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PERFORMANCE CHARACTERISTICS OF AUTOMOTIVE ENGINES IN THE UNITED STATES

Third Series - Report No. 13
1977 Chrysler 318 CID (5.2L), 2V

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INTERIM REPORT

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16. Abstract

Experimental data were obtained in dynamometer tests of a 1977 Chrysler 318 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

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PREFACE

This report, prepared by the U.S. Department of Energy, Bartlesville Energy Technology Center for the U.S. Department of Transportation, Transportation Systems Center, Energy Technology Branch, Cambridge MA, presents results of experimental work to obtain information on performance characteristics of an engine used in automobiles sold in the United States.

This project is funded by the National Highway Traffic Safety Administration, Office of Research and Development, Office of Passenger Vehicle Research, Technology Assessment Division.

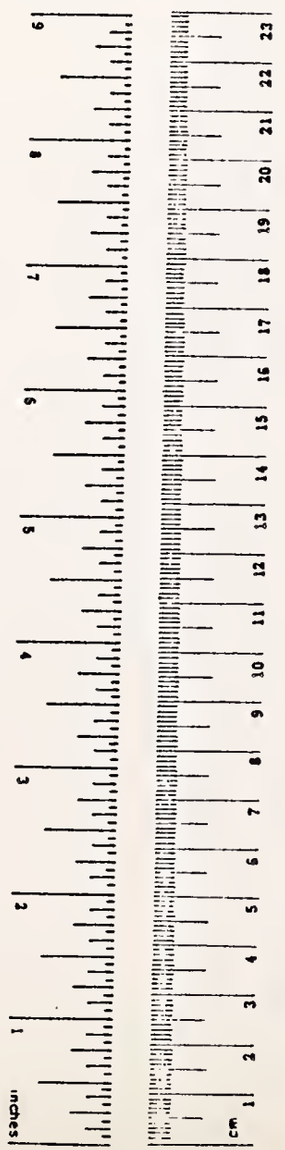
Mr. James A. Kidd, Jr. of the U.S. Department of Transportation, Transportation Systems Center, is the technical monitor.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

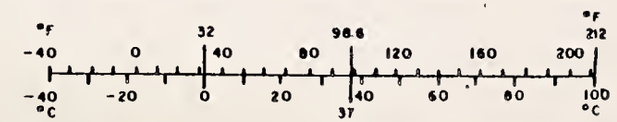
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures. Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.6	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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1. INTRODUCTION

The objective of this program is to obtain engine performance data for estimating fuel economy and emissions for varied engine service and duty. The intent of the work done at the Bartlesville Energy Technology Center is to provide basic engine characteristic data required as input for engineering calculations of fuel consumption and emissions involving ground transportation.

The data acquired from tests of a 1977 Chrysler 318-CID, 2V engine are presented in this report. Chrysler used this particular engine in the 1977 forty-nine states production of the Plymouth Fury (equipped with automatic transmission). Similar versions of this engine are used to power vehicles in the 4,000 lb to 4,500 lb inertia weight class. The test results are sufficient to establish steady-state maps for fuel consumption and exhaust emissions (carbon monoxide, unburned hydrocarbons, and oxides of nitrogen) over the entire operating range of the engine.

2. ENGINE TEST REPORT

The engine test setup included a complete engine (SAE definition) coupled to an eddy-current dynamometer. A cooling tower was used in place of the fan and radiator. The alternator was included but was not wired into the engine's electrical system. Emission control systems included exhaust-gas-recirculation, positive crankcase ventilation, aspirated air, and an oxidation catalyst. The manufacturer's engine specifications are listed in Table 1.

Prior to testing, the engine was operated at various speeds and loads (designed to approximate road/load conditions) over a 40-hour period for break-in. A single batch of unleaded regular grade gasoline was used throughout the engine break-in and tests; an analysis of the fuel is given in Table 2. Details of the break-in schedule are given in Table 3. The engine tests began on July 12, 1977, and ended on July 20, 1977.

The engine was tested while operating at the following steady-state modes:

Speeds: 1,000; 1,300; 1,600; 2,000; 2,500; 3,000; 3,500; 4,000 rpm

Loads: 0, 10, 25, 40, 60, 75, 90, 100 pct of full load (0, 10, 25, 40, and 75 pct points were repeated at each engine speed).

Idle speed-load modes: 800 rpm -- 0, 20, 40 lb-ft
600 rpm -- 40 lb-ft

Over speed point: 4,300 rpm--100 pct of full load

The following data were recorded for each test point:

Test number
Date
Barometric pressure, mm Hg
Dew point, °F

Inlet air temperature, °F
Speed, rpm
Torque, lb-ft -- Daytronics strain gauge load cell
Fuel rate, lb/hr -- Fluidyne positive displacement fuel flow meter
Ignition timing, °BTC
Manifold vacuum, in. Hg
Throttle angle, degrees
CO, pct -- Beckman, NDIR
CO_2, pct -- Beckman NDIR
O_2, pct -- Beckman polarographic detector
HC, ppmC -- Beckman flame ionization detector
NO_x, ppm -- Thermo-Electron chemiluminescent detector
Oil temperature, °F
Oil pressure, psig
Coolant temperature, °F
Exhaust temperature, °F
Exhaust pressure, in H_2O
Intake manifold temperature, °F

The following equations were used in calculating power, air-fuel ratio (A/F), 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

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 rate (dimensionless):

$$AF_s = \frac{69(2 + x/2 - y)}{MW_{fuel}}$$

where x = Hydrogen-carbon ratio of fuel

y = Oxygen-carbon ratio of fuel

MW_{fuel} = Fuel molecular weight per carbon atom

$= 12.01115 + 1.00797x + 16.00000y$

5. Hydrogen concentration in raw exhaust (percent):

$$H_2 = \frac{x(CO)(CO + CO_2)}{2\ (CO + 3CO_2)}$$

where CO = Carbon monoxide concentration (percent)

CO_2 = Carbon dioxide concentration (percent)

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

$$\frac{(CO)(H_2O)}{(CO_2)(H_2)} = 3$$

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

$$C_w = 1 + \frac{(x/2)(CO + CO_2) - H_2}{100}$$

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):

$$AF = \frac{AF_s}{2 + x/2 - y} \left[\frac{(1 + \frac{x}{2} - y)(CO) + (2 + \frac{x}{2} - y)(CO_2) + 2(O_2) + \frac{NO\chi}{10^4} - H_2}{CO + CO_2 + C_W\,(HC/10^4)} \right]$$

where O_2 = Oxygen concentration (percent)
$NO\chi$ = 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):

$$M_{CO} = \frac{MW_{CO}}{MW_f} * \frac{\%CO * M_f}{\%CO + \%CO_2 + C_w(\%HC)} * 453.59237$$

MW_{CO} = Molecular weight of CO (28.01055)
MW_f = Molecular weight of fuel (112.01115 + 1.00797x + 16.00000y)
M_f = Fuel rates in lbs/hour
%HC = HC)ppm)/10^4

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

$$M_{HC} = \frac{MW_{HC}}{MW_f} * \frac{\%HC * M_f * C_w}{\%CO + \%CO_2 + C_w(\%HC)} * 453.59237$$

MW_{HC} = Molecular weight of hydrocarbon
= 12.01115 + 1.00797x + 16.00000y

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

$$M_{NO\chi} = \frac{MW_{NO\chi}}{MW_f} * \frac{\%NO\chi * M_f}{\%CO + \%CO_2 + C_w(\%HC)} * 453.59237 * K_H$$

$MW_{NO\chi}$ = 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):

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

where N = Engine speed (revolutions per minute)
T = Brake torque (foot-pounds)
t = Air temperature (°F)
B = Barometric pressure (mm Hg)
P = Partial pressure of water vapor in intake air (mm Hg)

3. DISCUSSION OF TEST RESULTS

The peak value of corrected brake horsepower was found at the engine speed noted in Table 1, but was slightly lower than the quoted value. The maximum torque produced by the engine agreed with the value listed in Table 1. The brake specific fuel consumption (bsfc) of this engine operating at wide-open-throttle (WOT) is shown plotted as a function of engine speed in Figure 1. The engine speed at which minimum values of bsfc were attained coincide with the engine speed at which peak torque values were achieved.

The fuel consumption rate was found to be nearly a linear function of brake horsepower (Figure 2) for each of the engine speeds considered. The A/F ratio was maintained at conditions slightly leaner than stoichiometric for light loads, and became enriched as the power demand increased (Figure 3). The actual combustion chamber stoichiometry is not reflected in all of the A/F measurements due to the introduction of aspirated air into the exhaust gas stream at some speed and load conditions. Typically, the aspirated air was introduced at light load and low engine speed conditions. The emission rates of CO were maintained at low levels for those engine operating points with overall lean A/F due to the action of the oxidation catalyst (Figure 4). The unburned HC emission rates exhibited trends similar to those of the CO, in that the oxidation catalyst maintained low emission rates at each of the engine operating conditions in which there was oxygen available in the exhaust stream (Figure 5). The $NO\chi$ emission rates were found to be repeatable at each of the steady-state operating points tested except when A/F was near stoichiometric. In such cases, it was not uncommon to find reductions of the $NO\chi$ emission rate across the catalyst (Figure 6); this was the case with the 75 percent load/1,600 rpm test points.

4. CLOSURE

The experimental work to obtain performance data for the Chrysler 318-CID engine has been completed; these data are presented in the tables accompaying this report.

TABLE 1. MANUFACTURER'S ENGINE SPECIFICATIONS

Displacement, cubic inches	318
Maximum horsepower, bhp @ 4,000 rpm	140
Maximum torque, lb-ft @ 1,600 rpm	235
Bore and stroke, inches	3.91 and 3.31
Configuration	90° v, 8-cylinder
Compression ratio	8.5
Firing order	1-8-4-3-6-5-7-2
Ignition timing at idle speed, °BTDC @ 850 rpm	8
Block material	Cast iron
Head material	Cast iron
Number of crankshaft main bearings	5
Number of compression rings/piston	2
Number of oil rings/piston	1
Cam drive type	Chain
Valve lift:	
Intake, inches	0.373
Exhaust, inches	0.400
Valve timing:	
Intake opens, °BTC	10
Intake closes, °ABC	50
Exhaust opens, °BBC	52
Exhaust closes, °ATC	16
Spark plug gap, inches	0.035
Engine weight, lbs	575
Exhaust-gas-recirculation system:	
Valve type	Poppet
Control signal	Amplified manifold and carburator vacuum
Point of discharge	Intake manifold
Crankcase emission control:	
Control method	Positive crankcase ventilation
Point of discharge	Intake manifold
Carburetor type	2-bbl downdraft
Distributor specifications:[1]	
Centrifugal advance, begins, ° @ 600 rpm	1.2
Centrifugal advance, intermediate, ° @ 650 rpm	2.5
Centrifugal advance, full, ° @ 2,300 rpm	8.6
Vacuum advance, begins, ° @ 8 in. Hg	1.7
Vacuum advance, maximum, ° @ 13.5 in. Hg	11
Carburetor number	30637766
EGR valve number	3874909
Distributor number	4095302

[1]Distributor degrees at distributor rpm.

TABLE 2. ENGINE BREAK-IN SCHEDULE

Simulated speed, vehicle, mph	Engine speed, rpm	Intake manifold vacuum, in. Hg	Fraction of time in mode
Idle	800	20	1/10
20	1,000	16.5	"
30	1,300	14	"
40	1,600	11	"
50	1,950	11	"
60	2,250	11.5	"
25	1,150	15	"
35	1,450	12.5	"
45	1,800	11	"
55	2,100	10.5	"

Mileage per cycle = 90 miles.
Total mileage accumulated over 40-hour break-in period = 1,440 miles.

TABLE 3. FUEL ANALYSIS

Fuel No.	7619
Research octane No.	91.5
Motor octane No.	83.5
Specific gravity	0.7161
API gravity, degrees	66.1
Distillation, °F:	
10 pct evaporated	128
50 pct "	218
95 pct "	404
100 pct "	417
Reid vapor pressure, psig	9.5
FIA analysis, pct:	
Aromatics	6
Olefins	17
Paraffins	77
Sulfur, pct	0.024
Lead, grams per gallon	Trace
Hydrogen/carbon atomic ratio	2.040

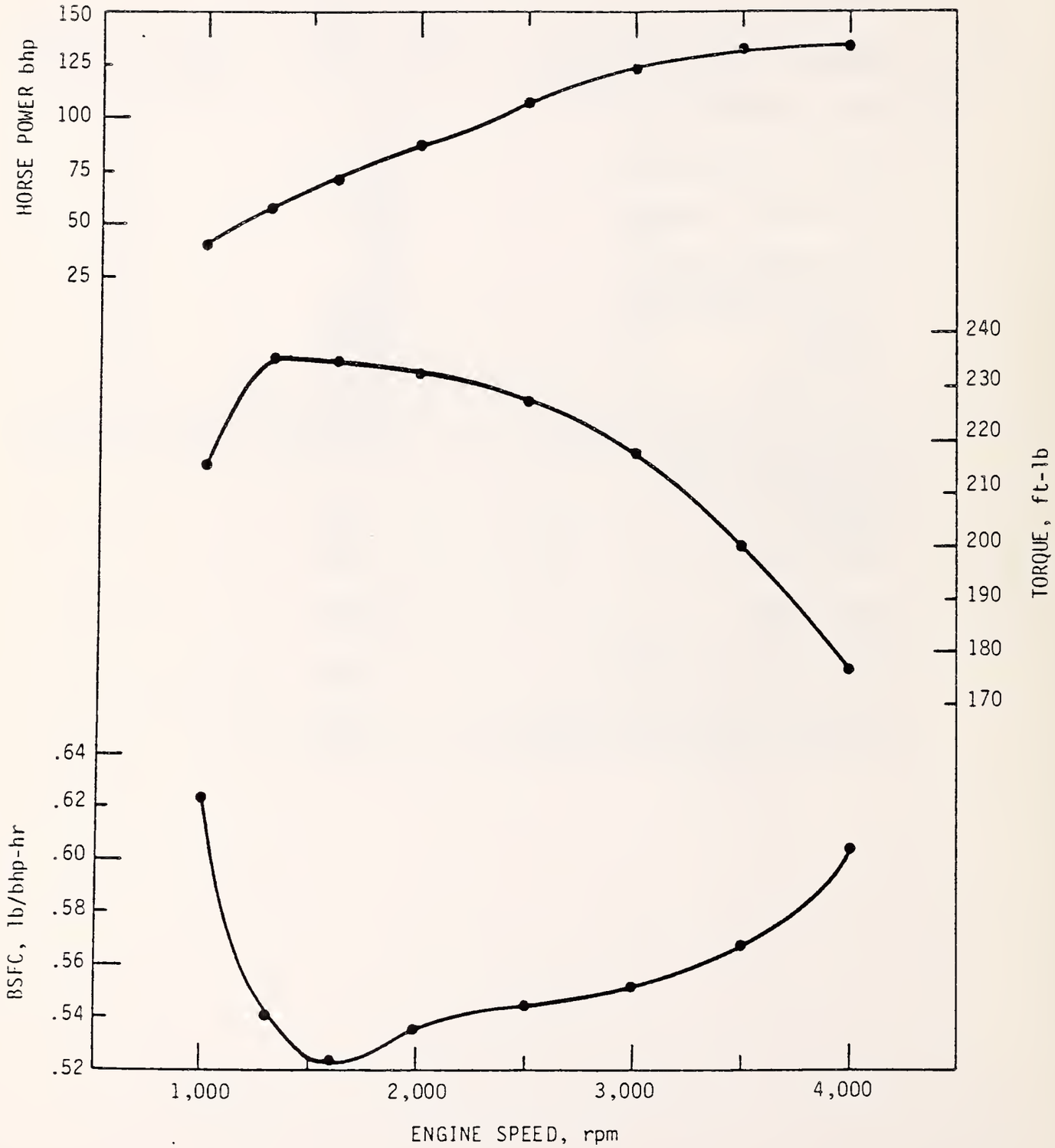


FIGURE 1. BRAKE SPECIFIC FUEL CONSUMPTION, TORQUE, AND BRAKE HORSEPOWER VERSUS ENGINE RPM AT WIDE-OPEN-THROTTLE--CHRYSLER 318-CID ENGINE

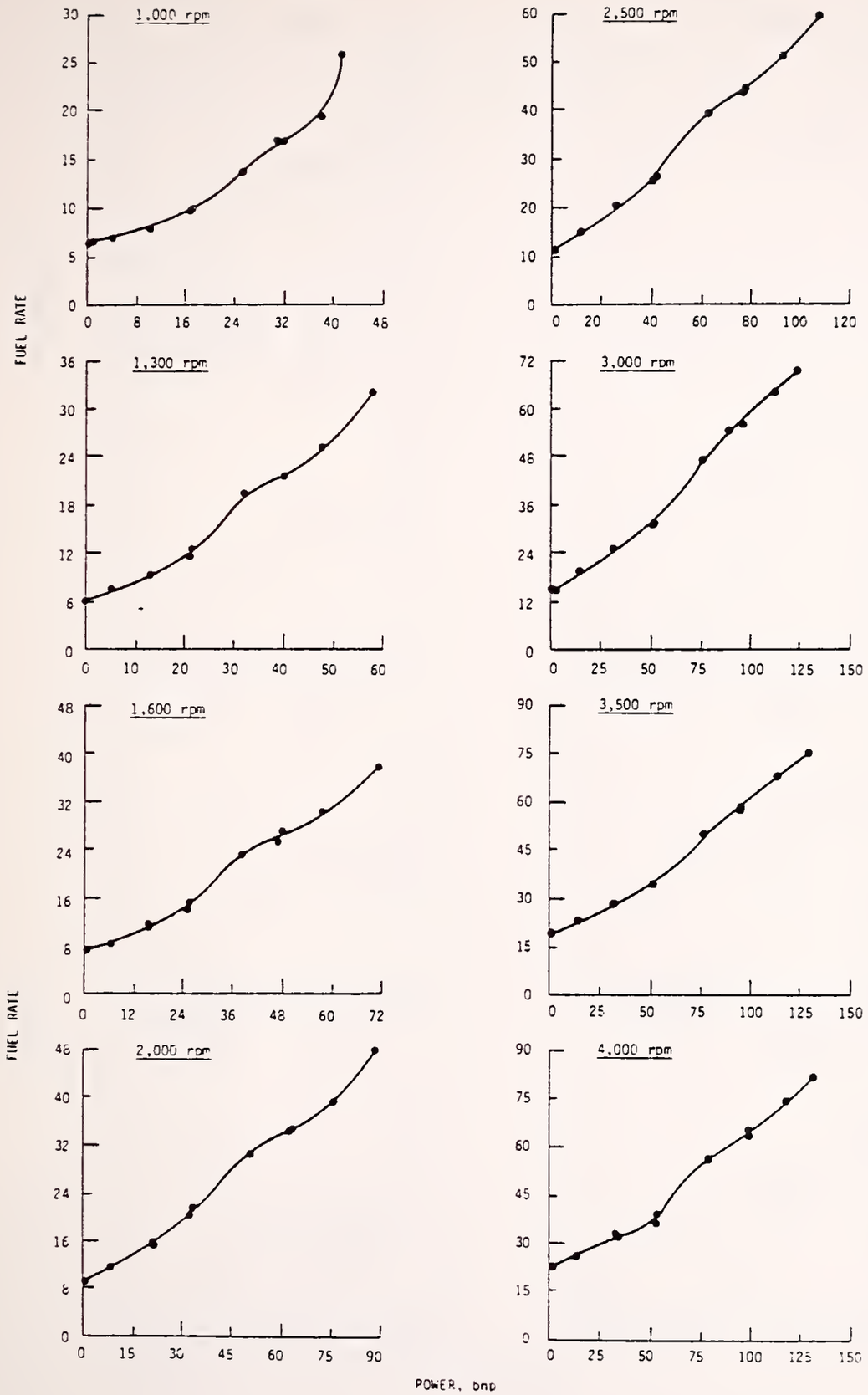


FIGURE 2. FUEL RATE VERSUS POWER AT VARIOUS SPEED AND LOAD CONDITIONS--CHRYSLER 318-CID ENGINE

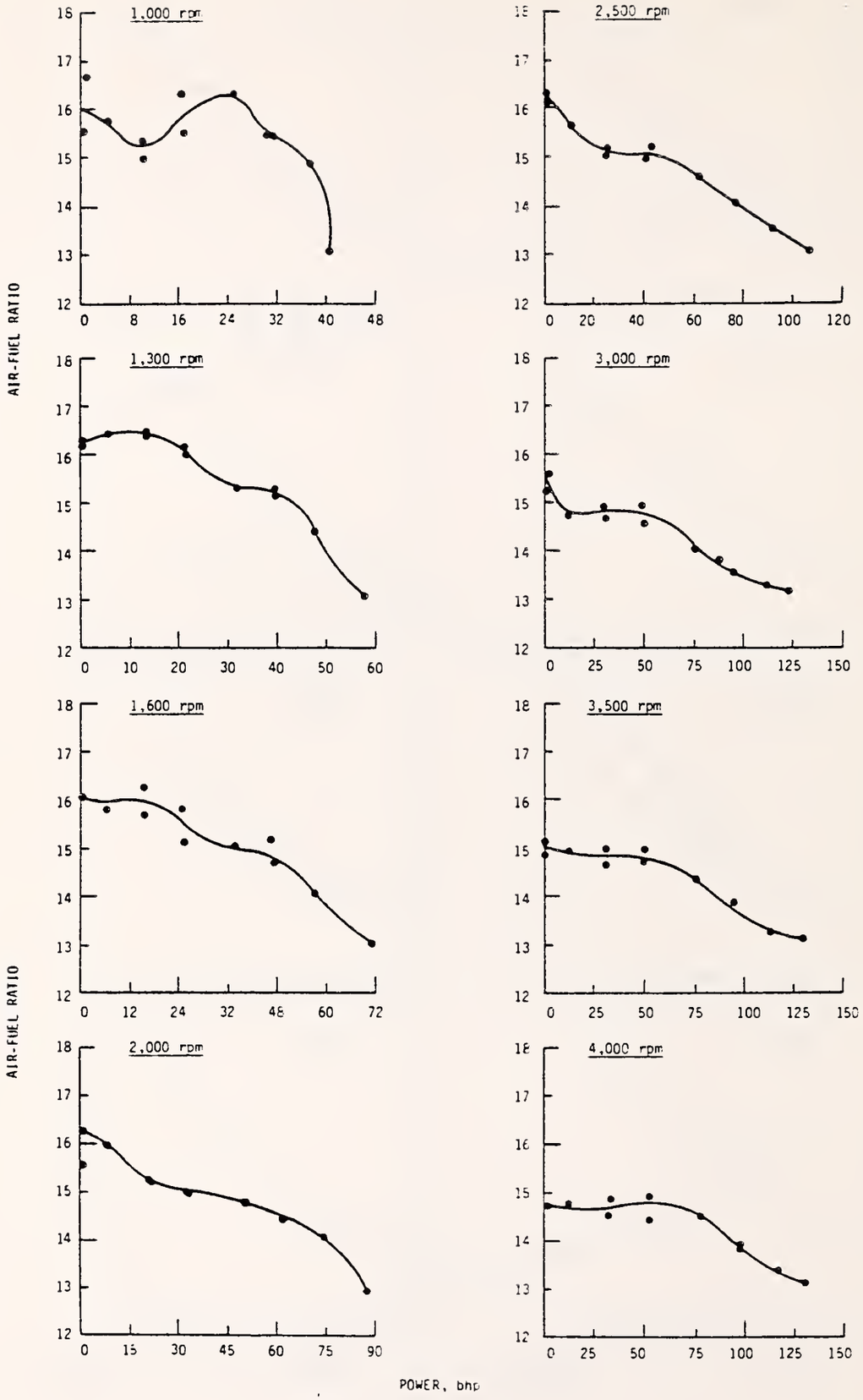


FIGURE 3. AIR-FUEL RATIO VERSUS POWER AT VARIOUS SPEED AND LOAD CONDITIONS--CHRYSLER 318-CID ENGINE

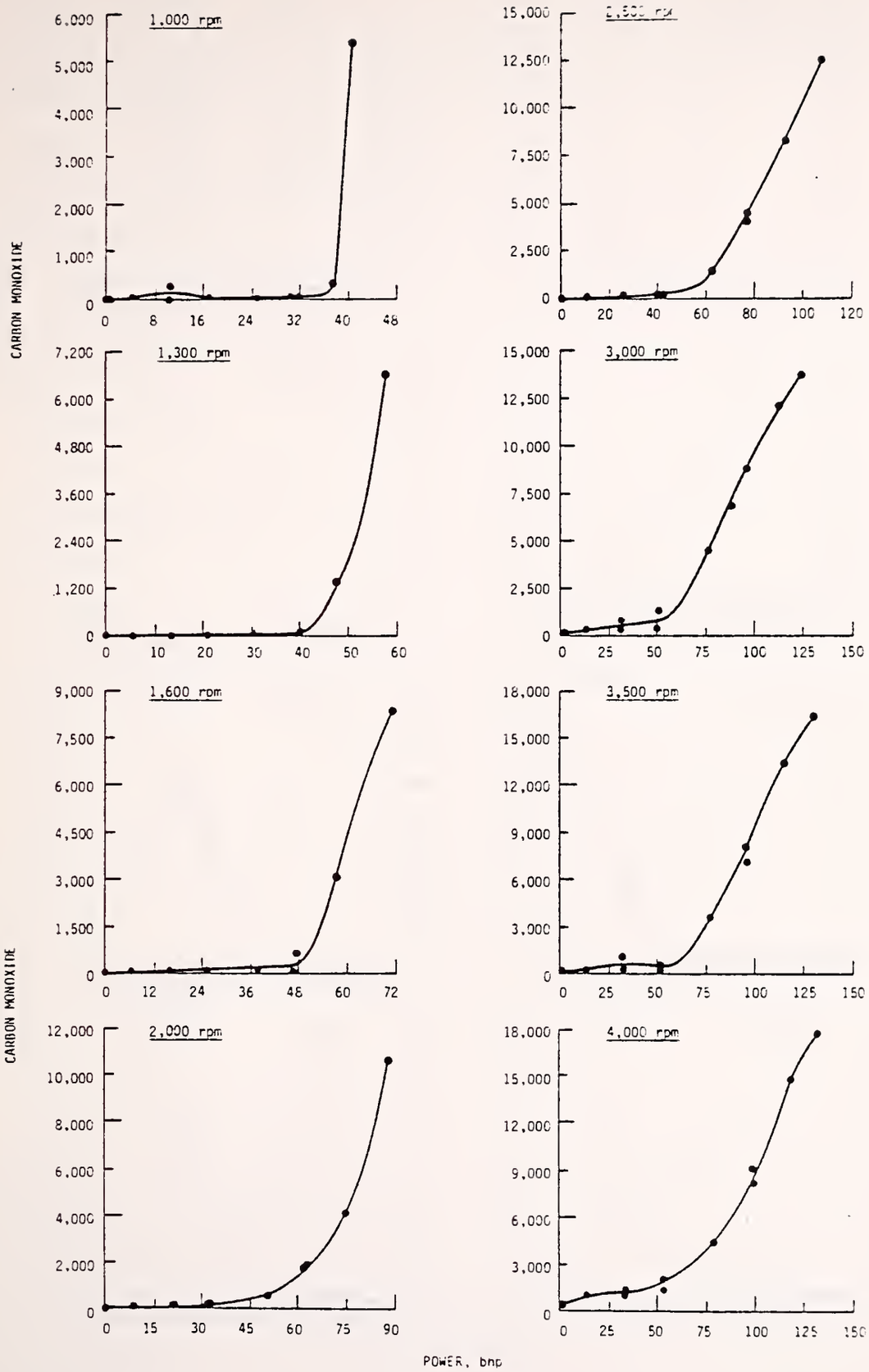


FIGURE 4. CARBON MONOXIDE EMISSIONS VERSUS POWER AT VARIOUS SPEED AND LOAD CONDITIONS--CHRYSLER 318-CID ENGINE

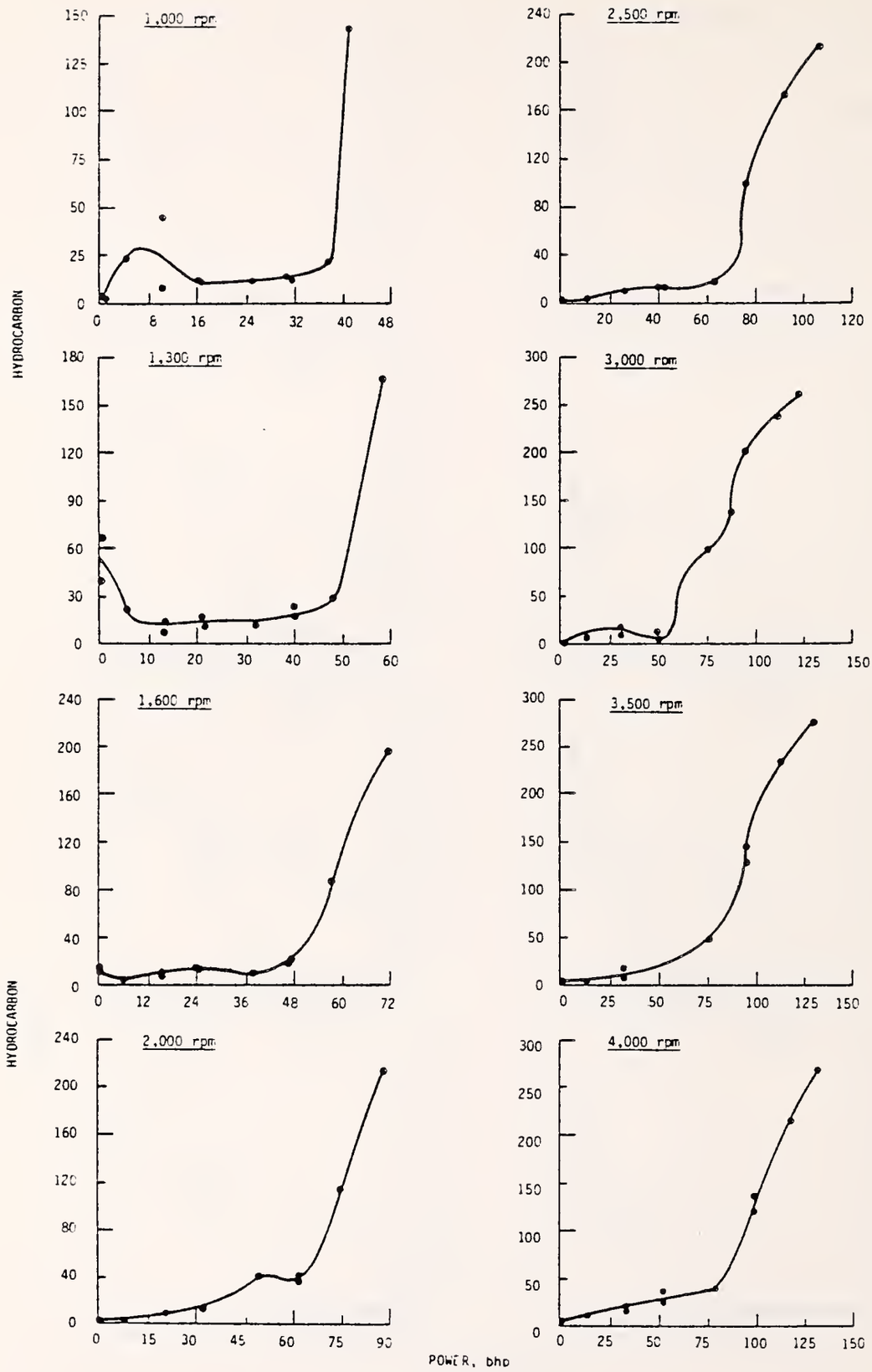


FIGURE 5. HYDROCARBON EMISSIONS VERSUS POWER AT VARIOUS SPEED AND LOAD CONDITIONS--CHRYSLER 318-CID ENGINE

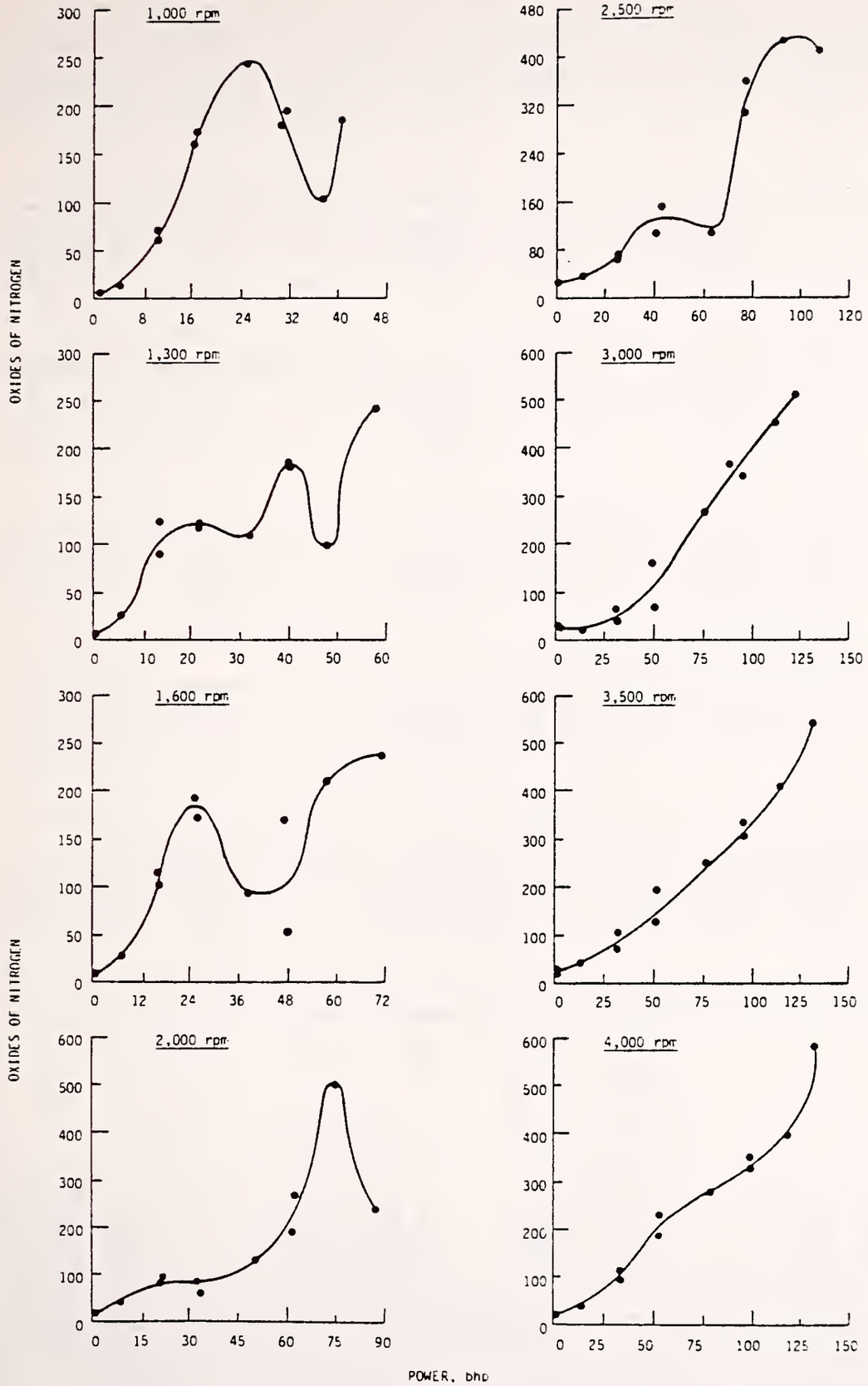


FIGURE 6. OXIDES OF NITROGEN EMISSIONS VERSUS POWER AT VARIOUS SPEED AND LOAD CONDITIONS--CHRYSLER 318-CID ENGINE

ENGINE: CHR318
FUEL CODE:. 7619

TEST NUMBER	1.01	1.02	2.01	2.02	3.01	3.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/12/77	7/12/77	7/12/77	7/12/77	7/12/77	7/12/77
BAROMETER, MMHG	742.5	742.5	742.5	742.5	742.5	742.5
HUMIDITY, GRAINS/LB	105	105	105	105	105	105
TEMPERATURE, F	73	73	74	74	74	74
ENGINE SPEED, RPM	800	800	800	800	800	800
TORQUE, FT-LB	1.0	1.0	20.8	21.9	39.3	40.5
POWER, BHP*	.2	.2	3.2	3.4	6.1	6.3
FUEL RATE, LB/HR	4.9	4.9	5.7	5.7	6.3	6.3
IGNITION TIMING, DEG BTDC	7.0	7.0	7.0	7.0	8.5	8.5
MANIFOLD VACUUM, IN HG	18.0	18.0	16.5	16.5	16.0	16.0
THROTTLE ANGLE, DEG	.5	.5	.5	.5	1.5	1.5
INTAKE MAN TEMP., F	130	130	143	143	135	135
CONCENTRATIONS, DRY BASIS						
CO, %	.5305	.0320	.3200	.0245	.2231	.0419
CO2, %	13.30	13.87	13.90	14.05	13.86	13.97
O2, %	1.30	1.00	1.55	1.35	1.38	1.25
HC, PPMC	2677	936	1324	296	1659	432
NOX, PPM	36	47	111	110	228	206
AIR/FUEL RATIO	15.19	15.40	15.59	15.71	15.50	15.63
EMISSION RATES, G/HR						
CO	166.4	10.1	115.1	9.0	89.5	17.0
HC	42.2	14.9	23.9	5.4	33.4	8.8
NOX+	2.2	2.9	7.7	7.7	17.5	16.1
OIL TEMPERATURE, F	171	171	191	191	191	191
OIL PRESSURE, PSI	57	57	45	45	43	43
COOLANT TEMPERATURE, F	168	168	171	171	172	172
EXHAUST PRESSURE, IN. H2O	1.0	1.0	2.0	2.0	2.0	2.0
EXHAUST TEMPERATURE, F	620	620	686	599	675	609

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	4.01	4.02	5.01	5.02	6.01	6.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/12/77	7/12/77	7/20/77	7/20/77	7/12/77	7/12/77
BAROMETER, MMHG	742.5	742.5	741.6	741.6	742.5	742.5
HUMIDITY, GRAINS/LB	105	105	76	76	105	99
TEMPERATURE, F	75	75	73	73	77	77
ENGINE SPEED, RPM	600	600	1000	1000	1000	1000
TORQUE, FT-LB	40.3	40.3	215.0	215.0	193.5	193.5
POWER, BHP*	4.7	4.7	40.9	40.9	37.8	37.7
FUEL RATE, LB/HR	4.8	4.8	25.5	25.5	19.1	19.1
IGNITION TIMING, DEG BTDC	7.0	7.0	7.0	7.0	7.0	7.0
MANIFOLD VACUUM, IN HG	14.5	14.5	.0	.0	2.0	2.0
THROTTLE ANGLE, DEG	.0	.0	73.0	73.0	24.0	24.0
INTAKE MAN. TEMP., F	134	134	116	116	116	116
CONCENTRATIONS, DRY BASIS						
CO, %	.2208	.0231	3.8675	3.9169	.9150	.2529
CO2, %	13.70	13.85	12.09	12.18	13.50	14.40
O2, %	1.85	1.70	.38	.12	1.10	.26
HC, PPMC	1591	289	2028	2071	1487	354
NOX, PPM	161	145	883	820	1375	468
AIR/FUEL RATIO	15.84	15.98	13.24	13.07	15.03	14.85
EMISSION RATES, G/HR						
CO	68.4	7.2	5368.4	5366.3	1082.8	296.9
HC	24.8	4.5	141.4	142.5	88.4	20.9
NOX+	9.6	8.6	202.4	185.3	312.8	102.1
OIL TEMPERATURE, F	187	187	209	209	202	202
OIL PRESSURE, PSI	32	32	35	35	43	43
COOLANT TEMPERATURE, F	170	170	170	170	171	171
EXHAUST PRESSURE, IN. H2O	2.0	2.0	18.0	9.0	19.0	11.0
EXHAUST TEMPERATURE, F	577	524	996	988	1030	1157

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	7.01	7.02	8.01	8.02	9.01	9.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/12/77	7/12/77	7/12/77	7/12/77	7/12/77	7/12/77
BAROMETER, MMHG	742.5	742.5	742.5	742.5	742.5	742.5
HUMIDITY, GRAINS/LB	99	99	99	99	99	99
TEMPERATURE, F	76	76	76	76	76	76
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	162.0	162.0	129.3	130.5	86.0	86.0
POWER, BHP*	31.6	31.6	24.8	25.0	16.8	16.8
FUEL RATE, LB/HR	16.5	16.6	13.6	13.5	9.6	9.6
IGNITION TIMING, DEG BTDC	7.0	7.0	14.0	14.0	30.5	30.5
MANIFOLD VACUUM, IN HG	4.5	4.5	8.5	8.5	14.0	14.0
THROTTLE ANGLE, DEG	13.5	13.5	7.5	7.5	3.0	3.0
INTAKE MAN. TEMP., F	123	123	124	124	130	130
CONCENTRATIONS, DRY BASIS						
CO, %	.2360	.0325	.0770	.0124	.4064	.0210
CO2, %	14.40	14.75	13.11	13.29	14.01	14.50
O2, %	1.26	.95	2.19	2.03	1.30	1.01
HC, PPMC	1553	226	1142	245	1604	332
NOX, PPM	1097	1031	1498	1454	1850	1545
AIR/FUEL RATIO	15.42	15.44	16.32	16.33	15.40	15.50
EMISSION RATES, G/HR						
CO	238.2	32.9	69.8	11.2	242.4	12.5
HC	78.7	11.5	52.0	11.1	48.0	10.0
NOX+	205.6	193.9	252.5	243.9	205.0	171.4
OIL TEMPERATURE, F	202	202	193	193	202	202
OIL PRESSURE, PSI	47	47	47	47	47	47
COOLANT TEMPERATURE, F	169	169	170	170	170	170
EXHAUST PRESSURE, IN. H2O	14.0	9.0	10.0	6.0	6.0	4.0
EXHAUST TEMPERATURE, F	1001	983	906	875	766	752

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	10.01	10.02	11.01	11.02	12.01	12.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/12/77	7/12/77	7/12/77	7/12/77	7/12/77	7/12/77
BAROMETER, MMHG	742.5	742.5	742.9	742.9	742.9	742.9
HUMIDITY, GRAINS/LB	99	99	105	105	105	105
TEMPERATURE, F	76	76	77	77	76	76
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	53.0	53.0	21.5	21.5	1.9	4.5
POWER, BHP*	10.3	10.3	4.2	4.2	.4	.9
FUEL RATE, LB/HR	7.7	7.7	6.8	6.7	6.0	6.3
IGNITION TIMING, DEG BTDC	29.5	29.5	13.5	13.5	7.5	7.5
MANIFOLD VACUUM, IN HG	17.0	17.0	18.0	18.0	19.0	19.0
THROTTLE ANGLE, DEG	.5	.5	.0	.0	.0	.0
INTAKE MAN. TEMP., F	126	126	129	129	133	133
CONCENTRATIONS, DRY BASIS						
CO, %	.2405	.0124	.3514	.0320	.0955	.0147
CO2, %	13.60	14.50	13.03	13.29	13.03	13.09
O2, %	1.55	.78	2.05	1.79	2.58	2.48
HC, PPMC	1568	329	477	1015	553	113
NOX, PPM	787	787	140	136	71	73
AIR/FUEL RATIO	15.65	15.33	16.09	16.00	16.63	16.65
EMISSION RATES, G/HR						
CO	119.3	5.9	160.7	14.5	39.5	6.3
HC	39.1	7.9	11.0	23.1	11.5	2.4
NOX+	72.5	69.8	12.3	11.9	5.7	6.0
OIL TEMPERATURE, F	197	197	194	194	193	193
OIL PRESSURE, PSI	48	48	52	52	52	52
COOLANT TEMPERATURE, F	170	170	170	170	171	171
EXHAUST PRESSURE, IN H2O	4.0	4.0	4.0	3.0	4.0	4.0
EXHAUST TEMPERATURE, F	700	700	720	664	742	742

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7613

TEST NUMBER	13.01	13.02	14.01	14.02	15.01	15.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/20/77	7/20/77	7/19/77	7/19/77	7/13/78	7/13/77
BAROMETER, MMHG	741.6	741.6	741.5	741.5	745.0	745.0
HUMIDITY, GRAINS/LB	76	76	76	76	79	79
TEMPERATURE, F	75	75	71	71	80	80
ENGINE SPEED, RPM	1300	1300	1300	1300	1300	1300
TORQUE, FT-LB	235.0	235.0	193.5	193.5	162.0	162.0
POWER, BHP*	58.2	58.2	47.8	47.8	40.8	40.8
FUEL RATE, LB/HR	31.2	31.7	24.9	24.9	21.6	21.4
IGNITION TIMING, DEG BTDC	11.0	11.0	12.0	12.0	13.0	13.0
MANIFOLD VACUUM, IN HG	.0	.0	2.0	2.0	4.0	4.0
THROTTLE ANGLE, DEG	75.0	75.0	30.0	30.0	17.5	17.5
INTAKE MAN TEMP., F	108	108	138	138	147	147
CONCENTRATIONS, DRY BASIS						
CO, %	3.8077	3.8650	1.6155	.9260	.3962	.0546
CO2, %	12.15	12.18	13.70	14.59	14.29	14.74
O2, %	.29	.12	.16	.04	.95	.61
HC, PPMC	1976	1933	1353	379	1196	244
NOX, PPM	839	858	870	406	703	664
AIR/FUEL RATIO	13.21	13.09	14.11	14.42	15.17	15.19
EMISSION RATES, G/HR						
CO	6457.1	6589.2	2322.0	1352.4	521.4	71.2
HC	168.3	165.5	97.7	27.8	79.0	16.0
NOX+	234.8	241.4	207.0	98.2	155.2	145.4
OIL TEMPERATURE, F	211	211	213	213	214	214
OIL PRESSURE, PSI	45	45	60	60	52	52
COOLANT TEMPERATURE, F	172	172	171	171	170	170
EXHAUST PRESSURE, IN. H2O	30.0	17.0	25.0	15.0	14.0	21.0
EXHAUST TEMPERATURE, F	1086	1078	1125	1195	1147	1165

* CORRECTED SAE J816B
\+ COPRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	16.01	16.02	17.01	17.02	18.01	18.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77
BAROMETER, MMHG	745.0	745.0	745.0	745.0	745.0	745.0
HUMIDITY, GRAINS/LB	79	79	79	79	79	79
TEMPERATURE, F	78	78	80	80	78	78
ENGINE SPEED, RPM	1300	1300	1300	1300	1300	1300
TORQUE, FT-LB	129.0	129.0	86.0	86.0	54.0	54.0
POWER, BHP*	31.9	31.9	21.6	21.6	13.4	13.4
FUEL RATE, LB/HR	19.2	19.1	12.4	12.4	9.6	9.5
IGNITION TIMING, DEG BTDC	13.0	13.0	35.0	35.0	35.0	35.0
MANIFOLD VACUUM, IN HG	5.5	5.5	14.0	14.0	17.5	17.5
THROTTLE ANGLE, DEG	14.0	14.0	7.0	7.0	3.0	3.0
INTAKE MAN. TEMP., F	173	173	140	140	124	124
CONCENTRATIONS, DRY BASIS						
CO, %	.3255	.0355	.0893	.0113	.0896	.0108
CO2, %	14.27	14.70	13.76	14.01	13.44	13.74
O2, %	1.12	80	2.05	1.78	2.51	2.27
HC, PPMC	1012	181	1483	264	1276	219
NOX, PPM	541	548	950	925	1020	868
AIR/FUEL RATIO	15.33	15.33	16.08	16.05	16.47	16.43
EMISSION RATES, G/HR						
CO	389.7	42.3	71.2	9.0	57.8	6.9
HC	60.8	10.8	59.4	10.6	41.3	7.0
NOX+	108.7	109.6	127.1	123.4	110.4	93.0
OIL TEMPERATURE, F	212	212	206	206	205	205
OIL PRESSURE, PSI	54	54	56	56	56	56
COOLANT TEMPERATURE, F	171	171	175	175	172	172
EXHAUST PRESSURE, IN H2O	20.0	12.0	9.0	4.0	5.0	4.0
EXHAUST TEMPERATURE, F	1139	1134	871	863	825	808

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	19.01	19.02	20.01	20.02	21.01	21.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/13/77	7/13/77	7/13/77	7/13/77	7/20/77	7/20/77
BAROMETER, MMHG	745.0	745.0	745.0	745.0	741.6	741.6
HUMIDITY, GRAINS/LB	79	79	79	79	76	76
TEMPERATURE, F	84	84	93	93	76	76
ENGINE SPEED, RPM	1300	1300	1300	1300	1600	1600
TORQUE, FT-LB	21.5	21.5	.6	.6	234.0	234.0
POWER, BHP*	5.4	5.4	.2	.2	71.4	71.4
FUEL RATE, LB/HR	7.8	7.7	6.2	6.2	37.8	36.9
IGNITION TIMING, DEG BTDC	35.0	35.0	35.0	35.0	12.5	12.5
MANIFOLD VACUUM, IN HG	18.5	18.5	20.0	20.0	.0	.0
THROTTLE ANGLE, DEG	2.0	2.0	1.0	1.0	75.0	75.0
INTAKE MAN. TEMP., F	124	124	132	132	105	105
CONCENTRATIONS, DRY BASIS						
CO, %	.1324	.0143	.1392	.0129	4.0799	4.0439
CO2, %	13.06	13.35	13.12	13.41	11.92	11.98
O2, %	2.55	2.39	2.96	2.43	.24	.10
HC, PPMC	4899	794	11620	1889	1930	1910
NOX, PPM	250	291	81	130	640	696
AIR/FUEL RATIO	16.06	16.47	15.57	16.36	13.06	13.00
EMISSION RATES, G/HR						
CO	67.9	7.4	53.8	5.3	8600.9	8317.3
HC	126.1	20.7	225.4	38.8	204.3	197.3
NOX+	21.5	25.3	5.2	9.0	222.6	236.3
OIL TEMPERATURE, F	200	200	198	198	214	214
OIL PRESSURE, PSI	60	60	60	60	55	24
COOLANT TEMPERATURE, F	170	170	172	172	171	171
EXHAUST PRESSURE, IN. H2O	5.0	4.0	4.0	3.0	46.0	24.0
EXHAUST TEMPERATURE, F	778	856	663	998	1149	1136

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	22.01	22.02	23.01	23.02	24.01	24.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77
BAROMETER, MMHG	745.0	745.0	745.0	745.0	745.0	745.0
HUMIDITY, GRAINS/LB	82	82	90	90	90	90
TEMPERATURE, F	103	103	94.	94	94	94
ENGINE SPEED, RPM	1600	1600	1600	1600	1600	1600
TORQUE, FT-LB	184.5	184.5	154.0	154.0	123.0	123.0
POWER, BHP*	57.6	57.6	47.7	47.7	38.1	38.1
FUEL RATE, LB/HR	30.3	29.8	26.8	26.5	22.9	22.9
IGNITION TIMING, DEG BTDC	14.0	14.0	13.0	13.0	13.0	13.0
MANIFOLD VACUUM, IN HG	2.0	2.0	3.0	3.0	5.5	5.5
THROTTLE ANGLE, DEG	32.0	32.0	24.0	24.0	17.0	17.0
INTAKE MAN. TEMP., F	175	175	168	168	185	185
CONCENTRATIONS, DRY BASIS						
CO, %	.5138	1.7742	.9715	.3789	.4472	.0665
CO2, %	13.70	14.15	13.97	14.61	14.07	14.53
O2, %	.30	.12	.49	.12	.74	.40
HC, PPMC	1668	1028	1227	266	809	145
NOX, PPM	629	722	549	186	466	373
AIR/FUEL RATIO	14.63	14.07	14.60	14.70	15.04	15.05
EMISSION RATES, G/HR						
CO	934.4	3021.0	1549.1	600.5	628.3	93.5
HC	152.3	87.9	98.3	21.1	57.1	10.2
NOX+	194.7	209.3	155.3	52.3	116.2	93.1
OIL TEMPERATURE, F	222	222	189	175	215	215
OIL PRESSURE, PSI	5	55	60	60	60	60
COOLANT TEMPERATURE, F	175	175	175	175	174	174
EXHAUST PRESSURE, IN. H2O	34.0	20.0	30.0	18.0	25.0	16.0
EXHAUST TEMPERATURE, F	1247	1232	1225	1247	1247	1254

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	25.01	25.02	26.01	26.02	27.01	27.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77
BARONETER, MMHG	745.0	745.0	745.0	745.0	745.0	745.0
HUMIDITY, GRAINS/LB	90	90	90	90	90	90
TEMPERATURE, F	94	94	93	93	92	92
ENGINE SPEED, RPM	1600	1600	1600	1600	1600	1600
TORQUE, FT-LB	82.0	82.0	51.0	51.0	20.5	20.5
POWER, BHP*	25.4	25.4	15.8	15.8	6.3	6.2
FUEL RATE, LB/HR	14.9	15.0	11.4	11.3	8.7	8.6
IGNITION TIMING, DEG BTDC	35.0	35.0	35.0	35.0	36.0	36.0
MANIFOLD VACUUM, IN HG	13.5	13.5	17.5	17.5	20.5	20.5
THROTTLE ANGLE, DEG	6.0	6.0	3.0	3.0	1.0	1.0
INTAKE MAN. TEMP., F	165	165	142	142	130	130
CONCENTRATIONS, DRY BASIS						
CO, %	.7560	.0775	.2136	.0201	.1553	.0148
CO2, %	13.64	14.49	13.64	13.79	13.44	13.63
O2, %	1.18	.52	1.55	1.25	1.60	1.40
HC, PPMC	1593	263	1169	189	754	133
NOX, PPM	1248	1052	805	795	288	288
AIR/FUEL RATIO	15.14	15.14	15.71	15.70	15.81	15.81
EMISSION RATES, G/HR						
CO	698.8	71.6	156.2	14.6	87.4	8.4
HC	73.9	12.2	43.0	6.9	21.3	3.8
NOX+	204.7	172.4	104.5	102.6	28.8	28.9
OIL TEMPERATURE, F	215	215	210	210	205	205
OIL PRESSURE, PSI	60	60	60	60	60	60
COOLANT TEMPERATURE, F	172	172	172	172	173	173
EXHAUST PRESSURE, IN. H2O	14.0	8.0	10.0	6.0	6.0	4.0
EXHAUST TEMPERATURE, F	1002	1100	927	929	868	835

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	28.01	28.02	29.01	29.02	30.01	30.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/13/77	7/13/77	7/20/77	7/20/77	7/13/77	7/13/77
BAROMETER, MMHG	745.0	745.0	741.6	741.6	745.0	745.0
HUMIDITY, GRAINS/LB	90	90	76	76	90	90
TEMPERATURE, F	91	91	82	82	93	93
ENGINE SPEED, RPM	1600	1600	2000	2000	2000	2000
TORQUE, FT-LB	.6	.6	230.0	230.0	194.0	194.0
POWER, BHP*	.2	.2	88.3	88.3	75.1	75.1
FUEL RATE, LB/HR	7.3	7.4	47.3	47.3	39.8	38.9
IGNITION TIMING, DEG BTDC	35.0	3.0	14.0	14.0	15.0	15.0
MANIFOLD VACUUM, IN HG	21.5	21.5	.0	.0	3.0	3.0
THROTTLE ANGLE, DEG	4.0	.0	75.0	75.0	31.0	31.0
INTAKE MAN. TEMP., F	132	132	106	106	131	131
CONCENTRATIONS, DRY BASIS						
CO, %	.1900	.0170	4.1817	4.1952	1.9192	1.8103
CO2, %	13.17	13.41	11.86	11.89	13.55	13.67
O2, %	2.03	1.80	.16	.07	.25	.13
HC, PPMC	1697	383	1825	1700	1501	1023
NOX, PPM	120	132	597	570	1188	1259
AIR/FUEL RATIO	16.01	16.08	12.97	12.93	14.04	14.06
EMISSION RATES, G/HR						
CO	92.6	8.4	10582.1	10572.1	4376.7	4045.1
HC	41.5	9.5	231.9	215.2	171.9	114.8
NOX+	10.4	11.6	249.4	237.2	480.8	499.2
OIL TEMPERATURE, F	203	203	224	224	220	220
OIL PRESSURE, PSI	60	60	55	55	60	60
COOLANT TEMPERATURE, F	173	173	175	175	175	175
EXHAUST PRESSURE, IN. H2O	5.0	4.0	52.0	38.0	50.0	34.0
EXHAUST TEMPERATURE, F	825	814	1254	1226	1339	1311

* CORRECTED SAE J8168
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	31.01	31.02	32.01	32.02	33.01	33.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77
BAROMETER, MMHG	745.0	745.0	745.0	745.0	745.0	745.0
HUMIDITY, GRAINS/LB	87	87	87	87	87	87
TEMPERATURE, F	95	95	95	95	93	93
ENGINE SPEED, RPM	2000	2000	2000	2000	2000	2000
TORQUE, FT-LB	162.0	162.0	130.0	130.0	86.0	86.0
POWER, BHP*	62.8	62.8	49.3	50.4	33.3	33.3
FUEL RATE, LB/HR	34.3	34.3	30.3	30.3	21.3	21.3
IGNITION TIMING, DEG BTDC	15.0	15.0	15.0	15.0	28.0	28.0
MANIFOLD VACUUM, IN HG	4.0	4.0	5.0	5.0	11.0	11.0
THROTTLE ANGLE, DEG	26.0	26.0	21.0	21.0	11.0	11.0
INTAKE MAN. TEMP., F	155	155	185	185	207	207
CONCENTRATIONS, DRY BASIS						
CO, %	1.0131	.9418	.4868	.2810	.6759	.1360
CO2, %	14.01	14.24	14.25	14.45	13.84	14.49
O2, %	.35	.11	.47	.20	.89	.42
HC, PPMC	1096	401	645	458	1020	194
NOX, PPM	982	757	531	404	335	259
AIR/FUEL RATIO	14.52	14.46	14.86	14.78	15.01	15.02
EMISSION RATES, G/HR						
CO	2056.5	1904.9	899.5	512.8	881.1	177.3
HC	111.7	40.7	59.9	41.9	66.8	12.7
NOX+	347.7	267.3	171.3	128.7	76.2	58.9
OIL TEMPERATURE, F	229	229	229	229	226	226
OIL PRESSURE, PSI	60	60	60	60	60	60
COOLANT TEMPERATURE, F	175	175	174	174	172	172
EXHAUST PRESSURE, IN. H2O	45.0	30.0	40.0	25.0	24.0	14.0
EXHAUST TEMPERATURE, F	1365	1354	1357	1376	1212	1267

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	34.01	34.02	35.01	35.02	36.01	36.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77	7/13/77
BAROMETER, MMHG	745.0	745.0	745.0	745.0	745.0	745.0
HUMIDITY, GRAINS/LB	87	87	87	87	87	87
TEMPERATURE, F	91	91	90	90	89	89
ENGINE SPEED, RPM	2000	2000	2000	2000	2000	2000
TORQUE, FT-LB	54.0	54.0	21.6	21.6	.6	.6
POWER, BHP*	20.9	20.9	8.3	8.3	.2	.2
FUEL RATE, LB/HR	15.4	15.4	11.2	11.4	9.0	9.1
IGNITION TIMING, DEG BTDC	37.0	37.0	37.0	37.0	37.0	37.0
MANIFOLD VACUUM, IN HG	16.5	16.5	20.0	20.0	21.5	21.5
THROTTLE ANGLE, DEG	6.0	6.0	3.0	3.0	1.0	1.0
INTAKE MAN. TEMP., F	179	179	150	150	138	138
CONCENTRATIONS, DRY BASIS						
CO, %	.6692	.0702	.2160	.0184	.1310	.0120
CO2, %	13.63	14.34	13.53	13.74	13.38	13.51
O2, %	1.23	.71	1.82	1.65	2.14	2.00
HC, PPMC	992	173	461	81	999	74
NOX, PPM	540	496	311	310	139	149
AIR/FUEL RATIO	15.26	15.26	15.97	15.98	16.19	16.26
EMISSION RATES, G/HR						
CO	641.4	67.1	158.3	13.7	78.3	7.3
HC	47.8	8.3	17.0	3.0	30.0	2.2
NOX+	90.2	82.8	39.8	40.3	14.5	15.7
OIL TEMPERATURE, F	219	219	214	214	210	210
OIL PRESSURE, PSI	60	60	60	60	60	60
COOLANT TEMPERATURE, F	173	173	173	173	173	173
EXHAUST PRESSURE, IN. H2O	15.0	9.0	10.0	6.0	5.0	4.0
EXHAUST TEMPERATURE, F	1070	1134	995	969	942	900

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	37.01	37.02	38.01	38.02	39.01	39.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/19/77	7/19/77	7/14/77	7/14/77	7/14/77	7/14/77
BAROMETER, MMHG	741.5	741.5	746.8	746.8	746.8	746.8
HUMIDITY, GRAINS/LB	76	76	93	93	93	93
TEMPERATURE, F	77	77	89	89	91	91
ENGINE SPEED, RPM	2500	2500	2500	2500	2500	2500
TORQUE, FT-LB	226.0	226.0	193.5	193.5	162.0	162.0
POWER, BHP*	107.9	107.9	93.1	93.1	77.6	77.6
FUEL RATE, LB/HR	58.9	58.6	50.2	50.6	44.0	43.8
IGNITION TIMING, DEG BTDC	17.0	17.0	17.0	17.0	16.5	16.5
MANIFOLD VACUUM, IN HG	1.0	1.0	3.0	3.0	4.0	4.0
THROTTLE ANGLE, DEG	75.0	75.0	41.5	41.5	35.5	35 5
INTAKE MAN. TEMP., F	105	105	128	128	172	172
CONCENTRATIONS, DRY BASIS						
CO, %	3.8962	3.9479	2.8830	2.9424	1.7436	1.7500
CO2, %	12.36	12.33	13.08	12.98	13.52	13.65
O2, %	.05	.03	.18	.10	.25	.10
HC, PPMC	1390	1341	1469	1223	1207	763
NOX, PPM	811	783	887	844	820	780
AIR/FUEL RATIO	13.10	13.07	13.60	13.54	14.12	14.07
EMISSION RATES, G/HR						
CO	12342.2	12410.6	8048.5	8241.2	4499.6	4472.3
HC	221.1	211.6	205.9	172.1	156.4	97.9
NOX+	425.3	407.5	446.2	425.8	381.4	359.2
OIL TEMPERATURE, F	231	231	238	238	242	242
OIL PRESSURE, PSI	60	60	58	58	58	58
COOLANT TEMPERATURE, F	175	175	174	174	176	176
EXHAUST PRESSURE, IN. H2O	76.0	58.0	75.0	52.0	66.0	43.0
EXHAUST TEMPERATURE, F	1350	1328	1406	1380	1430	1405

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	40.01	40.02	41.01	41.02	42.01	42.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/14/77	7/14/77	7/14/77	7/14/77	7/14/77	7/14/77
BAROMETER, MMHG	746.8	746.8	746.7	746.7	746.7	746.7
HUMIDITY, GRAINS/LB	93	107	107	107	107	107
TEMPERATURE, F	85	85	88	88	83	83
ENGINE SPEED, RPM	2500	2500	2500	2500	2500	2500
TORQUE, FT-LB	129.0	129.0	87.1	87.8	53.3	52.3
POWER, BHP*	61.8	63.2	42.7	43.0	25.6	25.6
FUEL RATE, LB/HR	38.9	39.0	25.4	26.7	20.8	20.6
IGNITION TIMING, DEG BTDC	16.0	16.0	32.0	32.0	39.0	39.0
MANIFOLD VACUUM, IN HG	5.0	5.0	11.0	11.0	15.0	15.0
THROTTLE ANGLE, DEG	30.0	30.0	18.0	18.0	13.5	13.5
INTAKE MAN. TEMP , F	193	193	214	214	207	207
CONCENTRATIONS, DRY BASIS						
CO, %	.8250	.5750	.3976	.0738	.5582	.0776
CO2, %	13.75	14.22	13.76	14.13	13.50	14.12
O2, %	.35	.10	.95	.65	1.12	.67
HC, PPMC	587	144	686	143	834	141
NOX, PPM	570	240	470	460	289	283
AIR/FUEL RATIO	14.63	14.62	15.23	15.23	15.25	15.23
EMISSION RATES, G/HR						
CO	1978.4	1368.8	642.1	125.2	726.3	101.7
HC	70.7	17.2	55.6	12.2	54.5	9.3
NOX+	246 3	110.8	147.3	151.4	73.1	72.0
OIL TEMPERATURE, F	241	241	234	234	227	227
OIL PRESSURE, PSI	58	58	58	58	61	61
COOLANT TEMPERATURE, F	178	178	176	176	173	173
EXHAUST PRESSURE, IN. H2O	56.0	37.0	30.0	25.0	20.0	15.0
EXHAUST TEMPERATURE, F	1458	1458	1260	1290	1167	1212

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

	43.01	43.02	44.01	44.02	45.01	45.02
TEST NUMBER	43.01	43.02	44.01	44.02	45.01	45.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/14/77	7/14/77	7/14/77	7/14/77	7/20/77	7/20/77
BAROMETER, MMHG	745.6	745.6	745.6	745.6	741.6	741.6
HUMIDITY, GRAINS/LB	98	98	98	98	74	74
TEMPERATURE, F	81	81	82	82	84	84
ENGINE SPEED, RPM	2500	2500	2500	2500	3000	3000
TORQUE, FT-LB	22.8	22.2	2.5	1.5	215.0	215.0
POWER, BHP*	10.9	10.6	1.2	.7	122.1	124.0
FUEL RATE, LB/HR	15.0	15.2	11.7	11.7	68.4	68.3
IGNITION TIMING, DEG BTDC	38.0	38.0	38.0	38.0	19.0	19.0
MANIFOLD VACUUM, IN HG	19.5	19.5	21.0	21.0	2.0	2.0
THROTTLE ANGLE, DEG	10.0	10.0	8.0	8.0	75.0	75.0
INTAKE MAN. TEMP, F	155	155	152	152	113	113
CONCENTRATIONS, DRY BASIS						
CO, %	.3557	.0352	.1371	.0124	3.7271	3.7004
CO2, %	13.35	13.74	13.14	13.26	12.04	12.07
O2, %	1.57	1.26	2.03	2.09	.14	.08
HC, PPMC	412	84	243	55	1498	1394
NOX, PPM	212	206	165	181	828	839
AIR/FUEL RATIO	15.72	15.69	16.22	16.35	13.17	13.16
EMISSION RATES, G/HR						
CO	343.8	34.3	107.1	9.7	14477.2	13690.2
HC	20.0	4.1	9.5	2.2	292.2	259.0
NOX+	37.7	36.9	23.7	26.1	528.0	509.4
OIL TEMPERATURE, F	220	220	221	221	248	248
OIL PRESSURE, PSI	63	63	63	63	55	55
COOLANT TEMPERATURE, F	178	178	175	175	172	172
EXHAUST PRESSURE, IN. H2O	10.0	6.0	8.0	6.0	135.0	86.0
EXHAUST TEMPERATURE, F	1077	1076	1043	998	1432	1420

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	46.01	46.02	47.01	47.02	48.01	48.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/14/77	7/14/77	7/14/77	7/14/77	7/14/77	7/14/77
BAROMETER, MMHG	744.5	744.5	744.5	744.5	744.5	744.5
HUMIDITY, GRAINS/LB	117	117	117	117	117	117
TEMPERATURE, F	92	92	111	111	108	108
ENGINE SPEED, RPM	3000	3000	3000	3000	3000	3000
TORQUE, FT-LB	193.5	193.5	162.0	162.0	129.0	129.0
POWER, BHP*	113.0	113.0	96.3	96.2	76.4	76.4
FUEL RATE, LB/HR	62.2	62.9	55.3	55.1	47.2	46.4
IGNITION TIMING, DEG BTDC	17.0	17.0	18.0	18.0	18.0	18.0
MANIFOLD VACUUM, IN HG	3.0	3.0	4.0	4.0	5.5	5.5
THROTTLE ANGLE, DEG	47.0	47.0	41.0	41.0	34.0	34.0
INTAKE MAN. TEMP., F	116	116	176	176	191	191
CONCENTRATIONS, DRY BASIS						
CO, %	3.3566	3.5373	2.7790	2.8773	1.6286	1.6768
CO2, %	12.64	12.40	12.90	12.78	13.39	13.36
O2, %	.15	.10	.16	.10	.20	.10
HC, PPMC	1564	1371	1425	1308	920	722
NOX, PPM	686	643	555	546	476	489
AIR/FUEL RATIO	13.36	13.26	13.60	13.53	14.15	14.08
EMISSION RATES, G/HR						
CO	11431.5	12114.6	8768.5	8791.1	4451.8	4480.3
HC	267.6	235.9	225.8	200.8	126.3	96.8
NOX+	478.5	451.1	358.6	341.6	266.6	267.5
OIL TEMPERATURE, F	241	241	245	245	240	240
OIL PRESSURE, PSI	63	68	58	58	60	60
COOLANT TEMPERATURE, F	176	176	175	175	176	176
EXHAUST PRESSURE, IN. H2O	105.0	73.0	90.0	61.0	72.0	49.0
EXHAUST TEMPERATURE, F	1432	1400	1432	1397	1465	1449

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

	49.01	49.02	50.01	50.02	51.01	51.02
TEST NUMBER	1	2	1	2	1	2
DATA SOURCE CODE	7/14/77	7/14/77	7/14/77	7/14/77	7/14/77	7/14/77
TEST DATE	744.5	744.5	744.5	744.5	744.5	744.5
BAROMETER, MMHG	121	121	121	121	121	121
HUMIDITY, GRAINS/LB	106	106	105	105	103	103
TEMPERATURE, F	3000	3000	3000	3000	3000	3000
ENGINE SPEED, RPM	86.0	86.0	53.0	53.0	21.5	21.5
TORQUE, FT-LB	50.9	50.9	31.3	31.3	12.7	12.7
POWER, BHP*	31.3	31.3	24.9	24.9	19.3	19.4
FUEL RATE, LB/HR	36.0	36.0	41.0	41.0	41.0	41.0
IGNITION TIMING, DEG BTDC	11.5	11.5	15.0	15.0	18.0	18.0
MANIFOLD VACUUM, IN HG	20.5	20.5	16.0	16.0	12.0	12.0
THROTTLE ANGLE, DEG	213	213	215	215	203	203
INTAKE MAN TEMP., F						
CONCENTRATIONS, DRY BASIS						
CO, %	.9273	.6943	1.0194	.4611	.9670	.2722
CO2, %	13.54	13.97	13.39	14.08	13.43	14.23
O2, %	.53	.13	.64	.14	.69	.18
HC, PPMC	1015	266	1041	229	732	126
NOX, PPM	603	177	295	131	176	86
AIR/FUEL RATIO	14.66	14.57	14.68	14.68	14.77	14.80
EMISSION RATES, G/HR						
CO	1742.0	1294.1	1525.6	688.5	1127.3	319.3
HC	95.8	24.9	78.2	17.2	42.8	7.4
NOX+	238.2	69.2	92.9	41.1	43.1	21.3
OIL TEMPERATURE, F	241	241	235	235	232	232
OIL PRESSURE, PSI	60	60	62	62	62	62
COOLANT TEMPERATURE, F	173	173	173	173	173	173
EXHAUST PRESSURE, IN. H2O	38.0	24.0	27.0	16.0	19.0	11.0
EXHAUST TEMPERATURE, F	1288	1325	1215	1266	1179	1227

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	52.01	52.02	53.01	53.02	54.01	54.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/14/77	7/14/77	7/20/77	7/20/77	7/19/77	7/19/77
BAROMETER, MMHG	744.5	744.5	741.6	741.6	741.5	741.5
HUMIDITY, GRAINS/LB	121	121	74	74	81	81
TEMPERATURE, F	102	102	83	83	71	71
ENGINE SPEED, RPM	3000	3000	3500	3500	3500	3500
TORQUE, FT-LB	1.6	1.6	198.0	198.0	173.0	173.0
POWER, BHP*	1.0	.9	131.2	131.2	115.2	115.2
FUEL RATE, LB/HR	14.8	15.0	75.4	75.6	68.1	68.2
IGNITION TIMING, DEG BTDC	41.0	41.0	20.0	20.0	20.0	20.0
MANIFOLD VACUUM, IN HG	21.0	21.0	2.5	2.5	4.0	4.0
THROTTLE ANGLE, DEG	9.5	9.5	75.0	75.0	47.0	47.0
INTAKE MAN. TEMP., F	173	173	113	113	111	111
CONCENTRATIONS, DRY BASIS						
CO, %	.6590	.0633	3.8031	3.8058	3.6478	3.6188
CO2, %	13.39	13.96	11.96	11.97	12.56	12.57
O2, %	1.11	.75	.12	.07	.12	.08
HC, PPMC	336	63	1369	1278	1356	1255
NOX, PPM	169	170	844	775	636	658
AIR/FUEL RATIO	15.24	15.30	13.14	13.11	13.25	13.24
EMISSION RATES, G/HR						
CO	624.4	59.6	16290.6	16352.6	13490.5	13400.4
HC	16.0	3.0	294.5	275.7	251.9	233.3
NOX+	33.8	33.6	593.8	546.8	398.1	412.6
OIL TEMPERATURE, F	228	228	254	254	217	217
OIL PRESSURE, PSI	62	62	60	60	60	60
COOLANT TEMPERATURE, F	173	173	171	171	178	178
EXHAUST PRESSURE, IN. H2O	15.0	7.0	150.0	100.0	135.0	86.0
EXHAUST TEMPERATURE, F	1134	1155	1471	1458	1425	1394

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	55.01	55.02	56.01	56.02	57.01	57.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/19/77	7/19/77	7/19/77	7/19/77	7/19/77	7/19/77
BAROMETER, MMHG	741.5	741.5	741.5	741.5	741.5	741.5
HUMIDITY, GRAINS/LB	81	81	81	81	81	81
TEMPERATURE, F	77	77	78	78	79	79
ENGINE SPEED, RPM	3500	3500	3500	3500	3500	3500
TORQUE, FT-LB	144.0	144.0	115.0	115.0	77.0	77.0
POWER, BHP*	96.4	96.4	77.1	77.1	51.6	51.6
FUEL RATE, LB/HR	59.2	58.9	50.7	50.6	34.5	34.6
IGNITION TIMING, DEG BTDC	20.0	20.0	21.0	21.0	40.0	40.0
MANIFOLD VACUUM, IN HG	4.5	4.5	6.0	6.0	12.0	12.0
THROTTLE ANGLE, DEG	42.0	42.0	34.0	34.0	22.0	22.0
INTAKE MAN. TEMP., F	163	163	178	178	193	193
CONCENTRATIONS, DRY BASIS						
CO, %	2.4637	2.4289	1.3112	1.1993	.5200	.1237
CO2, %	13.38	13.48	14.15	14.32	14.37	14.81
O2, %	.13	.07	.19	.08	.52	.30
HC, PPMC	1119	871	566	322	439	116
NOX, PPM	569	598	516	503	785	547
AIR/FUEL RATIO	13.76	13.77	14.33	14.33	14.91	14.96
EMISSION RATES, G/HR						
CO	8189.0	8038.9	3875.3	3538.2	1087.4	260.0
HC	186.8	144.7	84.0	47.7	46.1	12.3
NOX+	320.1	335.0	258.3	251.4	278.0	194.6
OIL TEMPERATURE, F	252	252	254	254	251	251
OIL PRESSURE, PSI	58	58	60	60	60	60
COOLANT TEMPERATURE, F	174	174	173	173	170	170
EXHAUST PRESSURE, IN. H2O	110.0	73.0	80.0	61.0	50.0	31.0
EXHAUST TEMPERATURE, F	1495	1462	1536	1512	1370	1400

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	58.01	58.02	59.01	59.02	60.01	60.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/19/77	7/19/77	7/19/77	7/19/77	7/19/77	7/19/77
BAROMETER, MMHG	741.5	741.5	741.5	741.5	741.5	741.0
HUMIDITY, GRAINS/LB	81	81	81	81	81	81
TEMPERATURE, F	74	74	72	72	72	72
ENGINE SPEED, RPM	3500	3500	3500	3500	3500	3500
TORQUE, FT-LB	48.0	48.0	19.0	19.0	1.6	1.6
POWER, BHP*	32.0	32.0	12.7	12.7	1.1	1.1
FUEL RATE, LB/HR	27.6	28.3	22.8	22.9	19.3	19.1
IGNITION TIMING, DEG BTDC	43.0	43.0	43.0	43.0	43.0	43.0
MANIFOLD VACUUM, IN HG	16.0	16.0	17.5	17.5	19.5	19.5
THROTTLE ANGLE, DEG	17.0	17.0	14.0	17.0	12.0	12.0
INTAKE MAN. TEMP., F	190	190	191	191	175	175
CONCENTRATIONS, DRY BASIS						
CO, %	.5947	.1655	.6560	.1697	.6167	.0692
CO2, %	14.27	14.81	14.25	14.83	14.16	14.76
O2, %	.72	.37	.73	.32	.85	.54
HC, PPMC	415	89	386	84	354	51
NOX, PPM	443	358	201	169	136	129
AIR/FUEL RATIO	15.00	14.99	14.97	14.94	15.07	15.14
EMISSION RATES, G/HR						
CO	1002.0	284.8	911.5	235.5	730.5	80.7
HC	35.1	7.7	27.0	5.8	21.1	3.0
NOX+	126.2	104.2	47.2	39.8	27.3	25.4
OIL TEMPERATURE, F	243	243	238	238	235	235
OIL PRESSURE, PSI	60	0	60	60	61	61
COOLANT TEMPERATURE, F	171	171	171	171	171	171
EXHAUST PRESSURE, IN. H2O	35.0	22.0	26.0	15.0	20.0	13.0
EXHAUST TEMPERATURE, F	1316	1341	1301	1323	1273	1285

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	61.01	61.02	62.01	62.02	63.01	63.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/20/77	7/20/77	7/19/77	7/19/77	7/19/77	7/19/77
BAROMETER, MMHG	741.6	741.6	741.5	741.5	741.5	741.5
HUMIDITY, GRAINS/LB	74	74	76	76	76	76
TEMPERATURE, F	74	74	73	73	78	78
ENGINE SPEED, RPM	4000	4000	4000	4000	4000	4000
TORQUE, FT-LB	176.0	176.0	156.6	156.6	130.5	130.5
POWER, BHP*	133.3	133.3	119.2	119.2	99.8	99.8
FUEL RATE, LB/HR	81.0	81.1	72.9	73.4	64.8	64.5
IGNITION TIMING, DEG BTDC	21.0	21.0	21.0	21.0	21.0	21.0
MANIFOLD VACUUM, IN HG	2.0	2.0	4.0	4.0	5.0	5.0
THROTTLE ANGLE, DEG	75.0	75.0	49.0	49.0	44.0	44.0
INTAKE MAN. TEMP., F	100	100	131	131	162	162
CONCENTRATIONS, DRY BASIS						
CO, %	3.8190	3.8299	3.7263	3.6606	2.5946	2.4838
CO2, %	11.99	11.96	12.58	12.61	13.50	13.61
O2, %	.10	.06	.54	.30	.61	.32
HC, PPMC	1270	1166	1280	1072	998	752
NOX, PPM	820	771	567	599	545	578
AIR/FUEL RATIO	13.13	13.11	13.48	13.38	14.02	13.92
EMISSION RATES, G/HR						
CO	17528.4	17629.7	14988.4	14719.4	9590.0	9082.1
HC	292.7	269.6	258.6	216.5	185.3	138.0
NOX+	617.8	582.5	377.4	398.5	333.1	349.7
OIL TEMPERATURE, F	227	227	247	247	262	262
OIL PRESSURE, PSI	60	60	60	60	60	60
COOLANT TEMPERATURE, F	173	173	174	174	175	175
EXHAUST PRESSURE, IN. H2O	150.0	100.0	145.0	98.0	129.0	86.0
EXHAUST TEMPERATURE, F	1467	1451	1490	1462	1523	1491

* CORRECTED SAE J8168
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

	64.01	64.02	65.01	65.02	66.01	66.02
TEST NUMBER	1	2	1	2	1	2
DATA SOURCE CODE	7/19/77	7/19/77	7/19/77	7/19/77	7/19/77	7/19/77
TEST DATE	741.5	741.5	741.5	741.5	741.5	741.5
BAROMETER, MMHG	76	76	76	76	76	76
HUMIDITY, GRAINS/LB	80	80	82	82	78	78
TEMPERATURE, F	4000	4000	4000	4000	4000	4000
ENGINE SPEED, RPM	104.0	104.0	70.0	70.0	44.0	44.0
TORQUE, FT-LB	78.7	79.7	53.0	53.7	33.3	33.7
POWER, BHP*	55.9	55.5	39.0	39.0	32.4	32.4
FUEL RATE, LB/HR	21.0	21.0	40.0	40.0	43.0	43.0
IGNITION TIMING, DEG BTDC	6.5	6.5	12.0	12.0	14.5	14.5
MANIFOLD VACUUM, IN HG	36.0	36.0	24.0	24.0	20.0	20.0
THROTTLE ANGLE, DEG	176	176	190	190	192	192
INTAKE MAN. TEMP., F						
CONCENTRATIONS, DRY BASIS						
CO, %	1.5145	1.3321	.8383	.5718	.8796	.5665
CO2, %	14.22	14.41	14.46	14.80	14.35	14.77
O2, %	.59	.39	.77	.55	.82	.47
HC, PPMC	542	245	692	206	588	170
NOX, PPM	532	517	787	479	463	286
AIR/FUEL RATIO	14.50	14.49	14.90	14.91	14.91	14.86
EMISSION RATES, G/HR						
CO	4839.4	4343.8	1920.2	1348.6	1684.9	1107.0
HC	86.9	40.2	79.6	24.4	56.6	16.7
NOX+	281.2	279.2	298.3	186.9	146.7	92.5
OIL TEMPERATURE, F	262	262	256	256	253	253
OIL PRESSURE, PSI	60	60	60	60	60	60
COOLANT TEMPERATURE, F	174	174	169	169	172	172
EXHAUST PRESSURE, IN. H2O	109.0	72.0	59.0	38.0	41.0	25.0
EXHAUST TEMPERATURE, F	1557	1530	1392	1405	1345	1362

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	67.01	67.02	68.01	68.02	69.01	69.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/19/77	7/19/77	7/19/77	7/19/77	7/15/77	7/15/77
BAROMETER, MMHG	741.5	741.5	741.5	741.5	744.5	744.5
HUMIDITY, GRAINS/LB	76	76	76	76	82	82
TEMPERATURE, F	75	75	74	74	95	95
ENGINE SPEED, RPM	4000	4000	4000	4000	800	800
TORQUE, FT-LB	17.0	17.0	2.4	2.4	1.4	1.4
POWER, BHP*	12.9	13.0	1.8	1.8	.2	.2
FUEL RATE, LB/HR	26.6	26.5	23.5	23.4	4.8	4.8
IGNITION TIMING, DEG BTDC	43.0	43.0	43.0	43.0	7.0	7.0
MANIFOLD VACUUM, IN HG	17.0	17.0	18.5	18.5	18.0	18.0
THROTTLE ANGLE, DEG	16.0	16.0	14.0	14.0	.0	.0
INTAKE MAN. TEMP., F	196	196	196	196	141	141
CONCENTRATIONS, DRY BASIS						
CO, %	.9684	.6509	.8801	.4094	.5485	.1854
CO2, %	14.29	14.69	14.09	14.61	13.45	13.99
O2, %	.84	.39	.61	.18	1.40	.35
HC, PPMC	536	141	481	120	2739	1041
NOX, PPM	214	139	156	80	40	52
AIR/FUEL RATIO	14.89	14.77	14.78	14.74	15.24	14.86
EMISSION RATES, G/HR						
CO	1519.7	1035.5	1242.9	574.2	166.1	56.1
HC	42.2	11.3	34.1	8.5	41.6	15.8
NOX+	55.5	36.6	36.5	18.6	2.1	2.7
OIL TEMPERATURE, F	247	247	245	245	177	177
OIL PRESSURE, PSI	60	60	60	60	45	45
COOLANT TEMPERATURE, F	171	171	171	171	173	173
EXHAUST PRESSURE, IN. H2O	32.0	18.0	25.0	17.0	2.0	2.0
EXHAUST TEMPERATURE, F	1342	1344	1339	1348	546	593

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	70.01	70.02	71.01	71.02	72.01	72.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/15/77	77/15/77	7/15/77	7/15/77	7/15/77	7/15/77
BAROMETER, MMHG	744.5	744.5	744.5	744.5	744.5	744.5
HUMIDITY, GRAINS/LB	82	82	82	82	82	82
TEMPERATURE, F	95	95	95	95	95	95
ENGINE SPEED, RPM	800	800	800	800	600	600
TORQUE, FT-LB	20.0	20.0	40.0	40.0	39.0	39.0
POWER, BHP*	3.0	3.1	6.2	6.2	4.5	4.5
FUEL RATE, LB/HR	6.1	6.1	6.4	6.4	4.8	4.9
IGNITION TIMING, DEG BTDC	7.0	7.0	8.0	8.0	7.0	8.0
MANIFOLD VACUUM, IN HG	16.5	16.5	16.0	16.0	14.5	14.5
THROTTLE ANGLE, DEG	1.0	1.0	1.5	1.5	.0	.0
INTAKE MAN. TEMP., F	144	144	146	146	149	149
CONCENTRATIONS, DRY BASIS						
CO, %	.3951	.3361	.6910	.6450	.3516	.2301
CO2, %	13.94	14.10	13.90	14.00	13.49	13.60
O2, %	1.59	1.42	1.35	1.20	2.24	2.05
HC, PPMC	1278	1166	1518	1449	1769	1562
NOX, PPM	111	119	142	143	112	120
AIR/FUEL RATIO	15.59	15.50	15.25	15.18	16.03	15.98
EMISSION RATES, G/HR						
CO	149.5	128.6	277.1	257.3	111.4	73.5
HC	24.3	22.4	30.6	29.0	28.1	25.1
NOX+	7.2	7.7	9.7	9.7	6.0	6.5
OIL TEMPERATURE, F	184	184	186	186	186	186
OIL PRESSURE, PSI	44	44	44	44	31	31
COOLANT TEMPERATURE, F	174	174	174	174	171	171
EXHAUST PRESSURE, IN. H2O	2.0	2.0	2.0	2.0	2.0	2.0
EXHAUST TEMPERATURE, F	579	501	593	500	511	444

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	73.01	73.02	74.01	74.02	75.01	75.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/15/77	7/15/77	7/15/77	7/15/77	7/15/77	7/15/77
BAROMETER, MMHG	744.5	744.5	744.5	744.5	744.5	744.0
HUMIDITY, GRAINS/LB	82	82	82	82	74	74
TEMPERATURE, F	95	95	96	96	76	76
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	1.0	1.0	53.0	53.0	86.0	86.0
POWER, BHP*	.2	.2	10.3	10.3	16.3	16.4
FUEL RATE, LB/HR	6.2	6.2	7.7	7.7	9.4	9.3
IGNITION TIMING, DEG BTDC	7.0	7.0	30.0	30.0	29.0	29.0
MANIFOLD VACUUM, IN HG	19.5	19.5	17.0	17.0	13.5	13.5
THROTTLE ANGLE, DEG	1.0	1.0	2.5	2.5	5.0	5.0
INTAKE MAN. TEMP., F	145	145	146	146	125	125
CONCENTRATIONS, DRY BASIS						
CO, %	.3956	.0247	.6401	.5584	.0656	.0090
CO2, %	14.04	14.43	14.25	14.32	13.84	14.02
O2, %	1.40	1.07	.89	.84	2.29	2.14
HC, PPMC	818	168	2005	1889	1526	371
NOX, PPM	68	73	780	747	1649	1579
AIR/FUEL RATIO	15.50	15.51	14.94	14.95	16.28	16.31
EMISSION RATES, G/HR						
CO	155.5	9.7	300.5	262.4	40.8	5.6
HC	16.1	3.3	47.3	44.6	47.6	11.5
NOX+	4.5	4.9	62.3	59.7	168.1	160.1
OIL TEMPERATURE, F	187	187	193	193	177	177
OIL PRESSURE, PSI	55	55	50	50	65	65
COOLANT TEMPERATURE, F	175	175	174	174	173	173
EXHAUST PRESSURE, IN. H2O	2.0	2.0	2.0	2.0	6.0	4.0
EXHAUST TEMPERATURE, F	630	558	616	571	678	661

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	76.01	76.02	77.01	77.02	78.01	78.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/15/77	7/15/77	11/15/77	7/15/77	7/15/77	7/15/77
BAROMETER, MMHG	744.0	744.0	744.0	744.5	744.0	744.0
HUMIDITY, GRAINS/LB	74	74	74	74	74	74
TEMPERATURE, F	71	71	73	73	74	74
ENGINE SPEED, RPM	1000	1000	1300	1300	1300	1300
TORQUE, FT-LB	162.0	162.0	1.2	1.2	54.0	54.0
POWER, BHP*	30.7	30.6	.3	.3	13.2	13.3
FUEL RATE, LB/HR	16.5	16.7	6.2	6.2	9.3	9.4
IGNITION TIMING, DEG BTDC	8.0	29.0	34.0	34.0	34.0	34.0
MANIFOLD VACUUM, IN HG	3.0	3.0	20.5	20.5	17.0	17.0
THROTTLE ANGLE, DEG	17.0	17.0	2.0	2.0	5.0	5.0
INTAKE MAN. TEMP., F	128	128	140	140	137	137
CONCENTRATIONS, DRY BASIS						
CO, %	.2409	.0262	.1153	.0133	.0904	.0095
CO2, %	14.51	14.85	13.01	13.25	12.96	13.20
O2, %	1.30	1.00	3.13	2.40	2.56	2.31
HC, PPMC	1223	273	11607	3143	1534	402
NOX, PPM	1033	1082	71	109	920	857
AIR/FUEL RATIO	15.47	15.47	15.71	16.20	16.53	16.50
EMISSION RATES, G/HR						
CO	249.6	26.5	45.3	5.5	57.7	6.1
HC	63.6	13.9	229.1	65.3	49.2	12.9
NOX+	175.4	179.6	4.6	7.4	96.3	89.8
OIL TEMPERATURE, F	195	195	194	194	188	188
OIL PRESSURE, PSI	45	45	60	60	60	60
COOLANT TEMPERATURE, F	172	172	172	172	171	171
EXHAUST PRESSURE, IN. H2O	11.0	8.0	5.0	3.0	7.0	6.0
EXHAUST TEMPERATURE, F	938	915	566	599	747	727

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	79.01	79.02	80.01	80.02	81.01	81.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/15/77	7/15/77	7/15/77	7/15/77	7/15/77	7/15/77
BAROMETER, MMHG	744.0	744.0	744.0	744.0	744.0	744.0
HUMIDITY, GRAINS/LB	74	74	74	74	74	74
TEMPERATURE, F	75	75	71	71	73	73
ENGINE SPEED, RPM	1300	1300	1300	1300	1600	1600
TORQUE, FT-LB	86.0	86.0	162.0	162.0	1.2	1.2
POWER, BHP*	21.1	21.1	39.7	39.7	.4	.4
FUEL RATE, LB/HR	11.6	11.7	21.7	21.6	7.5	7.7
IGNITION TIMING, DEG BTDC	34.0	34.0	12.0	12.0	35.0	35.0
MANIFOLD VACUUM, IN HG	15.0	15.0	3.0	3.0	20.5	20.5
THROTTLE ANGLE, DEG	6.5	6.5	22.0	22.0	4.0	4.0
INTAKE MAN. TEMP., F	127	127	146	146	145	145
CONCENTRATIONS, DRY BASIS						
CO, %	.0748	.0085	.3495	.0381	.1519	.0138
CO2, %	13.19	13.42	13.75	14.12	13.09	13.39
O2, %	2.19	1.91	1.04	.77	2.10	1.83
HC, PPMC	1515	402	1179	320	2136	473
NOX, PPM	973	917	696	822	79	123
AIR/FUEL RATIO	16.25	16.19	15.27	15.32	16.04	16.09
EMISSION RATES, G/HR						
CO	58.6	6.7	482.5	52.4	76.6	7.1
HC	59.7	15.8	81.7	22.1	54.1	12.2
NOX+	125.1	118.0	157.5	185.5	6.6	10.4
OIL TEMPERATURE, F	198	198	204	204	204	204
OIL PRESSURE, PSI	57	57	55	55	60	60
COOLANT TEMPERATURE, F	174	174	173	173	172	172
EXHAUST PRESSURE, IN. H2O	7.0	5.0	21.0	12.0	8.0	5.0
EXHAUST TEMPERATURE, F	765	752	1077	1080	754	1071

* CORRECTED SAE J8168
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	82.01	82.02	83.01	83.02	84.01	84.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/15/77	7/15/77	7/15/77	7/15/77	7/15/77	7/15/77
BAROMETER, MMHG	744.0	744.0	744.0	744.0	744.0	744.0
HUMIDITY, GRAINS/LB	74	74	74	74	74	74
TEMPERATURE, F	73	73	73	73	74	74
ENGINE SPEED, RPM	1600	1600	1600	1600	1600	1600
TORQUE, FT-LB	51.0	51.0	82.0	82.0	154.0	154.0
POWER, BHP*	15.5	15.5	24.9	24.9	46.8	46.8
FUEL RATE, LB/HR	11.7	11.7	14.0	14.1	25.9	25.0
IGNITION TIMING, DEG BTDC	35.0	35.0	35.0	35.0	13.0	13.0
MANIFOLD VACUUM, IN HG	17.5	17.5	15.0	15.0	3.5	3.5
THROTTLE ANGLE, DEG	6.5	6.5	8.5	8.5	25.0	25.0
INTAKE MAN. TEMP., F	124	124	122	122	160	160
CONCENTRATIONS, DRY BASIS						
CO, %	.1054	.0119	.1753	.0183	.3921	.0404
CO2, %	13.14	13.32	13.36	13.76	13.95	14.33
O2, %	2.17	2.00	1.74	1.41	.75	.58
HC, PPMC	1096	274	1305	301	882	253
NOX, PPM	912	904	1433	1293	572	671
AIR/FUEL RATIO	16.26	16.28	15.89	15.82	15.07	15.19
EMISSION RATES, G/HR						
CO	82.3	9.3	160.2	16.7	624.5	62.5
HC	43.0	10.7	59.9	13.8	70.5	19.6
NOX+	116.9	115.3	214.6	193.1	149.4	170.3
OIL TEMPERATURE, F	202	202	206	206	214	214
OIL PRESSURE, PSI	60	60	60	60	55	55
COOLANT TEMPERATURE, F	175	175	176	176	174	174
EXHAUST PRESSURE, IN. H2O	10.0	5.0	10.0	6.0	25.0	18.0
EXHAUST TEMPERATURE, F	825	794	873	871	1215	1220

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	85.01	85.02	86.01	86.02	87.01	87.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/18/77	7/18/77	7/18/77	7/18/77	7/18/77	7/18/77
BAROMETER, MMHG	744.6	744.6	744.6	744.6	744.6	744.6
HUMIDITY, GRAINS/LB	110	110	110	110	110	110
TEMPERATURE, F	78	78	80	80	73	73
ENGINE SPEED, RPM	2000	2000	2000	2000	2000	2000
TORQUE, FT-LB	1.8	1.8	56.5	56.4	87.3	85.1
POWER, BHP*	.7	.7	21.7	21.7	33.3	32.5
FUEL RATE, LB/HR	9.0	9.0	15.2	15.2	20.3	20.2
IGNITION TIMING, DEG BTDC	37.0	37.0	37.0	37.0	34.0	34.0
MANIFOLD VACUUM, IN HG	21.5	21.5	17.0	17.0	12.0	12.0
THROTTLE ANGLE, DEG	5.0	5.0	10.0	10.0	14.0	14.0
INTAKE MAN. TEMP., F	146	146	138	138	166	166
CONCENTRATIONS, DRY BASIS						
CO, %	.5138	.0186	.6913	.0774	.7392	.1381
CO2, %	13.44	14.00	13.45	14.24	13.55	14.26
O2, %	1.35	1.12	1.26	.65	1.10	.45
HC, PPMC	1158	145	1128	210	1230	221
NOX, PPM	256	171	528	488	377	342
AIR/FUEL RATIO	15.40	15.58	15.26	15.22	15.10	15.04
EMISSION RATES, G/HR						
CO	290.8	10.6	654.4	72.8	926.3	171.0
HC	32.9	4.2	53.6	9.9	77.4	13.7
NOX+	28.5	19.3	98.3	90.4	93.1	83.3
OIL TEMPERATURE, F	206	206	214	214	216	216
OIL PRESSURE, PSI	63	63	60	60	60	60
COOLANT TEMPERATURE, F	177	177	177	177	176	176
EXHAUST PRESSURE, IN. H2O	4.0	2.0	10.0	2.0	14.0	9.0
EXHAUST TEMPERATURE, F	802	762	965	1120	1070	1142

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

	88.01	88.02	89.01	89.02	90.01	90.02
TEST NUMBER	1	2	1	2	1	2
DATA SOURCE CODE	7/18/78	7/18/77	7/18/77	7/18/77	7/18/77	7/18/77
TEST DATE	744.6	744.6	744.6	744.6	744.6	744.6
BAROMETER, MMHG	129	110	110	110	110	110
HUMIDITY, GRAINS/LB	76	76	73	73	77	77
TEMPERATURE, F	2000	2000	2500	2500	2500	2500
ENGINE SPEED, RPM	161.0	162.0	2.6	1.7	53.8	54.3
TORQUE, FT-LB	61.8	62.0	1.2	.8	25.8	26.0
POWER, BHP*	34.0	34.0	11.3	11.4	20.3	20.4
FUEL RATE, LB/HR	15.0	15.0	39.0	39.0	39.0	39.0
IGNITION TIMING, DEG BTDC	3.5	3.5	21.5	21.5	15.5	15.5
MANIFOLD VACUUM, IN HG	32.0	32.0	7.0	7.0	13.0	13.0
THROTTLE ANGLE, DEG	171	171	131	131	165	165
INTAKE MAN. TEMP., F						
CONCENTRATIONS, DRY BASIS						
CO, %	1.1230	.8867	.1988	.0187	.7560	.1375
CO2, %	13.70	13.98	13.01	13.22	13.33	14.14
O2, %	.32	.05	2.08	1.92	1.10	.49
HC, PPMC	1094	364	362	105	977	162
NOX, PPM	652	490	164	182	259	264
AIR/FUEL RATIO	14.44	14.43	16.22	16.22	15.13	15.08
EMISSION RATES, G/HR						
CO	2308.0	1775.9	153.5	14.2	952.4	172.5
HC	112.9	36.6	14.0	4.0	61.8	10.2
NOX+	295.6	193.0	25.0	27.2	64.1	65.2
OIL TEMPERATURE, F	227	227	214	214	221	221
OIL PRESSURE, PSI	58	58	63	63	62	62
COOLANT TEMPERATURE, F	175	175	177	177	178	178
EXHAUST PRESSURE, IN. H2O	38.0	28.0	6.0	4.0	16.0	10.0
EXHAUST TEMPERATURE, F	1333	1329	969	925	1107	1164

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	91.01	91.02	92.01	92.02	93.01	93.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/18/77	7/18/77	7/18/77	7/18/77	7/18/77	7/18/77
BAROMETER, MMHG	744.6	744.6	744.6	744.6	745.9	745.9
HUMIDITY, GRAINS/LB	110	110	110	110	88	88
TEMPERATURE, F	75	75	80	80	80	80
ENGINE SPEED, RPM	2500	2500	2500	2500	3000	3000
TORQUE, FT-LB	87.7	84.9	157.9	160.9	1.8	5.6
POWER, BHP*	42.0	40.6	75.9	77.3	1.0	3.2
FUEL RATE, LB/HR	25.6	25.5	43.0	43.0	14.9	14.9
IGNITION TIMING, DEG BTDC	34.0	34.0	17.0	17.0	41.5	41.5
MANIFOLD VACUUM, IN HG	11.5	11.5	4.0	4.0	20.7	20.7
THROTTLE ANGLE, DEG	17.0	17.0	35.0	35.0	9.5	9.5
INTAKE MAN. TEMP., F	183	183	170	170	145	145
CONCENTRATIONS, DRY BASIS						
CO, %	.6812	.1747	1.5425	1.6388	.4740	.0325
CO2, %	13.48	14.19	13.49	13.51	13.52	13.06
O2, %	.96	.38	.20	.04	1.45	1.17
HC, PPMC	874	175	1044	802	251	52
NOX, PPM	421	354	619	632	138	154
AIR/FUEL RATIO	15.08	14.99	14.18	14.06	15.58	15.63
EMISSION RATES, G/HR						
CO	1077.6	272.5	3850.5	4056.8	455.9	31.0
HC	69.5	13.7	130.9	99.7	12.1	2.5
NOX+	131.2	108.8	304.3	308.0	23.2	25.8
OIL TEMPERATURE, F	229	229	237	237	209	209
OIL PRESSURE, PSI	60	60	58	58	65	65
COOLANT TEMPERATURE, F	179	179	178	178	176	176
EXHAUST PRESSURE, IN. H2O	25.0	16.0	58.0	40.0	10.0	7.0
EXHAUST TEMPERATURE, F	1187	1249	1404	1379	1127	1119

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	94.01	94.02	95.01	95.02	96.01	96.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/18/77	7/18/77	7/18/77	7/18/77	7/18/77	7/18/77
BAROMETER, MMHG	745.9	745.9	745.9	745.9	743.5	743.5
HUMIDITY, GRAINS/LB	88	88	88	88	103	103
TEMPERATURE, F	75	75	76	76	82	82
ENGINE SPEED, RPM	3000	3000	3000	3000	3000	3000
TORQUE, FT-LB	53.0	53.0	86.0	86.0	154.6	154.0
POWER, BHP*	30.8	30.8	49.9	49.9	89.3	89.0
FUEL RATE, LB/HR	24.6	24.6	30.7	30.7	53.6	53.6
IGNITION TIMING, DEG BTDC	41.0	41.0	37.0	37.0	19.0	19.0
MANIFOLD VACUUM, IN HG	15.0	15.0	11.5	11.5	4.0	4.0
THROTTLE ANGLE, DEG	15.5	15.5	20.0	20.0	40.0	40.0
INTAKE MAN. TEMP., F	188	188	184	184	171	171
CONCENTRATIONS, DRY BASIS						
CO, %	.7528	.1864	.6428	.1862	2.0570	2.2590
CO2, %	13.76	14.36	13.82	14.41	13.30	13.10
O2, %	.93	.34	.74	.31	.17	.07
HC, PPMC	653	120	617	119	1055	893
NOX, PPM	300	238	616	478	685	641
AIR/FUEL RATIO	15.04	14.95	14.98	14.94	13.94	13.81
EMISSION RATES, G/HR						
CO	1147.6	284.6	1226.0	352.9	6291.5	6851.6
HC	50.0	9.2	59.1	11.4	162.1	136.1
NOX+	80.2	63.7	206.3	159.0	396.8	368.2
OIL TEMPERATURE, F	233	233	238	238	249	249
OIL PRESSURE, PSI	62	62	60	60	58	58
COOLANT TEMPERATURE, F	176	176	177	177	179	179
EXHAUST PRESSURE, IN. H2O	24.0	16.0	33.0	25.0	84.0	59.0
EXHAUST TEMPERATURE, F	1226	1274	1284	1320	1456	1422

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	97.01	97.02	98.01	98.02	99.01	99.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/19/77	7/19/77	7/19/77	7/19/77	7/19/77	7/19/77
BAROMETER, MMHG	741.5	741.5	741.5	741.5	741.5	741.5
HUMIDITY, GRAINS/LB	76	76	76	76	76	76
TEMPERATURE, F	72	72	77	77	75	75
ENGINE SPEED, RPM	3500	3500	3500	3500	3500	3500
TORQUE, FT-LB	2.0	2.0	48.0	48.0	77.0	77.0
POWER, BHP*	1.3	1.3	32.1	31.8	51.4	51.4
FUEL RATE, LB/HR	19.0	19.3	29.2	29.2	34.3	34.1
IGNITION TIMING, DEG BTDC	43.0	43.0	43.0	43.0	40.0	40.0
MANIFOLD VACUUM, IN HG	20.0	20.0	15.0	15.0	12.5	12.5
THROTTLE ANGLE, DEG	11.5	11.5	17.0	17.0	21.0	21.0
INTAKE MAN. TEMP., F	181	181	183	183	174	174
CONCENTRATIONS, DRY BASIS						
CO, %	.9109	.2283	1.0590	.6103	.7557	.2758
CO2, %	13.91	14.65	13.97	14.56	14.42	14.98
O2, %	.80	.29	.65	.17	.13	.05
HC, PPMC	439	103	730	191	623	142
NOX, PPM	121	81	392	242	655	376
AIR/FUEL RATIO	14.90	14.90	14.71	14.65	14.53	14.72
EMISSION RATES, G/HR						
CO	1053.5	266.4	1851.0	1060.2	1534.1	561 9
HC	25.5	6.0	64.1	16.7	63.5	14.6
NOX+	23.1	15.7	113.3	69.6	219.9	126.9
OIL TEMPERATURE, F	236	236	235	235	214	214
OIL PRESSURE, PSI	60	60	60	60	60	60
COOLANT TEMPERATURE, F	171	171	175	175	173	173
EXHAUST PRESSURE, IN. H2O	20.0	11.0	31.0	20.0	40.0	26.0
EXHAUST TEMPERATURE, F	1264	297	1268	1316	1278	1328

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

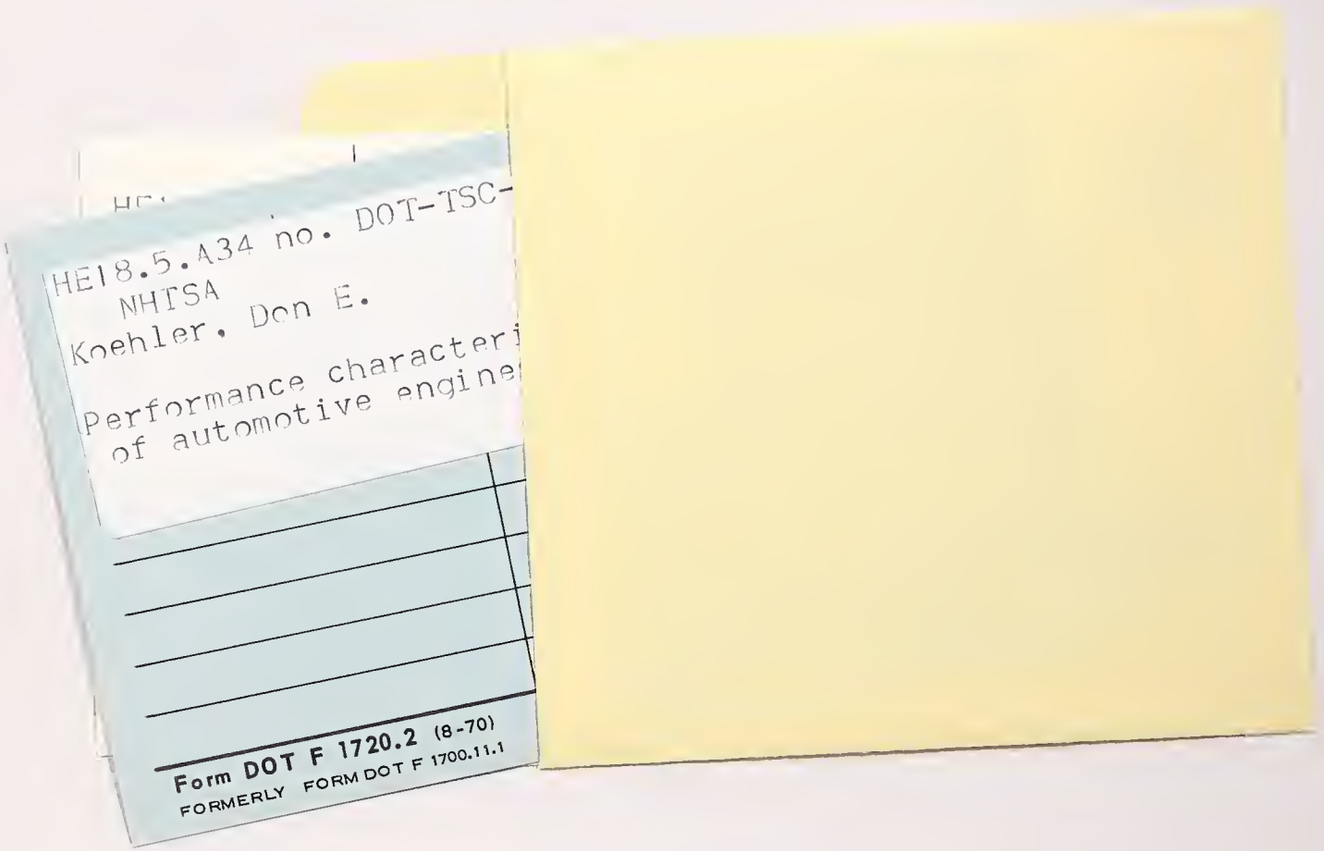
TEST NUMBER	100.01	100.02	101.01	101.02	102.01	102.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/19/77	7/19/77	7/19/77	7/19/77	7/26/77	7/19/78
BAROMETER, MMHG	741.5	741.5	741.5	741.5	741.5	741.5
HUMIDITY, GRAINS/LB	76	76	76	76	76	76
TEMPERATURE, F	78	78	75	75	76	76
ENGINE SPEED, RPM	3500	3500	4000	4000	4000	4000
TORQUE, FT-LB	144.0	144.0	2.4	2.4	44.0	44.0
POWER, BHP*	96.4	96.4	1.8	1.8	33.3	33.3
FUEL RATE, LB/HR	58.0	58.1	23.2	23.0	32.7	33.2
IGNITION TIMING, DEG BTDC	20.0	20.0	43.0	43.0	43.0	43.0
MANIFOLD VACUUM, IN HG	5.0	5.0	18.0	18.0	14.5	14.5
THROTTLE ANGLE, DEG	41.0	41.0	14.0	14.0	20.0	20.0
INTAKE MAN. TEMP., F	163	163	204	204	186	186
CONCENTRATIONS, DRY BASIS						
CO, %	2.1936	2.1684	.8281	.3333	.9260	.6776
CO2, %	13.79	13.85	14.44	14.95	14.44	14.74
O2, %	.04	.02	.10	.04	.08	.03
HC, PPMC	987	780	392	113	666	214
NOX, PPM	565	570	154	83	479	349
AIR/FUEL RATIO	13.84	13.87	14.49	14.69	14.42	14.53
EMISSION RATES, G/HR						
CO	7170.1	7109.3	1131.3	457.1	1770.7	1314.9
HC	162.0	128.5	26.9	7.8	64.0	20.9
NOX+	305.7	309.4	34.8	18.8	151.6	112.0
OIL TEMPERATURE, F	246	246	245	245	246	246
OIL PRESSURE, PSI	60	60	60	60	60	60
COOLANT TEMPERATURE, F	173	173	171	171	175	175
EXHAUST PRESSURE, IN. H2O	100.0	68.0	45.0	12.0	40.0	25.0
EXHAUST TEMPERATURE, F	1481	1450	1351	1351	1328	1340

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY

ENGINE: CHR318
FUEL CODE: 7619

TEST NUMBER	103.01	103.02	104.01	104.02	105.01	105.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	7/19/77	7/19/77	7/19/77	7/19/77	7/22/77	7/22/77
BAROMETER, MMHG	741.5	741.5	741.5	741.5	734.1	734.1
HUMIDITY, GRAINS/LB	76	76	76	76	63	63
TEMPERATURE, F	78	78	80	80	80	80
ENGINE SPEED, RPM	4000	4000	4000	4000	4300	4300
TORQUE, FT-LB	70.0	70.0	130.5	130.5	162.0	162.0
POWER, BHP*	53.5	53.5	98.8	100.0	133.1	133.1
FUEL RATE, LB/HR	38.5	36.3	63.1	63.3	83.3	83 4
IGNITION TIMING, DEG BTDC	40.0	40.0	21.0	21.0	44.0	44.0
MANIFOLD VACUUM, IN HG	12.5	12.5	5.0	5.0	2.5	2.5
THROTTLE ANGLE, DEG	24.0	24.0	44.0	44.0	75.0	75.0
INTAKE MAN. TEMP., F	180	180	164	164	105	105
CONCENTRATIONS, DRY BASIS						
CO, %	1.0205	.9282	2.2031	2.2900	3.8240	3.8155
CO2, %	14.43	14.63	13.80	13.74	12.06	12.11
O2, %	.07	.03	.04	.02	.06	.05
HC, PPMC	820	341	867	680	1460	1389
NOX, PPM	731	659	568	558	912	890
AIR/FUEL RATIO	14.37	14.43	13.85	13.82	13.10	13.11
EMISSION RATES, G/HR						
CO	2294.5	1973.9	7809.1	8158.5	17952.2	17885.9
HC	92.6	36.4	154.4	121.7	344.1	327.0
NOX+	272.0	232.0	333.4	328.8	666.2	649.2
OIL TEMPERATURE, F	250	250	256	256	255	255
OIL PRESSURE, PSI	60	60	60	60	60	60
COOLANT TEMPERATURE, F	175	175	174	174	175	175
EXHAUST PRESSURE, IN. H2O	50.0	32.0	120.0	81.0	165.0	115.0
EXHAUST TEMPERATURE, F	1348	1351	1522	1488	1470	1461

* CORRECTED SAE J816B
\+ CORRECTED FOR HUMIDITY



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