600.00
 6700.00 6800.00 6900.00 7000.00 7100.00 7200.00 7300.00 7400.00
 7500.00 7600.00 7700.00 7800.00 7900.00 8000.00 8100.00 8200.00
 8300.00 8400.00 8500.00 8600.00 8700.00 8800.00 8900.00 9000.00
 9100.00 9200.00 9300.00 9400.00 9500.00 9600.00 9700.00 9800.00
 9900.00 10000.00

E-BSNOX (1978) 1005

1978 AMC 121.0 1005 50

100 000

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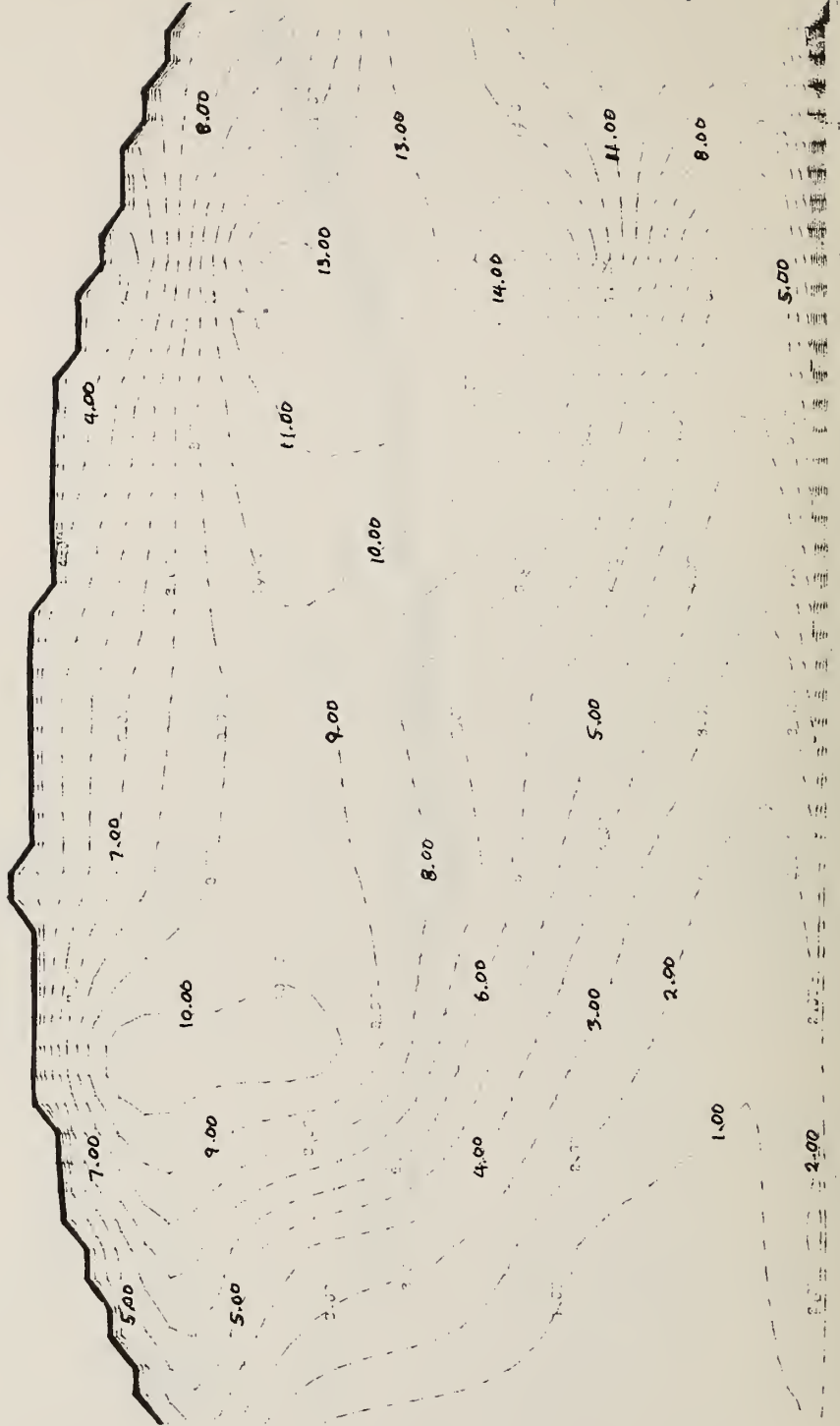
180 000

200 000

220 000

240 000

260 000



2.00

3.00

4.00

5.00

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Not available	
No. of Cylinders	6	
Bore, in.	3.75	
Stroke, in.	3.50	
Displacement, in ³	232	
Compression Ratio	8.0	
Horsepower, BHP at RPM	90 BHP at 3400 RPM	90 BHP at 3400 RPM
Torque, ft-lb at RPM	168 ft-lb 1600 RPM	168 ft-lb 1600 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.787	
Intake Valve Lift, in.	.375	
Exhaust Valve Diameter, in.	1.406	
Exhaust Valve Lift, in.	.375	
Intake Valve Opens, deg BTC	12.12	
Intake Valve Closes, deg ABC	64.80	
Intake Valve Duration, deg	256.92	
Exhaust Valve Opens, deg BBC	53.12	
Exhaust Valve Closes, deg ATC	23.80	
Exhaust Valve Duration, deg	256.92	
Valve Overlap, deg	35.92	
Distributor Type	Breakerless	
Idle Speed, RPM	M-600N A-500D	M-600N A-550D
Timing, degrees	M-8BTC A-10BTC	M-8BTC A-10BTC
Fuel System Type	Carburetor -1BBL downdraft	
Choke Type	Integral Automatic	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	Air Injection *Catalytic Converter EGR Ref. 7	Air Injection Catalytic Converter EGR Ref 7.

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D Drive

N = Neutral

*Not available on
Jeep-CJ-5/CJ-7 and

8-11 Post Office Vehicle

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 AMC-232 CID (3.8L) -1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Concord	A3	3000	2.53	34.8	NO	10.3	0.53	9.00	471.	1.63	18	0.05	0.0	350.	1.40	25	21
Concord	A3	3500	2.53	34.8	NO	11.2	0.49	11.60	455.	1.89	19	0.05	0.10	361.	1.93	24	21
Concord	A3	3500	2.53	34.8	NO	10.3	0.53	9.00	471.	1.63	18	0.05	0.0	350.	1.40	25	21
Pacer	A3	3500	2.73	37.5	NO	11.2	0.49	12.20	478.	1.51	18	0.08	3.40	392.	1.83	22	20
GremLin	M3	3000	2.73	38.0	NO	10.3	0.55	8.50	416.	1.01	21	0.09	0.40	327.	0.90	27	23
Concord	M3	3500	2.73	36.7	NO	11.2	0.78	11.50	422.	1.40	20	0.07	0.30	340.	1.24	26	22
GremLin	M4	3000	2.53	34.0	YES	10.3	0.52	7.50	446.	1.98	19	0.06	0.10	300.	2.13	30	23
Pacer	M4	3500	2.53	34.8	NO	11.2	0.53	7.90	473.	2.02	18	0.09	0.60	343.	2.86	26	21

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	590/267	
No. of Cylinders	6	
Bore, in.	3.75	
Stroke, in.	3.90	
Displacement, in ³	258	
Compression Ratio	8.0	
Horsepower, BHP at RPM	100 BHP 3400 RPM	100 BHP 3400 RPM
Torque, ft-lb at RPM	200 ft-lb 1600 RPM	200 ft-lb 1600 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.787	
Intake Valve Lift, in.	.375	
Exhaust Valve Diameter, in.	1.406	
Exhaust Valve Lift, in.	.375	
Intake Valve Opens, deg BTC	12.12	
Intake Valve Closes, deg ABC	64.80	
Intake Valve Duration, deg	256.92	
Exhaust Valve Opens, deg BBC	53.12	
Exhaust Valve Closes, deg ATC	23.80	
Exhaust Valve Duration, deg	256.92	
Valve Overlap, deg	35.92	
Distributor Type	Breakerless	
Idle Speed, RPM	M-850N A-700D	M-850N A-700D
Timing, degrees	M-6BTC A-8BTC	M-6BTC A-8BTC
Fuel System Type	Carburetor - 1BBL downdraft	
Choke Type	Integral Automatic	
Carburetor Barrel Diameter, in.	1.69	
Vehicle Emission Control Systems	Air Injection *Catalytic Converter EGR Ref. 7	Air Injection Catalytic Converter EGR Ref. 7

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation * Not Available on Jeep-CJ-S/CJ-7

N = Neutral

D = Drive

1978 AMC 258 CID (4.2L)-2BBL
certified for 49 States

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 AMC-258 CID (4.2 L) -1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Pacer	A3	3500	3.08	41.4	YES	12.3	0.31	3.30	692.	1.43	13	0.02	0.0	529.	0.88	17	14
Gremlin	M4	3500	2.73	38.0	YES	12.3	0.29	3.50	655.	0.89	13	0.04	0.0	421.	0.78	21	16

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 AMC-258 CID (4.2 L) -1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				Hwy MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Jeep CJ-S/CJ-7	A3	3500	3.54	40.8	N0	11.2	1.52	15.10	544.	2.23	16	0.59	2.40	444.	2.53	20	17
Jeep CJ-S/CJ-7	M3	3000	3.54	44.4	N0	10.3	1.18	9.60	526.	2.02	16	0.33	2.30	433.	1.67	20	18
Jeep CJ-S/CJ-7	M4	3500	4.09	51.3	N0	11.2	1.26	7.80	640.	2.83	14	0.41	2.80	498.	2.21	18	15

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 AMC-258 CID (4.2 L) -1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Jeep CJ-S/CJ-7	A3	3500	3.54	44.4	YES	16.0	0.47	5.20	666.	1.57	13	0.02	0.30	525.	1.66	17	13
Jeep CJ-S/CJ-7	M3	3000	3.54	44.4	NO	16.0	0.40	4.20	534.	1.89	16	0.06	0.10	474.	1.50	19	17
Jeep CJ-S/CJ-7	M4	3500	4.09	51.3	NO	16.0	0.51	5.20	650.	1.65	13	0.04	0.10	556.	1.81	16	14

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1975 AMC 258 CID (4.2L) - 1BBL

Engine tested by BEREC.

Engine certified for: 49 states, passenger cars, automatic transmission.

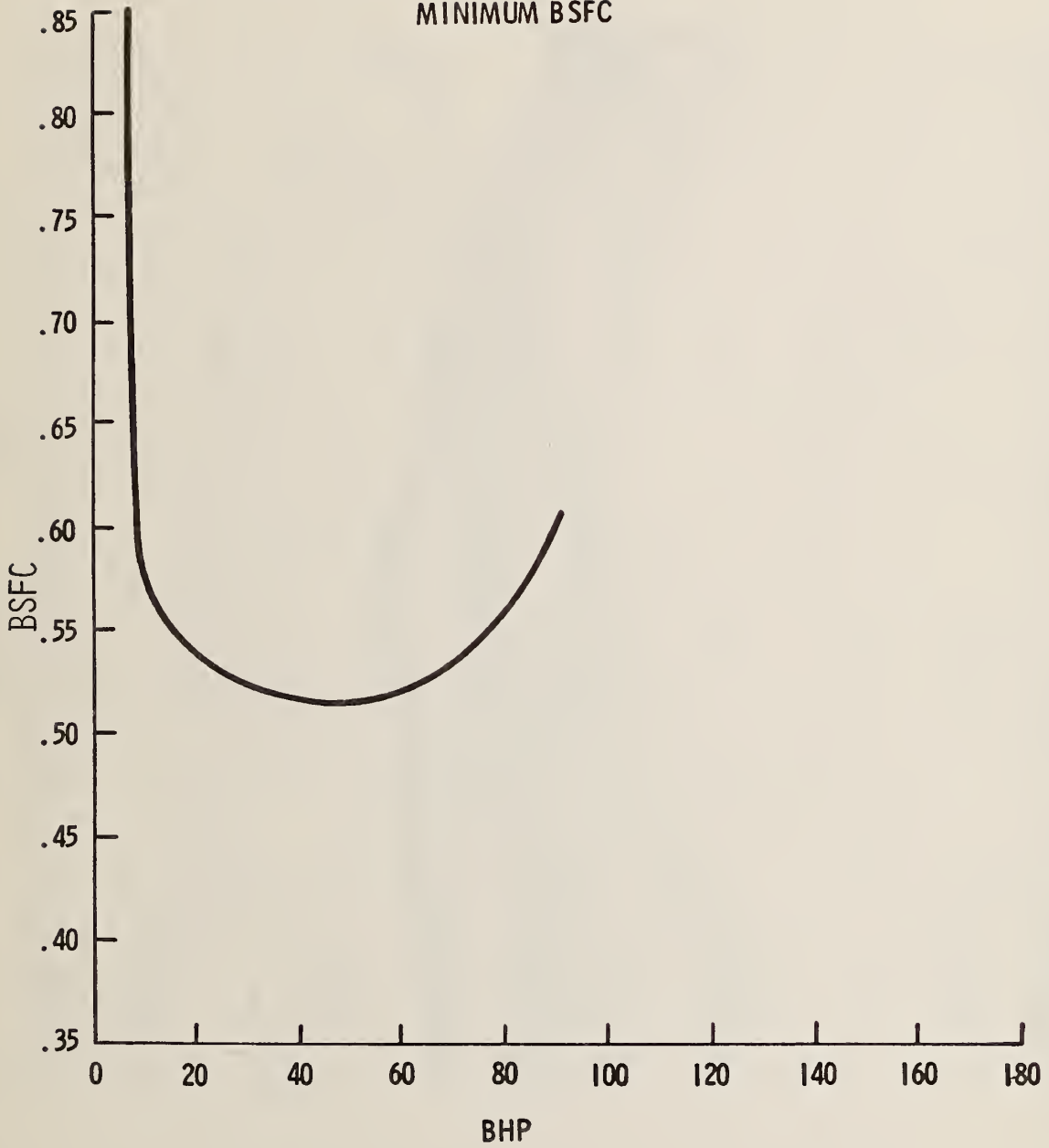
BSFC (LB/BHP-HR)

1975 AMC 258.0 CID-1 BBL



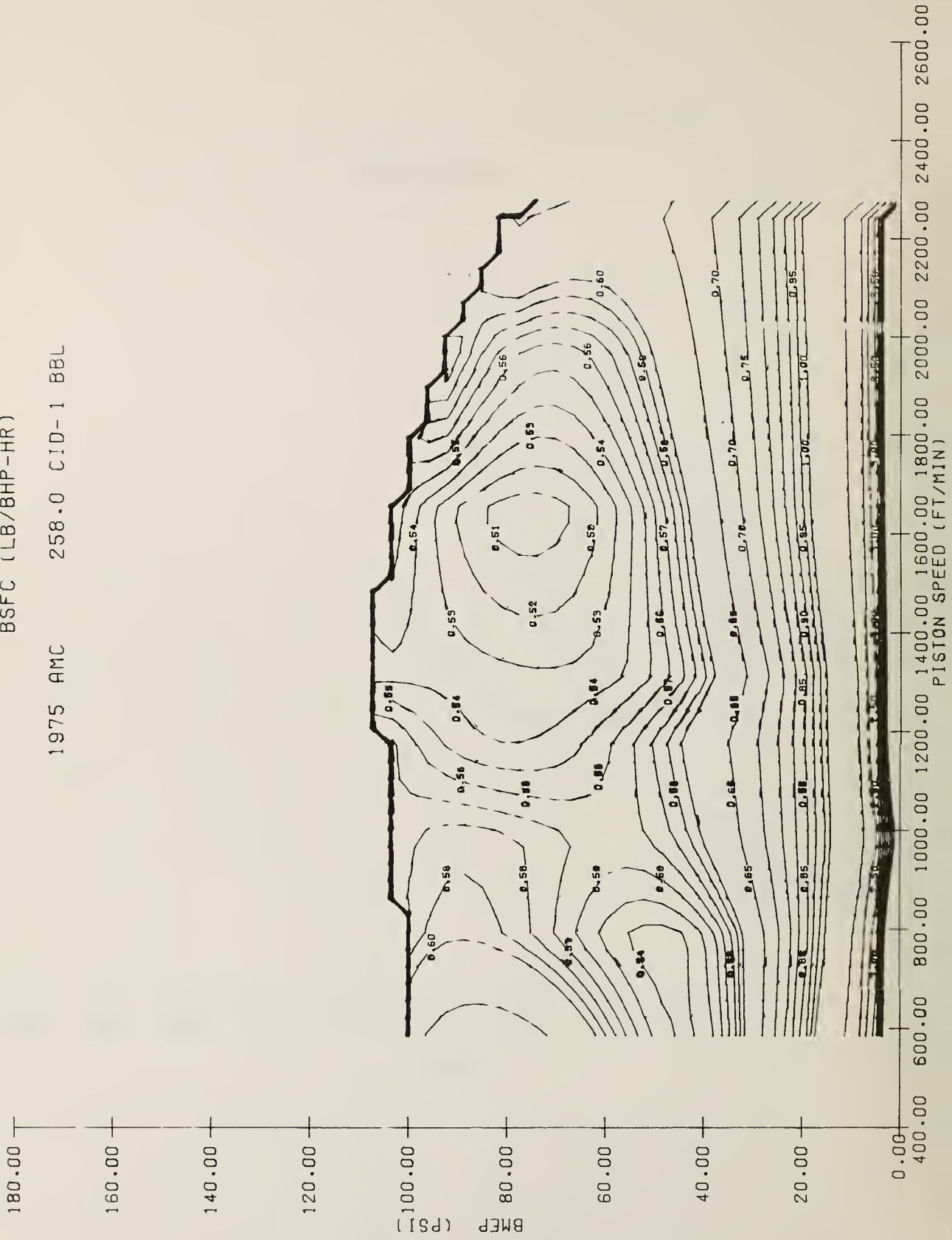
1975 AMC-258 CID(4.2L), L6-1BBL

MINIMUM BSFC



BSFC (LB/BHP-HR)

1975 AMC 258.0 CID-1 BBL



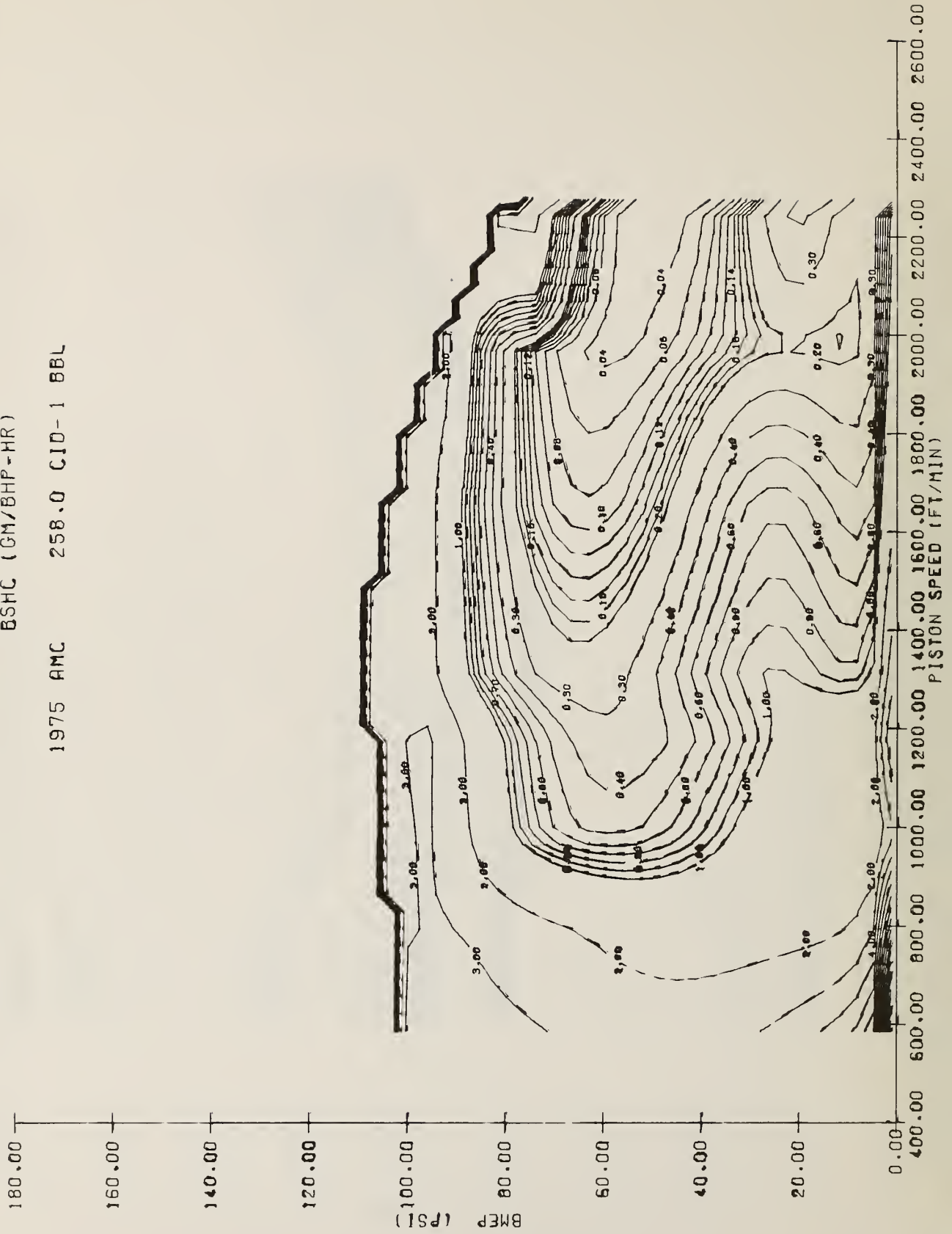
BSCO (GM/BHP-HR)

1975 AMC 258.0 C10-1 BBL



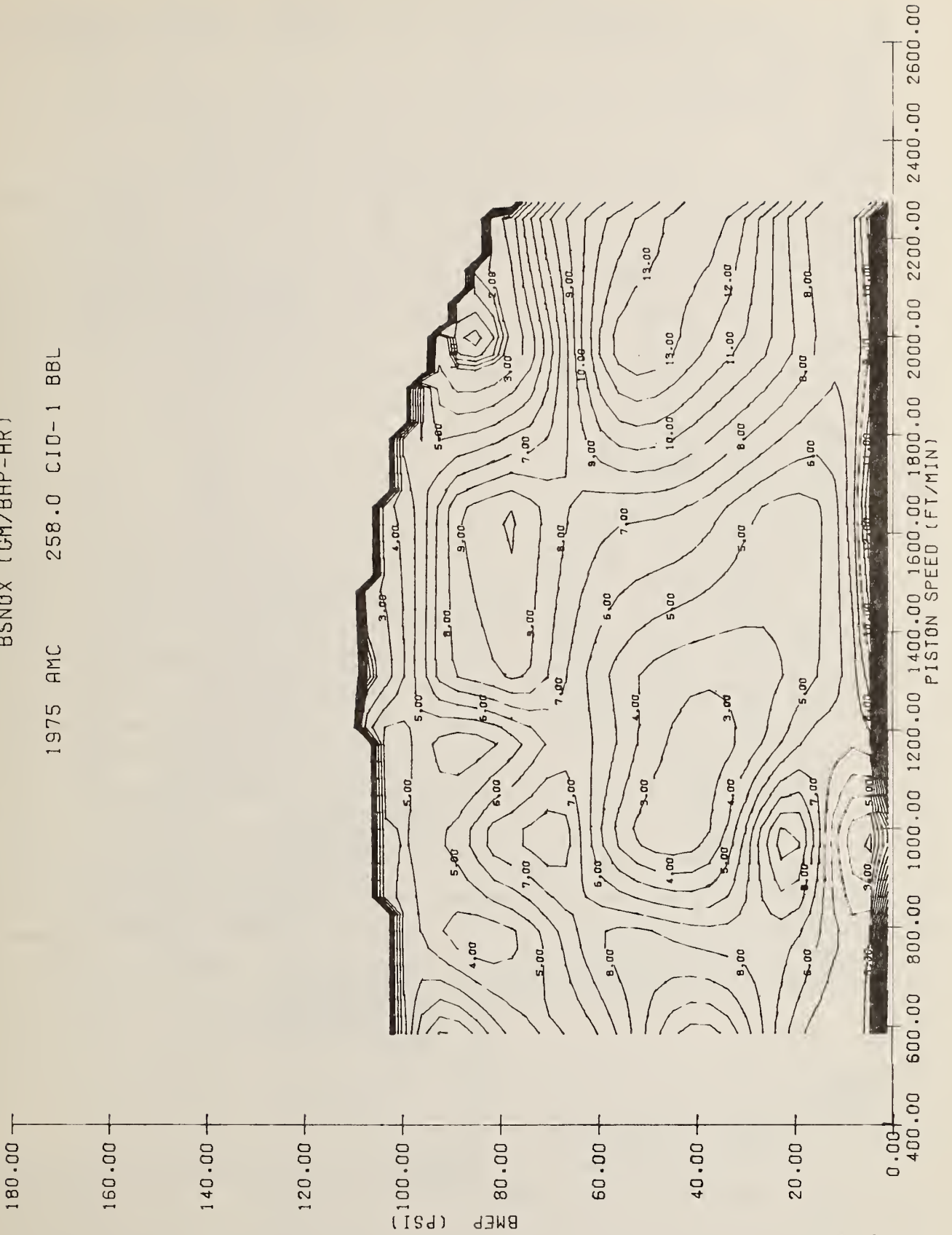
BSHC (GM/BHP-HR)

1975 AMC 258.0 CID-1 BBL



BSNOX (GM/BHP-HR)

1975 AMC 258.0 CID-1 BBL



ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.75	
Stroke, in.	3.90	
Displacement, in ³	258	
Compression Ratio	8.0	
Horsepower, BHP at RPM	120 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	201 ft-lb 1800 RPM	N/A ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.787	
Intake Valve Lift, in.	.400	
Exhaust Valve Diameter, in.	1.406	
Exhaust Valve Lift, in.	.400	
Intake Valve Opens, deg BTC	14.58	
Intake Valve Closes, deg ABC	68.79	
Intake Valve Duration, deg	263.37	
Exhaust Valve Opens, deg BBC	55.59	
Exhaust Valve Closes, deg ATC	27.78	
Exhaust Valve Duration, deg	263.37	
Valve Overlap, deg	42.36	
Distributor Type	Breakerless	
Idle Speed, RPM	M-600N A-600D	N/A
Timing, degrees	M- * A-10BTC	N/A
Fuel System Type	Carburetor - 2BB1 downdraft	
Choke Type	Integral Automatic	
Carburetor Barrel Diameter, in.	1.44	
Vehicle Emission Control Systems	Air Injection Catalytic Converter EGR	N/A
NOTES:	Ref. 7	

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

N = Neutral

D = Automatic

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 AMC-258 CID (4.2 L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Concord	A3	3500	2.73	36.7	YES	12.3	0.40	8.70	564.	1.38	15	0.06	0.60	412.	1.87	22	18
Pacer	A3	3500	2.73	37.5	YES	12.3	0.44	10.90	539.	1.44	16	0.05	0.30	415.	2.16	21	18
Pacer	M4	3500	2.53	34.0	YES	12.3	0.66	8.10	522.	1.82	16	0.11	1.10	355.	2.09	25	19

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	3.75	
Stroke, in.	3.44	
Displacement, in ³	304	
Compression Ratio	8.4	
Horsepower, BHP at RPM	130 BHP 3200 RPM	130 BHP 3200 RPM
Torque, ft-lb at RPM	238 ft-lb 2200 RPM	238 ft-lb 2200 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.787	
Intake Valve Lift, in.	.430	
Exhaust Valve Diameter, in.	1.406	
Exhaust Valve Lift, in.	.430	
Intake Valve Opens, deg BTC	14.75	
Intake Valve Closes, deg ABC	68.75	
Intake Valve Duration, deg	263.30	
Exhaust Valve Opens, deg BBC	56.75	
Exhaust Valve Closes, deg ATC	26.75	
Exhaust Valve Duration, deg	263.50	
Valve Overlap, deg	41.50	
Distributor Type	Breakerless	
Idle Speed, RPM	A-600D M-*	A - 600 M-*
Timing, degrees	A-10BTC M-*	A-10BTC M-*
Fuel System Type	Carburetor -2BBL-downdraft	
Choke Type	Integral Automatic	
Carburetor Barrel Diameter, in.	1.56	
Vehicle Emission Control Systems	Air Injection Catalytic Converter EGR	Air Injection Catalytic Converter EGR
NOTES:	Ref. 7	Ref. 7

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

* = Data not available

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 AMC-304 CID (5.0 L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Jeep CJ-S/CJ-7	A3	4000	3.54	40.8	N0	12.0	0.65	13.60	657.	1.79	13	0.11	0.40	510.	2.89	17	15
Jeep CJ-S/CJ-7	A3	4000	3.54	44.4	N0	12.0	0.71	12.10	671.	2.19	13	0.11	0.10	511.	3.34	17	14
Jeep CJ-S/CJ-7	A3	4000	4.09	51.3	N0	12.0	0.59	10.70	723.	2.14	12	0.08	0.80	630.	3.35	14	13
Jeep CJ-S/CJ-7	M3	3500	3.54	40.8	N0	11.2	0.72	8.80	590.	2.10	15	0.06	0.20	458.	3.75	19	16

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 AMC-304 CID (5.0 L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Jeep CJ-S/CJ-7	A3	4000	3.54	4.44	NO	16.0	0.47	7.50	791.	1.37	11	0.05	1.10	593.	2.81	15	12
Jeep CJ-S/CJ-7	M3	3500	3:54	40.8	YES	16.0	0.29	2.60	680.	1.43	13	0.13	0.20	519.	1.98	17	15
Jeep CJ-S/CJ-7	M3	3500	3.54	44.4	NO	16.0	0.32	2.00	679.	1.61	13	0.09	0.20	505.	2.37	18	15

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. ATR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.08	
Stroke, in.	3.44	
Displacement, in ³	360	
Compression Ratio	8.25	
Horsepower, BHP at RPM	140 . BHP 3350 RPM	140 BHP 3350 RPM
Torque, ft-lb at RPM	278 ft-lb 2000 RPM	278 ft-lb 2000 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	2.025	
Intake Valve Lift, in.	.430	
Exhaust Valve Diameter, in.	4.910	
Exhaust Valve Lift, in.	.430	
Intake Valve Opens, deg BTC	14.75	
Intake Valve Closes, deg ABC	68.75	
Intake Valve Duration, deg	263.30	
Exhaust Valve Opens, deg BBC	56.75	
Exhaust Valve Closes, deg ATC	26.75	
Exhaust Valve Duration, deg	263.50	
Valve Overlap, deg	41.50	
Distributor Type	Breakerless	
Idle Speed, RPM	A-600D M-*	A-600D M-*
Timing, degrees	A-10BTC M-*	A-10BTC M-*
Fuel System Type	Carburetor -2BBL downdraft	
Choke Type	Integral Automatic	
Carburetor Barrel Diameter, in.	1.56	
Vehicle Emission Control Systems	Air Injection Catalytic Converter EGR Ref. 7	Air Injection Catalytic Converter EGR Ref. 7

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 AMC-360 CID (5.9 L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Matador Wagon	A3	4500	3.15	38.2	YES	14.0	0.21	1.50	898.	1.10	10	0.05	0.10	553.	1.84	16	12
Matador Sedan	A3	4500	3.15	41.0	YES	14.0	0.32	2.40	835.	1.25	11	0.04	0.0	563.	2.26	16	12

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

9. INTERNATIONAL HARVESTER CORPORATION *

This chapter contains specifications and Environmental Protection Agency certification data for International Harvester's passenger car and light truck engines, which are sequenced by ascending CID. When available, associated engine performance analysis information is provided in reverse chronological order.

* See Section 11.6 for references.

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	*	
Stroke, in.	*	
Displacement, in ³	196	
Compression Ratio	*	
Horsepower, BHP at RPM	86 BHP RPM	* BHP RPM
Torque, ft-lb at RPM	* ft-lb RPM	* ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	Electronic Ignition	
Idle Speed, RPM	*	
Timing, degrees	*	
Fuel System Type	Carburetor - 1BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	*	*

NOTES:

- A = Automatic transmission
- M = Manual transmission
- EGR = Exhaust gas recirculation

1978 INTERNATIONAL HARVESTER-NISSAN 198 CID (3.2L)

Diesel-F.I.

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.27	
Stroke, in.	3.94	
Displacement, in ³	198	
Compression Ratio	22:1	
Horsepower, BHP at RPM	96 BHP RPM	* BHP RPM
Torque, ft-lb at RPM	137.5 ft-lb RPM	* ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, RPM	650	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	*	*

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*Data not available

Ref. 11.6.1

and

Ref. 11.4.27

1978 International Harvester -304 CID (5.0 L) -2BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	*	
Stroke, in.	*	
Displacement, in ³	304	
Compression Ratio	*	
Horsepower, BHP at RPM	144 BHP RPM	* BHP RPM
Torque, ft-lb at RPM	* ft-lb RPM	* ft-lb RPM
Exhaust System Type	Dual	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Carburetor -2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	*	*

NOTES:

- A = Automatic transmission
- M = Manual transmission
- EGR = Exhaust gas recirculation
- *Data not available

Ref. 1

1978 International Harvester-345 CID (5.7 L) -2BBL

ENGINE PARAMETER	49 STATES			CALIFORNIA		
Engine Wt. lbs/kg	*					
No. of Cylinders	8					
Bore, in.	*					
Stroke, in.	*					
Displacement, in ³	345					
Compression Ratio	*					
Horsepower, BHP at RPM	163	BHP	RPM	*	BHP	RPM
Torque, ft-lb at RPM	*	ft-lb	RPM	*	ft-lb	RPM
Exhaust System Type	Dual					
Intake Valve Diameter, in.	*					
Intake Valve Lift, in.	*					
Exhaust Valve Diameter, in.	*					
Exhaust Valve Lift, in.	*					
Intake Valve Opens, deg BTC	*					
Intake Valve Closes, deg ABC	*					
Intake Valve Duration, deg	*					
Exhaust Valve Opens, deg BBC	*					
Exhaust Valve Closes, deg ATC	*					
Exhaust Valve Duration, deg	*					
Valve Overlap, deg	*					
Distributor Type	*					
Idle Speed, RPM	*			*		
Timing, degrees	*			*		
Fuel System Type	Carburetor -2BBL downdraft					
Choke Type						
Carburetor Barrel Diameter, in.						
Vehicle Emission Control Systems	*			*		

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*Data not available

Ref. 1



10. FOREIGN MANUFACTURERS *

This chapter contains specifications and Environmental Protection Agency certification data for foreign manufacturers' passenger car and light truck engines, which are sequenced by ascending CID. When available, associated engine performance analysis information is provided in reverse chronological order.

* See Section 11.7 for references.

*1977 Alfa Romeo-120 CID (2.0L)-Fuel Injection

Ref. 1

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.307	
Stroke, in.	3.484	
Displacement, in ³	120	
Compression Ratio	9	
Horsepower, BHP at RPM	110 BHP 5500 RPM	110 BHP 5500 RPM
Torque, ft-lb at RPM	122 ft-lb 4000 RPM	122 ft-lb 4000 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.735	
Intake Valve Lift, in.	.378	
Exhaust Valve Diameter, in.	1.581	
Exhaust Valve Lift, in.	.378	
Intake Valve Opens, deg BTC	28	34
Intake Valve Closes, deg ABC	70	58
Intake Valve Duration, deg	272	272
Exhaust Valve Opens, deg BBC	63	51
Exhaust Valve Closes, deg ATC	15	27
Exhaust Valve Duration, deg	258	258
Valve Overlap, deg	37	49
Distributor Type	Breaker-Point	
Idle Speed, RPM	M:700+ 100	M:700+ 100
Timing, degrees	M:6+1 TDC @ Idle-Hot.	M:5+1 BTC 2 Idle
Fuel System Type	Fuel Injection	
Choke Type	Automatic on pump governor, w/Electromagnet at starting, thermostat	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Air Injection	Air Injection Oxidation Catalyst

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* - 1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1976 Alfa Romeo-120 CID(2.0L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
2000 Spider	M5	2750	4.55	63.4	NO		1.02	12.8	485.	.978	17	.074	3.60	368.	.723	24	20
Alfetta Berlinta	M5	3000	4.10	61.3	YES		1.44	14.8	448.	.951	19	.149	3.58	350.	.679	25	21

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data not available

*1976 Audi-97 CID(1.6L)-Fuel Injection

Ref. 2

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.13	
Stroke, in.	3.15	
Displacement, in ³	97	
Compression Ratio	8.0	
Horsepower, BHP at RPM	79 BHP 5500 RPM	77 BHP 5500 RPM
Torque, ft-lb at RPM	89 ft-lb 3300 RPM	89 ft-lb 3300 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.34	
Intake Valve Lift, in.	.406	
Exhaust Valve Diameter, in.	1.22	
Exhaust Valve Lift, in.	.406	
Intake Valve Opens, deg BTC	4	
Intake Valve Closes, deg ABC	46	
Intake Valve Duration, deg	230	
Exhaust Valve Opens, deg BBC	44	
Exhaust Valve Closes, deg ATC	6	
Exhaust Valve Duration, deg	230	
Valve Overlap, deg	10	
Distributor Type	Breaker-Point	
Idle Speed, RPM	925	925
Timing, degrees	3 ATC @ 925 RPM	3 ATC @ 925 RPM
Fuel System Type	Fuel Injection	
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel injection Exhaust Gas- Recirculation	Fuel injection Catalytic converter EGR
NOTES:	Ref. 33	Ref. 33

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Audi-97 CID(1.6L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Fox Wagon	A3	2500	3.91	50.0	YES	8.8	0.13	0.90	385.	1.08	23	0.05	0.50	272.	0.53	32	27
Fox	M4	2500	4.11	56.5	YES	8.8	0.10	1.00	394.	1.17	22	0.02	0.0	237.	2.02	37	27

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	5	
Bore, in.	3.13	
Stroke, in.	3.402	
Displacement, in ³	131	
Compression Ratio	8.0	
Horsepower, BHP at RPM	103 BHP 5500 RPM	* BHP RPM
Torque, ft-lb at RPM	110 ft-lb 4000 RPM	* ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	
Timing, degrees	*	
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel injection EGR	Fuel injection EGR Catalytic converter

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Ref. 32

Ref. 32

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Audi-131 CID(2.2L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
5000	A3	3000	3.91	56.4	YES	11.3	1.26	6.00	514.	1.87	17	0.77	3.20	366.	2.22	24	19
5000	M4	3000	4.11	56.7	YES	11.3	1.27	7.60	589.	1.91	15	0.80	3.30	388.	3.30	22	17

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Audi-131 CID(2.2L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
5000	A3	3000	3.91	56.4	YES	11.3	0.21	2.00	562.	1.26	16	0.07	0.10	393.	1.61	22	18
5000	M4	3000	4.11	56.7	YES	11.3	0.20	1.60	535.	1.25	16	0.04	0.10	355.	1.58	25	19

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	627/285	
No. of Cylinders	8	
Bore, in.	4.00	
Stroke, in.	3.48	
Displacement, in ³	350	
Compression Ratio	8.2	
Horsepower, BHP at RPM	180 BHP 4000 RPM	180 BHP 4000 RPM
Torque, ft-lb at RPM	270 ft-lb 2400 RPM	270 ft-lb 2400 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.935-1.945	
Intake Valve Lift, in.	.3900	
Exhaust Valve Diameter, in.	1.495-1.505	
Exhaust Valve Lift, in.	.4100	
Intake Valve Opens, deg BTC	28	
Intake Valve Closes, deg ABC	72	
Intake Valve Duration, deg	280	
Exhaust Valve Opens, deg BBC	78	
Exhaust Valve Closes, deg ATC	30	
Exhaust Valve Duration, deg	288	
Valve Overlap, deg	58	
Distributor Type	High Energy Ignition System	
Idle Speed, RPM	*	
Timing, degrees	A+M-6 BTC	A-8BTC M-6BTC
Fuel System Type	Carburetor - 4BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	Primary: 1.38	Secondary: 2.25
Vehicle Emission Control Systems	Catalytic converter EGR	Catalytic converter EGR
NOTES:	Ref. 33	Ref. 33

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.50	
Stroke, in.	3.15	
Displacement, in ³	121	
Compression Ratio	8.1	
Horsepower, BHP at RPM	110 BHP 5800 RPM	96 BHP 5500 RPM
Torque, ft-lb at RPM	176 ft-lb 5500 RPM	106 ft-lb 3500 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.81	
Intake Valve Lift, in.	.346	
Exhaust Valve Diameter, in.	1.496	
Exhaust Valve Lift, in.	.350	
Intake Valve Opens, deg BTC	4	
Intake Valve Closes, deg ABC	52	
Intake Valve Duration, deg	236	
Exhaust Valve Opens, deg BBC	52	
Exhaust Valve Closes, deg ATC	4	
Exhaust Valve Duration, deg	236	
Valve Overlap, deg	8	
Distributor Type	Breaker Point	
Idle Speed, RPM	A+M 900 \pm 50N	A+M 900 \pm 50N
Timing, degrees	A+M-25BTC @ 2200 RPM	A+M-25BTC @ 2400 RPM
Fuel System Type	K-Jetronic Fuel Injection	
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Air injection Fuel injection EGR	Air injection Fuel injection Thermal reactor EGR
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* 1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 BMW-121 CID(2.0L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
320 I	A3	2750	3.64	55.8	YES	10.9	0.87	9.70	478.	1.44	18	0.21	3.40	355.	0.96	26	21
320 I	M4	2750	3.64	54.1	YES	10.9	1.14	7.80	453.	1.82	19	0.47	4.10	303.	2.24	28	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 BMW-121 CID(2.0L) Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
320 I	A3	2750	3.64	55.8	YES	10.9	0.20	4.70	474.	1.10	18	0.0	0.30	329.	0.80	27	21
320 I	M4	2750	3.64	54.1	YES	10.9	0.25	5.00	495.	1.06	18	0.01	1.10	328.	1.24	27	21

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	6	
Bore, in.	3.504	
Stroke, in.	3.15	
Displacement, in ³	182	
Compression Ratio	8.1	
Horsepower, BHP at RPM	175 BHP 5500 RPM	175 BHP 5500 RPM
Torque, ft-lb at RPM	192 ft-lb 4500 RPM	192 ft-lb 4500 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.811	
Intake Valve Lift, in.	.354	
Exhaust Valve Diameter, in.	1.496	
Exhaust Valve Lift, in.	.354	
Intake Valve Opens, deg BTC	26	
Intake Valve Closes, deg ABC	66	
Intake Valve Duration, deg	272	
Exhaust Valve Opens, deg BBC	66	
Exhaust Valve Closes, deg ATC	26	
Exhaust Valve Duration, deg	272	
Valve Overlap, deg	52	
Distributor Type	Breaker Point	
Idle Speed, RPM	A+M-900 + 50N	A+M-900 + 50N
Timing, degrees	A+M-22BTC @ 1700 RPM	A+M-22BTC @ 2700RPM
Fuel System Type	L-Jetronic	Fuel Injection
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Air injection Fuel injection EGR Thermal reactor	Air injection Fuel injection EGR Thermal reactor
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission
M = Manual transmission
EGR = Exhaust gas recirculation
N = Neutral

*1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 BMW-182 CID(3.0L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
530 I	A3	3500	3.45	49.4	YES	12.3	0.38	12.50	607.	1.68	14	0.0	0.60	454.	1.63	20	17
530 I	M4	3500	3.45	48.0	YES	12.3	0.32	13.10	610.	1.56	14	0.01	3.20	347.	1.28	25	17

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 BMW-182 CID(3.0L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
530 I	A3	3500	3.45	49.4	YES	12.3	0.35	7.00	646.	1.31	14	0.01	0.60	489.	1.30	18	15
530 I	M4	3500	3.45	48.0	YES	12.3	0.19	7.20	655.	1.16	13	0.01	0.60	441.	1.05	20	16

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.504	
Stroke, in.	3.386	
Displacement, in ³	196	
Compression Ratio	9.0	
Horsepower, BHP at RPM	197 BHP 5500 RPM	197 BHP 5500 RPM
Torque, ft-lb at RPM	206 ft-lb 4300 RPM	206 ft-lb 4300 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems		
Certification data not available		

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	2.902	
Stroke, in.	3.445	
Displacement, in ³	91	
Compression Ratio	7.5	
Horsepower, BHP at RPM	53 BHP 5000 RPM	53 BHP 5000 RPM
Torque, ft-lb at RPM	69 ft-lb 2500 RPM	69 ft-lb 2500 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.38	
Intake Valve Lift, in.	.353	
Exhaust Valve Diameter, in.	1.17	
Exhaust Valve Lift, in.	.349	
Intake Valve Opens, deg BTC	18	
Intake Valve Closes, deg ABC	58	
Intake Valve Duration, deg	256	
Exhaust Valve Opens, deg BBC	58	
Exhaust Valve Closes, deg ATC	18	
Exhaust Valve Duration, deg	256	
Valve Overlap, deg	36	
Distributor Type	Breakerless	
Idle Speed, RPM	800	800
Timing, degrees	2BTC @ Idle	2 BTC @ Idle
Fuel System Type	Carburetor - 1BBL sidedraft	
Choke Type	Manual	
Carburetor Barrel Diameter, in.	1.5	
Vehicle Emission Control Systems	Air injection Catalytic converter EGR	Air injection Catalytic converter EGR
	Ref. 34	Ref. 34

NOTES: (1) Ref. 31

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* 1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 British Leyland Triumph-MG-91 CID(1.5L)-1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Spitfire	M4	2250	3.89	59.4	N0	8.8	0.39	0.80	348.	1.57	25	0.11	0.10	255.	2.44	35	29
Spitfire	M4 w/OD	2250	3.89	59.4	N0	8.8	0.39	0.80	348.	1.57	25	0.09	0.0	216.	2.25	41	31
Midget	M4	2250	3.91	60.8	N0	8.8	0.35	1.50	399.	1.04	22	0.08	0.30	263.	0.98	34	26

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1976 British Leyland Triumph MG-91 CID(1.5L)-1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG			
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x	
Spitfire	M4	2250	3.89	59.9	N0		.458	1.44	357.	1.47	25	.044	.349	289.	2.32	31	27	
Midget	M4	2250	3.91	60.8	N0		.338	1.50	415.	1.45	21	.047	.170	295.	2.20	30	24	

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.161 (1)	
Stroke, in.	3.504 (1)	
Displacement, in ³	110	
Compression Ratio	8.0 (1)	
Horsepower, BHP at RPM	63 BHP 4600 (1)RPM	(1) 63 BHP 4600 RPM
Torque, ft-lb at RPM	88 ft-lb 2500(1)RPM	(1) 88 ft-lb 2500 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.56	
Intake Valve Lift, in.	.36	
Exhaust Valve Diameter, in.	1.34	
Exhaust Valve Lift, in.	.36	
Intake Valve Opens, deg BTC	5	
Intake Valve Closes, deg ABC	45	
Intake Valve Duration, deg	230	
Exhaust Valve Opens, deg BBC	51	
Exhaust Valve Closes, deg ATC	21	
Exhaust Valve Duration, deg	252	
Valve Overlap, deg	26	
Distributor Type	Breakerless	
Idle Speed, RPM	850	850
Timing, degrees	10BTC @ 1500RPM	10BTC @ 1500RPM
Fuel System Type	Carburetor-1BBL Sidedraft	
Choke Type	Automatic, bimetal	
Carburetor Barrel Diameter, in.	1.75	
Vehicle Emission Control Systems	Air injection Catalytic converter EGR	Air injection Catalytic converter EGR
NOTES:	Ref. 33	Ref. 33

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1)- Ref. 31

*-1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 British Leyland-MG-110 CID(1.8L)-1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
MGB	M4	2750	3.91	45.0	N0	9.9	0.14	4.00	498.	1.19	18	0.05	0.20	306.	2.66	29	21
MGB	M4 w/OD	2750	3.91	45.0	N0	9.9	0.14	4.00	498.	1.19	18	0.06	0.60	262.	2.06	34	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 British Leyland-MG-110 CID(1.8L)-1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
MGB	M4	2750	3.91	45.5	N0	9.9	0.15	3.20	476.	1.16	18	0.04	0.70	306.	2.04	29	22
MGB	M4 w/OD	2750	3.91	45.5	N0	9.9	0.15	3.20	476.	1.16	18	0.04	0.60	269.	1.67	33	23

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS
*-1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	2.94	
Stroke, in.	2.992	
Displacement, in ³	122	
Compression Ratio	9.25	
Horsepower, BHP at RPM	90 BHP 4700 RPM	90 BHP 4700 RPM
Torque, ft-lb at RPM	116 ft-lb 3400 RPM	116 ft-lb 3400 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	800-850	800-850
Timing, degrees	4 ATC	4 ATC
Fuel System Type	2 Carburetor - 1BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air injection Catalytic converter EGR Ref. 34	Air injection Catalytic converter EGR Ref. 34

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation * Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 British Leyland Triumph-122 CID(2.0L)-2x1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x
TR7	A3	2750	3.27	50.0	YES	10.9	0.46	7.40	398.	1.84	0.07	0.60	318.	2.58	28	24
TR7	M4	2750	3.64	55.5	YES	10.9	0.24	1.20	380.	1.31	0.05	0.10	301.	1.33	29	25
TR7	M5	2750	3.90	57.9	YES	10.9	0.24	1.40	428.	1.34	0.04	0.10	304.	1.29	29	24

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

1978 British Leyland Triumph-215 CID(3.5L)-2BBL

ENGINE PARAMETER	49 STATES		CALIFORNIA	
Engine Wt. lbs/kg	*			
No. of Cylinders	*			
Bore, in.	*			
Stroke, in.	*			
Displacement, in ³	215			
Compression Ratio	8.1			
Horsepower, BHP at RPM	133 BHP	RPM	BHP	RPM
Torque, ft-lb at RPM	* ft-lb	RPM	ft-lb	RPM
Exhaust System Type	*			
Intake Valve Diameter, in.	*			
Intake Valve Lift, in.	*			
Exhaust Valve Diameter, in.	*			
Exhaust Valve Lift, in.	*			
Intake Valve Opens, deg BTC	*			
Intake Valve Closes, deg ABC	*			
Intake Valve Duration, deg	*			
Exhaust Valve Opens, deg BBC	*			
Exhaust Valve Closes, deg ATC	*			
Exhaust Valve Duration, deg	*			
Valve Overlap, deg	*			
Distributor Type	*			
Idle Speed, RPM	*			
Timing, degrees	*			
Fuel System Type	Carburetor-2BBL			
Choke Type	*			
Carburetor Barrel Diameter, in.	*			
Vehicle Emission Control Systems	Air injection Catalytic converter EGR		Air injection Catalytic converter EGR	
NOTES:	Ref. 32		Ref. 32	

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
 FOR
 1978 British Leyland Triumph-215 CID(3.5L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			Hwy MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
TR-8	A3	3000	3.08	45.8	YES	11.3	0.30	1.20	588.	1.00	15	0.11	0.20	409.	1.77	22	17
TR-8	M5 w/OD	3000	3.08	38.1	YES	11.3	0.35	1.10	568.	1.12	16	0.14	0.0	348.	1.75	26	19

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA

FOR

1978 British Leyland-Triumph-215 CID(3.5L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
TR-8	A3	3000	3.08	45.8	YES	11.3	0.24	2.70	615.	0.81	14	0.03	0.10	432.	1.49	20	17
TR-8	M5 w/OD	3000	3.08	38.1	YES	11.3	0.16	1.40	595.	0.66	15	0.03	0.10	371.	1.01	24	18

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	6	
Bore, in.	3.624	
Stroke, in.	4.173	
Displacement, in ³	258	
Compression Ratio	7.5	
Horsepower, BHP at RPM	162 BHP 4750 RPM	162 BHP 4750 RPM
Torque, ft-lb at RPM	225 ft-lb 2500 RPM	225 ft-lb 2500 RPM
Exhaust System Type	Dual	
Intake Valve Diameter, in.	1.748	
Intake Valve Lift, in.	.387/.389	
Exhaust Valve Diameter, in.	1.626	
Exhaust Valve Lift, in.	.387/.389	
Intake Valve Opens, deg BTC	17	
Intake Valve Closes, deg ABC	59	
Intake Valve Duration, deg	256	
Exhaust Valve Opens, deg BBC	59	
Exhaust Valve Closes, deg ATC	17	
Exhaust Valve Duration, deg	256	
Valve Overlap, deg	34	
Distributor Type	Transistorized	
Idle Speed, RPM	A-750N	A-750N
Timing, degrees	A-8 BTC	A-8BTC
Fuel System Type	2-Carburetors-/Zenith-/Stromberg	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.748	
Vehicle Emission Control Systems	Air injection EGR Oxidizing catalyst	Air injection EGR Oxidizing catalyst

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation * 1978 Data not available

N = Neutral

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	12	
Bore, in.	3.543	
Stroke, in.	2.756	
Displacement, in ³	326	
Compression Ratio	7.8	
Horsepower, BHP at RPM	245 BHP 5250 RPM	245 BHP 5250 RPM
Torque, ft-lb at RPM	269 ft-lb 4500 RPM	269 ft-lb 4500 RPM
Exhaust System Type	Dual	
Intake Valve Diameter, in.	1.625	
Intake Valve Lift, in.	.387/.389	
Exhaust Valve Diameter, in.	1.394	
Exhaust Valve Lift, in.	.387/.389	
Intake Valve Opens, deg BTC	13	
Intake Valve Closes, deg ABC	55	
Intake Valve Duration, deg	248	
Exhaust Valve Opens, deg BBC	55	
Exhaust Valve Closes, deg ATC	13	
Exhaust Valve Duration, deg	248	
Valve Overlap, deg	26	
Distributor Type	Transistorized	
Idle Speed, RPM	A-750M	A-750N
Timing, degrees	A-10BTC	A-10BTC
Fuel System Type	Electronic Fuel Injection	
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Electronic Fuel Injection EGR Oxidizing catalyst Air Injection	Electronic Fuel Injection EGR Oxidizing catalyst Air Injection

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

N = Neutral

*-1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 British Leyland-Jaguar-326 CID(5.3L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x	NO _x
XJ	A3	4500	3.31	43.5	YES	11.3	0.58	6.90	919.	1.17	10	0.06	1.10	646.	0.87	14	11
XJ-5	M4	4000	3.31	43.5	YES	11.7	1.07	12.90	766.	1.12	11	0.07	0.98	539.	1.02	16	13

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1976 British Leyland-Jaguar-326 CID(5.3L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	COMB- INED MPG	
							HC	CO	CO ₂	NO _x	HC	CO			CO ₂
XJ12L Series 2	A	4500	3.31	43.5	YES	.524	4.88	903.	1.05	.073	4.42	673.	.636	13	11
XJ5	A	4500	3.31	43.5	YES	.657	8.03	955.	2.22	.025	.058	613.	1.35	14	11

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	3.937	
Stroke, in.	3.350	
Displacement, in ³	326	
Compression Ratio	8.3	
Horsepower, BHP at RPM	340 BHP 5600 RPM	340 BHP 5600 RPM
Torque, ft-lb at RPM	400 ft-lb 4500 RPM	400 ft-lb 4500 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	
Timing, degrees	*	
Fuel System Type	4-Carburetors-2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air injection Catalytic converter	Air injection Catalytic converter

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Ref. 34

Ref. 34

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1976 British Leyland-AML-326 CID(5.3L)-4x2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	Hwy MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Aston Martin	A	4500	3.07	35.7	YES		.654	1.74	966.	1.81	9	.045	.012	642.	.977	14	11

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
 - b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
 - c. AIR CONDITIONING SIMULATION
 - d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS
- *-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1976 British Leyland-AML-326 CID(5.3L)4x2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x		
Aston Martin	A	4500	3.07	35.0	YES	.654	1.74	966.	1.81	9	.045	.012	642.	.977	14	11

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
 - b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
 - c. AIR CONDITIONING SIMULATION
 - d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS
- *-1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	3.189	
Stroke, in.	2.795	
Displacement, in ³	179	
Compression Ratio	8.8	
Horsepower, BHP at RPM	240 BHP 6600 RPM	240 BHP 6600 RPM
Torque, ft-lb at RPM	195 ft-lb 5000 RPM	195 ft-lb 5000 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	
Timing, degrees	*	
Fuel System Type	4-Carburetors-2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	*	*
Certification data not available		

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.39	
Stroke, in.	2.19	
Displacement, in ³	78.7	
Compression Ratio	8.5	
Horsepower, BHP at RPM	62 BHP 6000 RPM	61 BHP 5800 RPM
Torque, ft-lb at RPM	67 ft-lb 4000 RPM	67 ft-lb 4000 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.42	
Intake Valve Lift, in.	.347	
Exhaust Valve Diameter, in.	1.22	
Exhaust Valve Lift, in.	.343	
Intake Valve Opens, deg BTC	10	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	54	
Exhaust Valve Closes, deg ATC	10	
Exhaust Valve Duration, deg	244	
Valve Overlap, deg	20	
Distributor Type	Breaker Point	
Idle Speed, RPM	825 \pm 25	825 \pm 25
Timing, degrees	0 BTC	0 BTC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	.865	
Vehicle Emission Control Systems	Air injection	Air injection Catalytic converter
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*-1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Fiat-78.7 CID(1.3L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
128	M4	2250	3.76	61.	N0	8.8	.67	10.80	385.	1.28	22	0.18	4.80	258.	1.91	33	26
128	M4	2250	3.76	61.	N0	8.8	.66	10.40	399.	1.45	21	0.17	2.50	257.	2.33	34	25
X1/9	M4	2250	4.42	66.	N0	8.8	.66	8.30	480.	1.52	18	0.09	2.40	310.	1.98	28	21

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Fiat-78.7 CID(1.3L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
128	M4	2250	3.76	51.0	N0	8.8	0.20	3.80	404.	1.06	22	0.01	0.20	291.	1.75	30	25
128	M4	2250	3.76	51.0	N0	8.8	0.24	3.80	403.	1.15	22	0.01	0.30	260.	1.66	34	26
X1/9	M4	2250	4.08	51.0	N0	8.8	0.16	4.20	438.	1.03	20	0.01	0.60	302.	1.40	29	23

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.307	
Stroke, in.	3.118	
Displacement, in ³	107	
Compression Ratio	8.0	
Horsepower, BHP at RPM	86 BHP 6200 RPM	(1) 83 BHP 5800 RPM
Torque, ft-lb at RPM	90 ft-lb 2800 RPM	(1) 89 ft-lb 2800 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air injection EGR Catalytic converter (LanciaBeta only)	Air injection EGR Catalytic converter
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation (1)-1977 Fiat-Model Specifications-131
Station Wagon

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Fiat-107 CID(1.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	COMB- INED MPG	
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Lancia Beta	A3	3000	4.33	63.0	YES	11.3	0.24	5.00	517.	1.11	17	0.31	11.90	433.	0.91	20	18
131 Mirafiori	A3	2750	4.44	66.0	YES	10.9	0.71	11.50	486.	1.54	18	0.11	3.20	382.	1.93	23	20
124 Sport	M5 w/OD	2500	4.30	56.0	NO	9.4	0.65	8.90	456.	1.25	19	0.07	3.50	310.	1.70	28	22
131 Mirafiori	M5 w/OD	2750	4.10	53.0	YES	10.9	0.91	9.00	492.	1.19	17	0.10	2.80	327.	1.66	27	21
Lancia Beta	M5 w/OD	3000	4.36	59.0	YES	11.3	0.83	6.90	517.	1.49	17	0.12	0.70	367.	1.96	24	19

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Fiat-107 CID(1.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		HC	CO	CO ₂			NO _x	NO _x
Lancia Beta	A3	3000	4.33	53.0	YES	11.3	0.24	5.00	517.	1.11	17	0.31	11.90	433.	0.91	20	18
124 Sport	M5 w/OD	2500	4.30	56.0	NO	9.4	0.30	3.30	523.	0.98	17	0.01	0.30	343.	1.29	26	20
131 Mirafiori	M5 w/OD	2750	4.10	53.0	YES	10.9	0.22	2.40	475.	1.10	18	0.01	0.20	333.	1.34	27	21
Lancia Beta	M5 w/OD	3000	4.36	59.0	YES	11.3	0.27	2.30	573.	1.15	15	0.0	0.10	407.	1.60	22	18

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FIAT 140 CID (2.3L) Diesel - F.I.
(Pre-Production Engine)

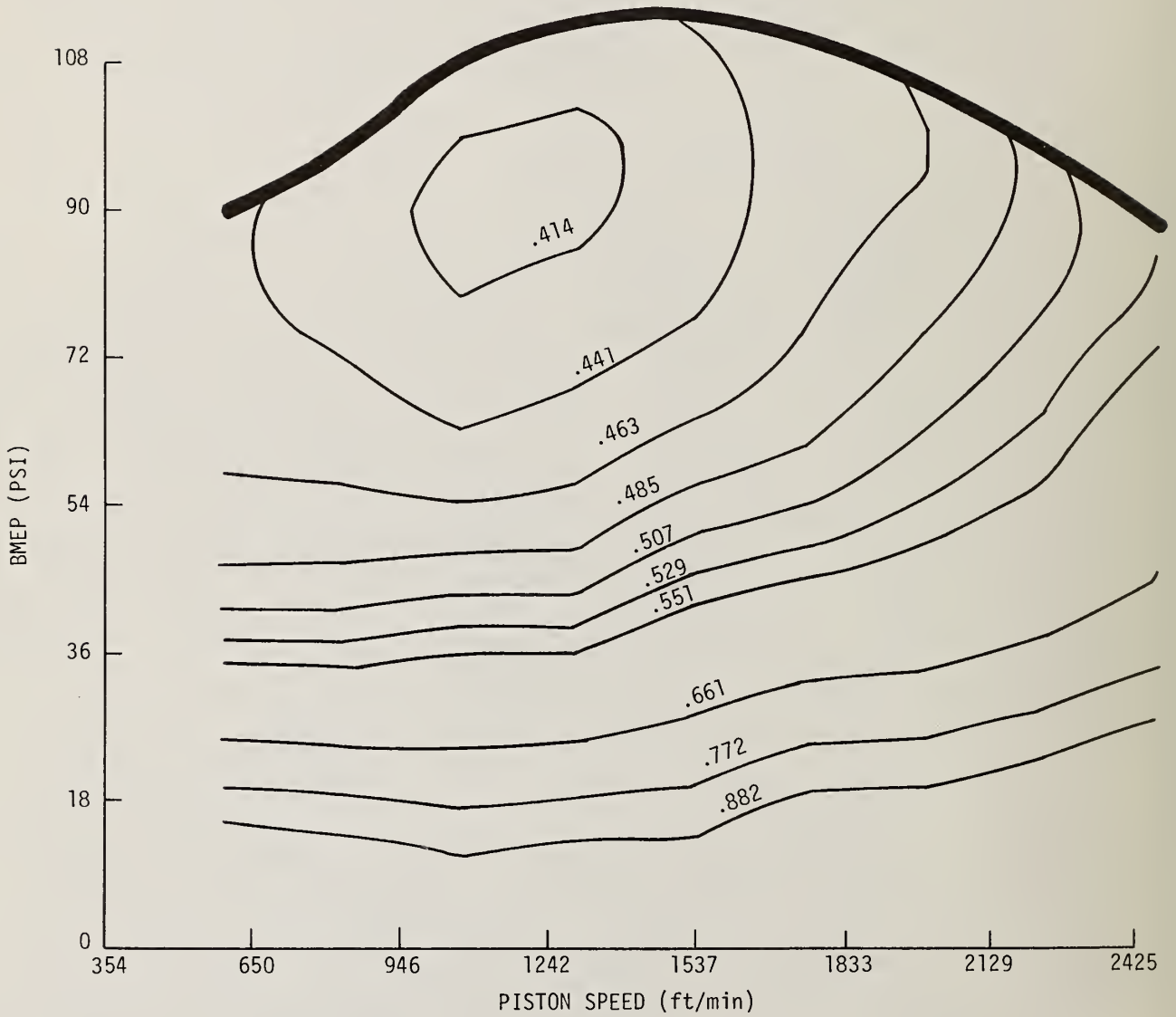
ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	L 4	
Bore, in.	3.661	(93 mm)
Stroke, in.	3.543	(90 mm)
Displacement, in ³	140	
Compression Ratio	22	
Horsepower, BHP at RPM	65 BHP 4100 RPM	BHP RPM
Torque, ft-lb at RPM	107 ft-lb 2400 RPM	ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, rpm	650	
Timing Degrees	10°BTDC	
Fuel System Type	F.I.	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection	

NOTE: A = Automatic
(1) Static Injection Timing
* Data not available

SOURCE: Fiat

FIAT - 140 CID (2.3L), DIESEL - F.I.
(PRE-PRODUCTION ENGINE)

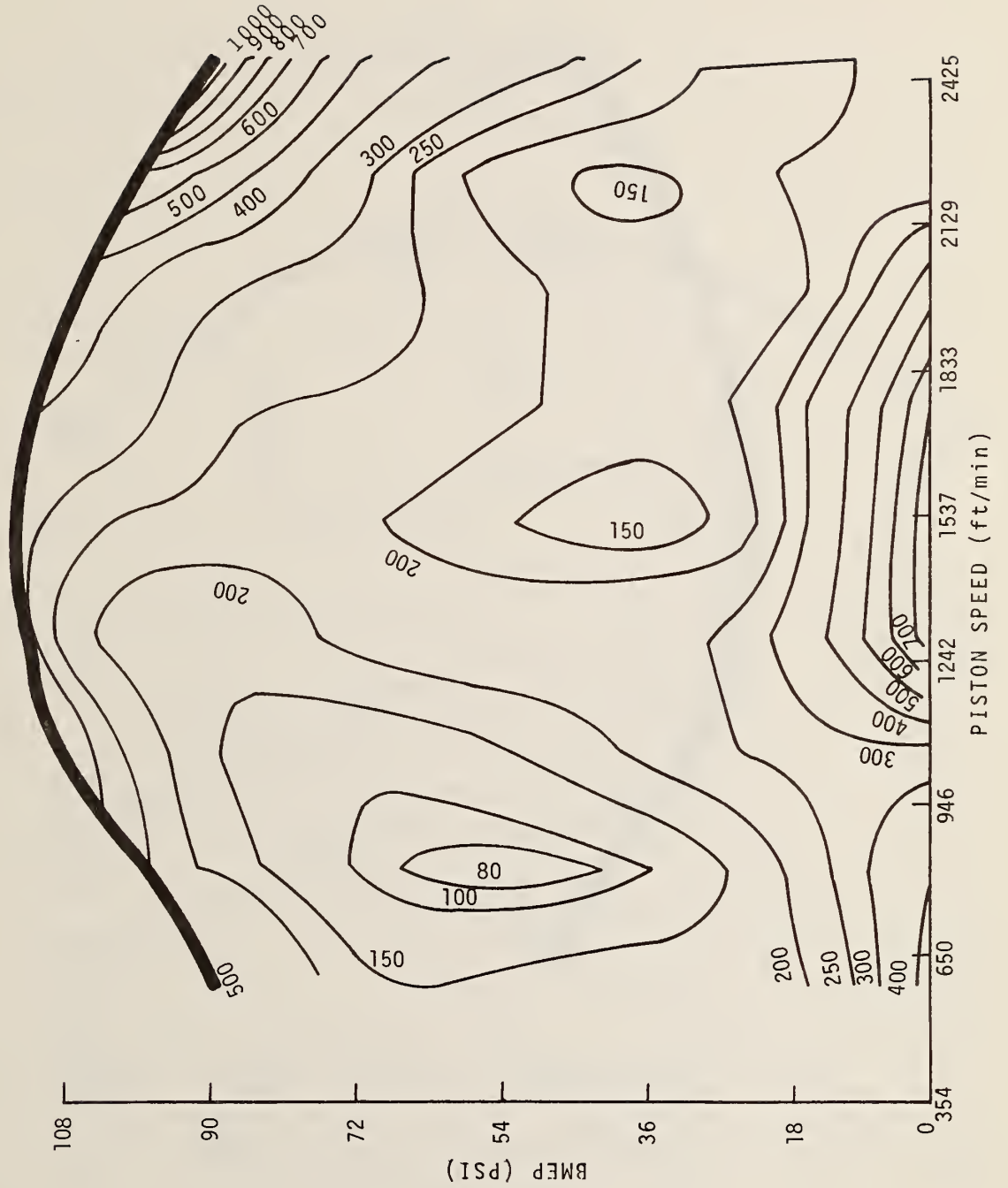
$$\text{BSFC} \left(\frac{\text{LB}}{\text{BHP-HR}} \right)$$



SOURCE: Fiat

FIAT - 140 CID (2.3L), DIESEL - F.I.
(PRE-PRODUCTION ENGINE)

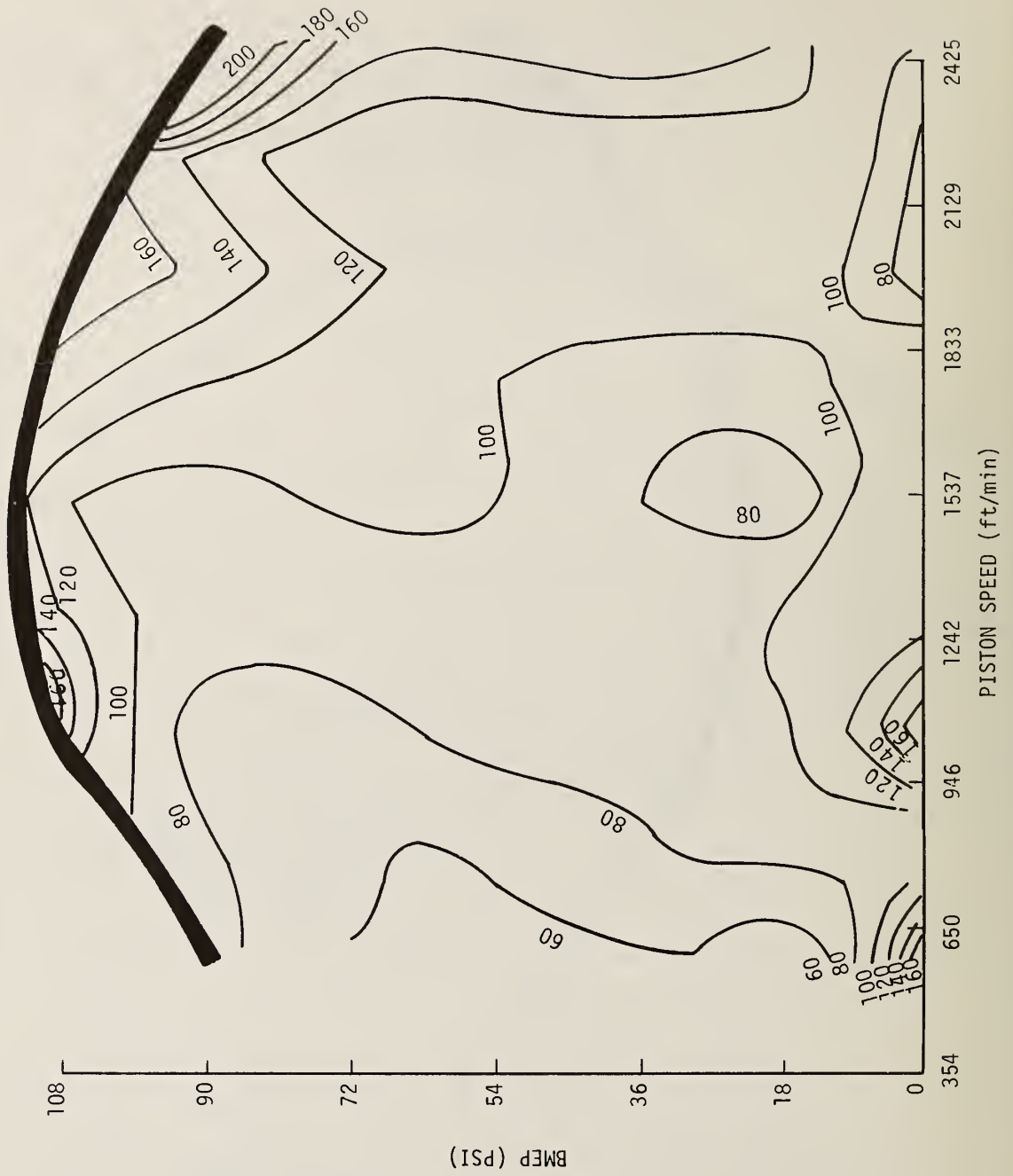
E - CO (PPM)



SOURCE: Fiat

FIAT - 140 CID (2.3L), DIESEL - F.I.
(PRE-PRODUCTION ENGINE)

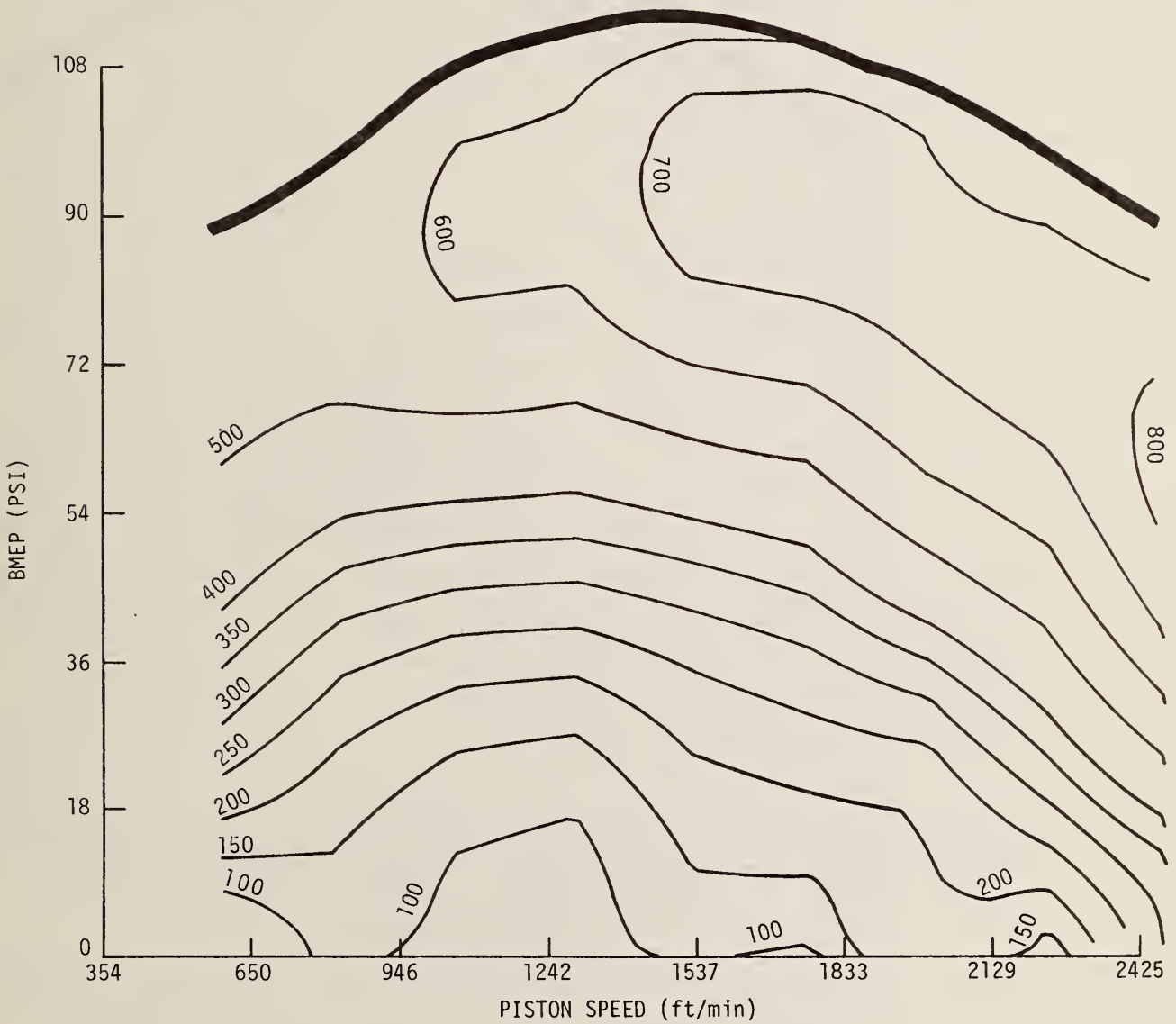
E - HC (PPM)



SOURCE: Fiat

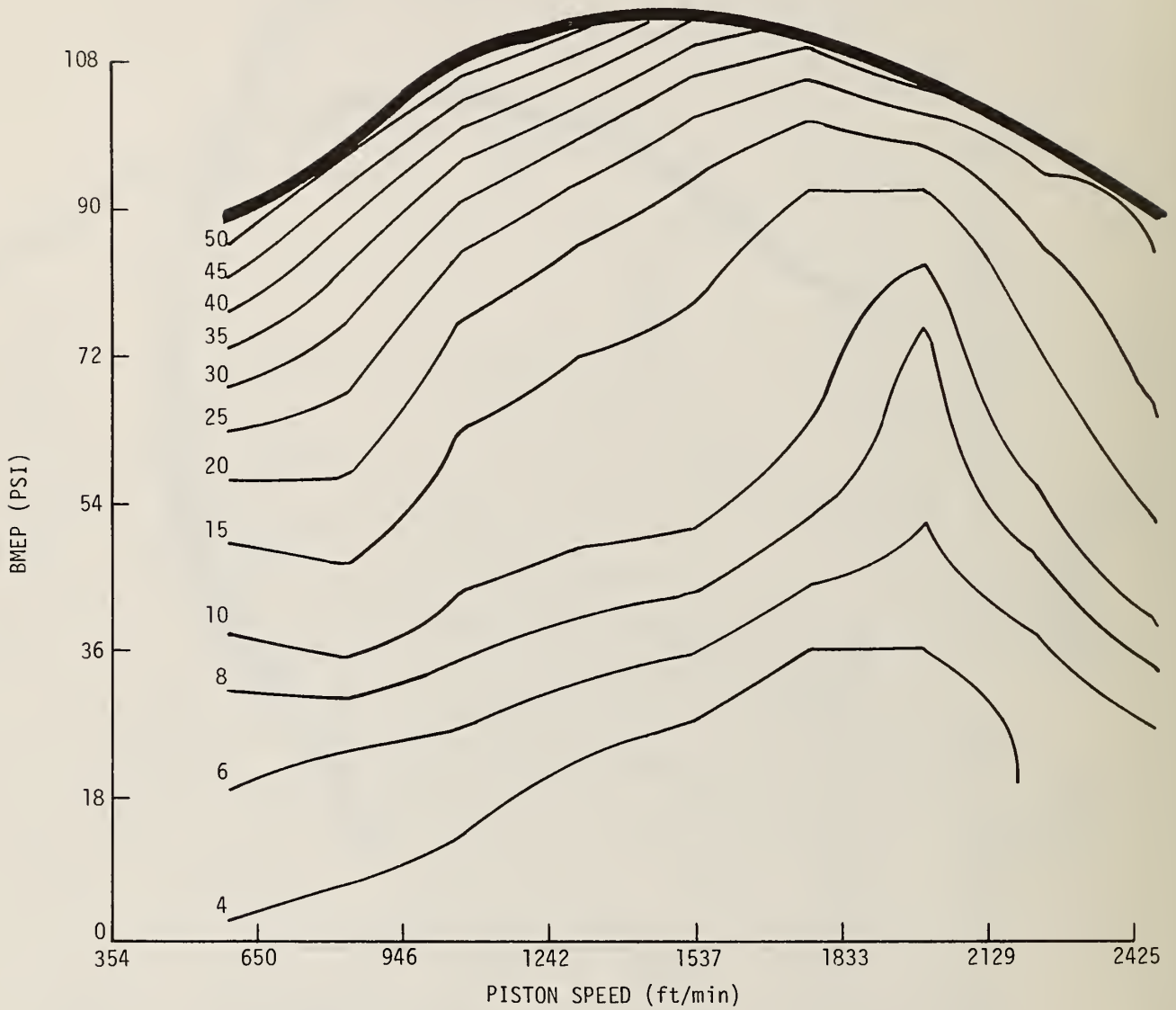
FIAT - 140 CID (2.3L), DIESEL - F.I.
(PRE-PRODUCTION ENGINE)

E - NO_x (PPM)



SOURCE: Fiat

FIAT - 140 CID (2.3L), DIESEL - F.I.
(PRE-PRODUCTION ENGINE)
SMOKE (Hartridge Smoke Units)*



* H.S.U. = percent opacity for an 18 inch path.

SOURCE: Fiat

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.622	
Stroke, in.	2.362	
Displacement, in ³	97.3	
Compression Ratio	8.5	
Horsepower, BHP at RPM	67 BHP 5200 RPM	67 BHP 5200 RPM
Torque, ft-lb at RPM	81 ft-lb 2400 RPM	81 ft-lb 2400 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.56	
Intake Valve Lift, in.	.315	
Exhaust Valve Diameter, in.	1.36	
Exhaust Valve Lift, in.	.315	
Intake Valve Opens, deg BTC	24	
Intake Valve Closes, deg ABC	64	
Intake Valve Duration, deg	268	
Exhaust Valve Opens, deg BBC	70	
Exhaust Valve Closes, deg ATC	18	
Exhaust Valve Duration, deg	268	
Valve Overlap, deg	42	
Distributor Type	Breaker Point	
Idle Speed, RPM	A-900N or P	A-900N or P
Timing, degrees	A-8BTC @ Idle	A-8BTC @ Idle
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	2.32	
Vehicle Emission Control Systems	Air injection EGR	Air injection EGR
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation P - Park

N - Neutral

*-1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Fuji (Subaru)-97.3 CID(1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Subaru	A3	2250	3.81	59.0	N0	8.2	0.60	6.90	330.	1.26	26	0.01	0.50	267.	0.98	33	29
Subaru	A3	2500	3.81	59.0	N0	8.7	0.69	8.00	341.	1.44	25	0.01	0.50	273.	1.04	32	28
Subaru	M4	2250	3.70	59.0	N0	8.2	1.21	9.20	265.	1.69	31	0.05	2.00	213.	1.28	41	35
Subaru Wagon	M4	2500	3.70	59.0	N0	8.7	0.84	10.20	304.	1.69	26	0.02	1.10	236.	1.34	37	31
Subaru Wagon	M4	2500	3.89	52.0	N0	8.7	0.85	10.80	328.	1.75	26	0.02	1.10	248.	1.37	36	29
Subaru	M5	2250	3.70	45.0	N0	8.2	1.19	9.20	263.	1.62	32	0.10	2.70	181.	1.30	48	37
Subaru	M5	2500	3.70	45.0	N0	8.7	0.93	10.50	300.	1.67	28	0.06	2.10	217.	1.73	40	32

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Fuji (Subaru)-97.3 CID(1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Subaru	A3	2250	3.81	59.0	N0	8.2	0.35	5.10	403.	1.09	22	0.01	0.40	317.	0.82	28	24
Subaru	A3	2500	3.81	59.0	N0	8.7	0.36	5.30	411.	1.20	21	0.02	0.40	332.	0.74	27	23
Subaru	M4	2250	3.70	59.0	N0	8.2	0.25	4.70	389.	1.02	22	0.01	0.40	269.	0.69	33	26
Subaru Wagon	M4	2500	3.70	59.0	N0	8.7	0.24	3.50	406.	1.17	22	0.01	0.30	274.	0.89	32	25
Subaru Wagon	M4	2500	3.89	62.0	N0	8.7	0.29	4.10	447.	1.07	20	0.01	0.40	302.	0.88	29	23
Subaru	M5	2250	3.70	45.0	N0	8.2	0.30	4.90	387.	1.06	22	0.02	1.00	226.	0.89	39	28
Subaru	M5	2500	3.70	45.0	N0	8.7	0.29	3.60	401.	1.25	22	0.03	1.10	230.	1.17	38	27

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*1977 Honda - 75.5 CID (1.2 L) - 2bb1

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data Not Available	
No. of Cylinders	4	
Bore, in.	2.83	
Stroke, in.	2.992	
Displacement, in ³	75.5	
Compression Ratio	8.1	
Horsepower, BHP at RPM	(1) 55 BHP5,000 RPM	N/A BHP RPM
Torque, ft-lb at RPM	(1) 67 ft-lb2,500 RPM	N/A ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.339	
Intake Valve Lift, in.	.343	
Exhaust Valve Diameter, in.	1.181	
Exhaust Valve Lift, in.	.335	
Intake Valve Opens, deg BTC	31	
Intake Valve Closes, deg ABC	61	
Intake Valve Duration, deg	272	
Exhaust Valve Opens, deg BBC	72	
Exhaust Valve Closes, deg ATC	32	
Exhaust Valve Duration, deg	284	
Valve Overlap, deg	63	
Distributor Type	Breaker Point	
Idle Speed, RPM	A&M - 750	N/A
Timing, degrees	A&M - OTDC	N/A
Fuel System Type	Carburetor - 2bb1 downdraft	
Choke Type	Manual	
Carburetor Barrel Diameter, in.	Priamry: 1.181	Secondary: 1.024
Vehicle Emission Control Systems	Air Injection	N/A

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1) = Ref. 31

* = 1978 Data Not Available

*1977 Honda CVCC (1) 90.8 CID (1.5 L) - 3BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	235/106	
No. of Cylinders	4	
Bore, in.	2.913	
Stroke, in.	3.406	
Displacement, in ³	90.8	
Compression Ratio	7.9	
Horsepower, BHP at RPM	63 BHP 5,000 RPM	63 BHP 5,000 RPM
Torque, ft-lb at RPM	77 ft-lb 3,000 RPM	77 ft-lb 3,000 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.378 ± .004 - .472 ± .004 Aux	
Intake Valve Lift, in.	.382 - .118 Aux	
Exhaust Valve Diameter, in.	1.102 ± .004	
Exhaust Valve Lift, in.	.382	
Intake Valve Opens, deg BTC	43	8 Aux
Intake Valve Closes, deg ABC	89	48 Aux
Intake Valve Duration, deg	312	2.205 Aux
Exhaust Valve Opens, deg BBC	94	
Exhaust Valve Closes, deg ATC	48	
Exhaust Valve Duration, deg	322	
Valve Overlap, deg	91	56 Aux
Distributor Type	Breaker Point	
Idle Speed, RPM	M-750-850N A-650-750S	Same as 49 States
Timing, degrees	See Below	See Below
Fuel System Type	Carburetor - 3bbl downdraft	
Choke Type	Manual	
Carburetor Barrel Diameter, in.	Primary: 1.102 Secondary: 1.339 Aux: .472	
Vehicle Emission Control Systems	Engine Modifications	Engine Modifications
	Honda CVCC System	Honda CVCC System
	Engine Serial No. ED 3-35, ED 4-40	ED 3-30, ED 3-39, ED 4-30, ED 4-39
Distributor Type	SGA, SGC, SGD, WBA	2BTC @ 800 RPM
	SGE	2BTC @ 700 RPM
	WBB	2BTC @ 700 RPM

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1) Controlled Vortex Combustion Chamber

S = Second Gear

N = Neutral

* = 1978 Data Not Available

10-60 Aux = Auxiliary Intake Valve

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

* 1977 Honda CVCC - 90.8 CID (1.5 L) - 3BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x	
Civic CVCC Wagon	M4	2250	4.43	58.4	N0	8.8	0.92	4.60	283.	1.74	30	0.12	1.90	213.	2.36	41	34	
Civic CVCC Wagon	Semi Auto	2250	4.12	62.0	N0	8.8	0.39	4.40	317.	1.49	27	0.15	1.20	275.	1.60	32	29	
Civic	M4	2000	3.88	51.0	N0	8.3	1.38	6.30	215.	1.52	39	0.29	2.00	174.	3.52	50	43	
Civic	M5	2000	3.88	51.0	N0	8.3	1.38	6.20	203.	1.39	41	0.33	1.90	159.	2.92	54	46	
Civic CVCC	Semi Auto	2000	4.12	58.0	N0	8.3	0.91	3.80	270.	1.70	32	0.16	2.50	233.	2.27	37	34	

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data Not Available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Honda CVCC 90.8 CID (1.5 L) - 3B3L

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Civic CVCC Wagon	M4 Semi Auto	2250	4.43	58.4	N0	8.8	0.25	3.00	315.	1.19	28	0.02	0.60	239.	1.48	37	31
Civic CVCC Wagon	M4 Semi Auto	2250	4.12	62.0	N0	8.8	0.27	4.10	353.	1.18	25	0.01	0.80	275.	1.40	32	27
Civic	M4	2000	4.07	53.6	N0	8.3	0.29	2.60	249.	1.25	35	0.03	1.10	191.	2.69	46	39
Civic	M5	2000	4.07	53.6	N0	8.3	0.30	2.80	253.	1.18	34	0.06	1.30	171.	2.32	51	40
Civic CVCC	Semi Auto	2000	4.12	58.0	N0	8.3	0.27	3.20	311.	1.37	28	0.02	1.20	258.	2.16	34	30

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data Not Available

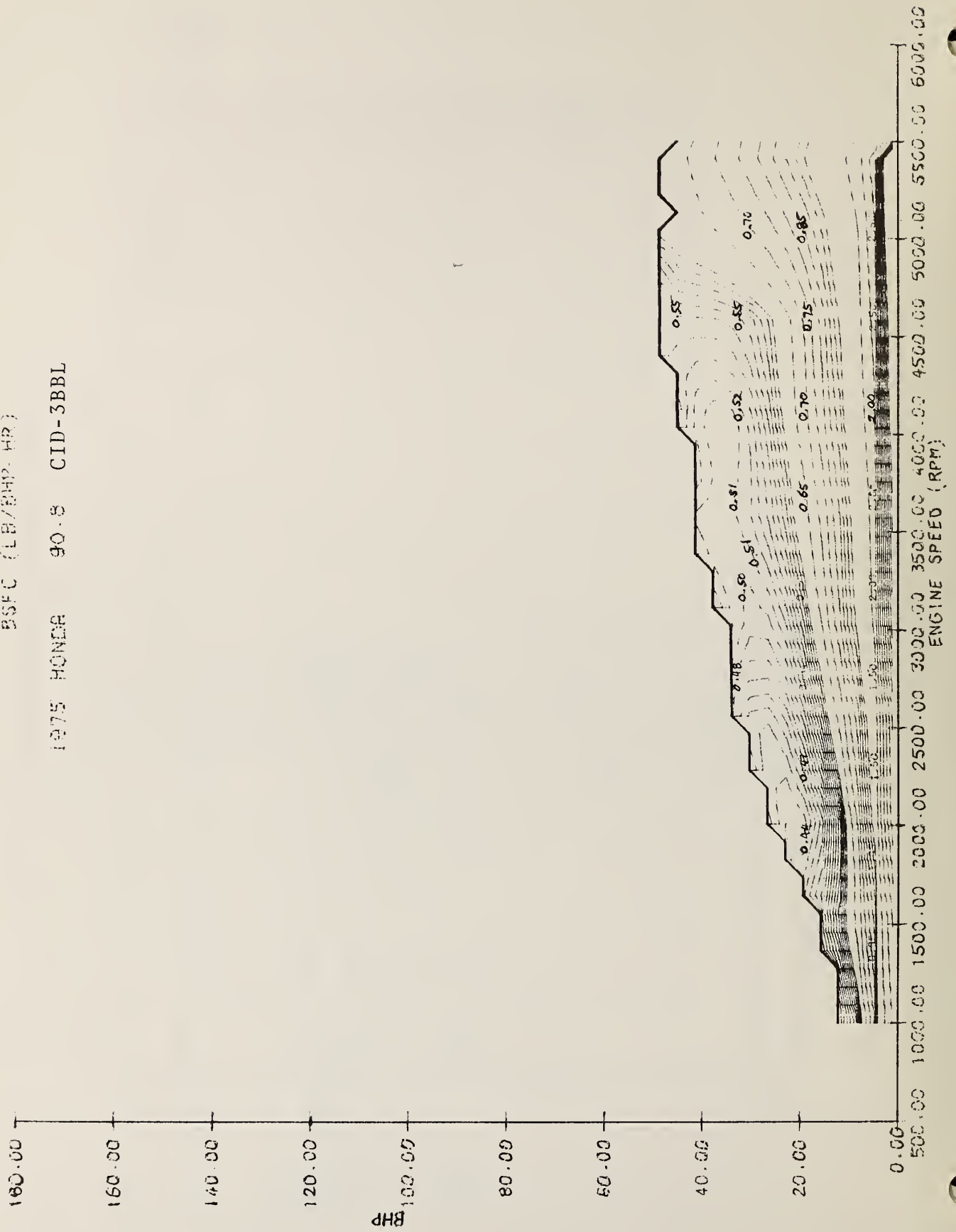
1975 HONDA CVCC 90.8 CID (1.5L) - 3BBL

Engine tested by BERC.

Engine is calibrated to achieve emission standards of $0.41 \frac{\text{gm}}{\text{mi}}$ HC, $3.4 \frac{\text{gm}}{\text{mi}}$ CO, and $2.0 \frac{\text{gm}}{\text{mi}}$ NO_x which exceed 1977-1979 Federal passenger car emission standards of: $1.5 \frac{\text{gm}}{\text{mi}}$ HC, $15 \frac{\text{gm}}{\text{mi}}$ CO, and $2.0 \frac{\text{gm}}{\text{mi}}$ NO_x.

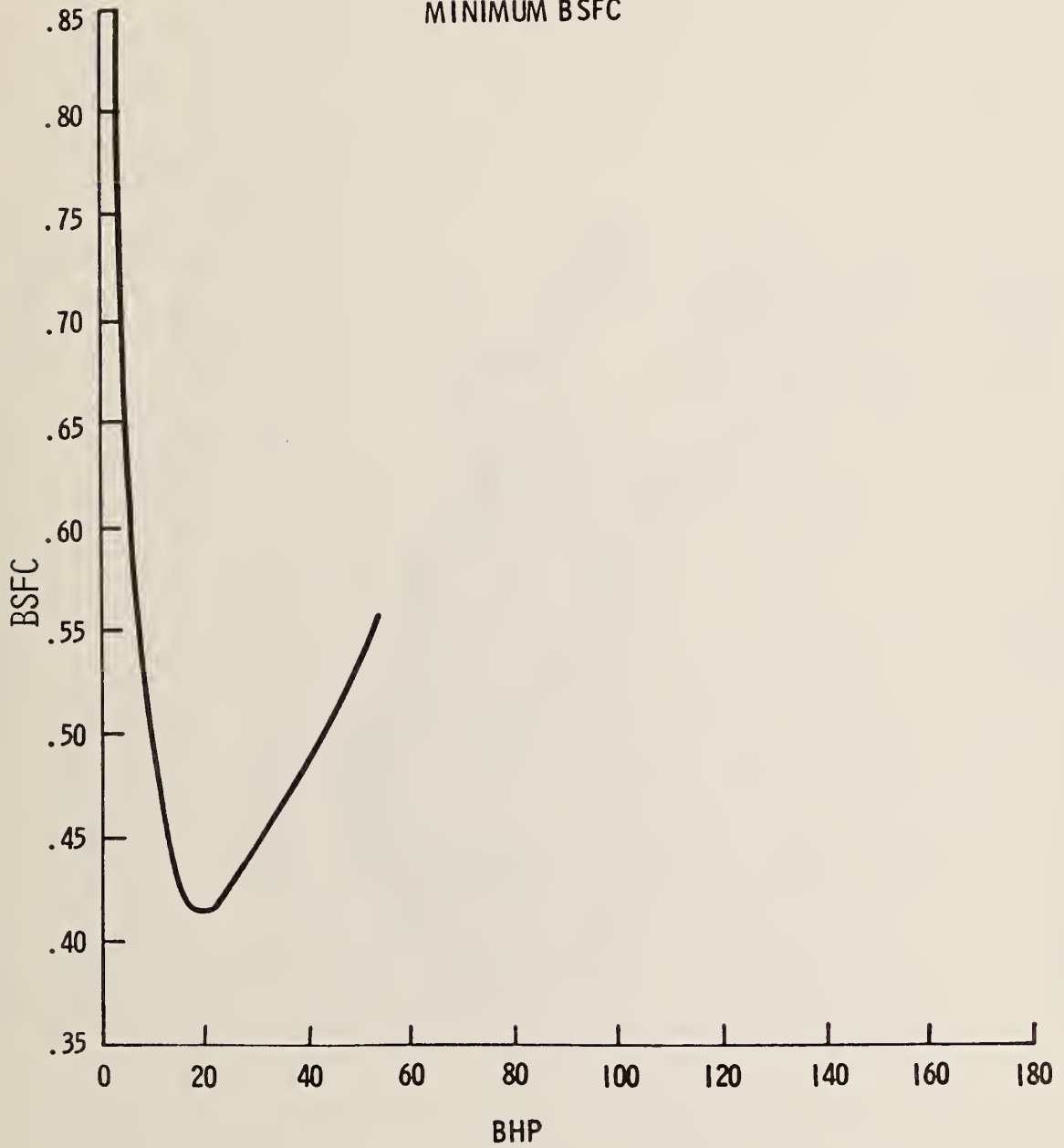
BSFC (LB/BHP-HR)

1975 HONDA 90-8 CID-3BBL



1977 Honda-90.8 CID (1.5L), L4-3BBL

MINIMUM BSFC



BOEING-BURBANK-HRW

1575 HONCF 3018 CID-3BBL

180.00 +

160.00 +

140.00 +

120.00 +

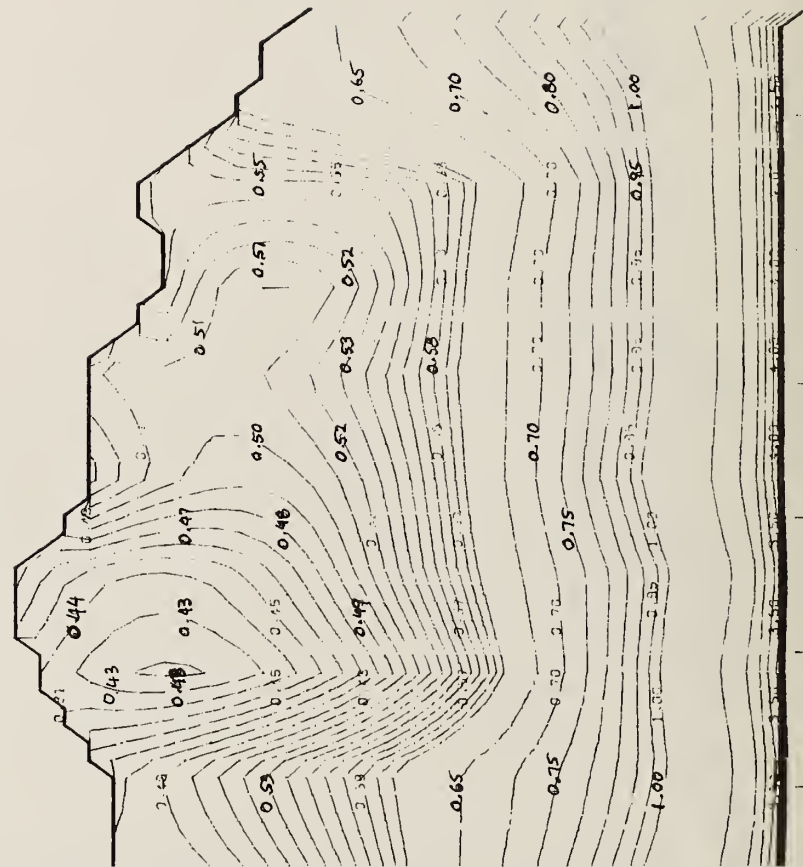
100.00 +
CFST

80.00 +
BMEP

60.00 +

40.00 +

20.00 +



180.00 + 160.00 + 140.00 + 120.00 + 100.00 + 80.00 + 60.00 + 40.00 + 20.00 +

0 400.00 800.00 1200.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00

PISTON SPEED (FEET/MIN)

560.0 (CM/BHP-HR)

1075 HONDA 90.9 CID-3BBL

180.00

160.00

140.00

120.00

100.00

80.00

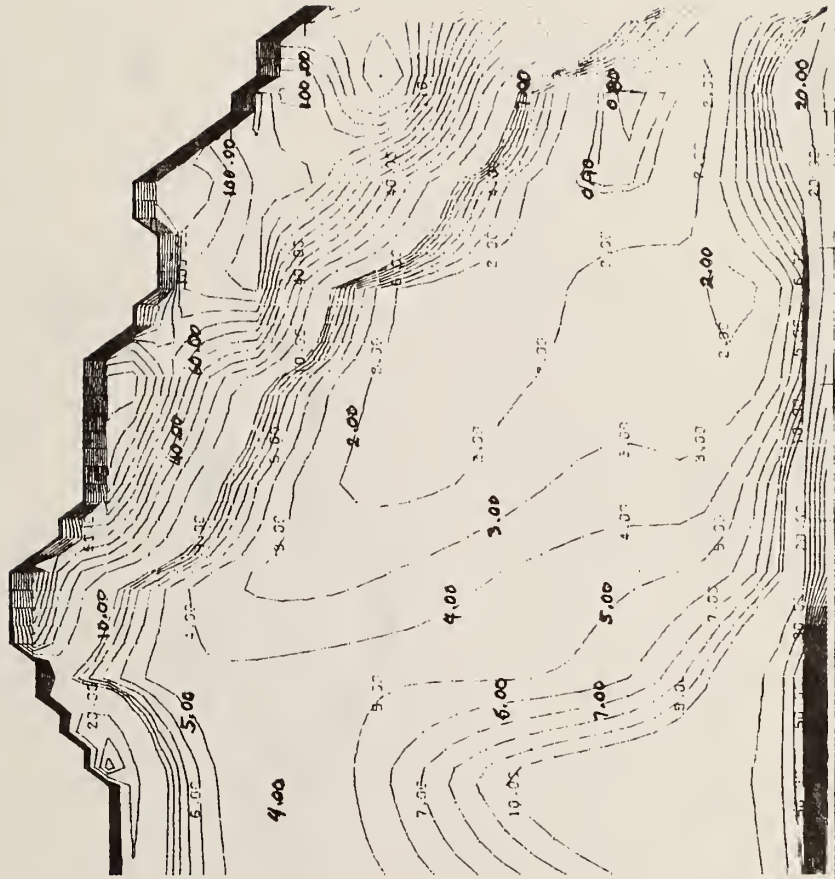
60.00

40.00

20.00

0.00

BMP (PSI)



0.00 200.00 400.00 600.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2400.00 2800.00 3000.00 3500.00 4000.00 4400.00
PISTON SPEED (FT/MIN)

F8HC (CM15HF-HF)

1975 HANCOX CID-3BBL

180.00 +

160.00 +

140.00 +

120.00 +

100.00 +

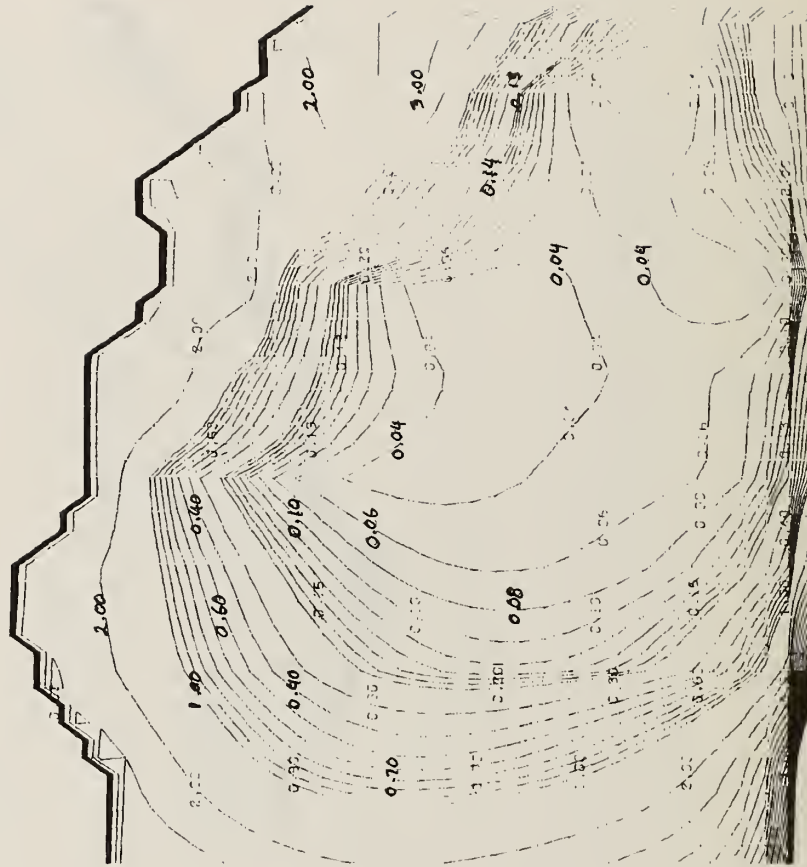
80.00 +

60.00 +

40.00 +

20.00 +

0.00 +



*1977 Honda CVCC 97.6 CID (1.6 L) - 3BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data Not Available	
No. of Cylinders	4	
Bore, in.	2.913	
Stroke, in.	3.661	
Displacement, in ³	97.6	
Compression Ratio	8.0	
Horsepower, BHP at RPM	67 BHP 5,000 RPM	67 BHP 5,000 RPM
Torque, ft-lb at RPM	85 ft-lb 3,000 RPM	85 ft-lb 3,000 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.378 ± .004 / .472 ± .004 (1)	
Intake Valve Lift, in.	.382 - .118	
Exhaust Valve Diameter, in.	1.102 ± .004	
Exhaust Valve Lift, in.	.382	
Intake Valve Opens, deg BTC	43 - 8 (1)	
Intake Valve Closes, deg ABC	89 - (81 2 Speed A) - 48 (1)	
Intake Valve Duration, deg	312 - (304 2 Speed A) - 236 (1)	
Exhaust Valve Opens, deg BBC	94	
Exhaust Valve Closes, deg ATC	48	
Exhaust Valve Duration, deg	322	
Valve Overlap, deg	91 - 56 (1)	
Distributor Type	Breaker Point	
Idle Speed, RPM	M-750-850M A-630-730S	Same as 49 States
Timing, degrees	**	***
Fuel System Type	Carburetor - 3bbl downdraft	
Choke Type	Manual	
Carburetor Barrel Diameter, in.	Primary: 1.102/Secondary: 1.339/Aux: .422	
Vehicle Emission Control Systems	Engine Modification Honda CVCC System	Engine Modification Honda CVCC System

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* 1978 Data Not Available

N = Neutral

S = Second Gear

** A-6BTC @ 680RPM M-6BTC @ 800RPM

*** M2BTC @ 800RPM AOTDC @ 680RPM

(1) = Auxiliary intake valve

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Honda CVCC 97.6 CID (1.6 L) - 3BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Accord CVCC	Semi Auto	2250	4.12	57.0	N0	8.8	0.46	4.50	337.	1.68	26	0.04	0.90	284.	1.79	31	28
Accord CVCC	M-5	2250	4.27	46.7	N0	8.8	1.32	5.20	224.	1.42	38	0.31	2.20	180.	2.65	48	42

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data Not Available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Honda CVCC 97.6 CID (1.6 L) - 3BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG			
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x	NO _x	
Accord CVCC	Semi Auto	2250	4.12	57.0	NO	8.8	0.21	3.20	347.	1.34	25	0.01	0.50	274.	1.43	32	28	
Accord CVCC	M-5	2250	4.27	46.7	NO	8.8	0.28	2.40	265.	1.17	33	0.04	1.30	186.	1.89	47	38	

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data Not Available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.307	
Stroke, in.	3.228	
Displacement, in ³	111	
Compression Ratio	8.5	
Horsepower, BHP at RPM	80 BHP 4800 RPM	80 BHP 4800 RPM
Torque, ft-lb at RPM	95 ft-lb 3000 RPM	95 ft-lb 3000RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.665-1.669	
Intake Valve Lift, in.	.3937	
Exhaust Valve Diameter, in.	1.335-1.339	
Exhaust Valve Lift, in.	.3937	
Intake Valve Opens, deg BTC	21	
Intake Valve Closes, deg ABC	65	
Intake Valve Duration, deg	266	
Exhaust Valve Opens, deg BBC	55	
Exhaust Valve Closes, deg ATC	20	
Exhaust Valve Duration, deg	255	
Valve Overlap, deg	41	
Distributor Type	Breaker-Point	
Idle Speed, RPM	A+M-900N	A+M-900N
Timing, degrees	A+M-6BTC @ 900RPM	A+M-6BTC @ 900RPM
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	Primary; 1.18	Secondary: 1.34
Vehicle Emission Control Systems	Air Injection EGR	Catalytic Converter Air Injection EGR
NOTES:	Ref. 32	Ref. 32
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation		
N = Neutral		
*Data not available		

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 ISUZU-111 CID (1.8 L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Opel	A3	2500	3.58	55.6	N0	9.4	0.72	10.70	352.	1.26	24	0.46	3.40	280.	1.45	31	27
Opel	M4	2500	3.58	55.6	N0	9.4	0.98	11.30	357.	1.64	24	0.54	4.50	251.	1.57	34	27
Opel	M5 w/OD	2500	3.31	51.3	N0	9.4	0.79	12.20	332.	1.64	25	0.48	5.80	221.	1.78	38	30

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 ISUZU-111 CID (1.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
0pe1	A3	2500	3.58	55.6	N0	9.4	0.15	1.90	372.	1.29	24	0.02	0.0	306.	1.09	29	26
0pe1	M4	2500	3.58	55.6	N0	9.4	0.10	0.80	395.	1.05	22	0.02	0.0	273.	0.96	32	26
0pe1	M5 w/OD	2500	3.31	51.3	N0	9.4	0.11	1.00	375.	1.18	24	0.02	0.0	235.	0.92	38	28

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 ISUZU-111 CID (1.8L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
LUV Pickup	A3	2750	4.10	55.6	N0	9.9	1.12	12.90	349.	2.30	24	0.63	4.50	298.	2.80	29	26
LUV Pickup	A3	3000	4.10	56.1	N0	10.3	1.17	10.00	369.	2.58	23	0.74	2.80	305.	3.31	28	25
LUV Pickup	M4	2750	4.10	55.6	N0	9.9	1.33	10.30	341.	2.29	24	0.44	5.70	247.	2.34	34	28
LUV Pickup	M4	3000	4.10	56.1	N0	10.3	1.63	8.80	371.	2.87	23	0.79	2.50	270.	2.48	32	26

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 ISUZU-111 CID (1.8 L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
LUV Pickup	A3	2750	4.11	55.6	NO	12.0	0.19	2.40	401.	1.56	22	0.02	0.20	330.	2.24	27	24
LUV Pickup	A3	3000	4.11	56.1	NO	12.0	0.15	2.50	426.	1.73	21	0.01	0.20	333.	1.90	27	23
LUV Pickup	M4	2750	4.11	55.6	YES	12.0	0.19	1.30	386.	1.57	23	0.02	0.0	283.	1.72	31	26
LUV Pickup	M4	3000	4.11	54.6	NO	12.0	0.18	1.90	427.	1.70	21	0.02	0.0	313.	1.64	28	23

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	3.386	
Stroke, in.	2.087	
Displacement, in ³	152	
Compression Ratio	10.5	
Horsepower, BHP at RPM	175 BHP 7500 RPM	175 BHP 7500 RPM
Torque, ft-lb at RPM	139 ft-lb 5750RPM	139 ft-lb 5750RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	4 Carburetors - 2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	*	*

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	12	
Bore, in.	3.228	
Stroke, in.	2.441	
Displacement, in ³	240	
Compression Ratio	10.5	
Horsepower, BHP at RPM	375 BHP 8000 RPM	375 BHP 8000 RPM
Torque, ft-lb at RPM	266 ft-lb 5500 RPM	266 ft-lb 5500RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	6 Carburetors - 2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	*	*

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.307	
Stroke, in.	3.118	
Displacement, in ³	107	
Compression Ratio	8.0	
Horsepower, BHP at RPM	86 BHP 6200 RPM	(1) 83 BHP 6200 RPM
Torque, ft-lb at RPM	90 ft-lb 2800RPM	(1) 89 ft-lb 2800RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Carburetor - 2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems (1)-1978 Lancia-Model Specifications-Beta Coupe	*	*

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.748	
Stroke, in.	2.724	
Displacement, in ³	120	
Compression Ratio	8.4	
Horsepower, BHP at RPM	140 BHP 6500 RPM	140 BHP 6500 RPM
Torque, ft-lb at RPM	130 ft-lb 5000RPM	130 ft-lb 5000RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	2 Carburetors-1BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air Injection Catalytic Converter	Air Injector Catalytic Converter
NOTES:	Ref. 33	Ref. 33
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation		
*Data not available		
Certification data not available		

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Lotus -120 CID (2.0L) -2X1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Elite	A3	2750	3.73	54.5	YES	10.9	0.35	2.80	556.	1.01	16	0.02	0.23	446.	1.30	20	17
Elite	M5	2750	3.73	43.7	YES	10.9	0.22	2.39	584.	1.75	15	0.01	0.07	335.	2.31	26	19
Esprit	M5	2500	4.38	46.7	NO	9.4	0.18	3.10	527.	1.12	17	0.01	0.60	309.	1.35	29	21

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Lotus - 120 CID (2.0 L) -2x1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		HC	CO	CO ₂			NO _x	NO _x
Elite	A3	2750	3.73	54.5	YES	10.9	0.35	2.80	556.	1.01	16	0.02	0.23	446.	1.30	20	17
Elite	M5	2750	3.73	43.7	YES	10.9	0.30	3.53	547.	1.45	16	0.03	0.0	333.	2.20	27	19
Elite	M5	2500	4.38	46.7	NO	9.4	0.18	3.10	527.	1.12	17	0.01	0.60	309.	1.35	29	21

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data not available

1978 Maserati- 181 CID (3.0L) -3x2BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.606	
Stroke, in.	2.953	
Displacement, in ³	181	
Compression Ratio	8.5	
Horsepower, BHP at RPM	180 BHP 6000 RPM	180 BHP 6000 RPM
Torque, ft-lb at RPM	185 ft-lb 3000 RPM	185 ft-lb 3000RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	3 Carburetors-2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	*	*

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* Data not available

Certification data not available

Used in Merack/SS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	3.697	
Stroke, in.	3.504	
Displacement, in ³	301	
Compression Ratio	8.5	
Horsepower, BHP at RPM	315 BHP 5000 RPM	315 BHP 5000 RPM
Torque, ft-lb at RPM	308 ft-lb 3500 RPM	308 ft-lb 3500 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	4 Carburetors-2BB1 downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air Injection Thermal Reactor	Air Injection Thermal Reactor
NOTES:	Ref. 33	Ref. 33

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Maserati -301 CID (4.9 L) -4X2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	NO _x	HC	CO				CO ₂
Khamsin	A3	4000	3.54	41.7	YES	12.5	0.28	5.54	923.	1.08	0.00	3.59	721.	0.48	12	11
Bora	M5	4000	4.22	48.6	YES	13.2	0.40	6.28	977.	1.04	0.01	0.30	655.	0.59	14	11

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Maserati-301 CID (4.9 L) -4X2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Khomsin	A3	4000	3.54	41.7	YES	12.5	0.28	5.54	923.	1.08	10	0.00	3.59	721.	0.48	12	11
Bora	M5	4000	4.22	48.6	YES	13.2	0.40	6.28	977.	1.04	9	0.01	0.30	655.	0.59	14	11

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* 1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	335/152	
No. of Cylinders	N/A Rotary Engine-2 Rotors	
Bore, in.	N/A Single Chamber Volume-35 CID	
Stroke, in.	N/A	
Displacement, in ³	70	
Compression Ratio	9.4	
Horsepower, BHP at RPM	95 BHP 6000 RPM	95 BHP 6000 RPM
Torque, ft-lb at RPM	102 ft-lb 4000 RPM	102 ft-lb 4000 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	(1)	
Intake Valve Lift, in.	(1)	
Exhaust Valve Diameter, in.	(1)	
Exhaust Valve Lift, in.	(1)	
Intake Valve Opens, deg BTC	32(ATC)	
Intake Valve Closes, deg ABC	40(ABC)	
Intake Valve Duration, deg	278	
Exhaust Valve Opens, deg BBC	75(BBC)	
Exhaust Valve Closes, deg ATC	38(ATC)	
Exhaust Valve Duration, deg	283	
Valve Overlap, deg	6	
Distributor Type	Breaker Point	
Idle Speed, RPM	750 \pm 25	750 \pm 25
Timing, degrees	**	Same as 49 States
Fuel System Type	Carburetor-4BBL downdraft	
Choke Type	Manual (with Bimetal)	
Carburetor Barrel Diameter, in.	Primary: 1.102	Secondary: 1.339
Vehicle Emission Control Systems	Air Injection Thermal Reactor Ref. 32	Air Injection Thermal Reactor **EGR **Not on all Models Ref. 32

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*=1978 Data not available

(1)= Data not available

** Trailing 20 \pm 4 ATC @ idleLeading 0 \pm 1 TDC @ idle

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Mazda (TKM) Rotary-70 CID (1.1 L)-4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
RX-3	A3	2500	3.73	56.8	YES	10.3	0.53	5.00	477.	1.24	18	0.01	0.70	379.	1.64	23	20
RX-3	M5 w/OD	2500	3.73	44.9	YES	10.3	0.78	5.70	446.	1.53	19	0.03	1.50	312.	2.10	28	23

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Mazda (TKM) Rotary-70 CID (1.1 L)-4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
RX-3	M5 w/OD	2500	3.73	44.9	YES	10.3	0.23	2.40	480.	1.13	18	0.04	2.30	303.	2.44	29	22
RX-3	A3	2500	3.73	56.8	NO	10.3	0.20	3.70	487.	0.90	18	0.03	2.00	352.	1.19	25	21

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

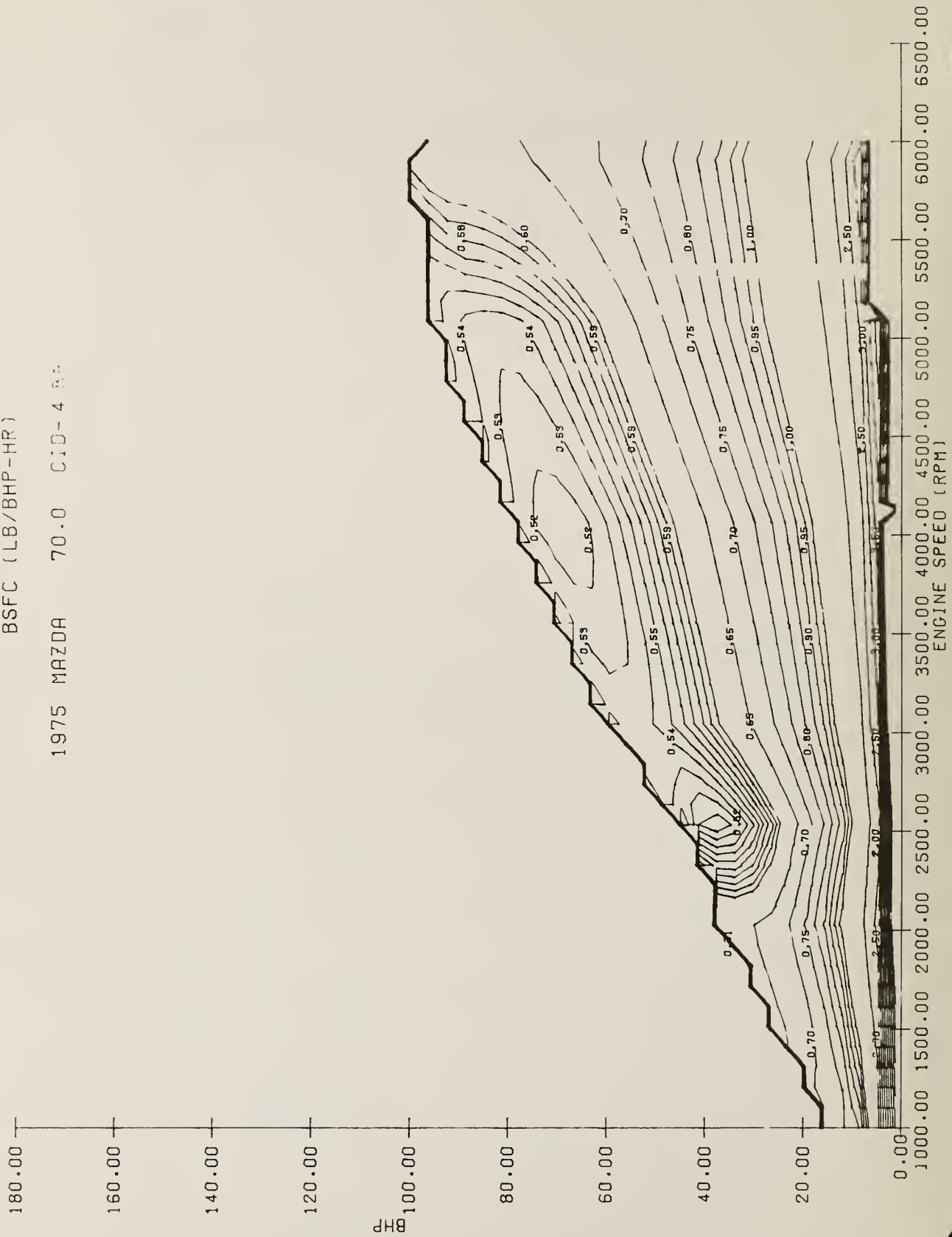
1975 MAZDA ROTARY 70 CID (1.1L) - 4BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

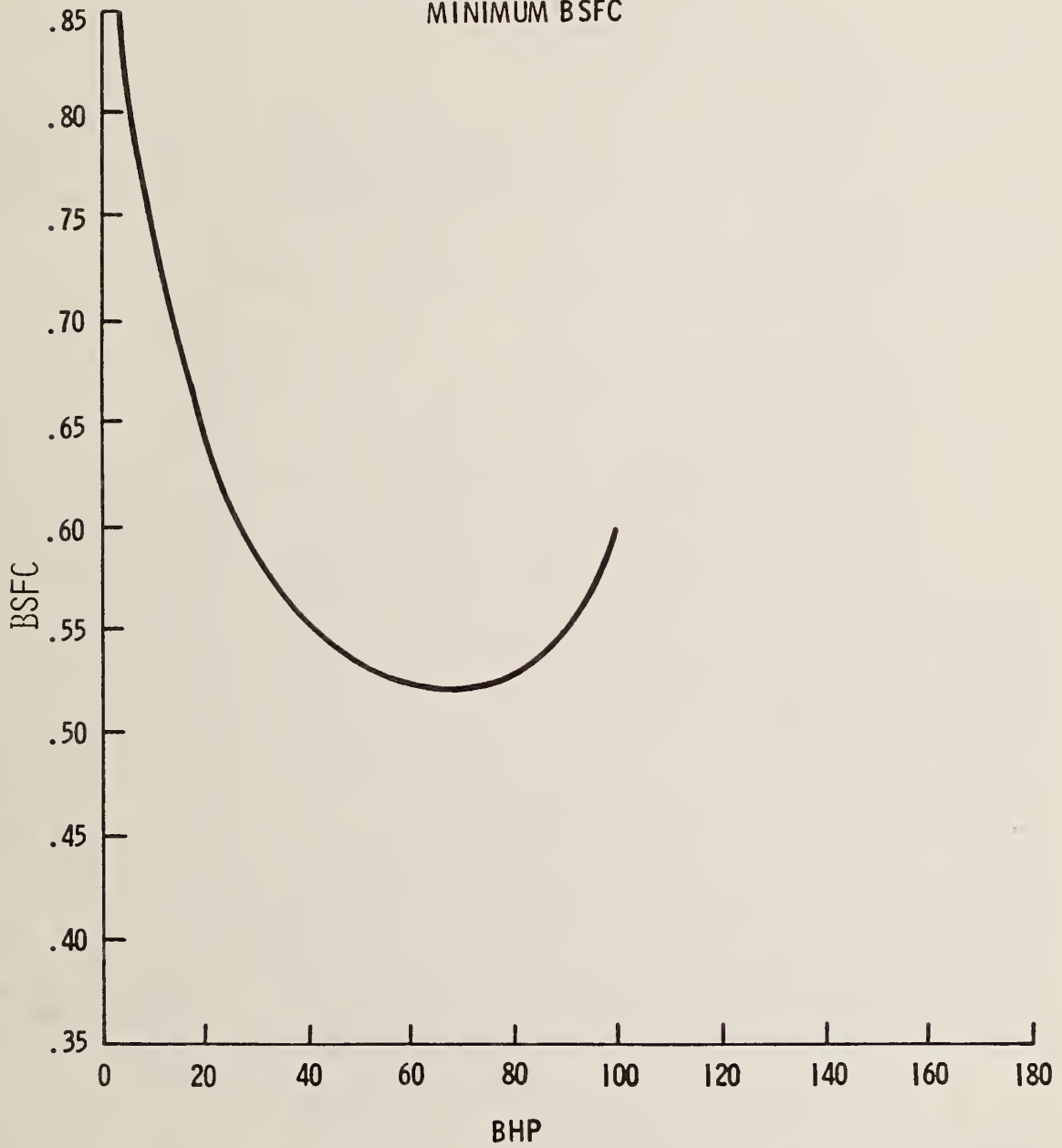
BSFC (LB/BHP-HR)

1975 MAZDA 70.0 CID-4 B&B



1975 Mazda 70 CID (1.1L) Rotary - 4BBL

MINIMUM BSFC



*1977 Mazda (TKM)-78 CID (1.3 L) -2BBL

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	2.874	
Stroke, in.	2.992	
Displacement, in ³	78	
Compression Ratio	9.2	
Horsepower, BHP at RPM	52 BHP ₅₀₀₀ RPM	49 BHP ₅₀₀₀ RPM
Torque, ft-lb at RPM	64 ft-lb ₃₀₀₀ RPM	63 ft-lb ₂₅₀₀ RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.417	
Intake Valve Lift, in.	.354	
Exhaust Valve Diameter, in.	1.22	
Exhaust Valve Lift, in.	.354	
Intake Valve Opens, deg BTC	13	
Intake Valve Closes, deg ABC	50	
Intake Valve Duration, deg	243	
Exhaust Valve Opens, deg BBC	57	
Exhaust Valve Closes, deg ATC	6	
Exhaust Valve Duration, deg	243	
Valve Overlap, deg	19	
Distributor Type	Transistorized	Breaker Point
Idle Speed, RPM	M-700	M-700
Timing, degrees	M-7BTC	M-11BTC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Manual	
Carburetor Barrel Diameter, in.	Primary: 1.024	Secondary: 1.181
Vehicle Emission Control Systems	Air Injection Catalytic Converter EGR	Air Injection Catalytic Converter EGR
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*-1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Mazda (TKM)-78 CID (1.3 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂
GLC	A3	2250	4.10	63.6	N0	8.8	0.50	8.50	281.	1.11	30	0.05	1.10	242.	1.64	33
GLC	M4	2250	3.73	57.9	N0	8.8	0.43	9.00	244.	1.08	34	0.05	0.60	207.	2.08	38
GLC	M5 w/OD	2250	3.73	47.8	N0	8.8	0.43	6.70	240.	1.51	35	0.06	0.70	193.	2.03	39

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Mazda (TKM)-78 CID (1.3 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	NO _x	HC	CO				CO ₂
GLC	A3	2250	4.10	63.6	N0	8.8	0.18	4.20	349.	0.89	0.0	0.0	273.	1.22	32	28
GLC	M4	2250	3.73	57.9	N0	8.8	0.18	2.60	276.	1.10	0.02	0.0	223.	1.53	40	35
GLC	M5 w/OD	2250	3.73	47.3	N0	8.8	0.23	2.30	268.	1.22	0.03	0.10	211.	1.84	42	36

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	(1)	
No. of Cylinders	N/A Rotary Engine-2 Rotors	
Bore, in.	N/A Single Chamber Volume-40 CID	
Stroke, in.	N/A	
Displacement, in ³	80	
Compression Ratio	9.2	
Horsepower, BHP at RPM	110 BHP 6000 RPM	110 BHP 6000 RPM
Torque, ft-lb at RPM	120 ft-lb 4000 RPM	120 ft-lb 4000 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	(1)	
Intake Valve Lift, in.	(1)	
Exhaust Valve Diameter, in.	(1)	
Exhaust Valve Lift, in.	(1)	
Intake Valve Opens, deg BTC	32(ATC)	
Intake Valve Closes, deg ABC	40(ABC)	
Intake Valve Duration, deg	278	
Exhaust Valve Opens, deg BBC	75(BBC)	
Exhaust Valve Closes, deg ATC	38(ATC)	
Exhaust Valve Duration, deg	383	
Valve Overlap, deg	6	
Distributor Type	Breaker Point	
Idle Speed, RPM	750 ± 25	750 ± 25
Timing, degrees	***	Same as 49 states
Fuel System Type	Carburetor-4BBL downdraft	
Choke Type	Manual w/Bimetal	
Carburetor Barrel Diameter, in.	Primary: 1.102	Secondary: 1.339
Vehicle Emission Control Systems	Air Injection Thermal Reactor **EGR Ref. 32	Air Injection Thermal Reactor **EGR Ref. 32

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = 1978 Data not available

(1) = Data not available

** RX-4 Wagon Only

Trailing 25 ± 4ATC @ Idle

Leading 5 ± 1 ATC @ Idle

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Mazda (TKM) Rotary-80 CID (1.3 L) -4BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x	NO _x
COSMO	M5 w/OD	3000	3.64	40.8	YES	11.3	0.94	7.70	457.	1.73	19	0.03	1.90	321.	2.51	27	22
RX-4 Wagon	A3	3000	3.64	53.9	YES	11.3	0.92	10.30	498.	1.65	17	0.04	2.00	379.	1.74	23	19

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg		
No. of Cylinders	4	
Bore, in.	3.071	
Stroke, in.	3.268	
Displacement, in ³	97	
Compression Ratio	8.6	
Horsepower, BHP at RPM	64 BHP 5000 RPM	66 BHP 5000 RPM
Torque, ft-lb at RPM	78 ft-lb 3000 RPM	79 ft-lb 3000 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.654	
Intake Valve Lift, in.	.374	
Exhaust Valve Diameter, in.	1.299	
Exhaust Valve Lift, in.	.374	
Intake Valve Opens, deg BTC	13	18
Intake Valve Closes, deg ABC	54	49
Intake Valve Duration, deg	247	247
Exhaust Valve Opens, deg BBC	57	62
Exhaust Valve Closes, deg ATC	10	5
Exhaust Valve Duration, deg	247	247
Valve Overlap, deg	23	23
Distributor Type	Breaker Point	
Idle Speed, RPM	M-800±50N A-650±50D	M-800±50N A-650±50D
Timing, degrees	A+M-5BTC	A+M-8BTC
Fuel System Type	Carburetor -2BBL downdraft	
Choke Type	Manual	
Carburetor Barrel Diameter, in.	Primary: 1.102	Secondary: 1.26
Vehicle Emission Control Systems	Air Injection	Catalytic Converter Air Injection EGR

NOTES:

- A = Automatic transmission
- M = Manual transmission
- EGR = Exhaust gas recirculation
- *=1978 Data not available
- N=Neutral
- D=Drive

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mazda (TKM)-97 CID (1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		HC	CO	CO ₂			NO _x	NO _x
808	A3	2500	3.91	60.7	N0	9.4	0.64	10.30	373.	1.53	23	0.11	2.80	283.	1.79	31	26
808 wagon	M4	2500	3.64	56.4	N0	9.4	0.49	10.00	374.	1.57	23	0.05	3.20	267.	1.93	33	26
808	M5	2500	3.64	56.4	N0	9.4	0.66	10.40	365.	1.51	23	0.04	4.80	249.	1.93	35.	27

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$N = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* -1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mazda (TKM)-97 CID (1.6 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
808 Wagon	A3	3000	3.58	51.7	N0	9.4	0.19	2.40	336.	0.95	26	0.02	0.10	275.	1.03	32	29
808	M4	2750	3.58	43.6	N0	9.4	0.22	3.40	302.	1.07	29	0.03	0.10	242.	0.88	37	32
808	M5	3000	3.58	43.6	N0	9.4	0.22	3.40	302.	1.07	29	0.03	0.20	230.	0.89	38	32

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* = 1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	*	
Stroke, in.	*	
Displacement, in ³	110	
Compression Ratio	8.5	
Horsepower, BHP at RPM	97 BHP 5600 RPM	97 BHP 5600 RPM
Torque, ft-lb at RPM	112 ft-lb 3600RPM	112 ft-lb 3600RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air Injection EGR	Air Injection Catalytic Converter EGR
NOTES:	Ref. 32	Ref. 32
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation		
*=Data not available		

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 Mazda (TKM)-110 CID (1.8 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG			
							HC	CO	CO ₂	NO _x	HC	CO				CO ₂	NO _x	
Courier Pickup	M4	3000	3.64	48.4	N0	10.3	1.54	13.70	282.	1.85	29	0.67	3.70	225.	2.63	38	32	
B 1800 Pickup	M5 W/OD	3000	3.64	41.7	N0	10.3	1.49	12.00	271.	2.12	30	0.65	4.40	217.	2.88	39	34	

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 Mazda (TKM)-110 CID (1.8 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Courier Pickup	M4	3000	3.64	48.4	N0	11.2	0.28	6.60	328.	0.95	26	0.03	1.10	265.	1.27	33	29
Courier Pickup	M5 w/OD	3000	3.64	41.7	N0	11.2	0.34	7.30	334.	0.97	26	0.03	1.30	255.	1.38	34	29

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$N = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	M-326/148	A-308/140
No. of Cylinders	4	
Bore, in.	3.781	
Stroke, in.	3.126	
Displacement, in ³	140	
Compression Ratio	9.0	
Horsepower, BHP at RPM	88 BHP 4800 RPM	88 BHP 4800 RPM
Torque, ft-lb at RPM	118 ft-lb 2800 RPM	118 ft-lb 2800 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.740 - 1.730	
Intake Valve Lift, in.	.4000	
Exhaust Valve Diameter, in.	1.510 - 1.490	
Exhaust Valve Lift, in.	.4000	
Intake Valve Opens, deg BTC	22	
Intake Valve Closes, deg ABC	66	
Intake Valve Duration, deg	268	
Exhaust Valve Opens, deg BBC	64	
Exhaust Valve Closes, deg ATC	24	
Exhaust Valve Duration, deg	268	
Valve Overlap, deg	46	
Distributor Type	Transistorized	
Idle Speed, RPM	A-800D M-850N	A-750D M-850N
Timing, degrees	A-20BTC M-6BTC	A-20BTC M-6BTC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic (Electrically Operated) ^(Hot Filtered) Air	
Carburetor Barrel Diameter, in.	Primary: 1.26	Secondary: 1.417
Vehicle Emission Control Systems	Air Injection EGR	Air Injection Catalytic Converter EGR
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

N = Neutral

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 Mazda (TKM) Ford 140 CID (2.3 L) -2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂
Courier Pickup	A3	3000	3.64	48.7	N0	10.3	1.45	14.80	377.	2.30	0.86	2.60	302.	3.75	29	25
Courier Pickup	M4	3000	3.64	48.4	N0	10.3	1.44	15.50	380.	1.95	0.74	4.00	352.	3.26	34	28
Courier Pickup	M5 w/OD	3000	3.64	41.7	N0	10.3	1.44	15.80	317.	1.85	0.72	4.30	238.	3.14	36	29

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 Mazda (TKM)-Ford 140 CID (2.3 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂	NO _x	HC	CO				CO ₂	NO _x
Courier Pickup	A3	3000	3.64	48.4	NO	11.2	0.26	3.80	404.	1.43	22	0.06	0.80	302.	2.04	29	24
Courier Pickup	M4	3000	3.64	48.4	NO	11.2	0.32	4.40	373.	1.11	23	0.04	0.10	275.	1.62	32	27
Courier Pickup	M5 w/O.D	3000	3.64	41.7	NO	11.2	0.33	4.40	368.	1.09	24	0.04	0.20	269.	1.60	33	27

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

Mercedes Benz 220 D - 134.1 CID (2.2L), F.I.
 Conversion to AVL Direct Injection Light Duty Diesel
 (Pre-Production Engine)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	L 4	
Bore, in.	3.425	(87 mm)
Stroke, in.	3.638	(92.4 mm)
Displacement, in ³	134.1	
Compression Ratio	*	
Horsepower, BHP at RPM	53 BHP 3500 RPM	BHP RPM
Torque, ft-lb at RPM	92 ft-lb 3000 RPM	ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, rpm	1200	
Timing Degrees	*	
Fuel System Type	Direct Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection	

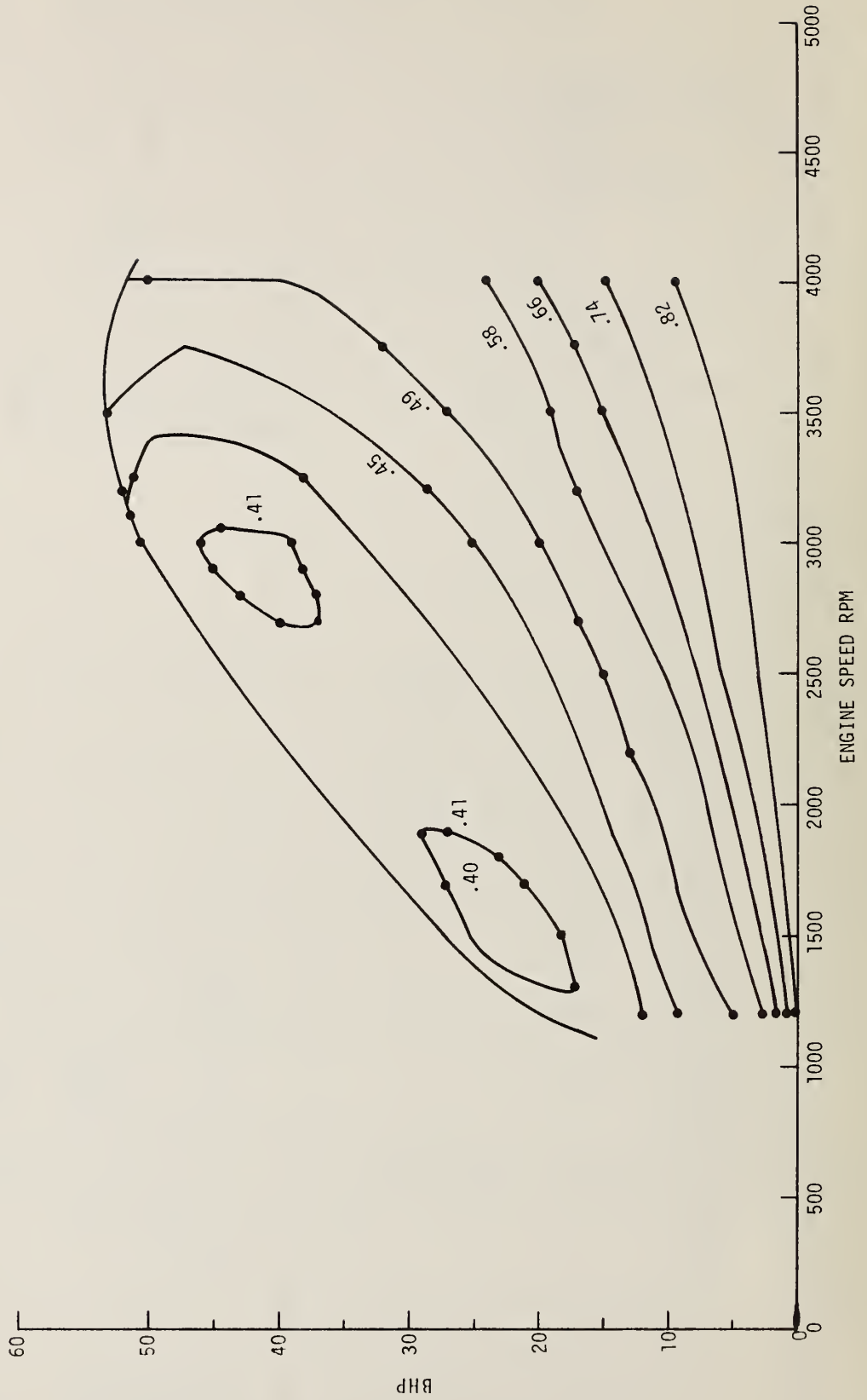
NOTE: A = Automatic
 * = Data not available

SOURCE: Ricardo Consulting Engineers

MERCEDES BENZ 220D - 134.1 CID (2.2L), F.I.

CONVERSION TO
AVL DIRECT INJECTION
LIGHT DUTY DIESEL ENGINE
(PRE-PRODUCTION ENGINE)

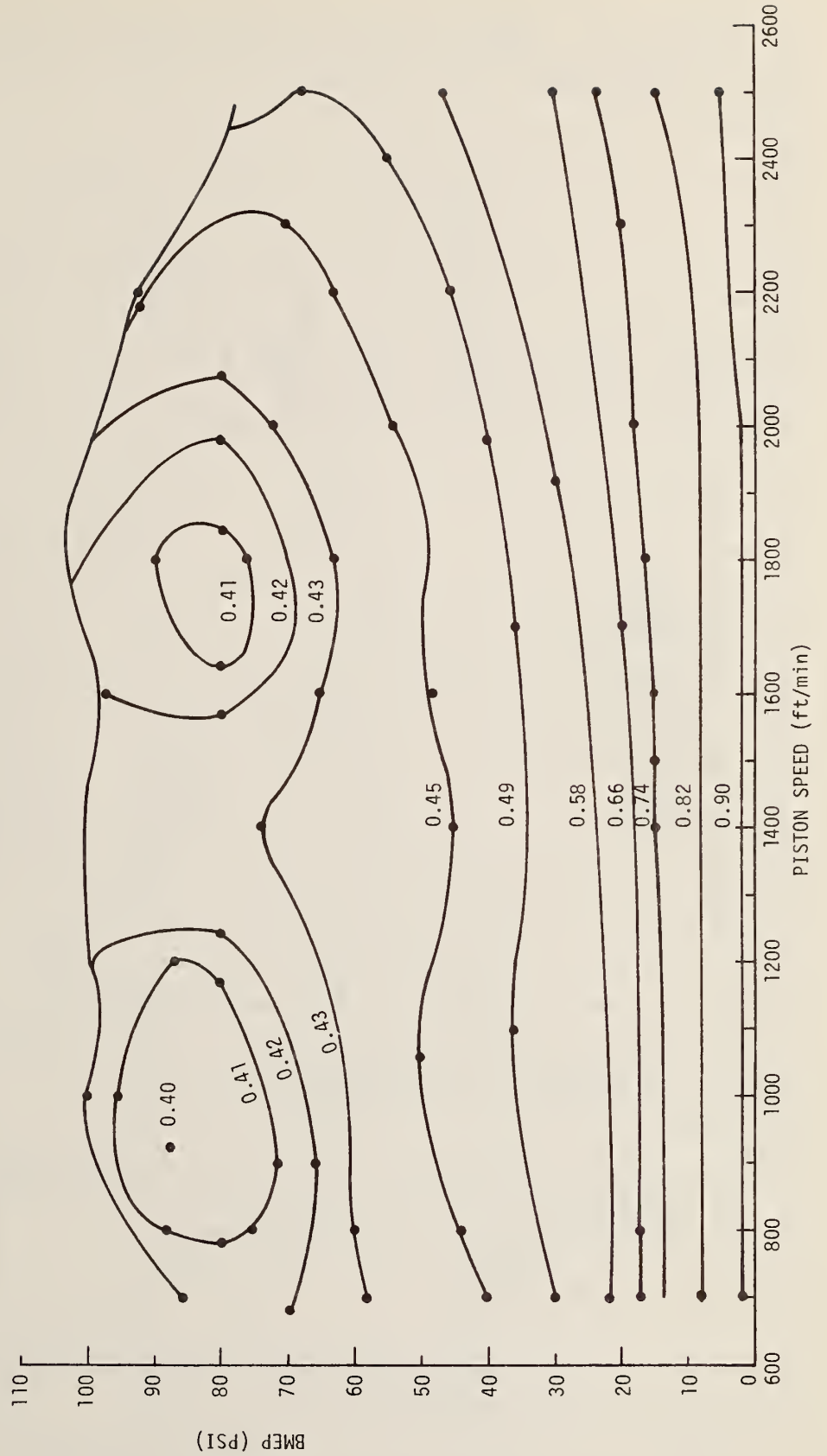
BSFC $\left(\frac{\text{Lb}}{\text{BHP-HR}} \right)$



SOURCE: Ricardo Consulting Engineers

MERCEDES BENZ 220D - 134.1 CID (2.2L), F.I.
 CONVERSION TO
 AVL DIRECT INJECTION
 LIGHT DUTY DIESEL ENGINE
 (PRE-PRODUCTION ENGINE)

BSFC ($\frac{\text{Lb}}{\text{BHP-HR}}$)

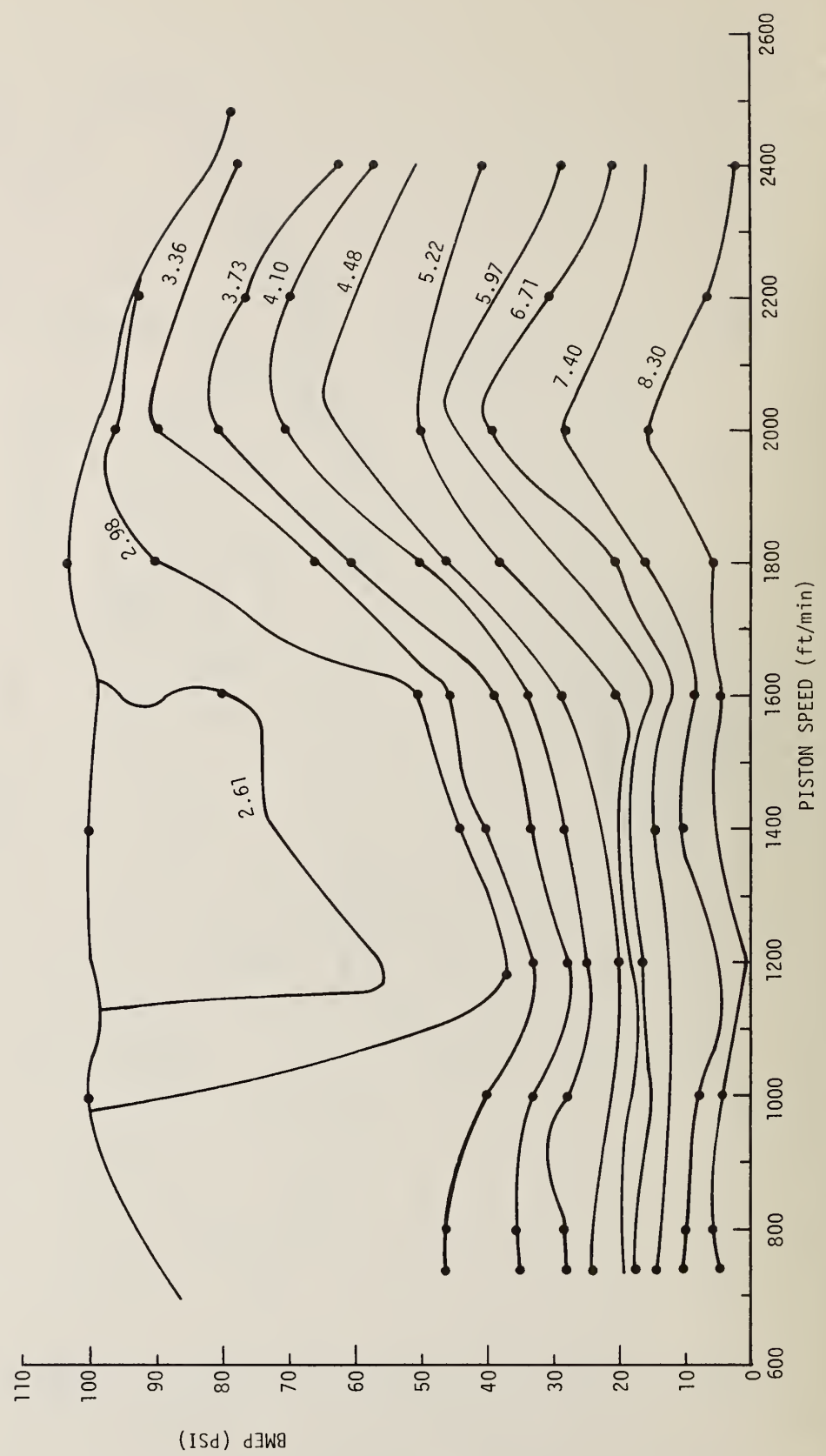


SOURCE: Ricardo Consulting Engineers

MERCEDES BENZ 220D - 134.1 CID (2.2L), F.I.

CONVERSION TO
AVL DIRECT INJECTION
LIGHT DUTY DIESEL ENGINE
(PRE-PRODUCTION ENGINE)

$$E - BSNO_x \left(\frac{Gm}{BHP-HR} \right)$$



SOURCE: Ricardo Consulting Engineers

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.689	
Stroke, in.	3.291	
Displacement, in ³	141	
Compression Ratio	8.0	
Horsepower, BHP at RPM	86 BHP 4800 RPM	86 BHP 4800 RPM
Torque, ft-lb at RPM	116 ft-lb 3000 RPM	116 ft-lb 3000 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Carburetor-1BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air Injection Catalytic Converter EGR Ref. 33	Air Injection Catalytic Converter EGR Ref. 33

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

N = Neutral

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mercedes Benz-141 CID (2.3 L)-1BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x			
230	A4	3500	3.69	53.0	Yes	12.3	0.23	4.80	506.	0.96	17	0.04	0.60	429.	0.78	21	19	

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*- 1978 Data not available

1978 Mercedes Benz-147 CID (2.4 L), Diesel-Fuel Injection

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.583	
Stroke, in.	3.638	
Displacement, in ³	147	
Compression Ratio	21.0	
Horsepower, BHP at RPM	62 BHP 4000 RPM	62 BHP 4000 RPM
Torque, ft-lb at RPM	97 ft-lb 2400 RPM	97 ft-lb 2400 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, RPM	*	
Timing, degrees	*	
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Ref 33	Fuel Injection Ref 33

NOTES:

- A = Automatic transmission
- M = Manual transmission
- EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mercedes Benz-147 CID (2.4 L), Diesel-F.I.

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
240D	A4	3500	3.69	53.0	Yes	13.2	0.87	5.20	663.	1.69	26	0.21	1.70	476.	1.13	30	28
240D	M4	3500	3.69	51.0	Yes	14.0	0.24	1.70	735.	1.28	25	0.13	0.20	513.	1.23	34	28

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mercedes Benz-147 CID (2.4 L), Diesel-F.I.

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
240D	A4	3500	3.69	53.6	Yes	12.3	0.36	0.90	391.	1.65	26	0.07	0.80	336.	1.48	30	28
240D	M4	3500	3.69	51.4	Yes	12.3	1.20	1.20	408.	1.43	25	0.06	0.60	303.	1.34	34	28

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

1978 Mercedes Benz-168 CID (2.7 L)-Fuel Injection

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.383	
Stroke, in.	3.102	
Displacement, in ³	168	
Compression Ratio	8.0	
Horsepower, BHP at RPM	142 BHP 5750 RPM	(1) BHP RPM
Torque, ft-lb at RPM	142 ft-lb 4600 RPM	(1) ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Air Injection Catalytic Converter EGR Ref. 33	Fuel Injection Air Injection Catalytic Converter EGR Ref. 33

NOTES:

- A = Automatic transmission
- M = Manual transmission
- EGR = Exhaust gas recirculation
- * = Data not available

(1) Output slightly less than 49 States (Ref. 31)

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mercedes Benz-168 CID (2.7 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
280E	A4	4000	3.54	51.0	Yes	14.0	0.38	5.20	685.	1.72	13	0.13	0.20	484.	1.68	18	15
280E	A4	4000	3.54	51.0	Yes	14.0	0.25	3.80	837.	1.25	10	0.03	0.10	621.	1.32	14	12
280E	A4	4000	3.69	52.0	NO	8.8	1.04	9.00	365.	1.58	23	0.50	4.40	236.	2.54	36	28
280E	A4	4000	3.69	52.0	NO	8.8	0.72	8.60	408.	1.35	21	0.22	3.60	265.	1.74	33	25

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA

FOR

*1977 Mercedes Benz-168 CID (2.7 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x
280E	A4	4000	3.54	51.6	Yes	13.2	0.18	1.10	600.	1.08	0.12	0.10	471.	0.66	19	16
280E	A4	4000	3.69	52.6	Yes	13.2	0.37	1.60	606.	1.20	0.17	1.00	489.	0.69	18	16

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

1978 Mercedes Benz-183 CID (3.0 L), Diesel-Fuel Injection

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	507/230	
No. of Cylinders	5	
Bore, in.	3.579	
Stroke, in.	3.642	
Displacement, in ³	183	
Compression Ratio	21.0	
Horsepower, BHP at RPM	77 BHP 4000 RPM	77 BHP 4000 RPM
Torque, ft-lb at RPM	115 ft-lb 2400 RPM	115 ft-lb 2400 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, RPM	*	
Timing, degrees	*	
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Ref. 33	Fuel Injection Ref. 33

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mercedes Benz-183 CID (3.0 L), Diesel-F.I.

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
300D	A4	4000	3.46	50.0	Yes	13.2	0.10	0.90	432.	1.64	24	0.07	0.70	366.	1.56	28	25

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
 FOR
 *1977 Mercedes Benz-183 CID (3.0 L), Diesel-F.I.

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂	NO _x	HC	CO				CO ₂	NO _x
300D	A4	4000	3.45	50.7	Yes	13.2	0.10	0.90	432.	1.64	24	0.07	0.70	366.	1.56	28	25

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

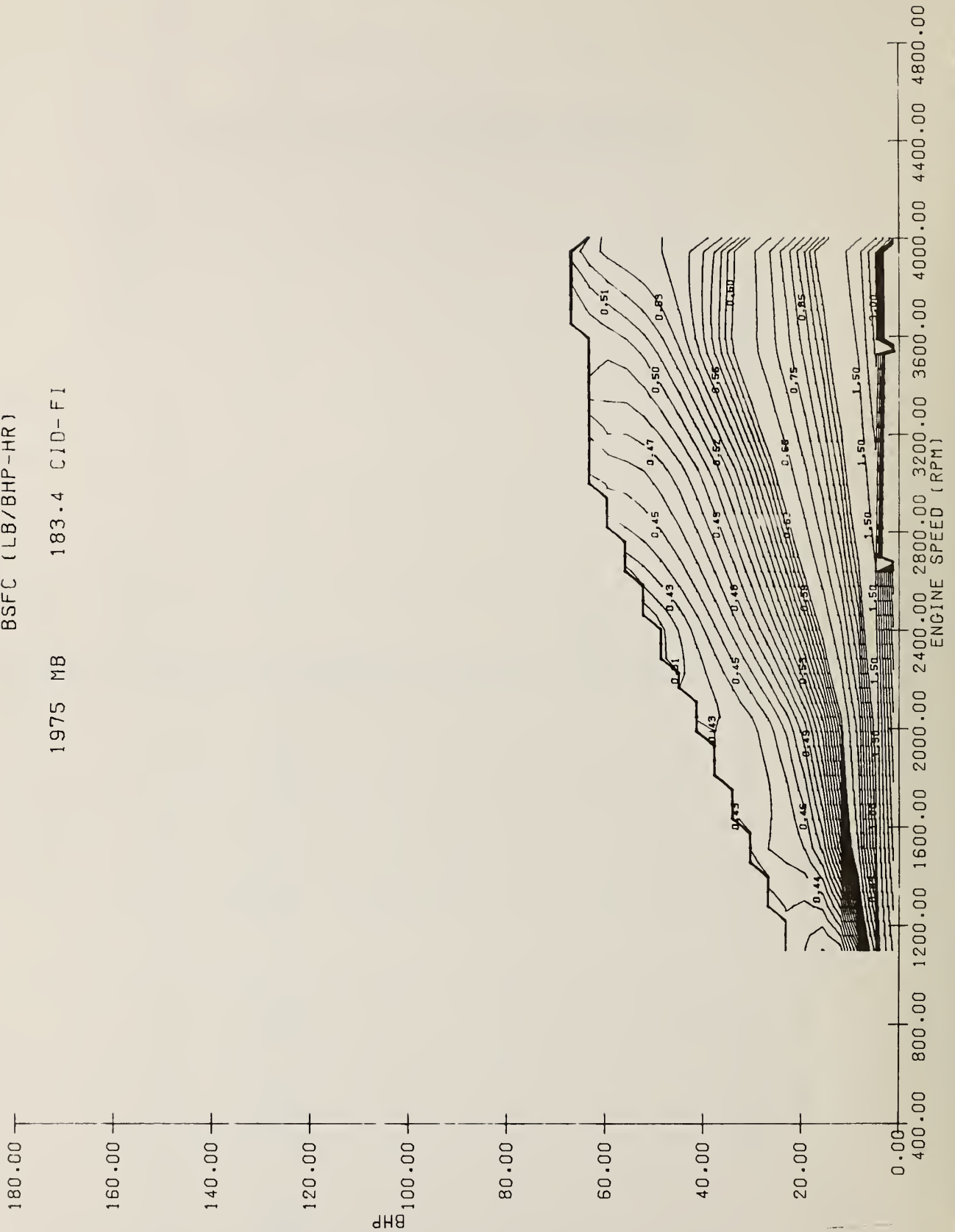
1975 MERCEDES BENZ 183 CID (3.0L), Diesel-F.I.

Engine tested by BERG.

Engine certified for: 49 states, passenger cars, automatic transmission.

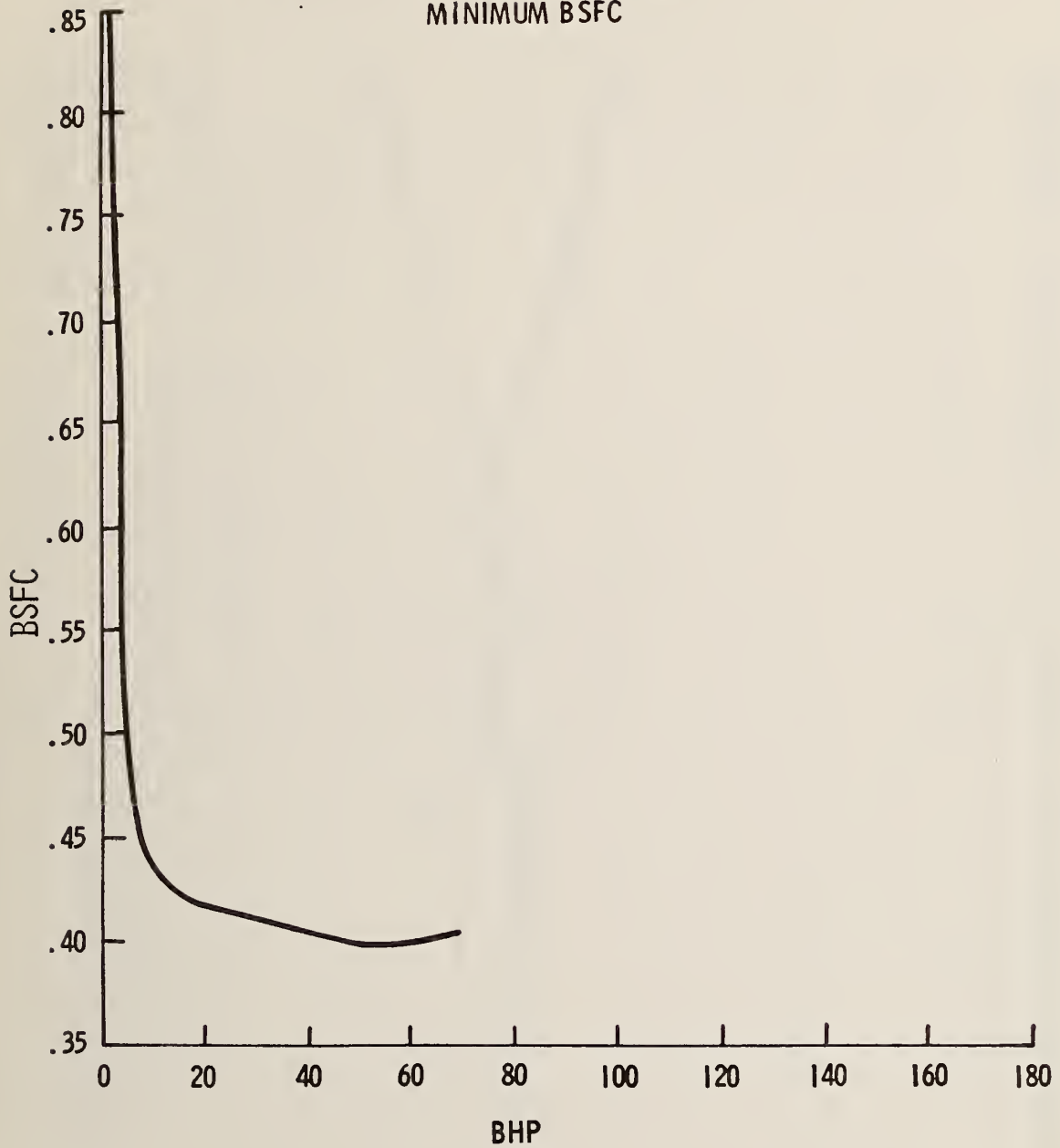
BSFC (LB/BHP-HR)

1975 MB 183.4 CID-FI

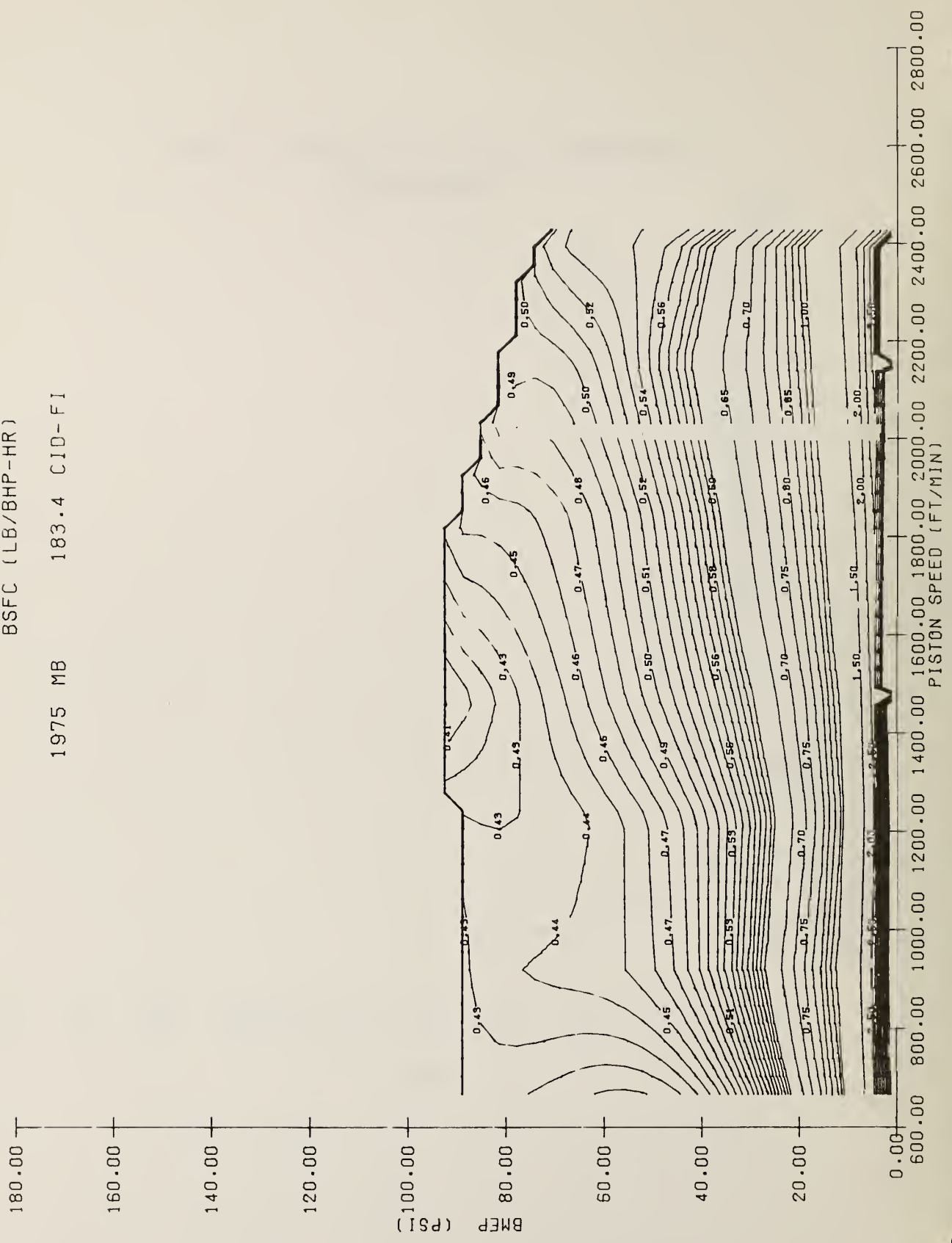


1975 Mercedes Benz 183 CID (3.0L) Diesel, L5 - F.I.

MINIMUM BSFC

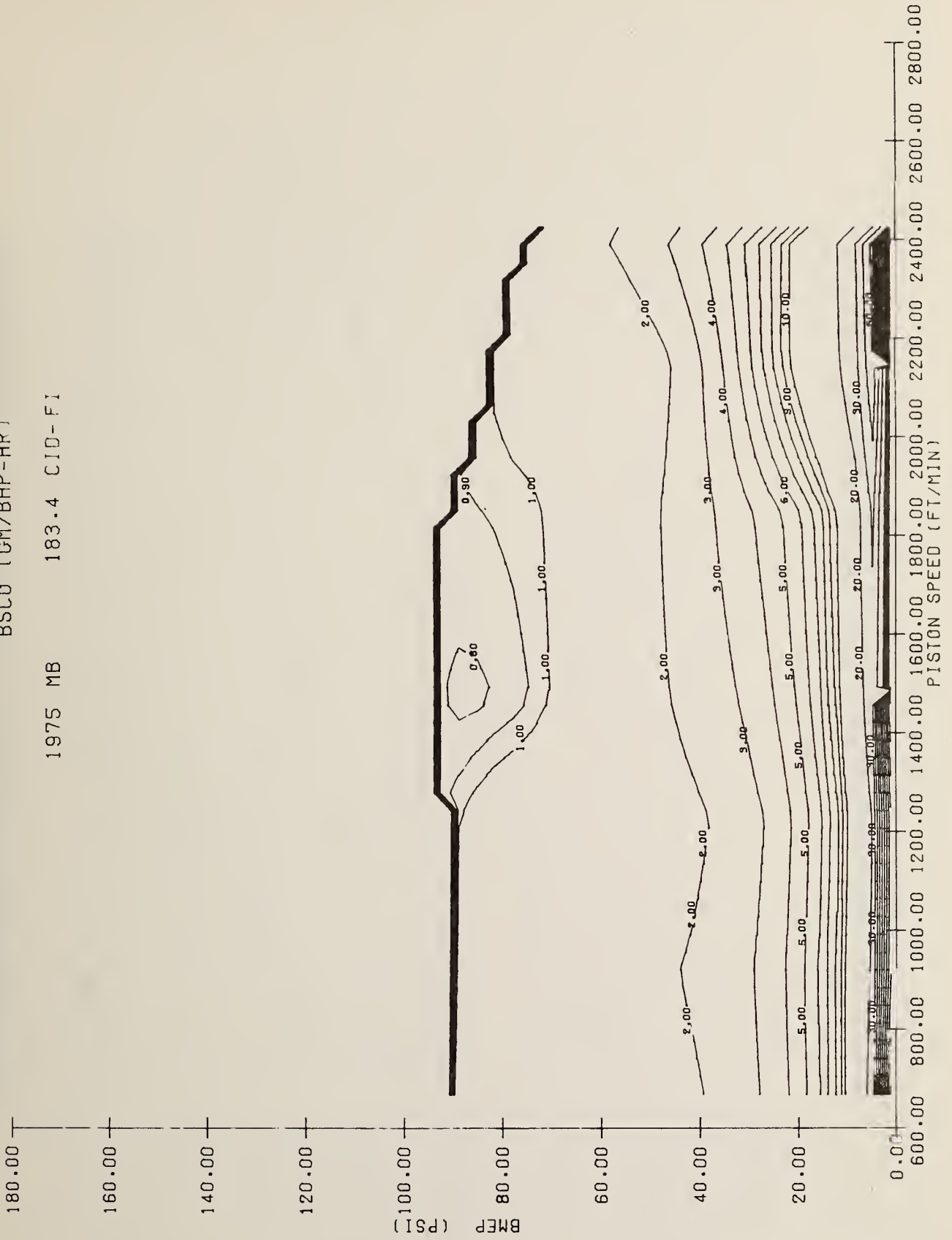


BSFC (LB/BHP-HR)
1975 MB 183.4 CID-FI



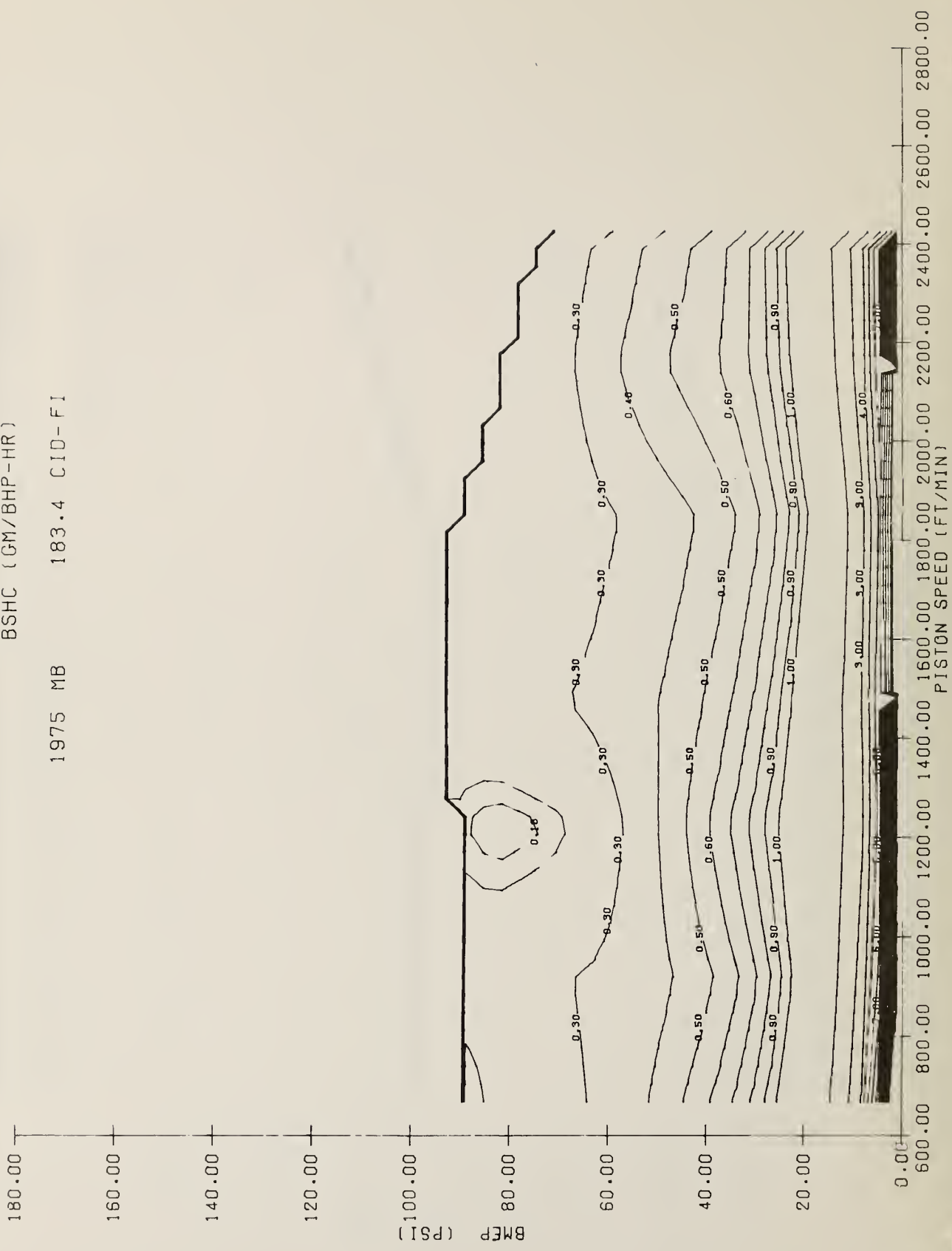
BSCO (GM/BHP-HR)

1975 MB 183.4 CID-FI



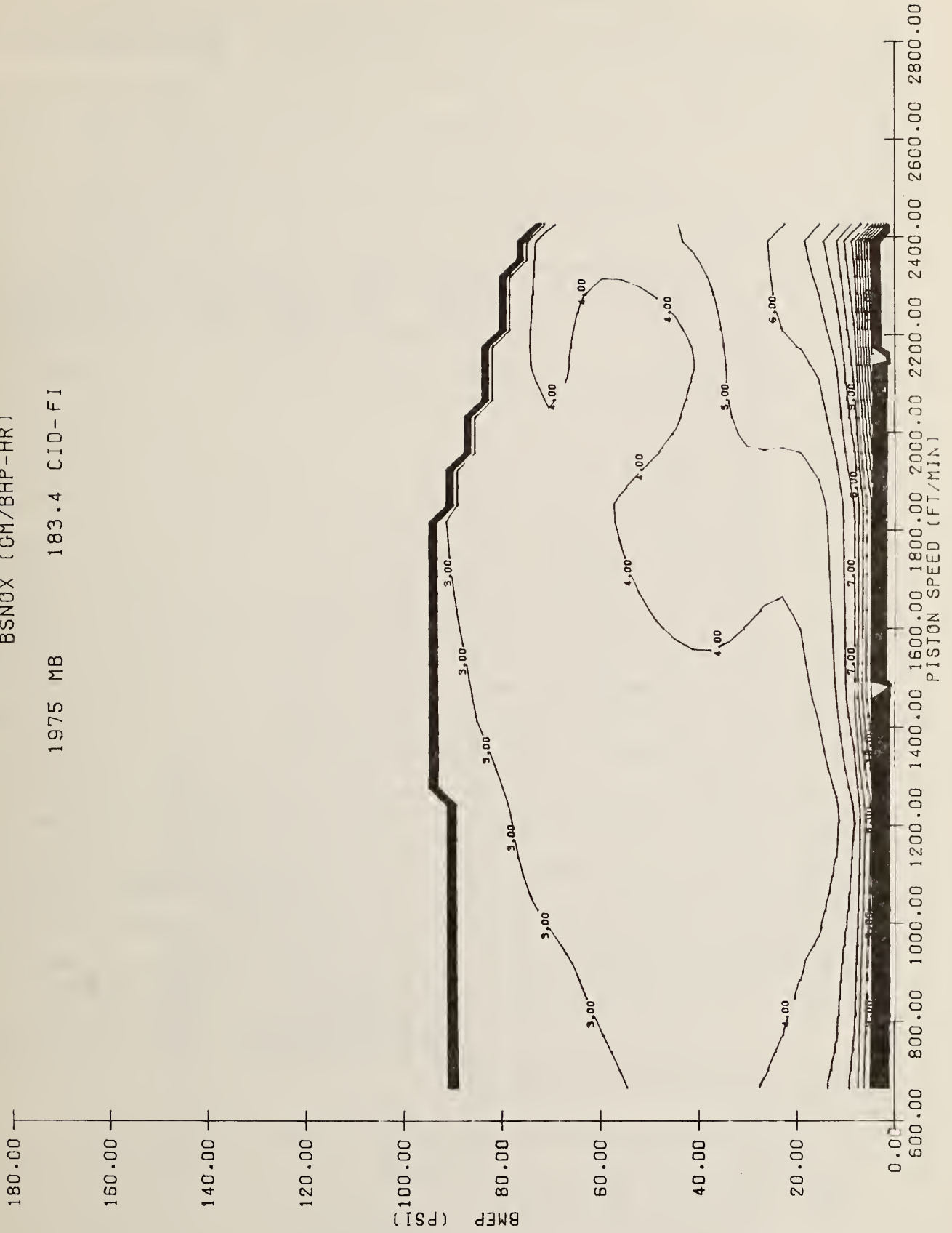
BSHC (GM/BHP-HR)

1975 MB 183.4 CID-FI



BSNOX (GM/BHP-HR)

1975 MB 183.4 CID-FI



ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	3.622	
Stroke, in.	3.346	
Displacement, in ³	276	
Compression Ratio	8.0	
Horsepower, BHP at RPM	180 BHP 4750 RPM	180 BHP 4750 RPM
Torque, ft-lb at RPM	220 ft-lb 3000 RPM	220 ft-lb 3000 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Air Injection Catalytic Converter EGR	Fuel Injection Air Injection Catalytic Converter EGR
NOTES:		
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation		
* = Data not available	Ref. 33	Ref. 33

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mercedes Benz-276 CID (4.5 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
450SL	A3	4000	3.06	42.0	Yes	13.2	0.25	2.70	688.	1.28	13	0.09	0.02	503.	0.95	18	14
450SLC	A3	4000	3.06	42.0	Yes	13.2	0.87	5.20	663.	1.69	13	0.21	1.70	476.	1.13	18	15
450SLC	A3	4500	3.06	43.0	Yes	14.0	0.24	1.70	735.	1.28	12	0.13	0.20	513.	1.23	17	14
450SEL	A3	4500	3.06	43.0	Yes	14.0	0.38	5.20	685.	1.72	13	0.13	0.20	484.	1.68	18	15

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mercedes Benz-276 CID (4.5 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
450SL	A3	4000	3.06	42.8	Yes	13.2	0.25	2.70	688.	1.28	13	0.09	0.20	503.	0.95	18	14
450SLC	A3	4500	3.06	43.0	Yes	14.0	0.24	1.70	735.	1.28	12	0.13	0.20	513.	1.23	17	14

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.213	
Stroke, in.	3.740	
Displacement, in ³	417	
Compression Ratio	8.0	
Horsepower, BHP at RPM	260 BHP 4000 RPM	260 BHP 4000 RPM
Torque, ft-lb at RPM	260 ft-lb 2500 RPM	360 ft-lb 2500 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	
Timing, degrees	*	
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Air Injection Catalytic Converter EGR Ref. 33	Fuel Injection Air Injection Catalytic Converter EGR Ref. 33

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
 FOR
 *1977 Mercedes Benz-417 CID (6.8 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
450SEL 6.9	A3	4500	2.65	36.0	Yes	14.0	0.25	3.80	837.	1.25	10	0.03	0.10	621.	1.32	14	12

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Mercedes Benz-417 CID (6.8 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	COMB- INED MPG		
							HC	CO	CO ₂	HC	CO	CO ₂			NO _x	NO _x
450SEL 6.9	A3	4500	2.65	36.8	Yes	14.0	0.25	3.80	837.	1.25	0.03	0.10	621.	1.32	14	12

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	2.992	
Stroke, in.	3.031	
Displacement, in ³	85	
Compression Ratio	8.5	
Horsepower, BHP at RPM	80 BHP 6000 RPM	(1) 78 BHP 6000 RPM
Torque, ft-lb at RPM	83 ft-lb 3600 RPM	(1) 83 ft-lb 3600 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.46	
Intake Valve Lift, in.	.311	
Exhaust Valve Diameter, in.	1.18	
Exhaust Valve Lift, in.	.324	
Intake Valve Opens, deg BTC	14	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	248	
Exhaust Valve Opens, deg BBC	56	
Exhaust Valve Closes, deg ATC	20	
Exhaust Valve Duration, deg	256	
Valve Overlap, deg	3 ^A	
Distributor Type	Transistorized	
Idle Speed, RPM	A-650D M-700N	A-650D M-700N
Timing, degrees	A+M-10BTC	A+M-10BTC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	Primary: .906	Secondary: 1.063
Vehicle Emission Control Systems	Air Injection EGR Ref. 32	Air Injection Catalytic Converter EGR Ref. 32

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

N-Neutral

D-Drive

(1) Ref. 31

*1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Nissan (Datsun)-85 CID (1.4 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
B-210	M5 W/OD	2250	3.70	49.1	N0	8.8	0.30	11.90	245.	1.41	36	0.07	0.10	184.	1.52	48	40
B-210	A3	2250	3.89	60.4	N0	8.8	1.15	10.30	354.	1.62	24	0.33	4.40	306.	1.58	28	26
F-10 Wagon	M4	2250	3.47	53.8	N0	8.8	1.13	10.50	305.	1.45	27	0.75	4.80	212.	2.52	40	32
F-10	M5	2250	3.47	53.8	N0	8.8	1.27	13.70	297.	1.89	28	0.88	5.30	212.	2.73	40	33
B-210	M4	2250	3.70	57.5	N0	8.8	1.15	8.50	298.	1.32	28	0.73	2.00	212.	2.29	41	33

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Nissan (Datsun)-85 CID (1.4 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
B-210	A3	2250	3.89	60.4	N0	8.8	0.20	2.20	362.	0.92	24	0.04	0.40	282.	1.19	31	27
B-210	A3	2500	3.89	60.4	N0	9.4	0.15	1.80	372.	1.13	24	0.03	0.10	312.	1.49	28	26
F-10 Wagon	M4	2250	3.47	53.8	N0	8.8	0.18	1.80	321.	1.03	27	0.03	0.20	227.	1.53	39	32
B-210	M4	2250	3.70	57.5	N0	8.8	0.21	2.90	303.	0.98	29	0.04	0.20	217.	1.26	41	33
F-10	M5	2250	3.47	54.1	N0	8.8	0.21	3.80	332.	1.13	26	0.04	0.20	231.	1.51	38	31
B-210	M5 w/OD	2250	3.70	49.1	N0	8.8	0.16	2.70	289.	1.06	30	0.03	0.20	211.	1.13	42	35

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	403/183	
No. of Cylinders	4	
Bore, in.	3.346	
Stroke, in.	3.385	
Displacement, in ³	119	
Compression Ratio	8.5	
Horsepower, BHP at RPM	97 BHP 5600 RPM	(1) BHP RPM
Torque, ft-lb at RPM	102 ft-lb 3200 RPM	(1) ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.654	
Intake Valve Lift, in.	.413	
Exhaust Valve Diameter, in.	1.378	
Exhaust Valve Lift, in.	.413	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	52	
Intake Valve Duration, deg	248	
Exhaust Valve Opens, deg BBC	54	
Exhaust Valve Closes, deg ATC	14	
Exhaust Valve Duration, deg	248	
Valve Overlap, deg	30	
Distributor Type	Breaker Point	Transistorized
Idle Speed, RPM	A-600D M-600N	A-600D M-600N
Timing, degrees	A+M-12 BTC	A+M-12 BTC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	Primary: 1.181	Secondary: 1.339
Vehicle Emission Control Systems	Air Injection EGR Ref. 32	Air Injection Catalytic Converter EGR Ref. 32

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

N = Neutral

D = Drive

(1) = Output slightly less than 49 states (Ref. 31)

* = 1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Nissan (Datsun)-119 CID (2.0 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
510	A3	2500	3.54	53.7	N0	9.4	1.19	9.50	337.	1.51	25	0.33	3.20	297.	0.96	29	27
510 Wagon	A3	2750	3.54	53.3	N0	9.9	1.21	10.60	349.	1.59	24	0.29	3.80	307.	1.21	28	26
200SX	A3	2750	3.70	56.6	N0	9.9	1.15	11.90	375.	1.45	22	0.17	3.80	320.	1.46	27	24
510 Wagon	M4	2750	3.54	53.3	N0	9.9	1.10	11.10	360.	1.47	23	0.44	3.60	276.	1.80	31	26
510	M5 w/OD	2500	3.54	45.3	N0	9.4	1.44	11.70	327.	1.53	25	0.66	3.40	245.	1.79	35	29
200SX	M5 w/OD	2750	3.89	50.8	N0	9.9	0.98	10.50	346.	1.40	24	0.42	5.50	256.	1.88	33	28

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Nissan (Datsun)-119 CID (2.0 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
510	A3	2750	3.54	53.1	NO	9.9	0.17	2.40	370.	0.95	24	0.02	0.10	309.	1.04	29	26
200SX	A3	2750	3.70	56.6	Yes	10.9	0.16	2.60	403.	1.00	22	0.01	0.10	354.	1.14	25	23
510 Wagon	M4	2750	3.54	53.3	NO	9.9	0.28	4.00	356.	0.93	24	0.04	0.40	276.	1.34	32	27
510	M5 W/OD	2750	3.54	45.3	Yes	10.9	0.26	4.70	344.	0.88	25	0.05	0.50	261.	1.26	34	28

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 Nissan (Datsun)-119 CID (2.0 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		HC	CO	CO ₂			NO _x	
Pickup	A3	2750	4.37	59.9	N0	9.9	1.48	11.90	364.	2.25	23	0.35	5.60	327.	2.31	26	24
Pickup	M4	2750	4.37	58.2	N0	9.9	1.35	7.70	367.	2.83	23	0.55	3.90	283.	2.46	30	26
Datsun Car Chassis	M4	3500	4.37	58.2	N0	11.2	1.21	13.00	438.	2.19	19	0.49	4.50	321.	3.18	27	22
Pickup	M5 w/OD	2750	4.37	50.3	N0	9.9	1.56	10.00	343.	2.41	24	0.56	3.20	264.	2.18	33	28

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 Nissan (Datsun)-119 CID (2.0 L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Pickup	A3	2750	4.38	59.9	No	11.5	0.27	4.10	403.	1.35	22	0.03	0.70	355.	1.78	25	23
Pickup	A3	2750	4.38	58.2	N0	11.5	0.33	2.60	380.	1.67	23	0.08	0.20	304.	2.20	29	25
Datsun Car Chassis	M4	3500	4.38	58.2	N0	21.5	0.30	8.60	505.	1.27	17	0.11	10.70	455	2.48	19	18
Pickup	M5 W/OD	2750	4.38	50.3	N0	11.5	0.37	3.50	379.	1.61	23	0.06	0.40	298.	1.64	30	26

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

1975 NISSAN (DATSUN) 119.1 CID (2.0L) - 2BBL

Engine tested by BERC.

Engine certified for: 49 states, passenger cars, automatic transmission.

ESFC

1975 DATSU 119.0 2 BBL

180.00 +

150.00 +

140.00 +

120.00 +

100.00 +
GHS

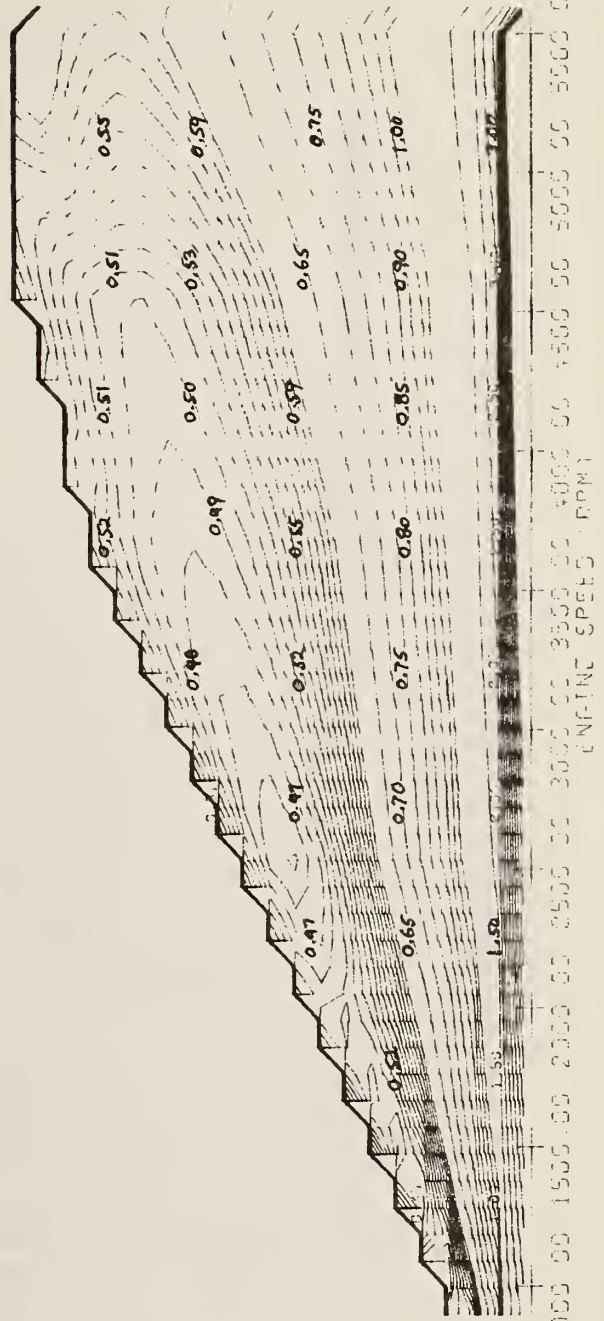
80.00 +

60.00 +

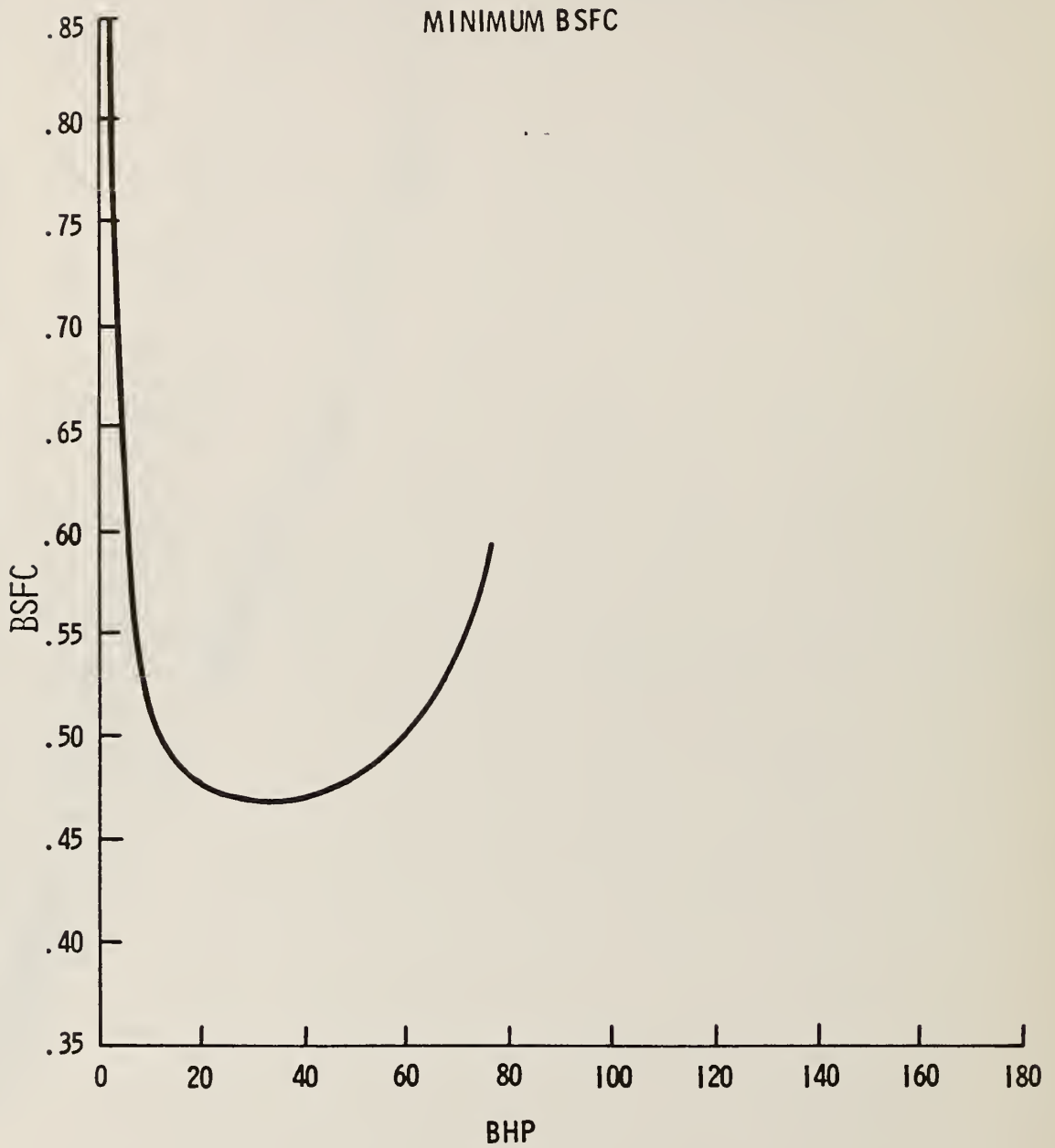
40.00 +

20.00 +

0.00 +



1975 Nissan (Datsun) 119 CID (2.0L), L4 - 2BBL



BSC0 100-140 HP
 1975 DATSU 119.0 IN. 2BBL

180.00 +

150.00 +

140.00 +

120.00 +

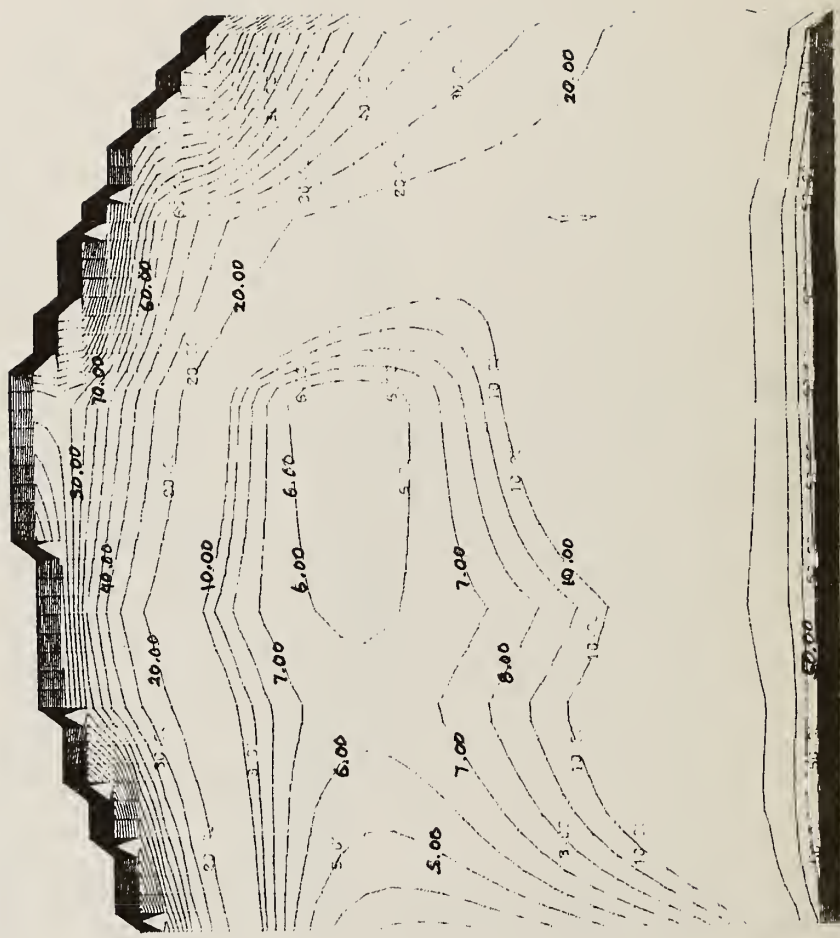
100.00 +

80.00 +

50.00 +

40.00 +

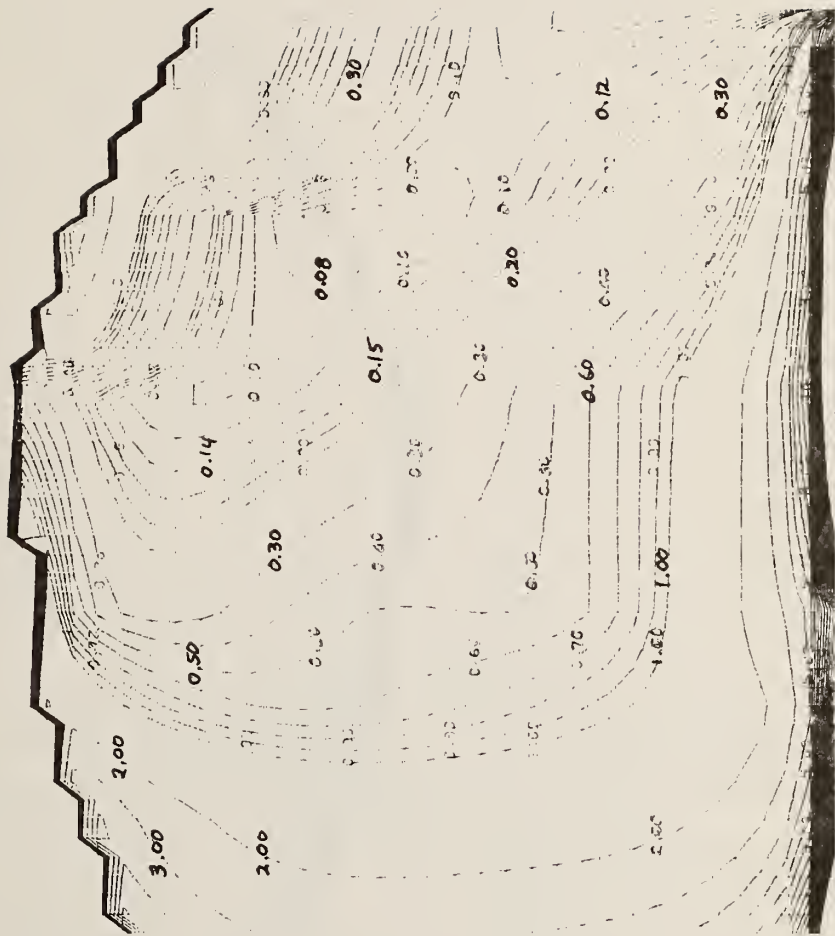
20.00 +



0.00
 20.00 40.00 80.00 120.00 160.00 200.00 250.00 290.00 300.00 320.00 340.00 360.00 380.00 400.00 440.00
 PISTON SPEED (FT/MIN)

USHC

.975 DATSU 119.0 2BBL



0.00+ 400.00 800.00 1200.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00
0.00+ 0.00 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80 3.00 3.20 3.40 3.60 3.80 4.00
PROGRAM SPREADSHEET

BSNOX 10M18HC HP

1975 DATSU 119.0 CID-CBBL

120.00

100.00

80.00

60.00

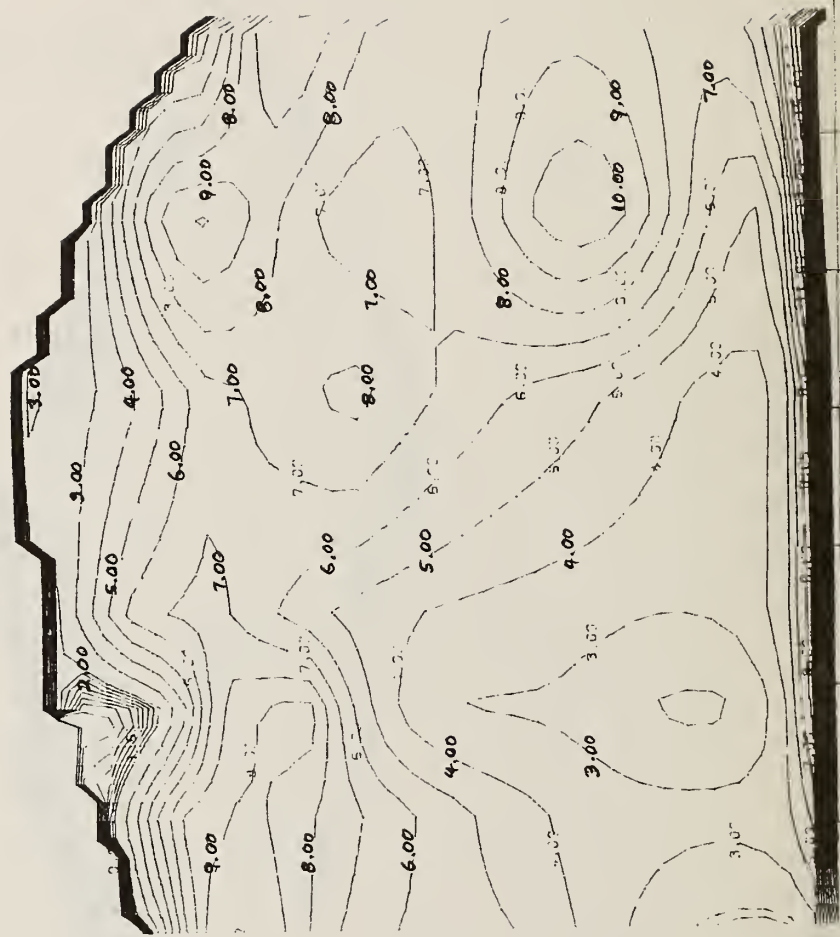
40.00

20.00

0.00

0.00

0.00



0.00 400.00 800.00 1200.00 1600.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00
PISTON SPEED (FT/MIN)

*1977 Nissan (Datsun) 146 CID (2.4 L)-Fuel Injection

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	6	
Bore, in.	3.268	
Stroke, in.	2.902	
Displacement, in ³	146	
Compression Ratio	8.6	
Horsepower, BHP at RPM	127 BHP 5600 RPM	(1) BHP RPM
Torque, ft-lb at RPM	138 ft-lb 4400 RPM	(1) ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.654	
Intake Valve Lift, in.	.394	
Exhaust Valve Diameter, in.	1.381	
Exhaust Valve Lift, in.	.413	
Intake Valve Opens, deg BTC	14	
Intake Valve Closes, deg ABC	52	
Intake Valve Duration, deg	240	
Exhaust Valve Opens, deg BBC	54	
Exhaust Valve Closes, deg ATC	12	
Exhaust Valve Duration, deg	248	
Valve Overlap, deg	26	
Distributor Type	Battery-Coil	
Idle Speed, RPM	M-700N A-650D	M-700N A-650D
Timing, degrees	M-10 BTC A-10 BTC	M-10 BTC A-10 BTC
Fuel System Type	Electronic Fuel Injection	
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection EGR	Fuel Injection Catalytic Converter EGR
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1) - Output slightly less
than 49 states (Ref. 31)

* - 1978 Data not available

N - Neutral

D - Drive

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Nissan (Datsun) 146 CID (2.4 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x			
810	A3	3000	3.70	52.9	Yes	11.3	0.28	3.40	505.	1.12	17	0.03	0.20	417.	1.04	21	19	
810 Wagon	M4	3000	3.70	53.4	Yes	11.3	0.24	2.20	500.	0.98	18	0.04	0.40	377.	1.10	24	20	

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*1977 Nissan (Datsun) 168 CID (2.8 L)-Fuel Injection

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	6	
Bore, in.	3.386	
Stroke, in.	3.110	
Displacement, in ³	168	
Compression Ratio	8.3	
Horsepower, BHP at RPM	(1)170 BHP5600 RPM	(1) 170 BHP 5600 RPM
Torque, ft-lb at RPM	(1)177 ft-lb 4400 RPM	(1) 177 ft-lb 4400 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.732	
Intake Valve Lift, in.	.413	
Exhaust Valve Diameter, in.	1.382	
Exhaust Valve Lift, in.	.413	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	52	
Intake Valve Duration, deg	248	
Exhaust Valve Opens, deg BBC	54	
Exhaust Valve Closes, deg ATC	14	
Exhaust Valve Duration, deg	248	
Valve Overlap, deg	30	
Distributor Type	Battery-Coil	
Idle Speed, RPM	M-800 N A-700D	M-800N A-700D
Timing, degrees	M-10BTC A-10BTC	M-10BTC A-10BTC
Fuel System Type	Electronic Fuel Injection	
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection EGR Ref 32	Fuel Injection Catalytic Converter EGR Ref. 32

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1)-Ref. 31

* - 1978 Data not available

D = Drive

N = Neutral

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Nissan (Datsun) 168 CID (2.8 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
280Z	A3	3000	3.54	49.6	Yes	11.3	1.21	6.10	506.	1.71	17	0.60	3.50	383.	1.83	23	19
280Z	M4	3000	3.54	49.6	Yes	11.3	1.16	7.50	477.	1.83	18	0.99	3.70	336.	2.49	26	21
280Z	M5 W/OD	3000	3.54	42.9	Yes	11.3	1.27	8.50	465.	1.83	18	0.99	3.30	313.	2.41	28	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Nissan (Datsun) 168 CID (2.8 L) Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	NO _x	HC	CO				CO ₂
280Z	A3	3000	3.54	49.6	Yes	11.3	0.29	3.40	498.	1.29	0.04	0.10	399.	1.18	22	19
280Z	M4	3000	3.54	49.6	Yes	11.3	0.26	3.30	504.	1.05	0.05	0.20	374.	0.88	24	20
280Z	M5 w/OD	3000	3.54	42.9	NO	10.3	0.24	2.90	477.	0.90	0.05	0.20	331.	0.87	27	21

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	850/385	Ref. 1.10
No. of Cylinders	6	
Bore, in.	3.625	
Stroke, in.	4.00	
Displacement, in ³	247.3	
Compression Ratio	*	
Horsepower, BHP at RPM	98 BHP 3600 RPM	98 BHP 3600 RPM
Torque, ft-lb at RPM	153 ft-lb RPM	153 ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems		

NOTES:

A = Automatic transmission

M = Manual transmission

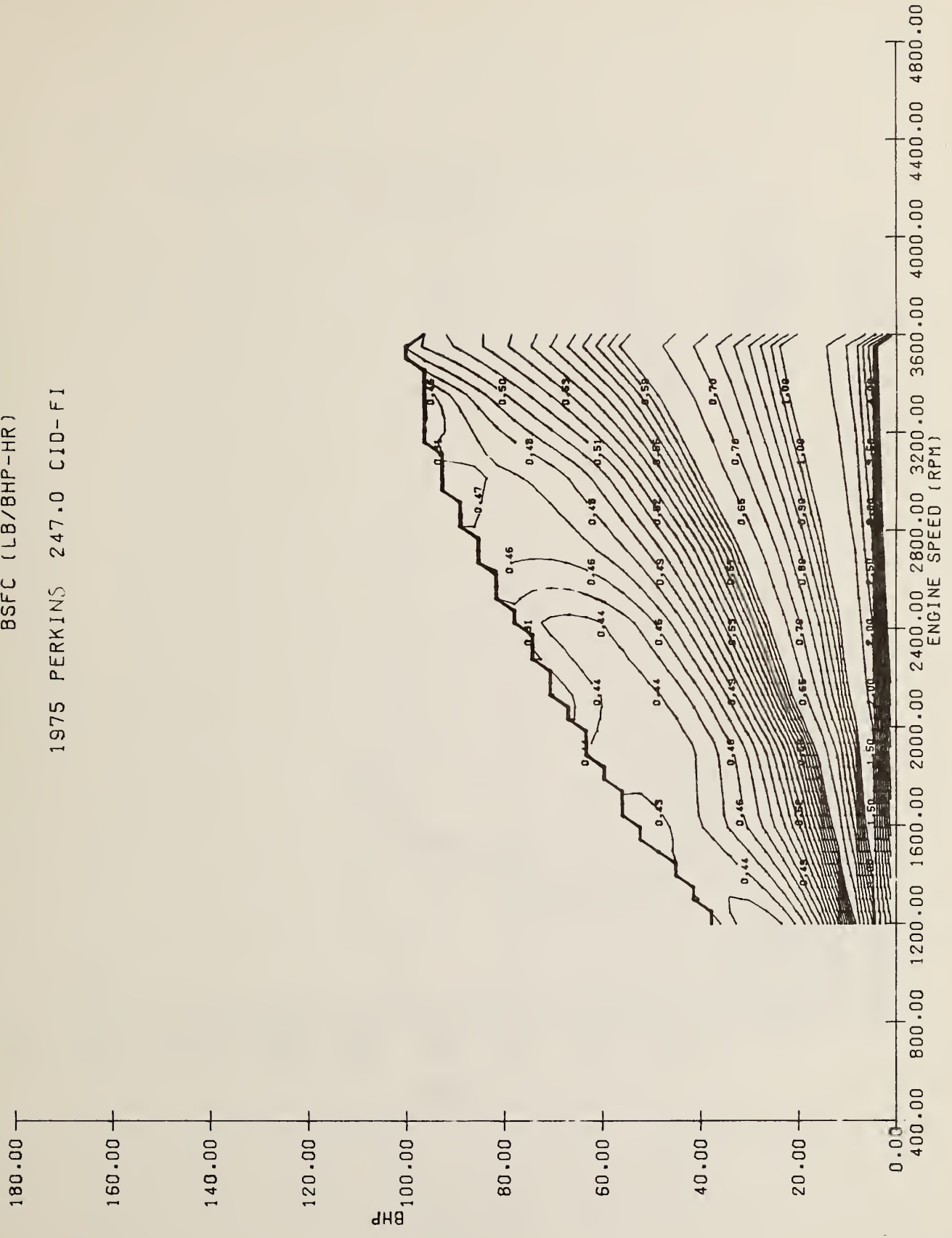
EGR = Exhaust gas recirculation

* = Data not available

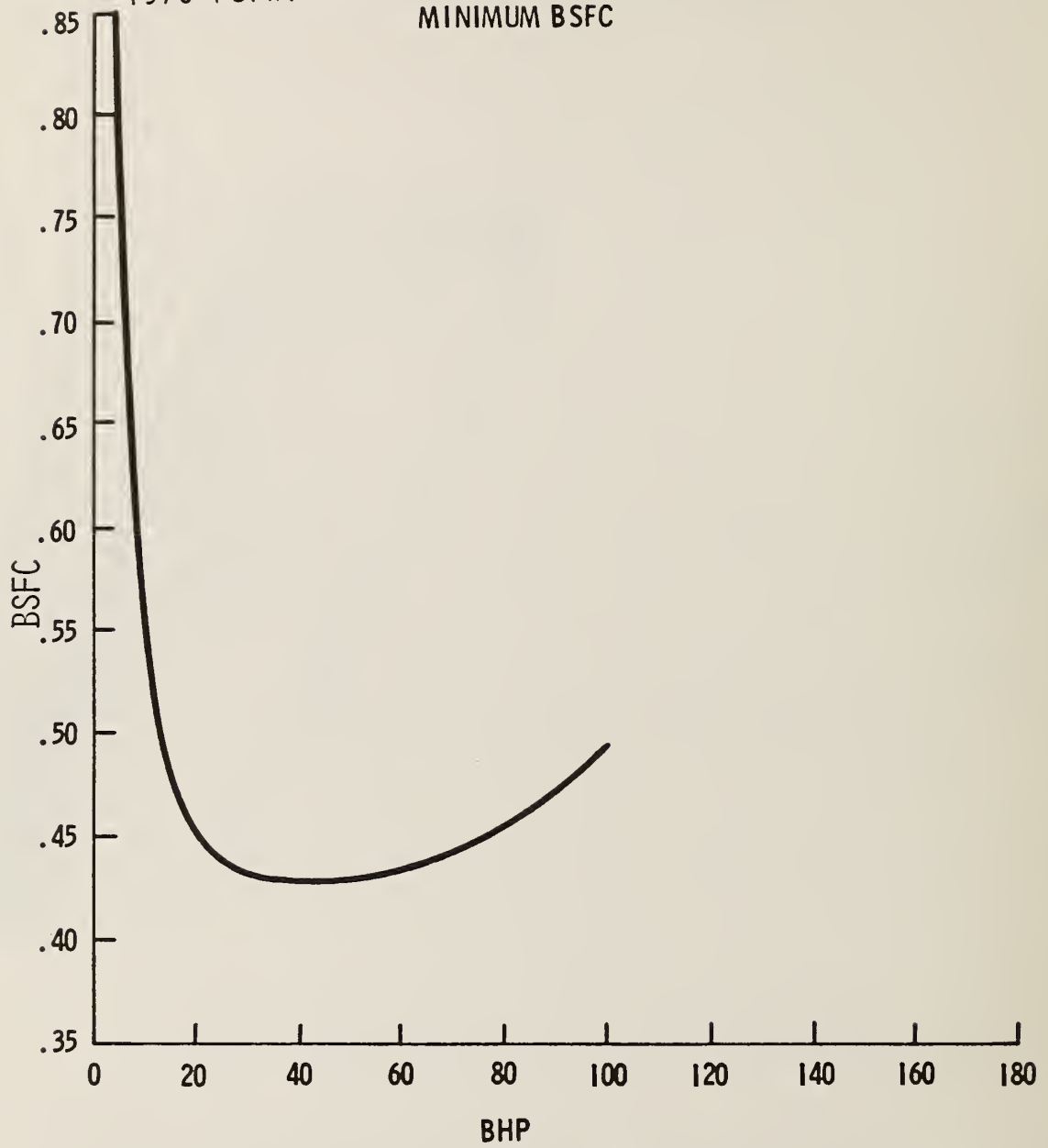
1975 PERKINS 247 CID (4.0L), Diesel-F.I.

Engine tested by BERC.

BSFC (LB/BHP-HR)
1975 PERKINS 247.0 CID-FI

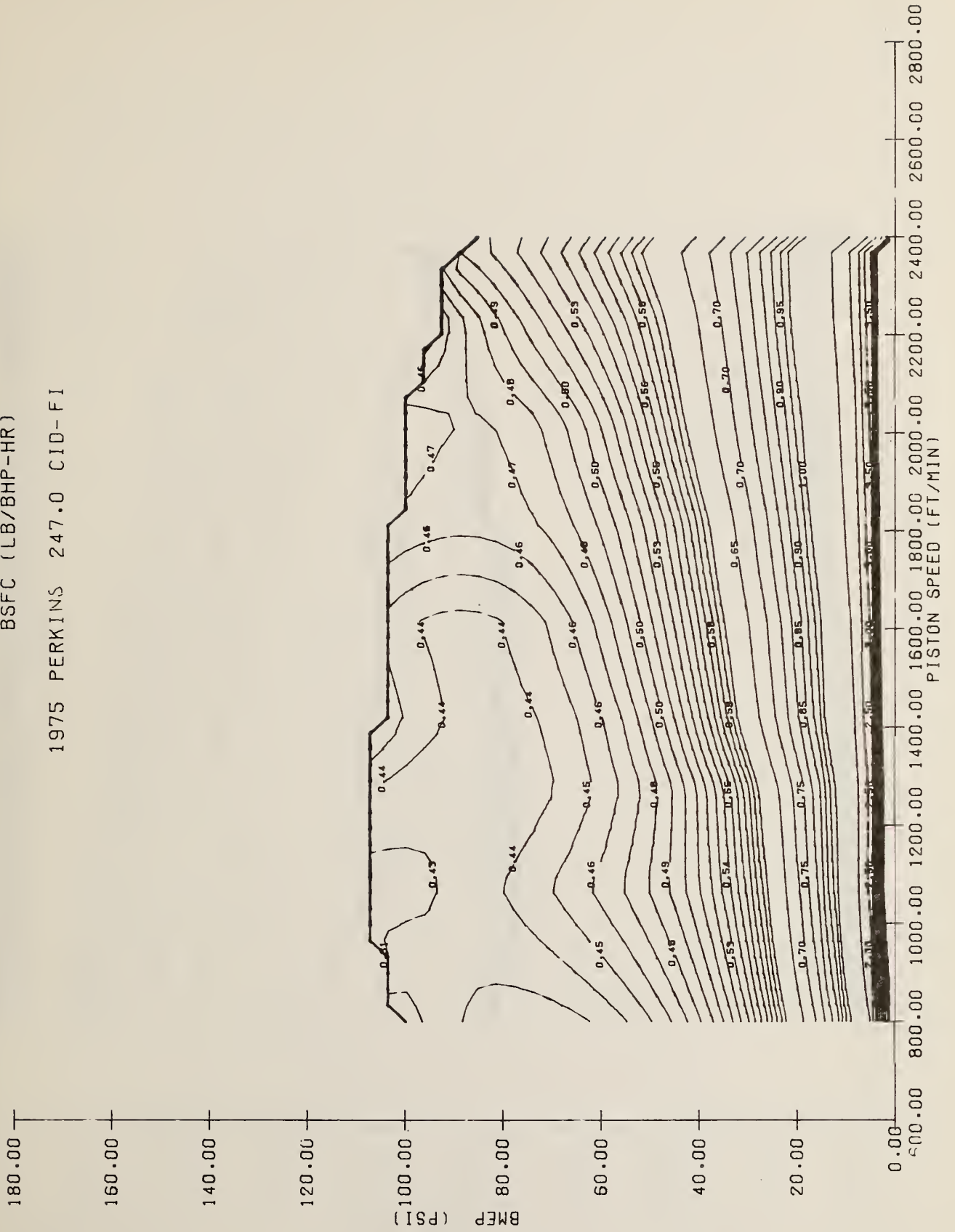


1975 Perkins-247 CID(4.0L) Diesel, L6, F.I.
MINIMUM BSFC

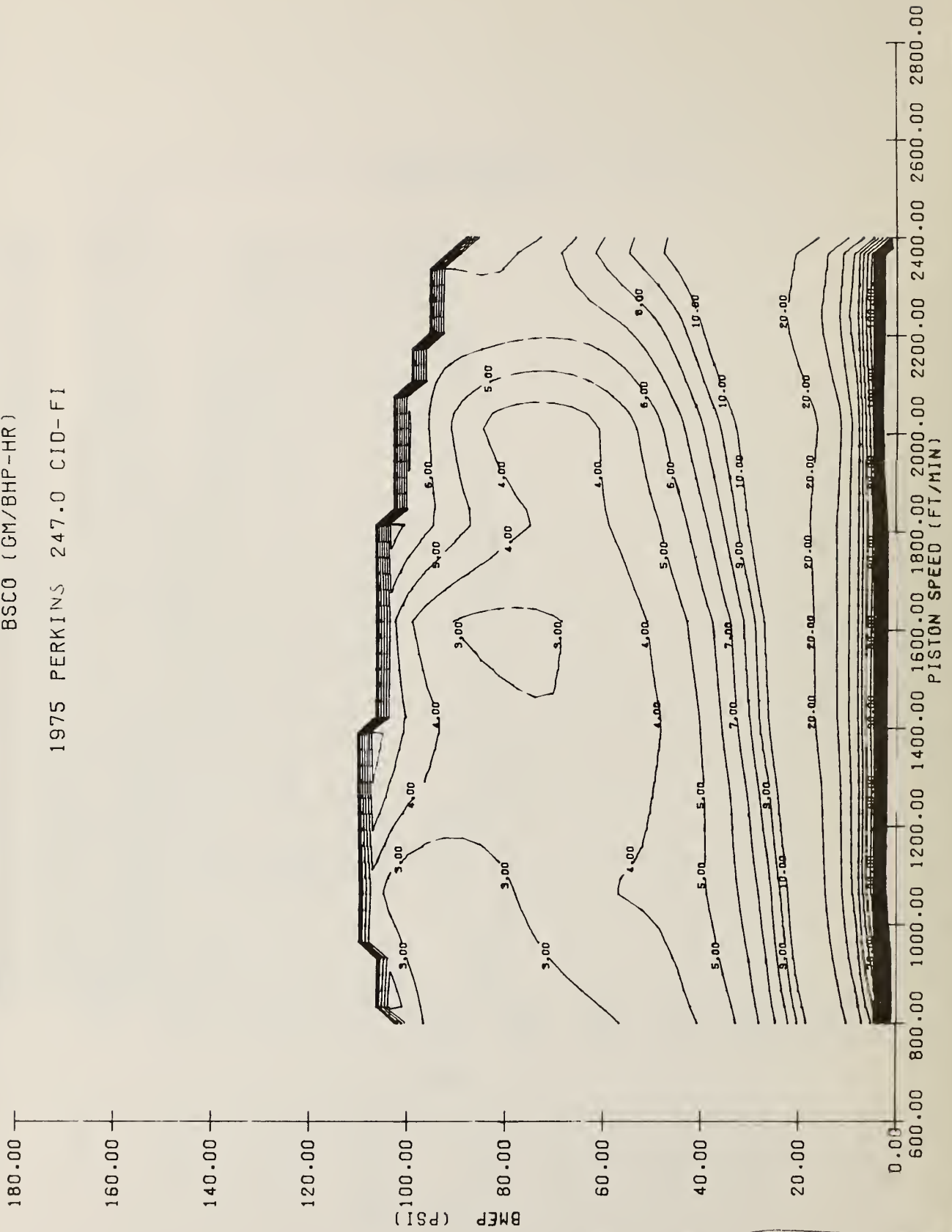


BSFC (LB/BHP-HR)

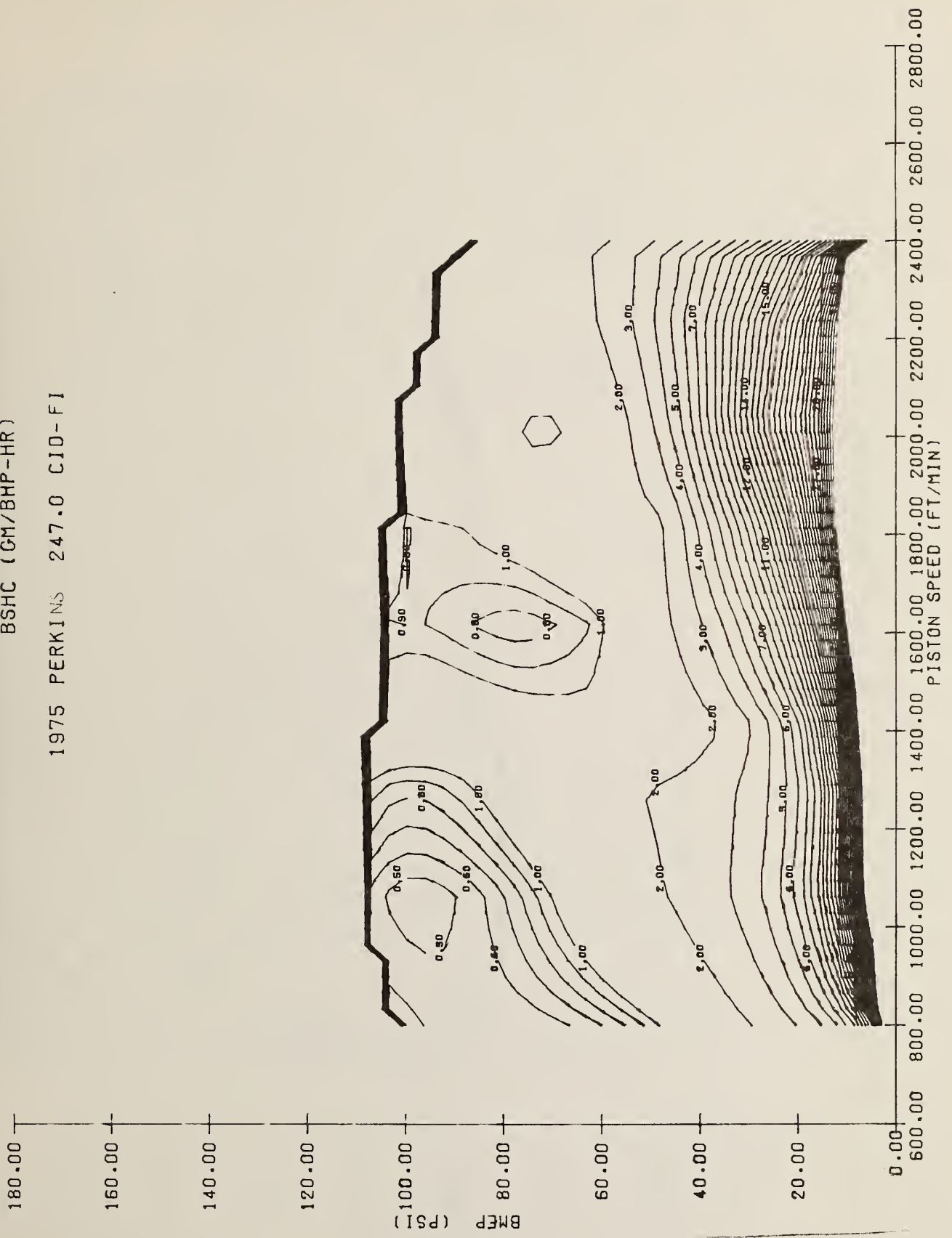
1975 PERKINS 247.0 CID-FI



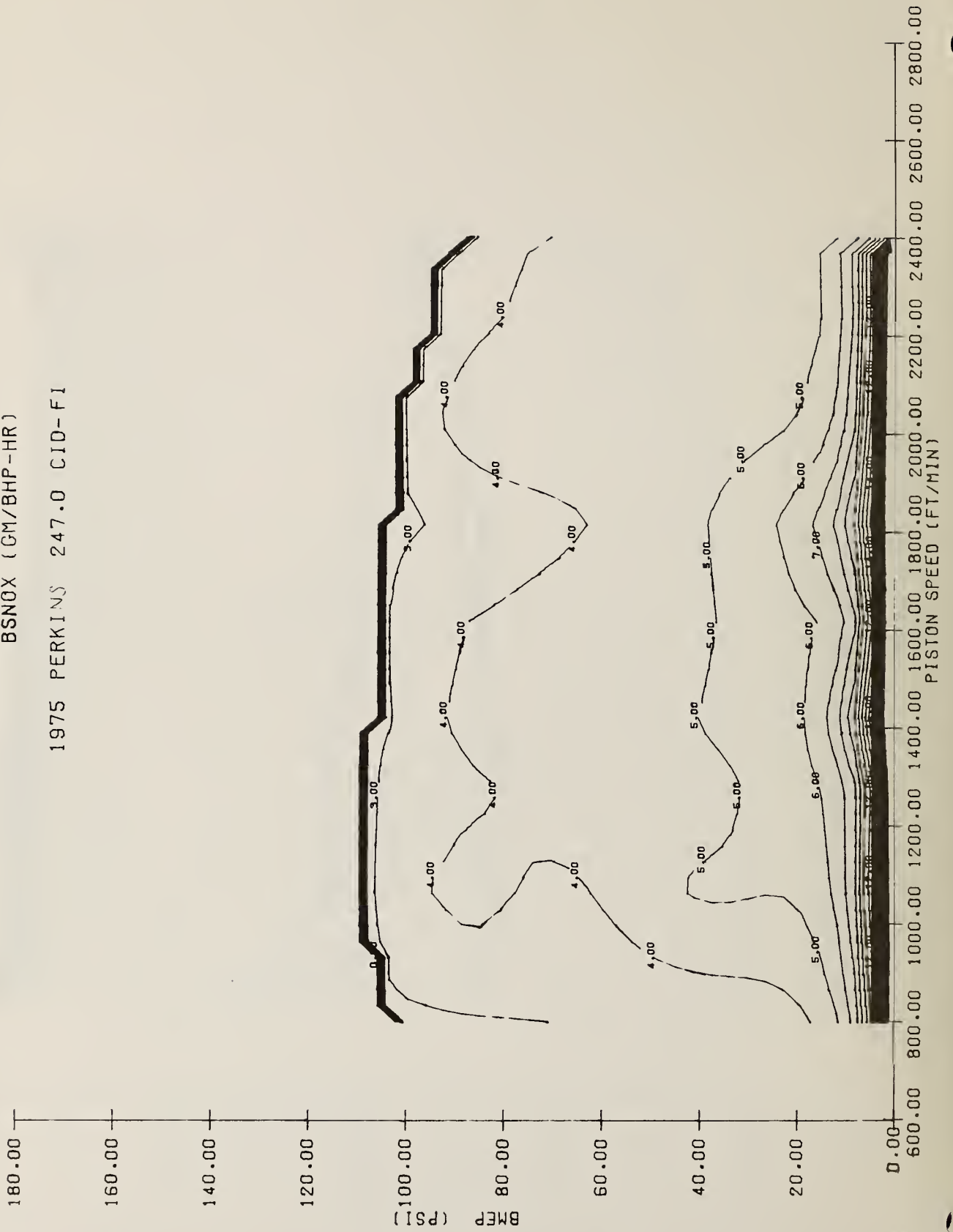
BSC0 (GM/BHP-HR)
1975 PERKINS 247.0 CID-FI



BSHC (GM/BHP-HR)
 1975 PERKINS 247.0 CID-FI



BSNOX (GM/BHP-HR)
1975 PERKINS 247.0 CID-FI



Peugeot 504D - 129 CID (2.1L) - Diesel - F.I.
(Pre-Production Engine)

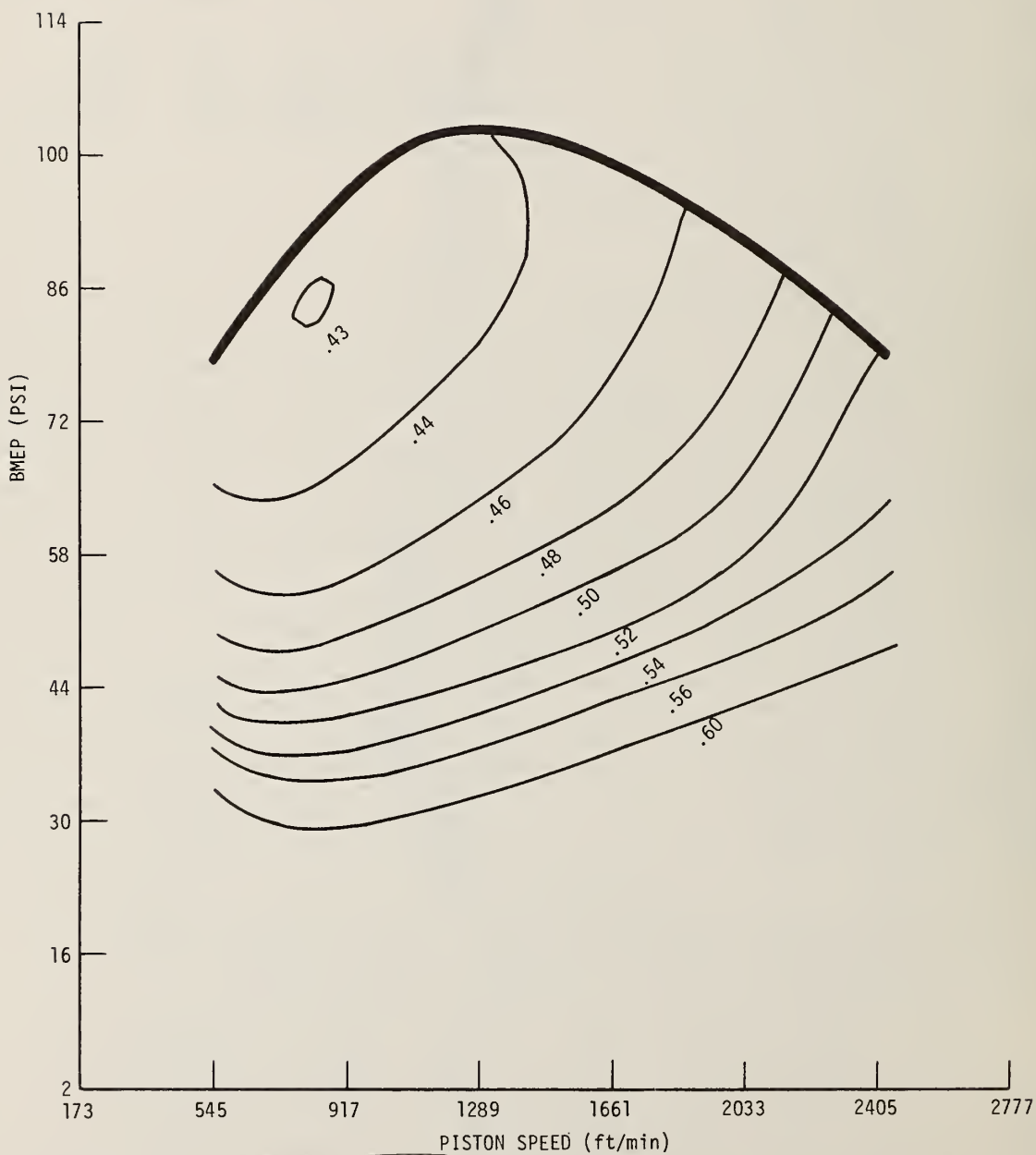
ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	L 4	
Bore, in.	3.593	(90.0mm)
Stroke, in.	3.268	(83.0mm)
Displacement, in ³	129	
Compression Ratio	*	
Horsepower, BHP at RPM	58 BHP 4500 RPM	BHP RPM
Torque, ft-lb at RPM	88 ft-lb 2400 RPM	ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, rpm	1000	
Timing Degrees	*	
Fuel System Type	F.I.	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection	

NOTE: A = Automatic
* Data not available

SOURCE: Ricardo Consulting Engineers

PEUGEOT 504D - 129 CID (2.1L), DIESEL - F.I.
(PRE-PRODUCTION ENGINE)

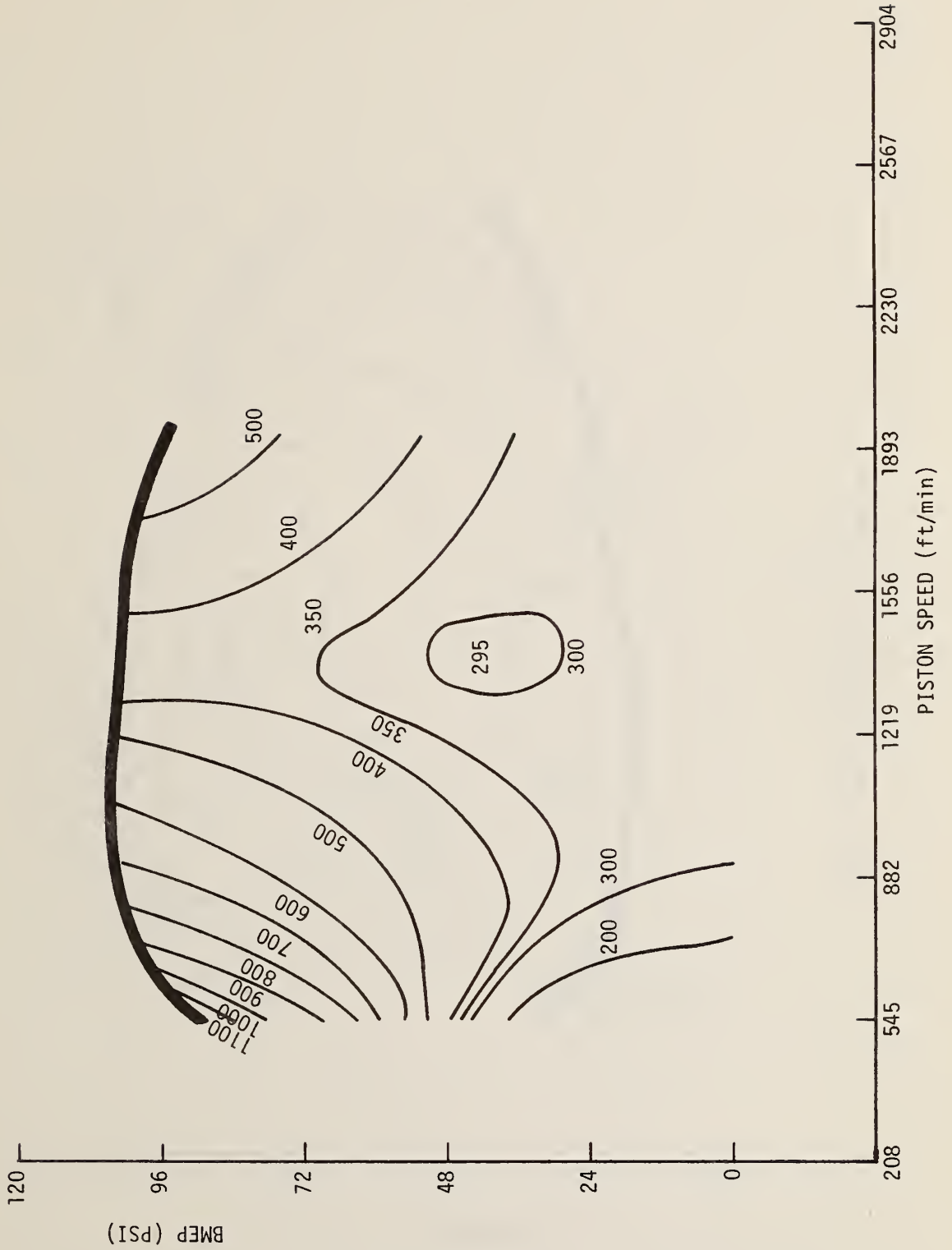
$$\text{BSFC} \left(\frac{\text{LB}}{\text{BHP-HR}} \right)$$



SOURCE: Ricardo Consulting Engineers

PEUGEOT 504D - 129 CID (2.1L), DIESEL - F.I.
(PRE-PRODUCTION ENGINE)

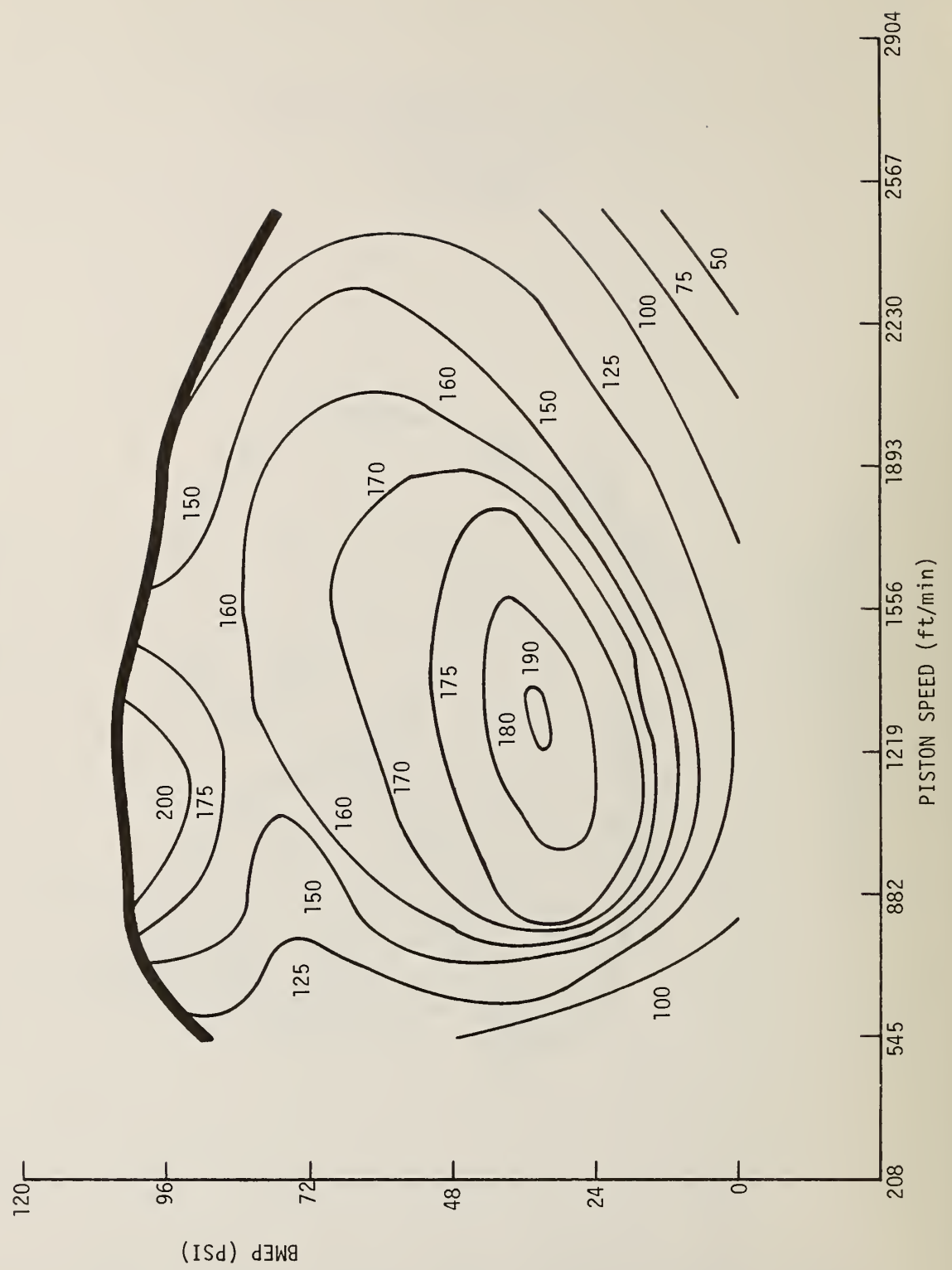
E - CO (PPM)



SOURCE: Ricardo Consulting Engineers

PEUGEOT 504D ~ 129 CID (2.1L), DIESEL ~ F.I.
(PRE-PRODUCTION ENGINE)

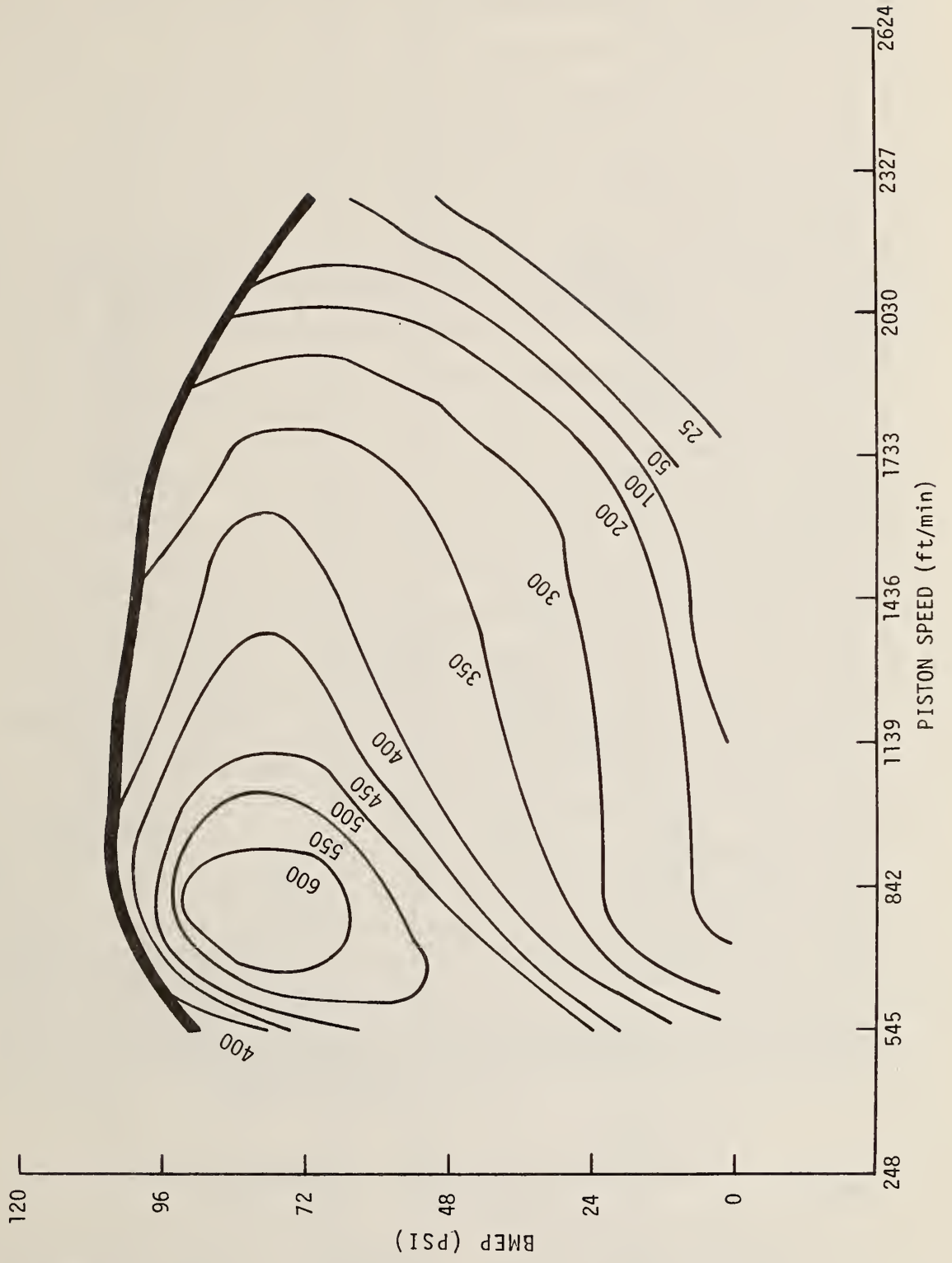
E - HC (PPM)



SOURCE: Ricardo Consulting Engineers

PEUGEOT 504D - 129 CID(2.1L), DIESEL - F.I.
(PRE-PRODUCTION ENGINE)

E - NO_x (PPM)



SOURCE: Ricardo Consulting Engineers

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.464	
Stroke, in.	3.189	
Displacement, in ³	120	
Compression Ratio	8.0	
Horsepower, BHP at RPM	(1)88 BHP 8000 RPM	(1)88 BHP 5000 RPM
Torque, ft-lb at RPM	(1)109 ft-lb 3000 RPM	(1)109 ft-lb 3000 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.615	
Intake Valve Lift, in.	.351	
Exhaust Valve Diameter, in.	1.319	
Exhaust Valve Lift, in.	.351	
Intake Valve Opens, deg BTC	4.5	
Intake Valve Closes, deg ABC	40	
Intake Valve Duration, deg	224.5	
Exhaust Valve Opens, deg BBC	38	
Exhaust Valve Closes, deg ATC	5	
Exhaust Valve Duration, deg	223	
Valve Overlap, deg	9.5	
Distributor Type	Breaker Point	
Idle Speed, RPM	900	900
Timing, degrees	5BTC	5BTC
Fuel System Type	2 Carburetors - 1BBL-downdraft	
Choke Type	Manual w/automatic override	
Carburetor Barrel Diameter, in.	Primary: .945	Secondary: 1.031
Vehicle Emission Control Systems (1)-Ref. 31	Air Injection Thermal Reactor	Air Injection Thermal Reactor

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.701	
Stroke, in.	3.260	
Displacement, in ³	141	
Compression Ratio	22.4	
Horsepower, BHP at RPM	71 BHP 4500 RPM	71 BHP 4500 RPM
Torque, ft-lb at RPM	99 ft-lb 2500 RPM	99 ft-lb 2500RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection	Fuel Injection
NOTES:		
A = Automatic transmission		
M = Manual transmission	Ref. 32	Ref. 32
EGR = Exhaust gas recirculation		
* = Data not available		

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Peugeot - 141 CID (2.3 L) Diesel-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
504	A3	3500	3.78	52.3	YES	12.3	0.66	1.20	401.	1.21	25	0.35	1.00	320.	0.90	32	28
504	A3	3500	3.78	52.3	NO	11.2	0.52	1.20	385.	1.11	26	0.25	1.00	333.	0.91	30	28
504 Wagon	A3	3500	4.11	56.0	NO	11.2	0.60	1.30	388.	1.05	26	0.15	0.90	331.	0.93	31	28
504 Wagon	A3	3500	4.11	56.0	YES	12.3	0.55	1.30	411.	1.17	24	0.15	0.80	340.	1.03	30	27
504	M4	3500	3.70	51.4	NO	11.2	0.89	1.60	355.	1.01	28	0.18	0.90	289.	0.85	35	31
504	M4	3500	3.70	51.4	YES	12.3	0.96	2.10	358.	1.03	28	0.33	1.00	296.	0.99	34	30
504 Wagon	M4	3500	4.11	56.0	NO	11.2	0.91	2.00	372.	0.96	27	0.36	1.20	290.	0.78	35	30
504 Wagon	M4	3500	4.11	56.0	YES	12.3	0.70	1.80	378.	1.02	27	0.18	1.00	316.	0.89	32	29

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = ENGINE RPM USING HIGHEST TRANSMISSION GEAR
VEHICLE SPEED IN MPH

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Peugeot-141 CID (2.3 L) Diesel-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
504	A3	3500	3.78	52.3	YES	12.3	0.66	1.20	401.	1.21	25	0.35	1.00	320.	0.90	32	28
504	A3	3500	3.78	52.5	NO	11.2	0.52	1.20	385.	1.11	26	0.25	1.00	333.	0.91	30	28
504 Wagon	A3	3500	4.11	56.0	NO	11.2	0.60	1.30	388.	1.05	26	0.15	0.90	331.	0.93	31	28
504 Wagon	A3	3500	4.11	56.0	YES	12.3	0.55	1.30	411.	1.17	24	0.15	0.80	340.	1.03	30	27
504	M4	3500	3.70	51.4	NO	11.2	0.89	1.60	355.	1.01	28	0.18	0.90	289.	0.85	35	31
504	M4	3500	3.70	51.4	YES	12.3	0.96	2.10	358.	1.03	28	0.33	1.00	296.	0.99	34	30
504 Wagon	M4	3500	4.11	56.0	NO	11.2	0.91	2.00	372.	0.96	27	0.36	1.20	290.	0.78	35	30
504 Wagon	M4	3500	4.11	56.0	YES	12.3	0.70	1.80	378.	1.02	27	0.18	1.00	316.	0.89	32	29

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.465	
Stroke, in.	2.874	
Displacement, in ³	163	
Compression Ratio	8.7	
Horsepower, BHP at RPM	133 BHP - 5750 RPM	133 BHP 5750 RPM
Torque, ft-lb at RPM	147 ft-lb 3500 RPM	147 ft-lb 3500 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Carburetor - 1BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems		

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.406	
Stroke, in.	3.323	
Displacement, in ³	121	
Compression Ratio	8.5	
Horsepower, BHP at RPM	110 BHP 5750 RPM	(1) BHP RPM
Torque, ft-lb at RPM	111 ft-lb 3500RPM	(1) ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems (1) -Output slightly less than 49 States (Ref. 31)	Fuel Injection Air Injection EGR Ref. 33	Fuel Injection Catalytic Converter EGR Ref.33

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

(1) Output slightly less than 49 states (Ref. 31)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.740	
Stroke, in.	2.772	
Displacement, in ³	183	
Compression Ratio	8.5	
Horsepower, BHP at RPM	172 BHP 5500 RPM	(1) BHP RPM
Torque, ft-lb at RPM	189 ft-lb 4200RPM	(1) ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems (1) Output slightly less than 49 States (Ref. 31)	Fuel Injection	Fuel Injection

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

(1) Output slightly less than 49 states (Ref. 31)

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Porsche-183 CID (3.0 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂		NO _x	
Turbo Carrera	M4	3000	4.22	37.6	YES	6.8	0.18	6.50	630.	0.98	14	0.01	1.50	362.	0.77	24	17

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
 - b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
 - c. AIR CONDITIONING SIMULATION
 - d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS
- * = 1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.819	
Stroke, in.	3.047	
Displacement, in ³	201	
Compression Ratio	6.5	
Horsepower, BHP at RPM	253 BHP 5500 RPM	253 BHP 5500 RPM
Torque, ft-lb at RPM	282 ft-lb 4000 RPM	282 ft-lb 4000RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Turbo-Charged	Fuel Injection Turbo-Charged

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	3.740	
Stroke, in.	3.106	
Displacement, in ³	273	
Compression Ratio	8.5	
Horsepower, BHP at RPM (1)	218 BHP 5200 RPM	218 BHP 5200 RPM
Torque, ft-lb at RPM (1)	225 ft-lb 3200 RPM	225 ft-lb 3200 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection	Fuel Injection

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Certification data not available

(1) - 49 States and California output figures are estimates (Ref. 31)

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	2.874	
Stroke, in.	3.031	
Displacement, in ³	79	
Compression Ratio	8.5	
Horsepower, BHP at RPM	59 BHP 6000 RPM	59 BHP 6000 RPM
Torque, ft-lb at RPM	70 ft-lb 3500 RPM	70 ft-lb 3500 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.3189	
Intake Valve Lift, in.	.1948	
Exhaust Valve Diameter, in.	1.1929	
Exhaust Valve Lift, in.	.1942	
Intake Valve Opens, deg BTC	22	
Intake Valve Closes, deg ABC	62	
Intake Valve Duration, deg	264	
Exhaust Valve Opens, deg BBC	65	
Exhaust Valve Closes, deg ATC	25	
Exhaust Valve Duration, deg	270	
Valve Overlap, deg	47	
Distributor Type	Breaker Point	
Idle Speed, RPM	M-850N	M-850N
Timing, degrees	0 TDC	0 TDC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Mechanical	
Carburetor Barrel Diameter, in.	1.259	
Vehicle Emission Control Systems	Air injection EGR	Catalytic converter Air injection EGR
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation N - Neutral

*1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.11	
Stroke, in.	3.307	
Displacement, in ³	100	
Compression Ratio	9.25	
Horsepower, BHP at RPM	71 BHP 5500 RPM	71 BHP 5500 RPM
Torque, ft-lb at RPM	84 ft-lb 3500 RPM	84 ft-lb 3500 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.657	
Intake Valve Lift, in.	.214	
Exhaust Valve Diameter, in.	1.392	
Exhaust Valve Lift, in.	.214	
Intake Valve Opens, deg BTC	24	
Intake Valve Closes, deg ABC	53	
Intake Valve Duration, deg	260	
Exhaust Valve Opens, deg BBC	59	
Exhaust Valve Closes, deg ATC	21	
Exhaust Valve Duration, deg	260	
Valve Overlap, deg	42	
Distributor Type	Breaker Point	
Idle Speed, RPM	A-650 ± 25D	A-650 ± 25D
Timing, degrees	A-7BTC	A-7BTC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Hot Water Automatic	
Carburetor Barrel Diameter, in.	1.26	
Vehicle Emission Control Systems	Air injection EGR	Catalytic converter Air injection EGR
NOTES:	Ref. 33	Ref. 33

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

D = Drive

D = Drive

*1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Renault-100 CID(1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	HC	CO	CO ₂				NO _x
Renault 12	A3	2500	3.55	56.6	N0	9.4	1.37	14.60	399.	1.77	0.40	4.20	327.	1.93	26	23
Renault 17	A3	2750	3.55	56.6	N0	9.9	1.04	12.30	421.	1.85	0.42	3.50	338.	1.88	26	22
Renault 14 Wagon	M4	2500	3.55	56.1	N0	9.4	1.25	11.80	377.	1.32	0.37	5.80	256.	2.32	33	26

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*-1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Renault-100 CID(1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Renault 12	A3	2500	3.55	56.6	N0	9.4	0.29	3.80	400.	1.27	22	0.03	0.10	323.	0.87	27	24
Renault 17	A3	2750	3.55	56.6	N0	9.9	0.17	1.80	434.	1.23	20	0.02	0.10	350.	1.07	25	22
Renault 12 Wagon	M4	2500	3.55	56.1	N0	9.4	0.19	1.90	428.	1.17	20	0.04	0.10	294.	1.29	30	24

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.11	
Stroke, in.	3.307	
Displacement, in ³	100	
Compression Ratio	9.3	
Horsepower, BHP at RPM	94 BHP 6250 RPM	N/A BHP RPM
Torque, ft-lb at RPM	90 ft-lb 3500 RPM	N/A ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.657	
Intake Valve Lift, in.	.225	
Exhaust Valve Diameter, in.	1.392	
Exhaust Valve Lift, in.	.225	
Intake Valve Opens, deg BTC	30	
Intake Valve Closes, deg ABC	72	
Intake Valve Duration, deg	282	
Exhaust Valve Opens, deg BBC	72	
Exhaust Valve Closes, deg ATC	30	
Exhaust Valve Duration, deg	282	
Valve Overlap, deg	60	
Distributor Type	Breaker Point	
Idle Speed, RPM	M-850 + 25	N/A
Timing, degrees	M-12BTC	N/A
Fuel System Type	Electronic Fuel Injection	
Choke Type	Cold Start Injector	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel injection EGR Air injection	N/A
NOTES:	Ref. 33	

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation *1977 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	8	
Bore, in.	4.098	
Stroke, in.	3.902	
Displacement, in ³	412	
Compression Ratio	7.3	
Horsepower, BHP at RPM	(1)240 BHP 4000 RPM	(1)240 BHP 4000 RPM
Torque, ft-lb at RPM	(1)350ft-lb 2500 RPM	(1)350 ft-lb 2500 RPM
Exhaust System Type	Single	Ref. 26
Intake Valve Diameter, in.	1.90	
Intake Valve Lift, in.	.400	
Exhaust Valve Diameter, in.	1.535	
Exhaust Valve Lift, in.	.400	
Intake Valve Opens, deg BTC	10.5	
Intake Valve Closes, deg ABC	75.5	
Intake Valve Duration, deg	266	
Exhaust Valve Opens, deg BBC	52.5	
Exhaust Valve Closes, deg ATC	33.5	
Exhaust Valve Duration, deg	266	
Valve Overlap, deg	44	
Distributor Type	Transisterized	
Idle Speed, RPM	A-600N	A-600N
Timing, degrees	A-15BTC @ 1200RPM	A-15BTC @ 1200RPM
Fuel System Type	2-Carburetors-1BBL downdraft	
Choke Type	Automatic-Butterfly Type	
Carburetor Barrel Diameter, in.	Variable	
Vehicle Emission Control Systems	Air injection Catalytic converter EGR	Air injection Catalytic converter EGR
	Ref. 33	Ref. 33

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation (1) - Ref. 31

N - Neutral

* = Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.54	
Stroke, in.	3.07	
Displacement, in ³	121	
Compression Ratio	8.7	
Horsepower, BHP at RPM	115 BHP 5500 RPM	110 BHP 5500 RPM
Torque, ft-lb at RPM	123 ft-lb 3500 RPM	123 ft-lb 3500 RPM
Exhaust System Type	Single	Ref. 2
Intake Valve Diameter, in.	1.653	
Intake Valve Lift, in.	.4087	
Exhaust Valve Diameter, in.	1.3976	
Exhaust Valve Lift, in.	.4344	
Intake Valve Opens, deg BTC	10	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	46	
Exhaust Valve Closes, deg ATC	18	
Exhaust Valve Duration, deg	244	
Valve Overlap, deg	28	
Distributor Type	Breaker Point	
Idle Speed, RPM	A+M 875	A+M 875
Timing, degrees	14BTC @ 800	12BTC @ 800
Fuel System Type	Fuel Injection	
Choke Type	Automatic w/cold start valve	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Air Injection EGR	Catalytic Converter

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1976 Saab 121 CID (2.0 L) -Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Saab 99	M4	3000	3.89	52.9	NO		1.45	11.2	386.	2.31	22	.786	4.53	294.	3.15	29	25
Saab 99	M4	3000	3.89	52.9	NO		1.13	12.0	395.	2.03	21	.268	2.04	288.	2.08	30	25
Saab 99	A	3000	3.89	53.5	YES		1.12	10.7	467.	2.46	18	.415	4.78	351.	2.50	25	21

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* = 1978 Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.54	
Stroke, in.	3.07	
Displacement, in ³	121	
Compression Ratio	7.5	
Horsepower, BHP at RPM	135 BHP 5000 RPM	135 BHP 5000 RPM
Torque, ft-lb at RPM	160 ft-lb 3500 RPM	160 ft-lb 3500 RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	*	*

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

Certification data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	(1)	
No. of Cylinders	4	
Bore, in.	2.95	
Stroke, in.	2.60	
Displacement, in ³	71	
Compression Ratio	9.0	
Horsepower, BHP at RPM	73 BHP 6000 RPM	N/A BHP RPM
Torque, ft-lb at RPM	74 ft-lb 3800 RPM	N/A ft-lb RPM
Exhaust System Type	(1)	
Intake Valve Diameter, in.	(1)	
Intake Valve Lift, in.	(1)	
Exhaust Valve Diameter, in.	(1)	
Exhaust Valve Lift, in.	(1)	
Intake Valve Opens, deg BTC	(1)	
Intake Valve Closes, deg ABC	(1)	
Intake Valve Duration, deg	(1)	
Exhaust Valve Opens, deg BBC	(1)	
Exhaust Valve Closes, deg ATC	(1)	
Exhaust Valve Duration, deg	(1)	
Valve Overlap, deg	(1)	
Distributor Type	(1)	
Idle Speed, RPM	M-650 A-650	N/A
Timing, degrees	A+M-5ATC @ 650RPM	N/A
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	(1)	
Vehicle Emission Control Systems	Air injection Catalytic converter EGR	N/A
NOTES:	Ref. 32	

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1) = Data not available

* = 1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Toyota-71 CID(1.2L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Corolla	M4	2250	3.91	60.0	N0	8.8	0.60	6.80	237.	1.21	36	0.12	0.60	200.	2.30	44	39
Corolla	M5 w/OD	2250	4.10	55.0	N0	8.5	0.68	9.40	241.	1.13	34	0.15	0.80	191.	1.92	46	39

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.25	
Stroke, in.	2.76	
Displacement, in ³	97	
Compression Ratio	9.0	
Horsepower, BHP at RPM	75 BHP 5800 RPM	73 BHP 5800 RPM
Torque, ft-lb at RPM	83 ft-lb 3800 RPM	83 ft-lb 3800 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.61	
Intake Valve Lift, in.	.34	
Exhaust Valve Diameter, in.	1.32	
Exhaust Valve Lift, in.	.35	
Intake Valve Opens, deg BTC	16	
Intake Valve Closes, deg ABC	54	
Intake Valve Duration, deg	250	
Exhaust Valve Opens, deg BBC	56	
Exhaust Valve Closes, deg ATC	20	
Exhaust Valve Duration, deg	256	
Valve Overlap, deg	36	
Distributor Type	Breaker Point or Breakerless	
Idle Speed, RPM	930	930
Timing, degrees	10 BTC	10 BTC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic-Electrically Heated	
Carburetor Barrel Diameter, in.	1.06	
Vehicle Emission Control Systems	Air injection Catalytic converter EGR	Catalytic converter Air injection EGR
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Toyota-97 CID(1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Corolla	A3	2500	3.91	58.8	N0	9.4	0.52	5.50	329.	1.31	26	0.13	0.30	274.	1.95	32	29
Corolla Wagon	A3	2500	4.10	61.6	N0	9.4	0.43	6.20	354.	1.38	24	0.04	0.30	290.	2.22	30	27
Corolla	M4	2500	3.73	56.0	N0	9.4	0.83	6.80	308.	1.31	28	0.13	0.20	238.	2.06	37	31
Corolla	M5 w/OD	2500	3.91	51.5	N0	9.4	0.67	5.90	301.	1.46	28	0.11	0.20	233.	2.51	38	32

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Toyota-97 CID(1.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				HIGHWAY EMISSIONS GRAMS/MILE				CITY MPG	HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x	HC	CO	CO ₂	NO _x			
Corolla Wagon	A3	2500	4.10	61.6	N0	9.4	0.18	2.60	381.	1.04	0.01	0.0	307.	1.54	29	25	
Corolla	A3	2500	4.10	61.6	N0	9.4	0.14	1.50	377.	0.99	0.0	0.0	303.	1.13	29	26	
Corolla	M4	2500	3.91	58.0	N0	9.4	0.23	3.20	354.	1.18	0.02	0.0	264.	1.57	34	28	
Corolla	M5 w/OD	2500	4.10	54.0	N0	9.4	0.15	2.50	362.	0.84	0.01	0.10	261.	1.39	34	28	

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	4	
Bore, in.	3.48	
Stroke, in.	3.50	
Displacement, in ³	134	
Compression Ratio	8.4	
Horsepower, BHP at RPM	96 BHP 4800 RPM	90 BHP 4800 RPM
Torque, ft-lb at RPM	120 ft-lb 2800 RPM	120 ft-lb 2800 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.69	
Intake Valve Lift, in.	.40	
Exhaust Valve Diameter, in.	1.42	
Exhaust Valve Lift, in.	.40	
Intake Valve Opens, deg BTC	18	
Intake Valve Closes, deg ABC	58	
Intake Valve Duration, deg	256	
Exhaust Valve Opens, deg BBC	58	
Exhaust Valve Closes, deg ATC	18	
Exhaust Valve Duration, deg	256	
Valve Overlap, deg	36	
Distributor Type	Breaker Point; Transistorized	
Idle Speed, RPM	850	850
Timing, degrees	8 BTC	8 BTC
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic	
Carburetor Barrel Diameter, in.	1.18	
Vehicle Emission Control Systems	Air injection EGR	California emission Control systems Data not available
NOTES:	Ref. 32	

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation * 1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Toyota-134 CID(2.0L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Celica	A3	2750	3.73	52.7	YES	7.8	0.51	10.10	389.	1.36	22	0.18	3.00	326.	0.96	27	24
Corona Wagon	A3	3000	3.58	51.0	YES	11.3	0.46	8.60	453.	1.48	19	0.19	2.80	375.	1.28	23	21
Celica	M4	2750	3.58	50.6	NO	7.1	0.88	10.80	412.	1.56	20	0.31	5.40	260.	2.23	33	25
Corona	M4	3000	3.58	51.0	YES	10.6	0.87	9.20	419.	1.68	20	0.34	3.60	303.	2.18	29	23
Celica	M5 w/OD	2750	3.58	43.6	YES	7.7	0.53	10.90	413.	1.29	20	0.18	4.80	255.	1.74	34	25

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

FEDERAL (49 STATES) TRUCK CERTIFICATION DATA
FOR

1978 Toyota-134 CID(3.0L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				COMB- INED MPG	
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
HiLux	A3	2750	4.11	55.2	N0	9.9	0.75	12.80	381.	2.31	22	0.24	3.60	327.	1.77	27	24
HiLux Car Chassis	M4	3500	4.11	53.5	N0	11.2	0.92	14.00	468.	2.55	18	0.28	4.10	346.	2.68	25	21
HiLux	M5 w/OD	2750	4.11	48.2	N0	9.9	0.73	13.60	368.	2.04	23	0.12	6.10	277.	2.50	31	26
HiLux	M5 w/OD	3000	4.11	47.1	N0	10.3	0.81	13.30	364.	2.36	23	0.37	4.80	275.	3.39	31	26

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	6	
Bore, in.	3.201	
Stroke, in.	3.299	
Displacement, in ³	165	
Compression Ratio	8.5	
Horsepower, BHP at RPM	108 BHP 5000 RPM	(1) BHP RPM
Torque, ft-lb at RPM	134 ft-lb 2400 RPM	(1) ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.575	
Intake Valve Lift, in.	.409	
Exhaust Valve Diameter, in.	1.339	
Exhaust Valve Lift, in.	.407	
Intake Valve Opens, deg BTC	18	
Intake Valve Closes, deg ABC	46	
Intake Valve Duration, deg	244	
Exhaust Valve Opens, deg BBC	52	
Exhaust Valve Closes, deg ATC	12	
Exhaust Valve Duration, deg	244	
Valve Overlap, deg	30	
Distributor Type	Semi-Transistorized	
Idle Speed, RPM	A-750	A-750
Timing, degrees	A-10BTC @ Idle	A-5BTC @ Idle
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Automatic-Electrothermal	
Carburetor Barrel Diameter, in.		
Vehicle Emission Control Systems	Engine modifications Air injection EGR Catalytic converter	Engine modifications Air injection Catalytic converter EGR

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1) Output slightly less than 49 states
(Ref. 31)

*-1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Toyota-165 CID(2.6L)-2BBL

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Cressida	A4 w/OD	3000	3.91	37.8	YES	11.3	0.22	2.10	449.	1.41	20	0.06	0.60	330.	1.61	27	22
Cressida Wagon	A4 w/OD	3000	3.91	37.8	NO	10.3	0.27	3.20	461.	1.33	19	0.05	0.0	329.	1.36	27	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	(1)	
No. of Cylinders	6	
Bore, in.	3.583	
Stroke, in.	4.00	
Displacement, in ³	258	
Compression Ratio	7.8	
Horsepower, BHP at RPM	168 BHP 3600 RPM	N/A BHP RPM
Torque, ft-lb at RPM	172 ft-lb 1800 RPM	N/A ft-lb RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.811	
Intake Valve Lift, in.	.370	
Exhaust Valve Diameter, in.	1.480	
Exhaust Valve Lift, in.	.370	
Intake Valve Opens, deg BTC	17	
Intake Valve Closes, deg ABC	53	
Intake Valve Duration, deg	250	
Exhaust Valve Opens, deg BBC	55	
Exhaust Valve Closes, deg ATC	15	
Exhaust Valve Duration, deg	250	
Valve Overlap, deg	32	
Distributor Type	Transistorized	
Idle Speed, RPM	M-650 ± 50	N/A
Timing, degrees	M-7BTC @ 650RPM	N/A
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	Mechanical	
Carburetor Barrel Diameter, in.	(1)	
Vehicle Emission Control Systems	Air injection EGR	N/A
	Ref. 32	

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

*-1978 Data not available

(1) Data not available

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	6	
Bore, in.	3.701	
Stroke, in.	2.85	
Displacement, in ³	183	
Compression Ratio	8.9	
Horsepower, BHP at RPM	142 BHP 5000 RPM	N/A BHP RPM
Torque, ft-lb at RPM	172 ft-lb 3000 RPM	N/A ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	N/A
Timing, degrees	*	N/A
Fuel System Type	Carburetor-2BBL downdraft	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Air injection EGR	N/A
NOTES:	Ref. 33	
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation	* = Data not available	

1978 Volkswagen-89 CID (1.5 L)-Fuel Injection

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.13	
Stroke, in.	2.89	
Displacement, in ³	89	
Compression Ratio	8.0	
Horsepower, BHP at RPM	71 BHP 5800 RPM	(1) BHP RPM
Torque, ft-lb at RPM	73 ft-lb 3500 RPM	(1) ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems (1) - Output slightly less than 49 states (Ref. 31)	Fuel Injection EGR Ref. 32	Fuel Injection EGR Catalytic Converter Ref. 32

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Volkswagen-89 CID (1.5 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Rabbit	A3	2250	3.76	57.0	N0	7.3	1.29	6.00	387.	1.68	22	0.82	3.50	271.	1.18	32	26
Rabbit	M4 w/OD	2250	3.90	57.5	N0	7.3	1.26	10.30	387.	1.80	25	0.81	5.10	225.	2.62	38	29

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.13	
Stroke, in.	2.89	
Displacement, in ³	90	
Compression Ratio	23	
Horsepower, BHP at RPM	71 BHP 5800 RPM	(1) BHP RPM
Torque, ft-lb at RPM	73 ft-lb 3500 RPM	(1) ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	N/A	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection	Fuel Injection
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1) - Slightly less in California

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Volkswagen-90 CID (1.5 L) Diesel-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Rabbit	M4 w/OD	2250	3.30	44.0	N0	7.3	0.78	1.00	201.	0.61	50	0.35	0.40	156.	0.51	64	55
Rabbit	M4 w/OD	2250	3.90	57.6	N0	7.3	0.30	1.00	258.	1.05	39	0.09	0.50	195.	0.93	52	44

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORESPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Volkswagen-90 CID (1.56) Diesel-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
Rabbit	M4	2250	3.30	44.0	N0	7.3	0.78	1.00	201.	0.61	50	0.35	0.40	156.	0.51	64	55
Rabbit	M4	2250	3.90	57.6	N0	7.3	0.30	1.00	258.	1.05	39	0.09	0.50	195.	0.93	52	44

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.366	
Stroke, in.	2.717	
Displacement, in ³	96.7	
Compression Ratio	7.3	
Horsepower, BHP at RPM	48 BHP 4200 RPM	48 BHP 4200 RPM
Torque, ft-lb at RPM	75 ft-lb 2200 RPM	75 ft-lb 2200RPM
Exhaust System Type	Single	Ref. 2
Intake Valve Diameter, in.	1.304	
Intake Valve Lift, in.	.352	
Exhaust Valve Diameter, in.	1.185	
Exhaust Valve Lift, in.	.333	
Intake Valve Opens, deg BTC	10	
Intake Valve Closes, deg ABC	38	
Intake Valve Duration, deg	228	
Exhaust Valve Opens, deg BBC	43.5	
Exhaust Valve Closes, deg ATC	4.5	
Exhaust Valve Duration, deg	228	
Valve Overlap, deg	14.5	
Distributor Type	Breaker Point	
Idle Speed, RPM	A-925 M-875	A-925 M-875
Timing, degrees	A=0BTC M-5ATC	A=0BTC M-5ATC
Fuel System Type	Fuel Injection	
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection EGR	Fuel Injection Catalytic Converter EGR
NOTES:	Ref. 32	Ref. 32
A = Automatic transmission		
M = Manual transmission		
EGR = Exhaust gas recirculation		
* = Data not available		

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	*	
No. of Cylinders	4	
Bore, in.	3.13	
Stroke, in.	3.15	
Displacement, in ³	97	
Compression Ratio	8.0	
Horsepower, BHP at RPM	78 BHP 5500 RPM	(1) BHP RPM
Torque, ft-lb at RPM	84 ft-lb 3200RPM	(1) ft-lb RPM
Exhaust System Type	*	
Intake Valve Diameter, in.	*	
Intake Valve Lift, in.	*	
Exhaust Valve Diameter, in.	*	
Exhaust Valve Lift, in.	*	
Intake Valve Opens, deg BTC	*	
Intake Valve Closes, deg ABC	*	
Intake Valve Duration, deg	*	
Exhaust Valve Opens, deg BBC	*	
Exhaust Valve Closes, deg ATC	*	
Exhaust Valve Duration, deg	*	
Valve Overlap, deg	*	
Distributor Type	*	
Idle Speed, RPM	*	*
Timing, degrees	*	*
Fuel System Type	Fuel Injection	
Choke Type	*	
Carburetor Barrel Diameter, in.	*	
Vehicle Emission Control Systems	Fuel Injection EGR	Fuel Injection Catalytic Converter EGR
NOTES:	Ref. 32	Ref. 32

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

(1) Output slightly less than 49 States (Ref. 31)

* = Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

1978 Volkswagen-97 CID (1.6 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
Dasher	M4 w/OD	2500	4.11	56.5	N0	8.0	1.16	5.10	369.	1.65	23	0.73	2.10	233.	2.60	37	28
Fox	A3	2500	4.11	60.0	N0	8.0	1.17	4.90	428.	1.39	20	0.85	2.70	297.	1.11	29	23

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b.
$$\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

1978 Volkswagen-97 CID (1.6 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE			HWY MPG	COMB- INED MPG		
							HC	CO	CO ₂		NO _x	HC	CO			CO ₂	NO _x
Dasher Wagon	A3	2500	3.91	60.0	N0	8.0	0.16	1.10	399.	1.11	22	0.03	0.10	296.	1.50	30	25
Fox	M4 w/OD	2500	4.11	56.5	N0	8.0	0.18	1.60	397.	1.24	22	0.03	0.0	252.	2.31	35	27

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

ENGINE PARAMETER	49 STATES			CALIFORNIA		
Engine Wt. lbs/kg	*					
No. of Cylinders	4					
Bore, in.	*					
Stroke, in.	*					
Displacement, in ³	120					
Compression Ratio	7.3					
Horsepower, BHP at RPM	67	BHP	RPM	*	BHP	RPM
Torque, ft-lb at RPM	*	ft-lb	RPM	*	ft-lb	RPM
Exhaust System Type	*					
Intake Valve Diameter, in.	*					
Intake Valve Lift, in.	*					
Exhaust Valve Diameter, in.	*					
Exhaust Valve Lift, in.	*					
Intake Valve Opens, deg BTC	*					
Intake Valve Closes, deg ABC	*					
Intake Valve Duration, deg	*					
Exhaust Valve Opens, deg BBC	*					
Exhaust Valve Closes, deg ATC	*					
Exhaust Valve Duration, deg	*					
Valve Overlap, deg	*					
Distributor Type	*					
Idle Speed, RPM	*			*		
Timing, degrees	*			*		
Fuel System Type	Fuel Injection					
Choke Type	*					
Carburetor Barrel Diameter, in.	N/A					
Vehicle Emission Control Systems	Fuel Injection EGR			Fuel Injection Catalytic Converter EGR		
NOTES:	Ref. 32			Ref. 32		
A = Automatic transmission						
M = Manual transmission						
EGR = Exhaust gas recirculation						
* - Data not available						

CALIFORNIA TRUCK CERTIFICATION DATA
FOR

1978 Volkswagen-120 CID (2.0 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
BUS	A3	3500	4.09	55.5	N0	11.2	0.59	16.60	510.	0.82	16	0.31	13.80	379.	1.24	22	19
BUS	M4 w/OD	3500	4.57	56.4	N0	11.2	0.63	12.40	473.	0.93	18	0.08	2.40	351.	1.48	25	20

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

*1977 Volvo-130 CID (2.1 L)-Fuel Injection

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	350/159	
No. of Cylinders	4	
Bore, in.	3.622	
Stroke, in.	3.15	
Displacement, in ³	130	
Compression Ratio	85	
Horsepower, BHP at RPM	102 BHP 5200 RPM	99 BHP 5200 RPM
Torque, ft-lb at RPM	114 ft-lb 2500 RPM	114 ft-lb 2500 RPM
Exhaust System Type	Single	
Intake Valve Diameter, in.	1.732	Ref. 30
Intake Valve Lift, in.	.417	" "
Exhaust Valve Diameter, in.	1.378	" "
Exhaust Valve Lift, in.	.417	" "
Intake Valve Opens, deg BTC	24	" "
Intake Valve Closes, deg ABC	60	" "
Intake Valve Duration, deg	264	" "
Exhaust Valve Opens, deg BBC	60	" "
Exhaust Valve Closes, deg ATC	24	" "
Exhaust Valve Duration, deg	264	" "
Valve Overlap, deg	48	" "
Distributor Type	Transistorized-Breakerless	
Idle Speed, RPM	**	**
Timing, degrees	M-12BTC @ 700-800 RPM	M-12BTC @ 700-800 RPM
Fuel System Type	Fuel Injection	
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection Catalytic Converter EGR Ref 33	Fuel Injection Catalytic Converter GTR Ref 33

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

* - 1978 Data not available

**Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Volvo-130 CID (2.1 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
240	A3	3000	3.91	56.0	Yes	11.3	0.35	4.90	473.	1.47	18	0.06	0.10	374.	1.40	24	20
240	A3	3000	3.91	56.0	Yes	11.3	0.22	2.90	468.	0.07	19	0.11	1.70	346.	0.01	25	21
245 Wagon	A3	3500	3.91	56.0	Yes	12.3	0.42	5.50	501.	1.29	17	0.09	0.60	370.	1.40	24	20
245 Wagon	A3	3500	3.91	56.0	Yes	12.3	0.17	2.40	467.	0.15	19	0.06	0.50	342.	0.04	26	21
240	M4	3000	3.91	43.0	Yes	11.3	0.44	5.90	477.	1.58	18	0.07	0.30	323.	1.76	27	21
240	M4	3000	3.91	54.0	Yes	11.3	0.20	2.70	484.	0.18	18	0.07	0.70	315.	0.04	28	22
245 Wagon	M4	3500	3.91	43.0	Yes	12.3	0.52	9.60	480.	1.27	18	0.08	0.60	318.	1.59	28	21
245 Wagon	M4	3500	3.91	54.0	Yes	12.3	0.22	3.30	486.	0.18	18	0.07	0.50	333.	0.03	27	21
240	M5	3000	3.91	43.0	Yes	11.3	0.44	5.90	477.	1.58	18	0.06	0.30	279.	2.06	32	23
240	M5	3000	3.91	54.0	Yes	11.3	0.20	2.70	484.	0.18	18	0.09	0.70	281.	0.03	31	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* - 1978 Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Volvo-130 CID (2.1 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	$\frac{N}{V}$ (b)	A/C SIM. (c)	ACT. DYN HP (d)	CITY EMISSIONS GRAMS/MILE			HIGHWAY EMISSIONS GRAMS/MILE			CITY MPG	HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂	NO _x	HC	CO				CO ₂
245 Wagon	M5	3500	3.91	43.0	Yes	12.3	0.52	9.60	480.	1.27	0.08	0.70	287.	1.69	31	22
245 Wagon	M5	3500	3.91	54.0	Yes	12.3	0.22	3.30	486.	0.18	0.11	1.00	300.	0.04	29	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* - 1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Volvo-130 CID (2.1 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE			CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG	
							HC	CO	CO ₂		NO _x	HC	CO	CO ₂			NO _x
240	A3	3000	3.91	56.0	Yes	11.3	0.22	2.90	468.	0.07	19	0.11	1.70	346.	0.01	25	21
245 Wagon	A3	3500	3.91	56.0	Yes	12.3	0.17	2.40	467.	0.15	19	0.06	0.50	342.	0.04	26	21
240	M4	3000	3.91	54.5	Yes	11.3	0.20	2.70	484.	0.18	18	0.07	0.70	315.	0.04	28	22
245 Wagon	M4	3500	3.91	54.5	Yes	12.3	0.22	3.30	486.	0.18	18	0.07	0.50	333.	0.03	27	21
240	M5	3000	3.91	54.5	Yes	11.3	0.20	2.70	484.	0.18	18	0.09	0.70	281.	0.03	31	22
245 Wagon	M5	3500	3.91	54.5	Yes	12.3	0.22	3.30	486.	0.18	18	0.11	1.00	300.	0.04	29	22

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* - 1978 Data not available

1977 VOLVO 130 CID (2.1L) - F.I.

Engine tested by BERC.

Engine certified for: 49 states, passengers cars, automatic transmission.

BSFC (LB/EHP-HR)

1977 VOLVO 130.0 CID- FI

180.00

160.00

140.00

120.00

100.00
BHP

90.00

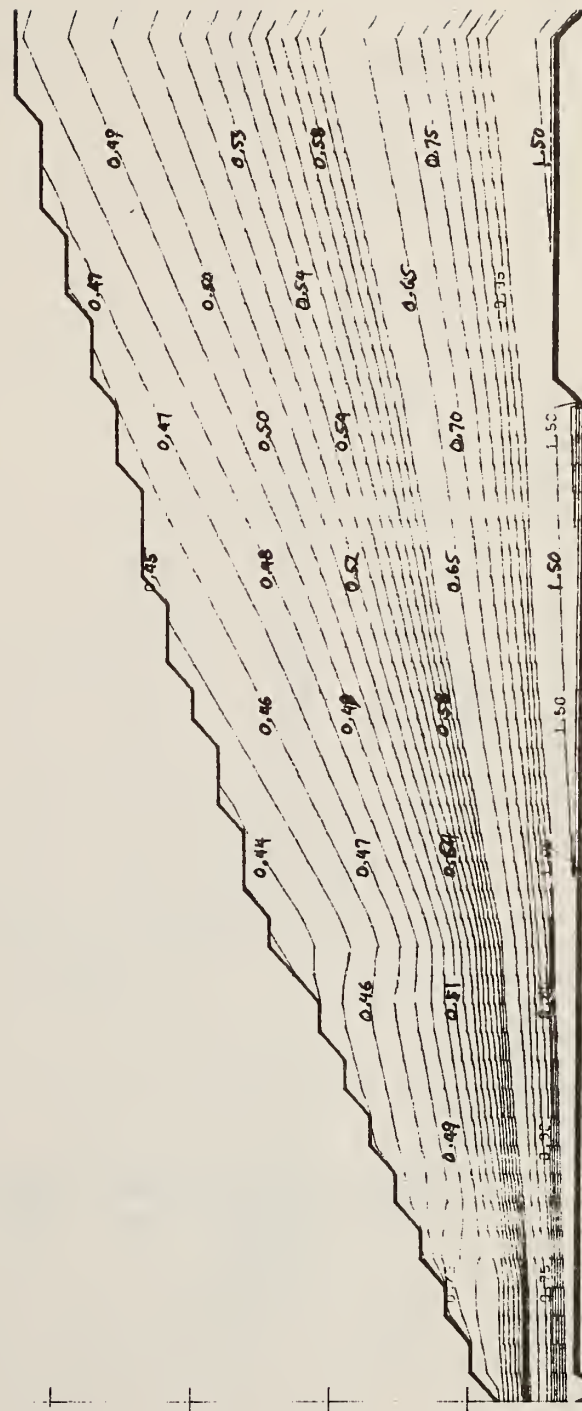
80.00

60.00

40.00

20.00

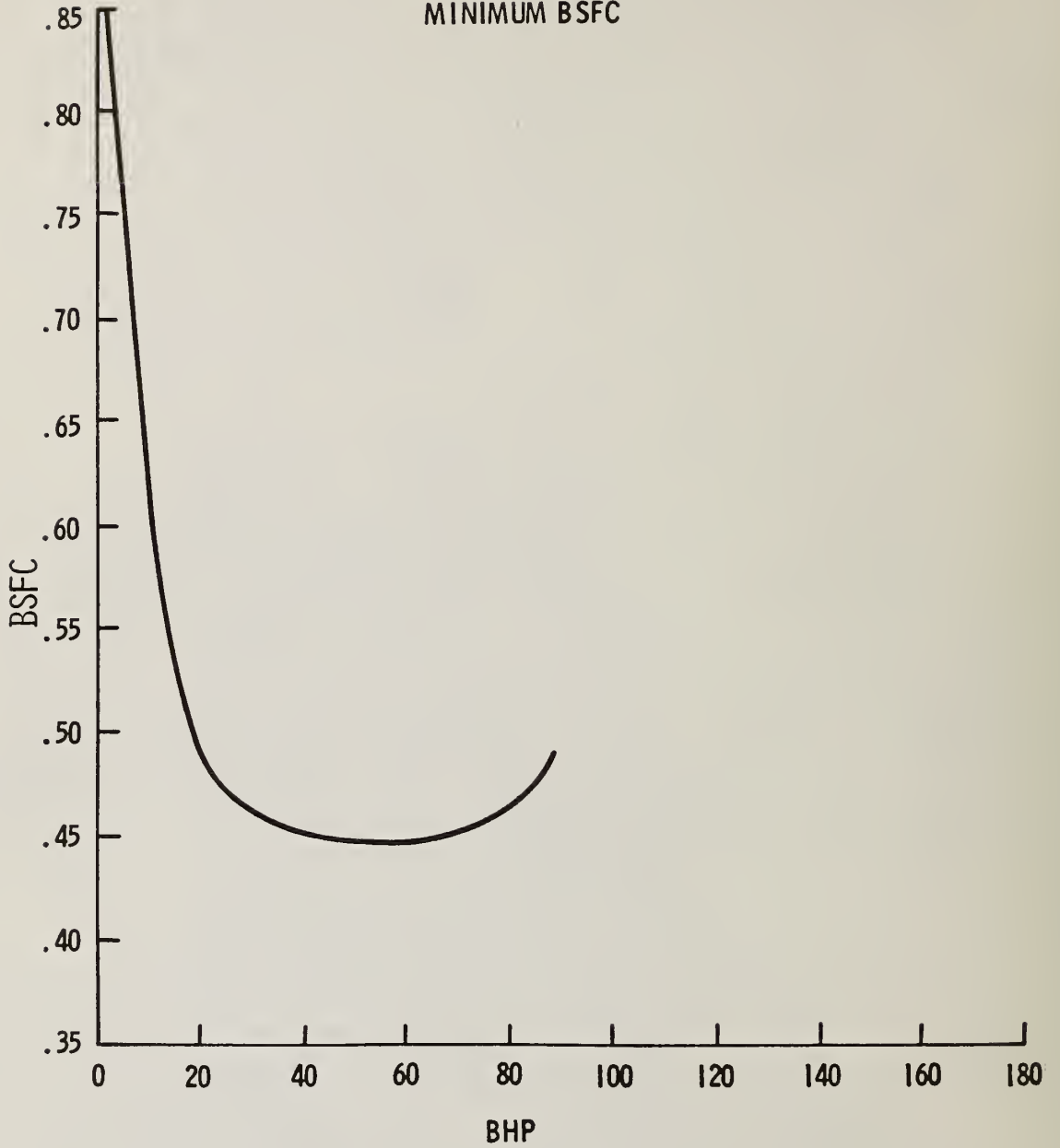
0.00



1200.00 1500.00 2000.00 2400.00 2800.00 3200.00 3600.00 4000.00 4400.00 4800.00 5200.00 5600.00
ENGINE SPEED (RPM)

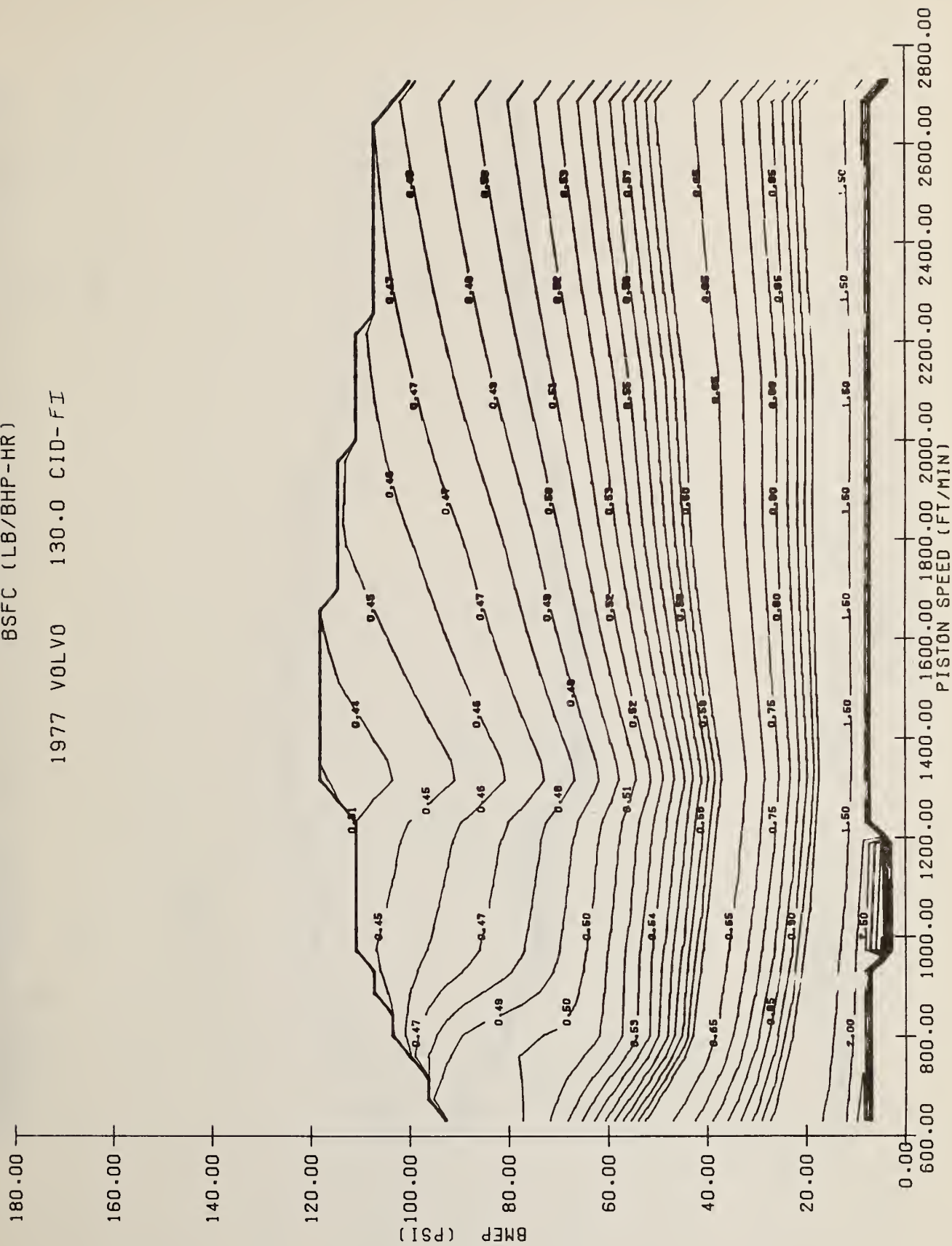
1977 Volvo 130 CID (2.1L), L4 - F.I.

MINIMUM BSFC

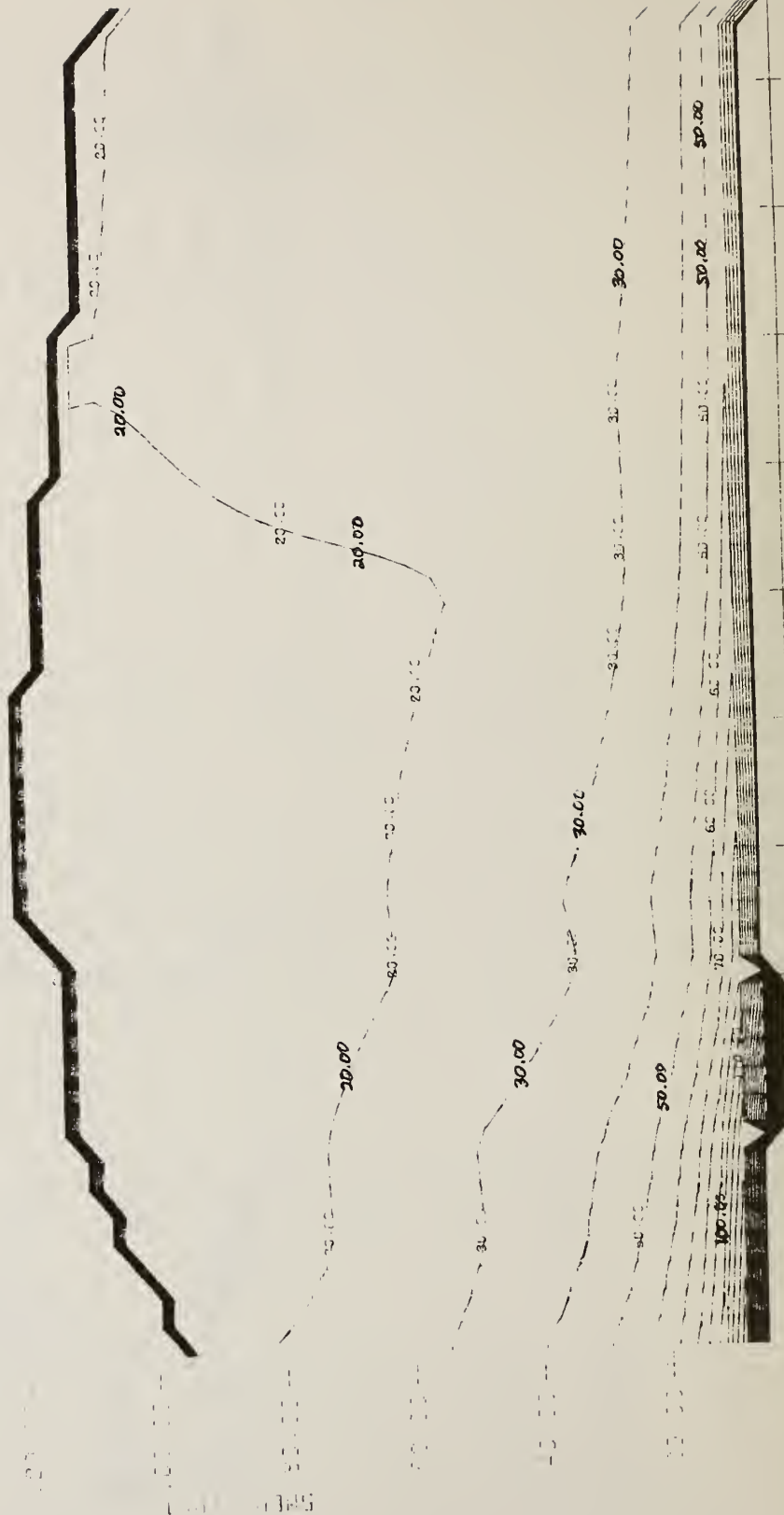


BSFC (LB/BHP-HR)

1977 VOLVO 130.0 CID-FI

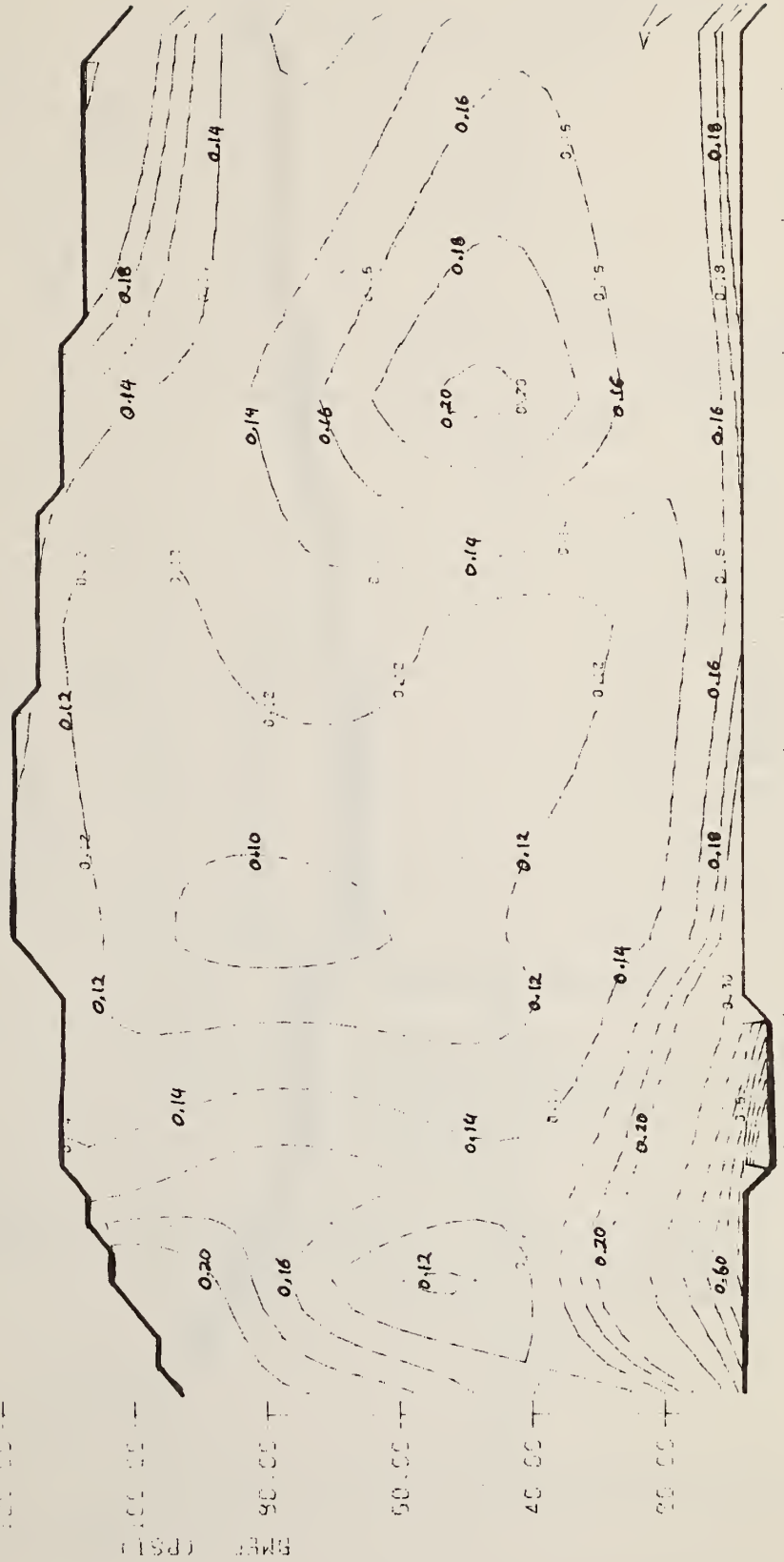


E-BSCO
 1977 VOLVO 130.0 FI

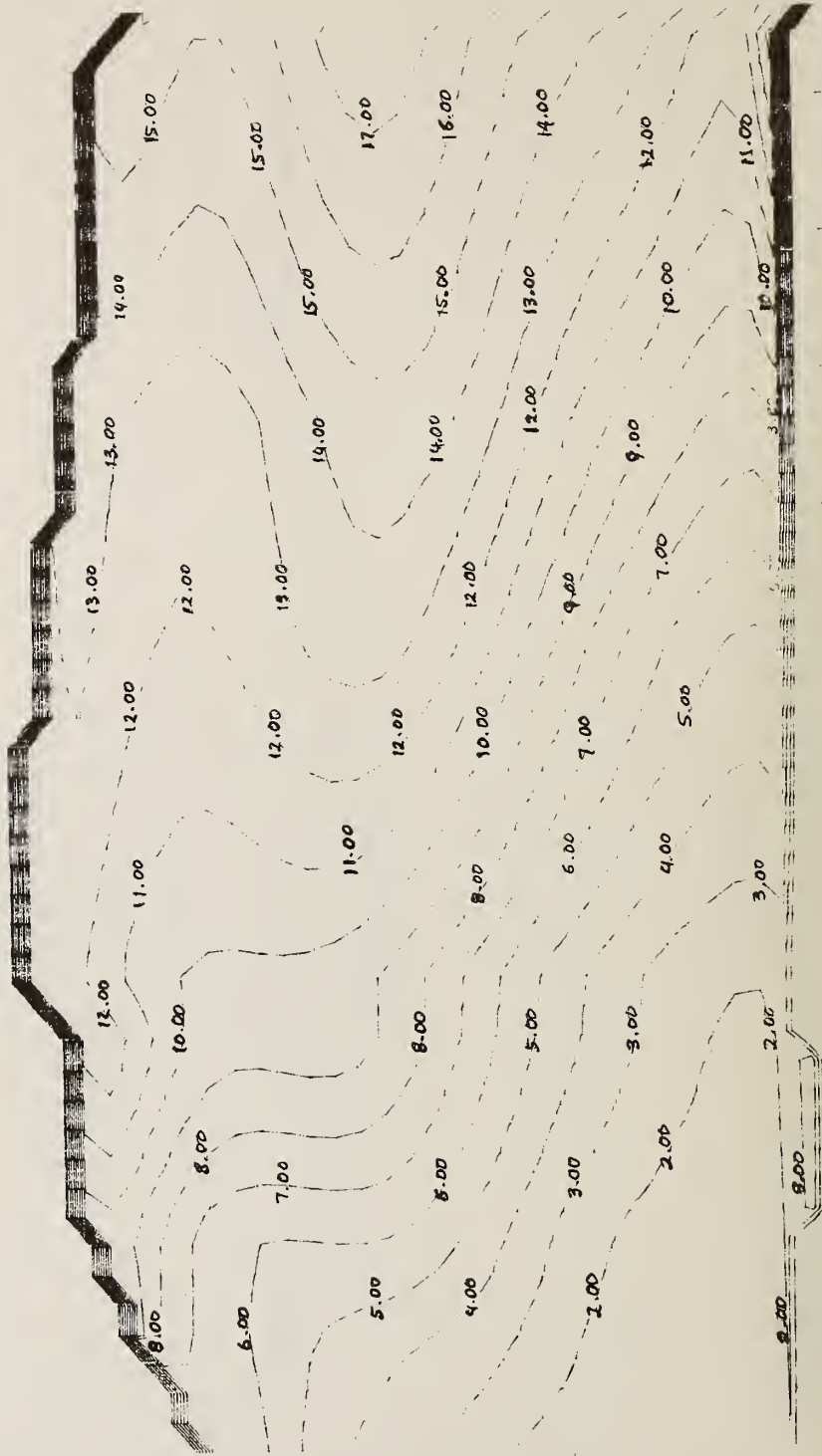


BSHC COMPRESSOR

1977 VOLVO 130 GLEFI



E ESNOX
 1977 VOLVVO 130.0 CIP-FI



655.00 800.00 1000.00 1200.00 1400.00 1600.00 1800.00 2000.00 2200.00 2400.00 2600.00 2800.00
 PISTON SPEED FT/MIN

ENGINE PARAMETER	49 STATES	CALIFORNIA
Engine Wt. lbs/kg	Data not available	
No. of Cylinders	6	
Bore, in.	3.465	
Stroke, in.	2.874	
Displacement, in ³	163	
Compression Ratio	8.2	
Horsepower, BHP at RPM	125 BHP 5500 RPM	121 BHP 5500 RPM
Torque, ft-lb at RPM	151 ft-lb 2750 RPM	149 ft-lb 2750 RPM
Exhaust System Type	Single w/crossover	
Intake Valve Diameter, in.	1.732	
Intake Valve Lift, in.	LB - .327	RB - .321
Exhaust Valve Diameter, in.	1.457	
Exhaust Valve Lift, in.	LB - .327	RB - .321
Intake Valve Opens, deg BTC	LB - 21	RB - 19
Intake Valve Closes, deg ABC	LB - 57	RB - 55
Intake Valve Duration, deg	LB - 258	RB - 254
Exhaust Valve Opens, deg BBC	LB - 57	RB - 55
Exhaust Valve Closes, deg ATC	LB - 21	RB - 19
Exhaust Valve Duration, deg	LB - 258	RB - 254
Valve Overlap, deg	LB - 42	RB - 38
Distributor Type	Transistorized-Breakerless	
Idle Speed, RPM	**	**
Timing, degrees	M-10BTC @ 700-800 RPM	M-10BTC @ 700-800 RPM
Fuel System Type	Fuel Injection	
Choke Type	None	
Carburetor Barrel Diameter, in.	N/A	
Vehicle Emission Control Systems	Fuel Injection (1) EGR Catalytic Converter Ref. 33	Fuel Injection Air Injection Catalytic Converter EGR Ref. 33

NOTES:

A = Automatic transmission

M = Manual transmission

EGR = Exhaust gas recirculation

LB = Left Bank

RB = Right Bank

* - 1978 Data not available (1) Not available on all models

**Data not available

FEDERAL (49 STATES) PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Volvo-163 CID (2.76)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
260	A3	3500	3.54	51.0	Yes	8.8	0.67	6.40	516.	1.38	17	0.07	0.30	414.	1.27	21	18
265 Wagon	M5	3500	3.73	41.0	Yes	12.3	0.46	5.50	594.	1.37	15	0.09	0.10	322.	1.72	28	19

- a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)
- b. $\frac{N}{V}$ = $\frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$
- c. AIR CONDITIONING SIMULATION
- d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* - 1978 Data not available

CALIFORNIA PASSENGER CAR CERTIFICATION DATA
FOR

*1977 Volvo - 163 CID (2.7 L)-Fuel Injection

VEH. MODEL	TRANS.	I.W. LBS (a)	AXLE RATIO	N V (b)	A/C SIM. (c)	ACT. DYNO HP (d)	CITY EMISSIONS GRAMS/MILE				CITY MPG	HIGHWAY EMISSIONS GRAMS/MILE				HWY MPG	COMB- INED MPG
							HC	CO	CO ₂	NO _x		HC	CO	CO ₂	NO _x		
260	A3	3500	3.54	51.1	Yes	12.3	0.31	1.60	635.	1.38	14	0.06	0.0	432.	1.53	20	16
265	M5	3500	3.73	41.0	Yes	12.3	0.20	1.10	641.	1.25	14	0.05	0.0	339.	1.31	26	18

a. INTERIA WEIGHT = CURB WEIGHT + 300 POUNDS (SIMULATING 2x150 LB. PASSENGERS)

b. $\frac{N}{V} = \frac{\text{ENGINE RPM USING HIGHEST TRANSMISSION GEAR}}{\text{VEHICLE SPEED IN MPH}}$

c. AIR CONDITIONING SIMULATION

d. ACTUAL DYNAMOMETER ROAD LOAD HORSEPOWER (AT 50MPH) USED DURING THE TESTS

* - 1978 Data not available

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