N O T I C E

THIS DOCUMENT HAS BEEN REPRODUCED FROM MICROFICHE. ALTHOUGH IT IS RECOGNIZED THAT CERTAIN PORTIONS ARE ILLEGIBLE, IT IS BEING RELEASED IN THE INTEREST OF MAKING AVAILABLE AS MUCH INFORMATION AS POSSIBLE

DOE/NASA/0124-5
NASA CR-165181
ERC LIB. 80173

Small Passenger Car Transmission Test— Dodge Omni A-404 Transmission

(NASA-CR-165181) SMALL PASSENGER CAR TRANSMISSION TEST: DODGE OMNI A-404 TRANSMISSION Final Report (Eaton Engineering and Research Center) 355 p HC A16/MF A01 CSCL 13F G3/37

N81-15366

Unclas 29660

M. P. Bujold
Eaton Corporation
Engineering & Research Center

September 1980

Prepared for
National Aeronautics and Space Administration
Lewis Research Center
Under Contract DEN3-124

for
U.S. DEPARTMENT OF ENERGY
Conservation and Solar Energy
Office of Transportation Programs

DOE/NASA/0124-5
NASA CR-165181
ERC LIB. 80173

Small Passenger Car Transmission Test— Dodge Omni A-404 Transmission

M. P. Bujold
Eaton Corporation
Engineering & Research Center
Southfield, Michigan 48037

September 1980

Prepared for
National Aeronautics and Space Administration
Lewis Research Center
Cleveland, Ohio 44135
Under Contract DEN3-124

for
U.S. DEPARTMENT OF ENERGY
Conservation and Solar Energy
Office of Transportation Programs
Washington, D.C. 20545
Under Interagency Agreement DE-AI01-77CS51044

PREFACE

The Electric and Hybrid Vehicle Research, Development, and Demonstration Act of 1976 (Public Law 94-413) authorized a Federal program of research and development designed to promote electric and hybrid vehicle technologies. The Energy Research and Development Administration, now the Department of Energy (DOE), which was given the responsibility for implementing the Act, established the Electric and Hybrid Vehicle Research, Development, and Demonstration Project within the Division of Transportation Energy Conservation to manage the activities required by Public Law 94-413.

The National Aeronautics and Space Administration under an Interagency Agreement (Number EC-77-A-31-1044) was requested by ERDA (DOE) to undertake research and development of propulsion systems for electric and hybrid vehicles. The Lewis Research Center was made the responsible NASA Center for this project. The work presented in this report is an early part of the Lewis Research Center program for propulsion system research and development for electric vehicles.

The work described in this report was conducted under Contract DEN3-124 with the National Aeronautics and Space Administration (NASA) and sponsored by the Department of Energy through an agreement with NASA.

TABLE OF CONTENTS

	PAGE
SUMMARY	1
INTRODUCTION	2
EQUIPMENT TESTED	3
TEST APPARATUS	4
TEST PROCEDURES	16
TEST RESULTS	26
DRIVE PERFORMANCE COVER SHEET	27
Drive Performance 1st Gear Input Torque = 10 lb-ft	29
" " " " " 20 lb-ft	34
" " " " " 30 lb-ft	39
" " " " " 40 lb-ft	44
" " " " " 50 lb-ft	49
" " " " " 60 lb-ft	54
" " " " " 70 lb-ft	59
" " " " " 80 lb-ft	64
" " " " " 90 lb-ft	69
DRIVE PERFORMANCE COVER SHEET	74
Drive Performance 2nd Gear Input Torque = 10 lb-ft	76
" " " " " 20 lb-ft	81
" " " " " 30 lb-ft	86
" " " " " 40 lb-ft	91
" " " " " 50 lb-ft	96
" " " " " 60 lb-ft	101
" " " " " 70 lb-ft	106
" " " " " 80 lb-ft	111
" " " " " 90 lb-ft	116
DRIVE PERFORMANCE COVER SHEET	121
Drive Performance 3rd Gear Input Torque = 10 lb-ft	123
" " " " " 20 lb-ft	128
" " " " " 30 lb-ft	133
" " " " " 40 lb-ft	138
" " " " " 50 lb-ft	143
" " " " " 60 lb-ft	148
" " " " " 70 lb-ft	153
" " " " " 80 lb-ft	158
" " " " " 90 lb-ft	163

PRECEDING PAGE BLANK NOT FILMED

POOR QUALITY

TABLE OF CONTENTS (cont'd)

	PAGE
CROSS SECTIONAL ROAD LOAD PERFORMANCE COVER SHEET.....	168
Cross Sectional Road Load Performance 3rd Gear Output Torque = 15 lb-ft ...	170
" " " " 50 lb-ft ...	175
" " " " 80 lb-ft ...	180
" " " " 115 lb-ft ...	185
" " " " 140 lb-ft ...	190
" " " " 175 lb-ft ...	195
" " " " 210 lb-ft ...	200
" " " " 240 lb-ft ...	205
" " " " 280 lb-ft ...	210
COAST PERFORMANCE COVER SHEET.....	215
Coast Performance 1st Gear Converter Torque = 10 lb-ft ...	217
" " " " 20 lb-ft ...	222
" " " " 30 lb-ft ...	227
" " " " 40 lb-ft ...	232
" " " " 50 lb-ft ...	237
" " " " 60 lb-ft ...	242
COAST PERFORMANCE COVER SHEET.....	247
Coast Performance 2nd Gear Converter Torque = 10 lb-ft ...	249
" " " " 20 lb-ft ...	254
" " " " 30 lb-ft ...	259
" " " " 40 lb-ft ...	264
" " " " 50 lb-ft ...	269
" " " " 60 lb-ft ...	274
" " " " 70 lb-ft ...	279
" " " " 80 lb-ft ...	284
COAST PERFORMANCE COVER SHEET.....	289
Coast Performance 3rd Gear Converter Torque = 10 lb-ft ...	291
" " " " 20 lb-ft ...	296
" " " " 30 lb-ft ...	301
" " " " 40 lb-ft ...	306
" " " " 50 lb-ft ...	311
" " " " 60 lb-ft ...	316
" " " " 70 lb-ft ...	321
NO LOAD LOSSES COVER SHEET.....	326
No Load Losses 1st Gear Closed Throttle.....	328
" 1st Gear Open "	330
" 2nd Gear Closed "	332
" 2nd Gear Open "	334
" 3rd Gear Closed "	336
" 3rd Gear Open "	338
APPENDIX.....	A-1

EQUIPMENT TESTED

This report involves the tests conducted on a 1979 Dodge Omni A-404 automatic transmission (P/N: 4186090 & 151614). The transmission consists of two multiple disc clutches, an overrunning clutch, two servos, a hydraulic accumulator, two bands, and two planetary gear sets to provide three forward ratios and a reverse ratio. The common sun gear of the planetary gear sets is connected to the front clutch by a driving shell which is splined to the sun gear and to the front clutch retainer. The hydraulic system consists of an oil pump, and a single valve body which contains all the valves except the governor valve.

Output torque from the main centerline is delivered through helical gears to the transfer shaft. This gear set is a factor of the final drive (axle) ratio. The shaft also carries the governor and the parking sprag.

An integral helical gear on the transfer shaft drives the differential ring gear. The final drive gearing is completed with the "Federal" (49 states) gear set producing an overall ratio of 3.48:1.

INTRODUCTION

The Dodge Omni A-404 transmission is a commercially available automatic transmission which is suited for a small passenger car installation. The transmission is equipped with three forward driving ranges, a neutral, reverse, and park. Very little technical information in the area of torque, speed and efficiency data is currently available on this transmission. This lack of available information was the principal reason for the initiation of this test.

The principal object of this test was to map torque, speed, and efficiency curves of the test transmission in each gear range and in both drive performance and coast performance conditions. The test was performed per the specifications of the Passenger Car Automatic Transmission Test Code - SAE J651b. The torque and speed limits of this test were governed by the torque and speed limits of an engine which would typically be supplied with this transmission. The test code specified that three basic tests were to be conducted which involved holding the torque constant and varying the transmission speed. The three specific tests were drive performance, coast performance, and no load losses which were conducted in first, second and third gear.

The test code required that the transmission should be held in gear over the complete range of the test. In order to accomplish this, it was necessary to block the valves. This kept the transmission locked in gear. The test code also specified an oil temperature requirement to ensure that a set viscosity level be attained throughout the tests. This temperature requirement was accomplished through the use of an immersion heater and oil cooler. The oil temperature was the main factor in limiting the amount of load that could be applied to the transmission.

The data that was obtained from the torque and speed sensors was placed directly onto tape. The tape was then fed into a computer which reduced the data and generated the necessary graphs and technical information. The main advantage to this method of data reduction is that any fluctuation that may occur due to system resonance is averaged by the computer. This method minimizes the error and allows the data to be viewed after the tests are completed.

EQUIPMENT TESTED

This report involves the tests conducted on a 1979 Dodge Omni A-404 automatic transmission (P/N: 4186090 & 151614). The transmission consists of two multiple disc clutches, an overrunning clutch, two servos, a hydraulic accumulator, two bands, and two planetary gear sets to provide three forward ratios and a reverse ratio. The common sun gear of the planetary gear sets is connected to the front clutch by a driving shell which is splined to the sun gear and to the front clutch retainer. The hydraulic system consists of an oil pump, and a single valve body which contains all the valves except the governor valve.

Output torque from the main centerline is delivered through helical gears to the transfer shaft. This gear set is a factor of the final drive (axle) ratio. The shaft also carries the governor and the parking sprag.

An integral helical gear on the transfer shaft drives the differential ring gear. The final drive gearing is completed with the "Federal" (49 states) gear set producing an overall ratio of 3.48:1.

TEST APPARATUS

The test apparatus used to operate the Dodge Omni A-404 transmission consisted of the following basic items which are described and listed below. The apparatus was basically the same for drive and coast performance tests with the exception of the transmission which was indexed 180° for coast performance tests.

The driving dynamometer was used to power the transmission. A torque sensor was placed on the dynamometer shaft to accurately monitor the torque into the transmission. A speed pickup was placed on the dyno shaft to measure the speed into the transmission.

The output shaft of the transmission was coupled to a torque sensor which accurately measured its torque. The torque sensor shaft was then coupled to a HY-VO chain drive (4:1 ratio) which was coupled to the absorber shaft. The purpose of the chain drive was to increase the slower output shaft speed into a range which would be acceptable to the absorber power requirements. The absorbing dynamometer was used to apply the system load. A speed pickup was mounted to the absorber shaft to measure output speed.

The transmission oil temperature was controlled through the use of a heat exchanger and circulation heater. When the transmission was operating at light load, the oil cooler was shutdown and the circulation heater was engaged so that the oil could be kept up to temperature specification. When the transmission was operating under heavy load, the oil cooler was operating and the circulation heater was disengaged so that the temperature specification was not exceeded.

The transmission was held in first gear by placing the gear selector lever in its appropriate setting. The transmission was held in second gear by blocking the 1 to 2 shift valve in the second position. The transmission was held in third gear by placing stops in the 1 to 2 shift valve and the 2 to 3 shift valve so the valves were kept in the 2 and 3 position respectively.

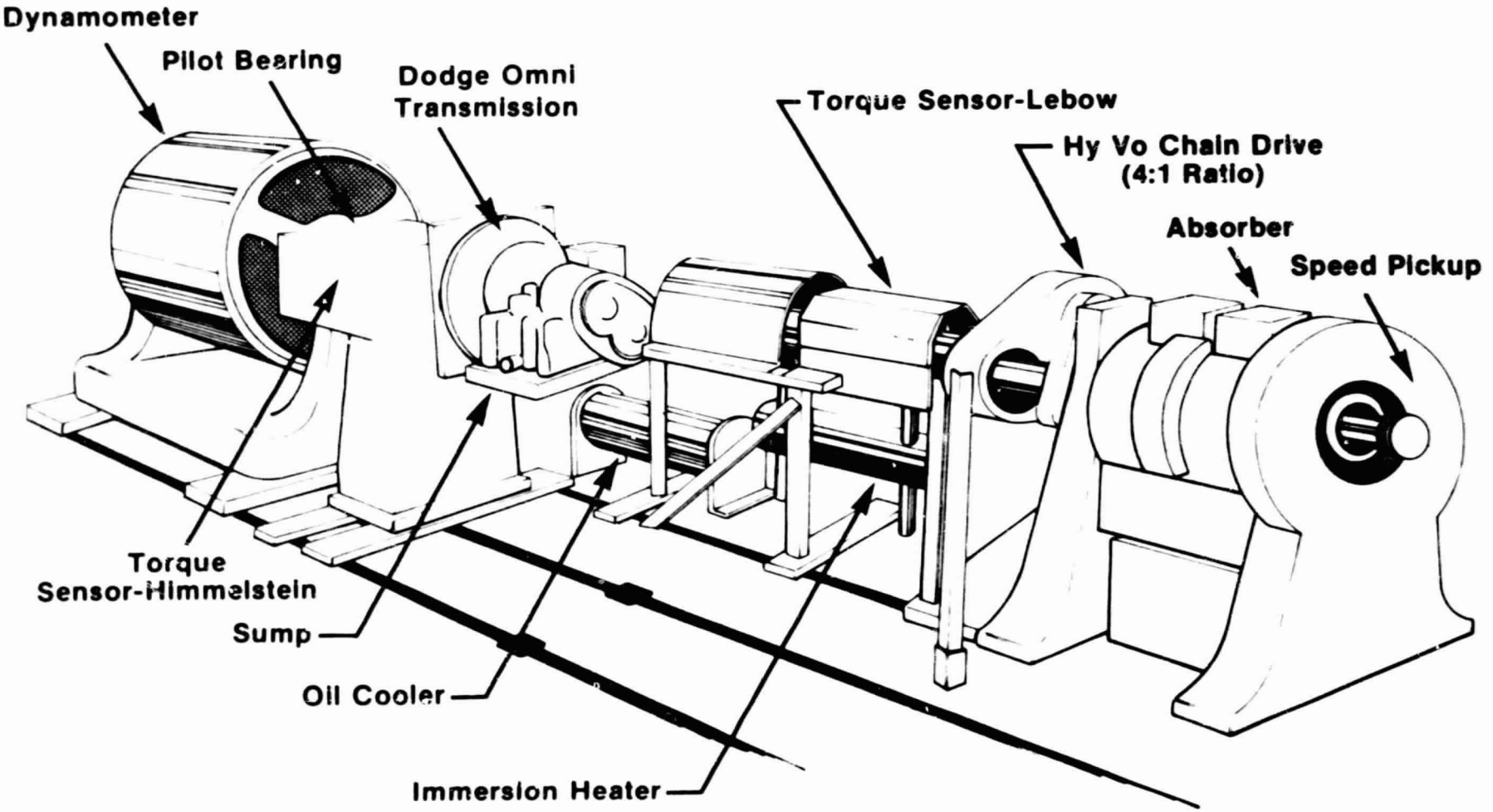
The transmission differential was locked for the entire test program. This was accomplished by welding the pinion gears to the differential carrier. This allowed the power to flow through one output shaft. This means that the output torques (drive perf.) and input torques (coast perf.) shown in the graphs are twice the values that each wheel would feel. However, the output speeds (drive perf.) and input speeds (coast perf.) are the actual speeds at each wheel.

The instrumentation for the setup consisted of the following basic items. The Lebow torque sensor was used in conjunction with a Daytronic signal conditioner (878). The Himmelstein torque sensor was matched with a Daytronic signal conditioner (878A). The magnetic speed pickup was used with an Airpax speed readout. These signals were then fed into a Sangamo 3500 tape recorder. The tape recorded data were then fed into a Hewlett Packard Analyzer which reduced the data.

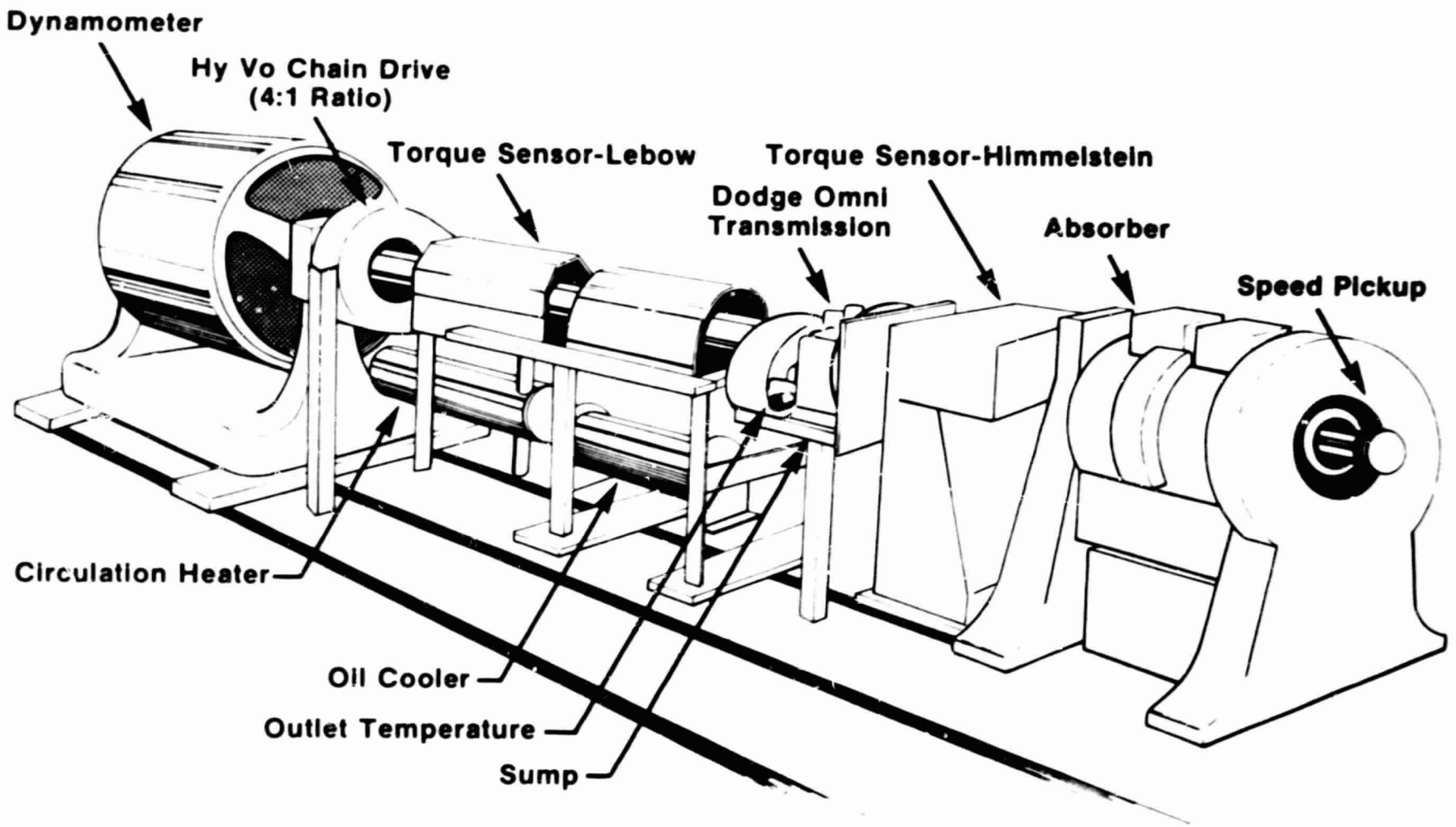
DESCRIPTION	PART NO.	MANUFACTURER
Driving Dynamometer	Model 26G308	General Electric
Flexible Coupling	226 SN	Thomas-Rexnord
Torque Sensor	MCRT6-02T(2-3)	Himmelstein
Pilot Bearing	SFT-15	Sealmaster
Transmission	A-404	Dodge
Rear Bearing	209-SFF	MRC
Flexible Coupling	226 SN	Thomas-Rexnord
Torque Sensor	1648-5K	Lebow
Torque Sensor	1248-20K	Lebow
Absorber	1014DG	Dynamatic
Heat Exchanger	F-301-ER-2P	Young
Circulation Heater	NWHO-2	Chromalox
Pressure Gage	D-0252	Marsh
HY VO Chain Drive (4:1)	1.25 wide	Morse

INSTRUMENTATION

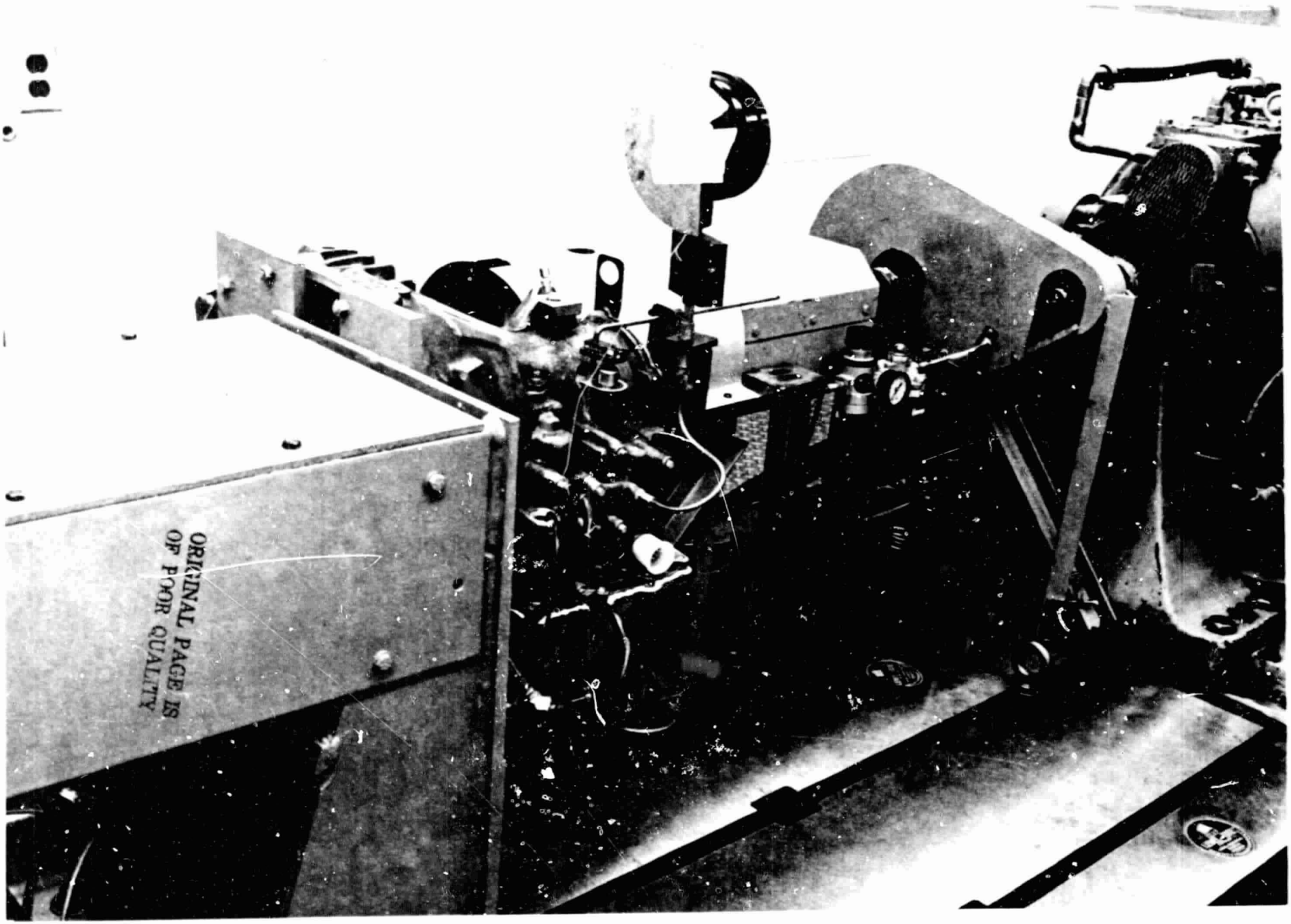
Torque Signal Conditioner	878A	Daytronic
Torque Signal Conditioner	878	Daytronic
Speed Readout	761400110	Airpax
Temperature Conditioner	810	Daytronic
Thermocouples	6610WBA2	Applied Instruments



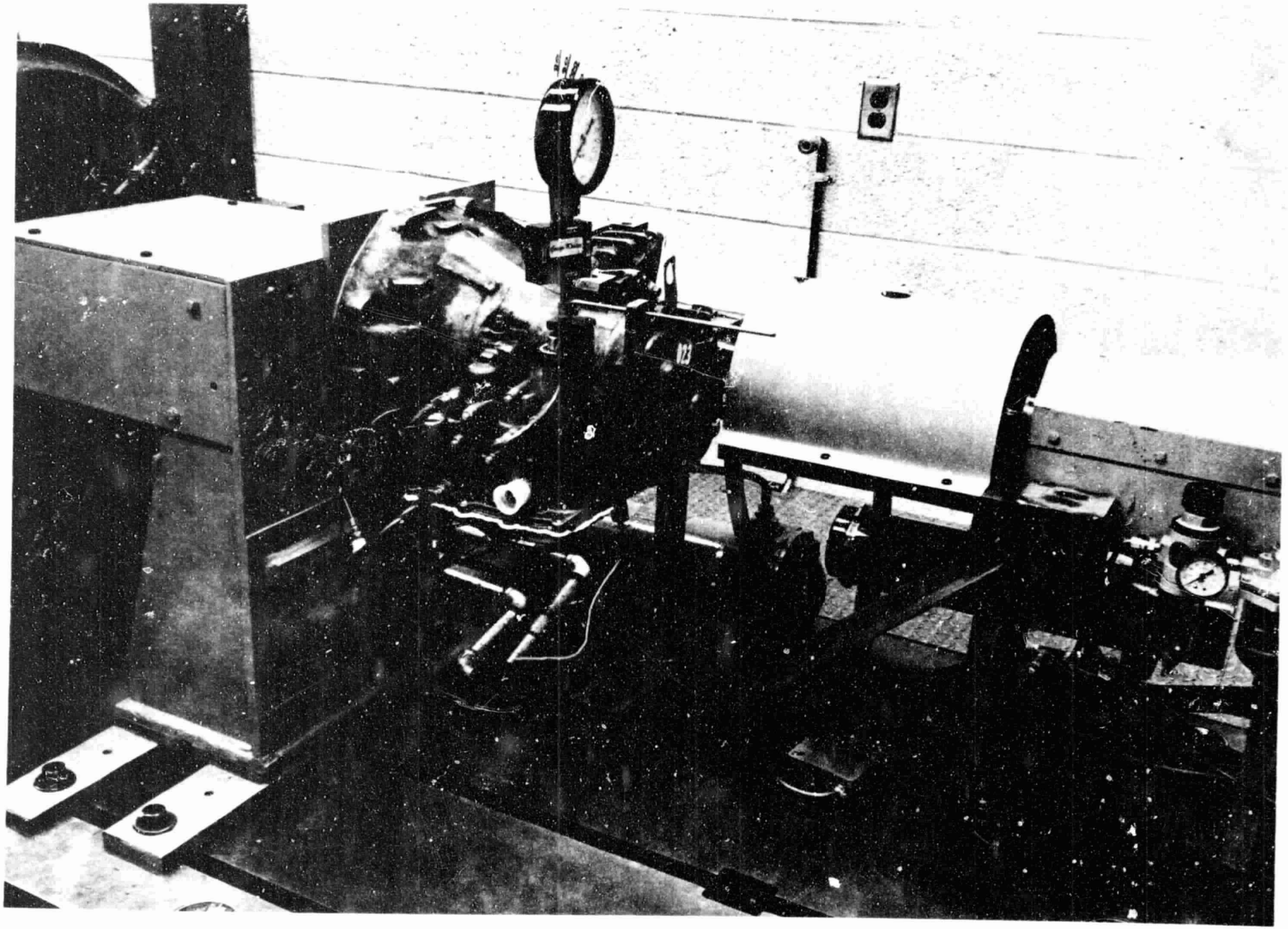
Drive Performance Test Setup
DEN3-124



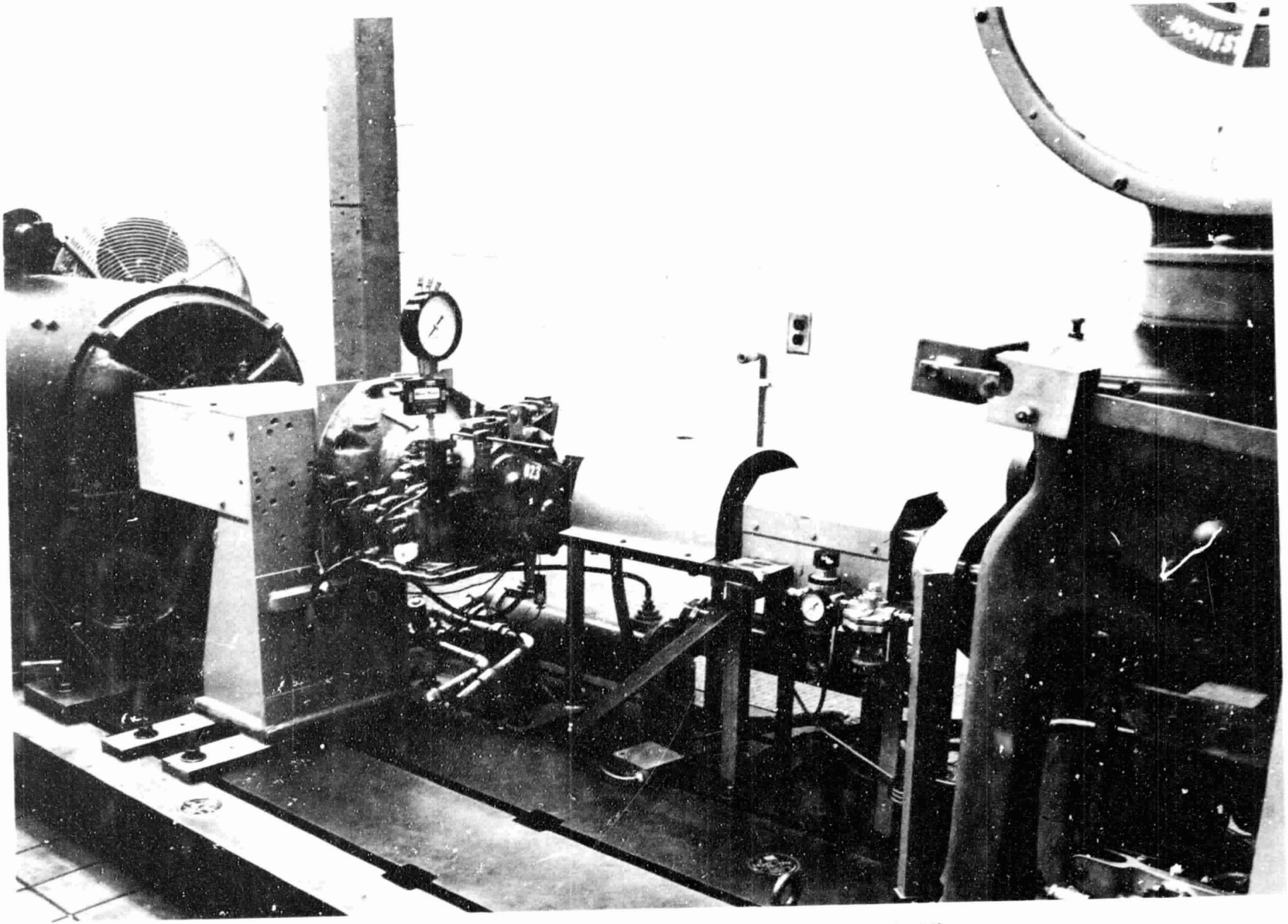
Coast Performance Test Setup
DEN3-124



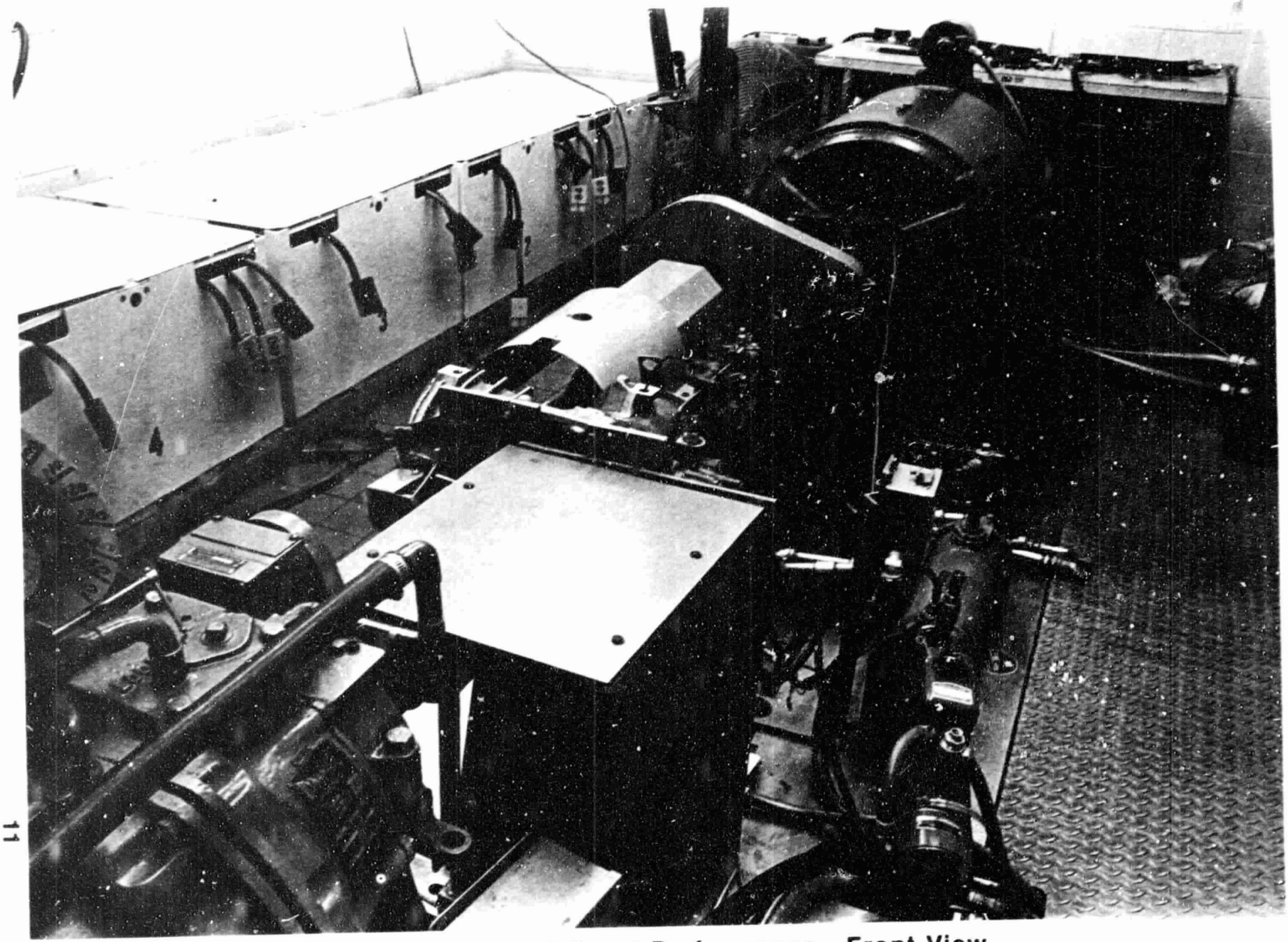
1979 Dodge Omni Drive Performance - Front View



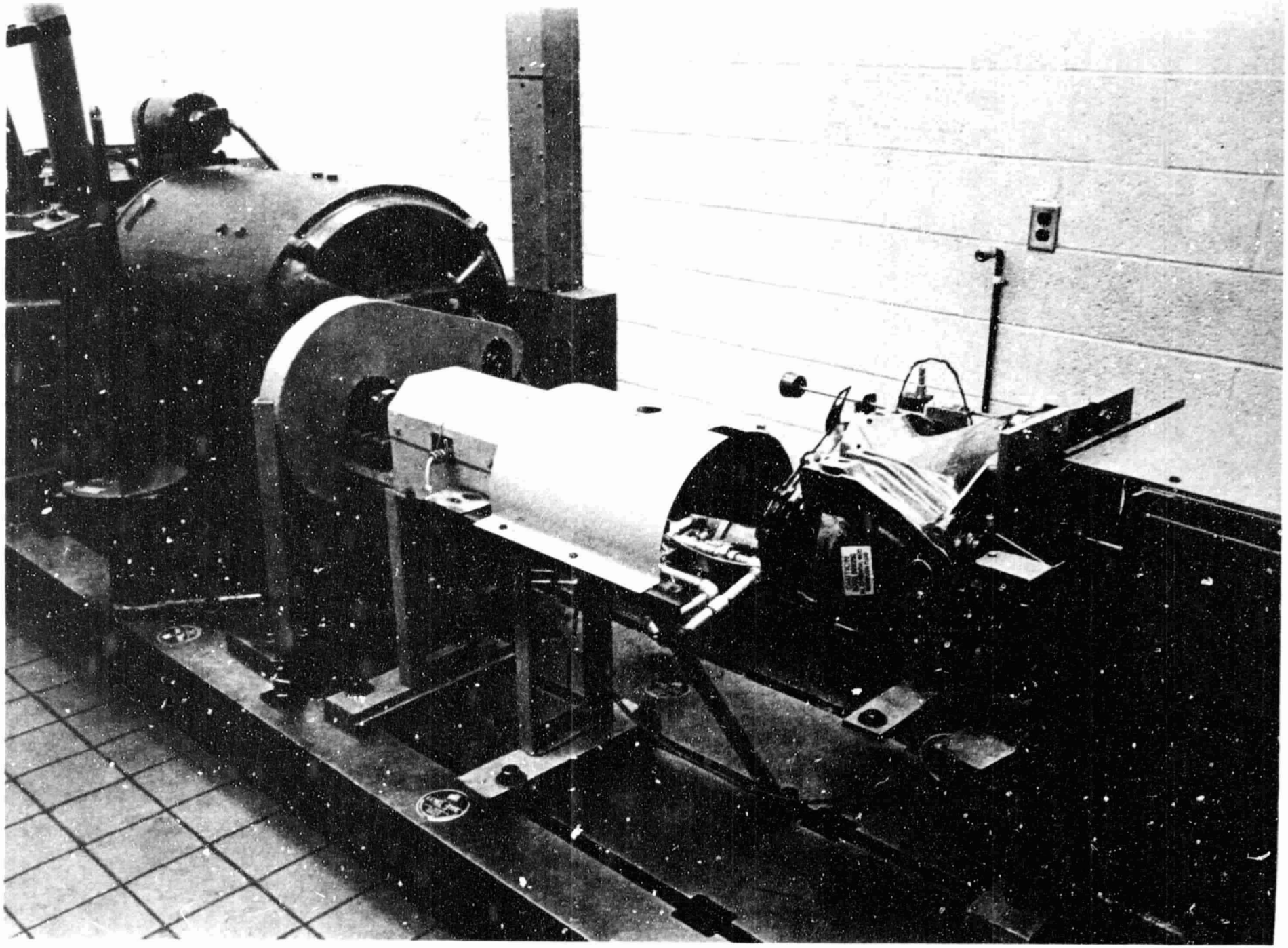
1979 Dodge Omni Drive Performance - Side View



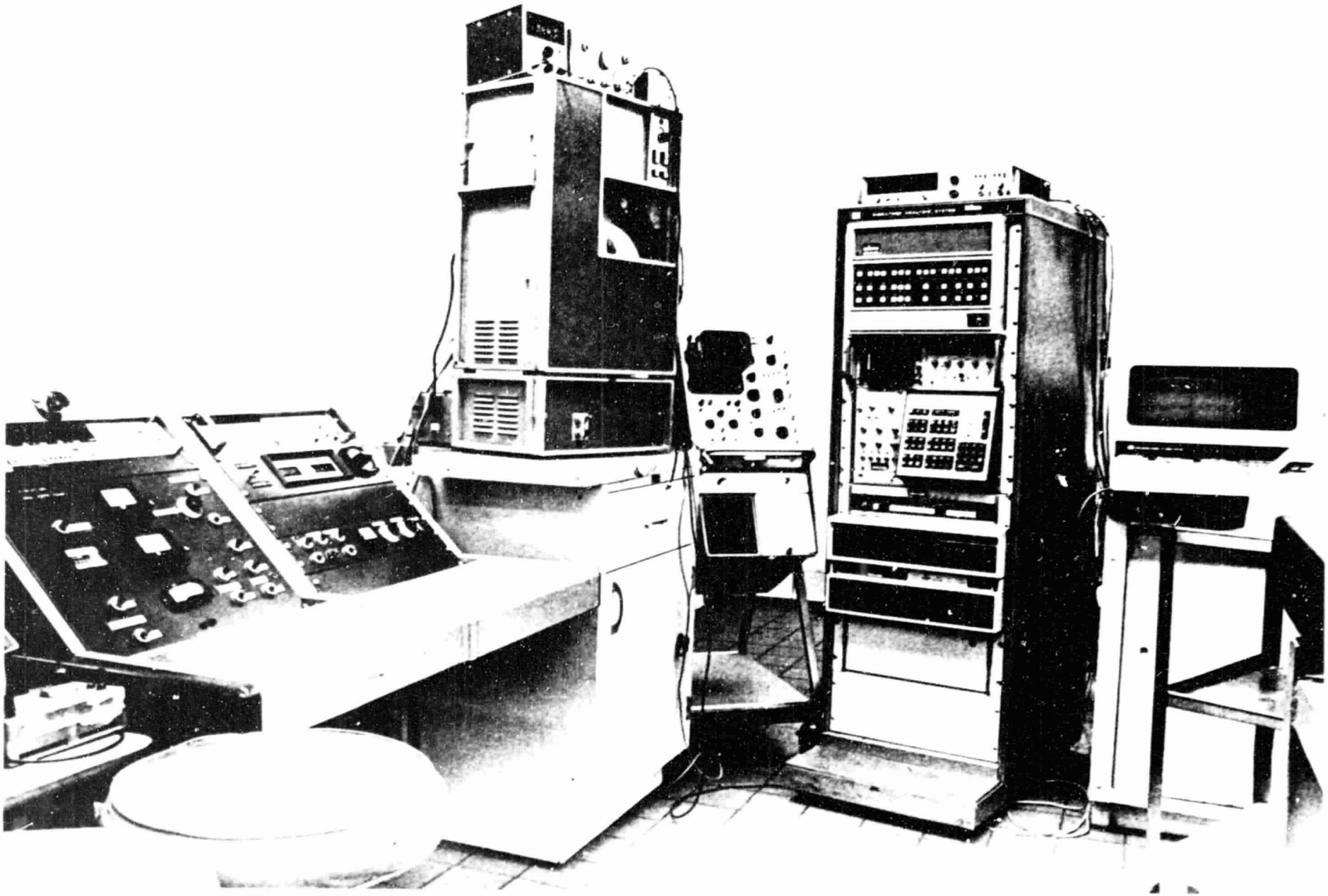
1979 Dodge Omni Drive Performance - Back View



1979 Dodge Omni Coast Performance - Front View



1979 Dodge Omni Coast Performance - Side View



Control Console with Data Reduction Equipment

TEST PROCEDURE

The test was conducted per the Passenger Car Automatic Transmission Test Code-SAE J651b. The code states that three basic tests should be performed on the transmission. These tests were drive performance, coast performance and no load losses. Each test was performed to the accuracies stated in the code. The throttle valve was modulated throughout the test to its normal operating positions. The chart on page 22 indicates the engine torque and its related throttle valve setting.

The first test conducted was the drive performance test. The limits of the test were determined by the normal operating conditions of an engine typically supplied with this transmission. The torque limit was set to 90 lb-ft and the speed limit was set to 5000 rpm. The input shaft of the transmission was tested at a torque which ranged from 10-90 lb-ft on the input shaft of the transmission. The torque was incremented by 10 lb-ft for each test. The speed limits of the test ranged from 500 to 4500 rpm on the input shaft of the transmission.

Section 1 of the test code which is labeled Drive Performance - Constant Input Torque was conducted first. The input torque was held at 10 lb-ft and the speed was incremented from 500-4500 rpm. The torque was then set to 20 lb-ft and the transmission was run through the same speed range. This procedure was followed for input torques of 10, 20, 30, 40, 50, 60, 70, 80, and 90 lb-ft. The throttle valve was modulated to match the appropriate input torque for these test ranges. The starting speed was dependent on when the torque could be attained which was characteristic of the torque converter. The data recorded in this test were input and output speed, input and output torque, line pressure, sump temperature, outlet temperature, case hotspot temperature and ambient temperature.

This procedure was performed on the transmission in first, second and third gear range. The transmission was held in each gear through the entire torque and speed range per the explanation given in the test apparatus section of this report.

The next portion of the test to be conducted was the Cross Sectional Road Load Performance Test. This test was conducted in third gear and involved holding the transmission output shaft at a constant torque while varying the input speed. The output torques selected were 15, 50, 80, 115, 140, 175, 210, 240, and 280 lb-ft. The speed range was from 500-4500 rpm on the input shaft. the starting speed was dependent on when the torque could be attained. The throttle valve was modulated throughout the test to match the appropriate engine torque. The data recorded in this test were input and output torque, input and output speed, line pressure, sump temperature, outlet temperature, case hotspot temperature, and ambient temperature.

The No Load Loss portion of the test was performed next. This test was run with the output shaft turning freely. The input torque and speed were recorded for an entire speed range which ran from 500 rpm to 4500 rpm. This test was performed in each gear range by disconnecting the output shaft and allowing it to turn freely.

The parameters recorded in this test were input torque and speed, line pressure, sump temperature, outlet temperature, case hotspot temperature, and ambient temperature.

The final set of tests performed were the coast performance tests. For this test the transmission was oriented in the reverse direction so that the dynamometer drove through the output shaft of the transmission and the power was taken up in the absorber. The test was operated by setting the converter impeller torque at a constant level and varying its speed in the range set by the previous tests. In order to run this test, it was necessary to spin the torque converter shaft at approximately 400 rpm so that the charge pump would generate the line pressure necessary to operate the transmission. The torque and speed ranges of this test were different from the previous tests due to torque converter characteristics. The speed was limited by two conditions. These conditions were the lowest speed necessary to maintain line pressure and the lowest speed at which the torque could be attained. The amount of torque which could be applied to the system was limited by the current limits of the dynamometer controller. The 1st gear coast performance tests reached the current limit at the 60 lb-ft run. This was due to the slow output speed in first gear which was beyond the dynamometer torque speed characteristics. The data recorded during this portion of the test were input and output torque, input and output speed, line pressure, sump temperature, outlet temperature, case hotspot temperature, and ambient temperature. The throttle valve was set to the idle position during the entire test.

The transmission was filled with Dextron II automatic transmission fluid through the entire test schedule. The physical and chemical properties of the transmission fluid were monitored throughout the test. The fluid appeared slightly brown after the second and third gear coast performance tests. This was attributed to the slow charge pump speeds which meant less oil flow for cooling purposes at high torque levels. The fluid was replaced each time the discoloring was noticed. This indicates that care should be taken if this transmission is to be operated in the coast performance mode (regenerative braking) for any length of time. This problem could be solved by setting a minimum charge pump speed at each torque level.

CALIBRATION

The test apparatus was calibrated before and after a major test. The major components calibrated were the torque sensors and the speed readouts. The torque sensors were calibrated with their respective readouts and attaching cables so that a total system accuracy was obtained. The calibration was performed on the torque sensors by placing them in a hydraulic test stand which applied a torque against the test specimen and a calibrated torque cell simultaneously. The calibrated torque cell is traceable to the National Bureau of Standards (once removed). The calibrated torque cell was used as an indication of the applied load, while the test specimen was the measured load. The torque sensors were calibrated to the limits of the range over which they were to be operated.

The speed readout was an AIRPAX counter (Model No. 761400110) which was calibrated in an operating range from 0 to 4500 rpm. The counter was calibrated with a Hewlett Packard electric counter (Model No. 5245L) used in conjunction with a WWVB frequency comparator (True Time, Inc. Model No. 60-TR). The accuracy of the digital readout was ± 1 count.

CALIBRATION SHEET 4-28-80
HIMMELSTEIN TORQUE SENSOR #MCRT 6-02T (2-3) DEN3-124
CAL VALUE = 58.0 lb-ft
(Drive performance torque was positive. Direction of torque was clockwise.)

APPLIED TORQUE (lb-ft)	MEASURED TORQUE (lb-ft)
0.0	0.0
25.0	25.0
50.0	5 .0
75.0	75.0
100.0	10 .0
125.0	125.0
150.0	150.0
125.0	125.0
100.0	100.0
75.0	75.0
50.0	50.0
25.0	25.5
0.0	0.0

(Coast performance torque was negative. Direction of torque was counterclockwise.)

0.0	-0.5
-25.0	-24.5
-50.0	-49.5
-75.0	-74.5
-100.0	-99.5
-125.0	-124.5
-150.0	-149.5
-125.0	-125.0
-100.0	-100.0
-75.0	-74.5
-50.0	-49.5
-25.0	-24.5
-0.0	-0.0

R QUALITY

CALIBRATION SHEET 5-16-80
LEBOW TORQUE SENSOR #1648-5K DEN3-124
CAL VALUE = 271.5 lb-ft
(Drive performance torque was positive. Direction of torque was clockwise.)

APPLIED TORQUE (lb-ft)	MEASURED TORQUE (lb-ft)
0.0	0.0
50.0	49.0
100.0	99.5
150.0	149.5
200.0	200.0
250.0	250.0
300.0	300.5
350.0	351.0
400.0	401.5
350.0	351.0
300.0	300.5
250.0	250.0
200.0	200.0
150.0	149.5
100.0	99.0
50.0	49.0
0 0	0.0

(Coast performance torque was negative. Direction of torque was counterclockwise.)

-0.0	-1.0
-50.0	-52.0
-100.0	-101.5
-150.0	-152.0
-200.0	-202.0
-250.0	-252.0
-300.0	-302.5
-350.0	-352.5
-400.0	-402.0
-350.0	-352.0
-300.0	-302.0
-250.0	-251.0
-200.0	-201.5
-150.0	-151.5
-100.0	-101.0
-50.0	-51.0
-0.0	-0.5

CALIBRATION SHEET
LEBOW TORQUE SENSOR #1248-2K
CAL VALUE = 479.0 lb-ft

6-23-80
DEN3-124

(Drive performance torque was positive. Direction of torque was clockwise.)

APPLIED TORQUE (lb-ft)	MEASURED TORQUE (lb-ft)
0.0	0.0
300.0	300.3
600.0	599.8
900.0	898.7
1200.0	1197.2
1500.0	1500.0
1200.0	1199.7
900.0	898.5
600.0	597.6
300.0	297.4
0.0	0.0

(Coast performance torque was negative. Direction of torque was counterclockwise.)

-0.0	-0.0
-300.0	-297.4
-600.0	-598.5
-900.0	-899.3
-1200.0	-1199.7
-1500.0	-1500.0
-1200.0	-1198.8
-900.0	-898.3
-600.0	-598.5
-300.0	-298.2
-0.0	-0.0

Following is a table of engine torque vs. throttle cable position. The transmission throttle cable was modulated for each engine torque level throughout the tests.

ENGINE TORQUE (lb-ft)	THROTTLE CABLE POSITION (in.)
closed	.00
10	.07
20	.14
30	.21
40	.28
50	.35
60	.42
70	.49
80	.56
90	.62
open	

SYSTEM ACCURACY

The instruments used in the test setup have been calibrated to insure the accuracy of the test data. The individual components utilized in the tests contain manufacturers specifications which guarantee the accuracy of the instrumentation. These accuracies are listed and combined in the appendix section to determine the total system accuracy. The three major components involved in the system accuracy are the torque signals, speed signals, and data reduction equipment. Worst case system accuracies for the torque sensors, cabling and readouts were determined from the calibration charts and are shown below.

TAPE RECORDER: Sangamo Model #3500
ACCURACY: $\pm$0.05% of Full Scale

TORQUE SENSOR: Lebow (1648-5K) + Daytronic (878A)
ACCURACY: ((Calculated Torque-Measured)/Full Scale Torque) x (100)
((175.79 - 176.0)/416.66) x (100) = $\pm$0.05% of Full Scale

TORQUE SENSOR: Himmelstein (MCRT 6-62T(2-3)) + Daytronic (878)
ACCURACY: ((Calculated Torque-measured)/Full Scale Torque) x (100)
((56.26 - 55.9)/(166.66)) x (100) = $\pm$0.21% of Full Scale

SPEED SENSOR: Speed Pickup + Airpax Counter
ACCURACY: Calibration was $\pm$1 Count (1/4000) x (100) = $\pm$0.025% of Full Scale

SPEED CONDITIONER (Frequency to Voltage Converter-Daytronic 840)
ACCURACY: 0.05% of Average DC Voltage $\pm$0.10% of Full Scale

HEWLETT PACKARD ANALYZER (HP 5451B Fourier Analyzer)
ACCURACY: 12 Bits = 2^{11} = 2048 Bits = 1 Volt
(1/2048) x (100) = $\pm$0.048% of Full Scale

COMPUTER INTER NUMBER CALCULATION (Method of Program Calculation)
= 0.5% of Full Scale

The inter number calculation error resulted from the method that the computer used to average the acquired data. This method is explained in the Appendix A.

From the instrument accuracy determined above, a system accuracy may be determined. There are two generally accepted methods for calculating a system error. These methods are the root mean square and the sum of the errors. Both methods are tabulated in the appendix and charted below for torque, speed, power and efficiency readings.

	ROOT MEAN SQUARE METHOD % OF FULL SCALE	SUM OF ERRORS METHOD % OF FULL SCALE	FULL SCALE
Torque Error (Lebow)	0.08%	0.15%	416 lb-ft
Torque Error (Himm.)	0.221%	0.31%	166 lb-ft
Speed Error	0.124%	0.223%	4000 RPM
Power Out Error	0.50%	0.70%	90 HP
Efficiency Error	0.58%	1.0%	100%

DATA REDUCTION

The signals obtained from the torque and speed transducers of the test stand were placed directly onto a Sangamo Tape Recorder Model No. 3500. The information on the tape was then fed into a computer which was used to compile the data. While in the computer, the data was reviewed to insure their accuracy and then a hard copy was printed out on a line printer.

The following procedure was used to record the input and output torque. The torque signals were placed on the tape recorder as voltage. A calibration value was determined in engineering units (lb-ft) for each torque sensor. The torques were recorded on channels one and two in the following manner:

CHANNEL 1: PRECALIBRATION ZERO CALIBRATION VOLTAGE PRERUN ZERO DATA

CHANNEL 2: PRECALIBRATION ZERO CALIBRATION VOLTAGE PRERUN ZERO DATA

This information was then fed into the computer which integrated and compiled a 2.5 second sample of data to obtain an average value in engineering units.

The frequency signals from the speed pickups were placed directly onto the tape recorder. The data on the tape was then fed into a frequency to voltage unit which turned the frequency into a dc voltage which in turn was fed into the computer. The method for recording speeds is shown below.

CHANNEL 3: ZERO FREQUENCY CALIBRATION FREQUENCY PRERUN ZERO FREQUENCY DATA

CHANNEL 4: ZERO FREQUENCY CALIBRATION FREQUENCY PRERUN ZERO FREQUENCY DATA

The data on these channels was then fed into the computer which integrated and compiled a 2.5 second sample of data to obtain an average speed value in engineering units.

The computer was programmed to take the values of torques and speeds and calculate efficiency and power from them. From the data it has generated, the computer would print out the required graphs and data per the contract specification. The main advantage to taking data in this manner was that the computer would calculate an integrated average which would minimize the error in a fluctuating signal. Any fluctuation due to system resonance or gear teeth meshing would be integrated and averaged.

BEST QUALITY

TEST RESULTS

The data contained in this segment of the report has been divided into three major sections. These sections are drive performance, coast performance, and no load losses. There are five data sheets for each test condition in the drive performance and coast performance tests. The organization of this data is described and listed in the table of contents. Cover sheets for drive performance, coast performance and no load losses have been placed at the beginning of each section to describe the enclosed sheets.

DRIVE PERFORMANCE

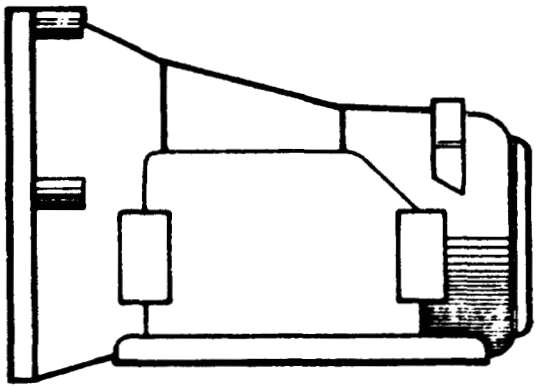
1st Gear

Graphs Contained in This Section

Torque Ratio -vs- Output Speed
Output Torque -vs- Output Speed
Input Speed -vs- Output Speed
Efficiency -vs- Output Speed
Efficiency -vs- Power Out

Torque In

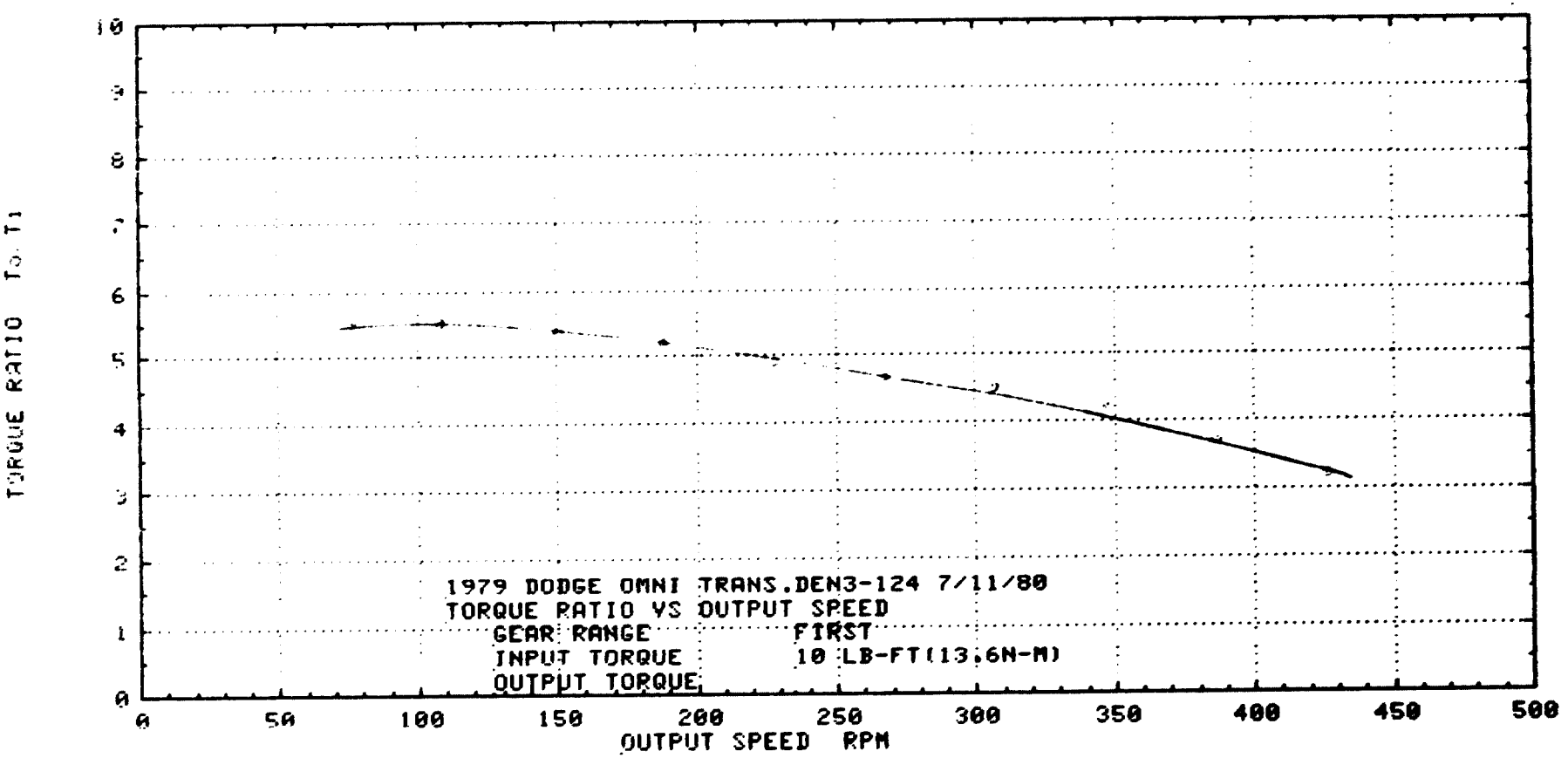
Speed In

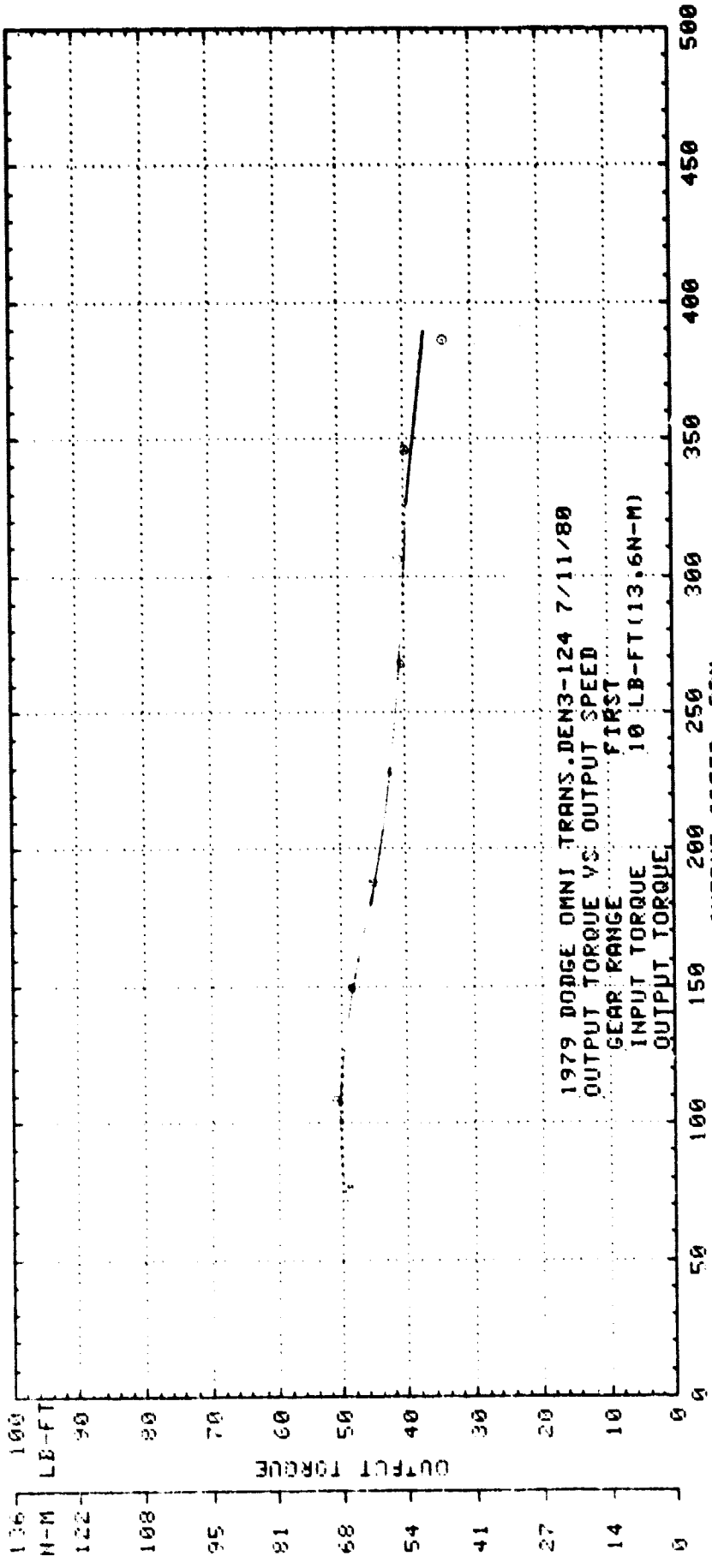


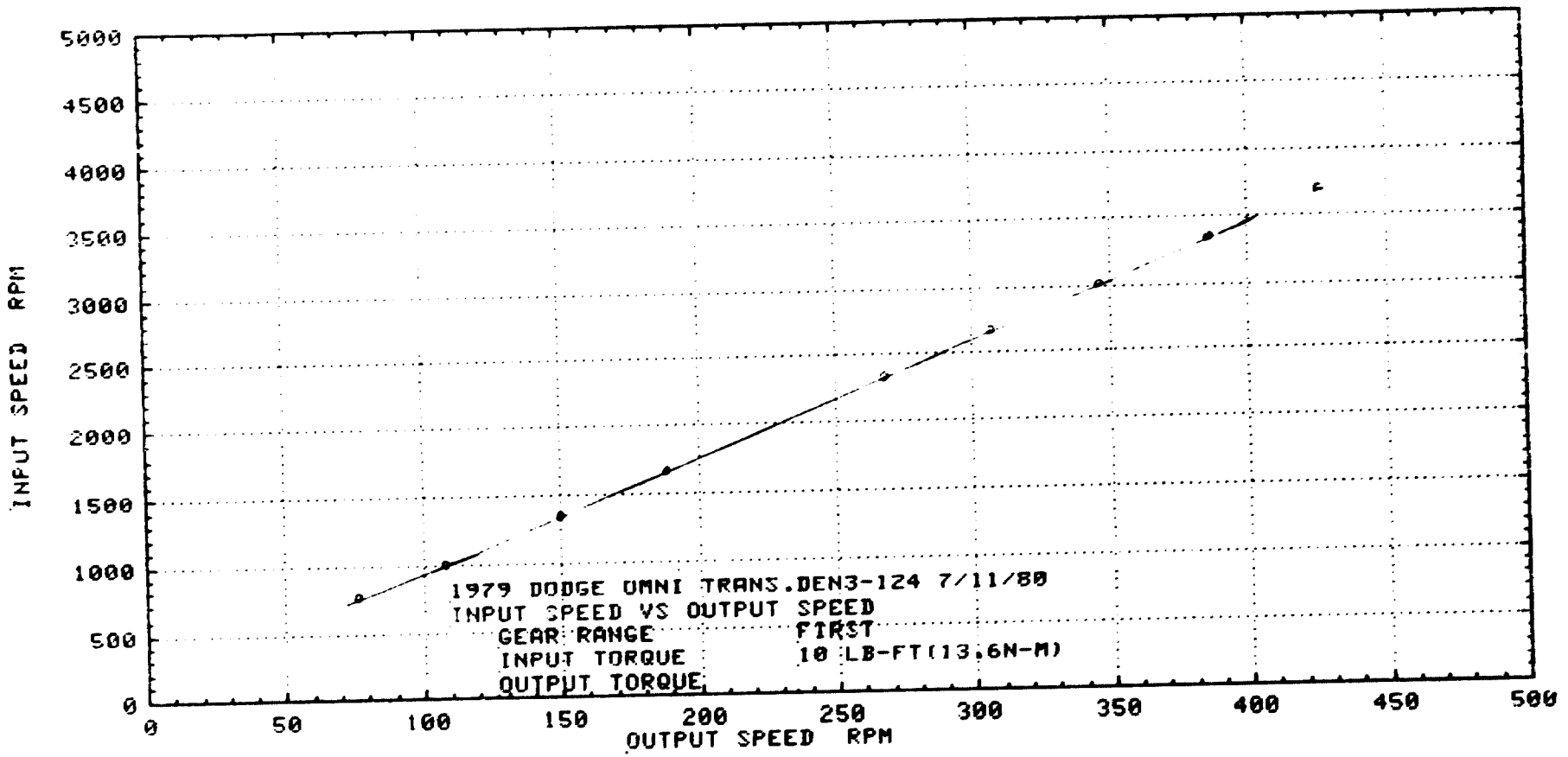
Torque Out

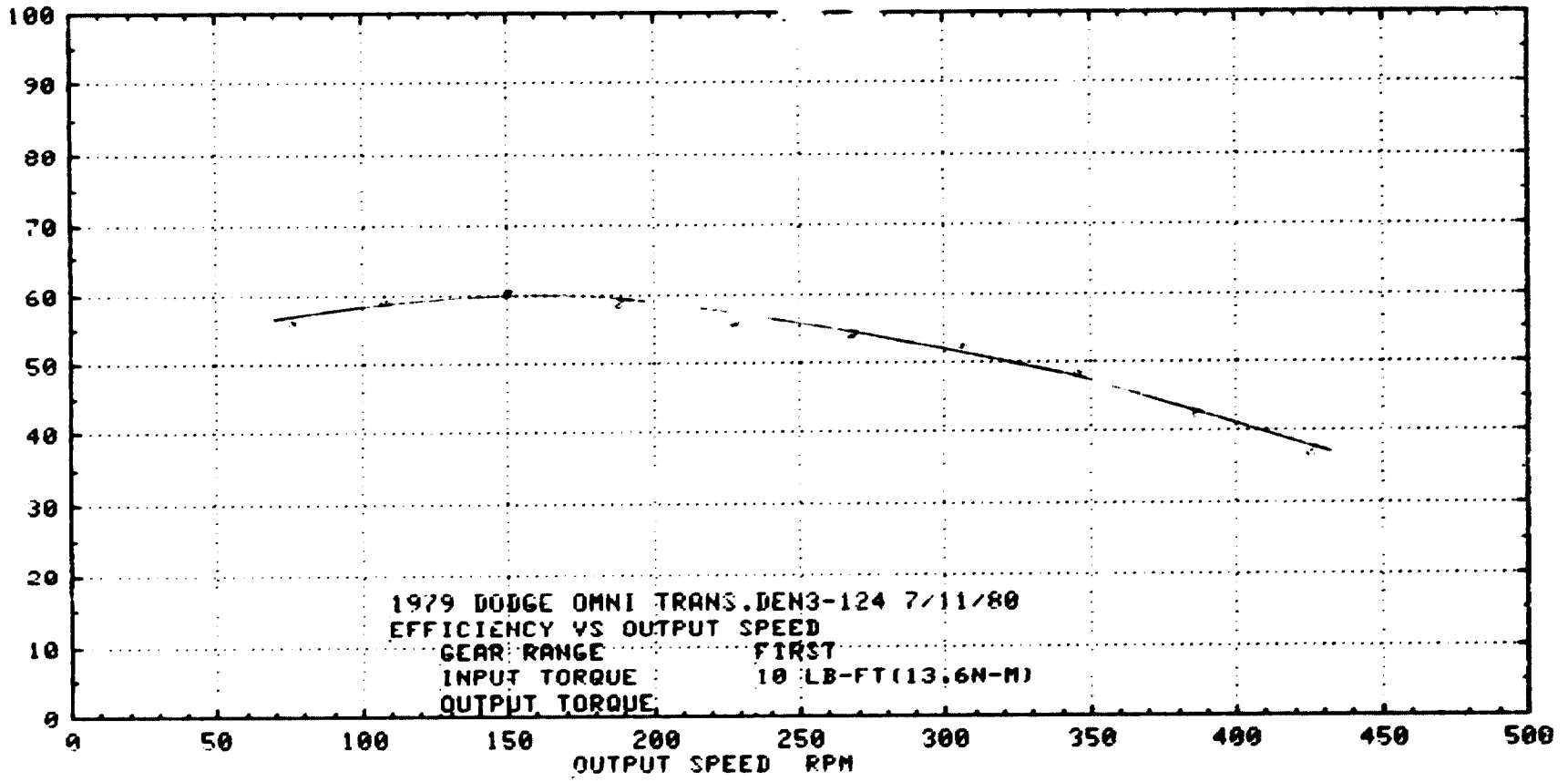
Speed Out

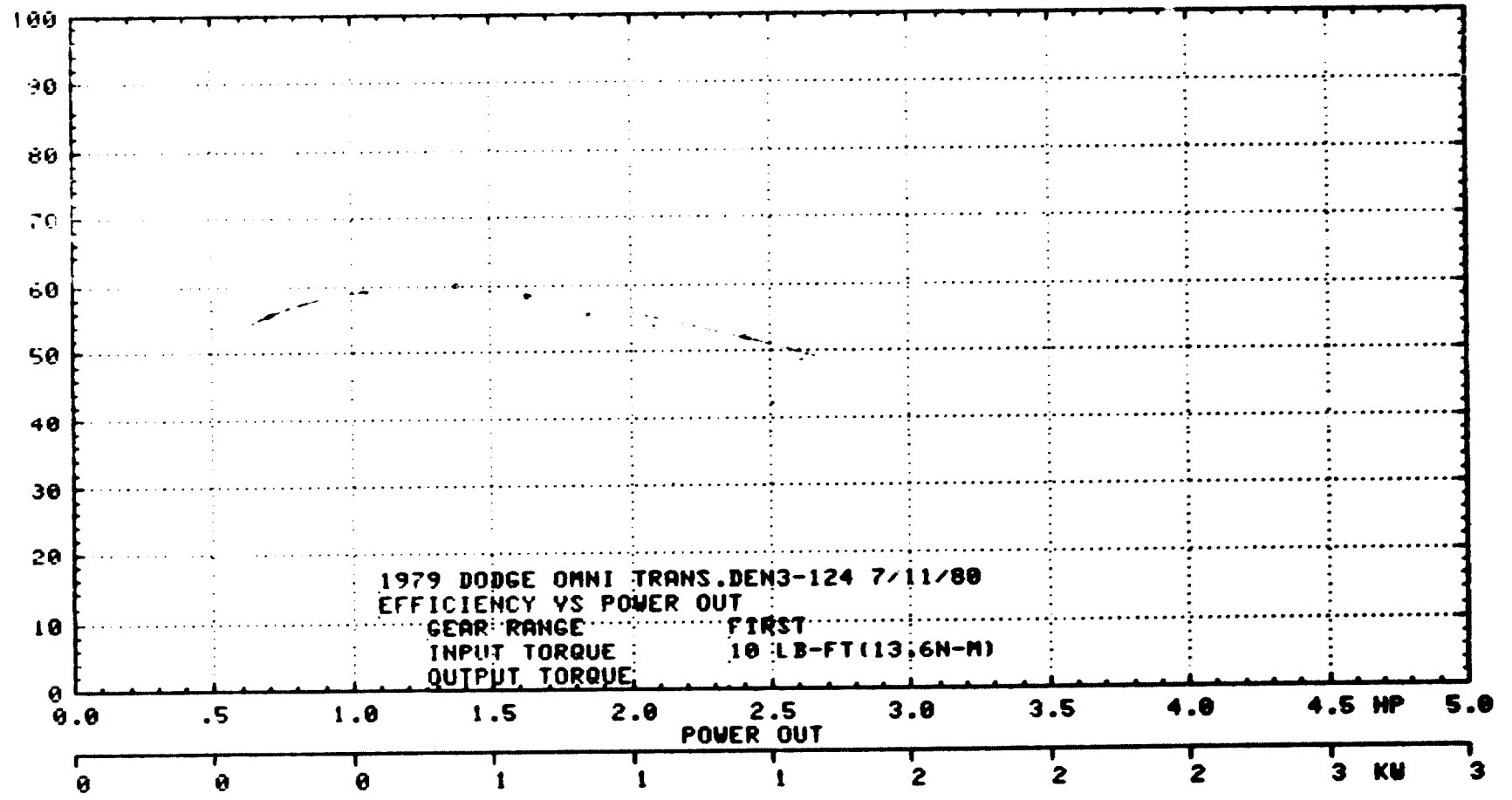
Drive Performance Tests


TORQUE RATIO To Ti
10
9
8
7
6
5
4
3
2
1
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE

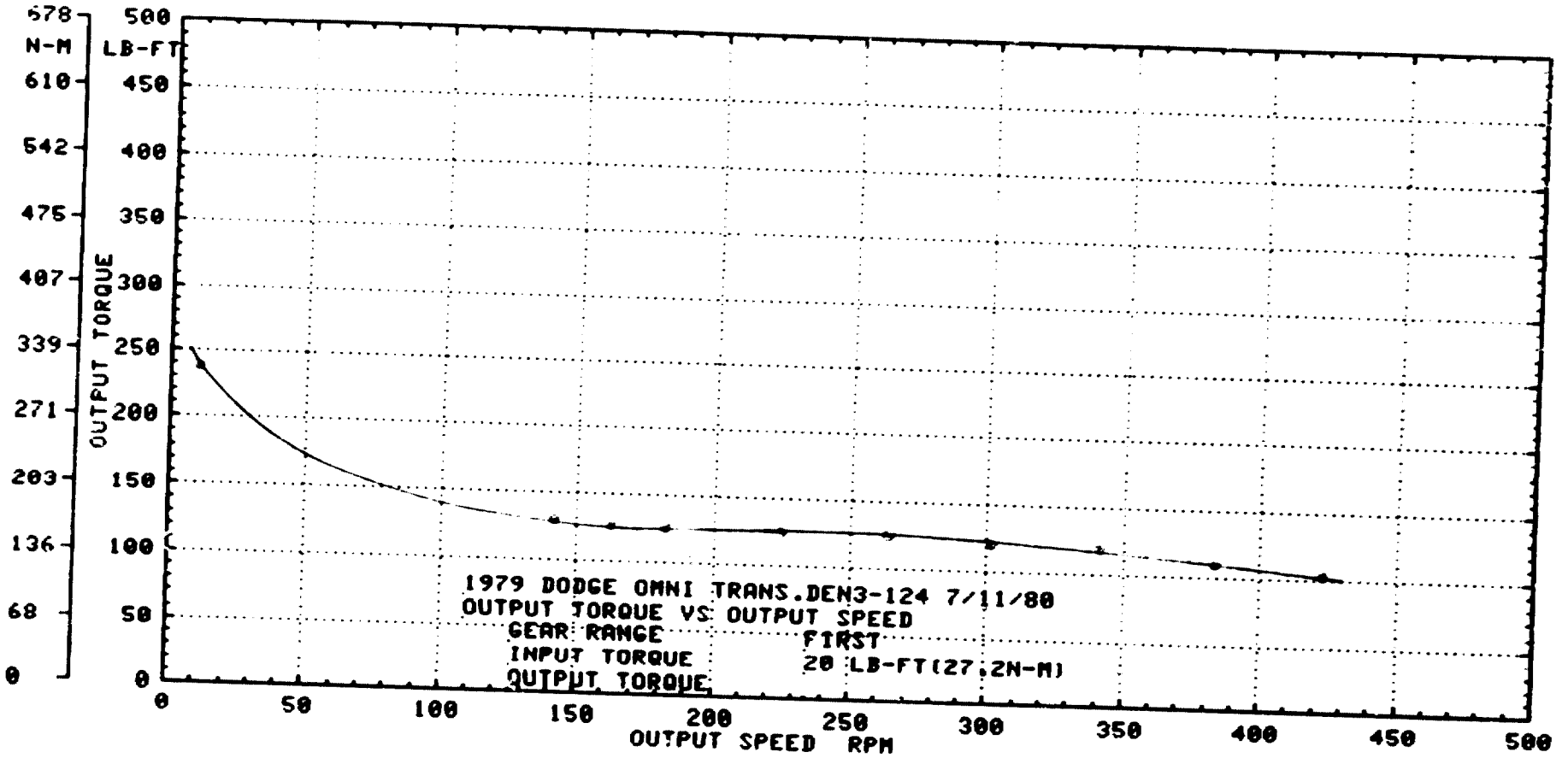

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE
OUTPUT SPEED RPM
OUTPUT TORQUE
LB-FT
N-M
0
50
100
150
200
250
300
350
400
450
500
10
20
30
40
50
60
70
80
90
100
14
27
41
54
68
81
95
108
122
136

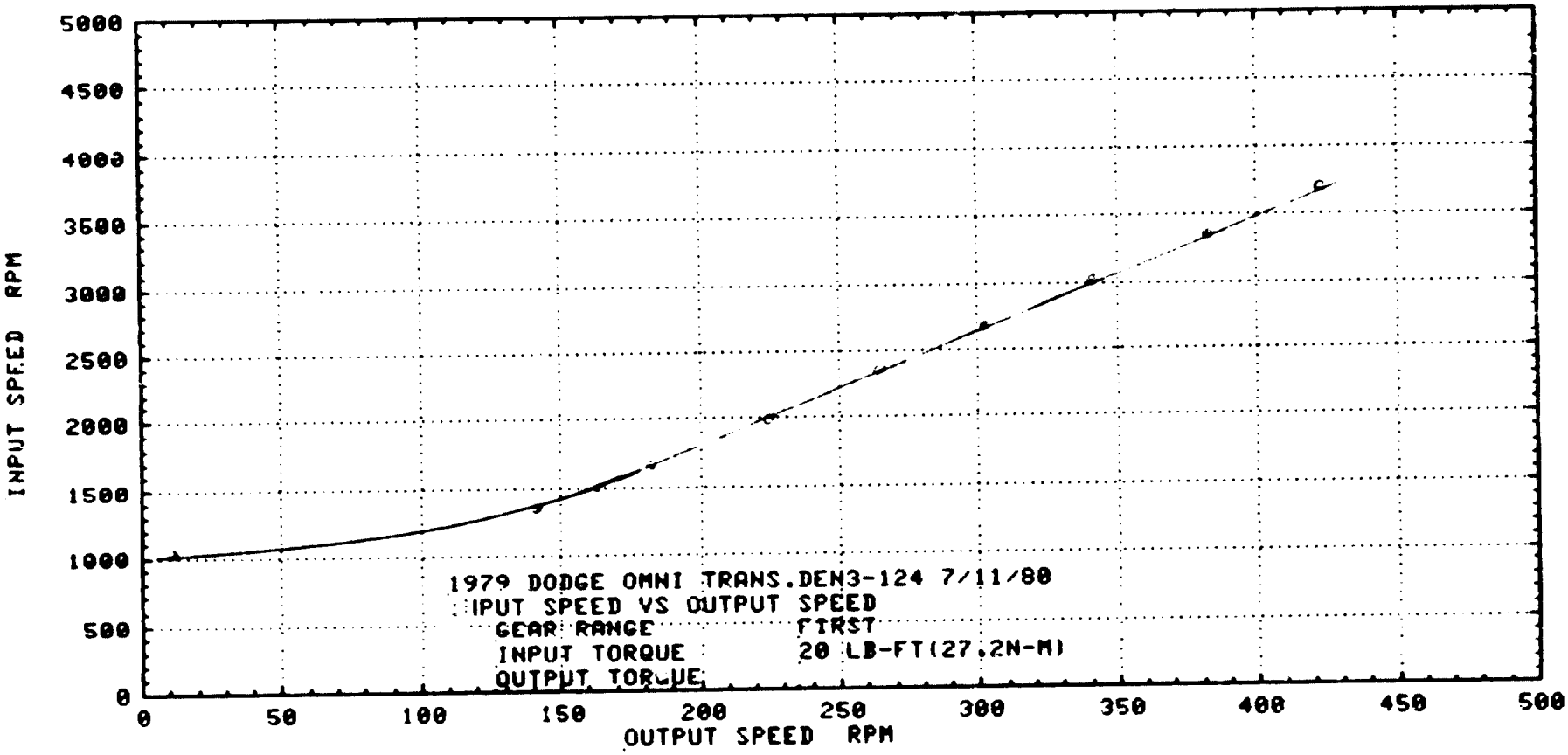

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE

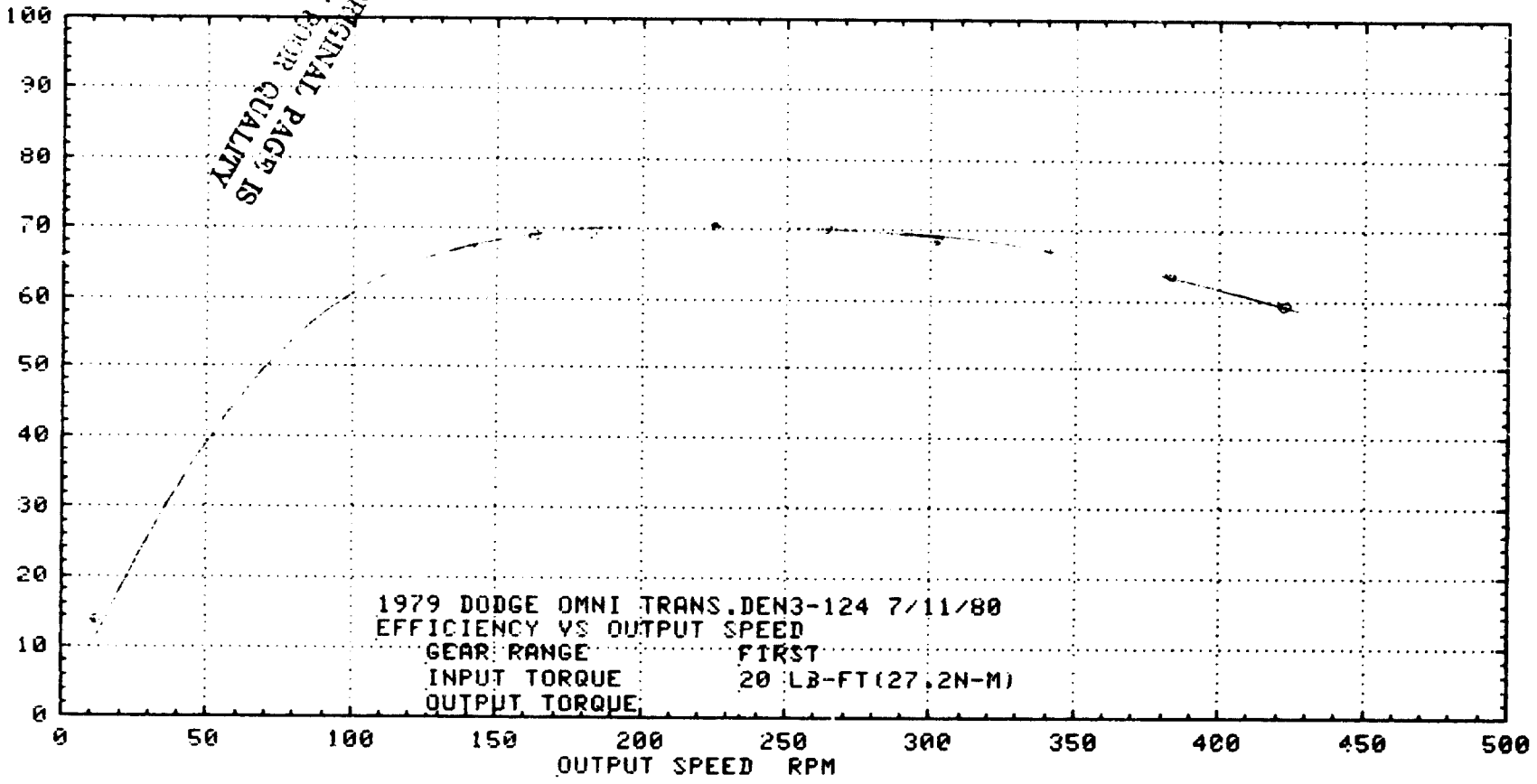

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE
0.0 .5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 HP 5.0
POWER OUT
0 0 0 1 1 1 2 2 2 3 KW 3

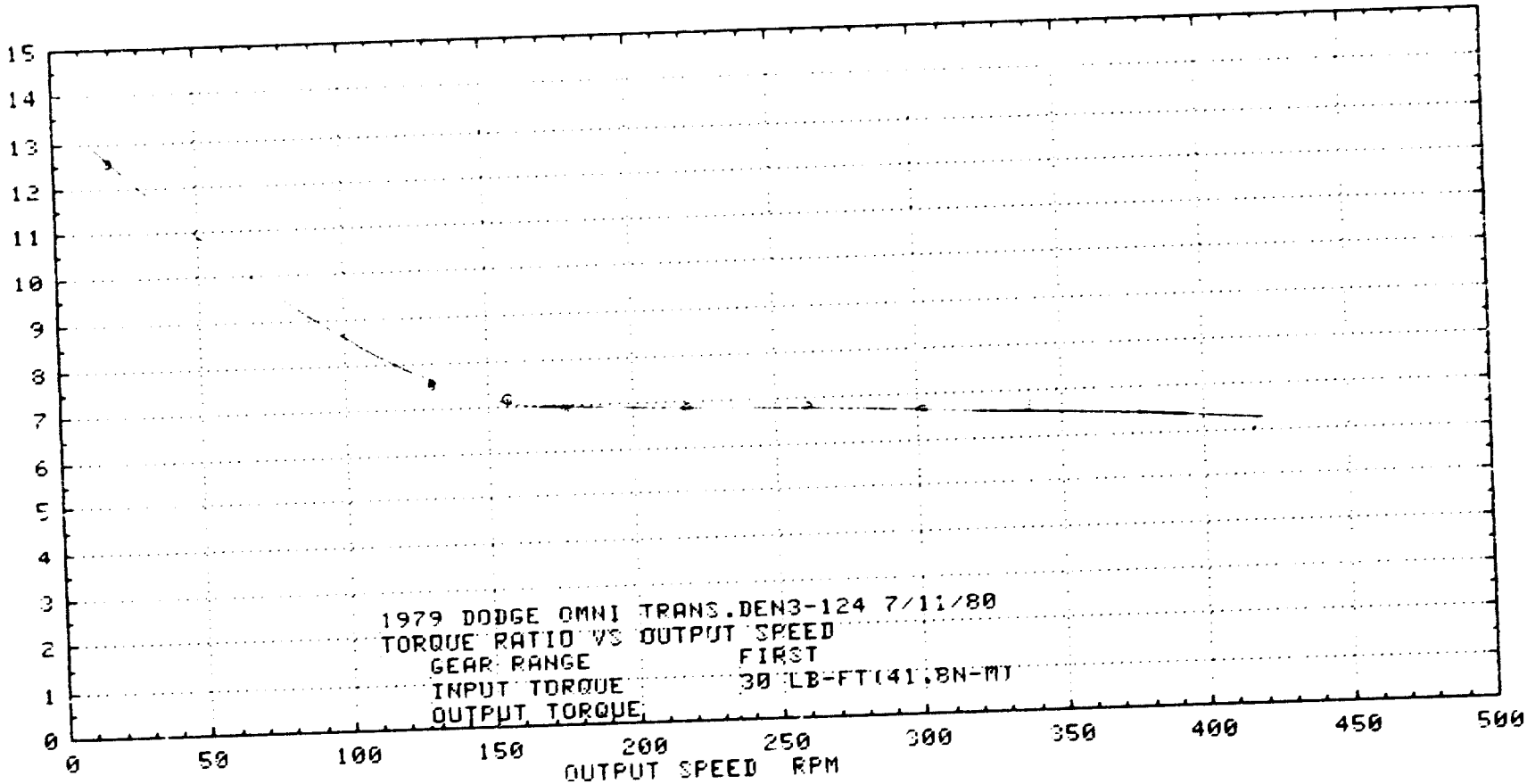
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE
OUTPUT SPEED RPM
TORQUE RATIO To/Ti
0
50
100
150
200
250
300
350
400
450
500
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

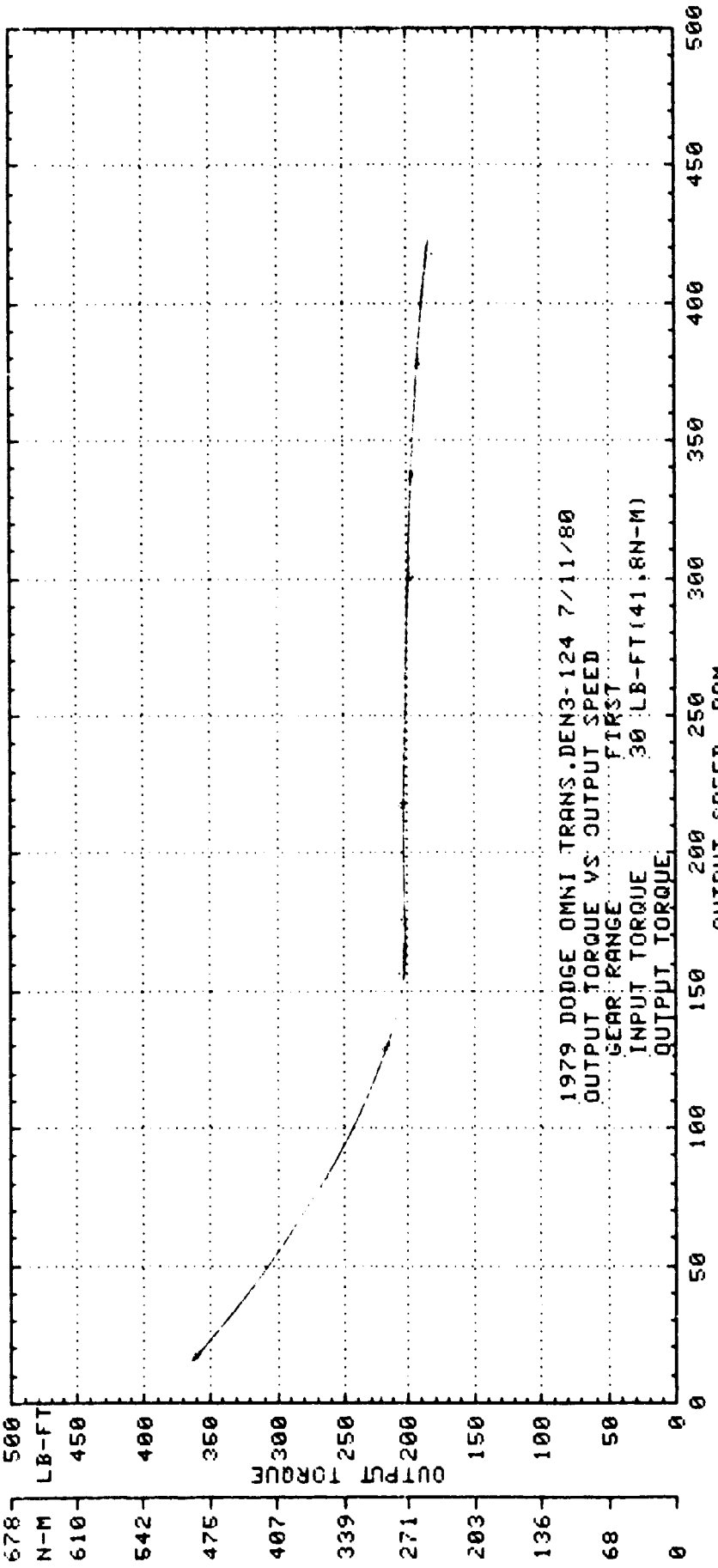

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE

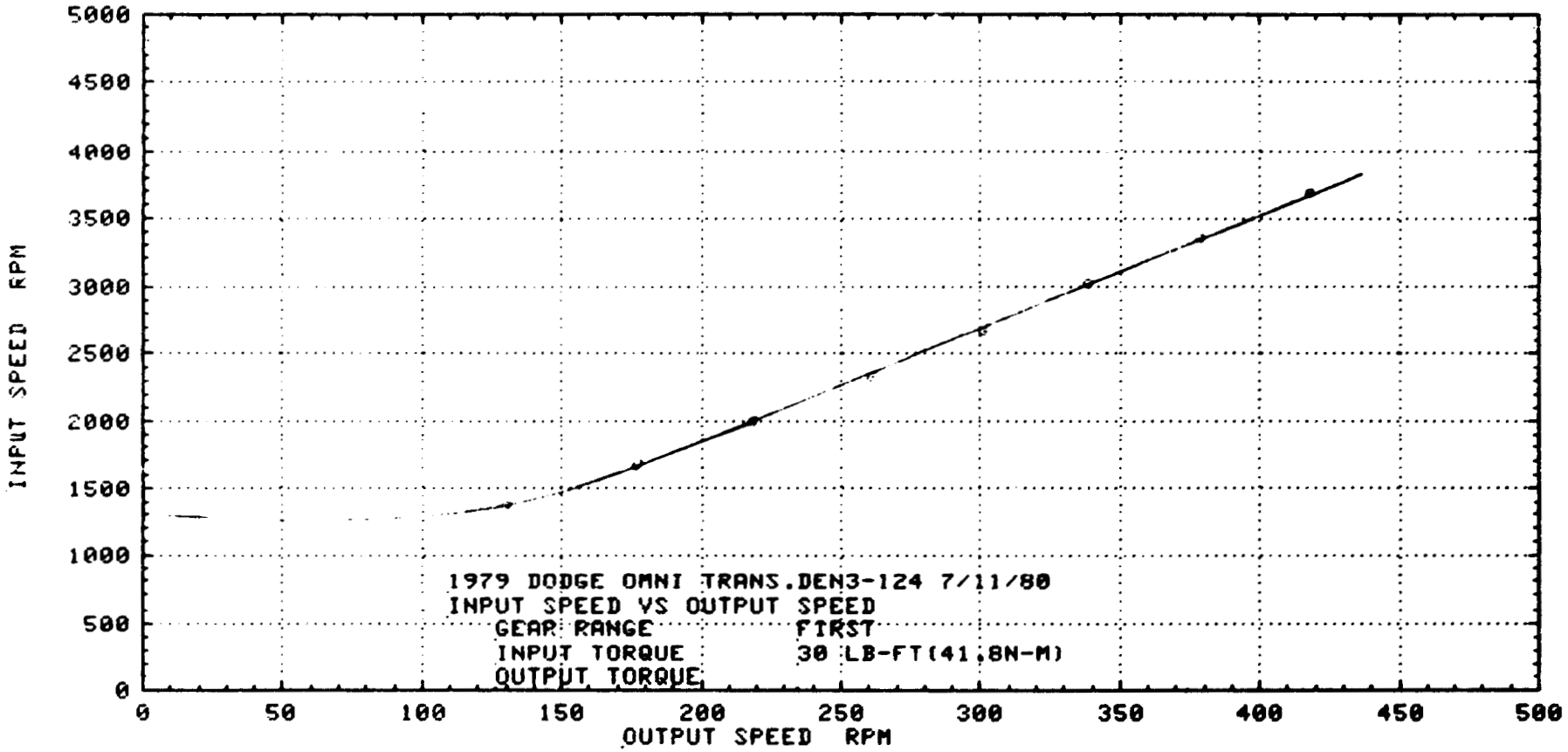

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE

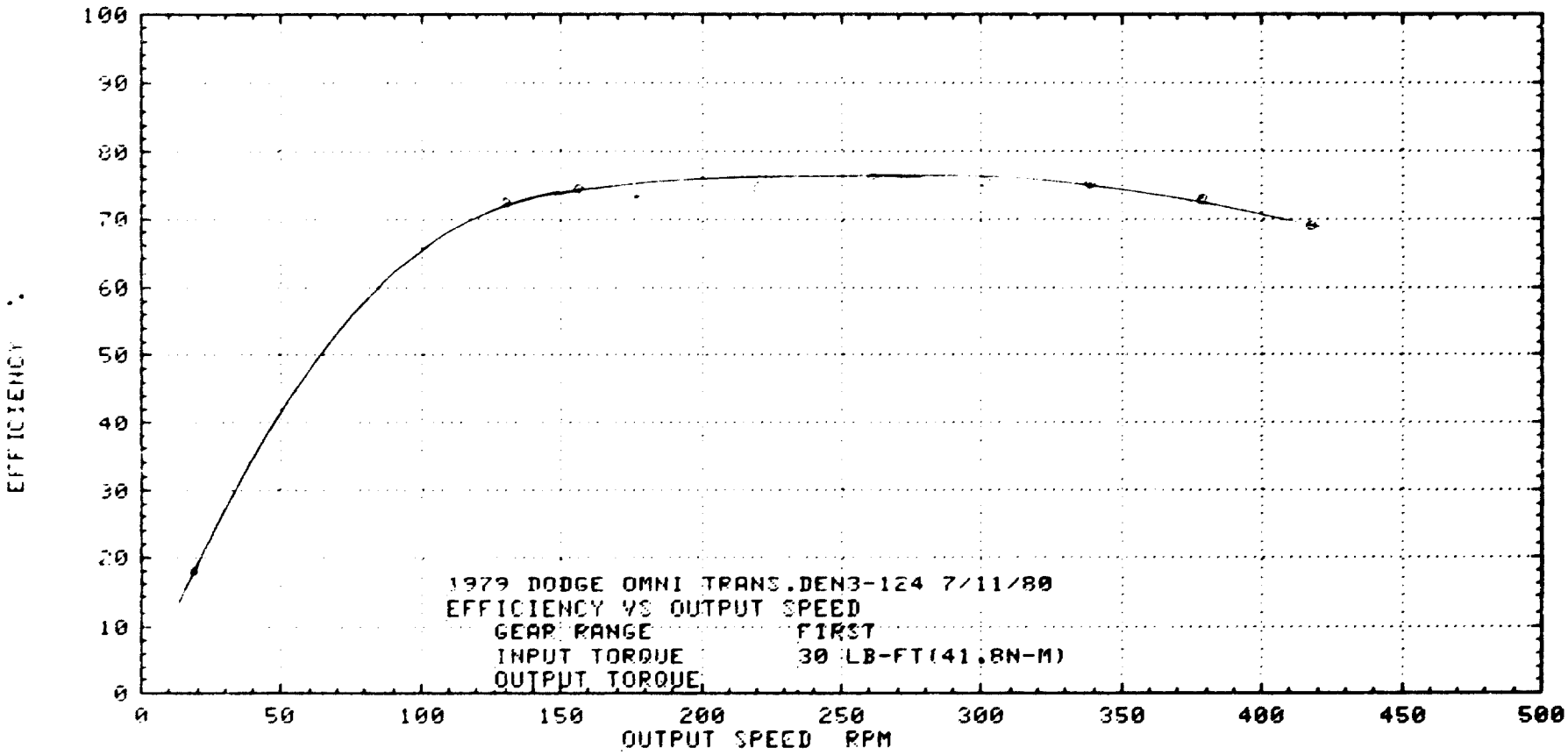

ORIGINAL PAGE IS OF POOR QUALITY
EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE

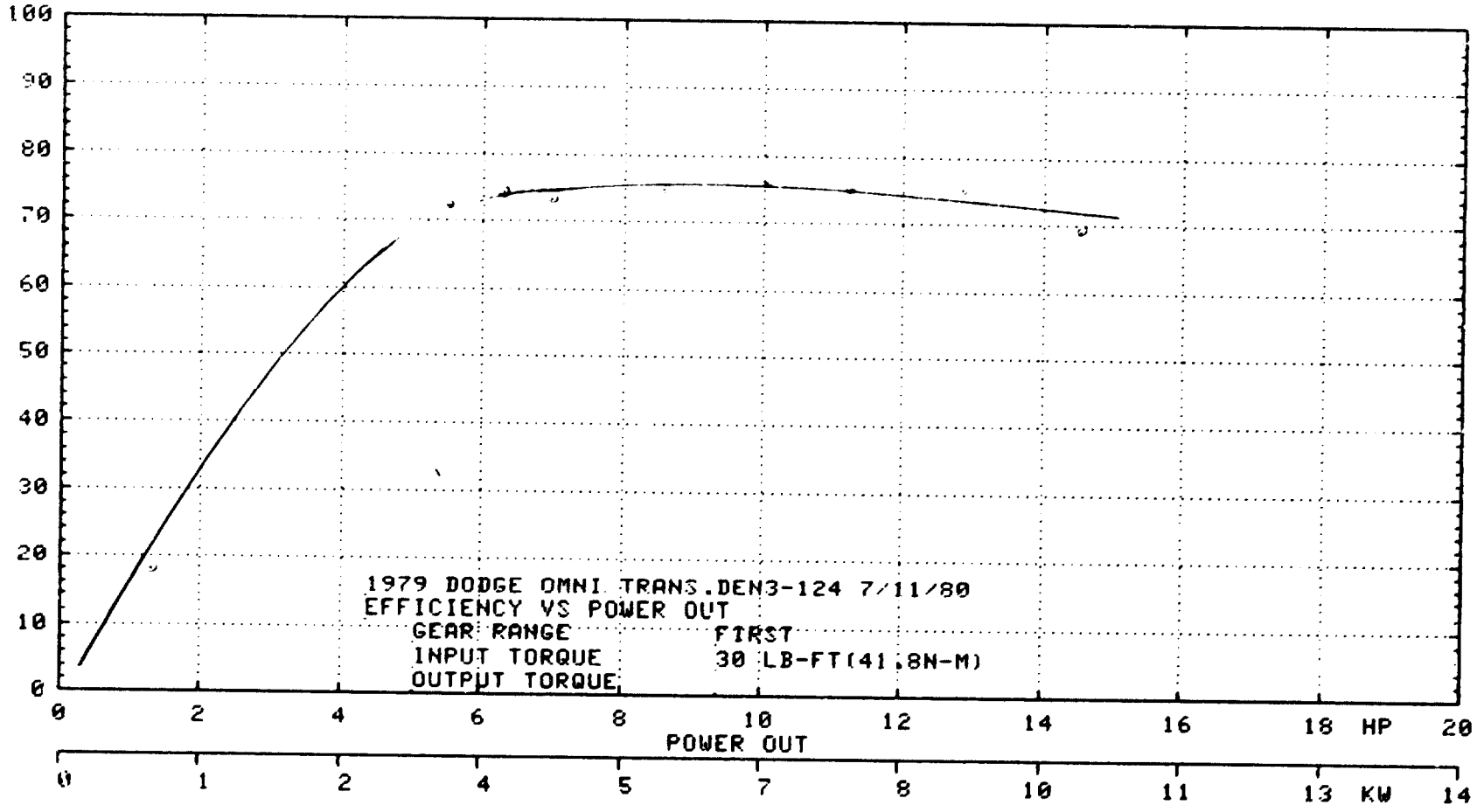
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE
POWER OUT
HP
KW
EFFICIENCY

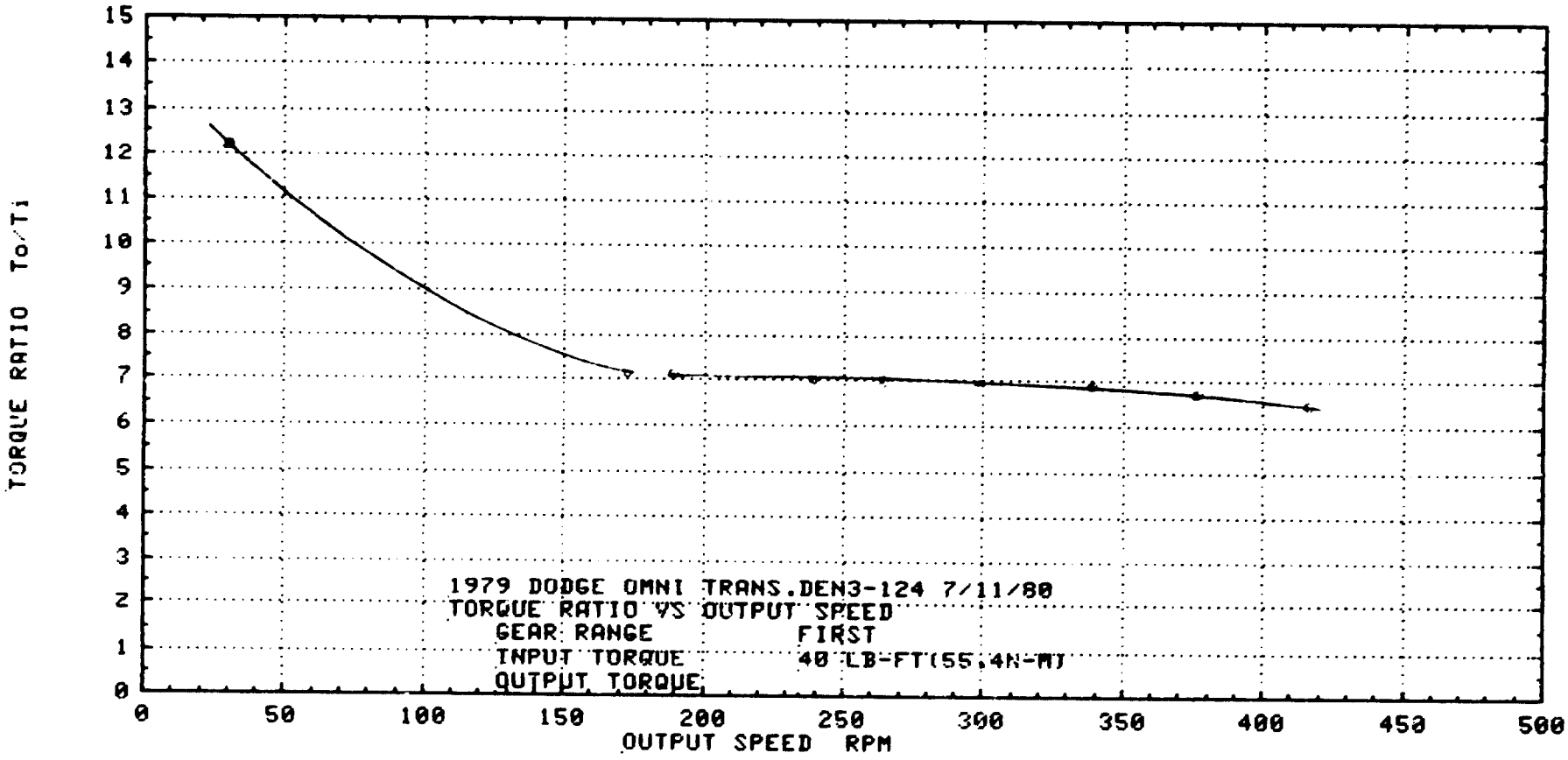

TORQUE RATIO To-Ti
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 30 LB-FT(41.8N-M)
OUTPUT TORQUE

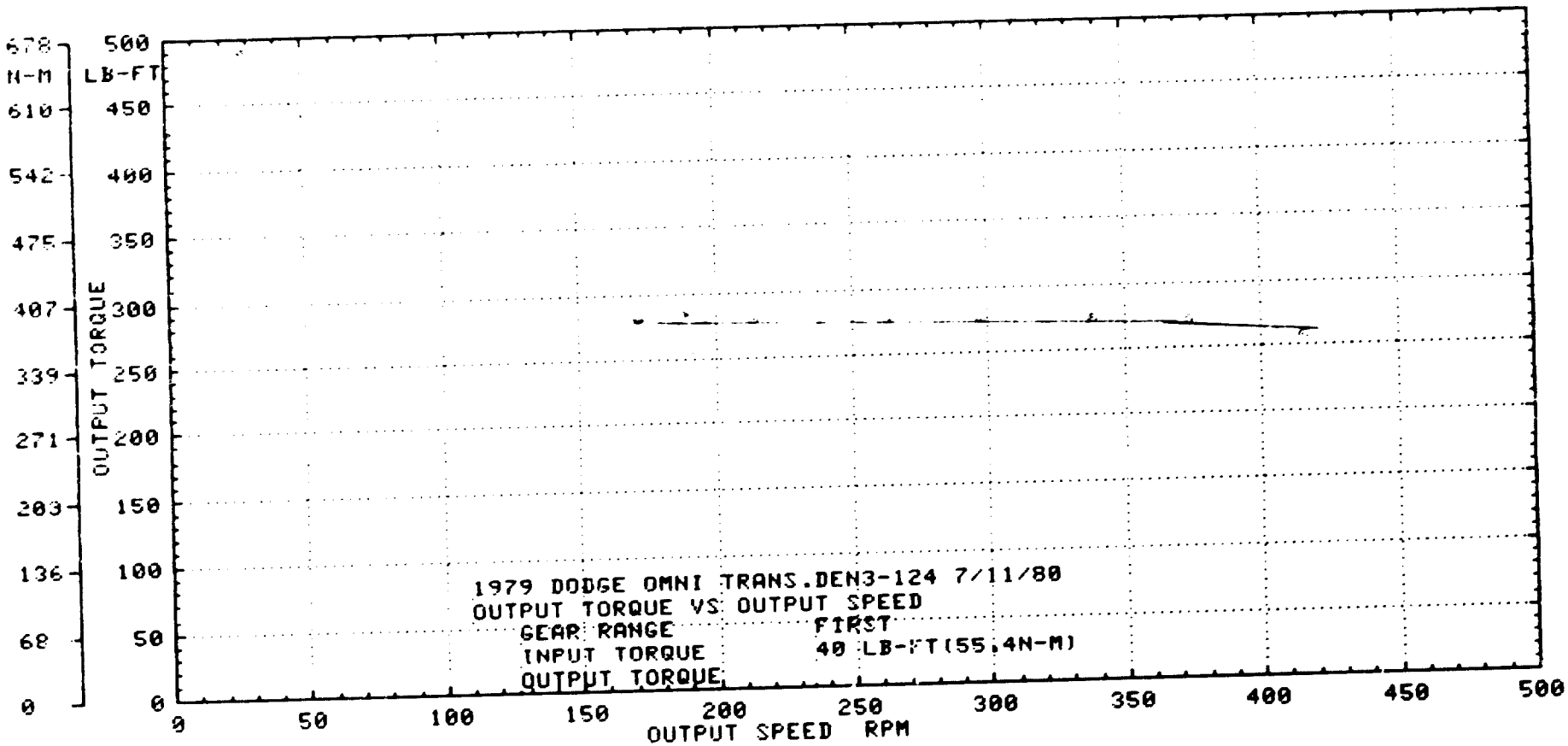

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 30 LB-FT(41.6N-M)
OUTPUT TORQUE
OUTPUT TORQUE
LB-FT
N-M
OUTPUT SPEED RPM
0
50
100
150
200
250
300
350
400
450
500
68
136
203
271
339
407
475
542
610
678

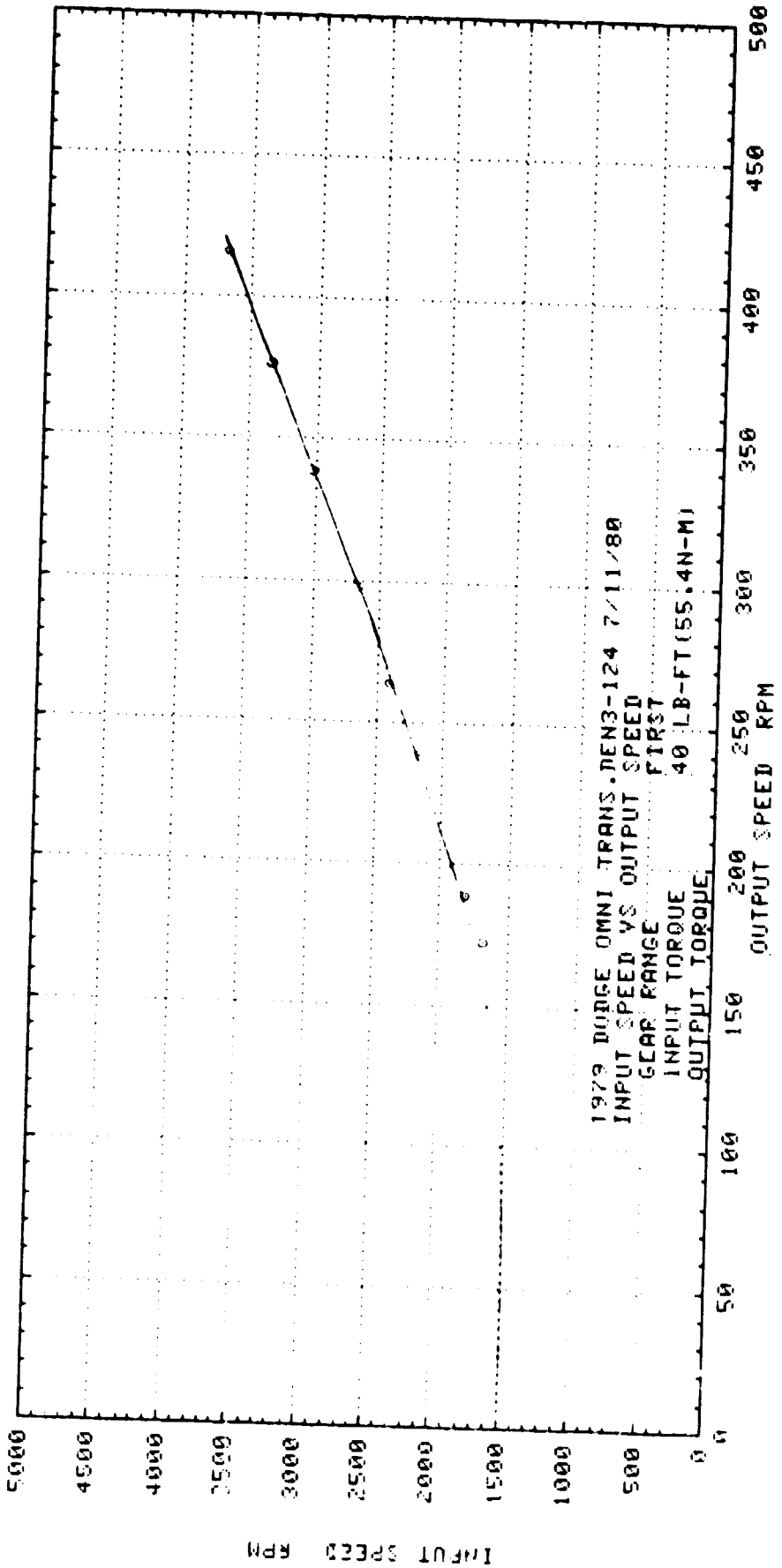

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 30 LB-FT(41.8N-M)
OUTPUT TORQUE

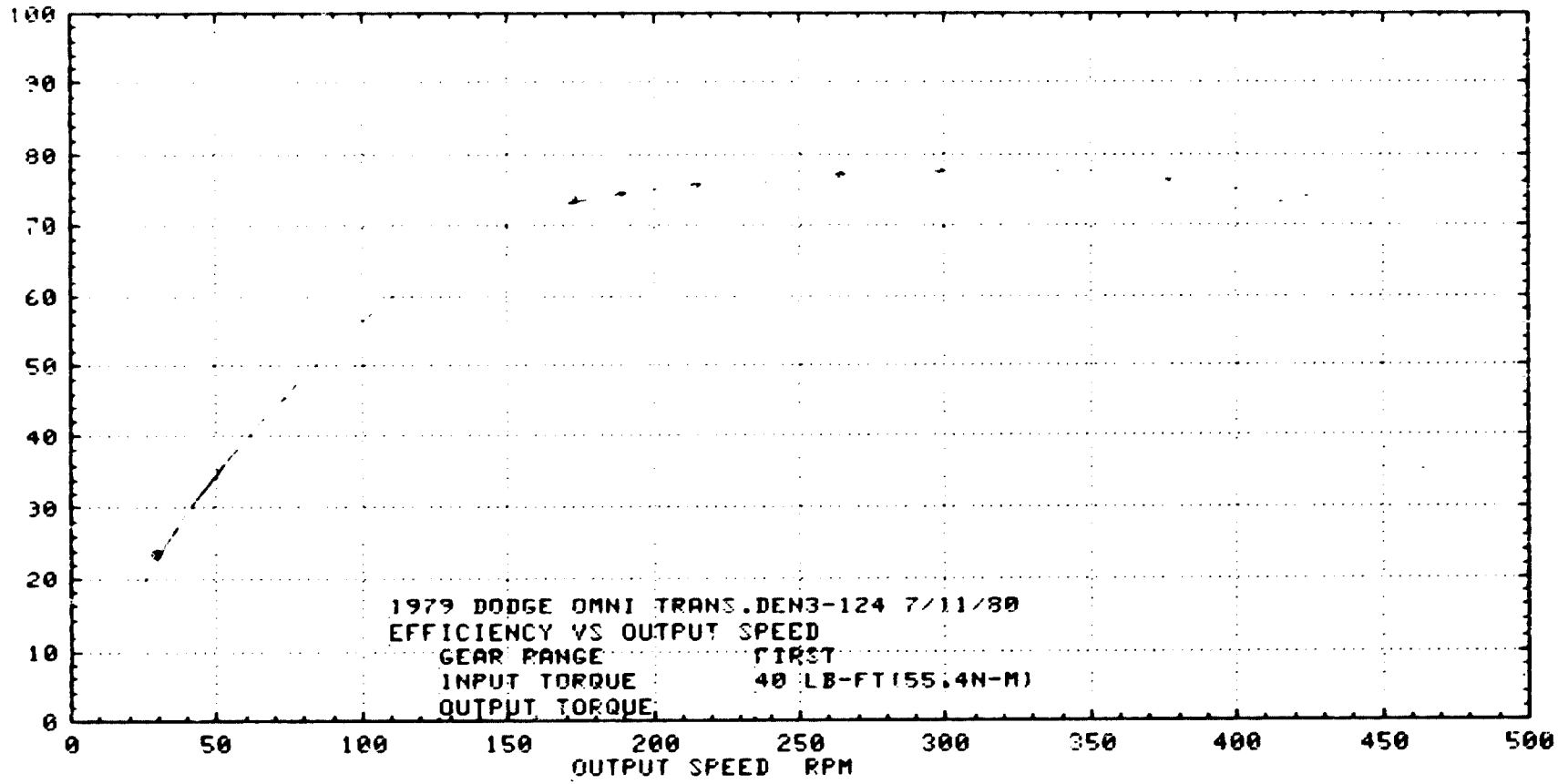

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 30 LB-FT(41.8N-M)
OUTPUT TORQUE

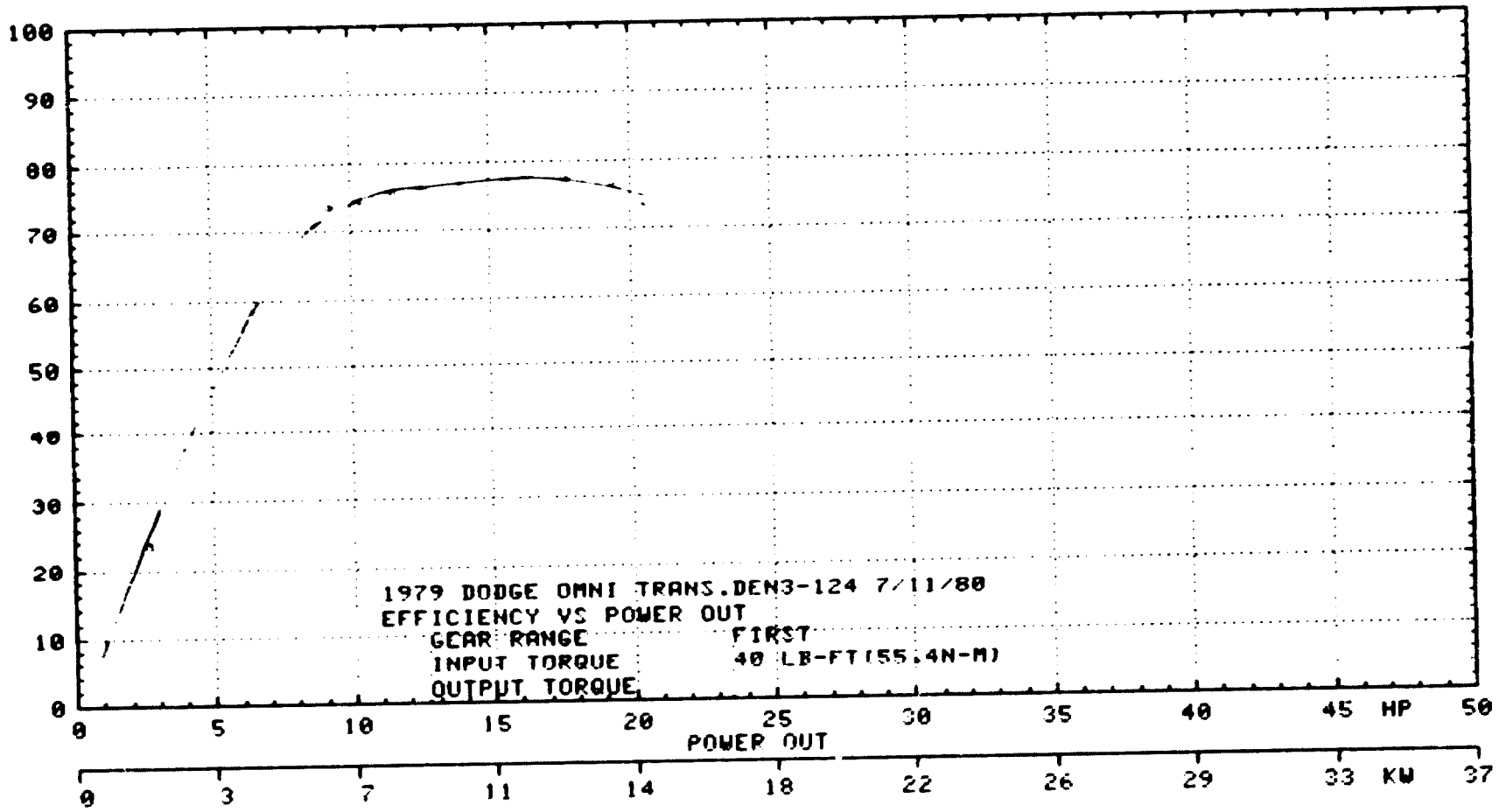

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 30 LB-FT(41.8N-M)
OUTPUT TORQUE
0 2 4 6 8 10 12 14 16 18 HP 20
POWER OUT
0 1 2 4 5 7 8 10 11 13 KW 14

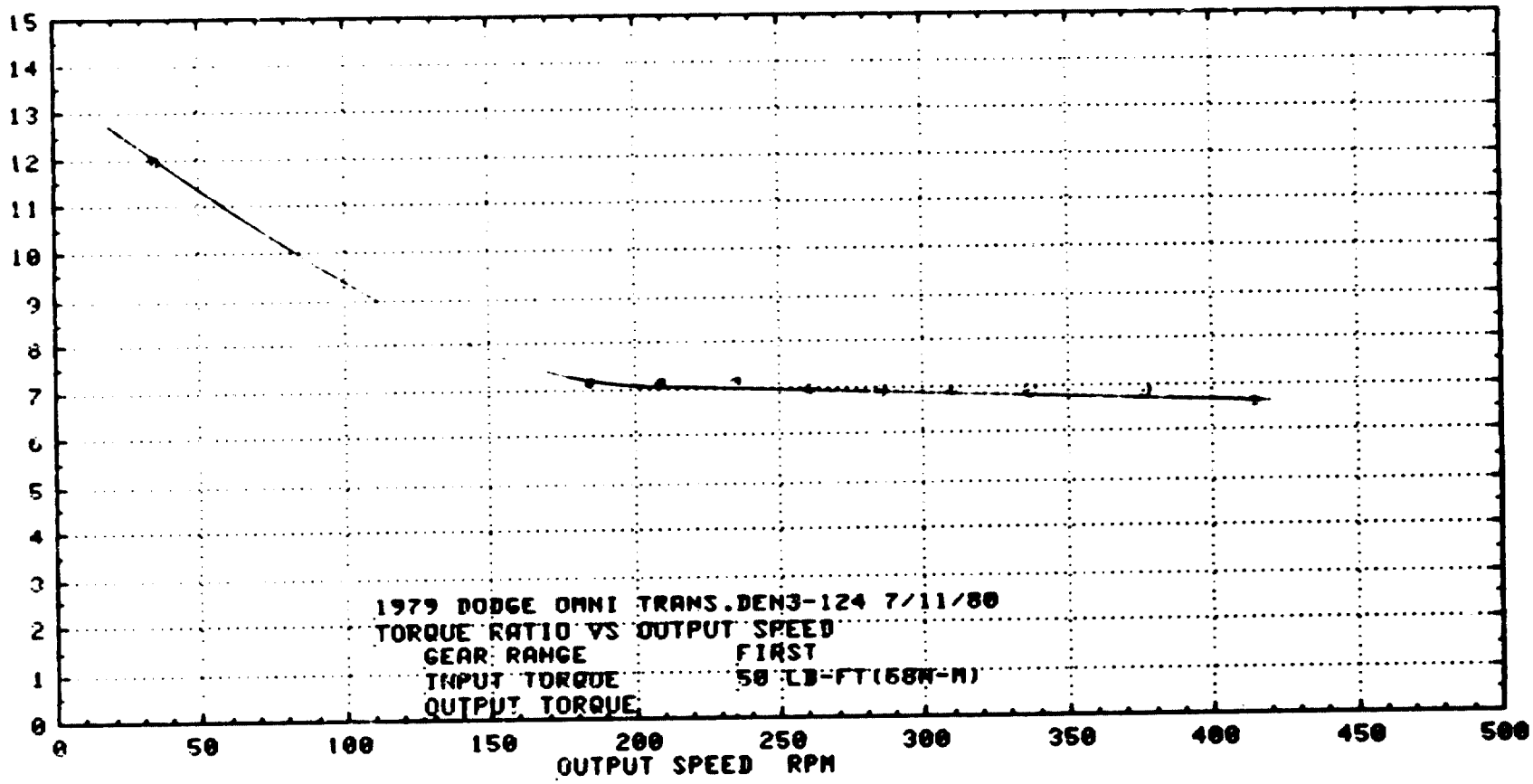

TORQUE RATIO To/Ti
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 40 LB-FT(55.4N-M)
OUTPUT TORQUE

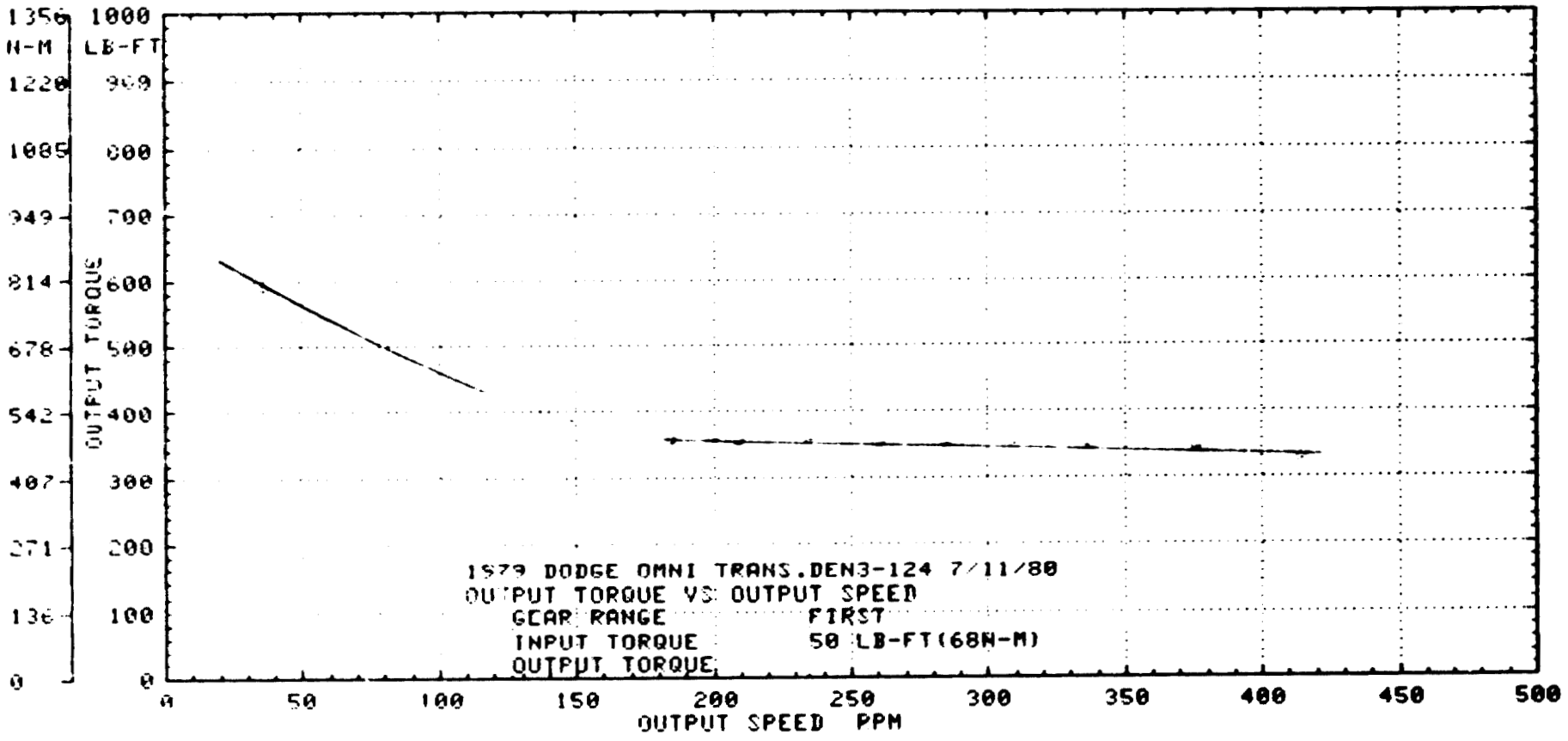

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 40 LB-FT(55.4N-M)
OUTPUT TORQUE
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM

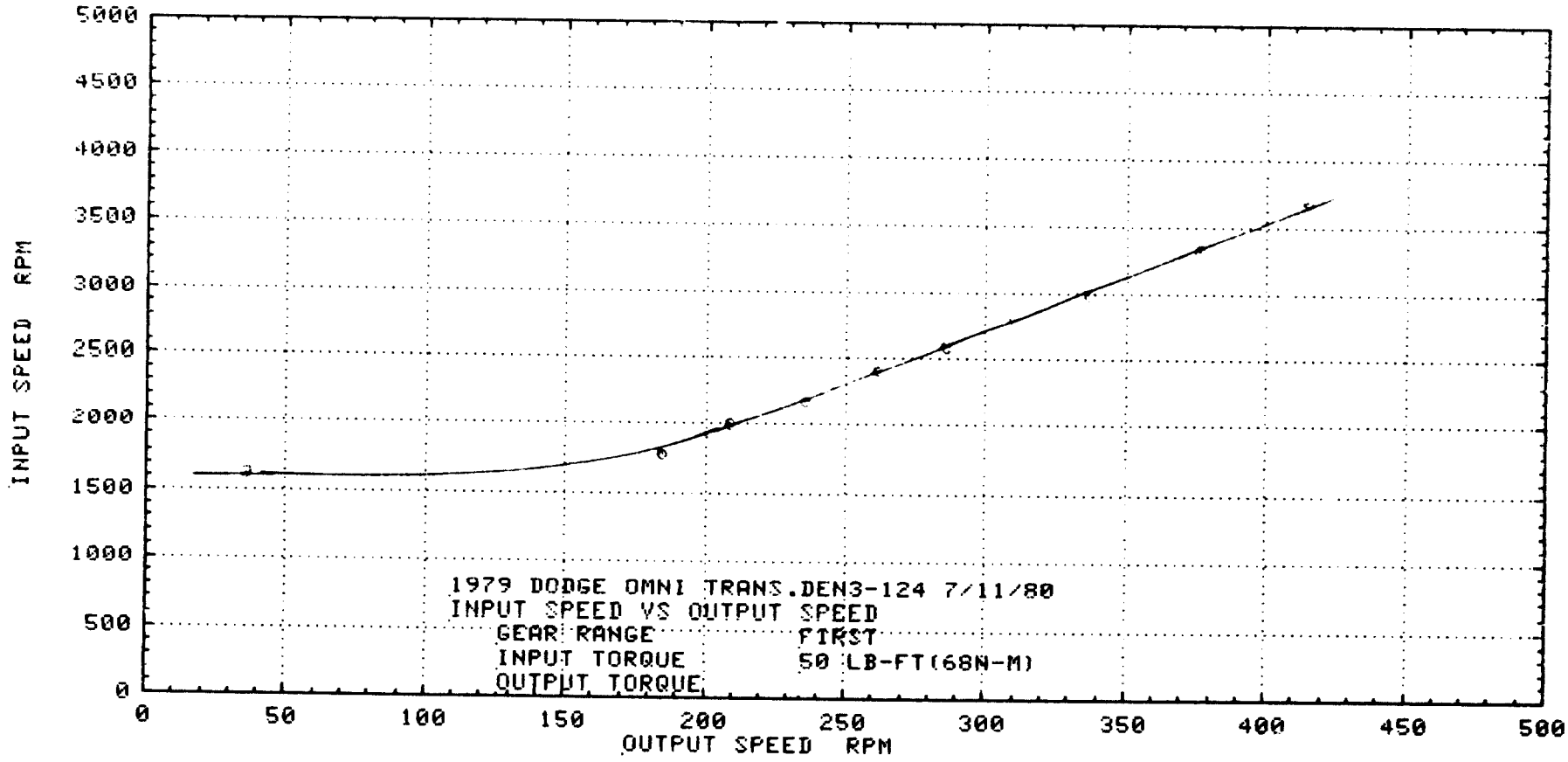

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 40 LB-FT(55.4N-M)
OUTPUT TORQUE
INPUT SPEED RPM
OUTPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 40 LB-FT(55.4N-M)
OUTPUT TORQUE

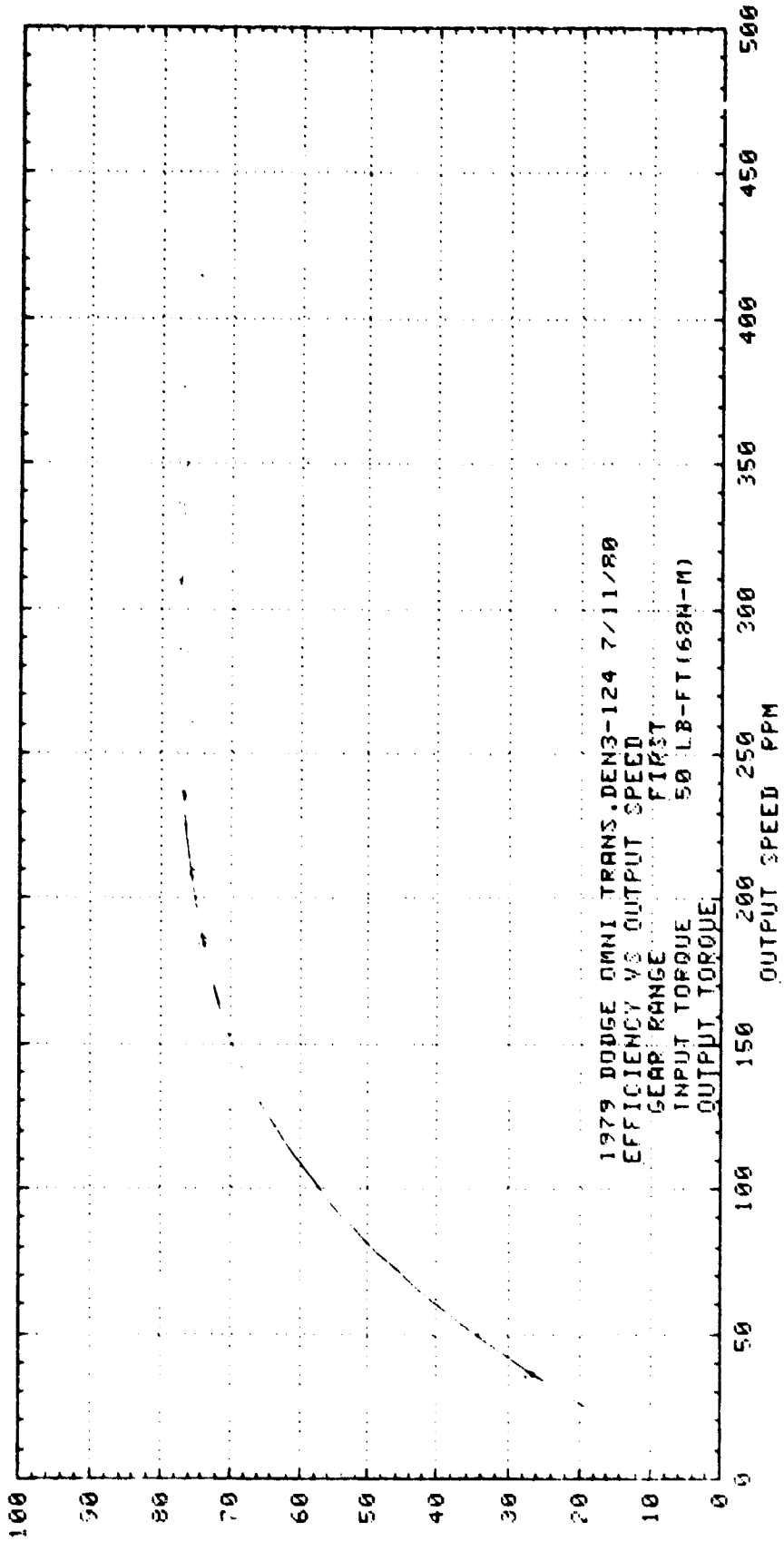

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 40 LB-FT(55.4N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

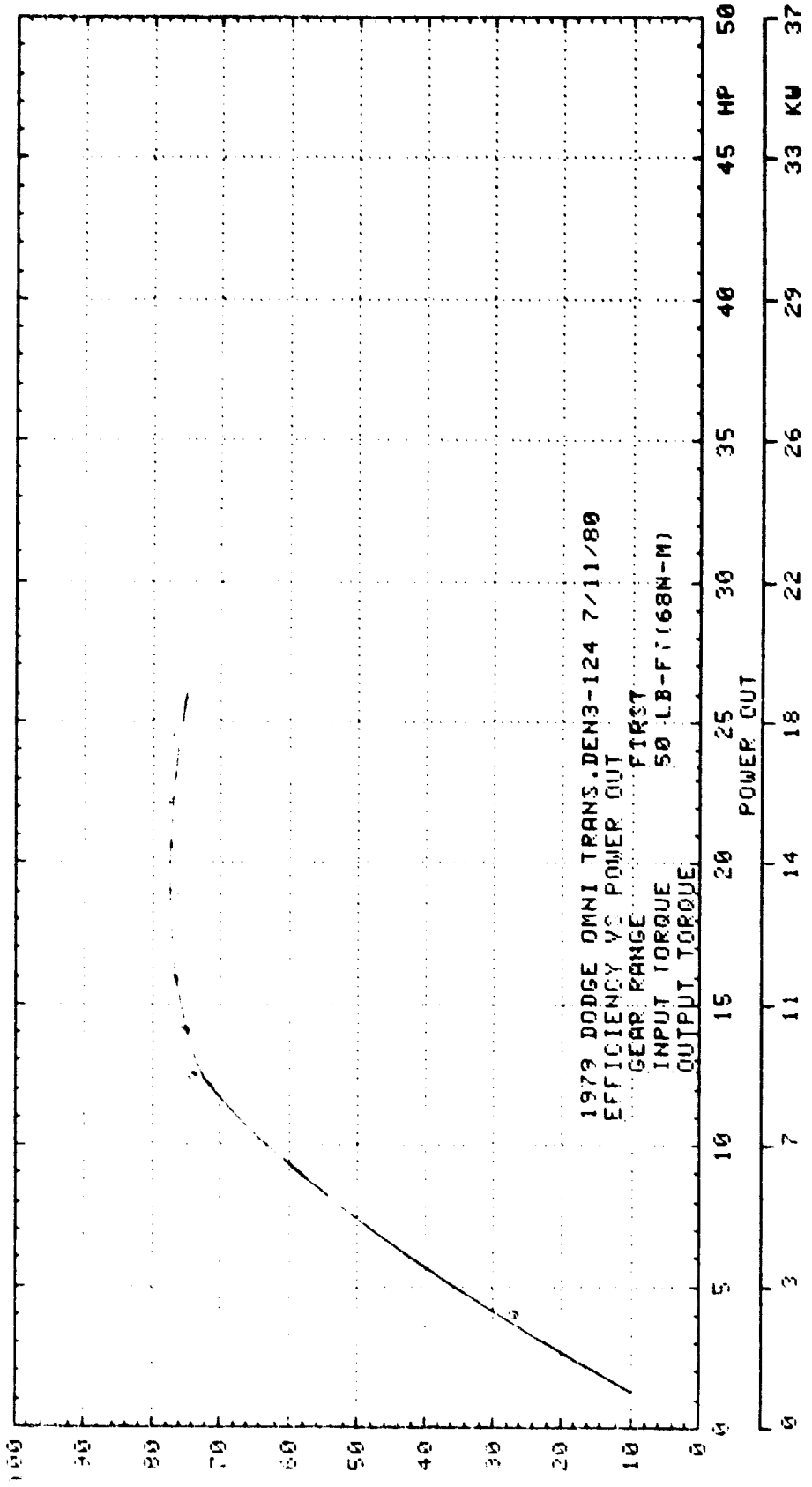

TORQUE RATIO
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE

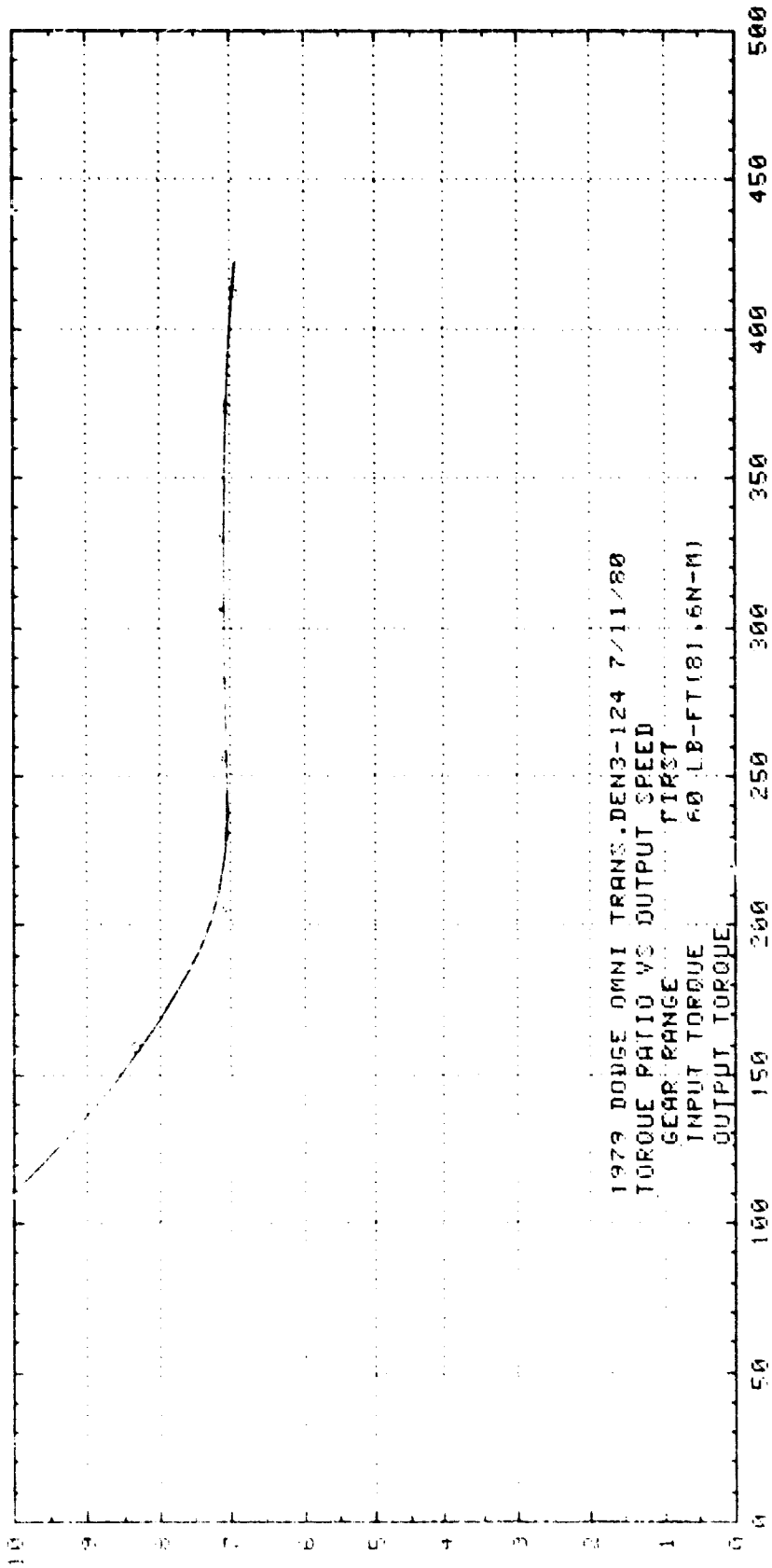

1356 1000
N-M LB-FT
1220 900
1085 800
949 700
814 600
678 500
542 400
407 300
271 200
136 100
0 0
OUTPUT TORQUE
0 50 100 150 200 250 300 350 400 450 500
OUTPUT SPEED PPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE

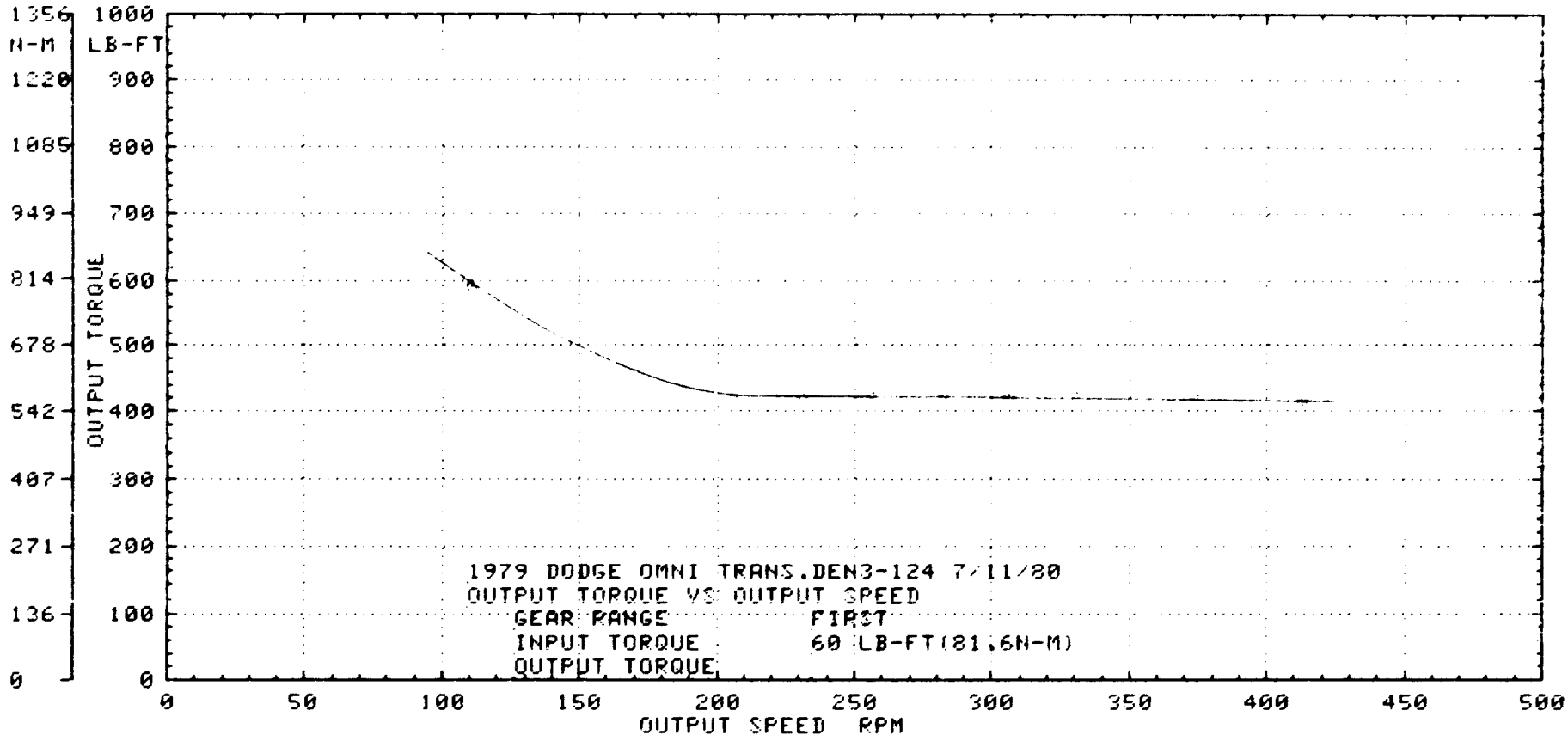

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE

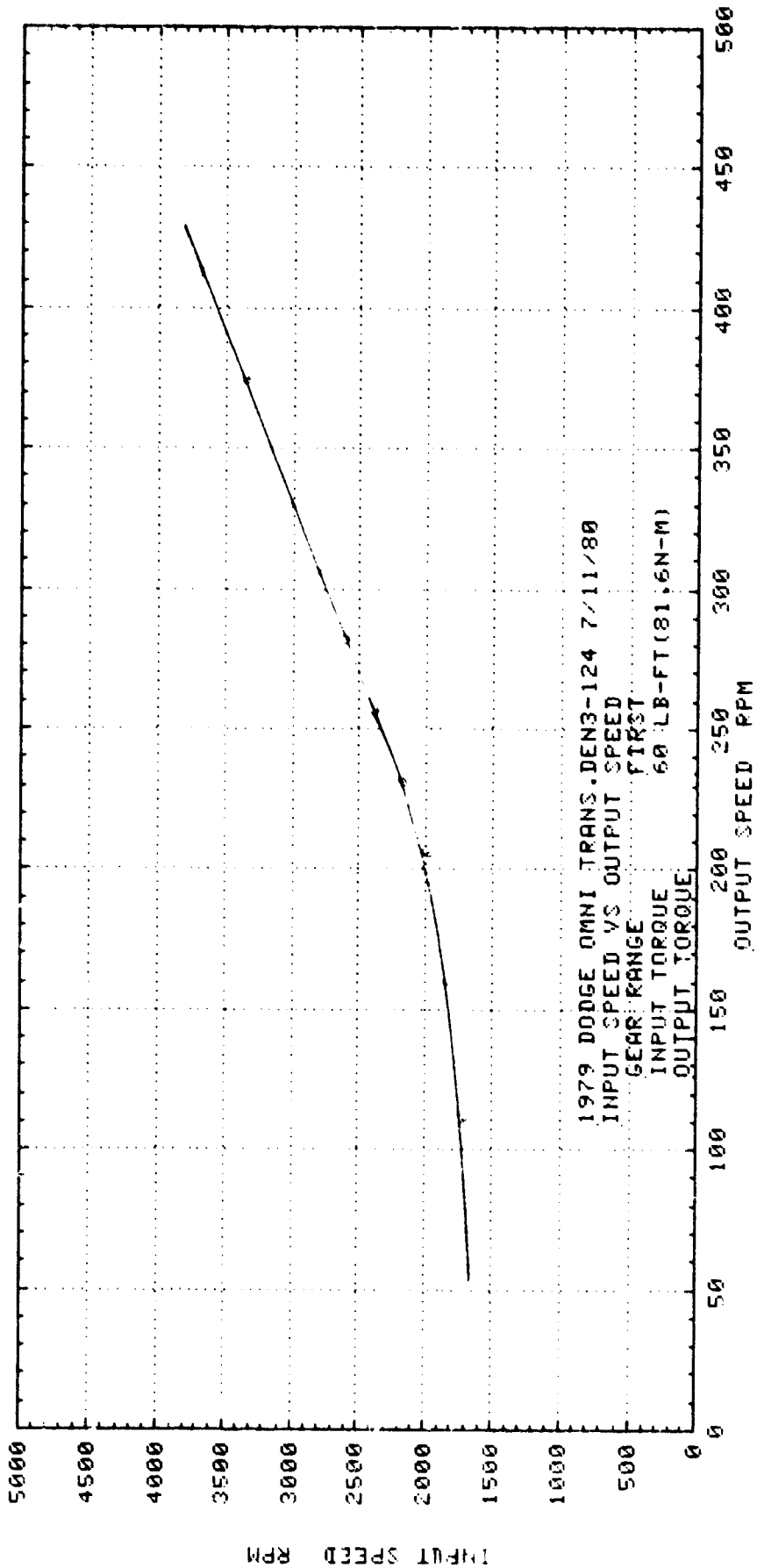
SI

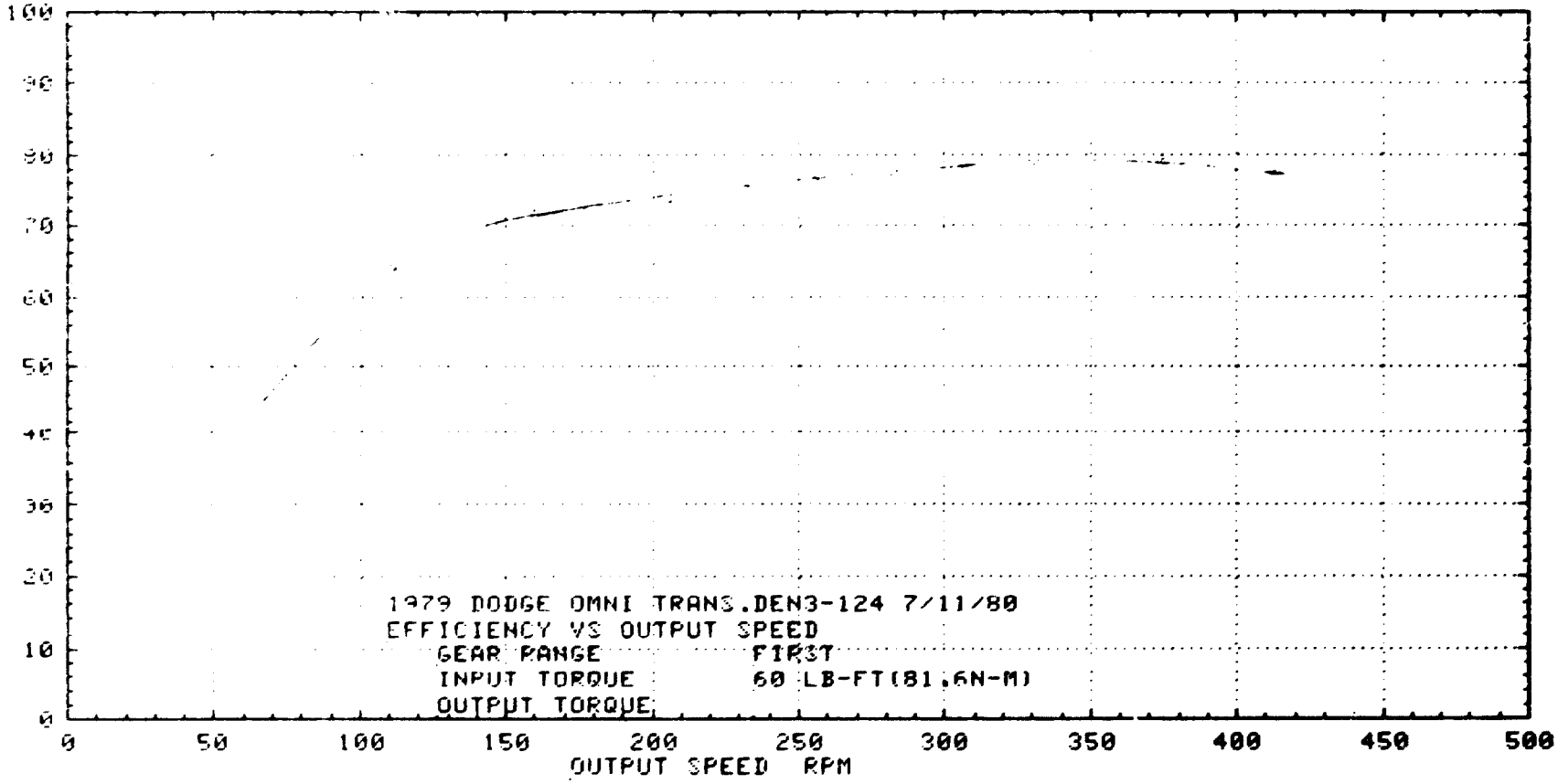

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE
EFFICIENCY %
OUTPUT SPEED RPM
0
10
20
30
40
50
60
70
80
90
100
0
50
100
150
200
250
300
350
400
450
500

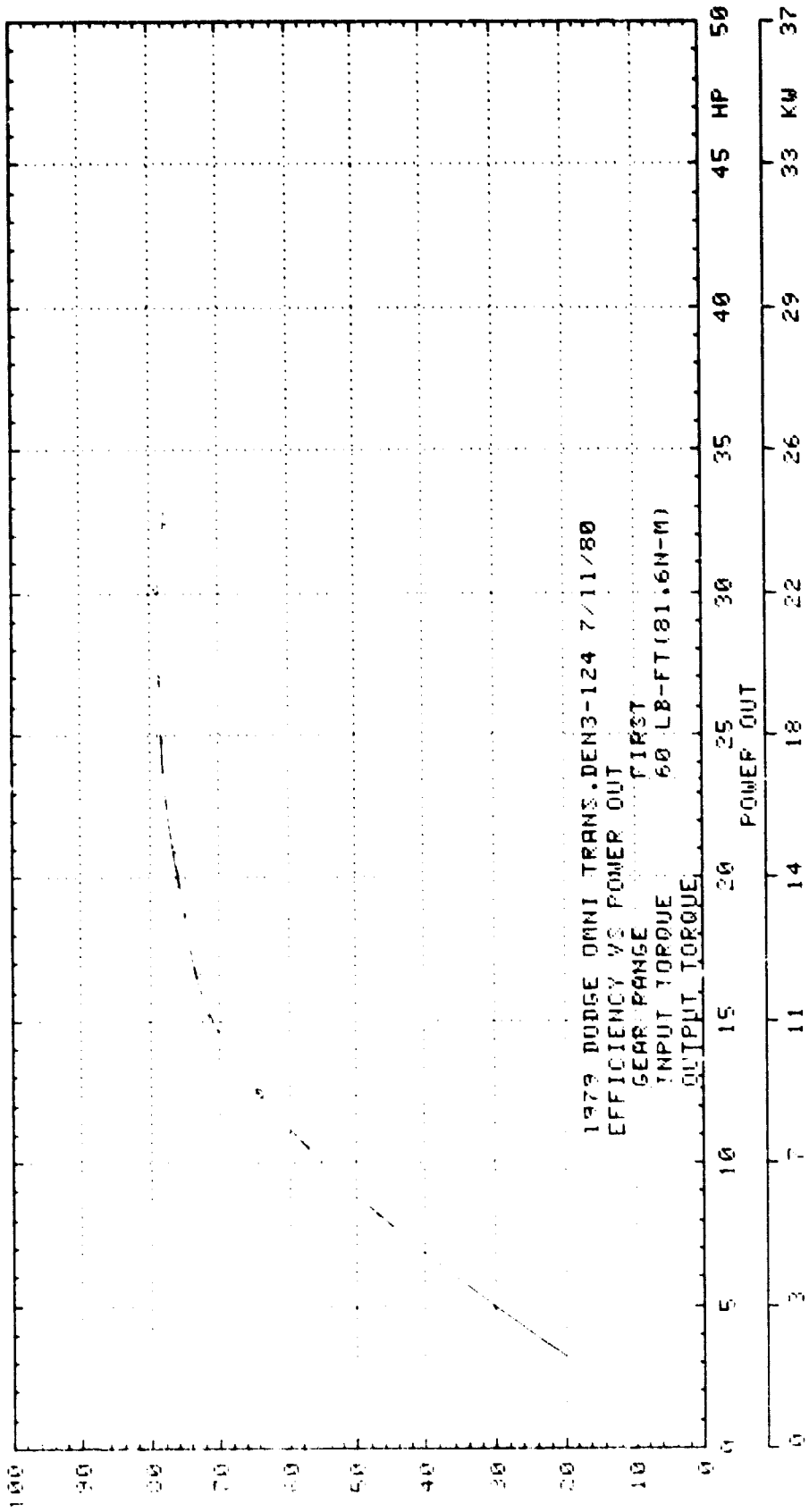

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE
POWER OUT
HP
KW
EFFICIENCY %


1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
TORQUE RATIO To T1

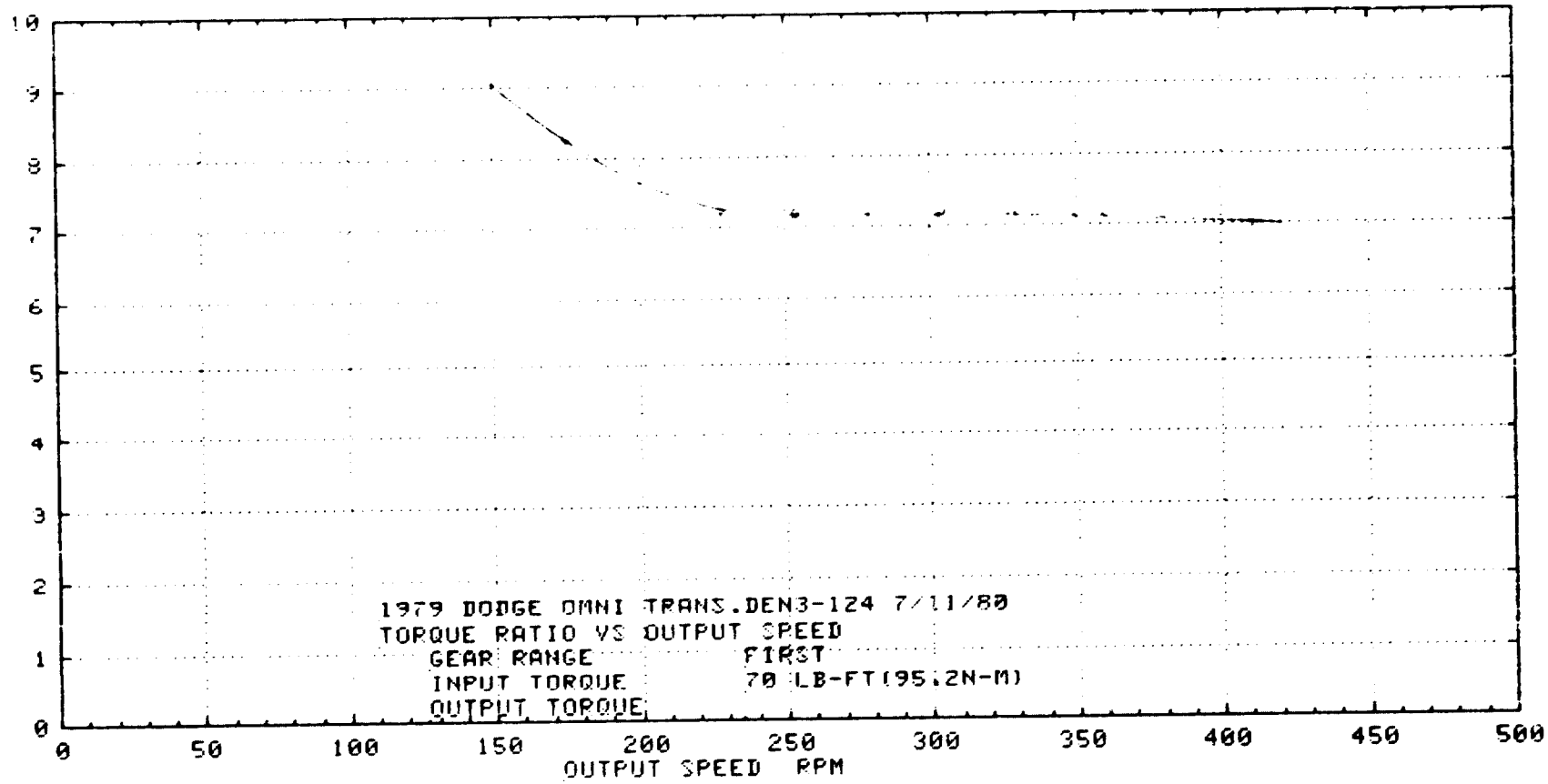

1356 1000
N-M LB-FT
1220 900
1085 800
949 700
814 600
678 500
542 400
407 300
271 200
136 100
0 0
OUTPUT TORQUE
0 50 100 150 200 250 300 350 400 450 500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE

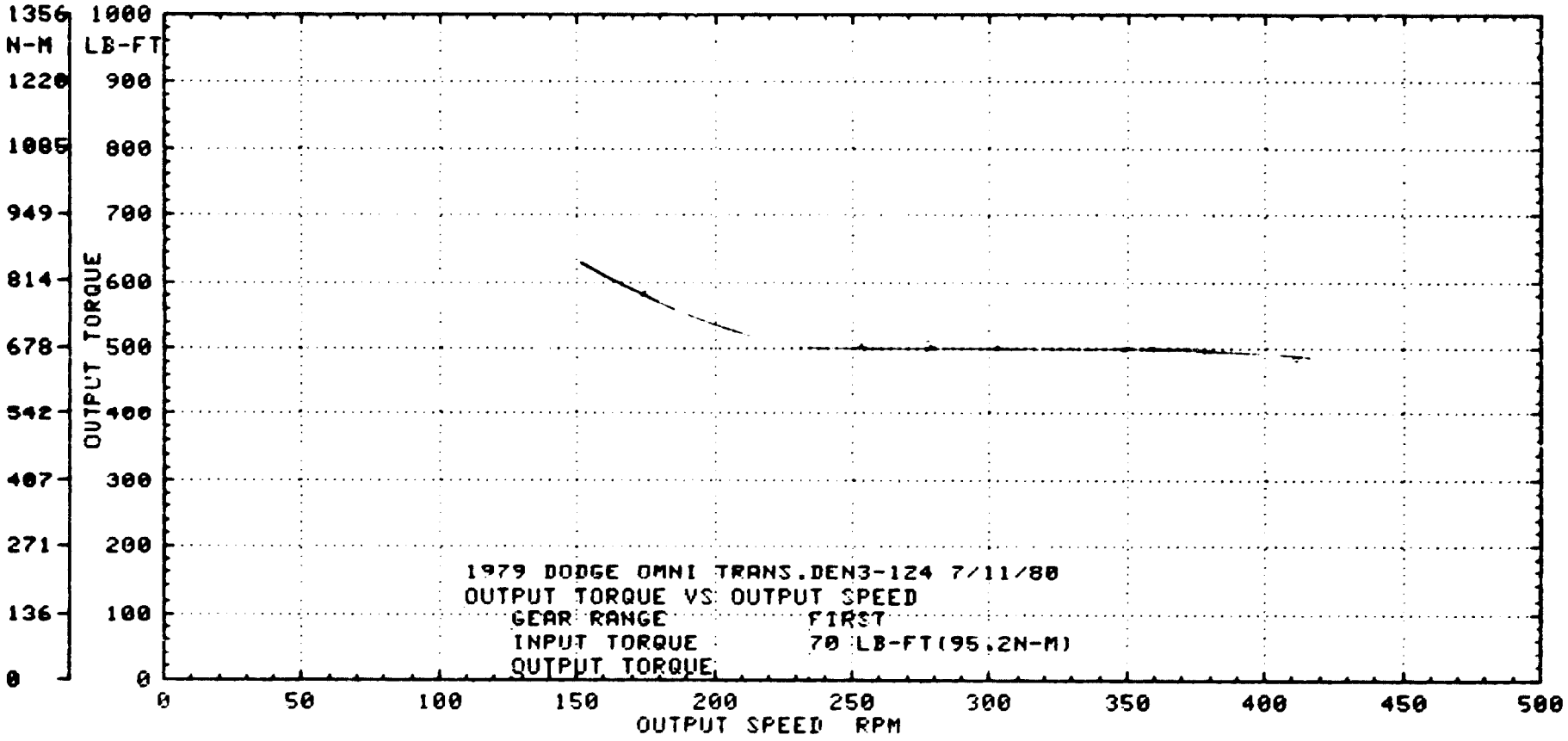

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE
INPUT SPEED RPM
OUTPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500

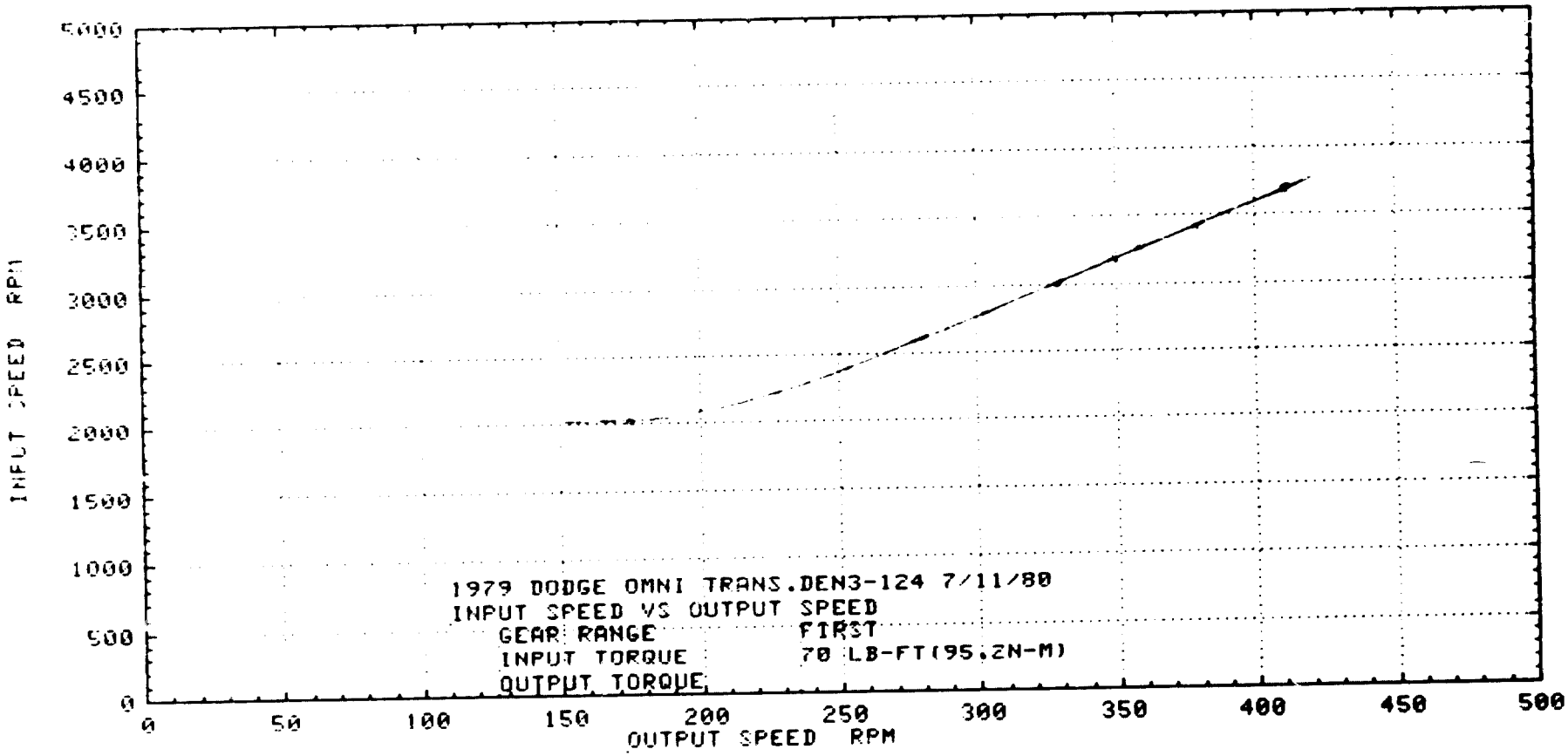

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE



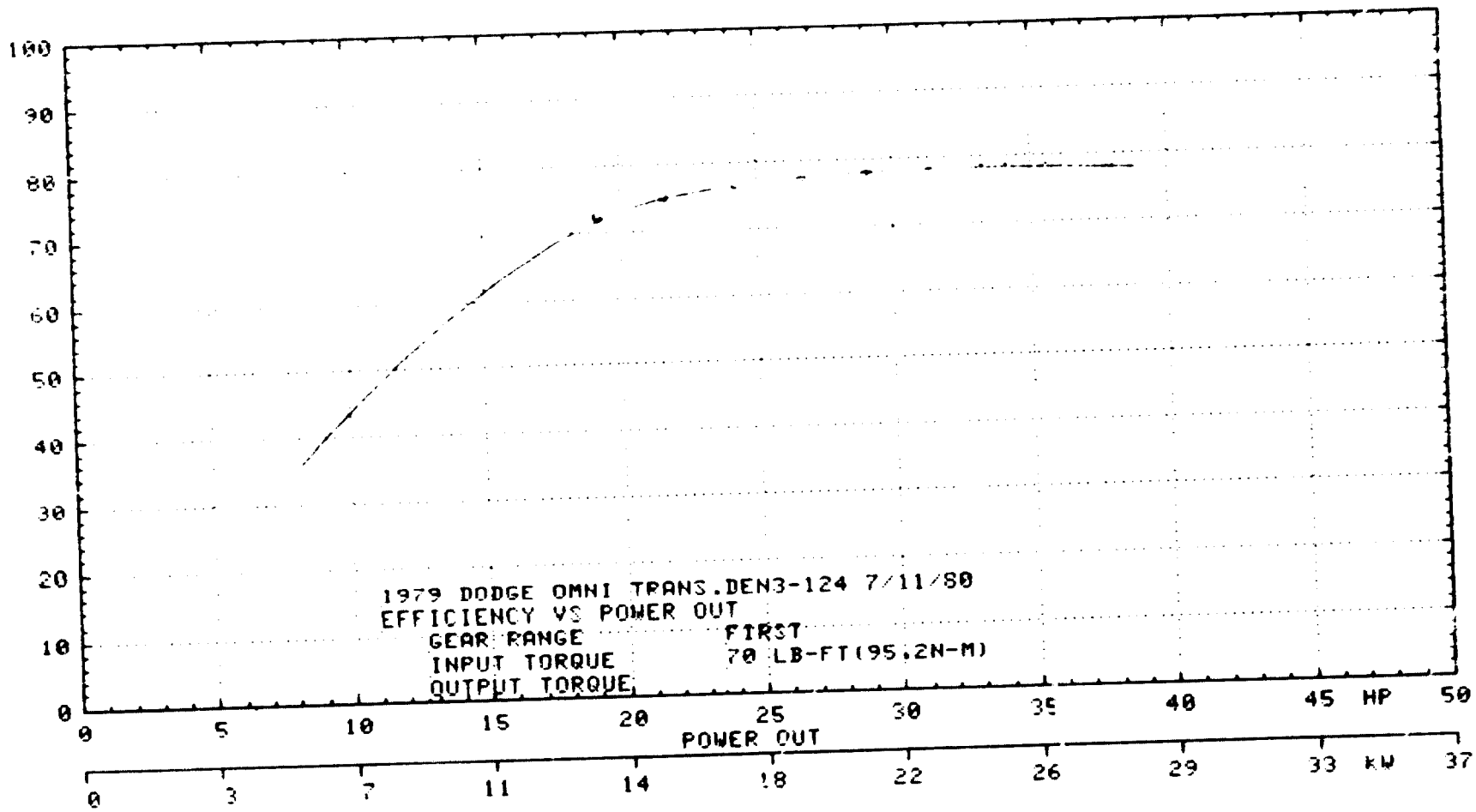
ORIGINAL PAGE IS
OF POOR QUALITY


TORQUE RATIO To Ti
10
9
8
7
6
5
4
3
2
1
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM

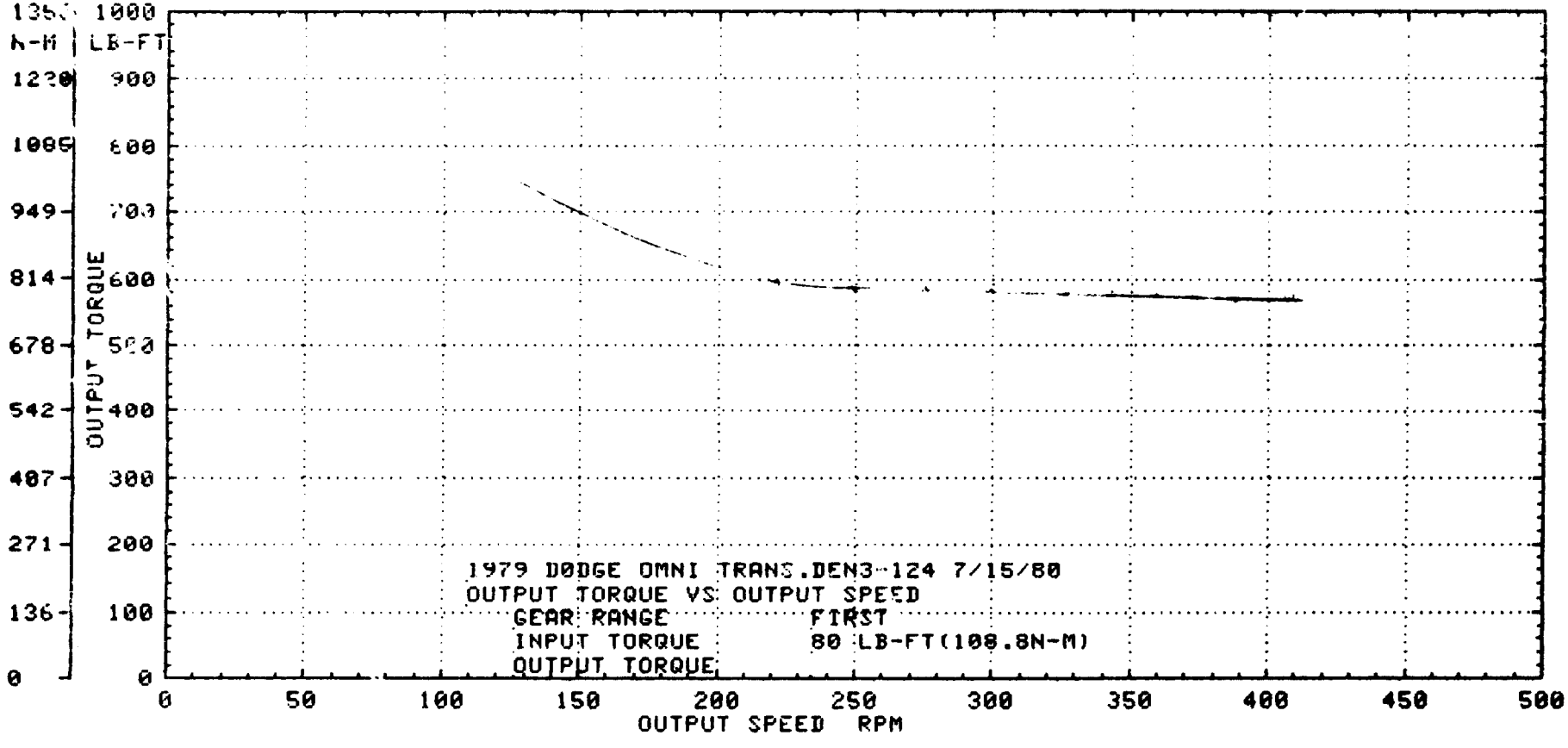

1356 N-M
1220
1085
949
814
678
542
407
271
136
0
1000 LB-FT
900
800
700
600
500
400
300
200
100
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
0 50 100 150 200 250 300 350 400 450 500
OUTPUT SPEED RPM

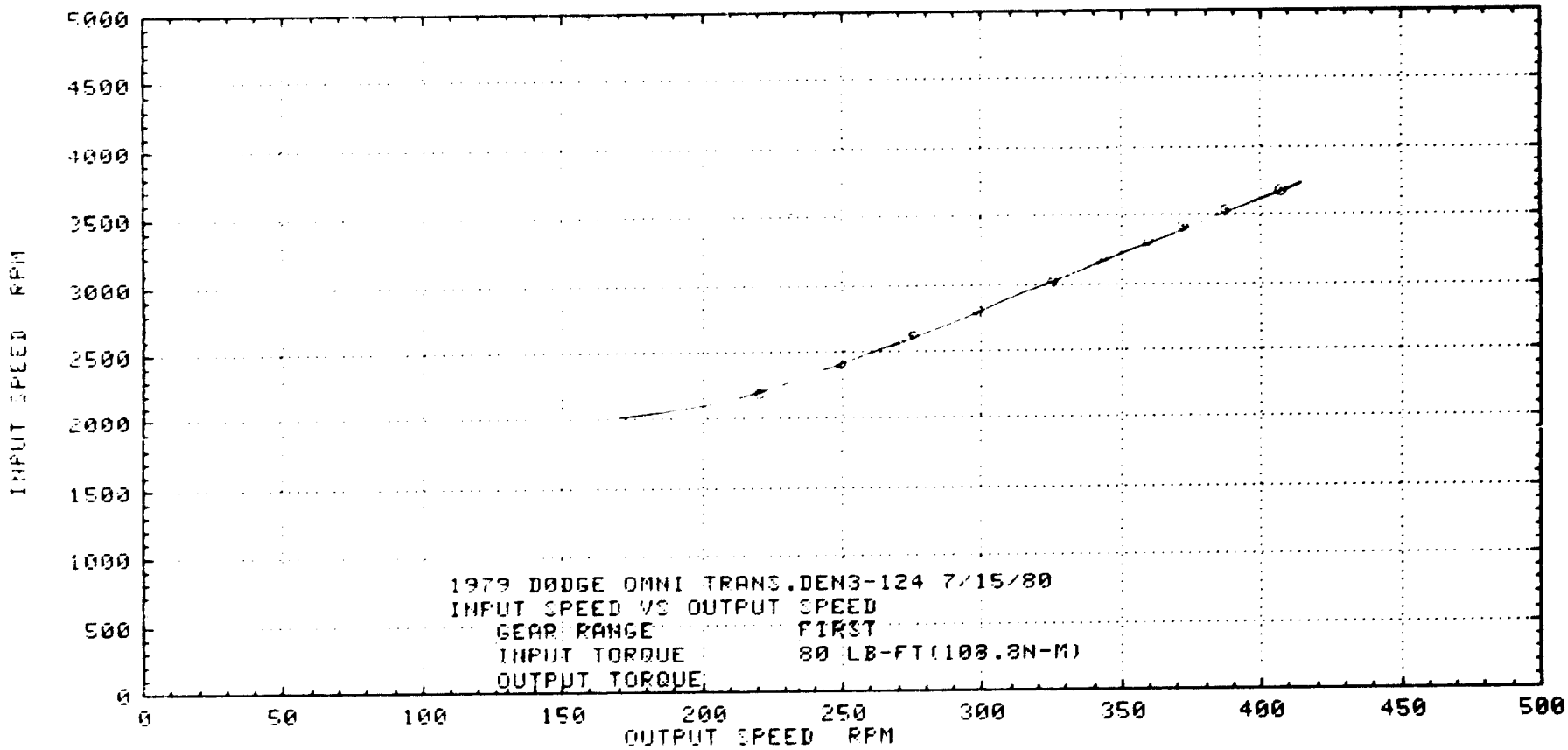

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE

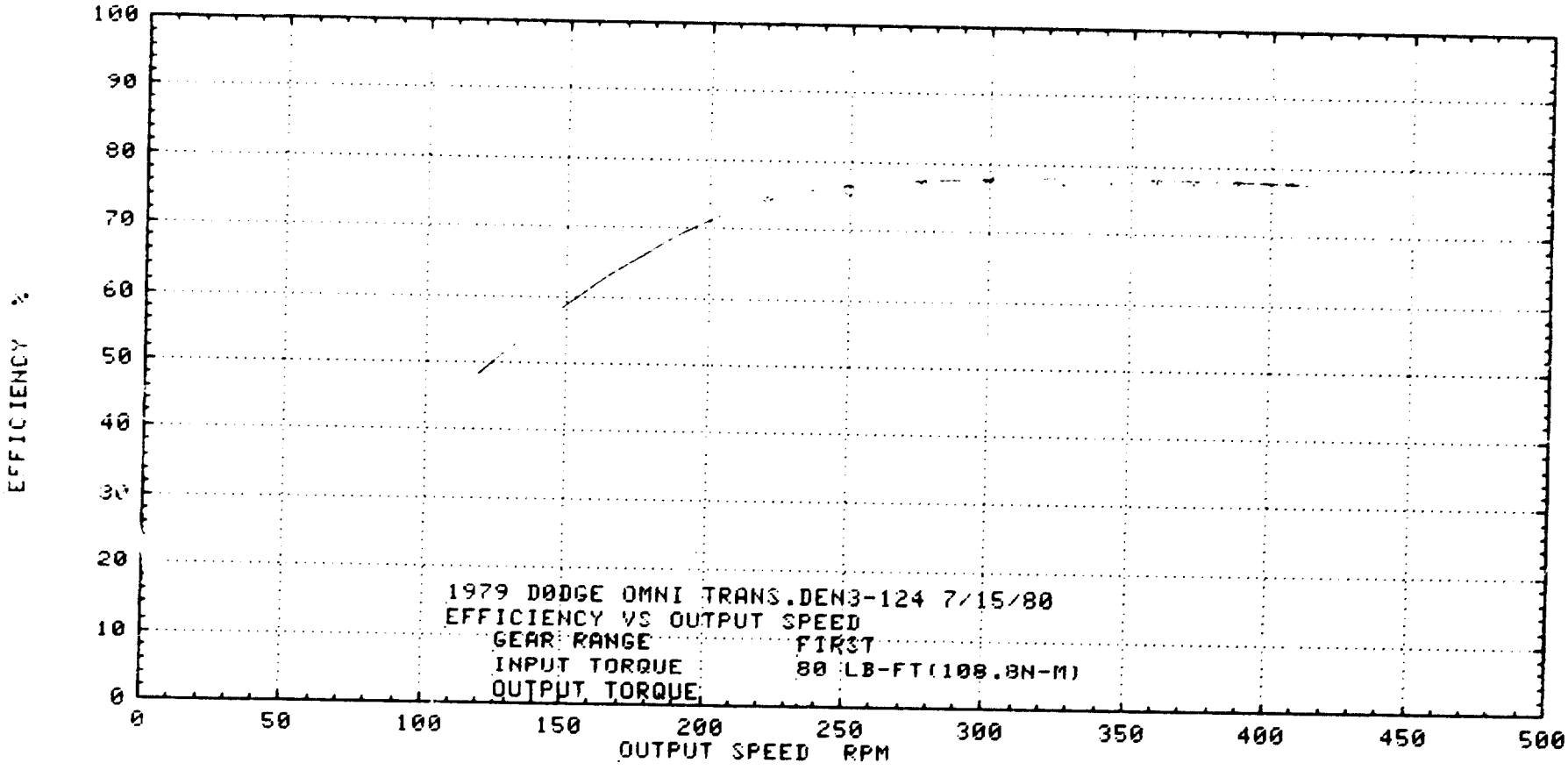
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
EFFICIENCY %
OUTPUT SPEED RPM
0
10
20
30
40
50
60
70
80
90
100
0
50
100
150
200
250
300
350
400
450
500

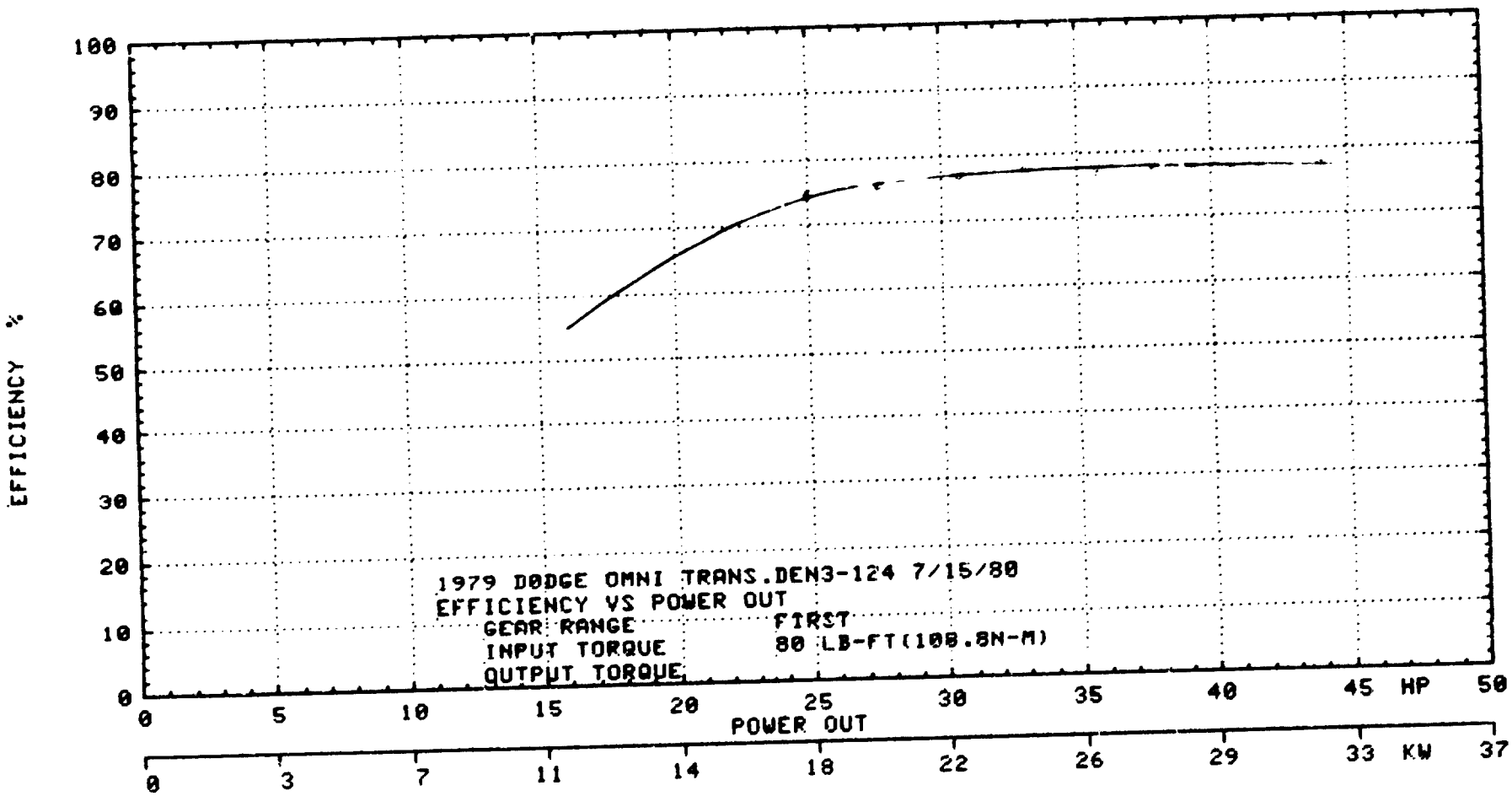

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 kW 37

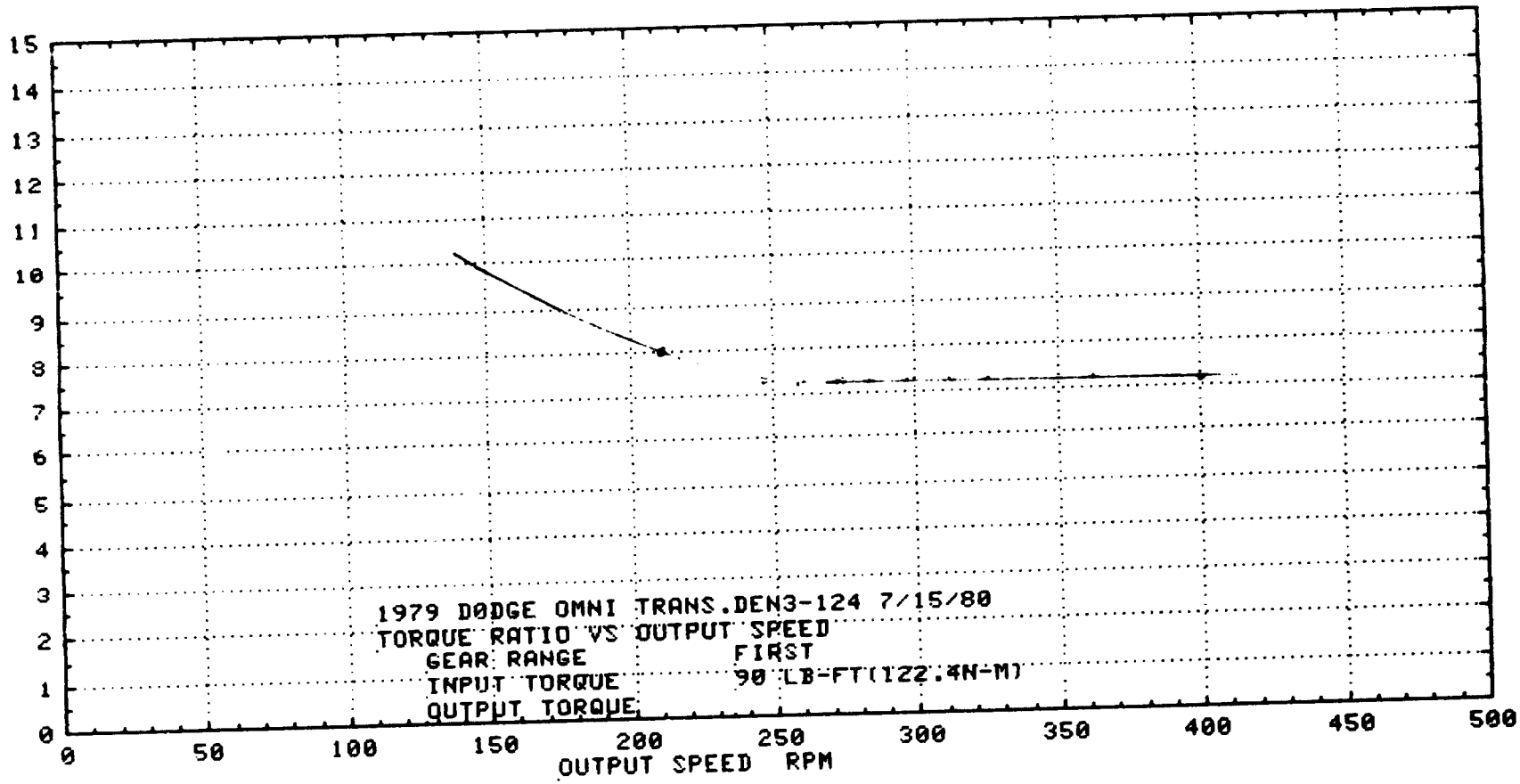
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE
TORQUE RATIO TO 1
OUTPUT SPEED RPM
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
50
100
150
200
250
300
350
400
450
500

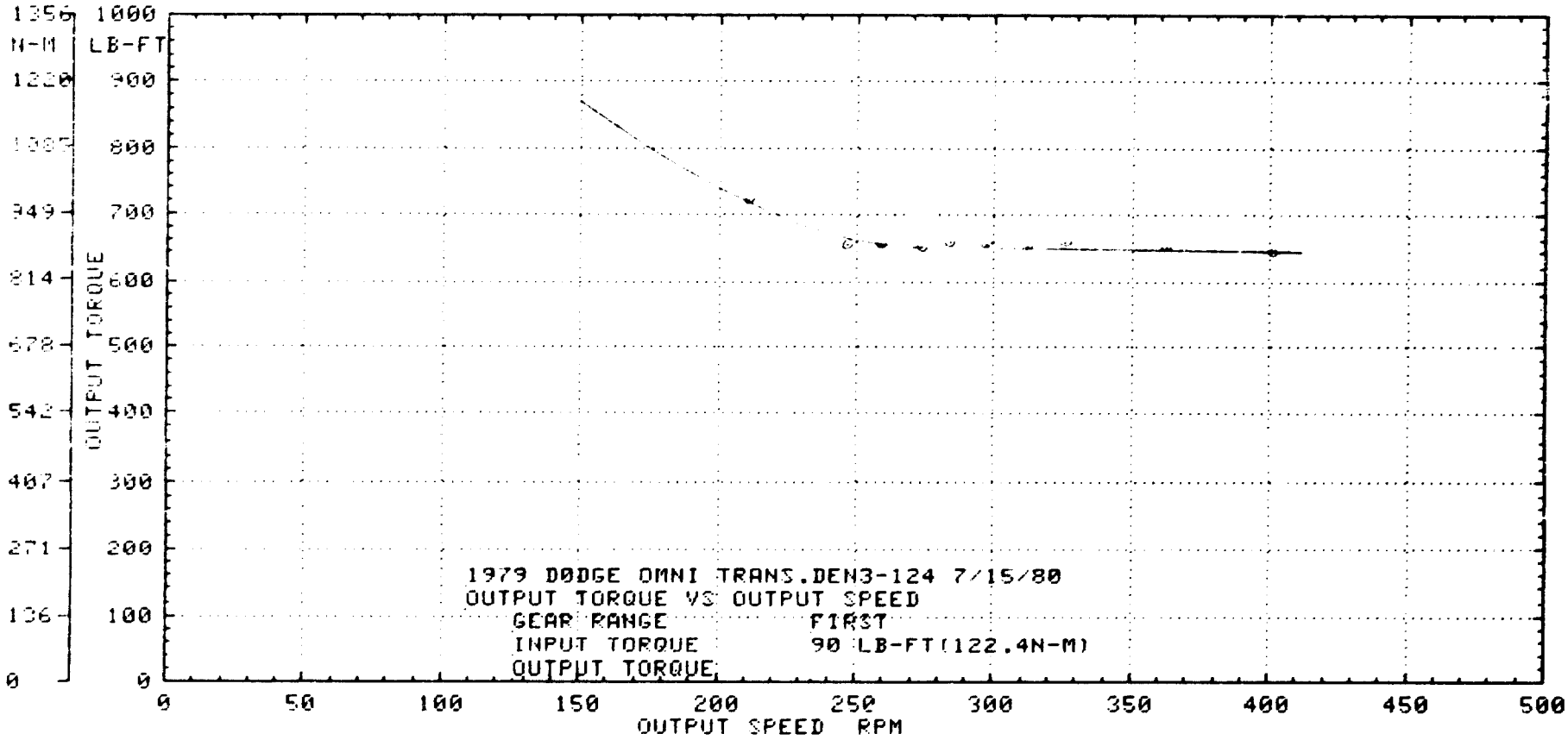

N-M
LB-FT
OUTPUT TORQUE
1356
1220
1085
949
814
678
542
407
271
136
0
1000
900
800
700
600
500
400
300
200
100
0
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM


INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE

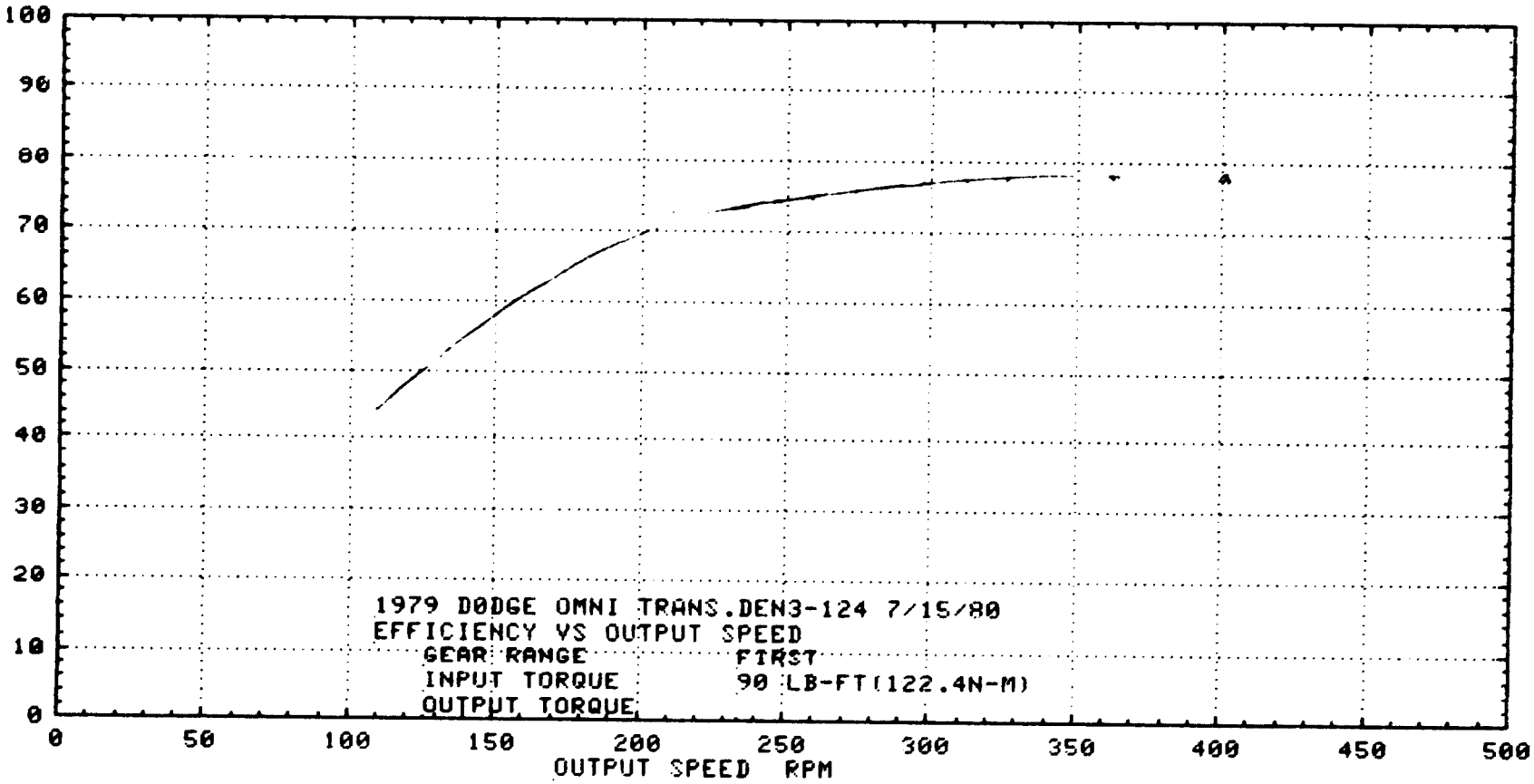

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE

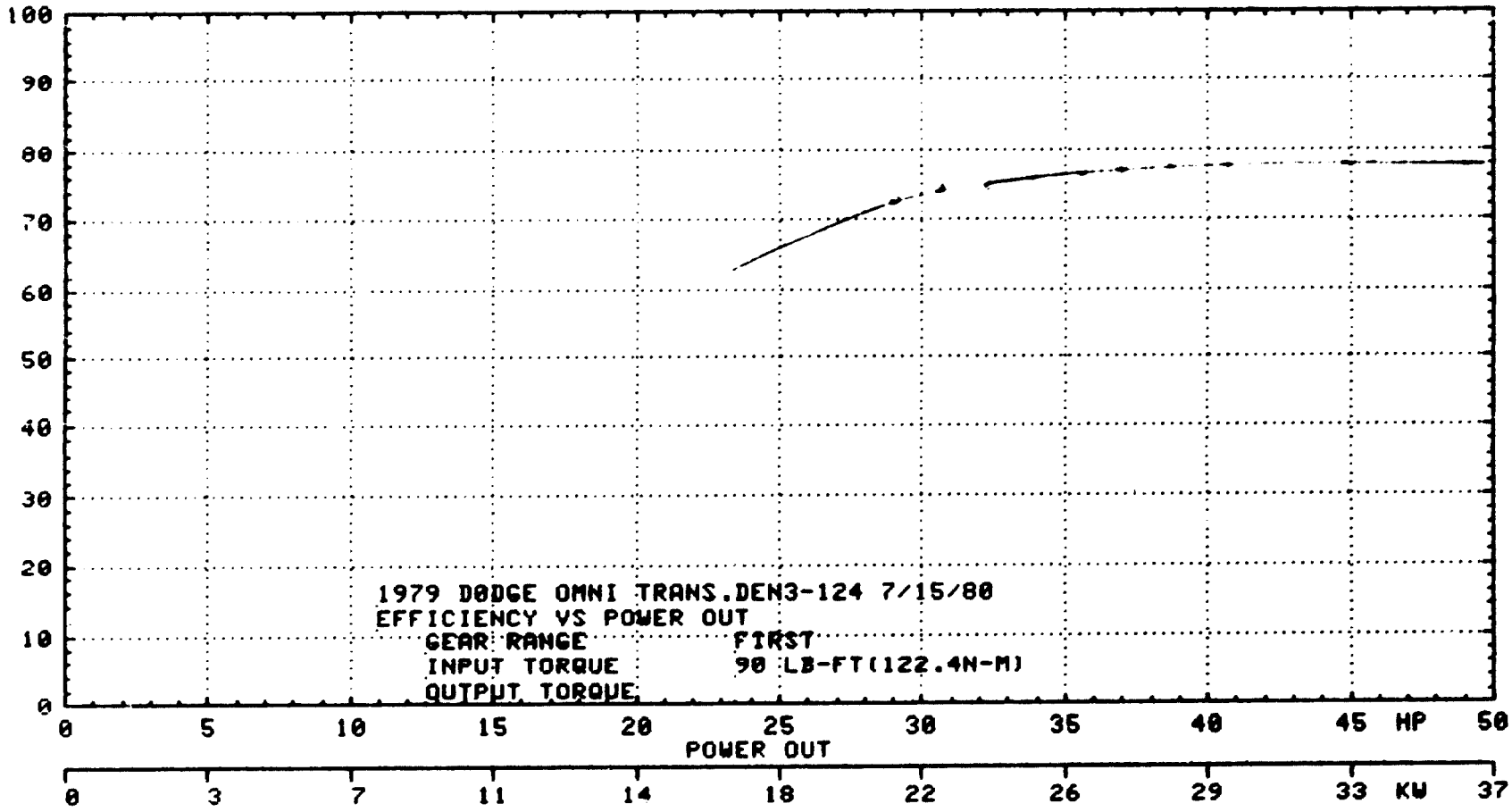

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37


TORQUE RATIO To/Ti
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE


1356
N-M
1220
1085
949
814
678
542
407
271
136
0
1000
LB-FT
900
800
700
600
500
400
300
200
100
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM

1979 DODGE OMNI TRANS.DEN3-124 7/15/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE
INPUT SPEED RPM
OUTPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
50
100
150
200
250
300
350
400
450
500


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
50
100
150
200
250
300
350
400
450
500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/15/80
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

DRIVE PERFORMANCE

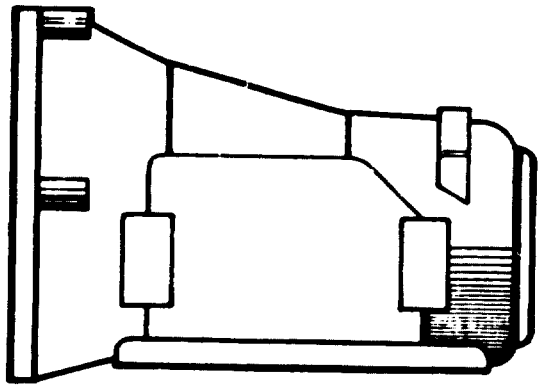
2nd Gear

Graphs Contained in This Section

Torque Ratio -vs- Output Speed
Output Torque -vs- Output Speed
Input Speed -vs- Output Speed
Efficiency -vs- Output Speed
Efficiency -vs- Power Out

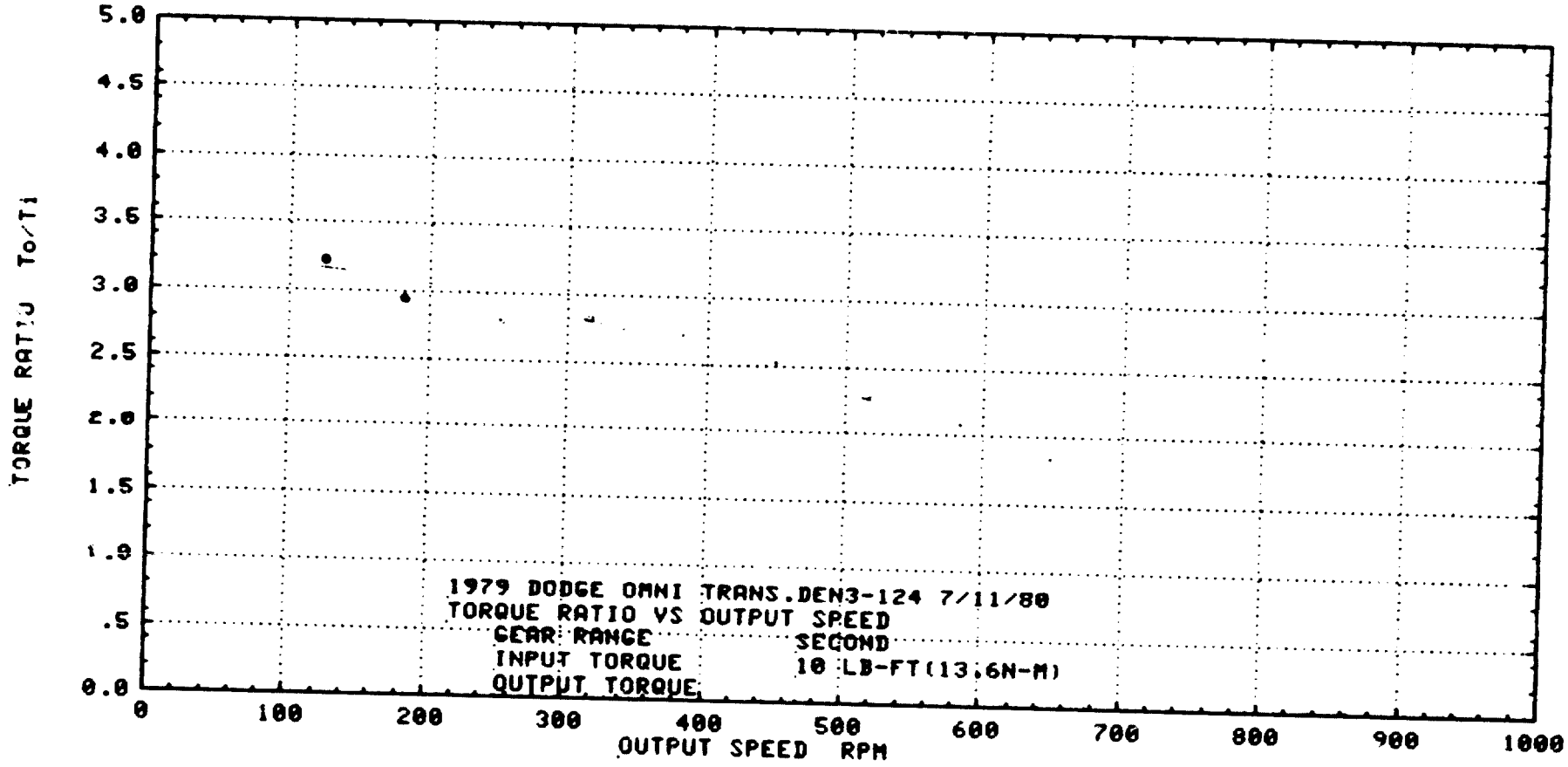
Torque In

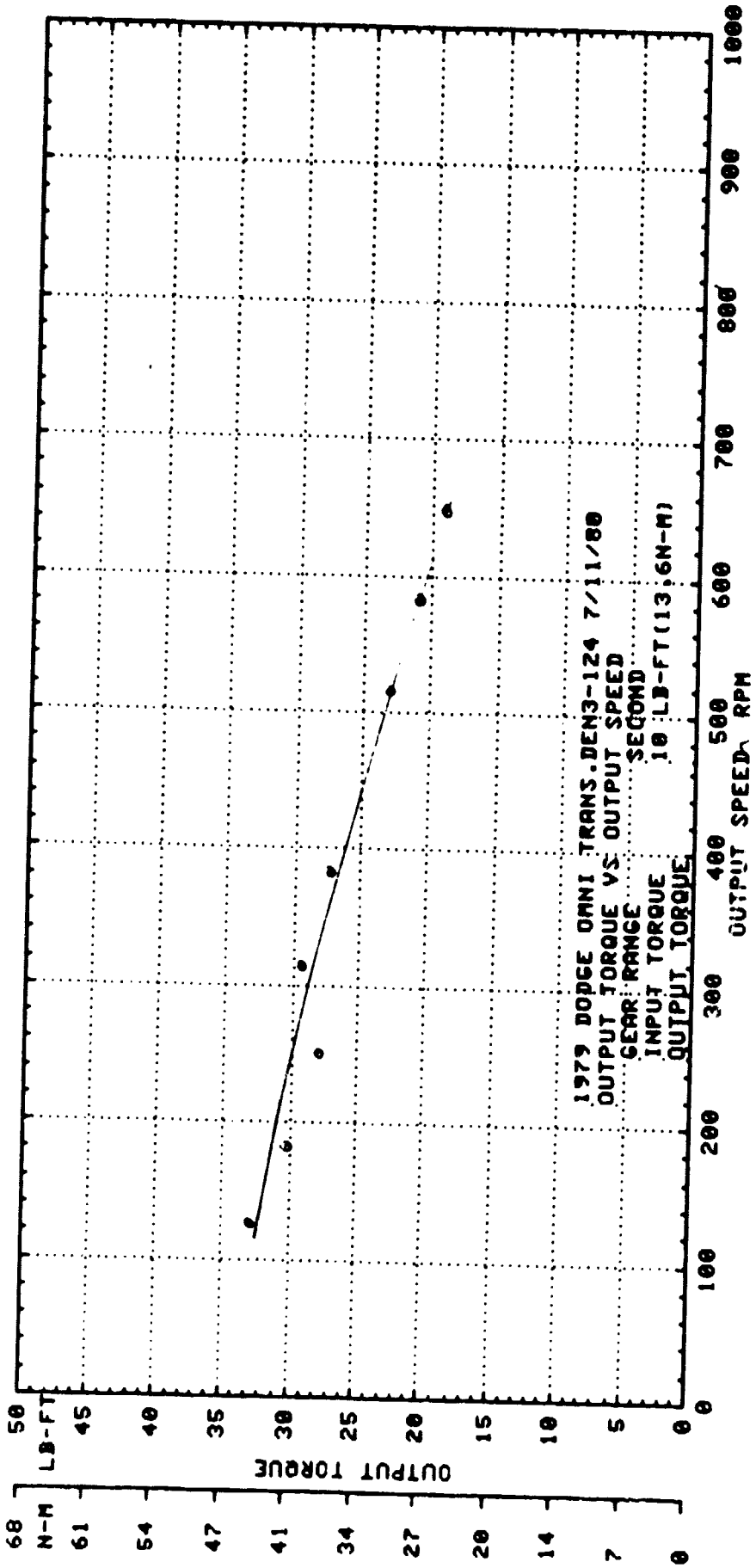
Speed In

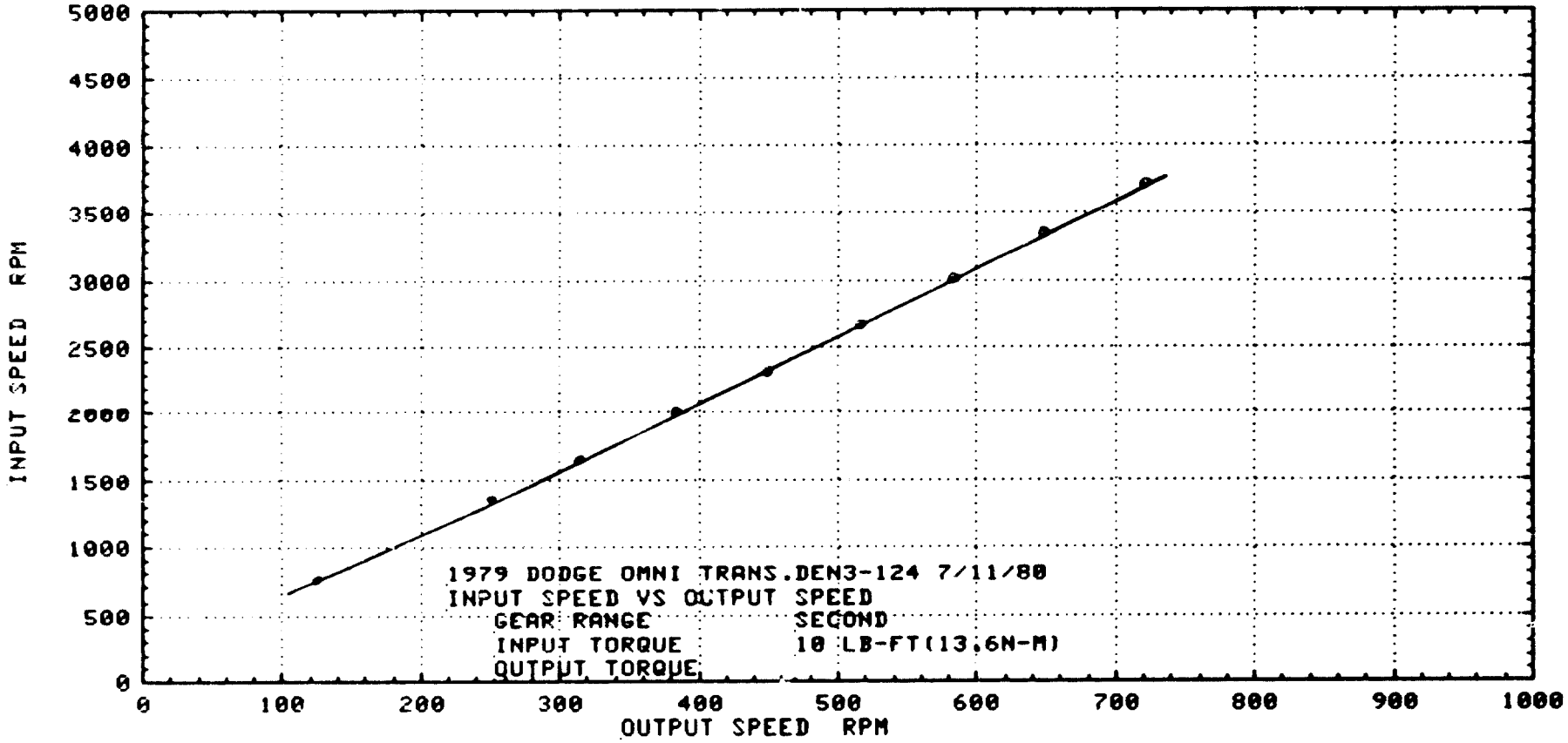


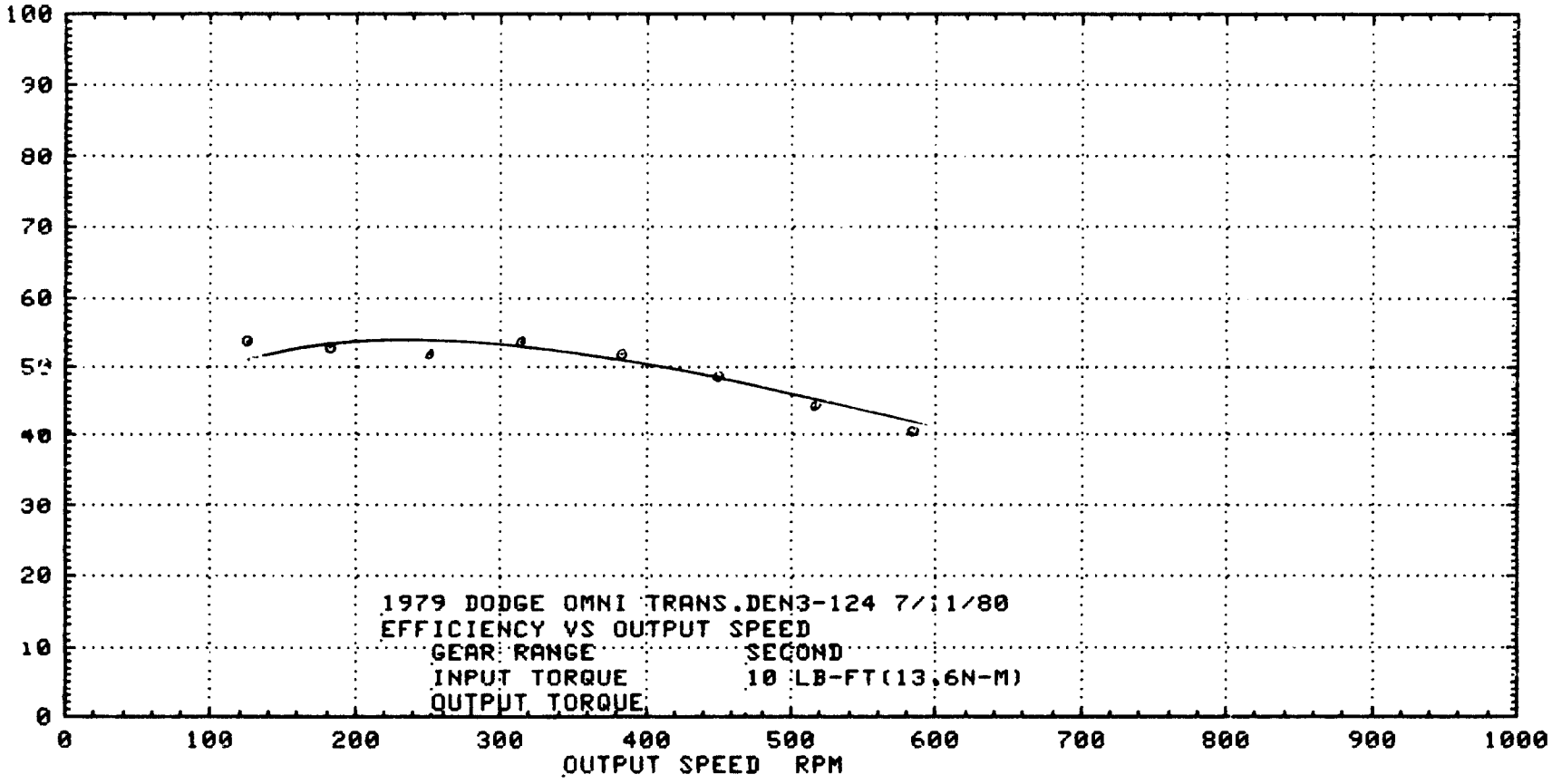
Torque Out

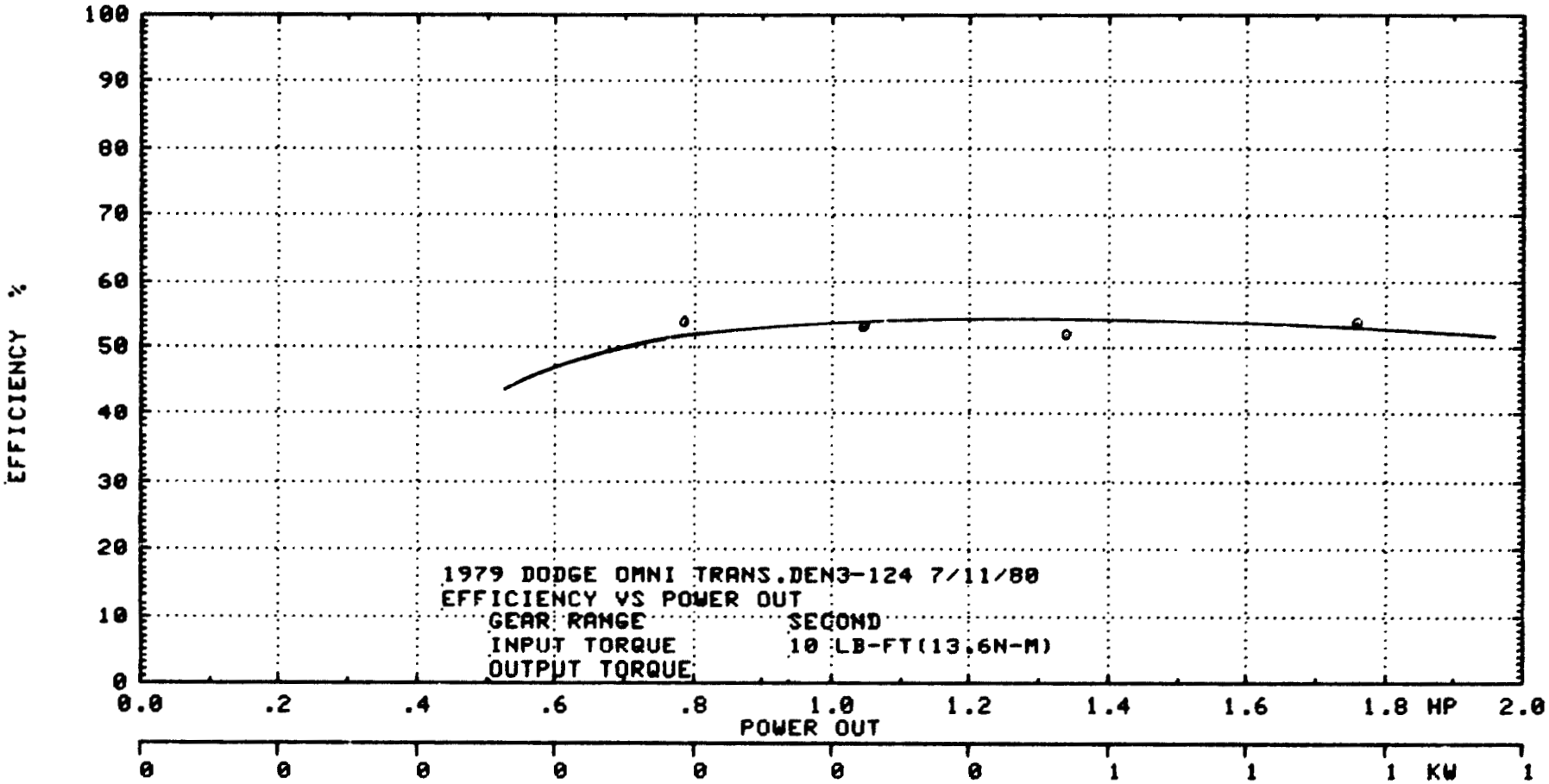
Speed Out

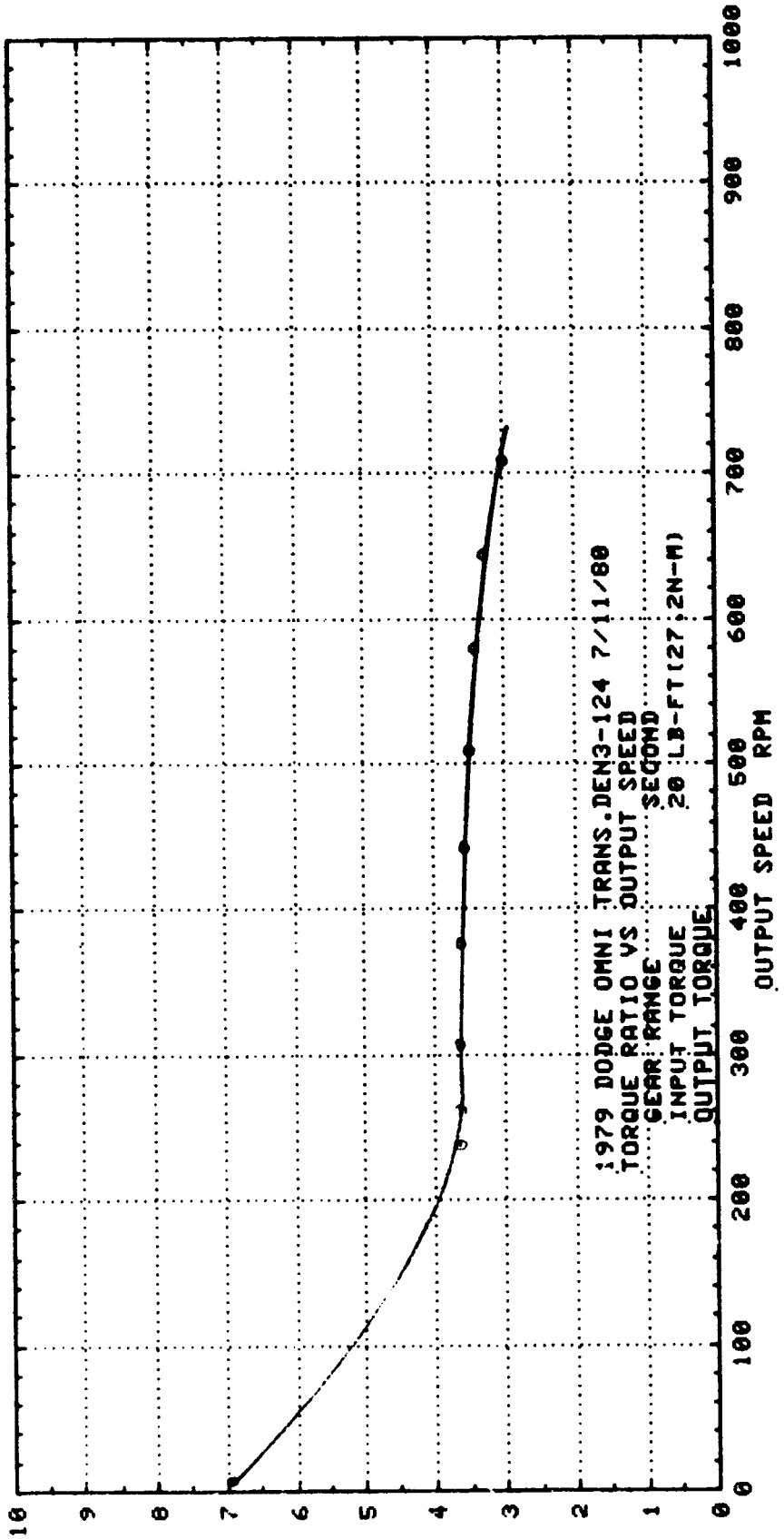

TORQUE RATIO To/Ti
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0.0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE

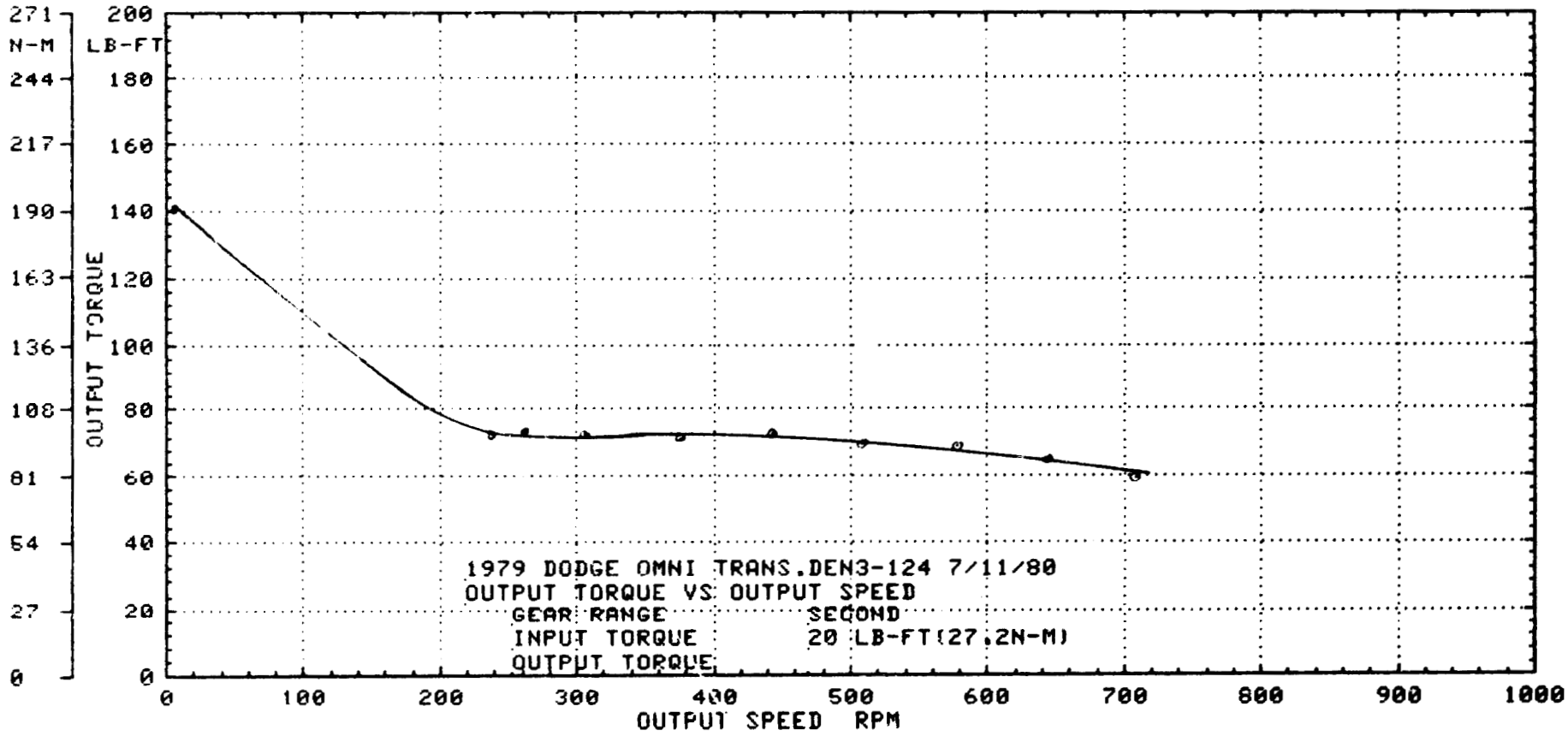

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 18 LB-FT(13.6N-M)
OUTPUT TORQUE
OUTPUT TORQUE
LB-FT
N-M
OUTPUT SPEED RPM
0
100
200
300
400
500
600
700
800
900
1000
5
10
15
20
25
30
35
40
45
50
7
14
20
27
34
41
47
54
61
68

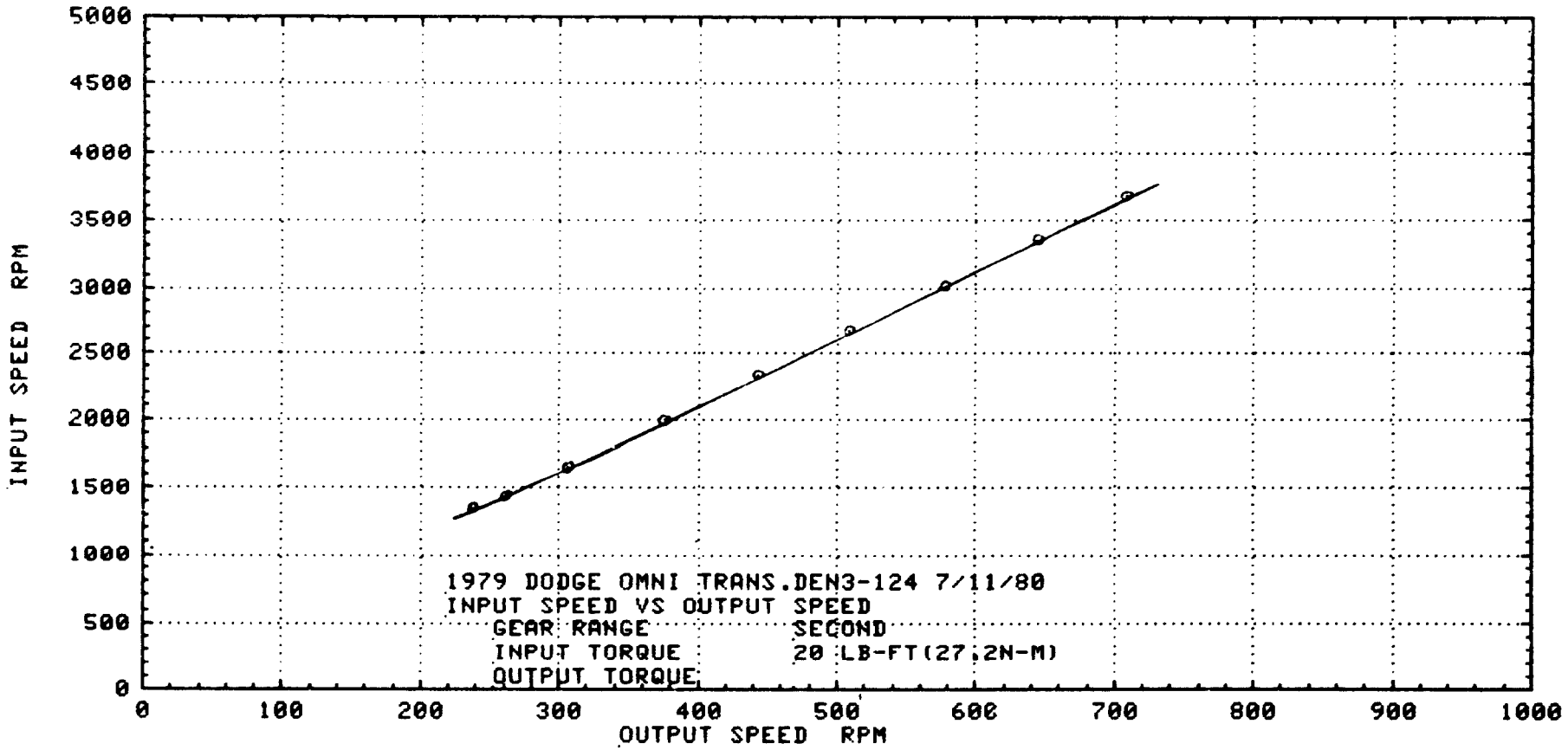

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE

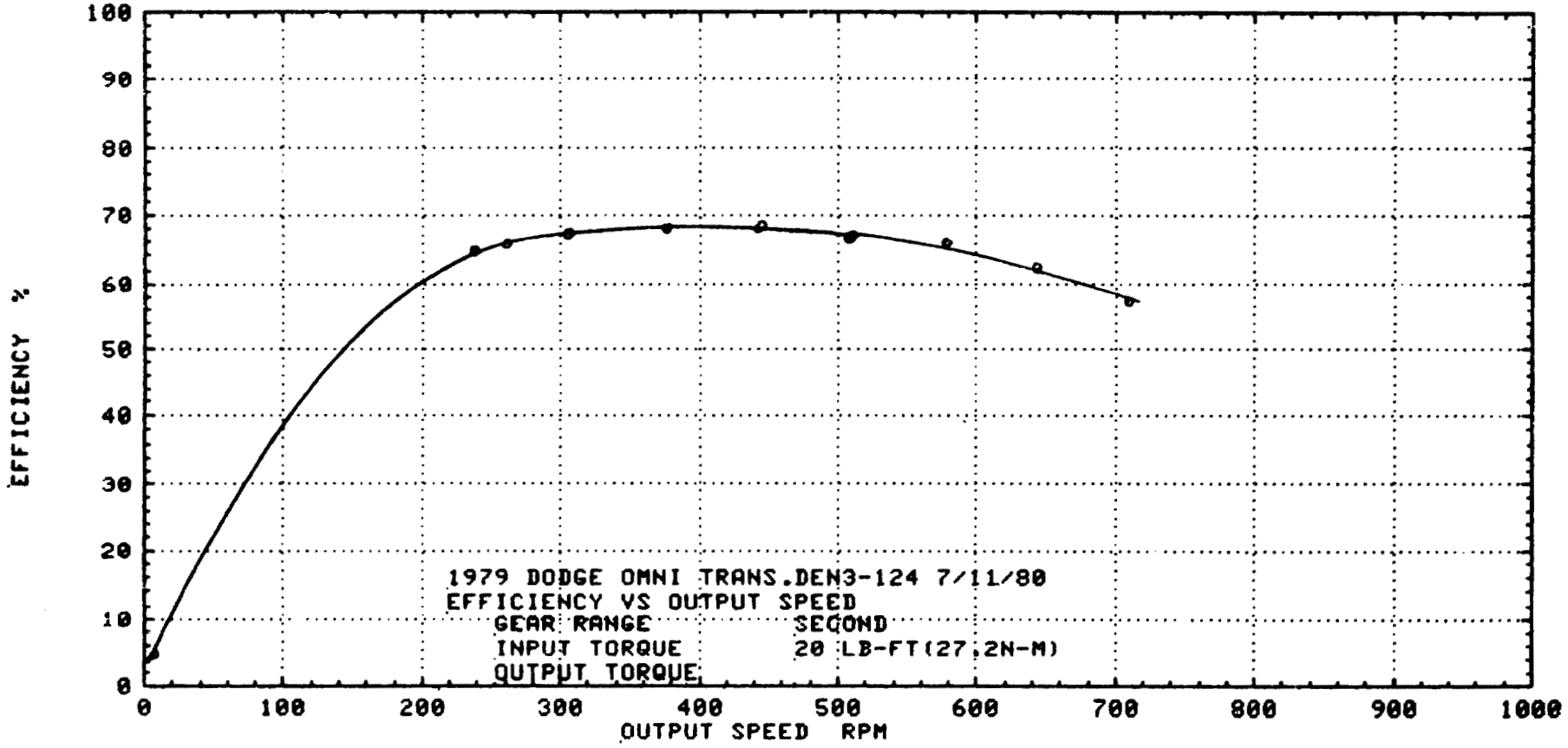

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE

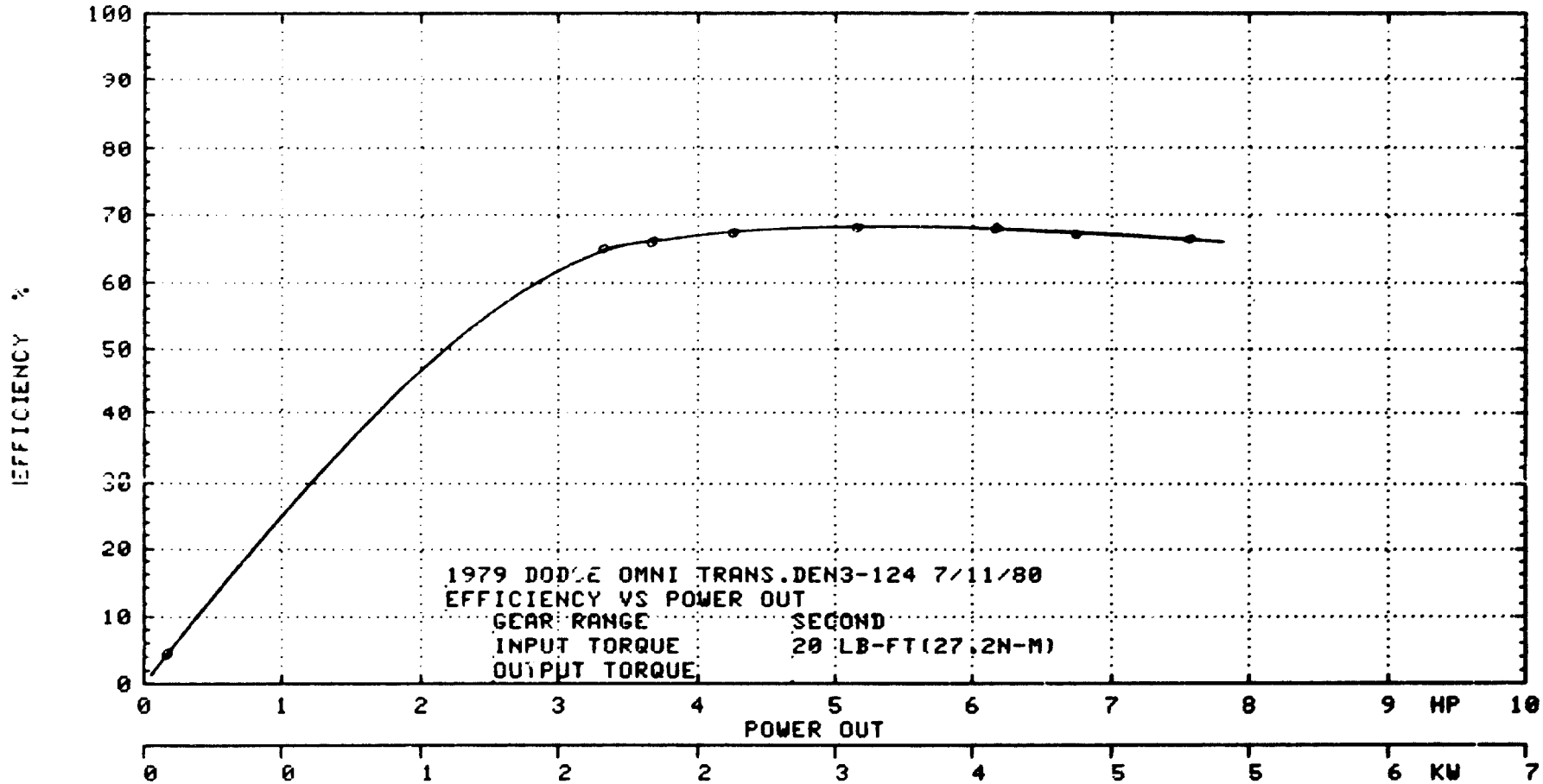

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE
0.0 .2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 HP 2.0
POWER OUT
0 0 0 0 0 0 0 1 1 1 KW 1

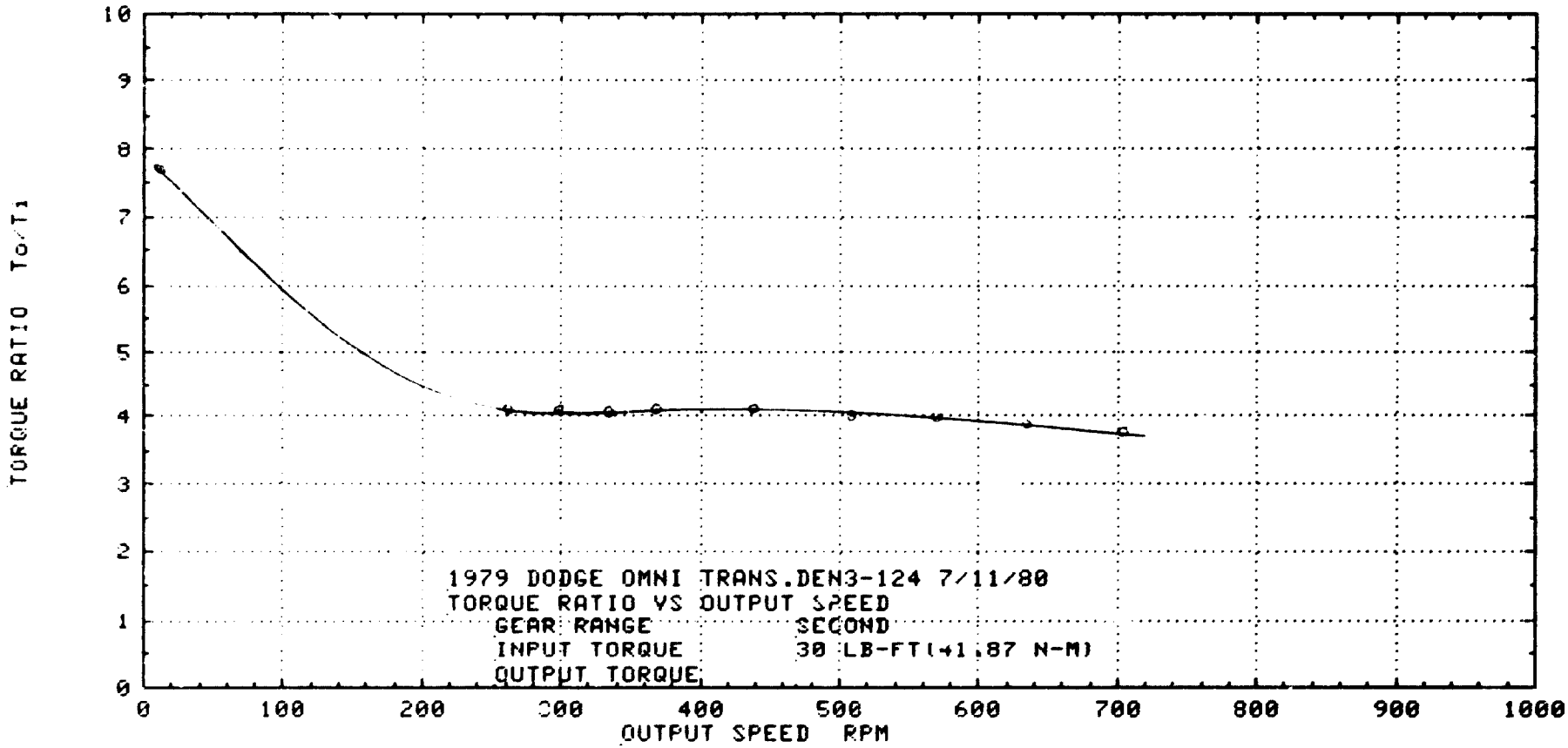

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE
OUTPUT SPEED RPM
TORQUE RATIO To/Ti
0
100
200
300
400
500
600
700
800
900
1000
1
2
3
4
5
6
7
8
9
10

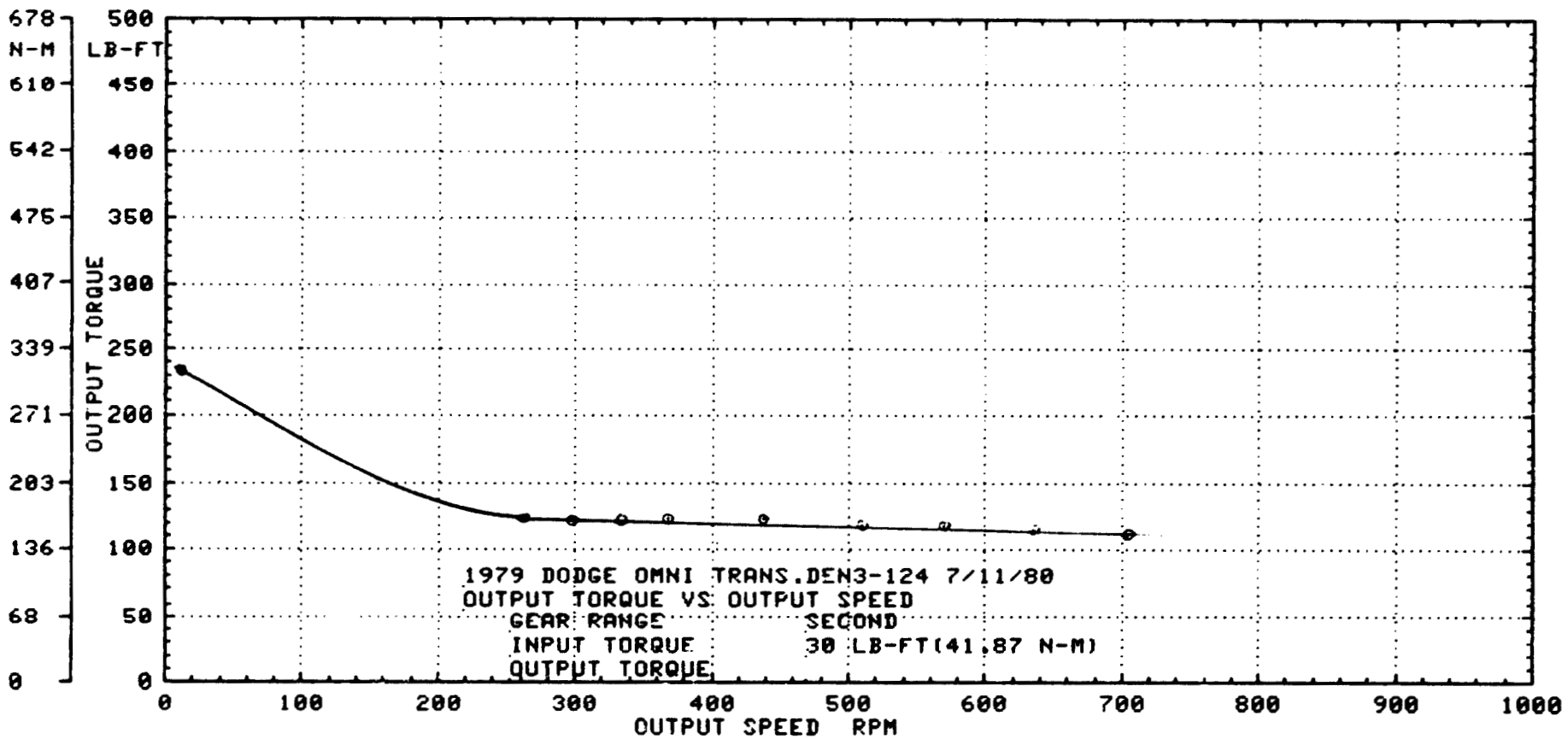

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE

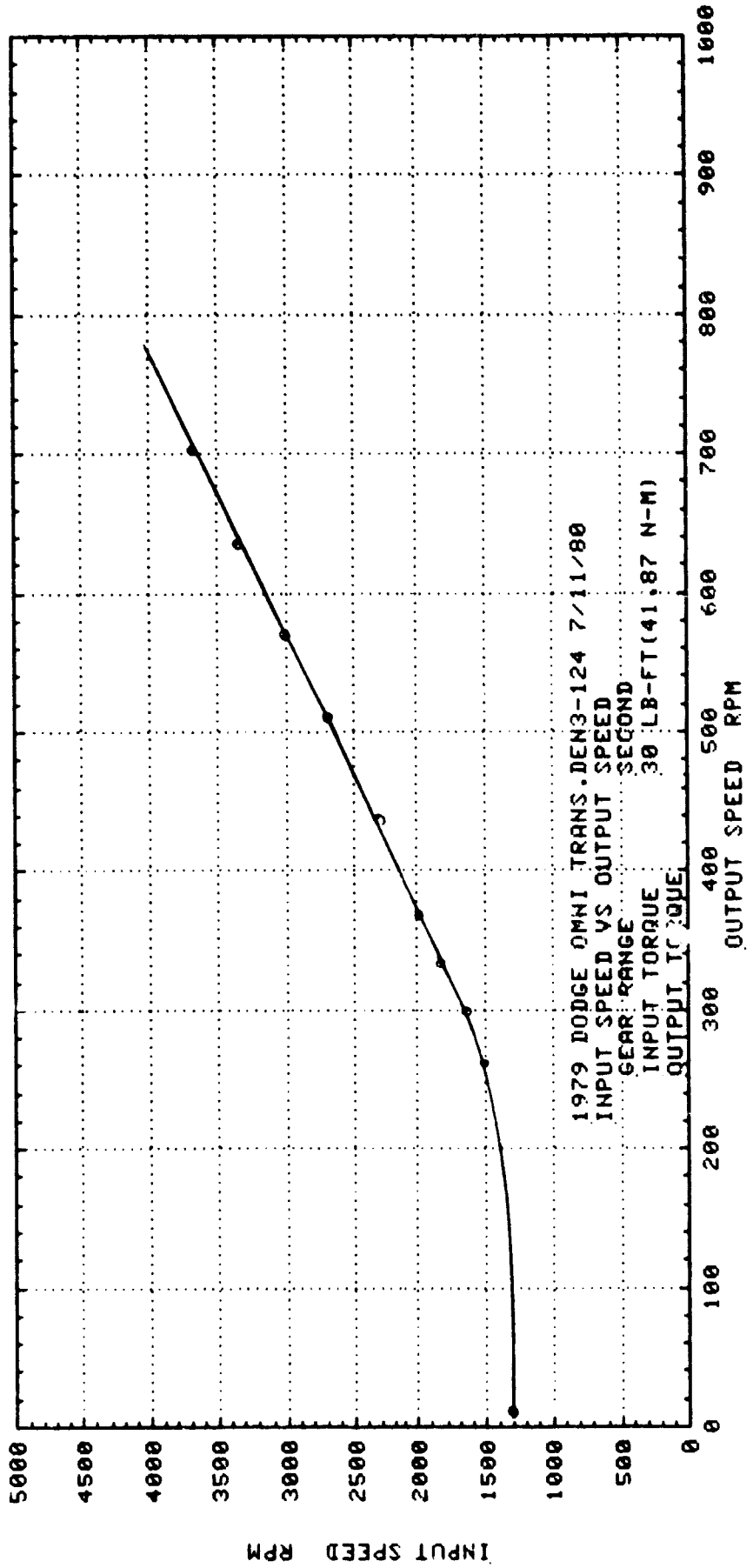

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE

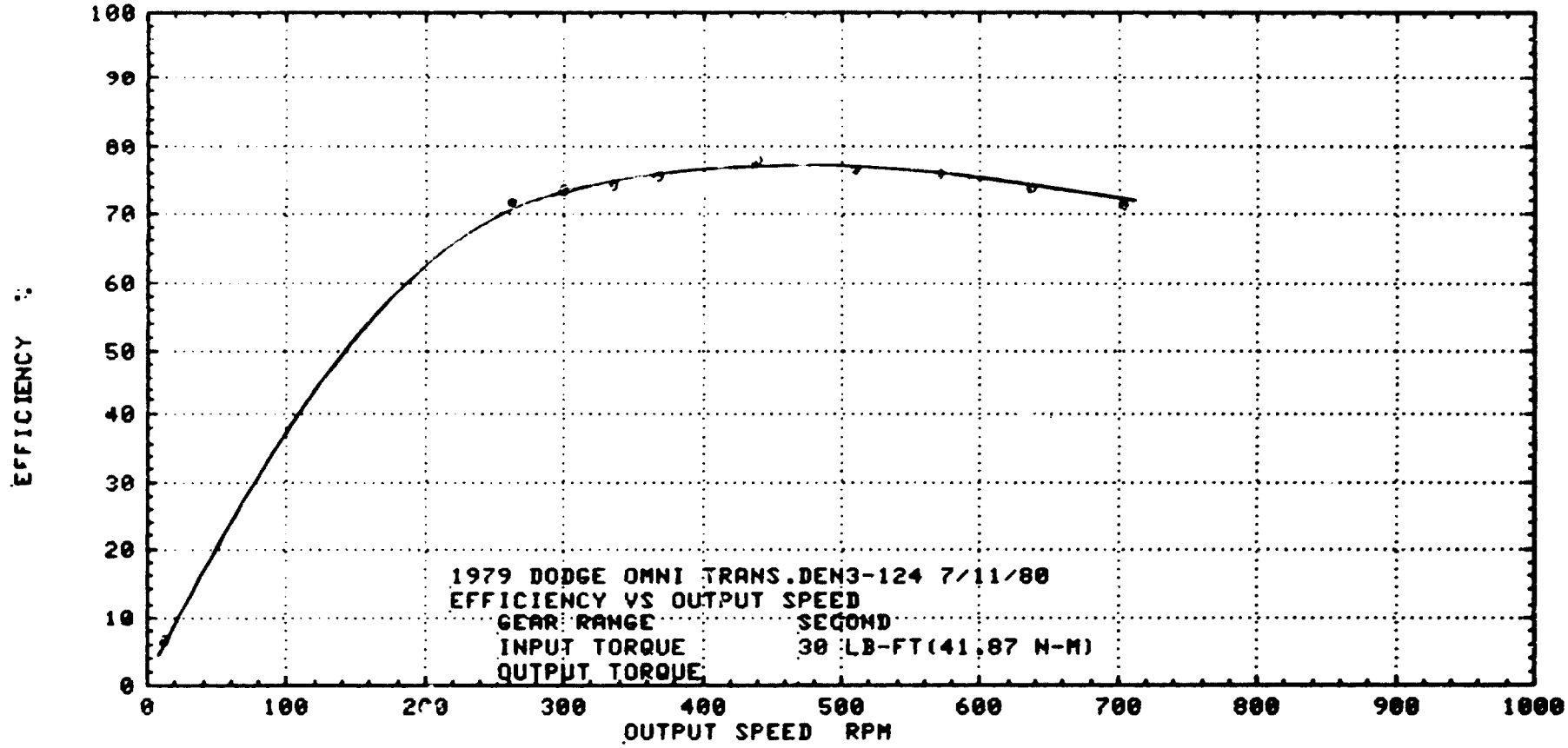

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE

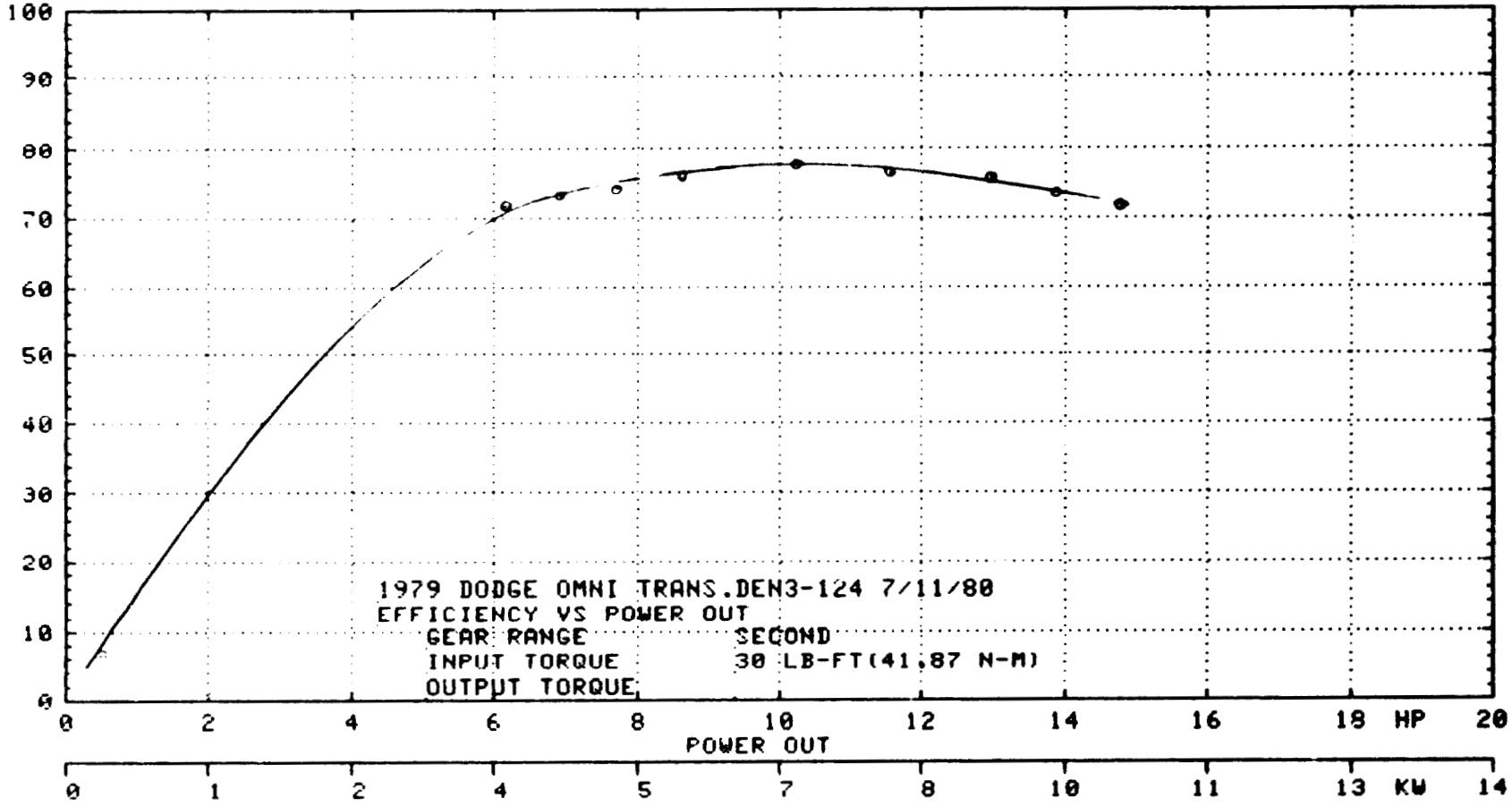

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE
0 1 2 3 4 5 6 7 8 9 HP 10
POWER OUT
0 0 1 2 2 3 4 5 5 6 KW 7

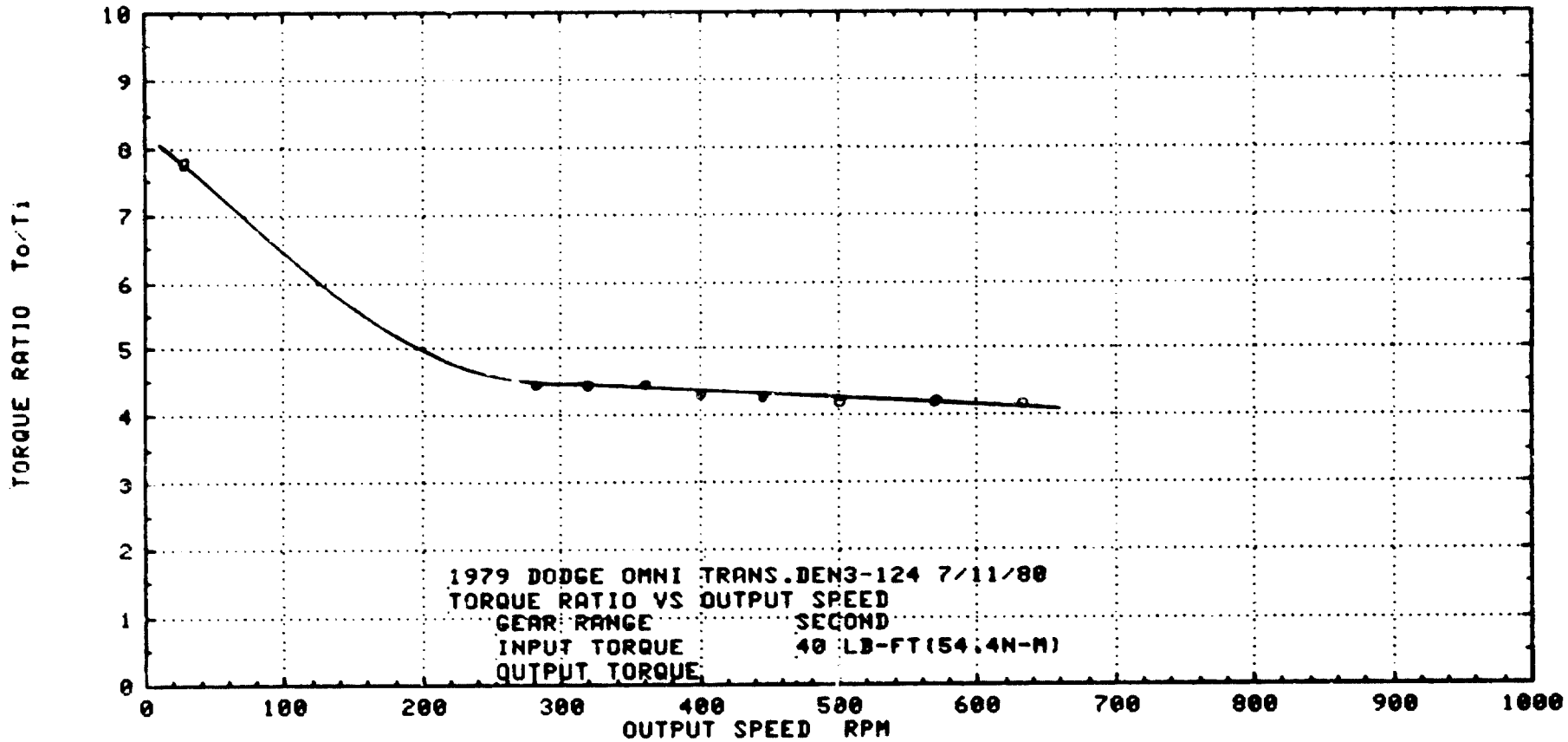

TORQUE RATIO To/Ti
10
9
8
7
6
5
4
3
2
1
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 30 LB-FT(41.87 N-M)
OUTPUT TORQUE

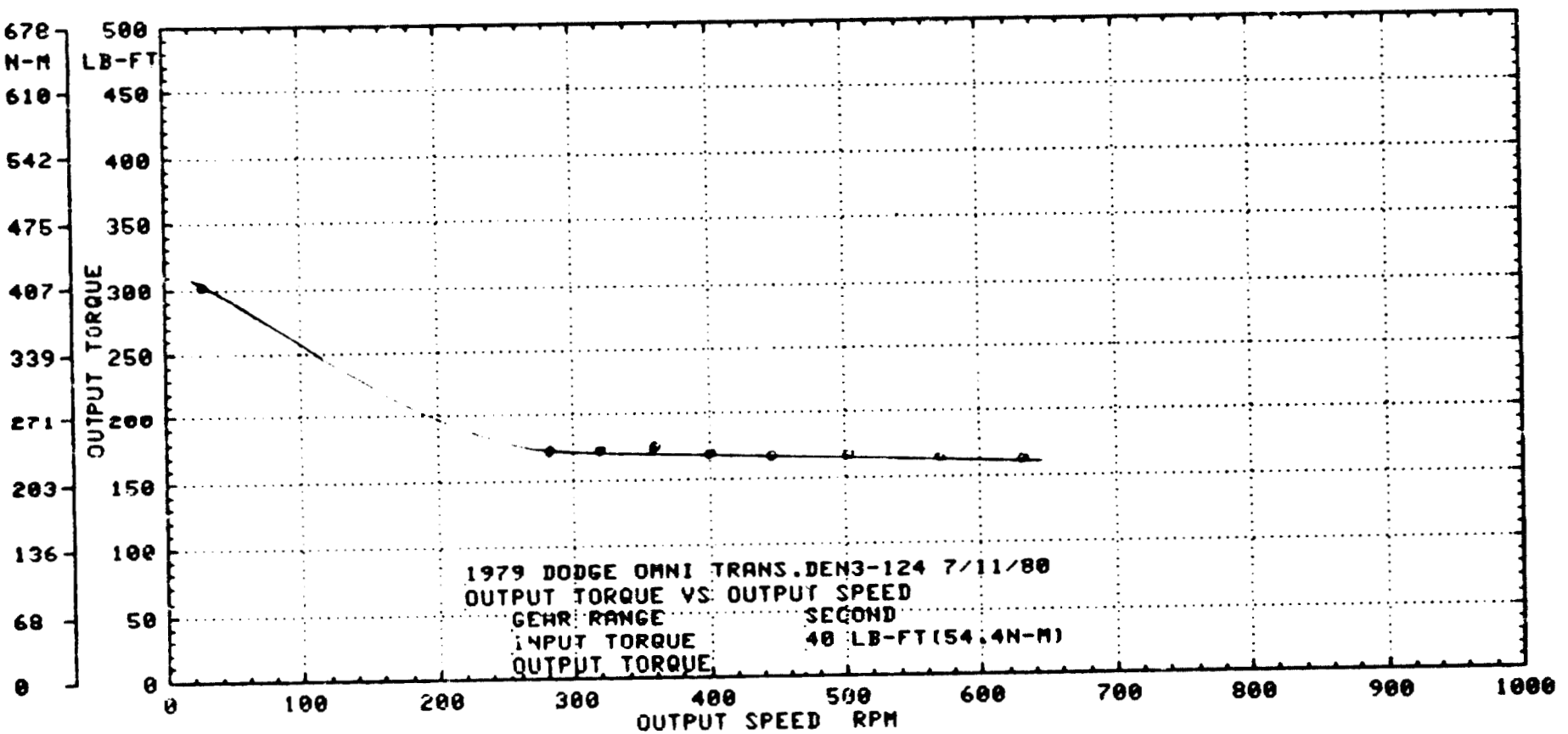

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 30 LB-FT(41.87 N-M)
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM

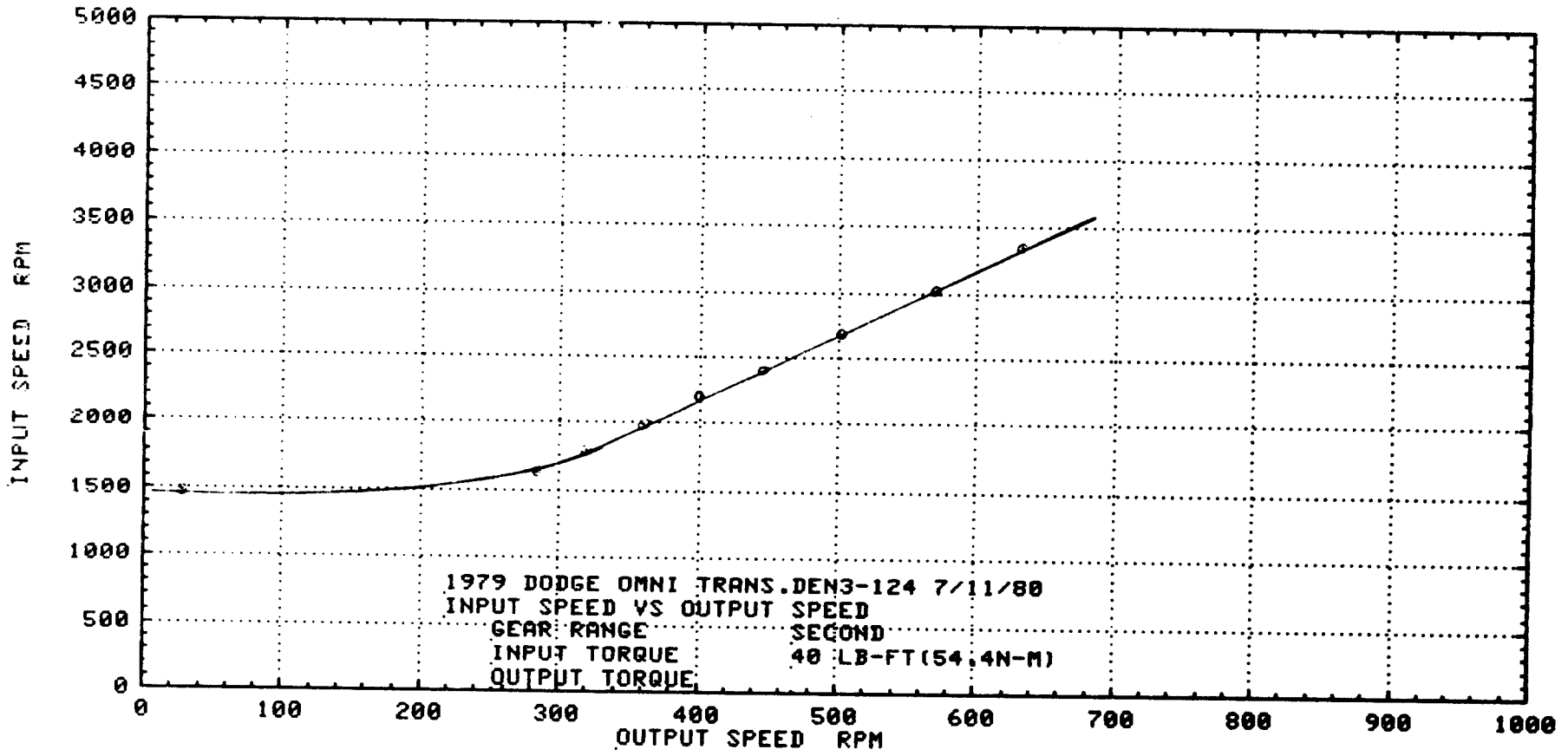

1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 30 LB-FT(41.87 N-M)
OUTPUT TORQUE
INPUT SPEED RPM
OUTPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
100
200
300
400
500
600
700
800
900
1000

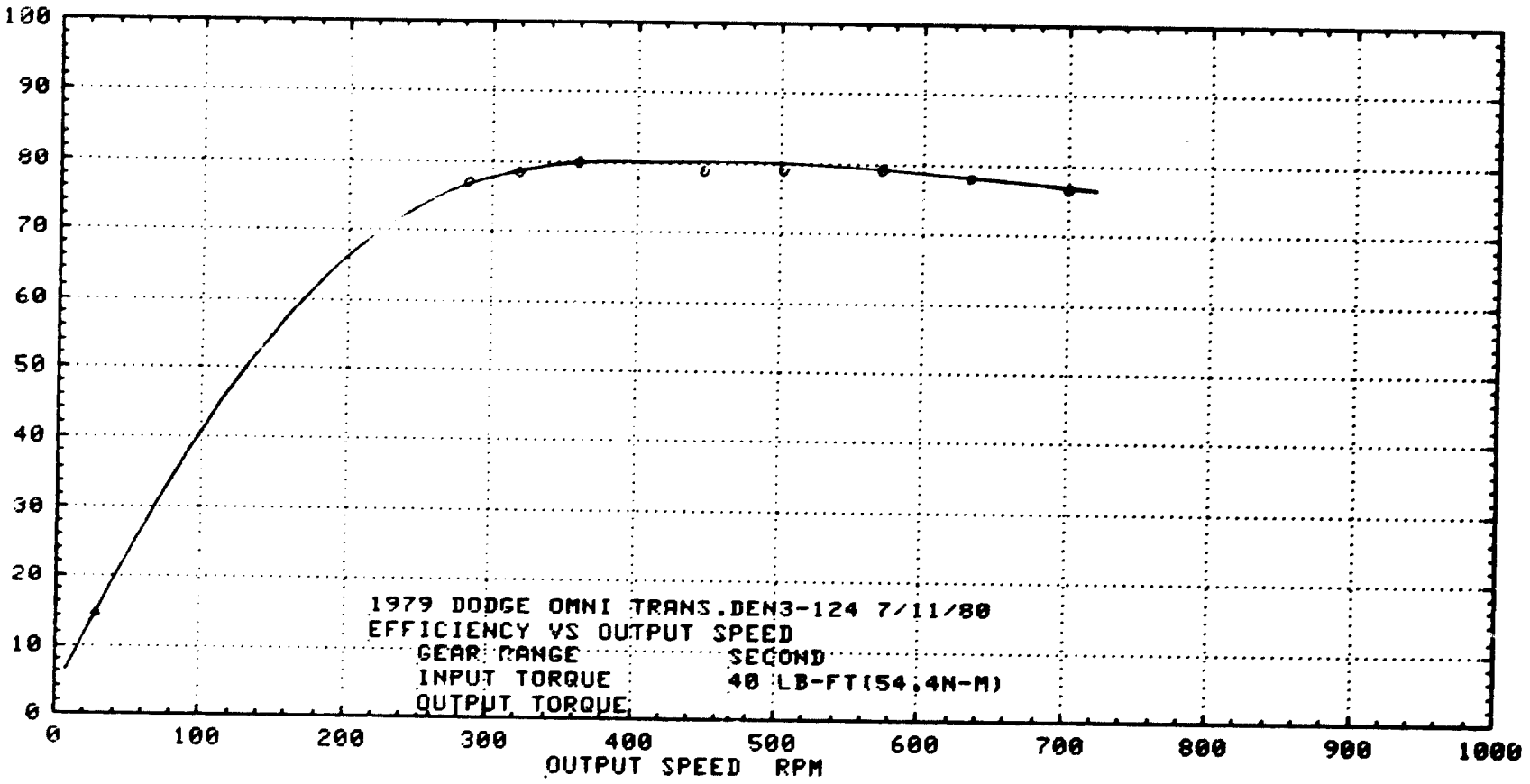

100
90
80
70
60
50
40
30
20
10
0
EFFICIENCY %
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 30 LB-FT(41.87 N-M)
OUTPUT TORQUE

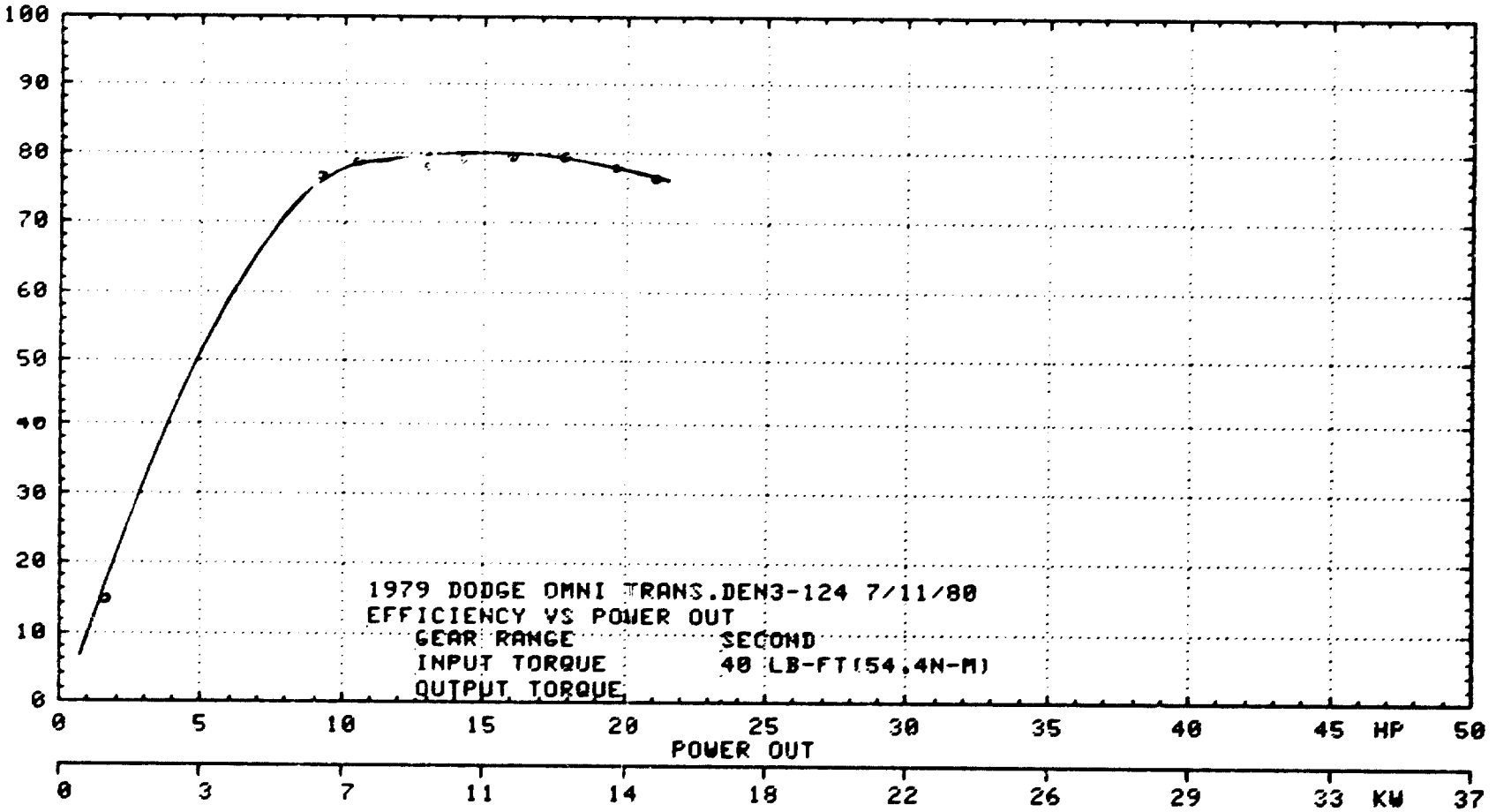

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 30 LB-FT(41.87 N-M)
OUTPUT TORQUE
0 2 4 6 8 10 12 14 16 18 HP 20
POWER OUT
0 1 2 4 5 7 8 10 11 13 KW 14

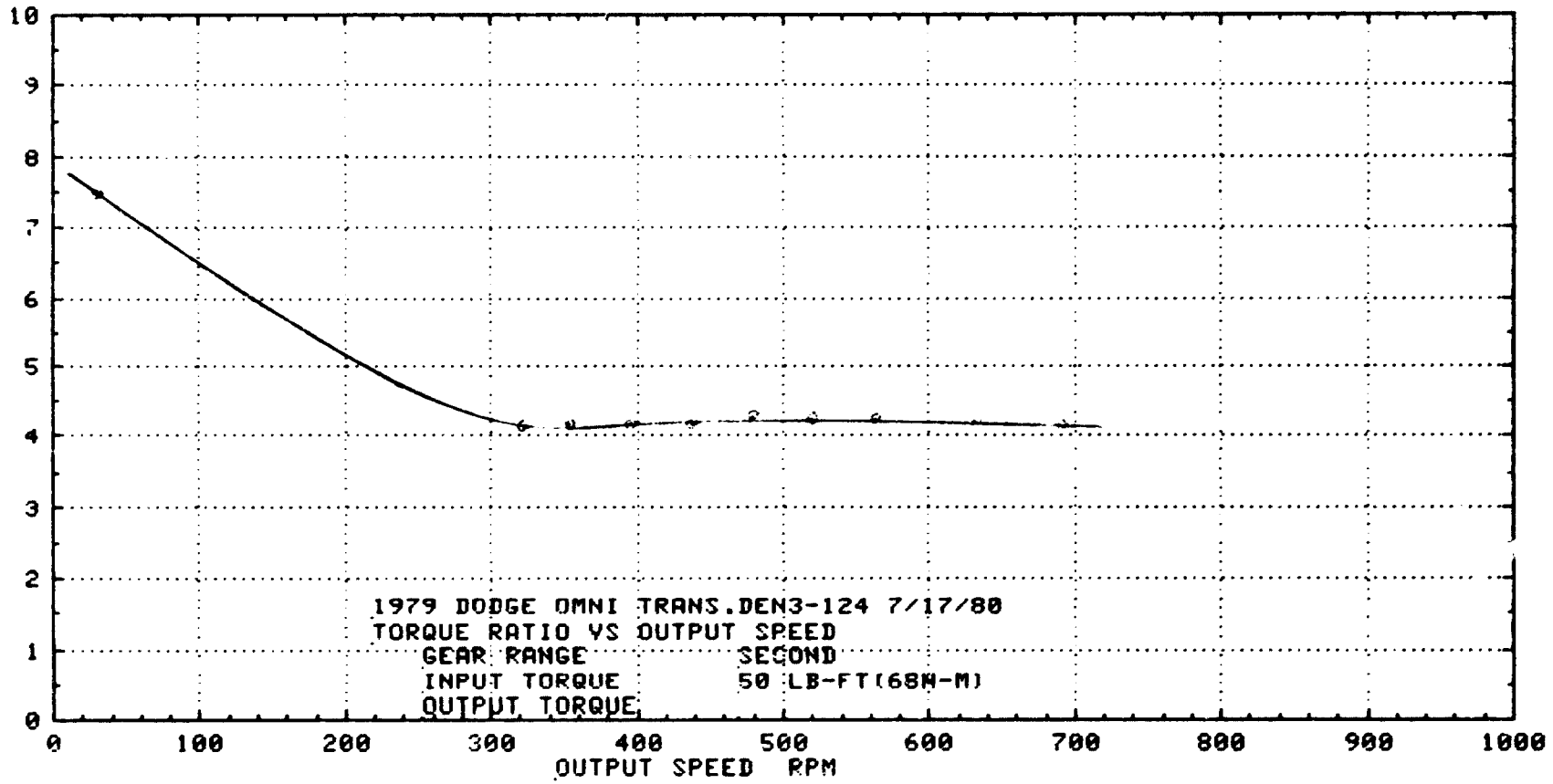

TORQUE RATIO To/Ti
10
9
8
7
6
5
4
3
2
1
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 40 LB-FT(54.4N-M)
OUTPUT TORQUE

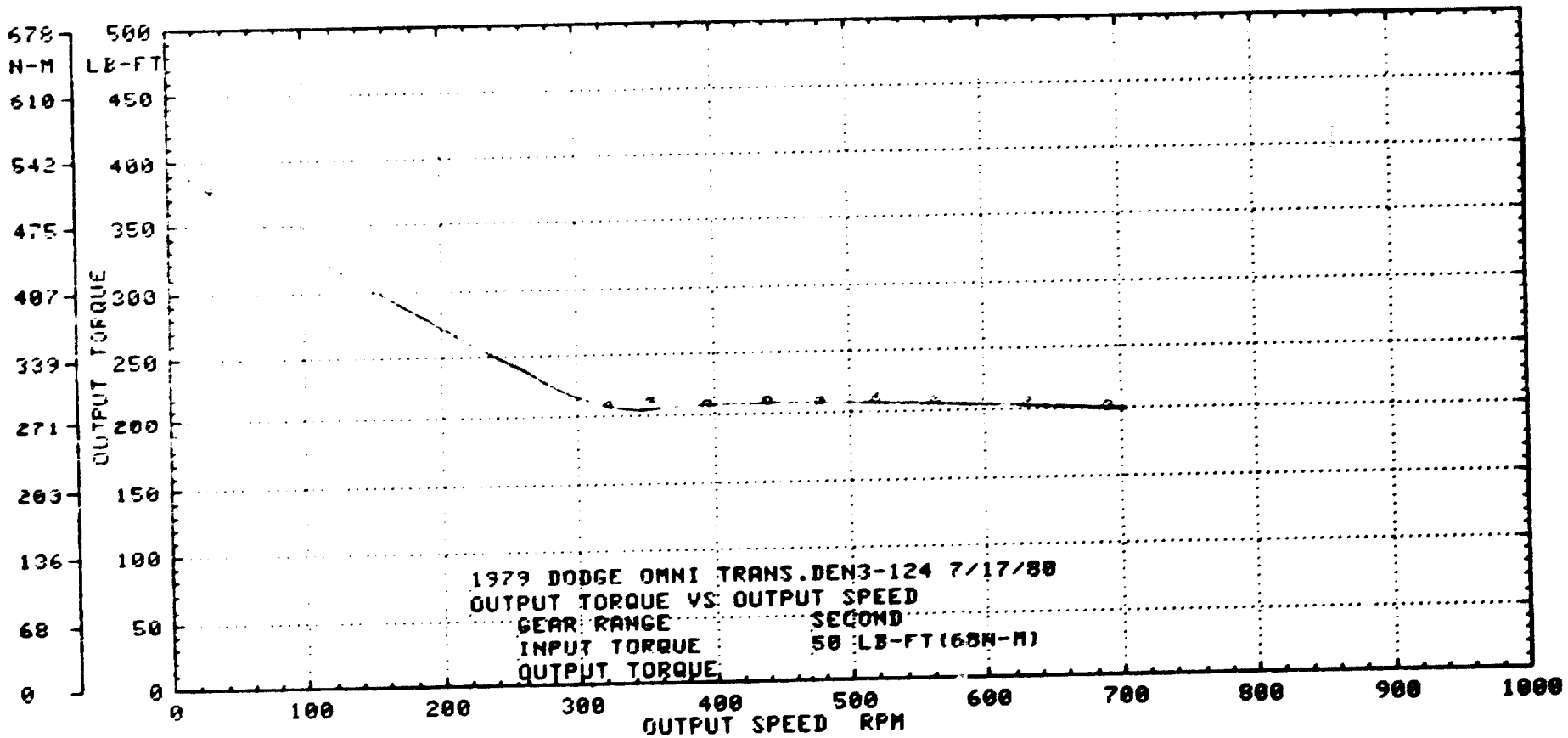

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 40 LB-FT(54.4N-M)
OUTPUT TORQUE

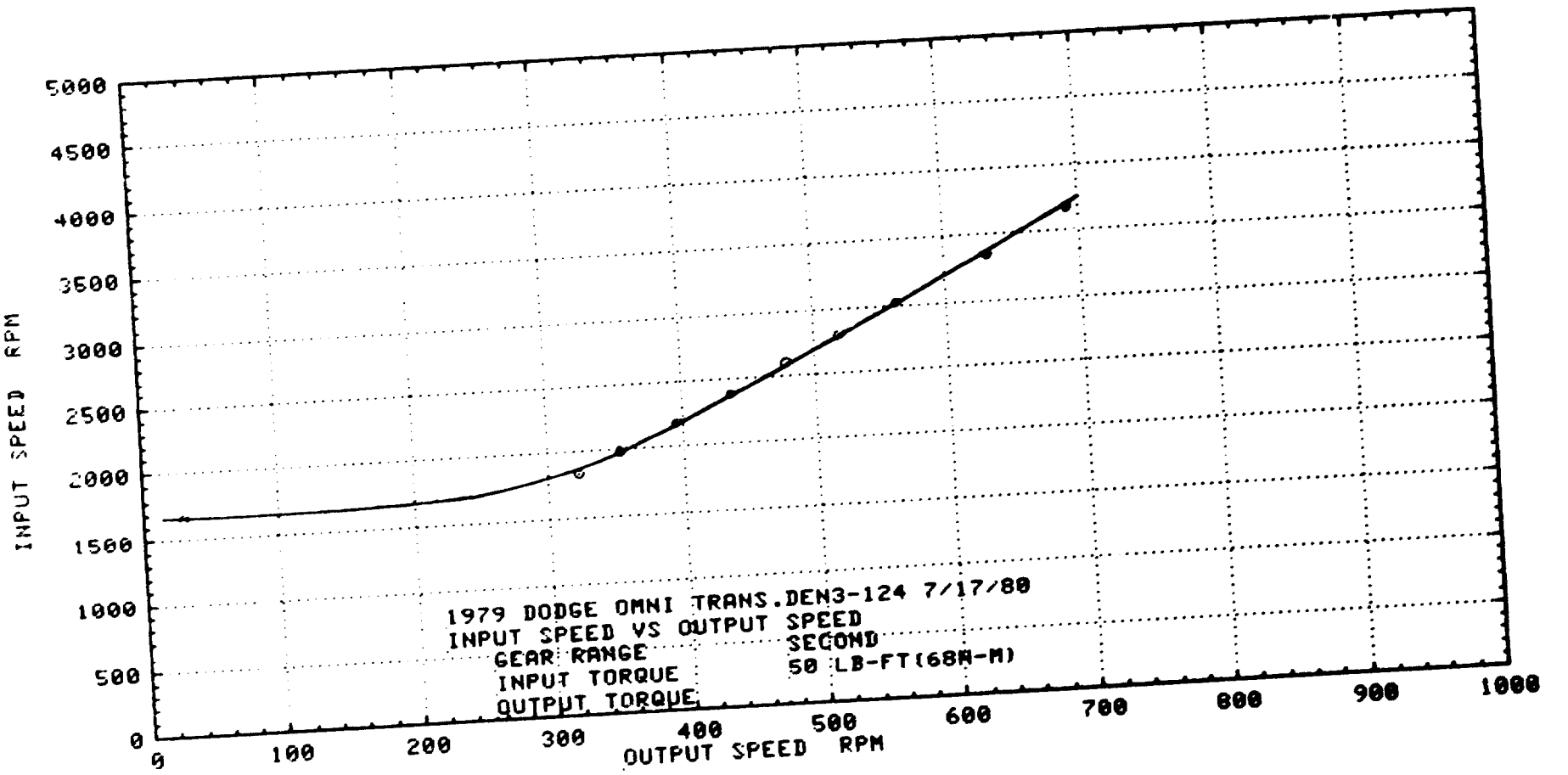

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 40 LB-FT(54.4N-M)
OUTPUT TORQUE

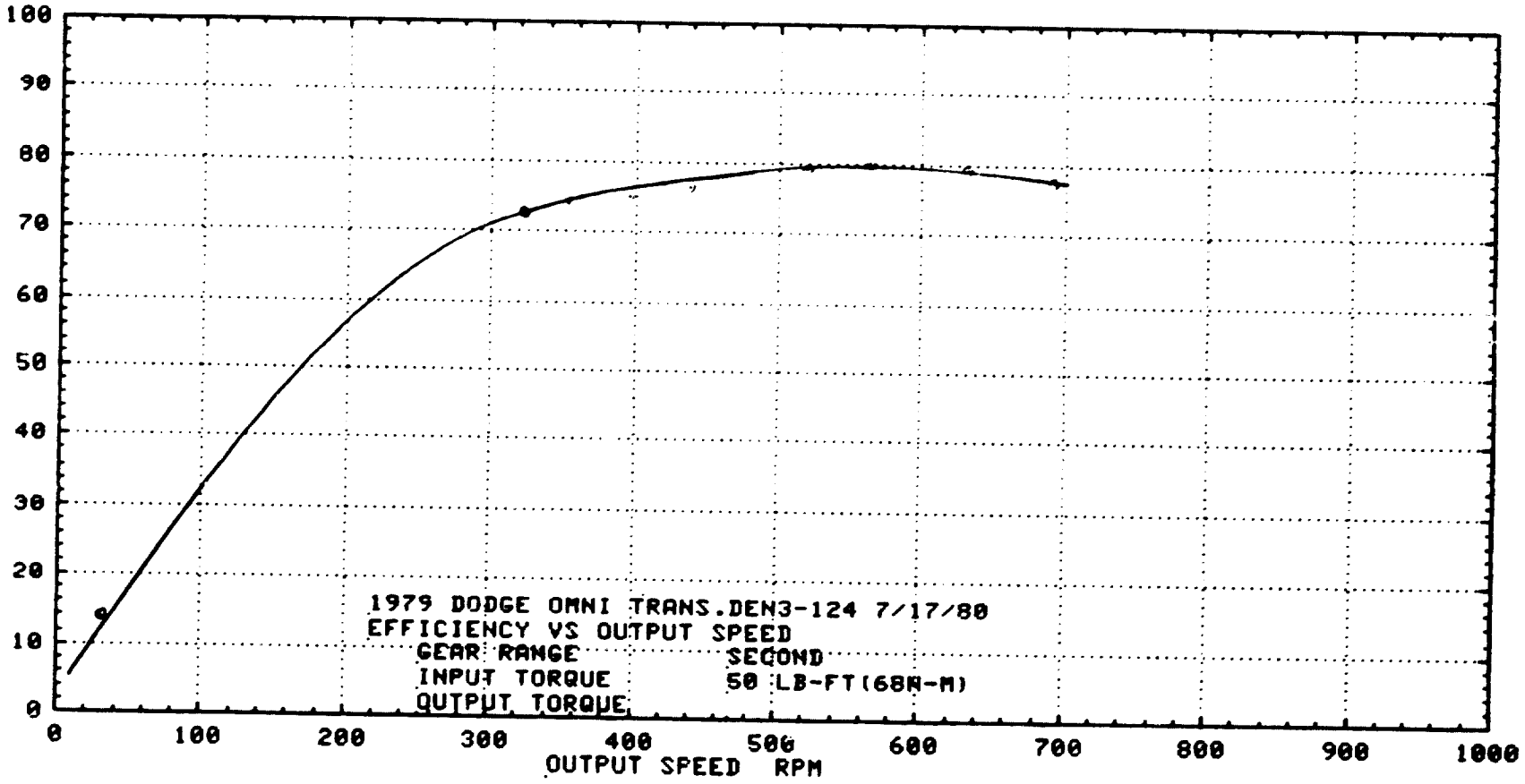

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 40 LB-FT(54.4N-M)
OUTPUT TORQUE


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/11/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 40 LB-FT(54.4N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

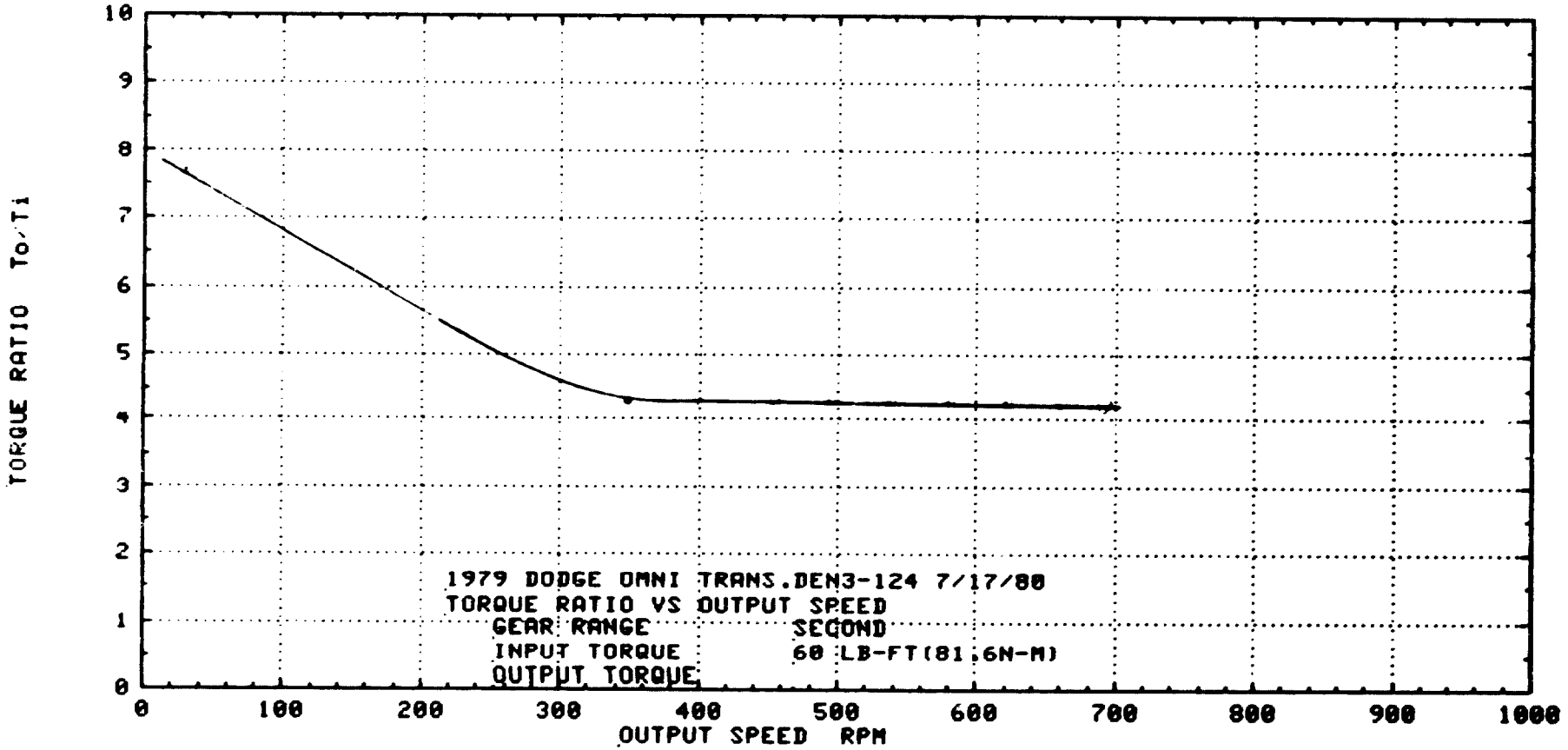

TORQUE RATIO To/Ti
10
9
8
7
6
5
4
3
2
1
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE

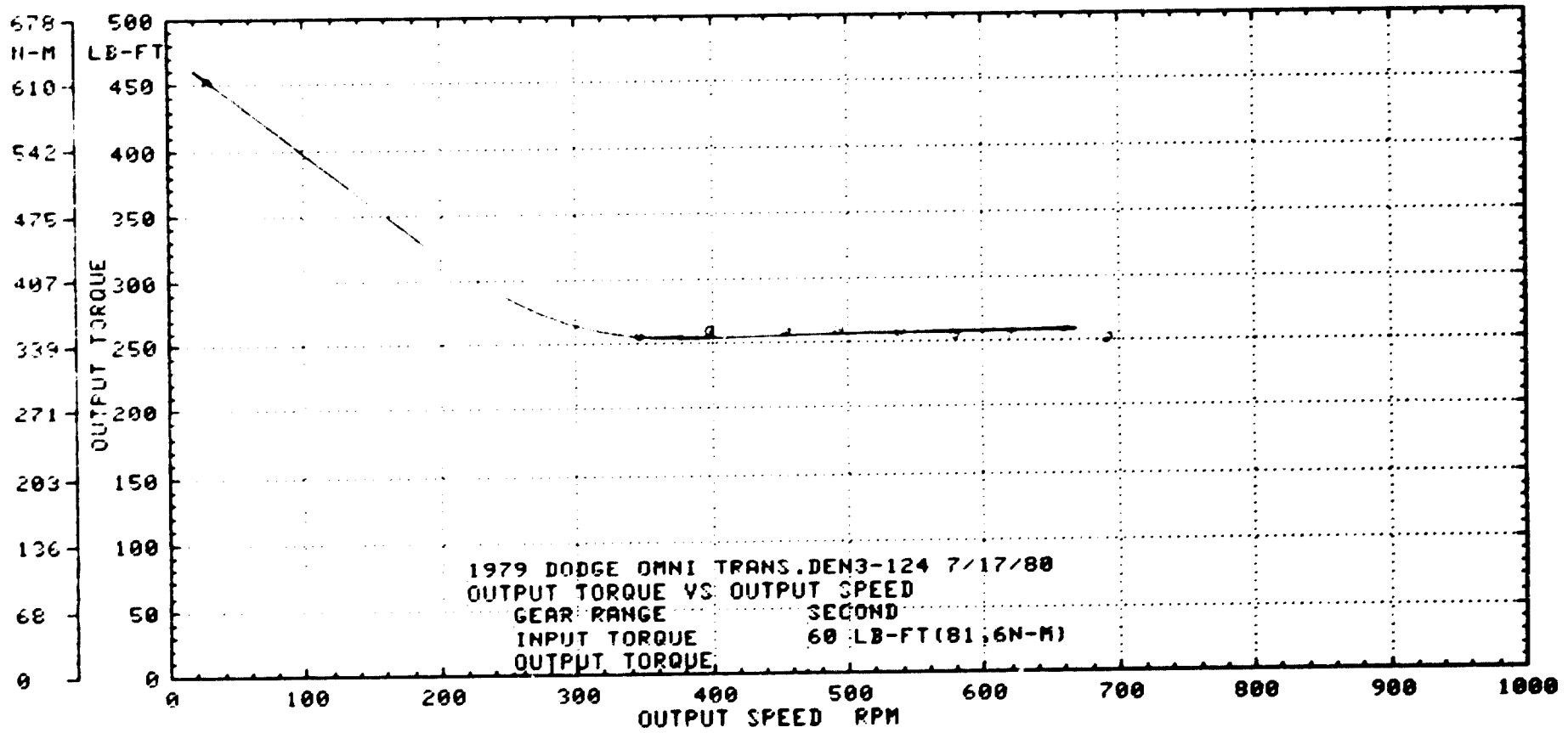

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE

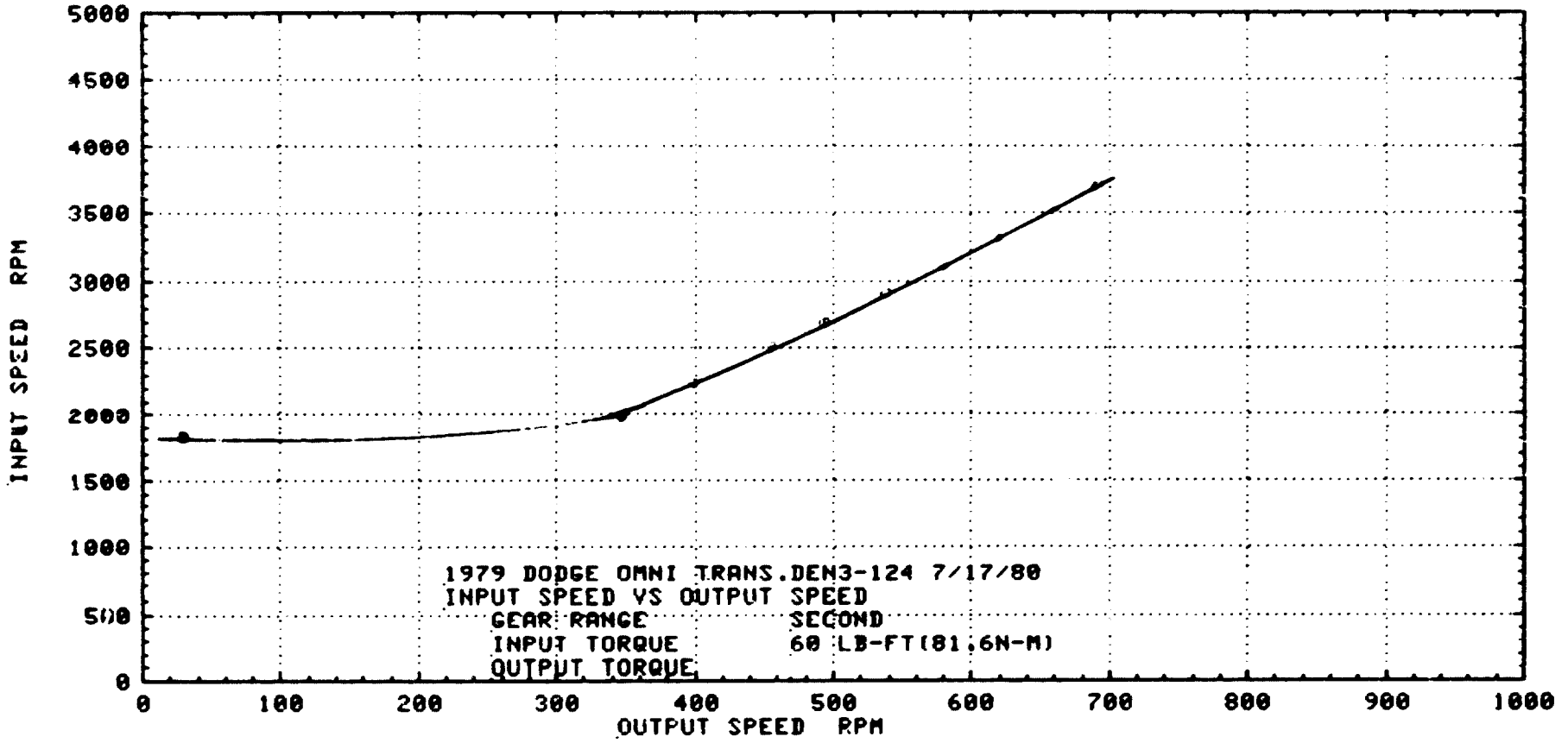

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE

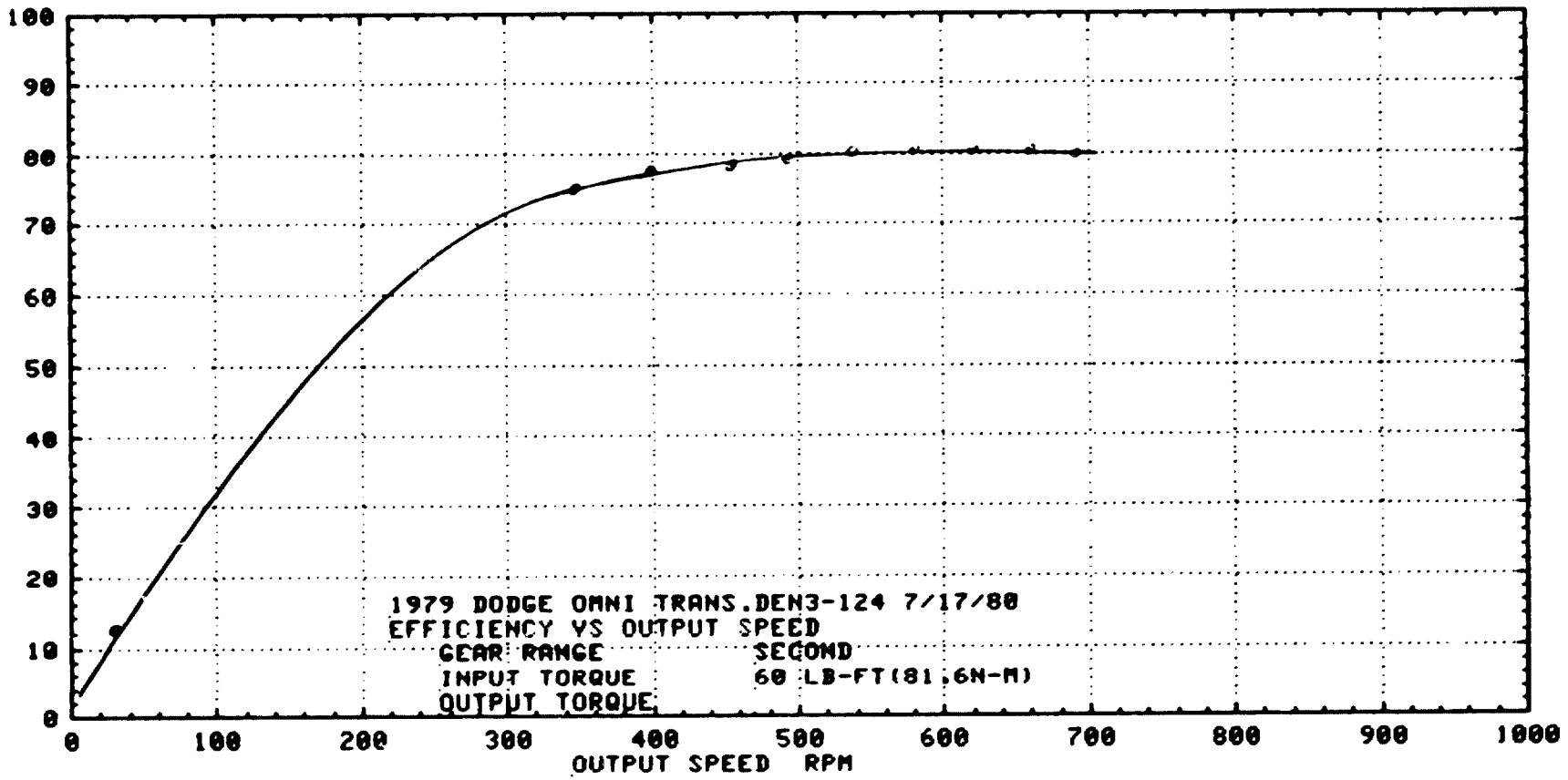

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE

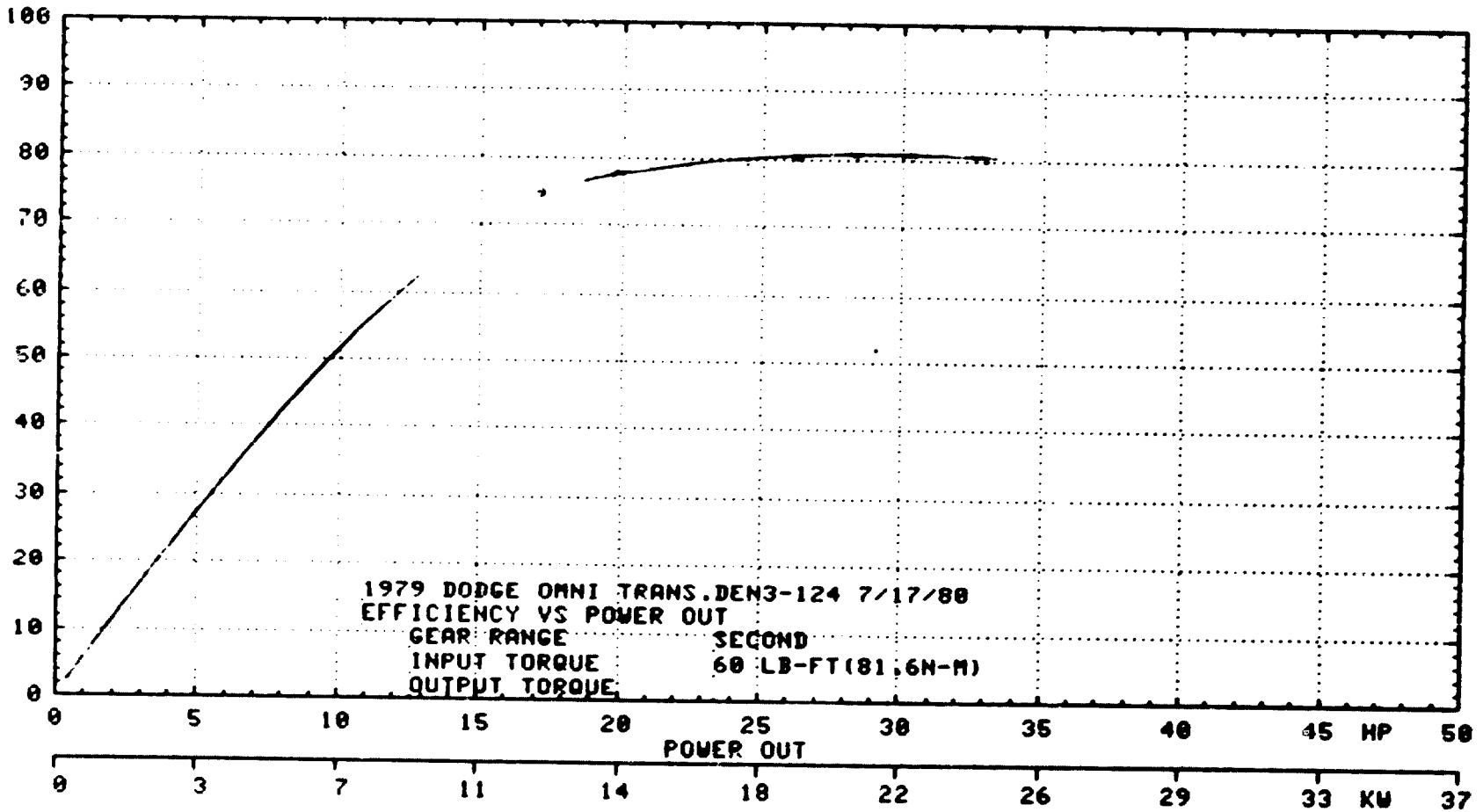
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 50 LB-FT(68N-M)
OUTPUT TORQUE
POWER OUT
EFFICIENCY %
0 5 10 15 20 25 30 35 40 45 50 HP
0 3 7 11 14 18 22 26 29 33 37 KW
0 10 20 30 40 50 60 70 80 90 100

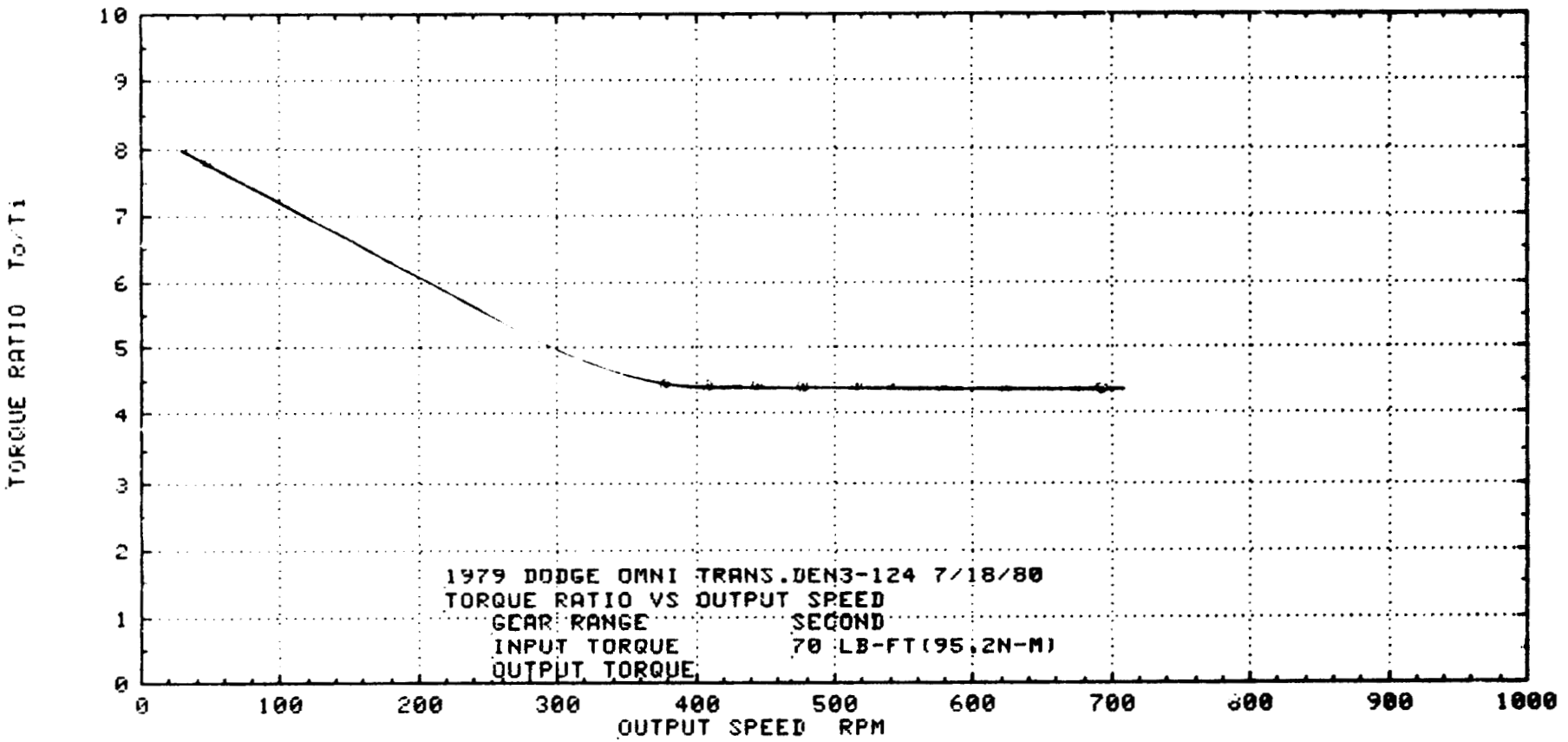

TORQUE RATIO To/Ti
10
9
8
7
6
5
4
3
2
1
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE

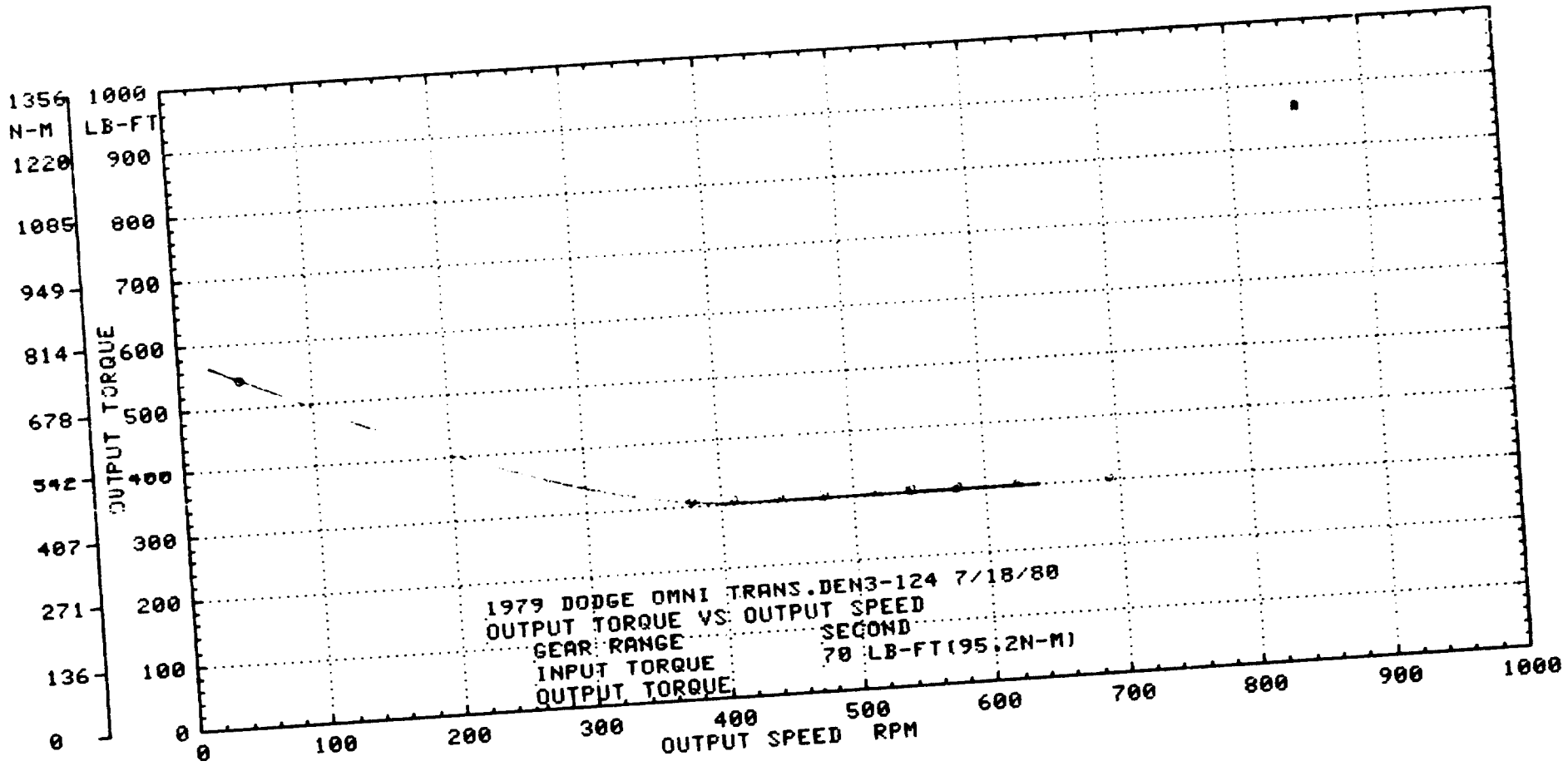

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE

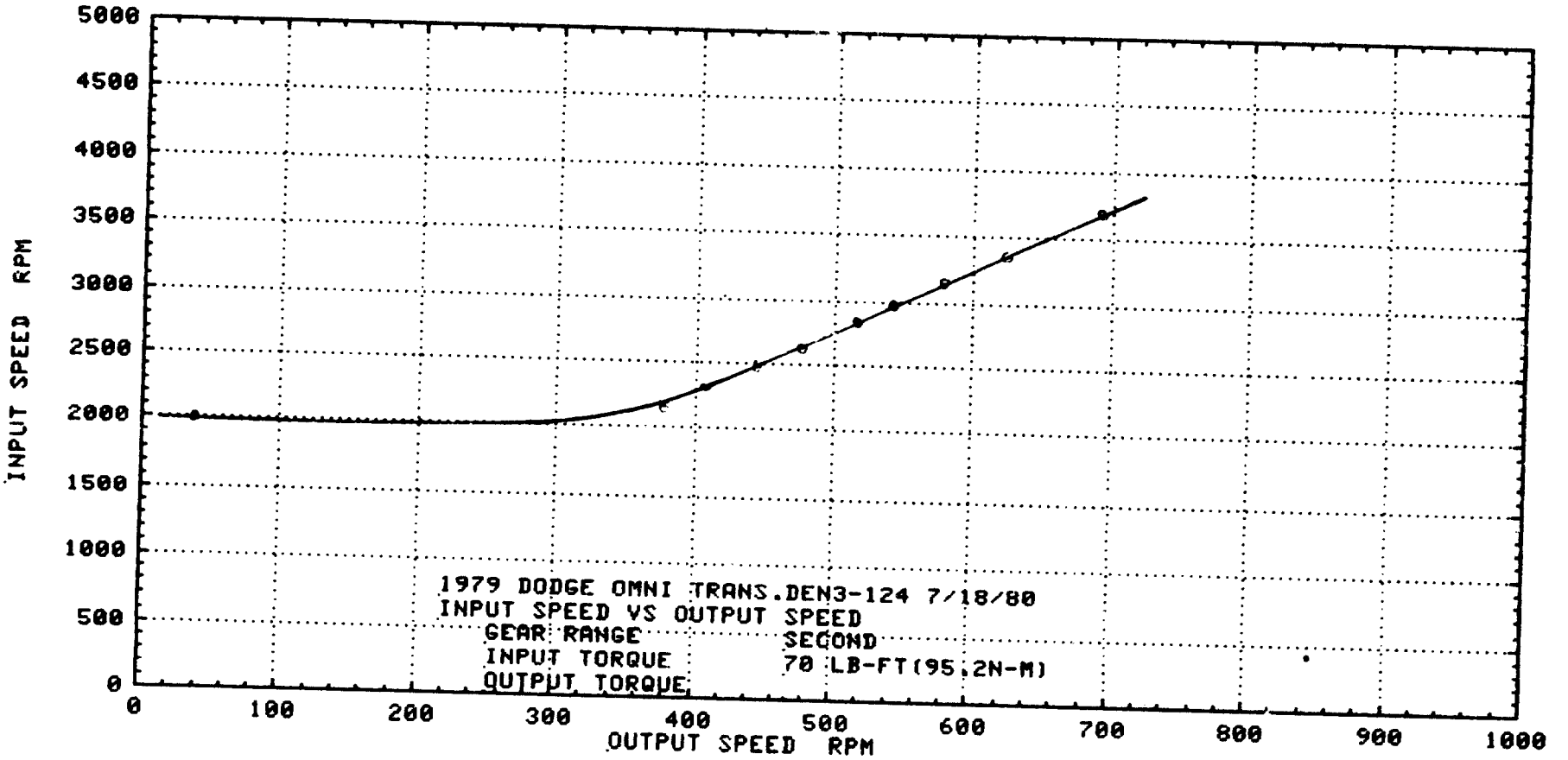

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE

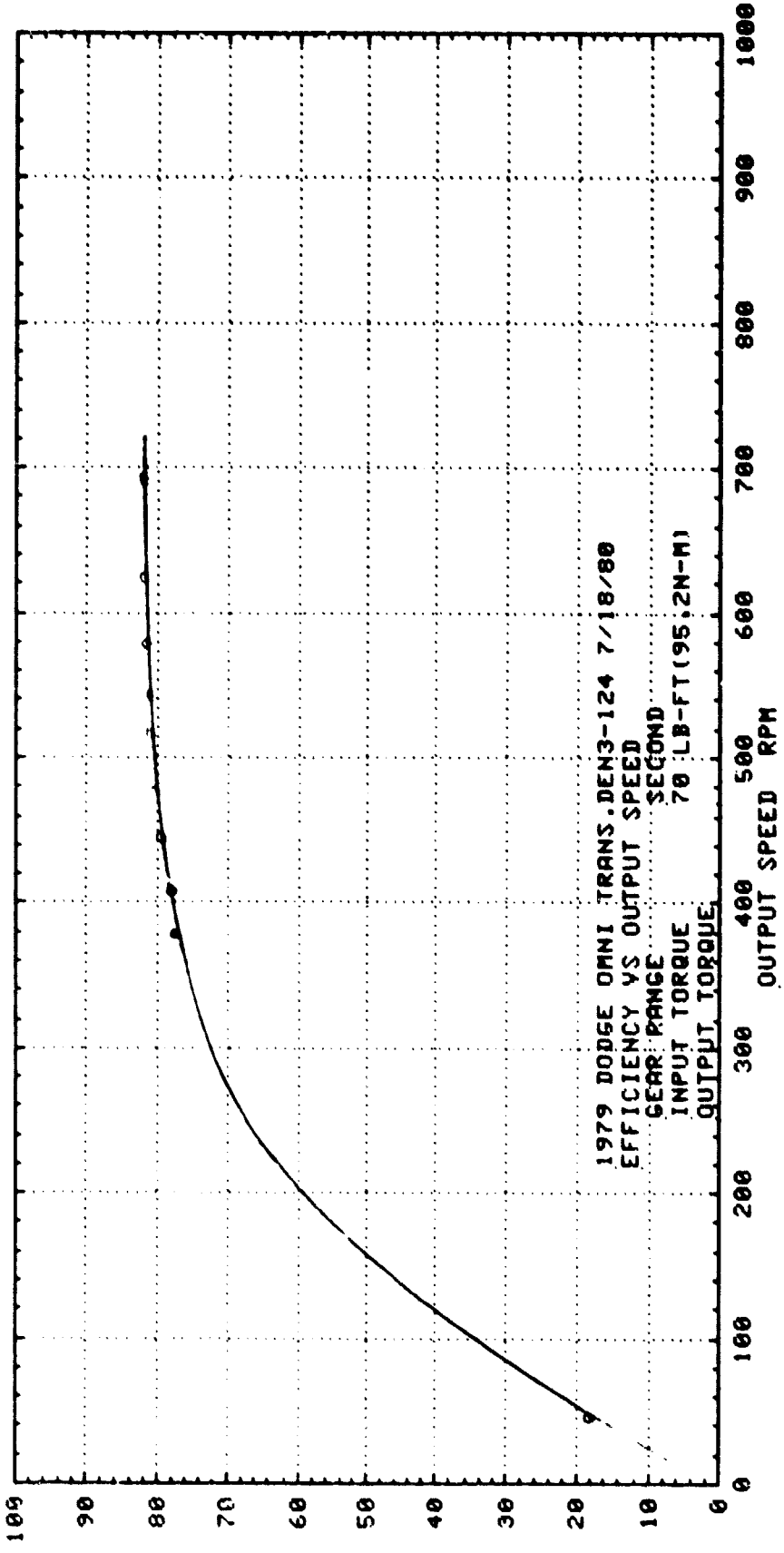

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE

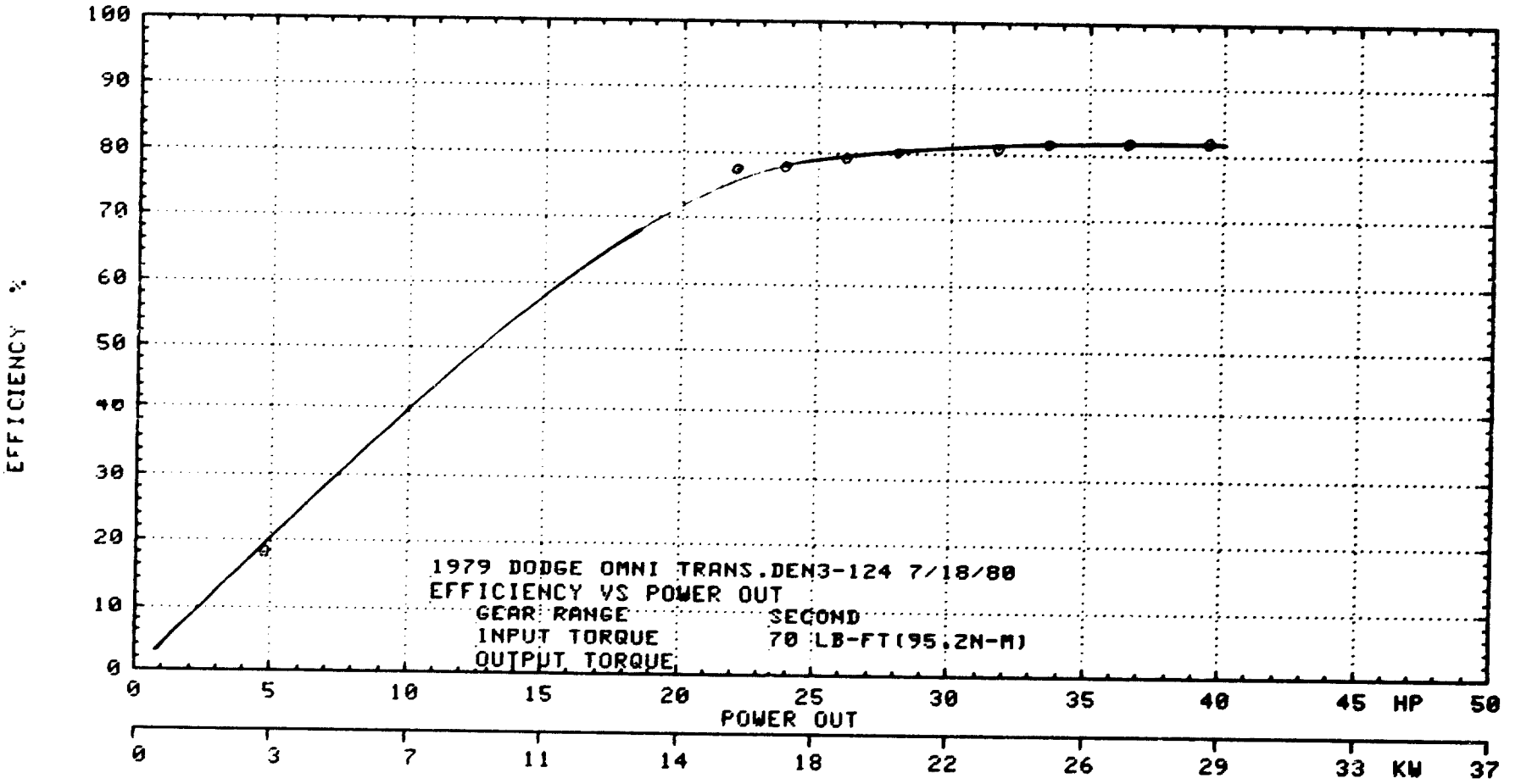

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/17/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

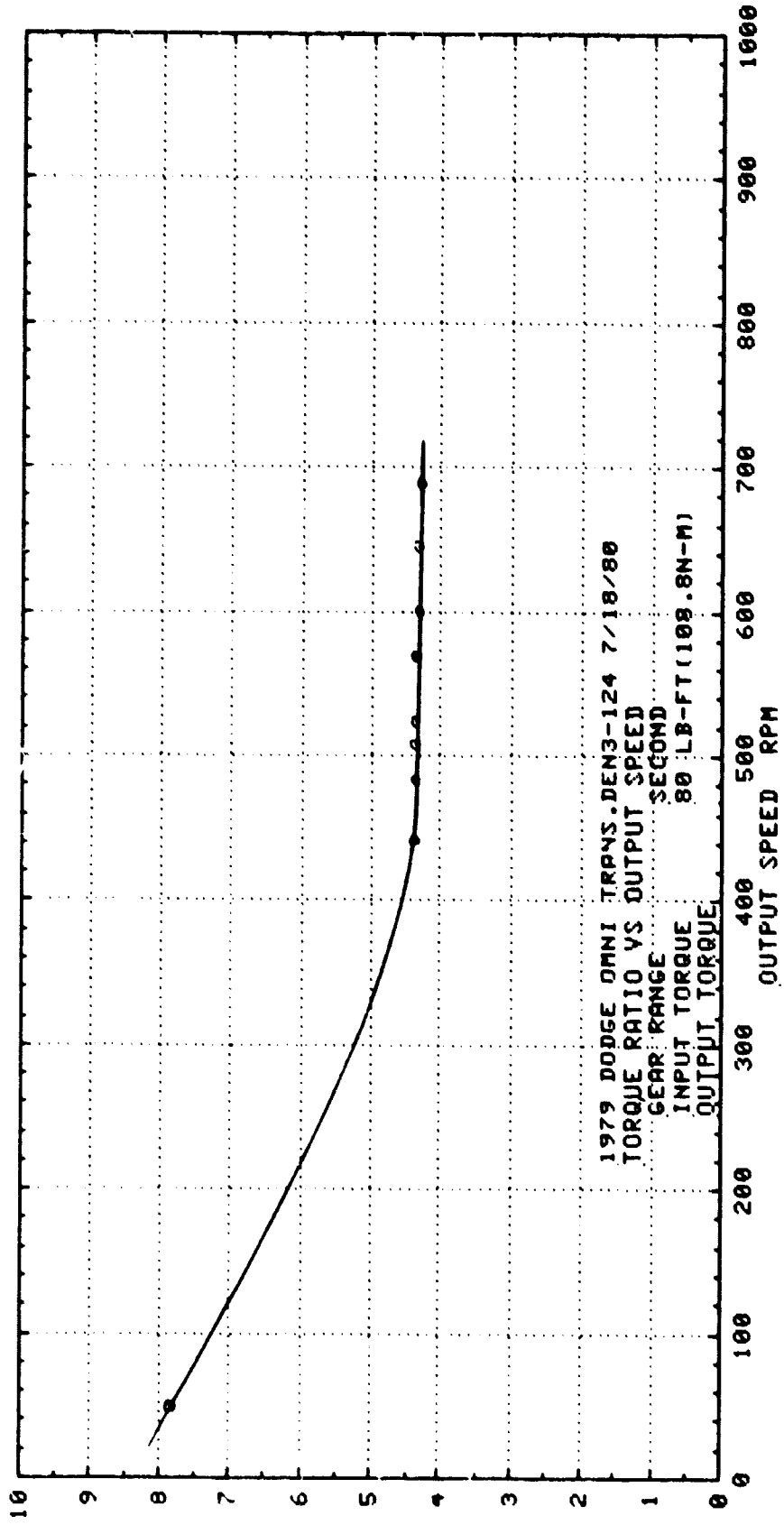

TORQUE RATIO To/Ti
10
9
8
7
6
5
4
3
2
1
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE

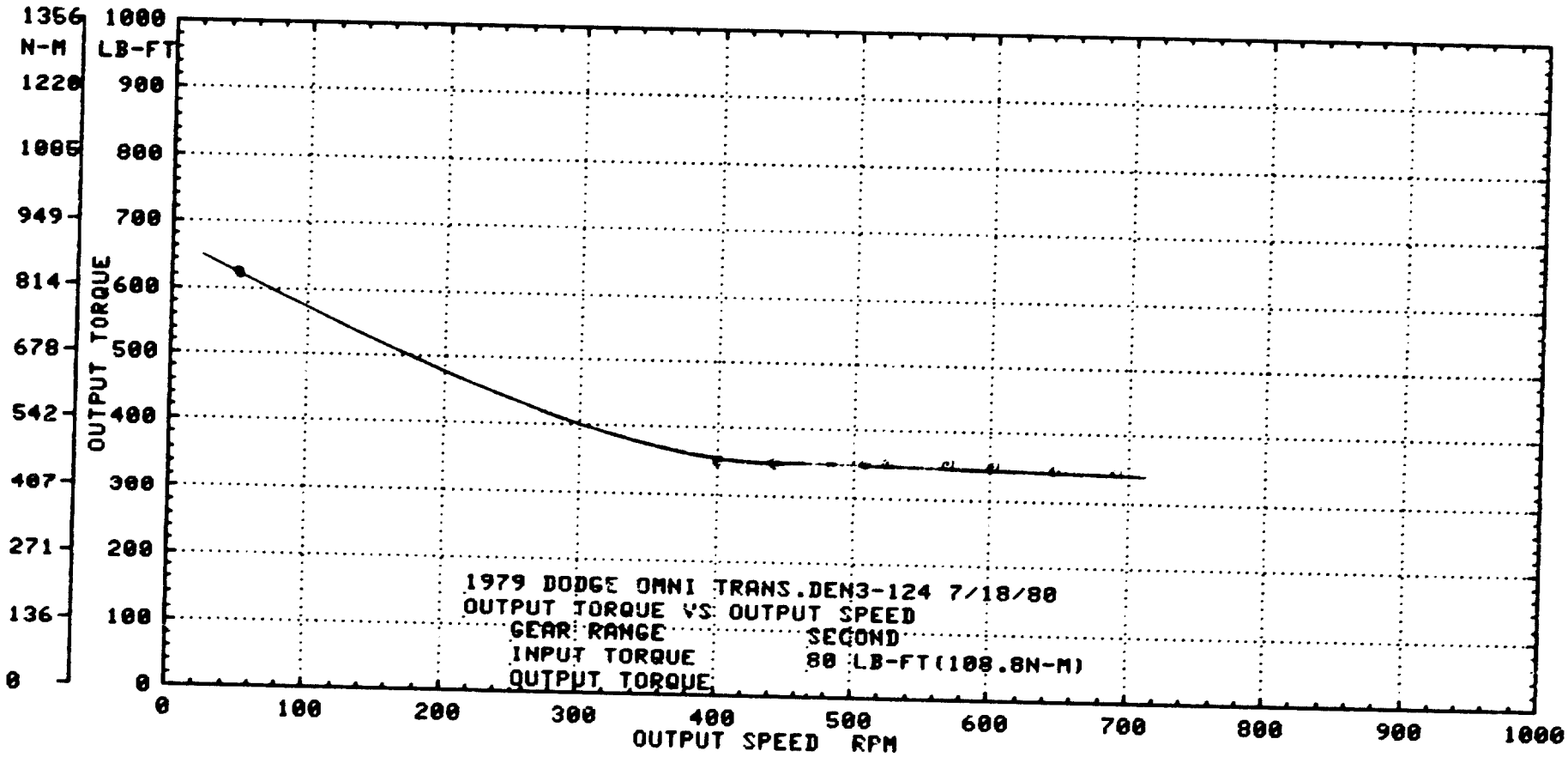

1356 N-M
1220
1085
949
814
678
542
407
271
136
0
1000 LB-FT
900
800
700
600
500
400
300
200
100
0
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE

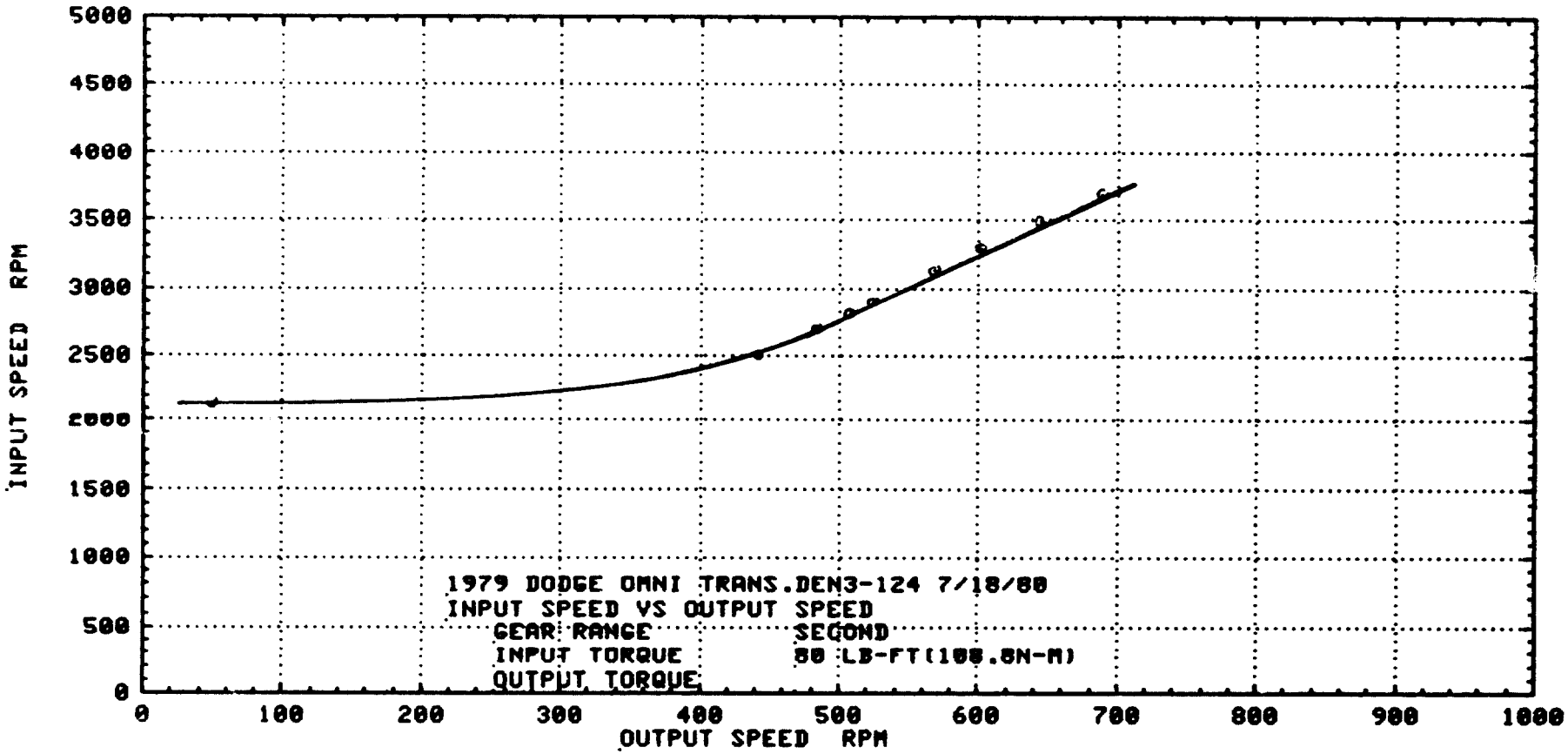

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE

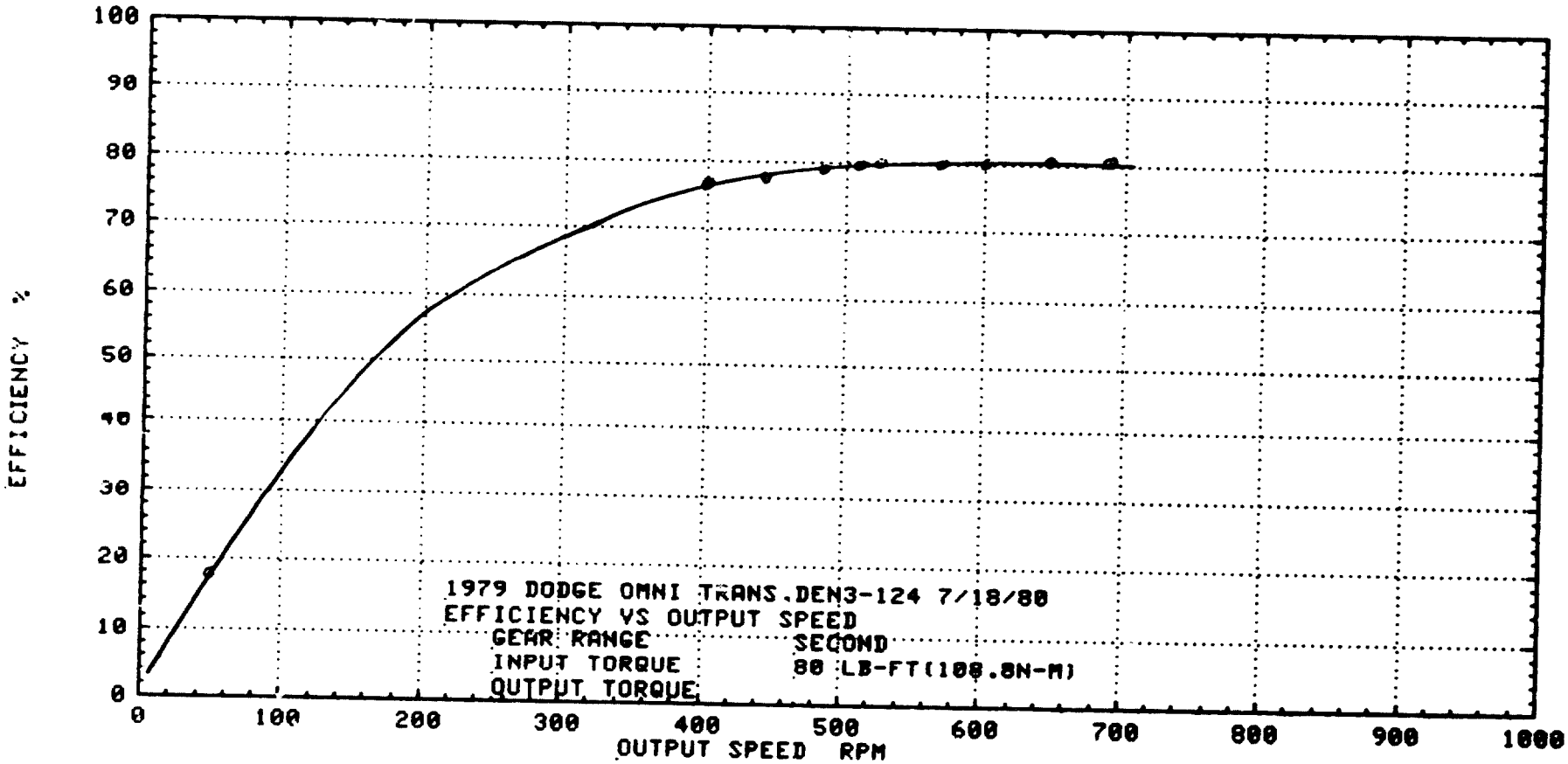

1979 DODGE OMNI TRANS.DEN3-124 7/18/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
OUTPUT SPEED RPM
EFFICIENCY %
0
100
200
300
400
500
600
700
800
900
1000
10
20
30
40
50
60
70
80
90
100

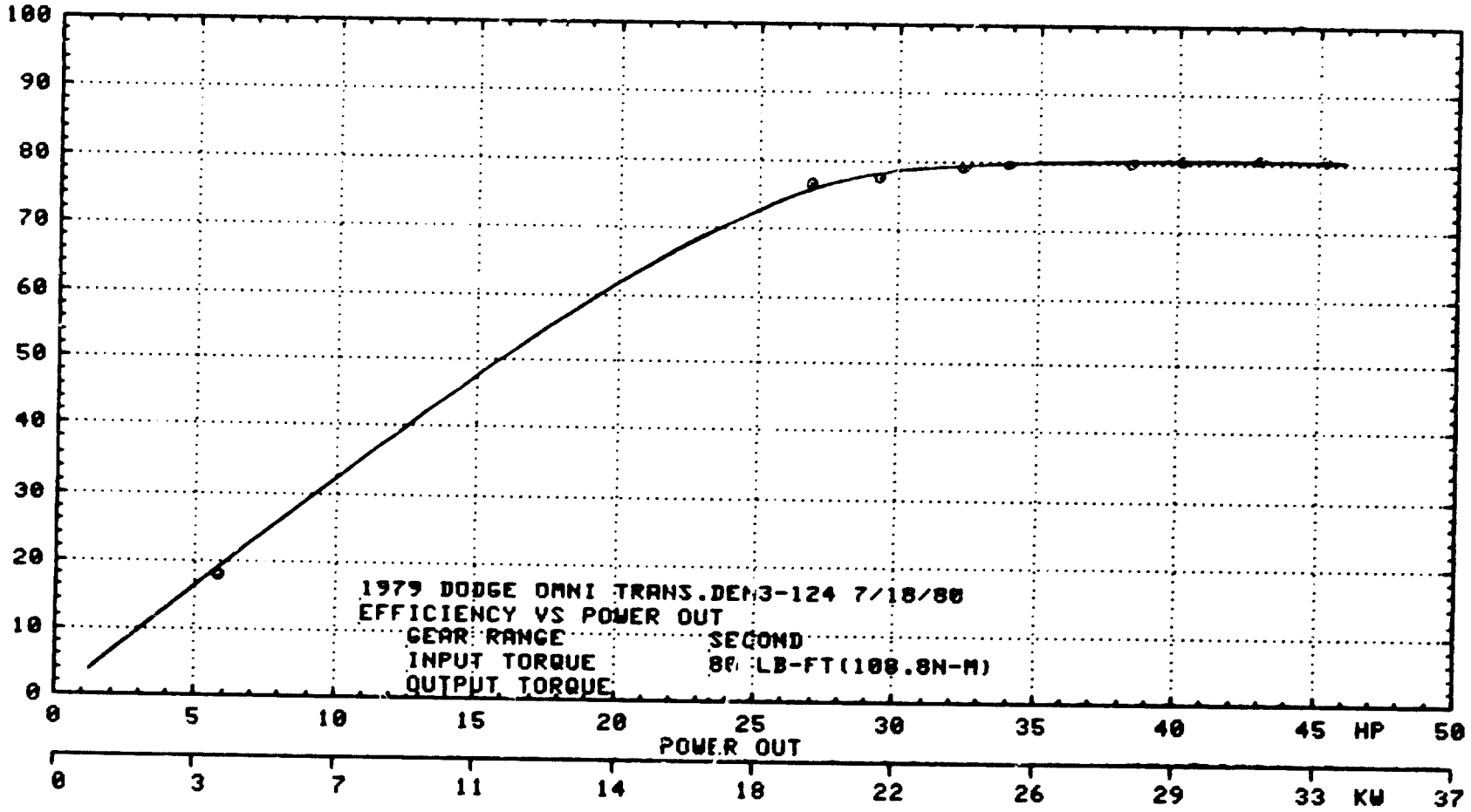

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

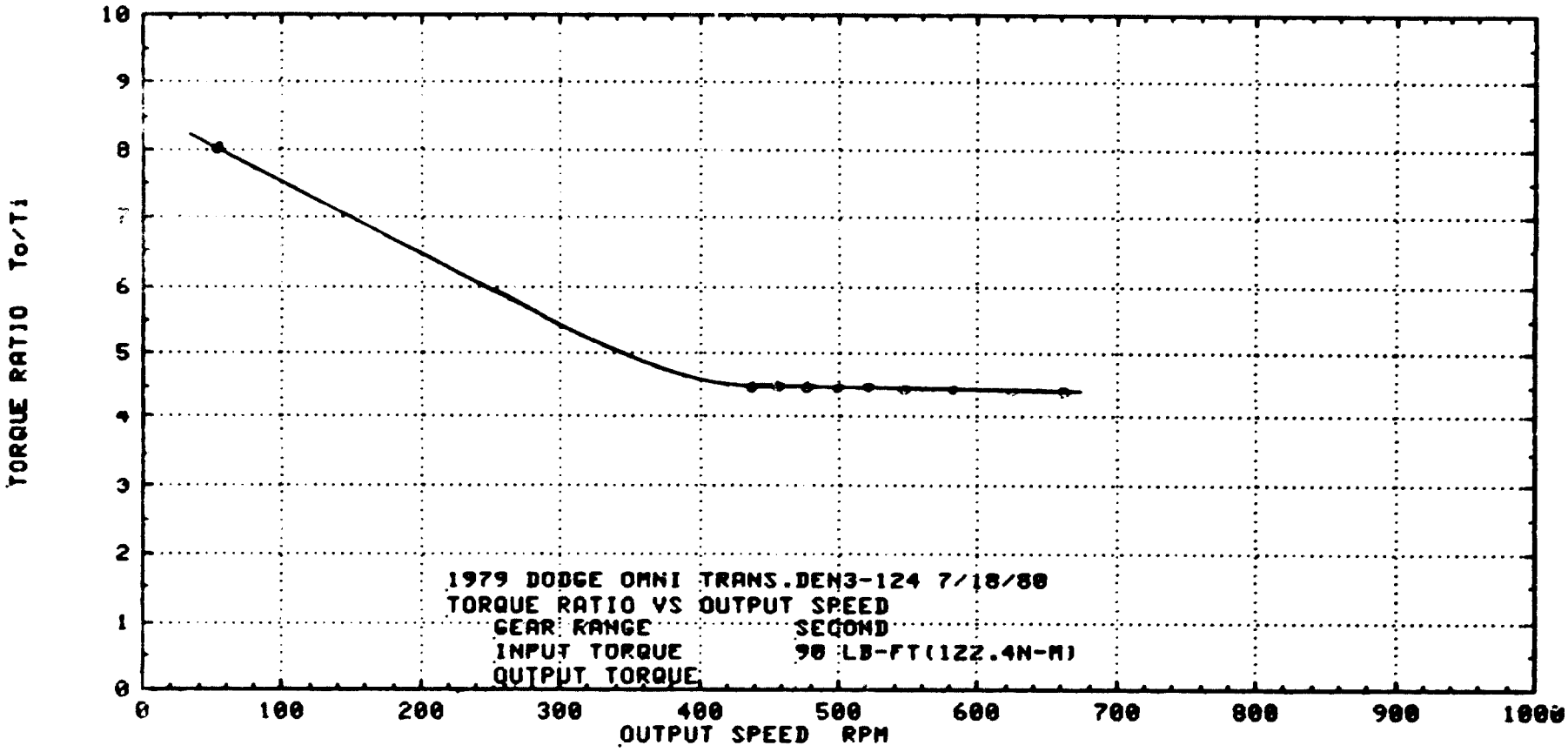

1979 DODGE OMNI TRNYS.DEN3-124 7/18/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE
OUTPUT SPEED RPM
TORQUE RATIO To/Ti
0
100
200
300
400
500
600
700
800
900
1000
1
2
3
4
5
6
7
8
9
10

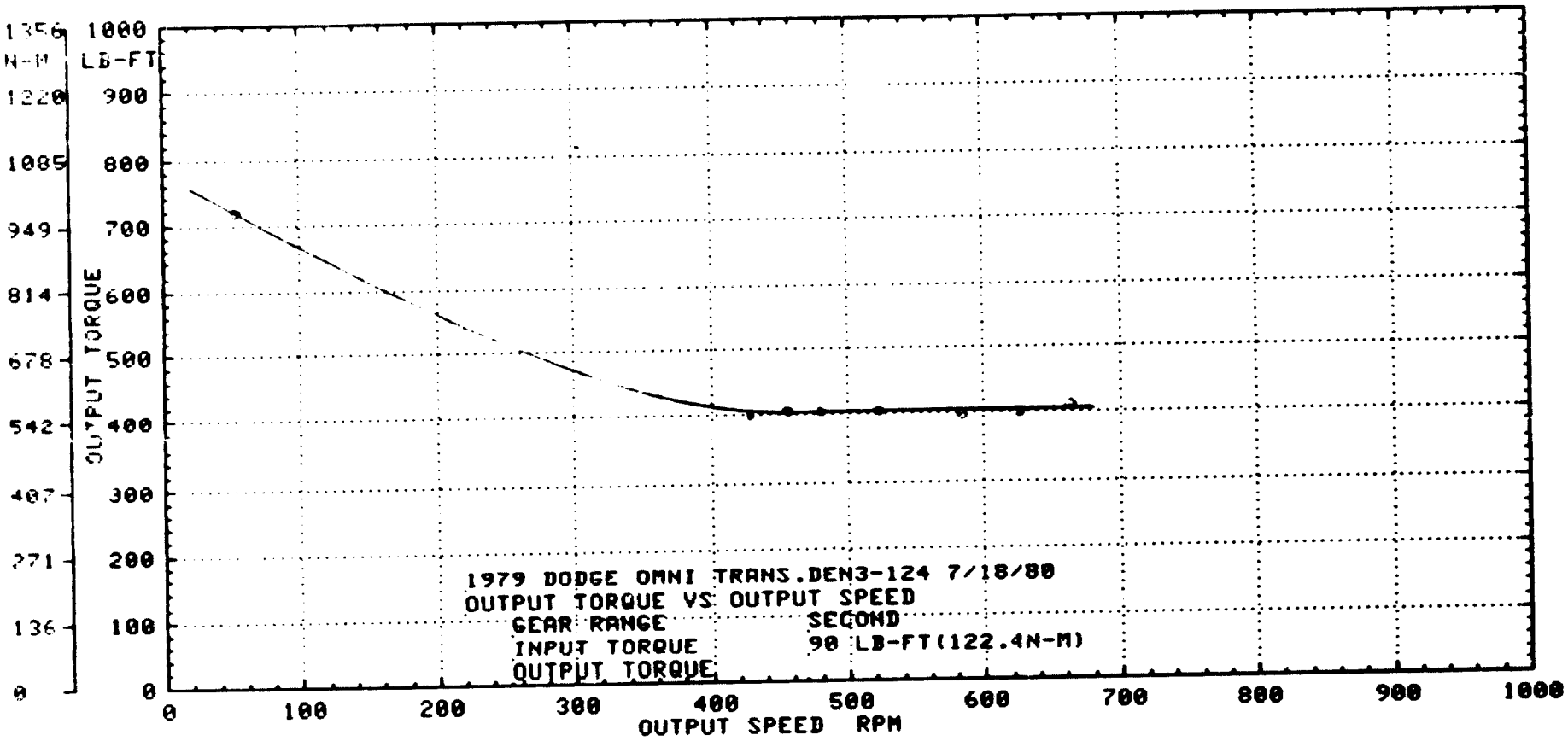

1356
N-M
1220
1085
949
814
678
542
407
271
136
0
1000
LB-FT
900
800
700
600
500
400
300
200
100
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM

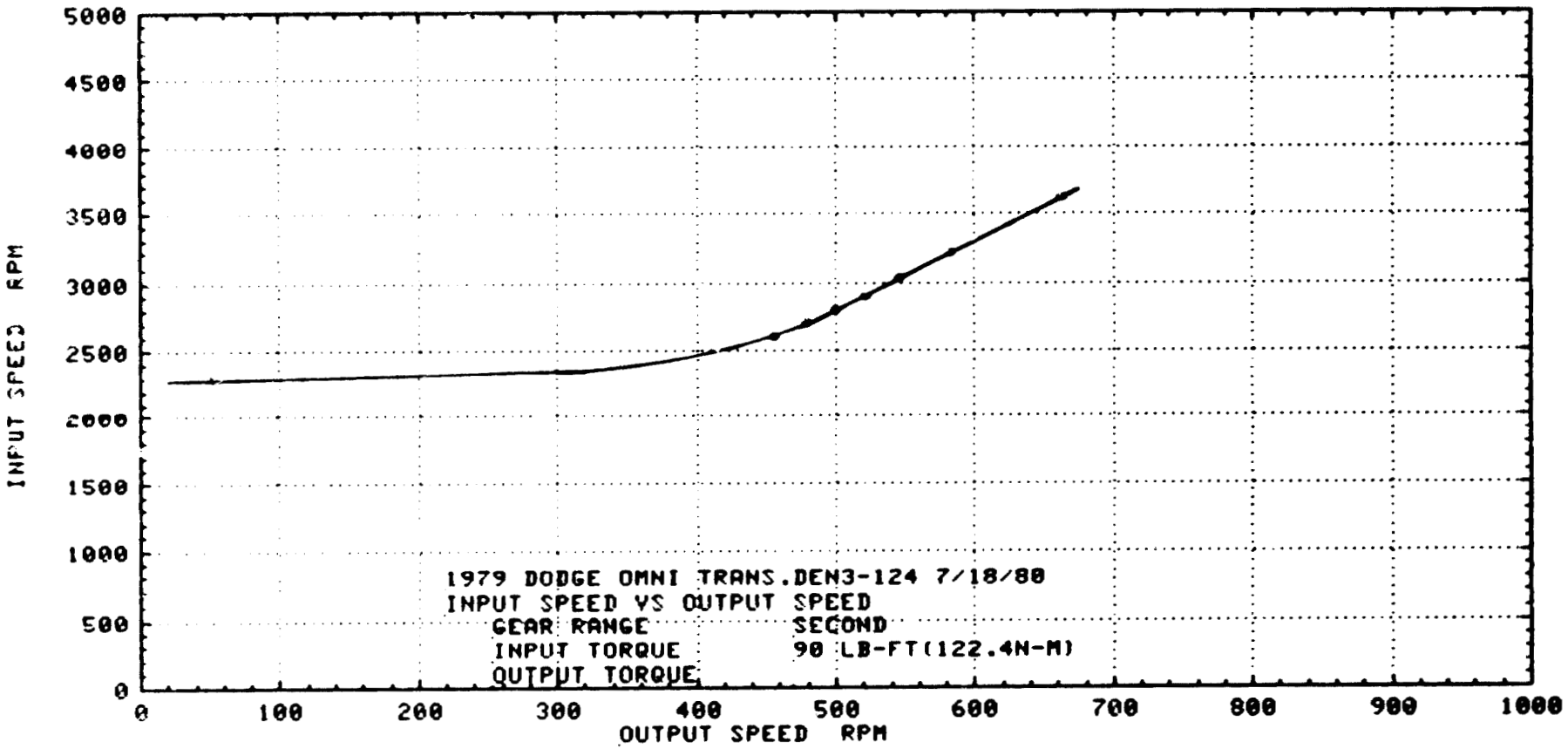

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE

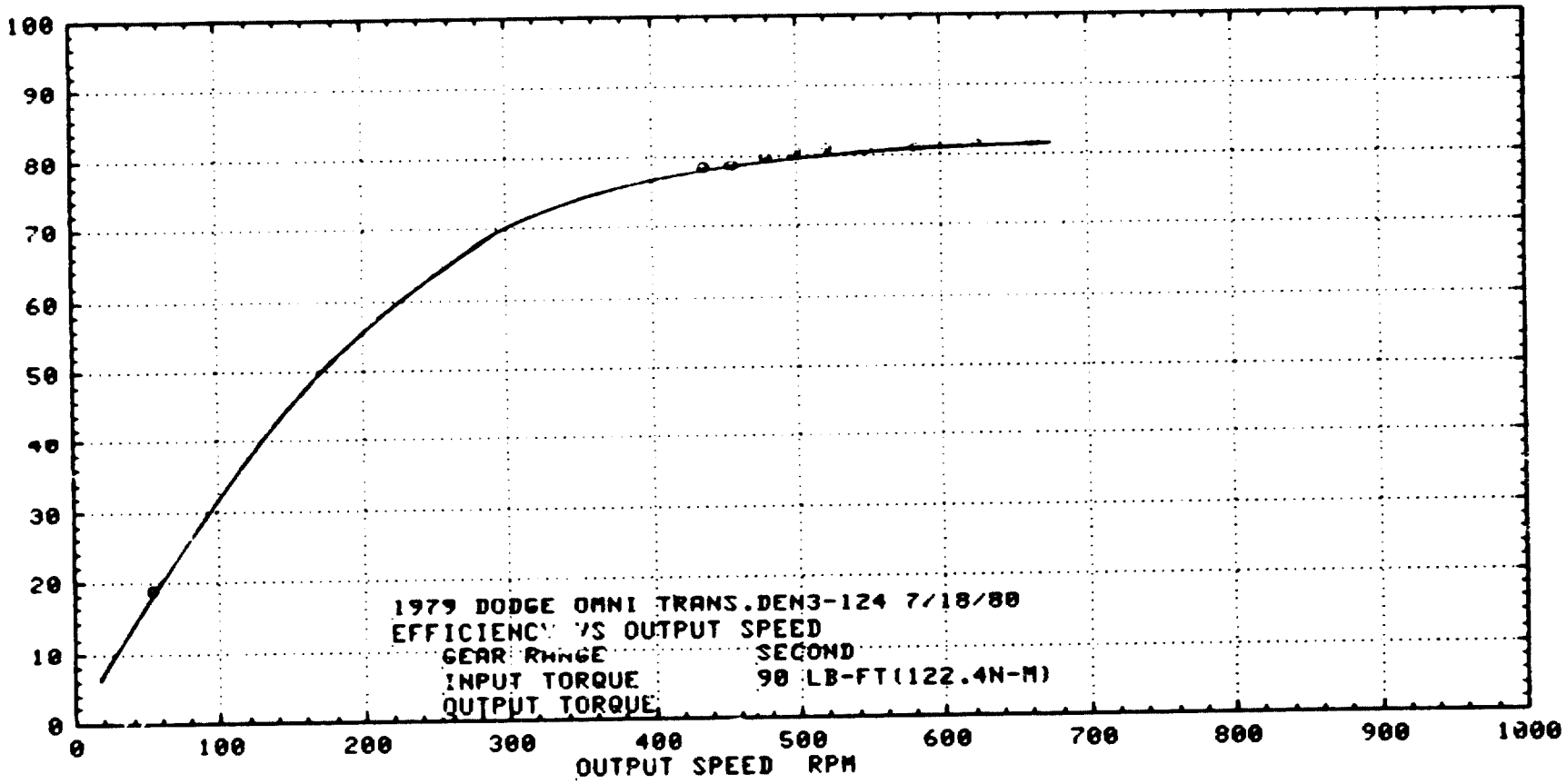

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE

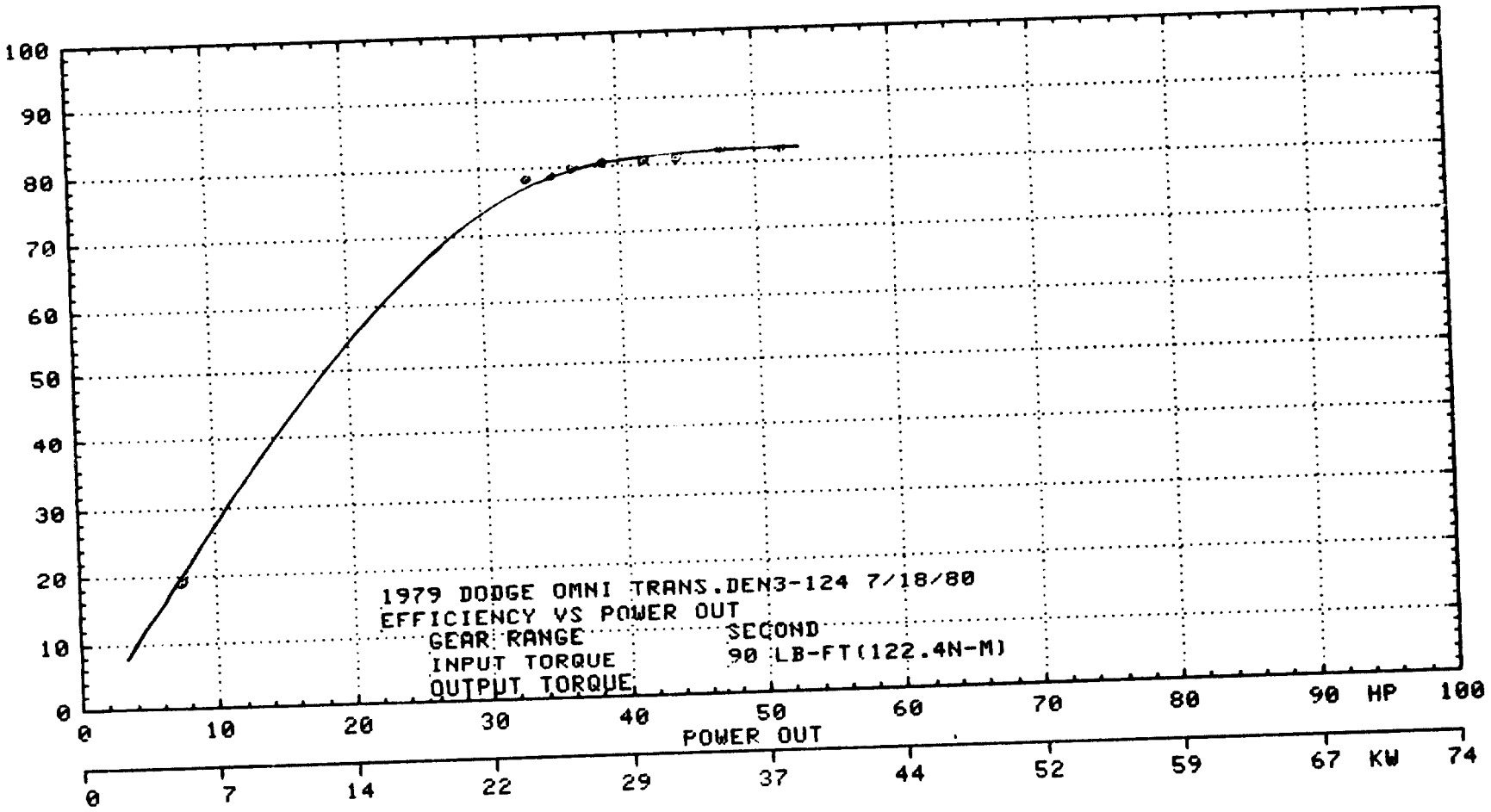

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEM3-124 7/18/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37


TORQUE RATIO To/Ti
10
9
8
6
5
4
3
2
1
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE


1356
N-M
1220
1085
949
814
678
542
407
271
136
0
1000
LB-FT
900
800
700
600
500
400
300
200
100
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM


INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE


100
90
80
70
60
50
40
30
20
10
0
EFFICIENCY %
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/18/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE
0 10 20 30 40 50 60 70 80 90 HP 100
POWER OUT
0 7 14 22 29 37 44 52 59 67 KW 74

DRIVE PERFORMANCE

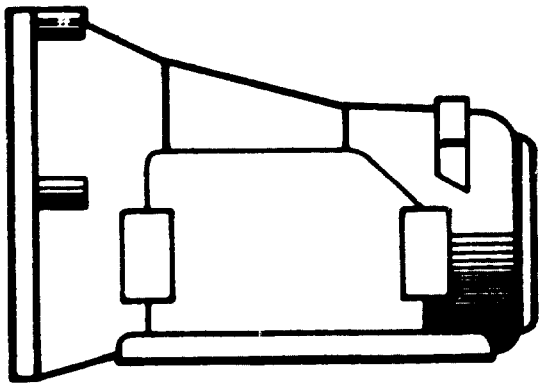
3rd Gear

Graphs Contained in This Section

Torque Ratio -vs- Output Speed
Output Torque -vs- Output Speed
Input Speed -vs- Output Speed
Efficiency -vs- Output Speed
Efficiency -vs- Power Out

Torque In

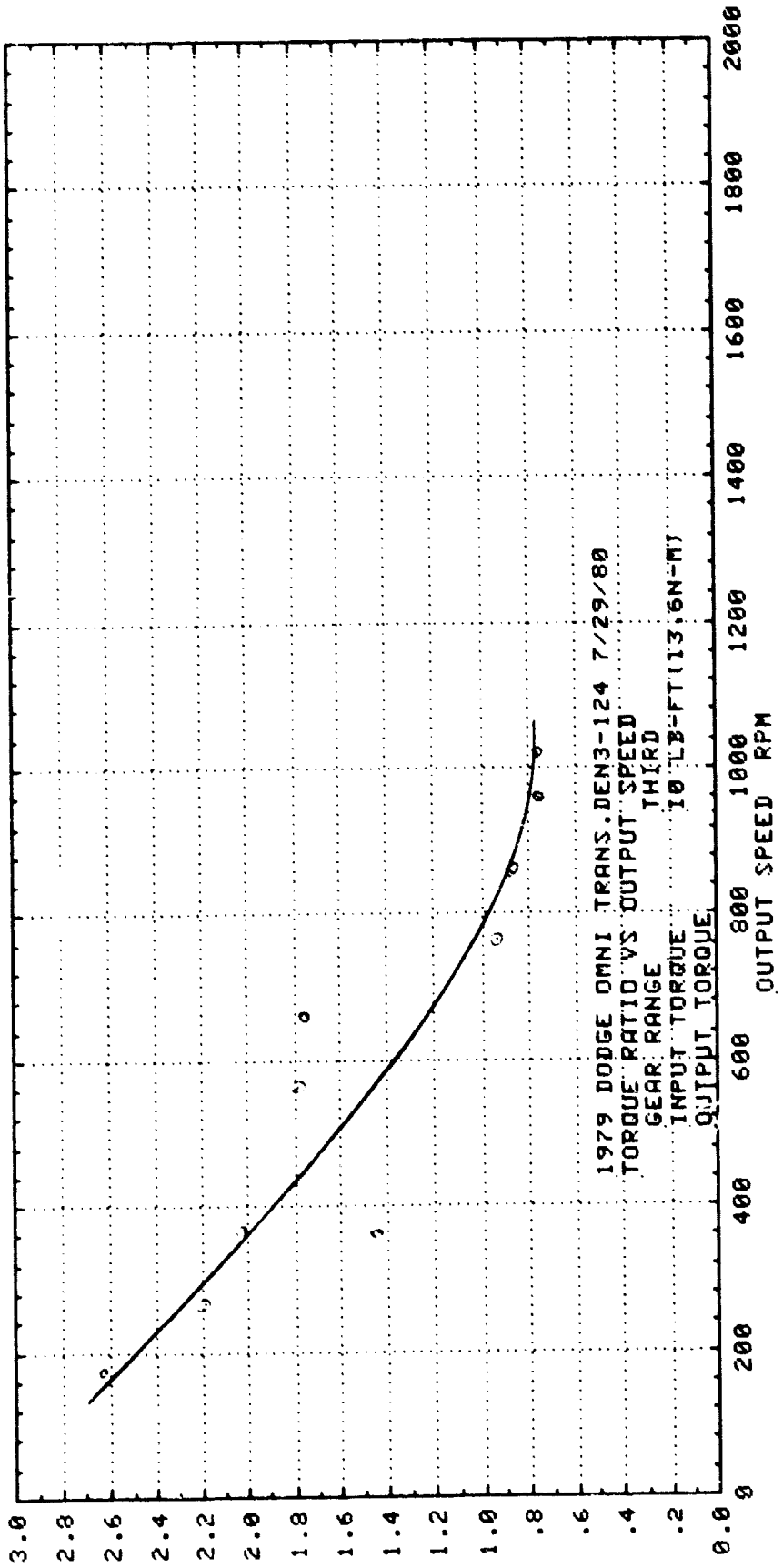
Speed In

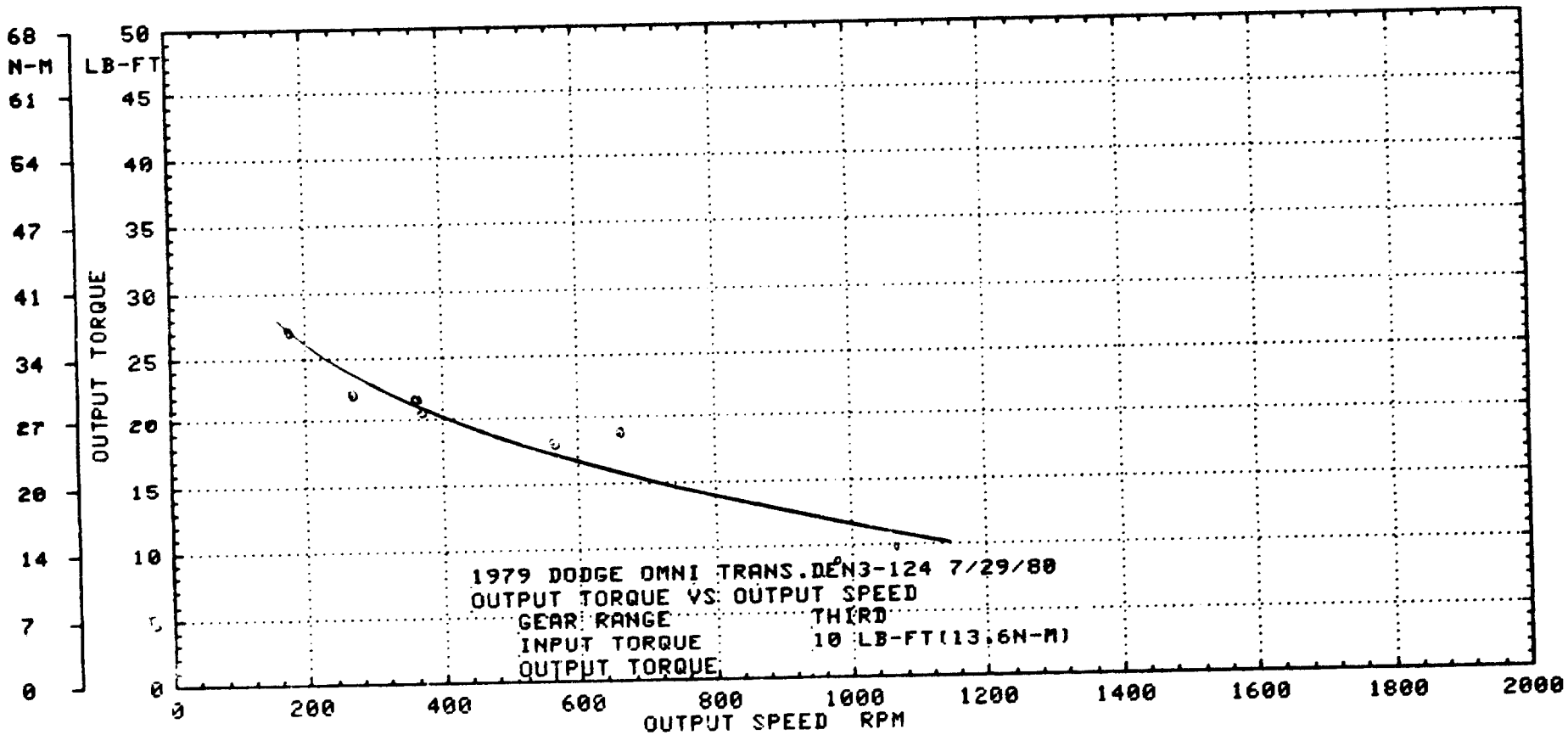


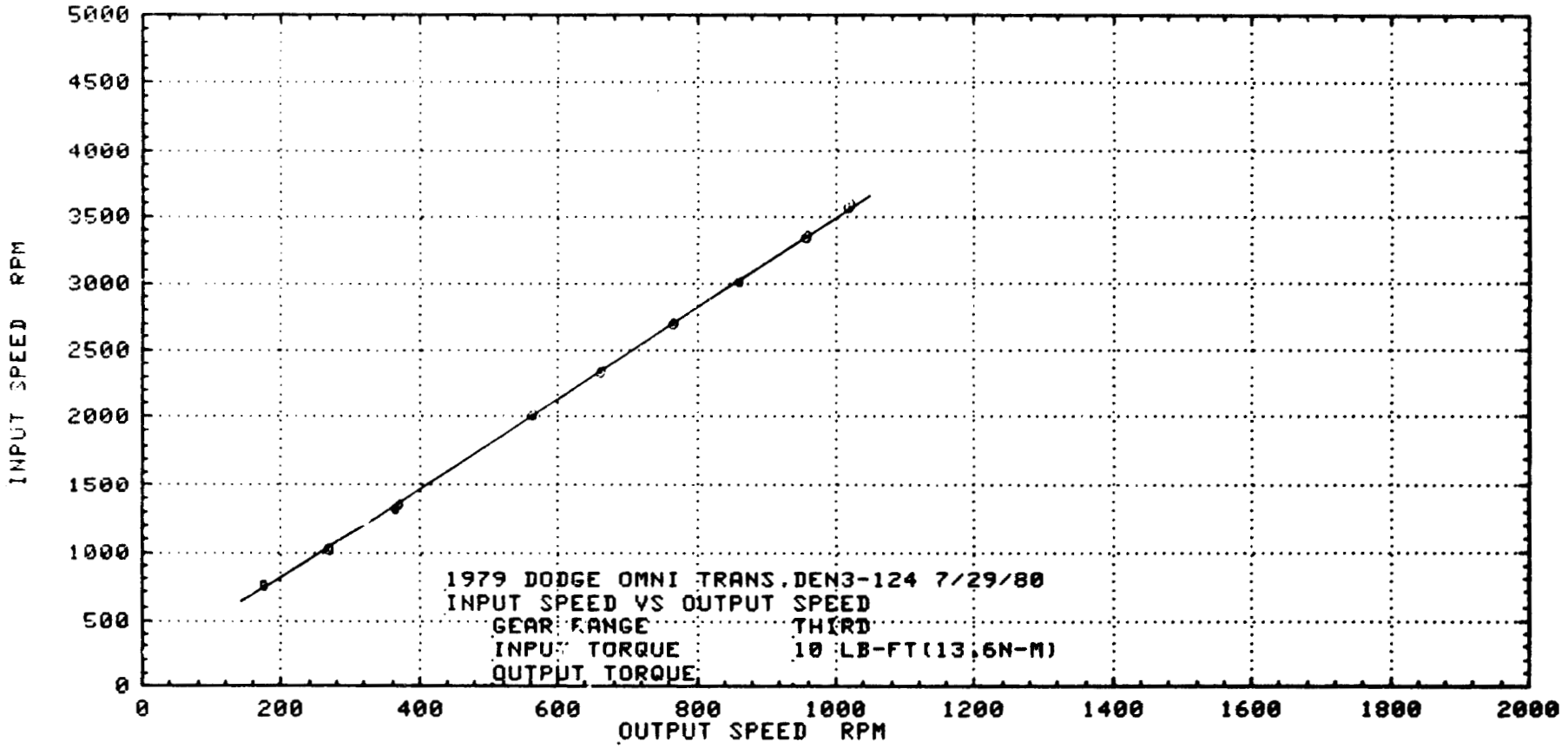
Torque Out

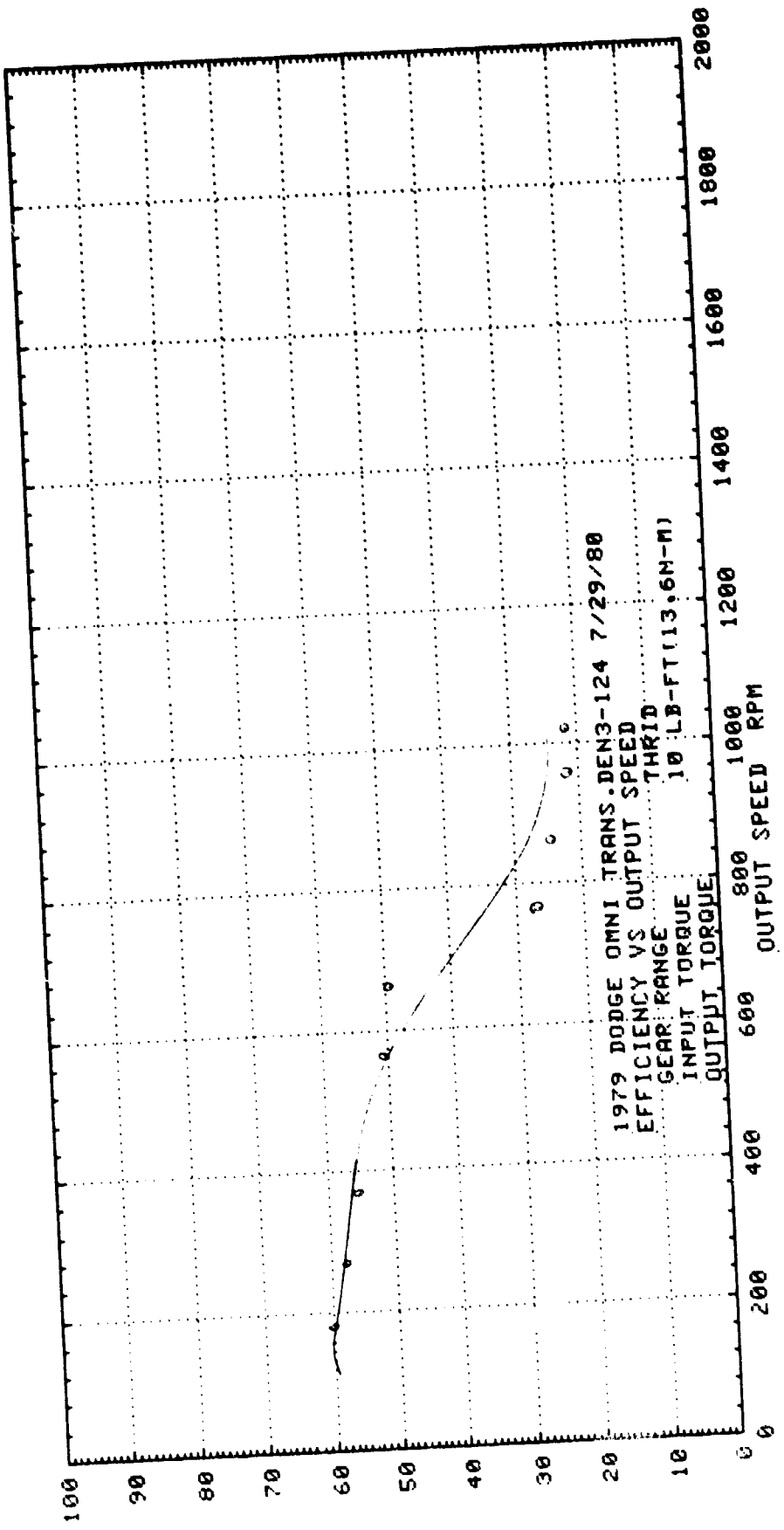
Speed Out

Drive Performance Tests

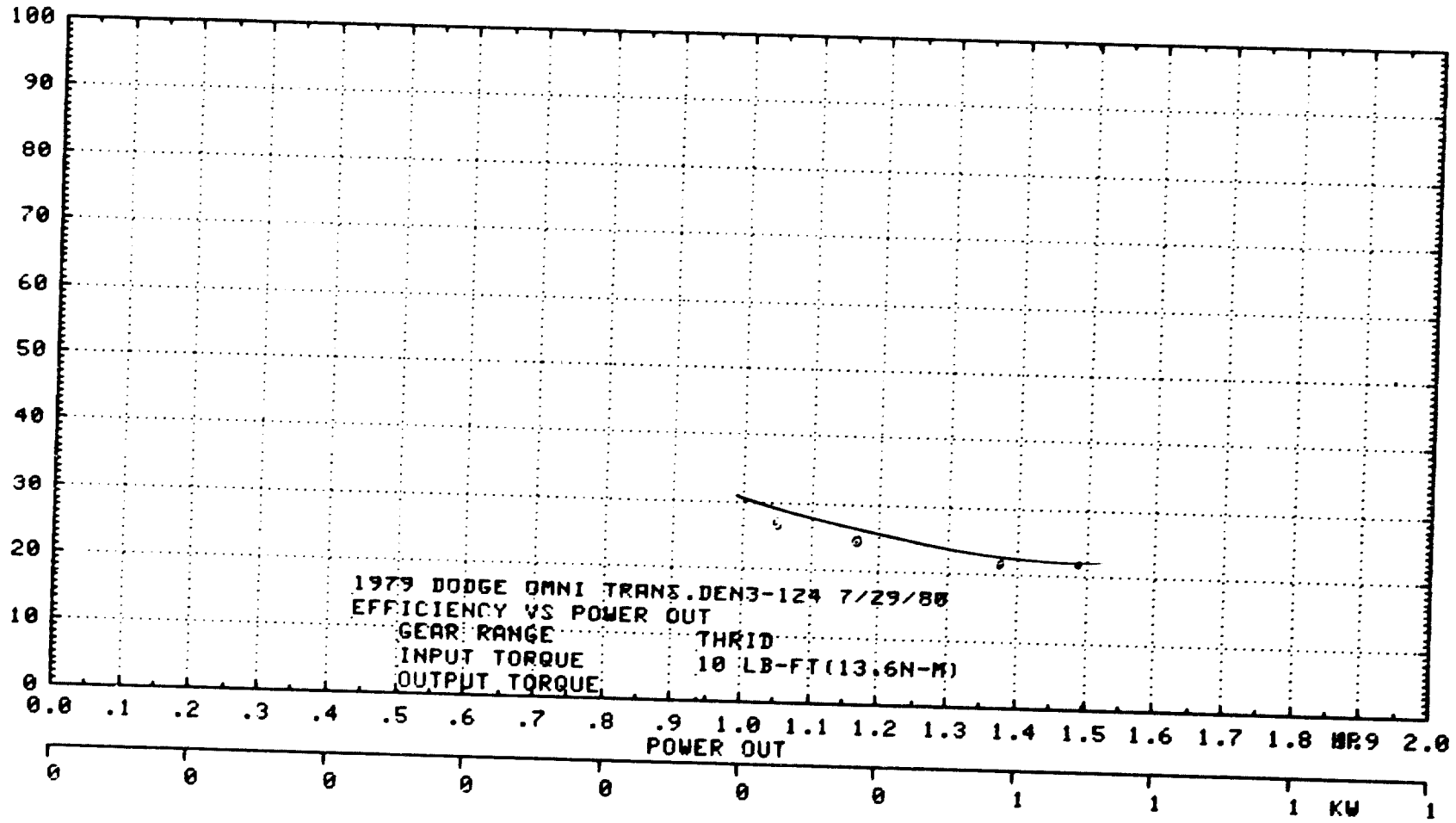

1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE
TORQUE RATIO To/Ti
OUTPUT SPEED RPM
0.0
.2
.4
.6
.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000

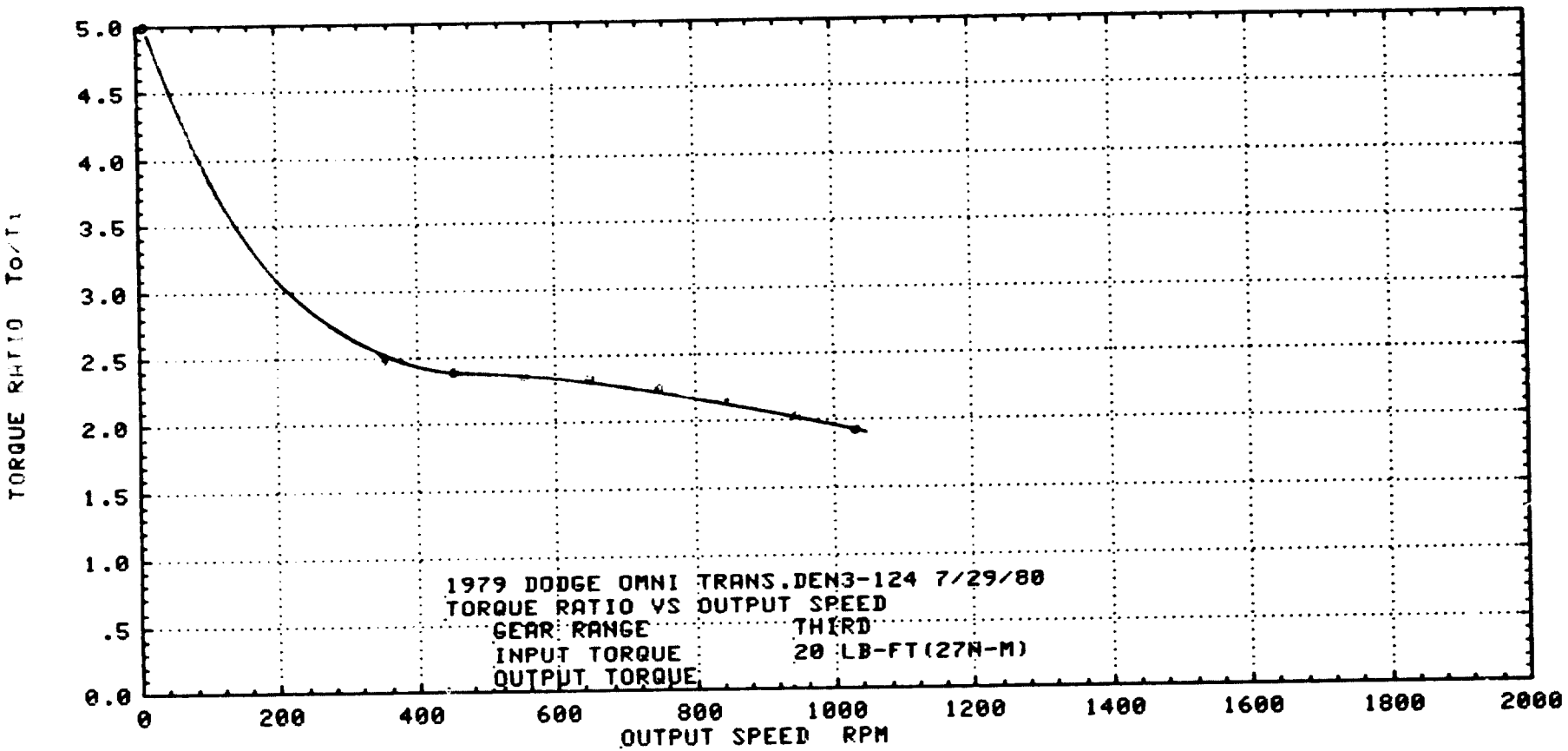

68
N-M
61
54
47
41
34
27
20
14
7
0
50
LB-FT
45
40
35
30
25
20
15
10
5
0
OUTPUT TORQUE
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE

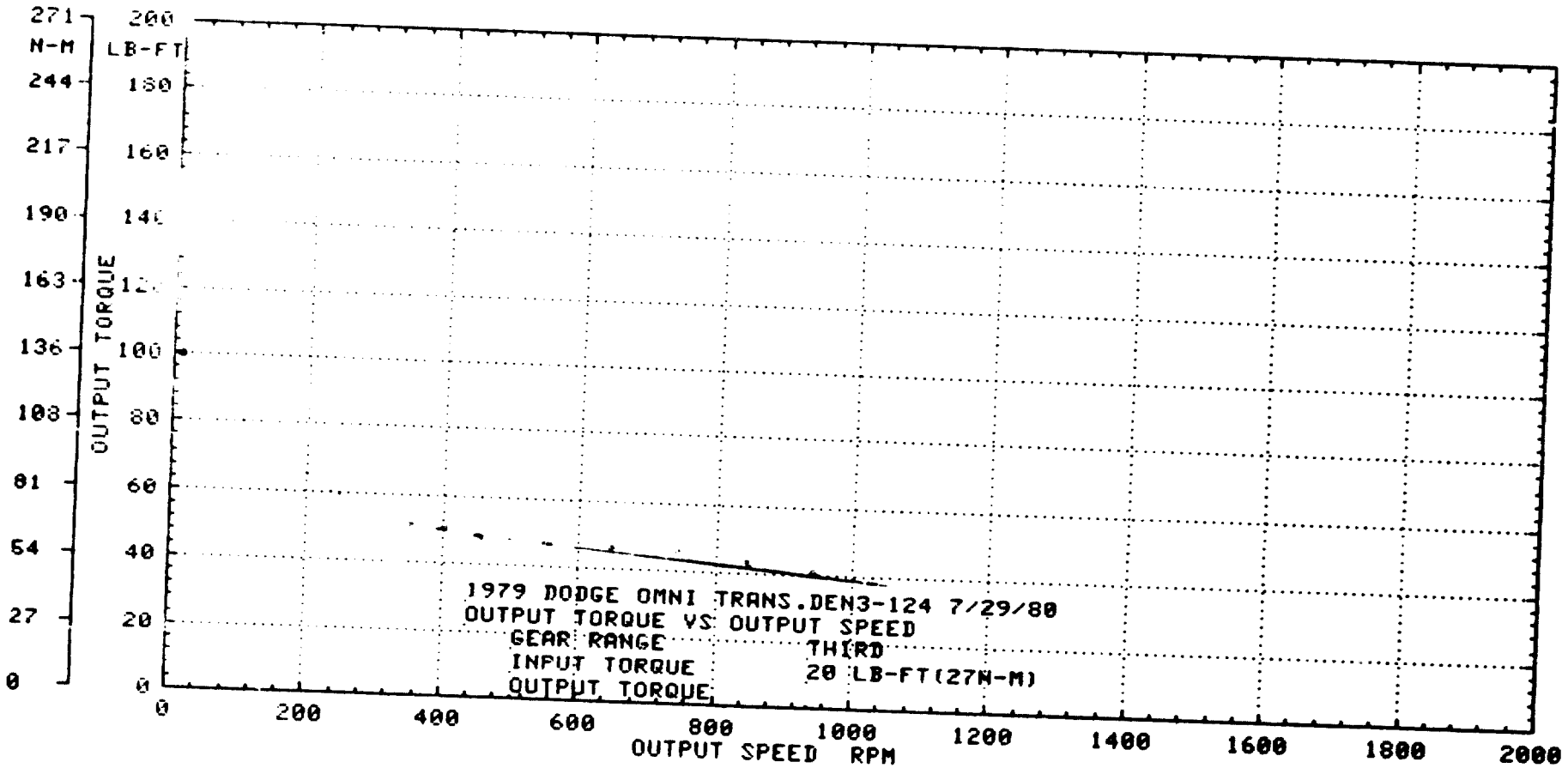

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE



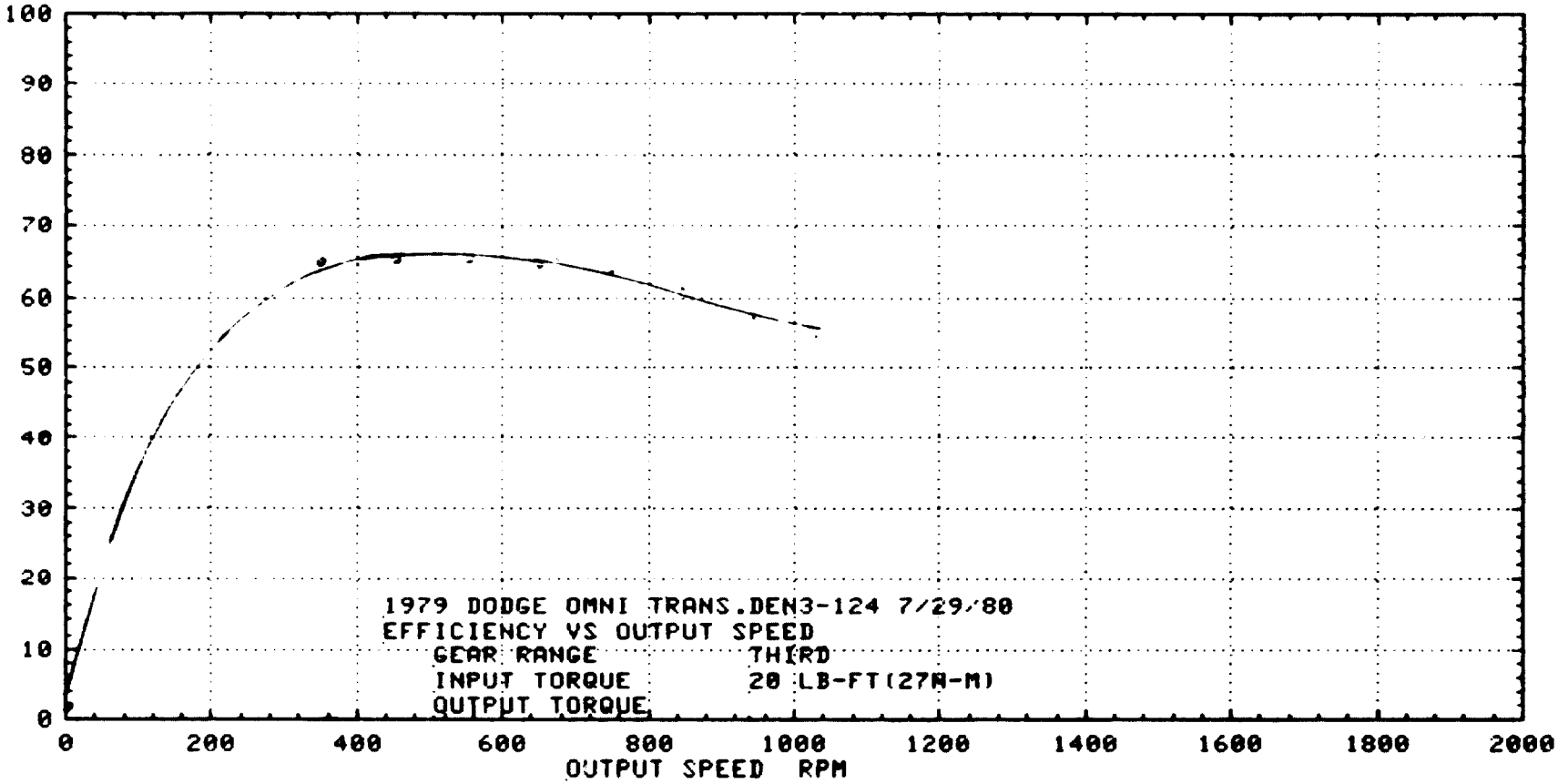
POOR QUALITY

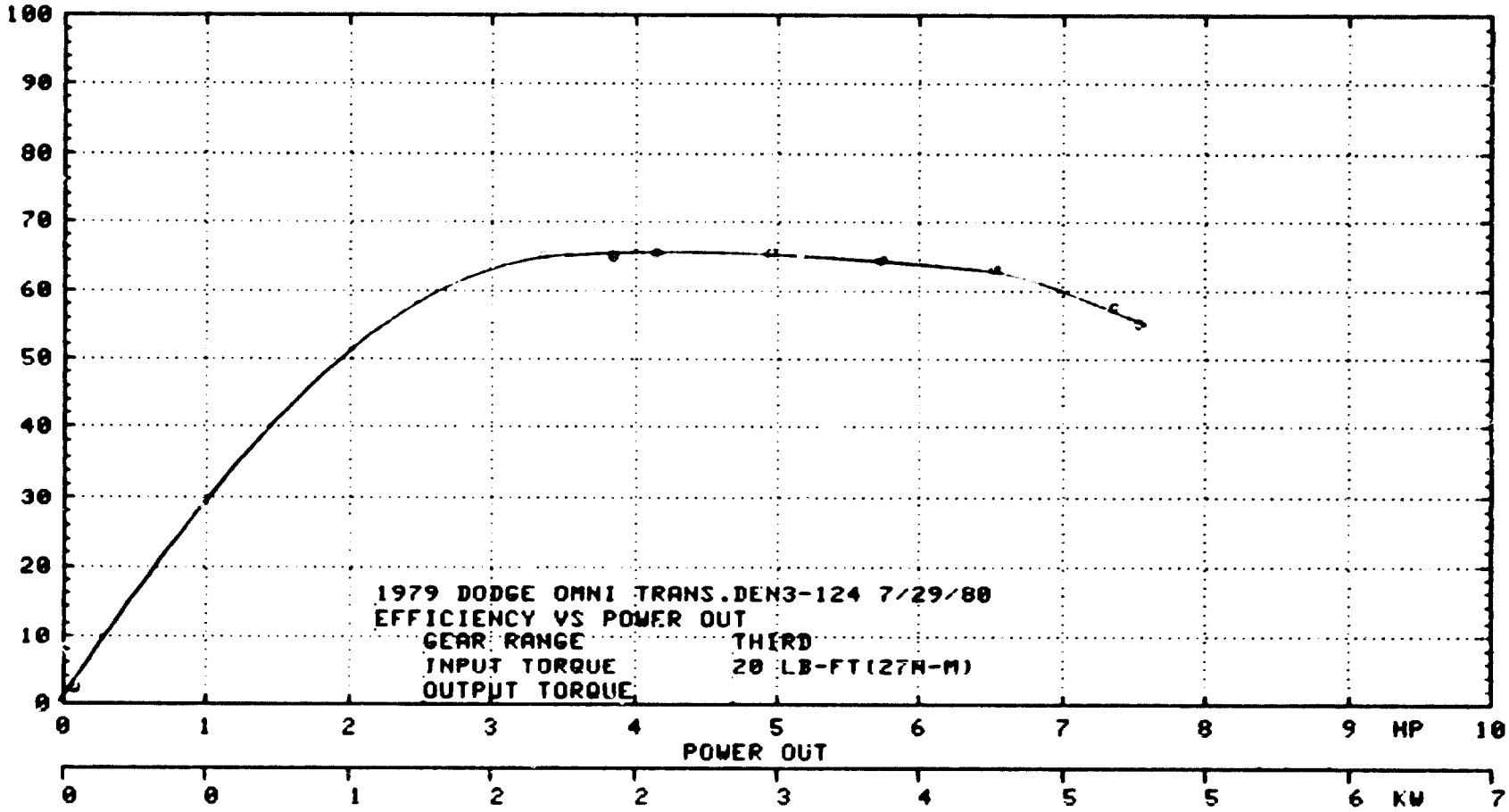

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THRID
INPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT TORQUE
0.0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0
POWER OUT
0 0 0 0 0 0 0 1 1 1 KW 1

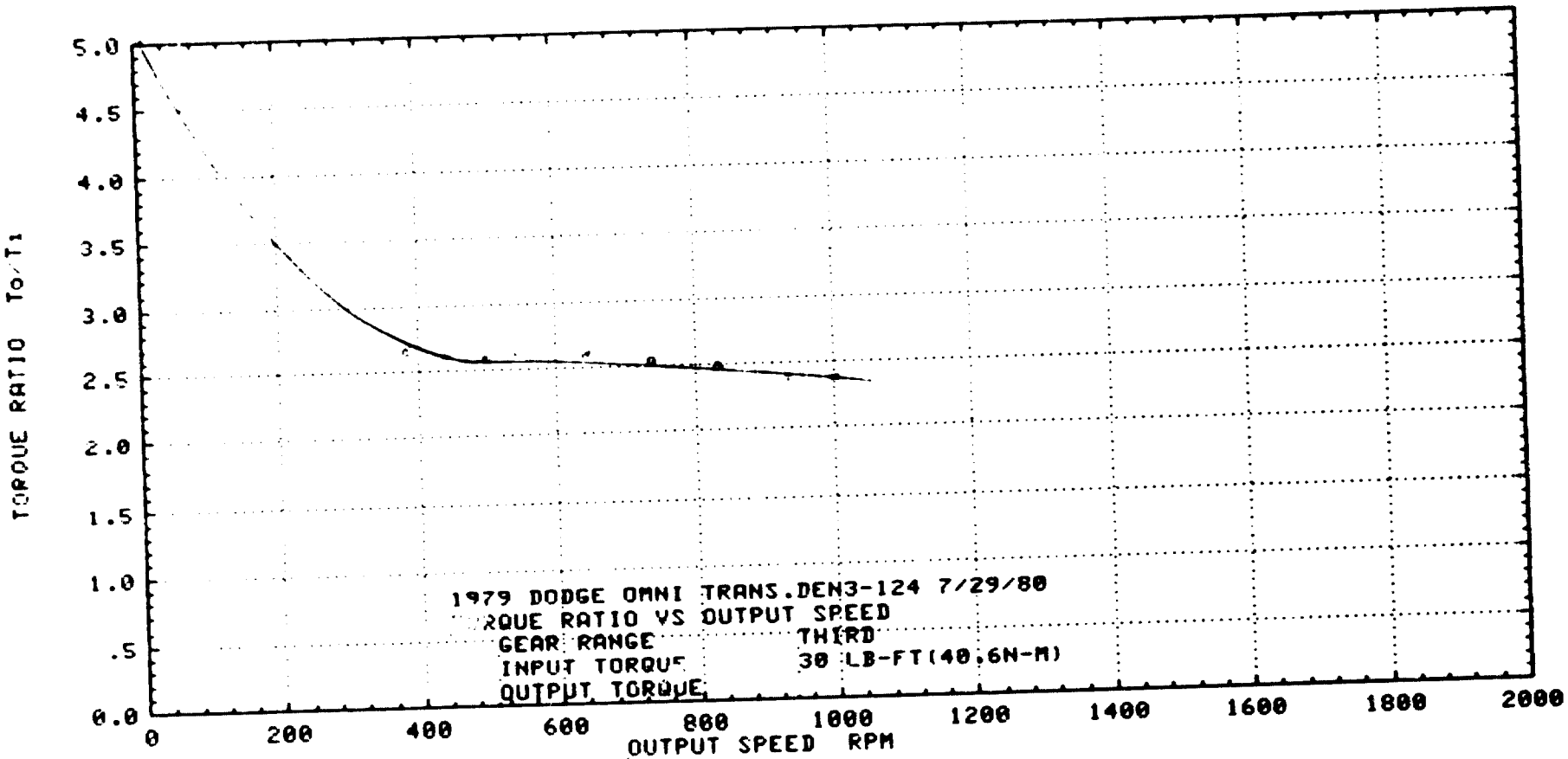

TORQUE RATIO To/Ti
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 20 LB-FT(27N-M)
OUTPUT TORQUE

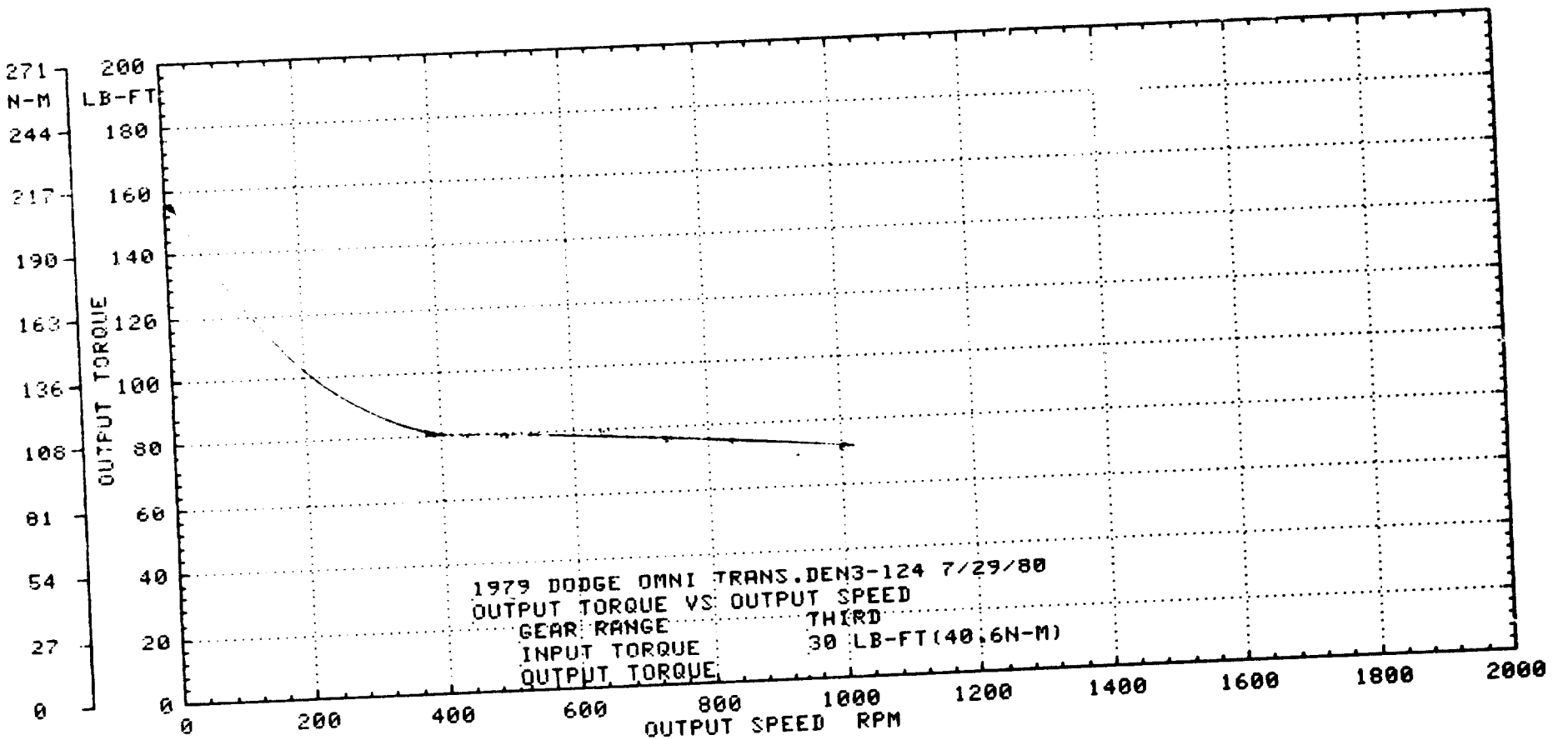

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 20 LB-FT(27N-M)
OUTPUT TORQUE
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM

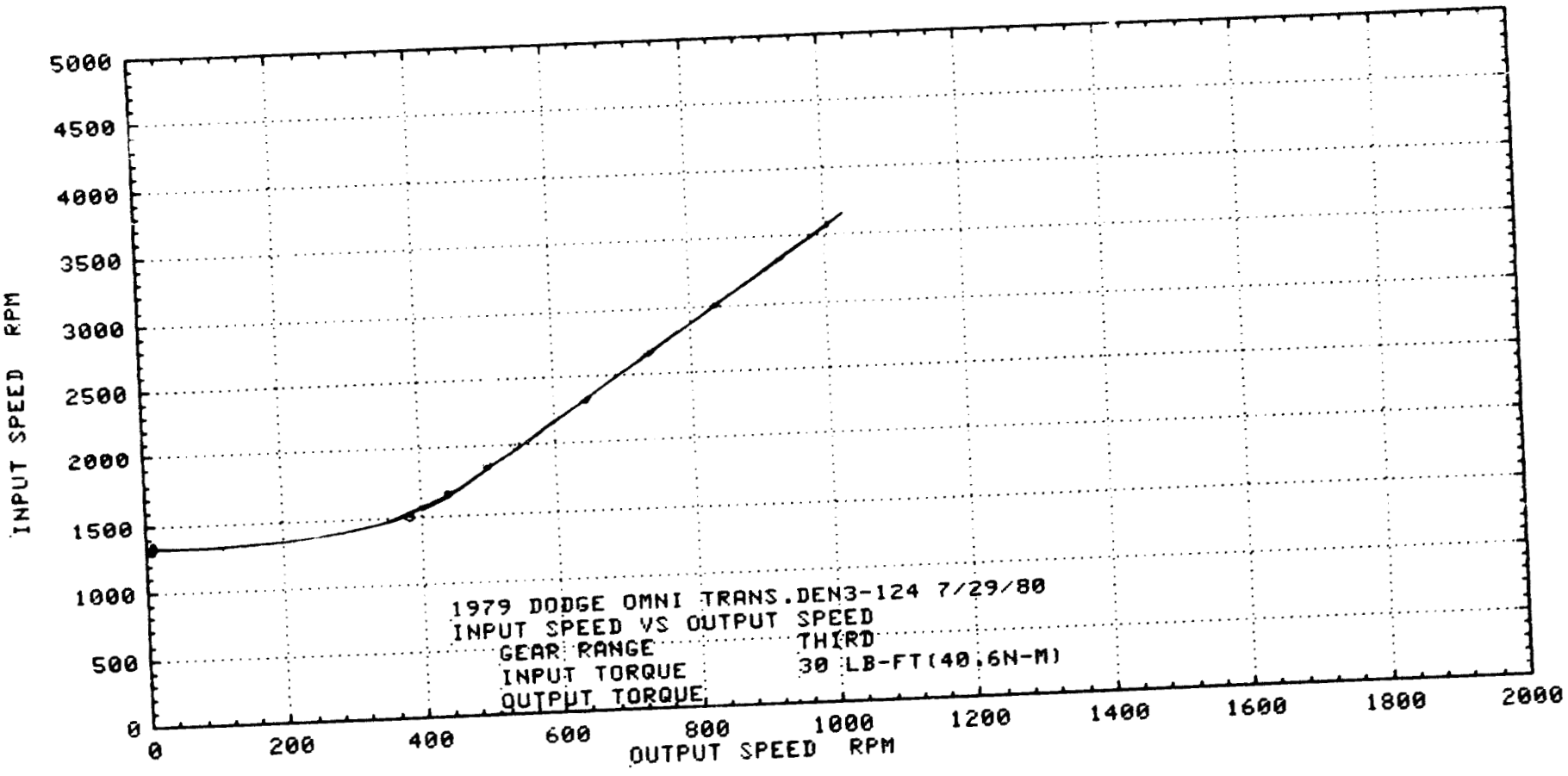
INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 20 LB-FT(27N-M)
OUTPUT TORQUE

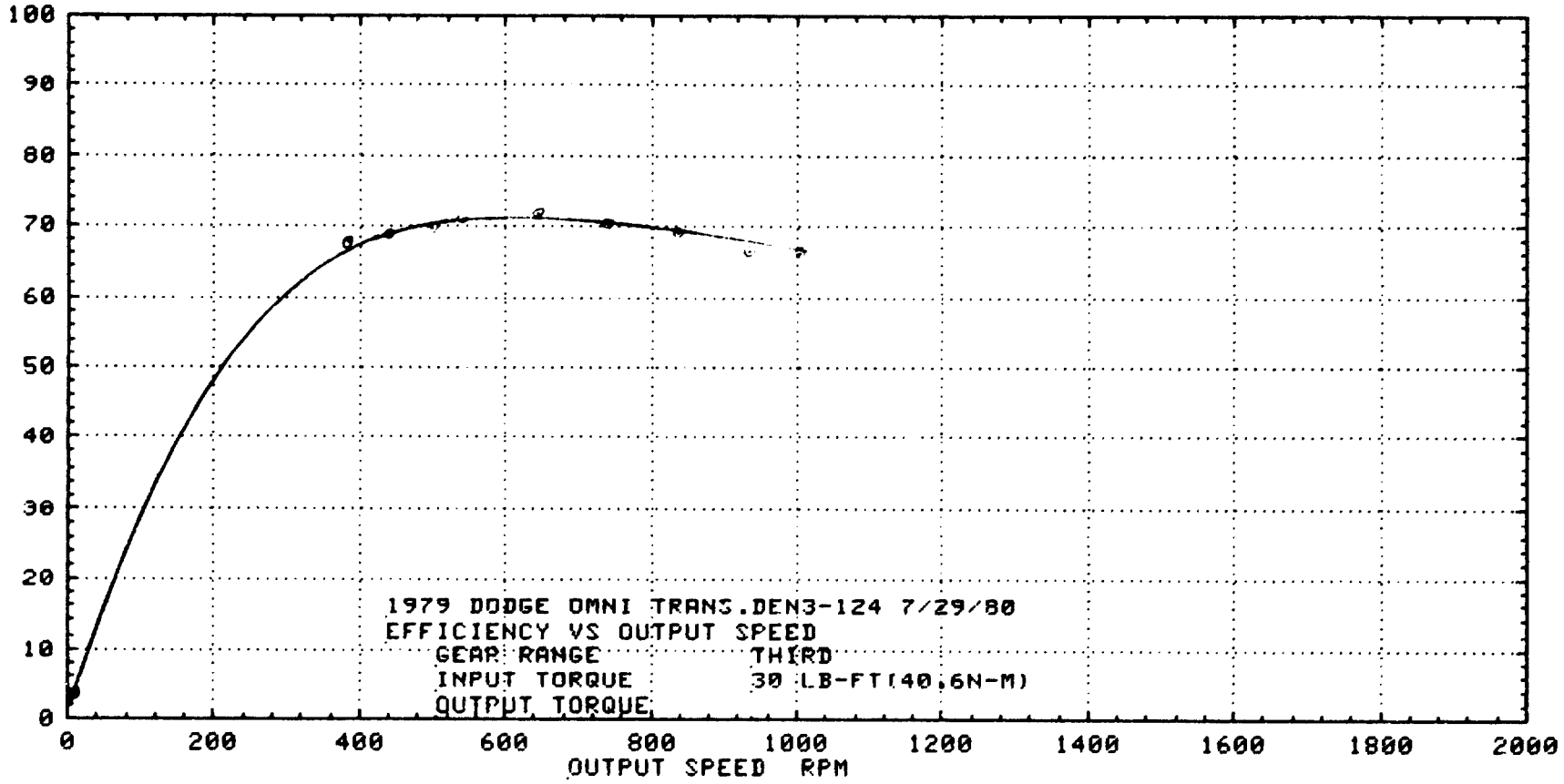

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 20 LB-FT(27N-M)
OUTPUT TORQUE

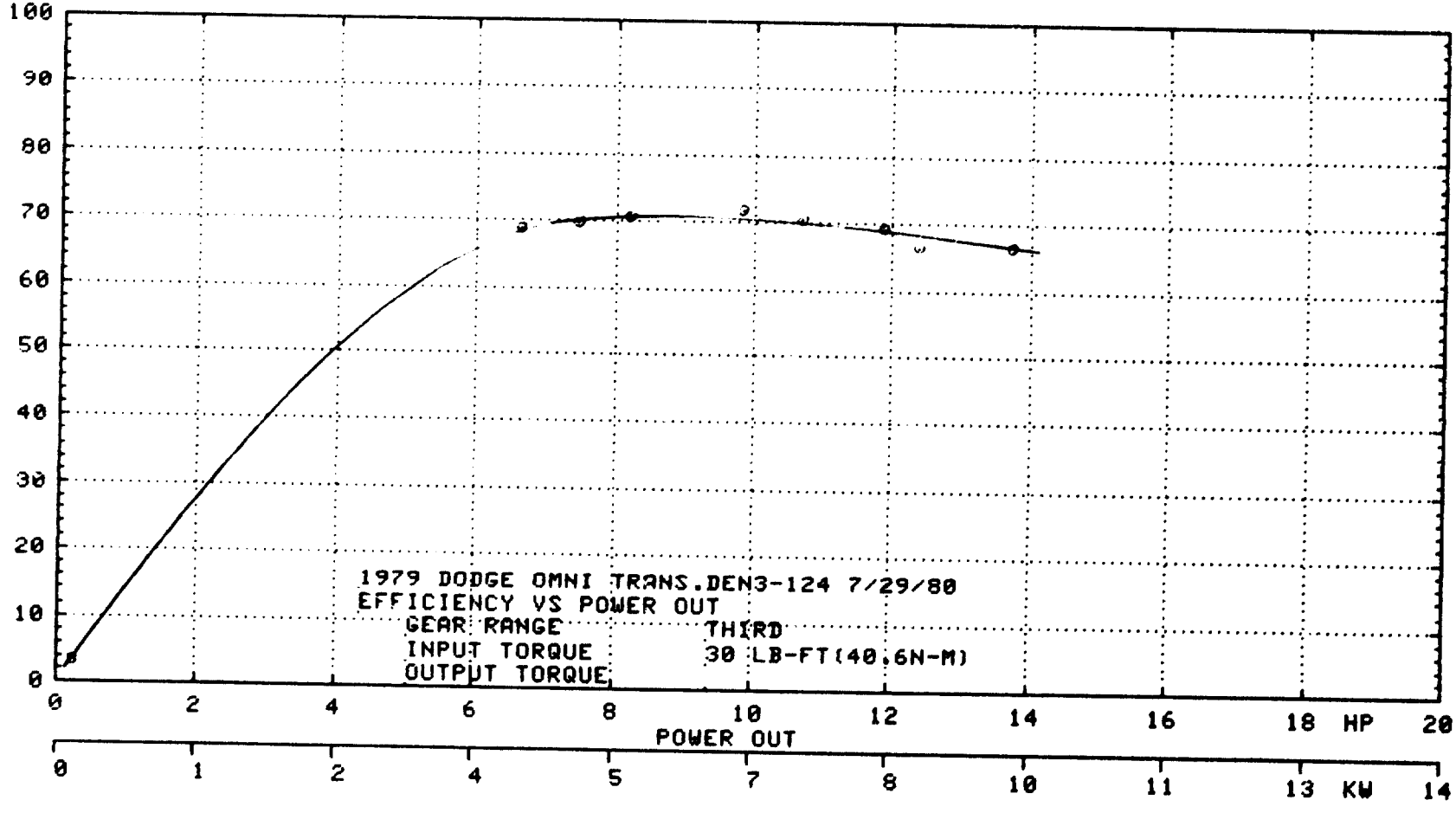

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 20 LB-FT(27N-M)
OUTPUT TORQUE
0 1 2 3 4 5 6 7 8 9 HP 10
POWER OUT
0 0 1 2 2 3 4 5 5 6 KW 7

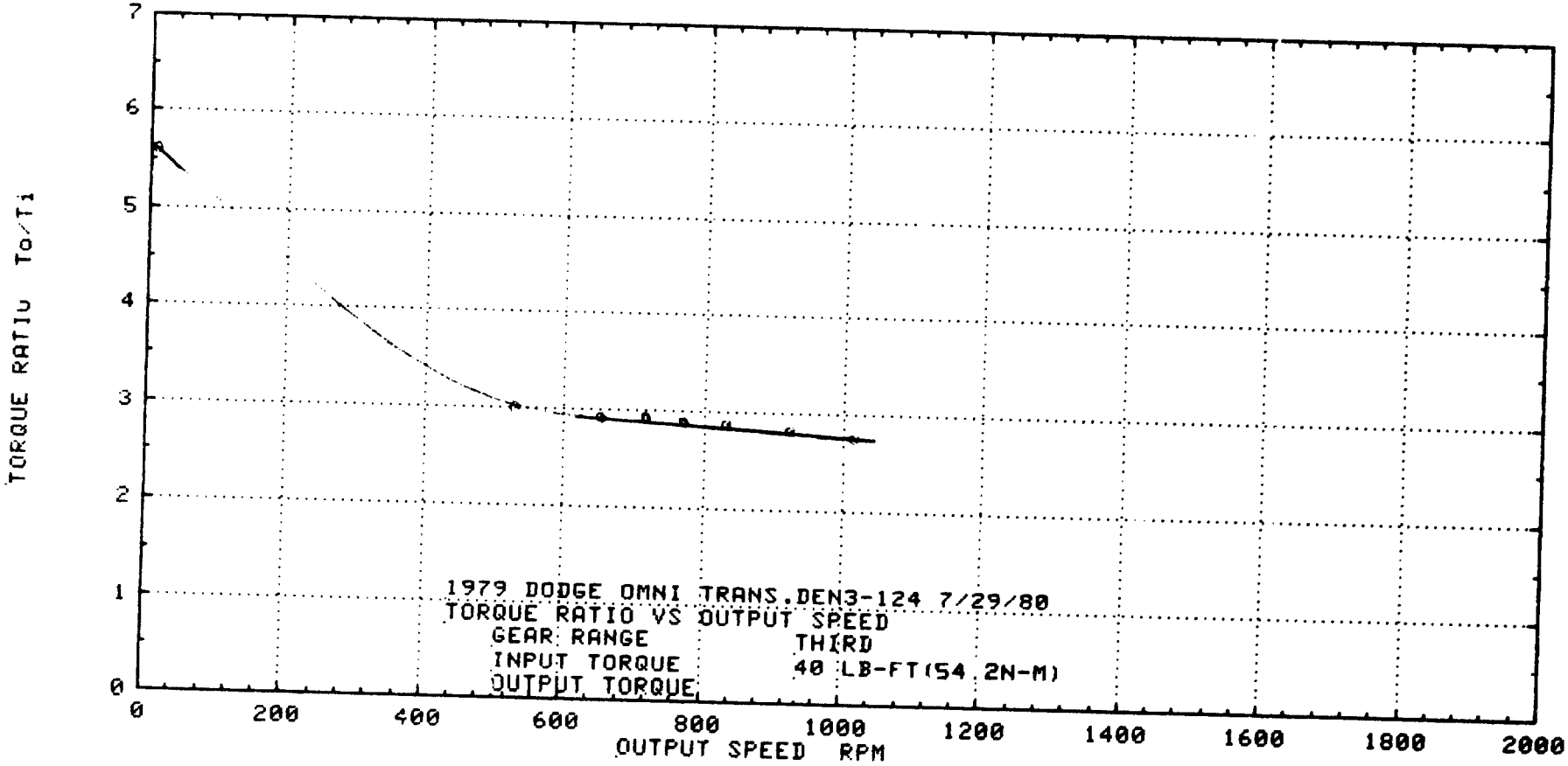

TORQUE RATIO To/Ti
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
RQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 30 LB-FT(40.6N-M)
OUTPUT TORQUE

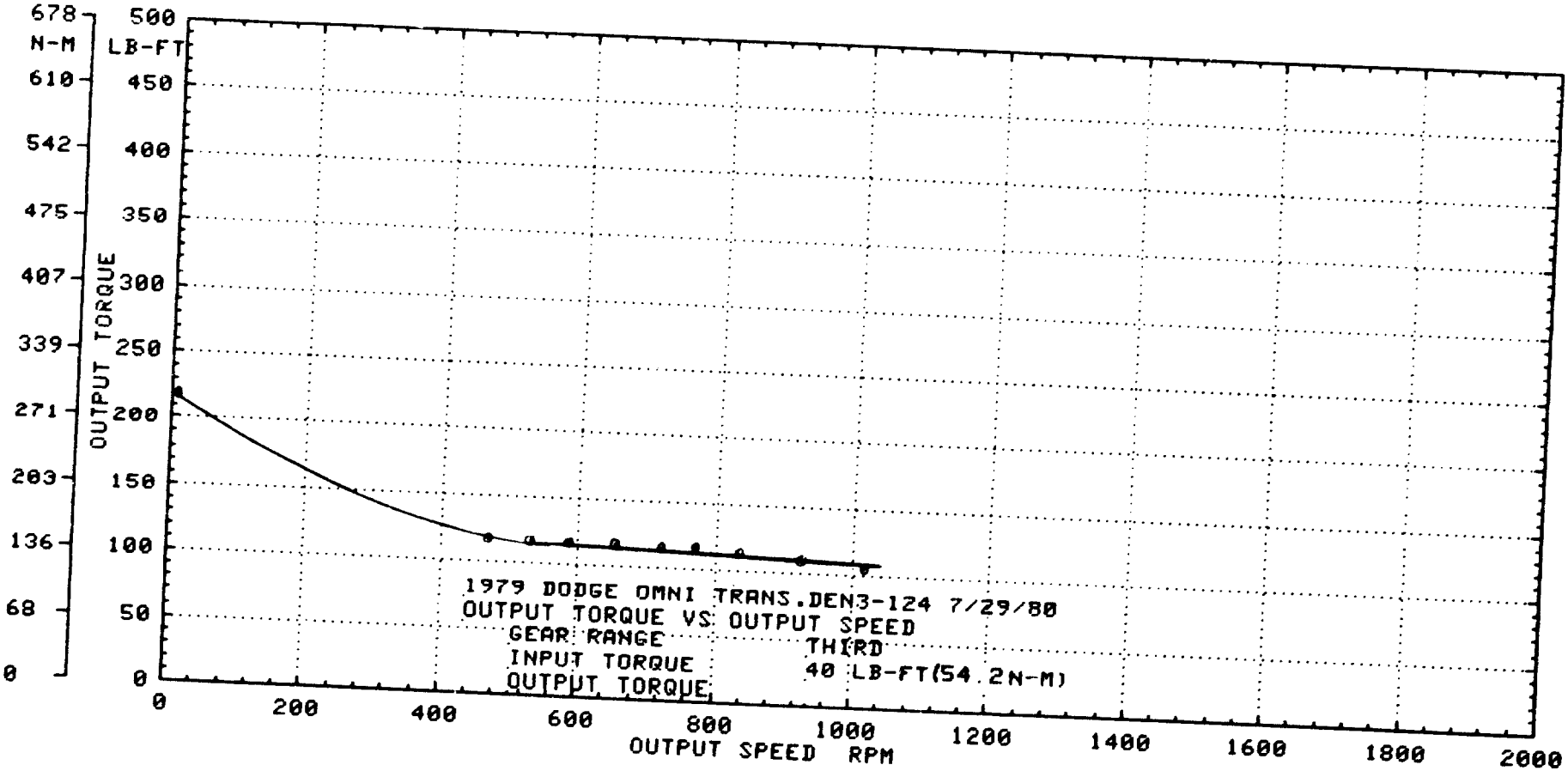

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
OUTPUT TORQUE
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 30 LB-FT(40.6N-M)
OUTPUT TORQUE

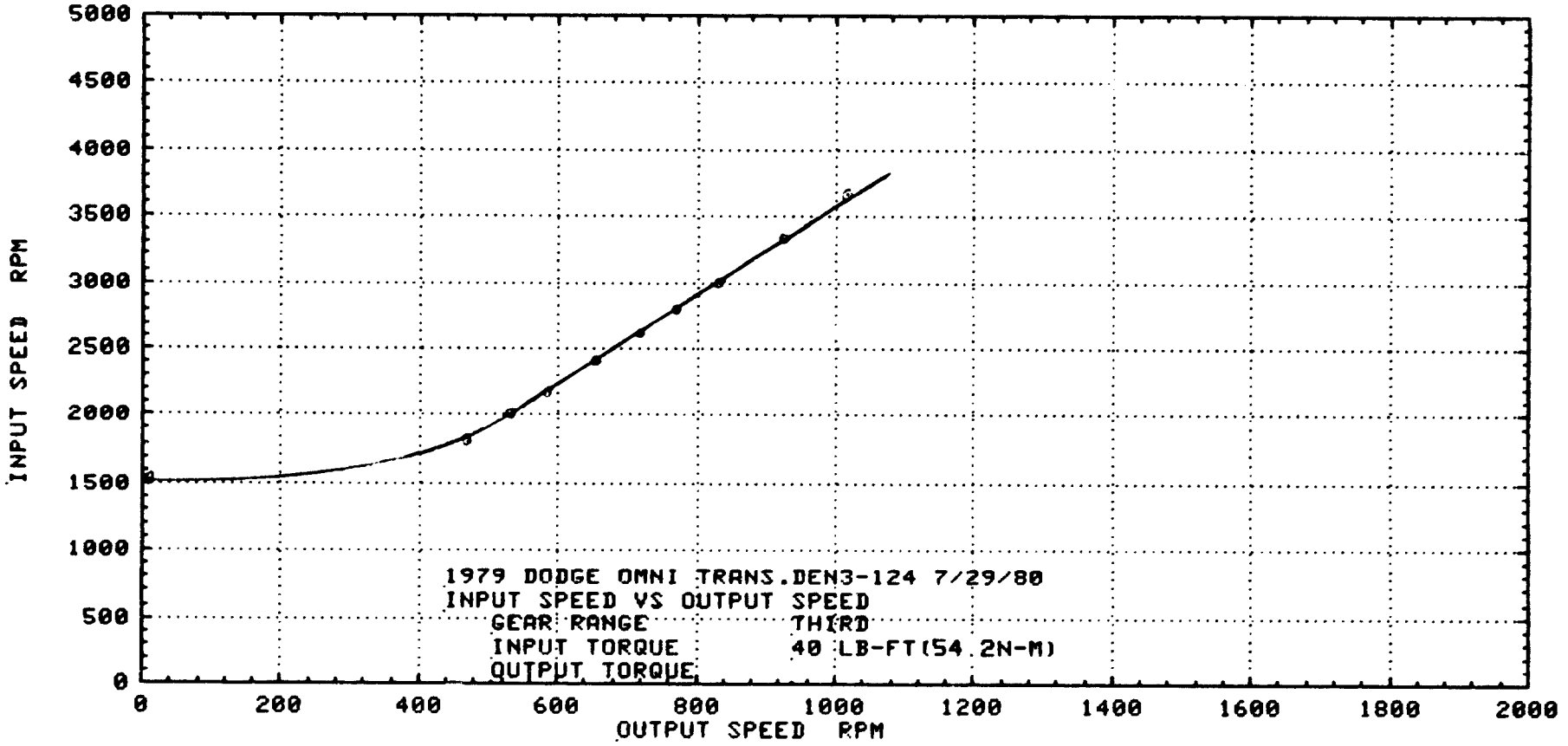

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 30 LB-FT(40.6N-M)
OUTPUT TORQUE

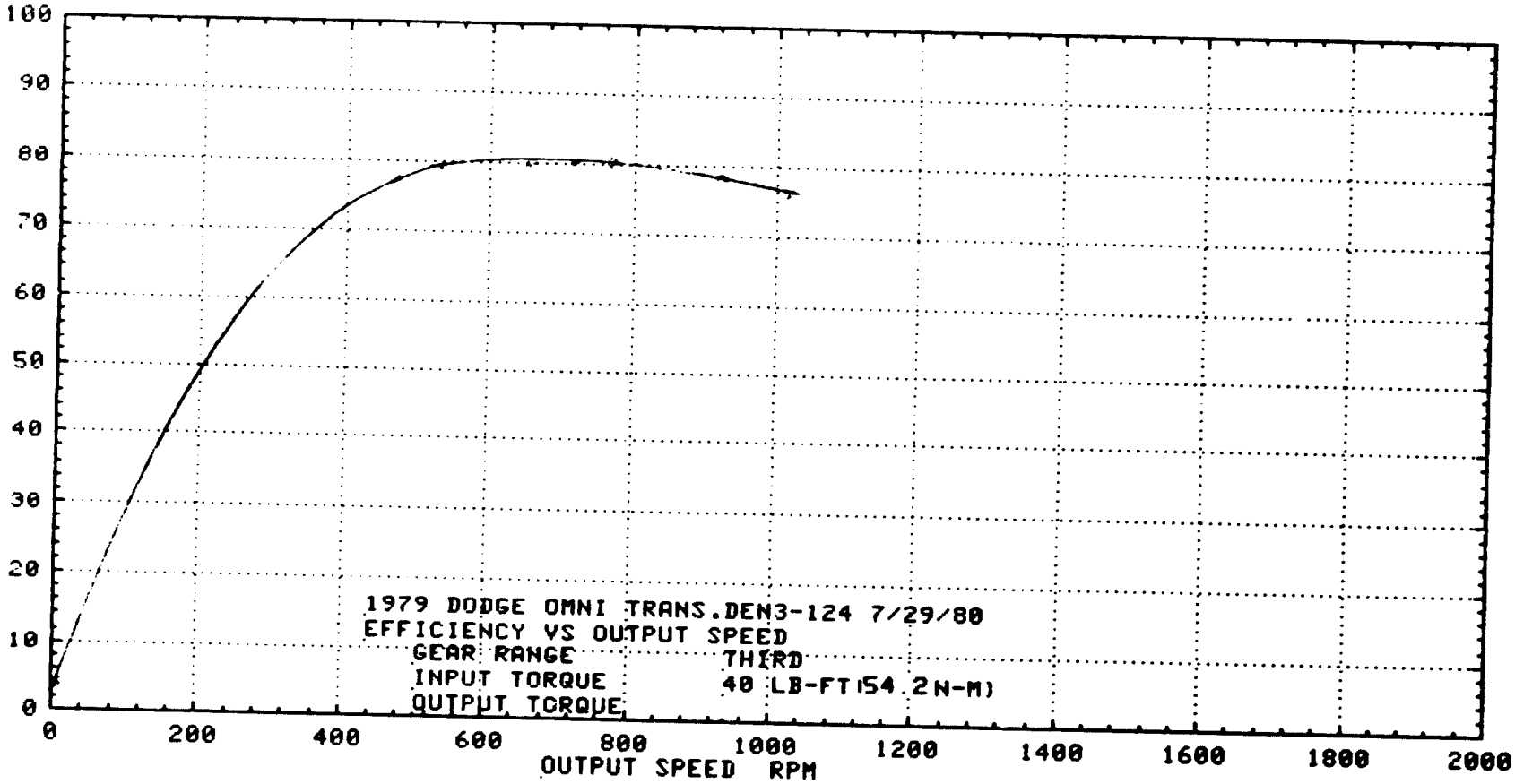

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 30 LB-FT(40.6N-M)
OUTPUT TORQUE

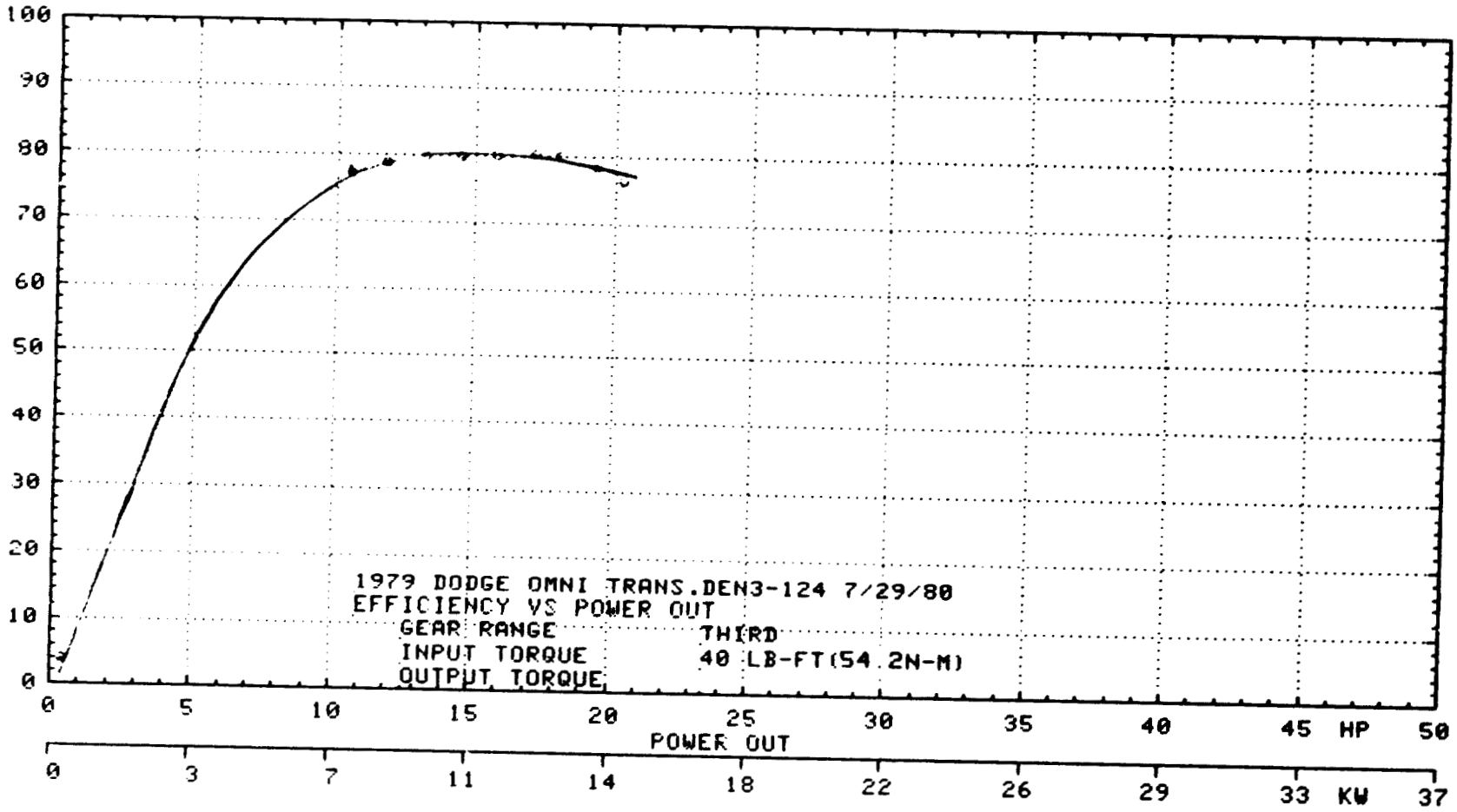

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 30 LB-FT(40.6N-M)
OUTPUT TORQUE
0 2 4 6 8 10 12 14 16 18 HP 20
POWER OUT
0 1 2 4 5 7 8 10 11 13 KW 14

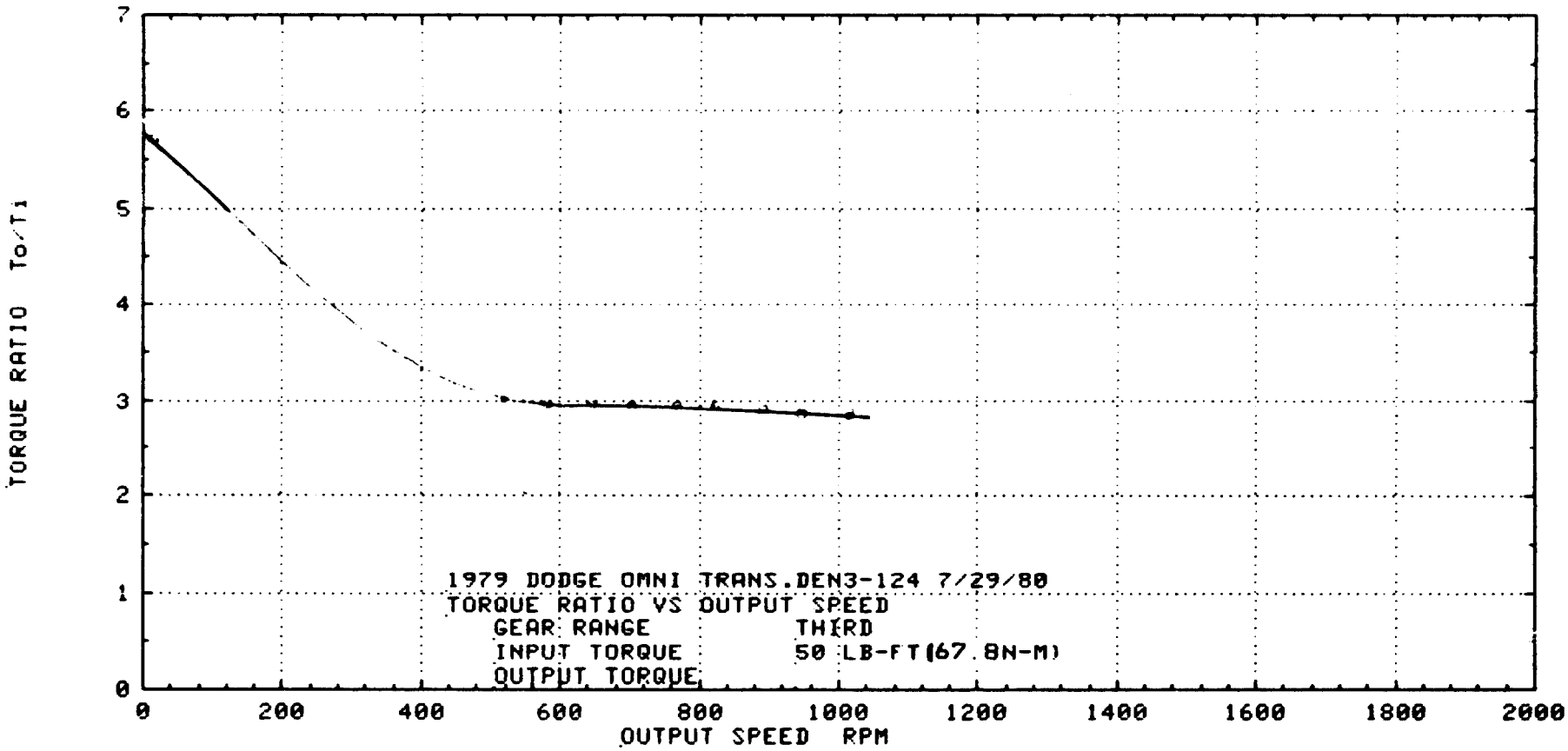

TORQUE RATIO To/Ti
7
6
5
4
3
2
1
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 40 LB-FT(54.2N-M)
OUTPUT TORQUE

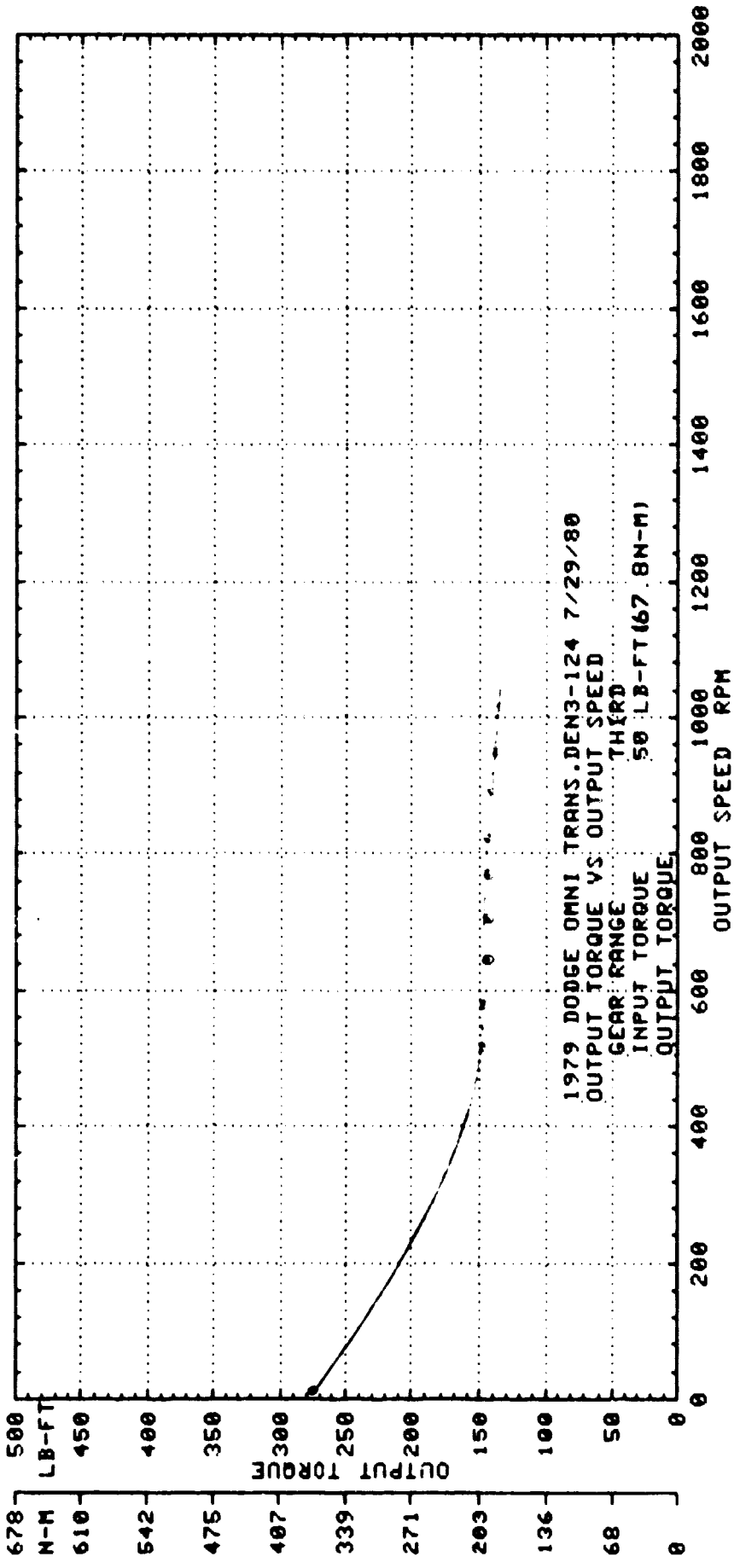

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 40 LB-FT(54.2N-M)
OUTPUT TORQUE

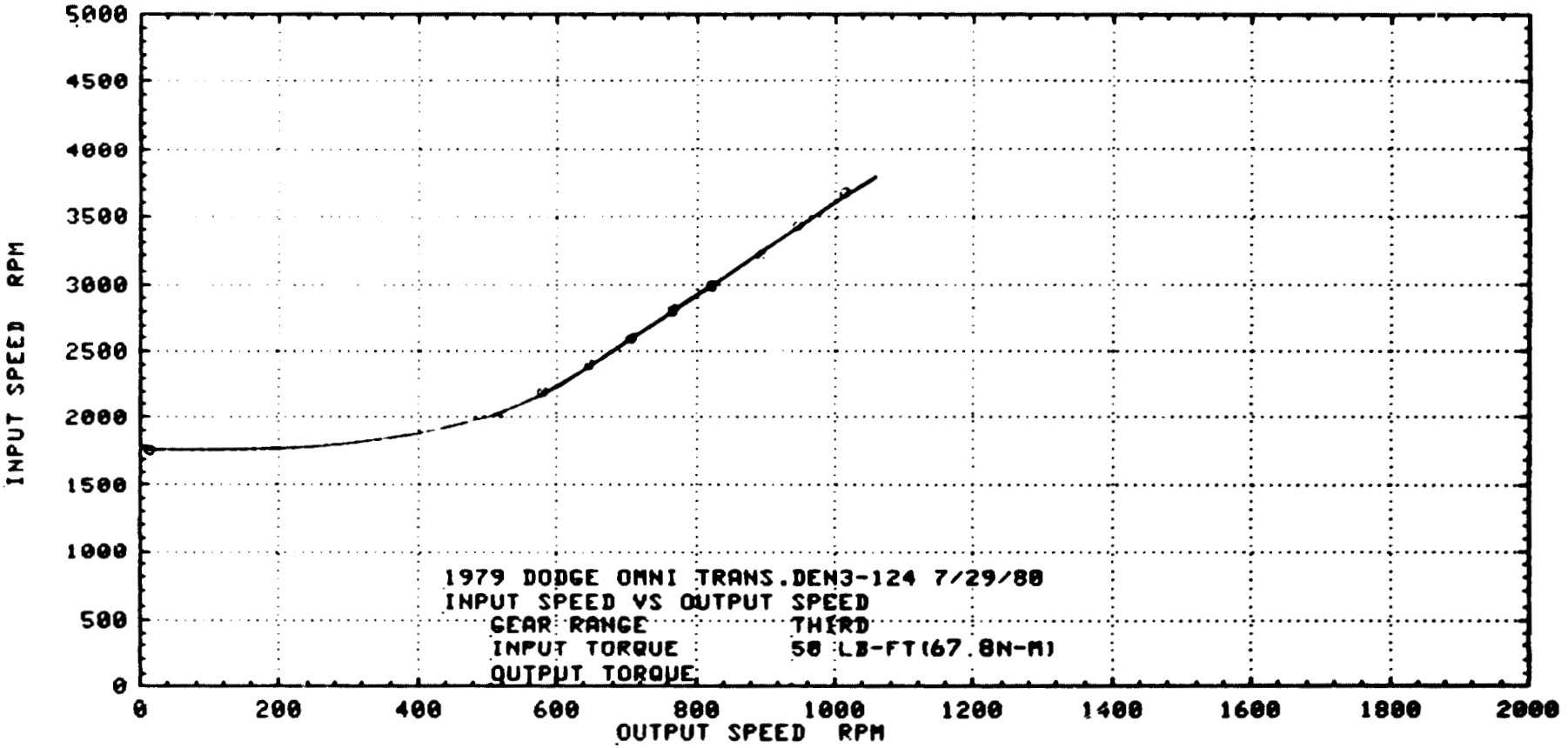

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 40 LB-FT(54.2N-M)
OUTPUT TORQUE

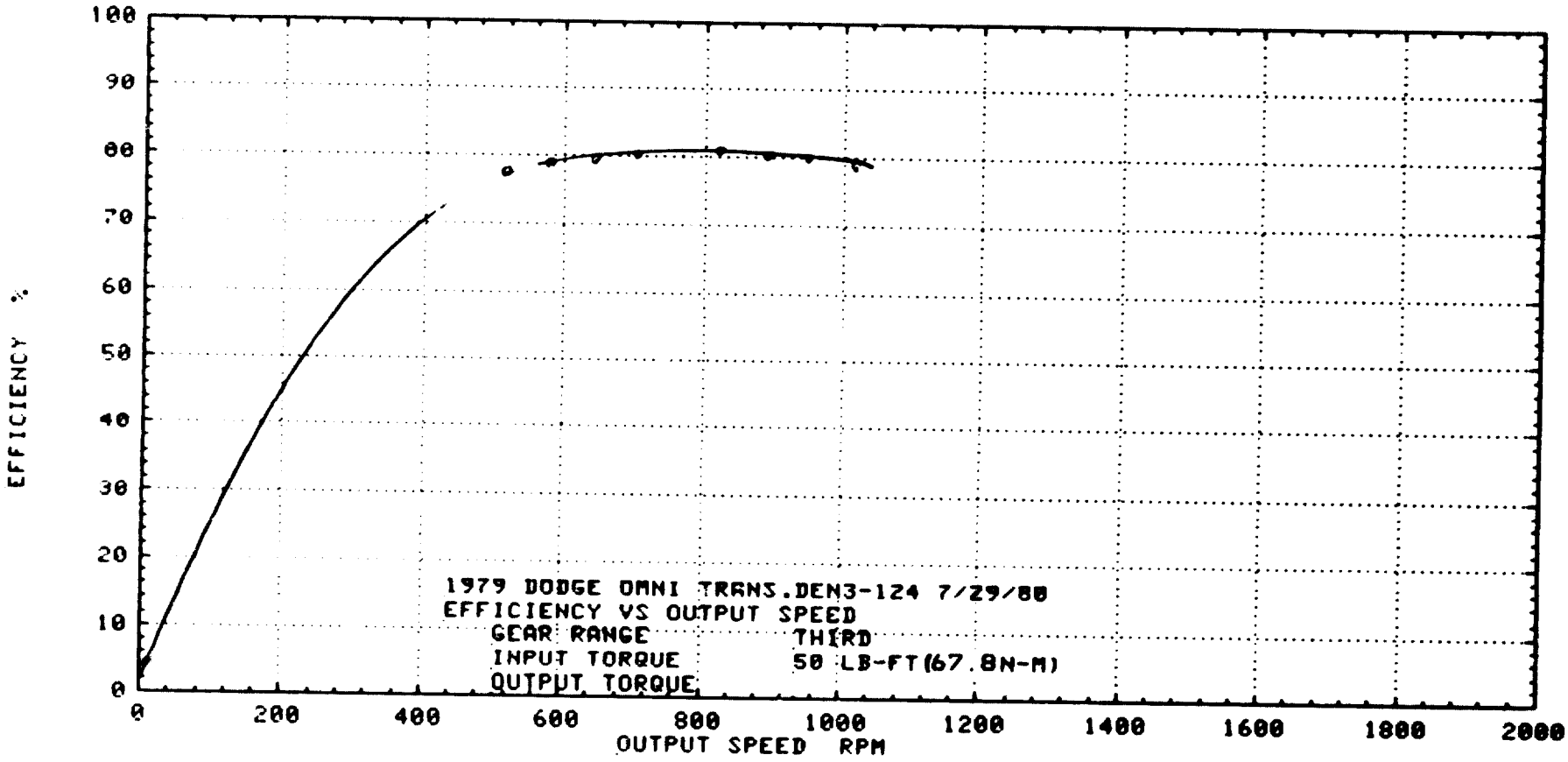

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 40 LB-FT 54.2 N-M
OUTPUT TORQUE

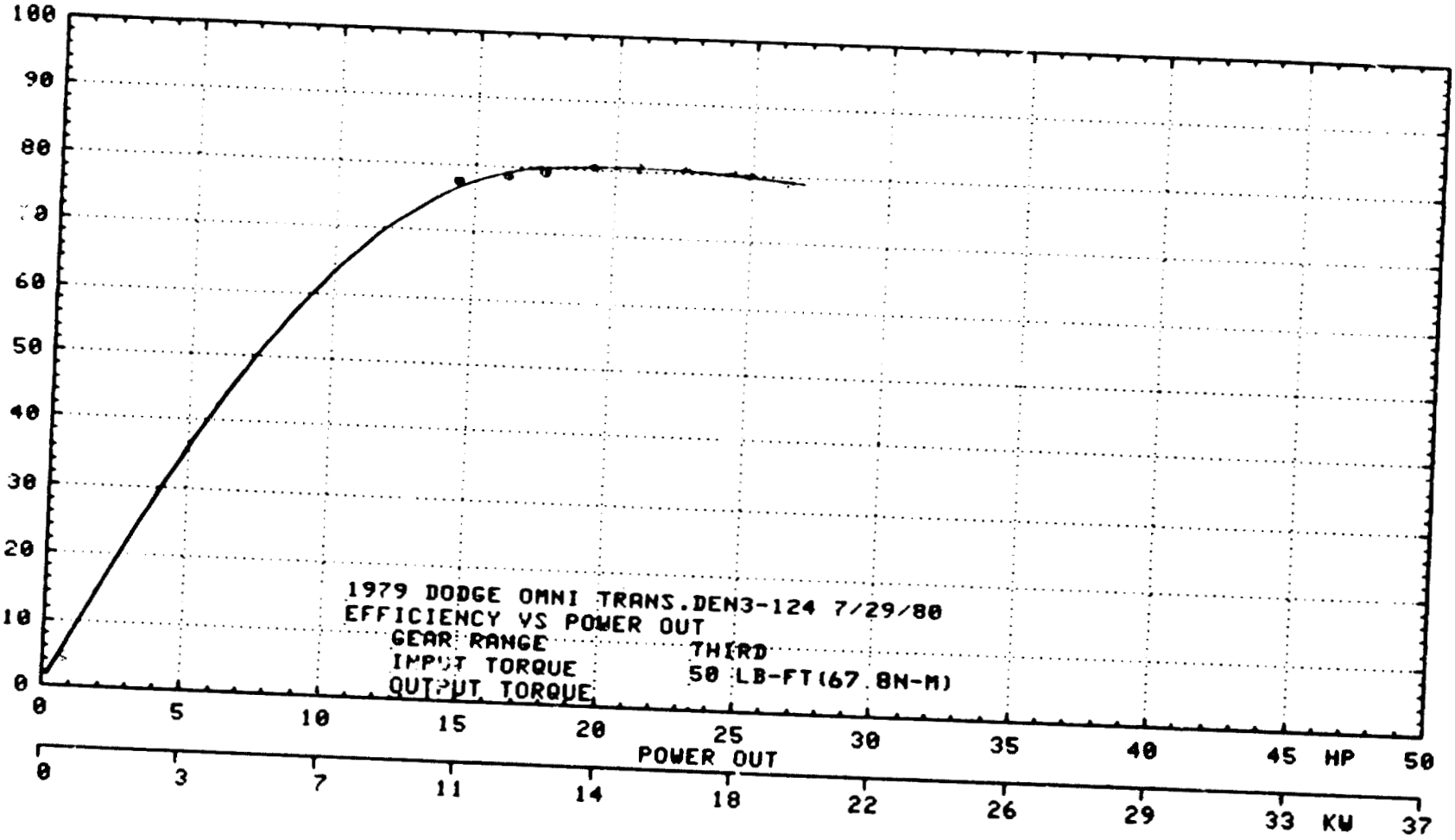

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 40 LB-FT(54.2N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

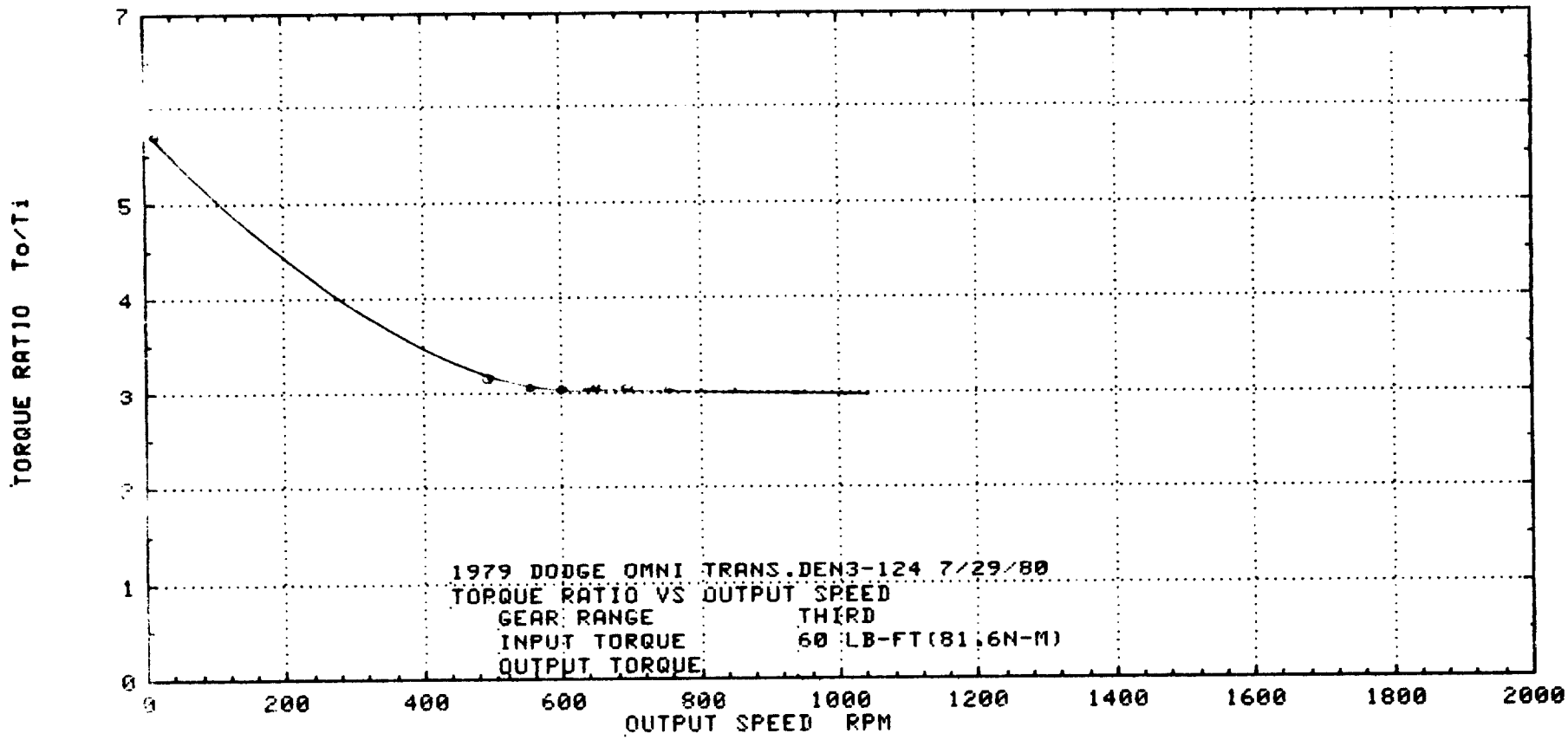

TORQUE RATIO To/Ti
7
6
5
4
3
2
1
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 50 LB-FT(67.8N-M)
OUTPUT TORQUE

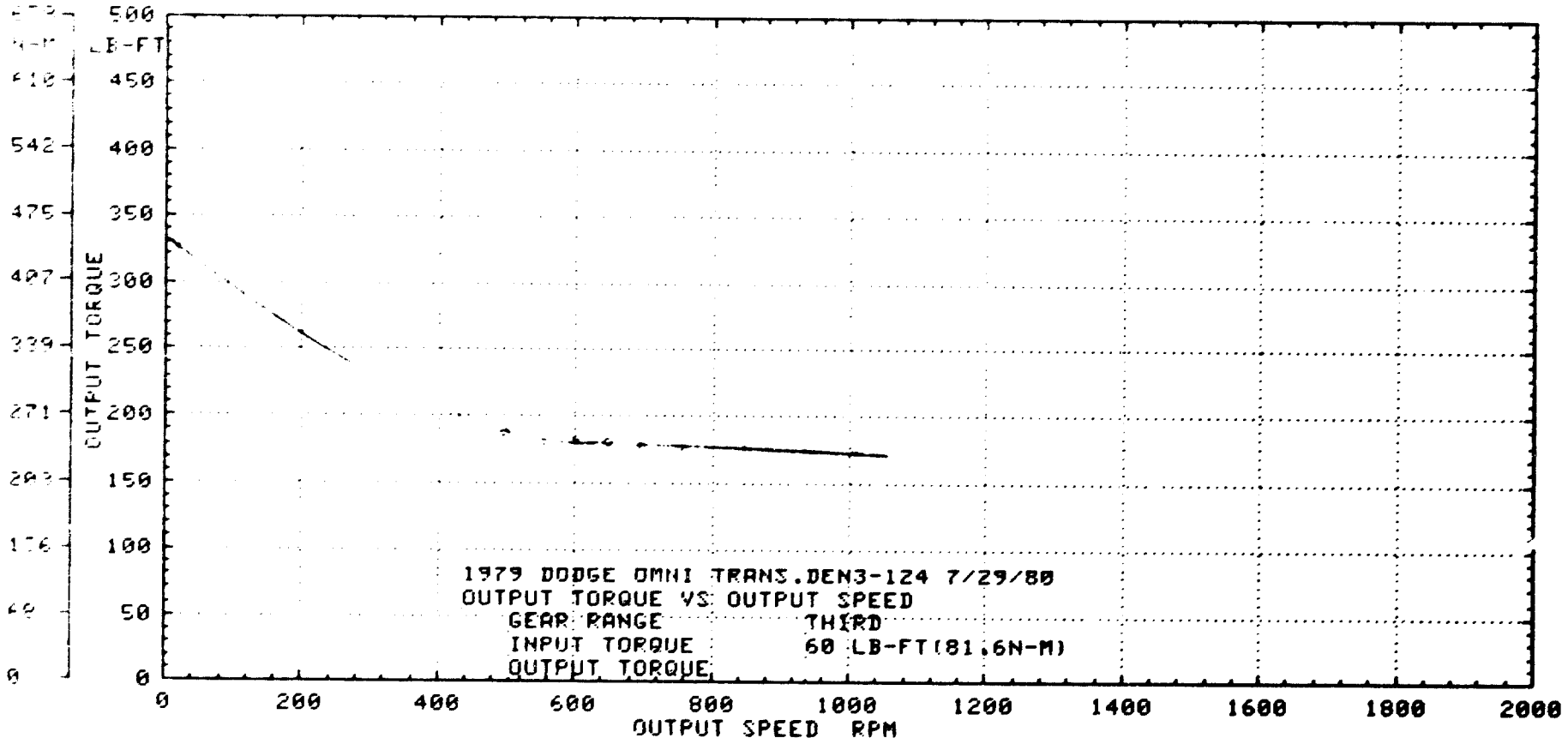

1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 50 LB-FT(67 8N-M)
OUTPUT TORQUE
OUTPUT TORQUE
LB-FT
N-M
500
450
400
350
300
250
200
150
100
50
0
678
610
542
475
407
339
271
203
136
68
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM

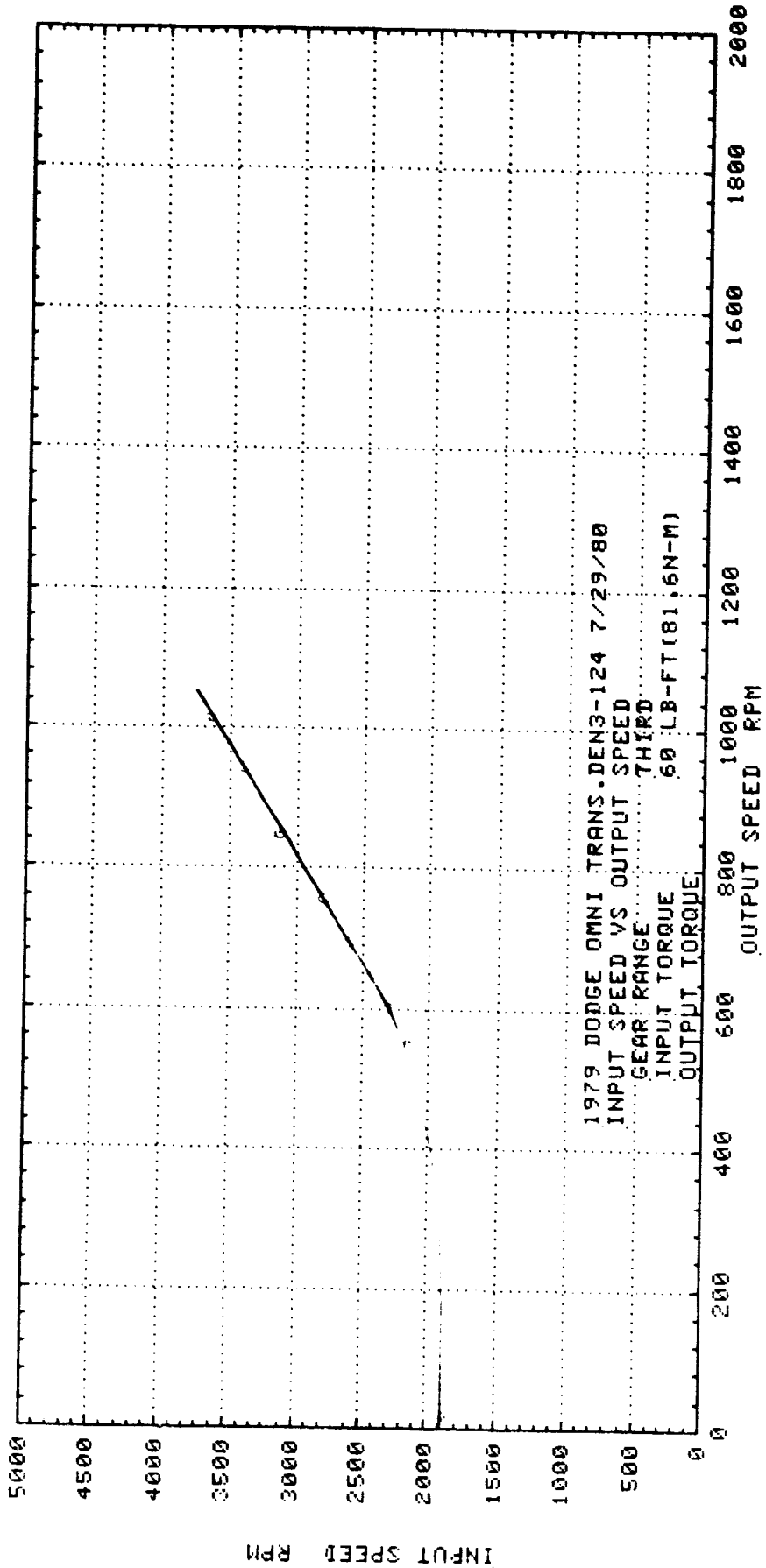

5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
INPUT SPEED RPM
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 50 LB-FT(67.8N-M)
OUTPUT TORQUE

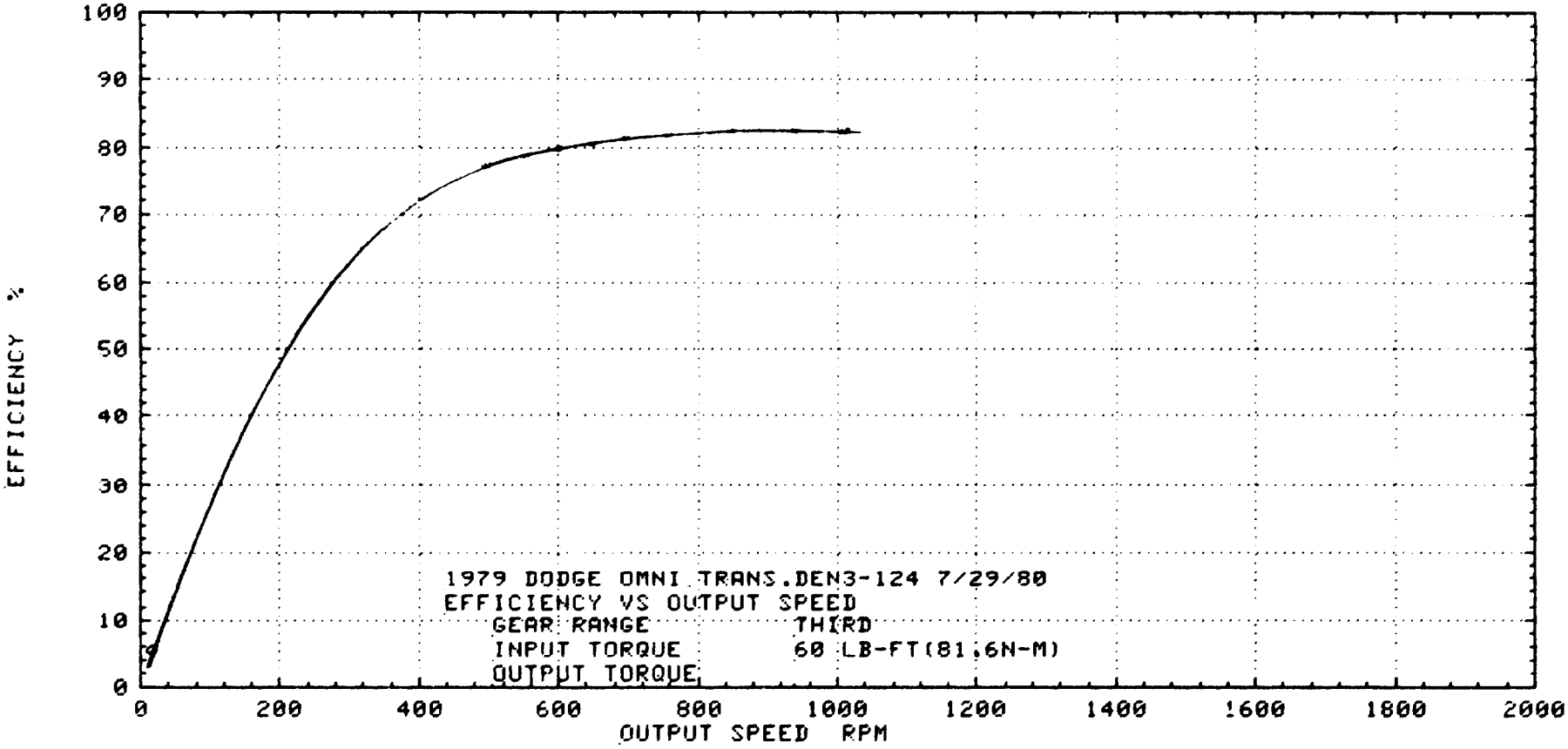

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 50 LB-FT(67.8N-M)
OUTPUT TORQUE

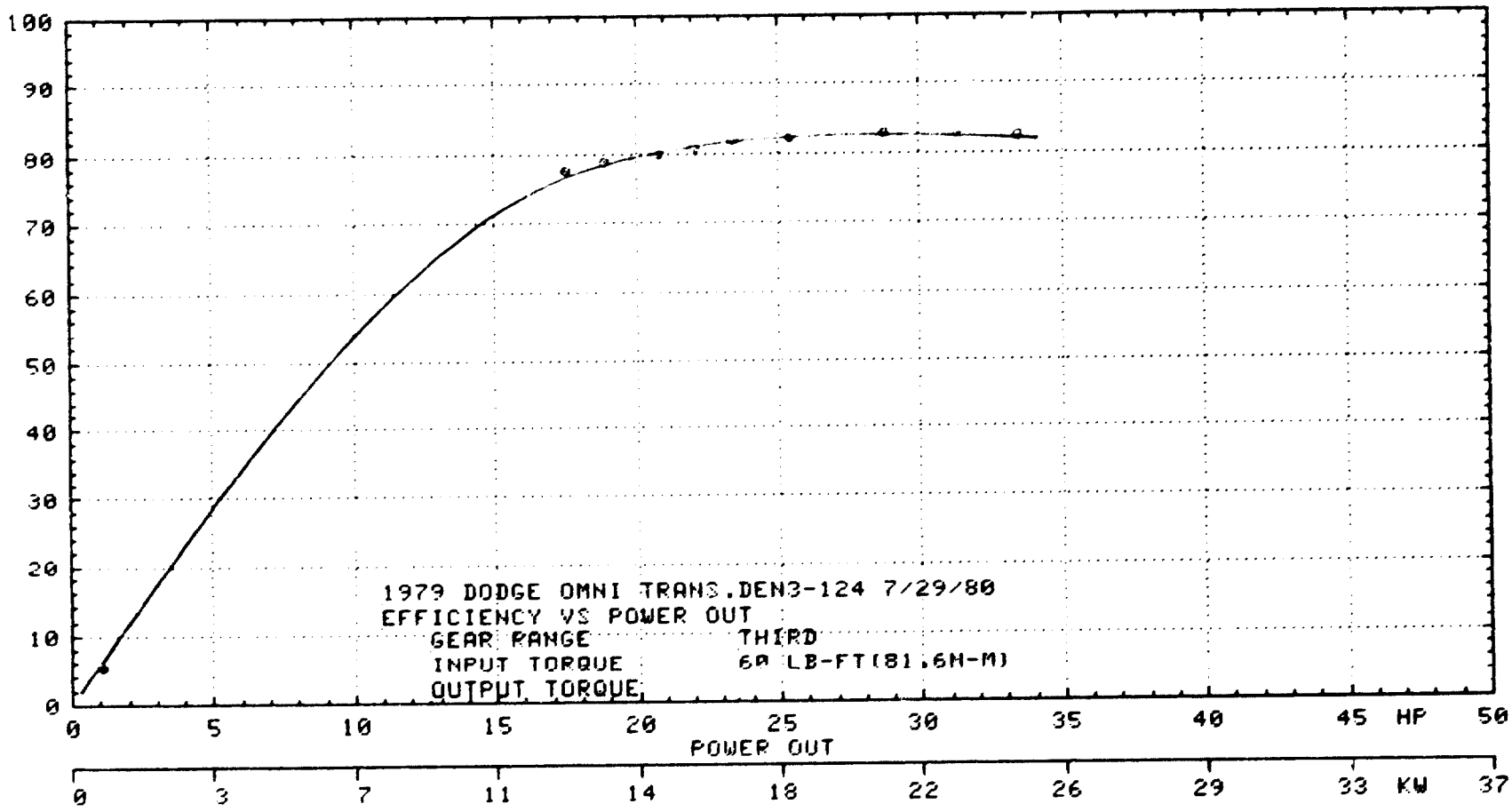

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 50 LB-FT(67.8N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

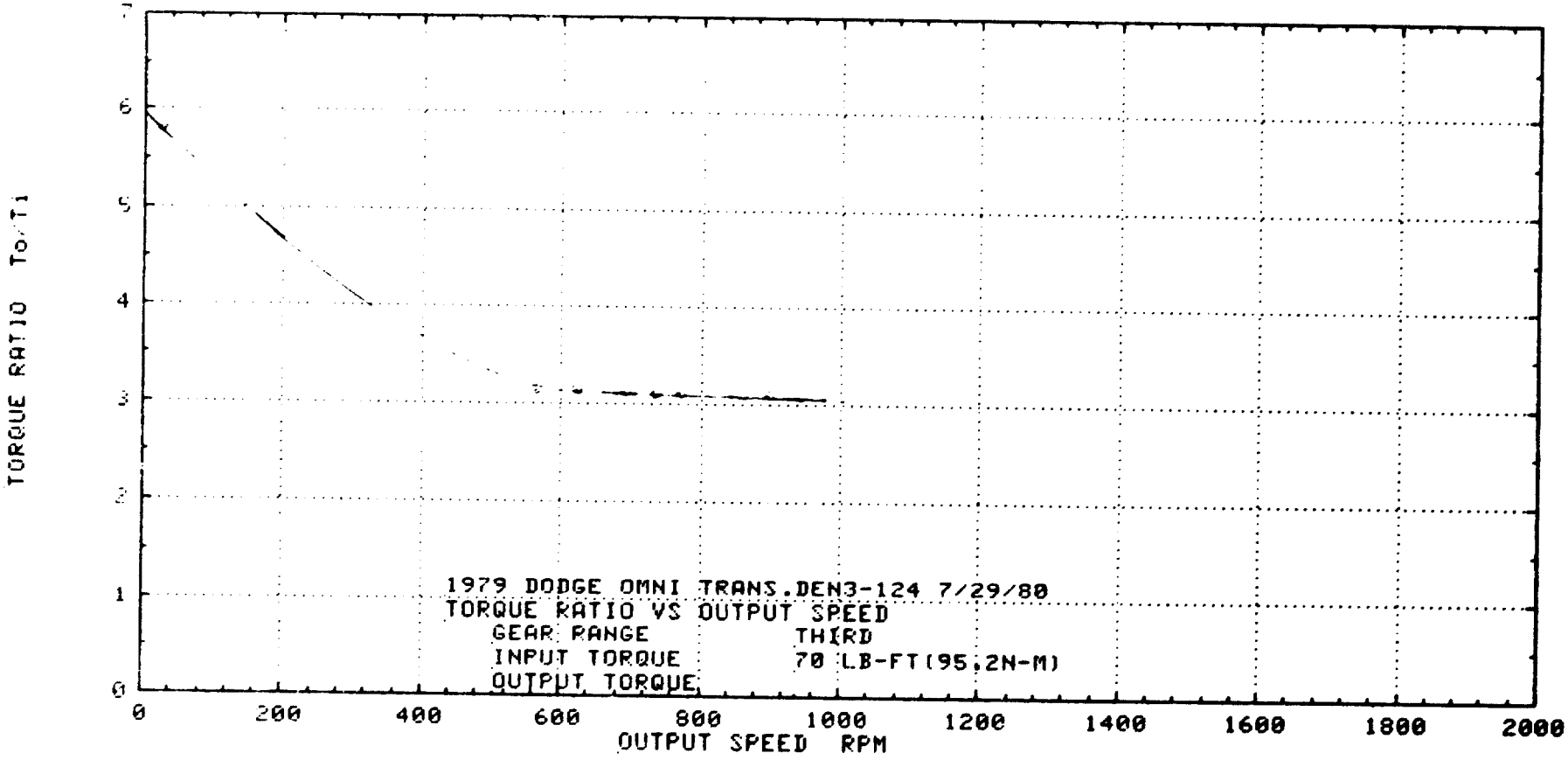

TORQUE RATIO To/Ti
7
5
4
3
2
1
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE

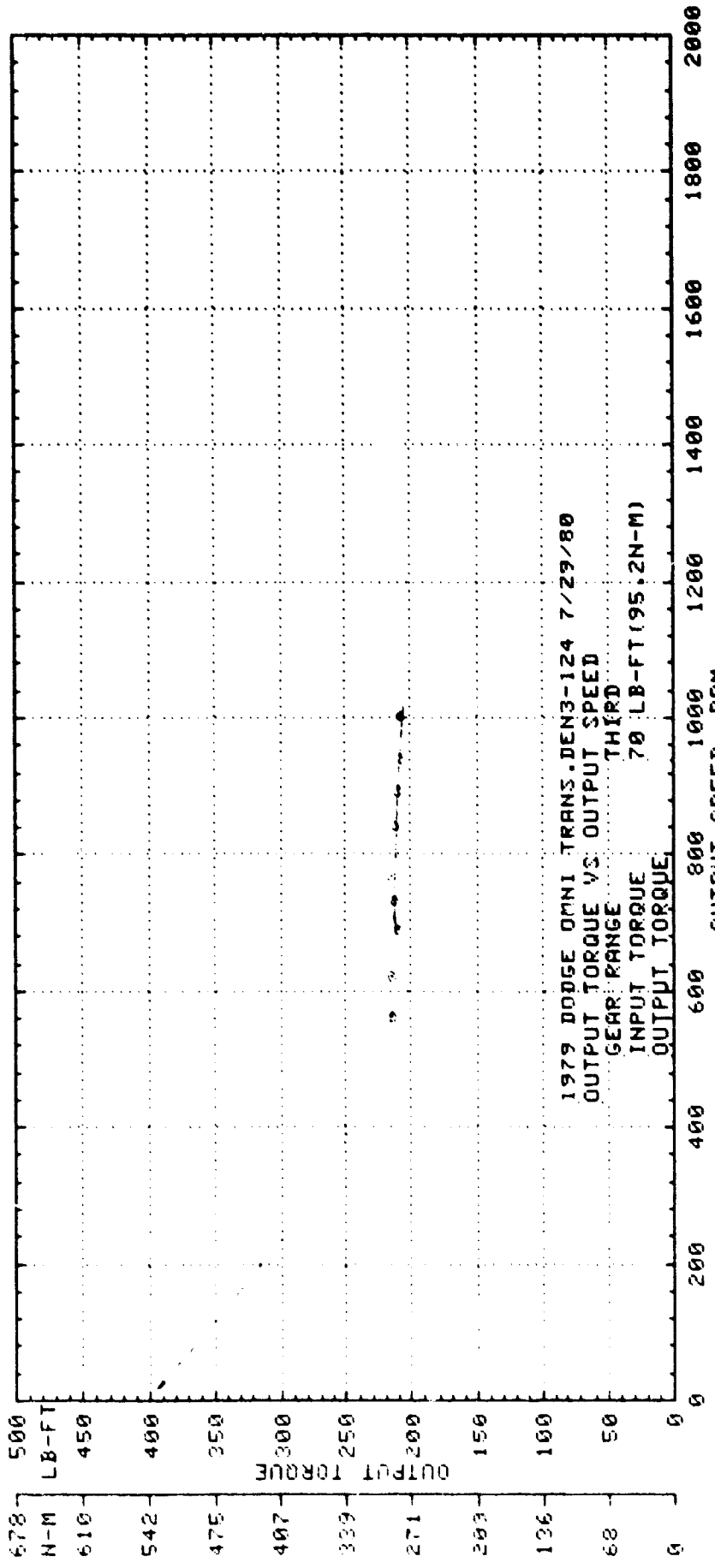

LB-FT
500
450
400
350
300
250
200
150
100
50
0
542
475
407
339
271
203
136
68
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM

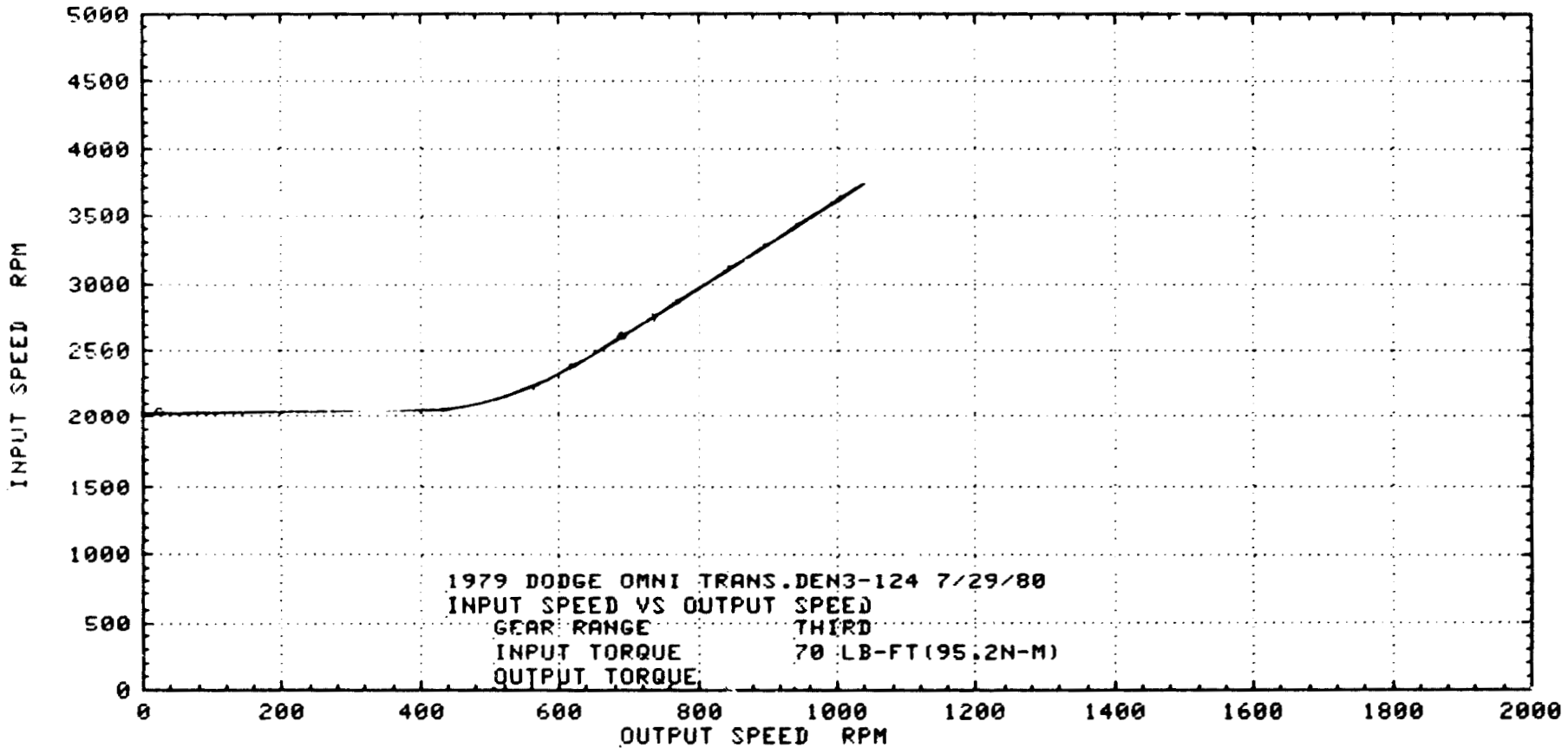

1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE
INPUT SPEED RPM
OUTPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
200
400
600
800
1000
1200
1400
1600
1800
2000

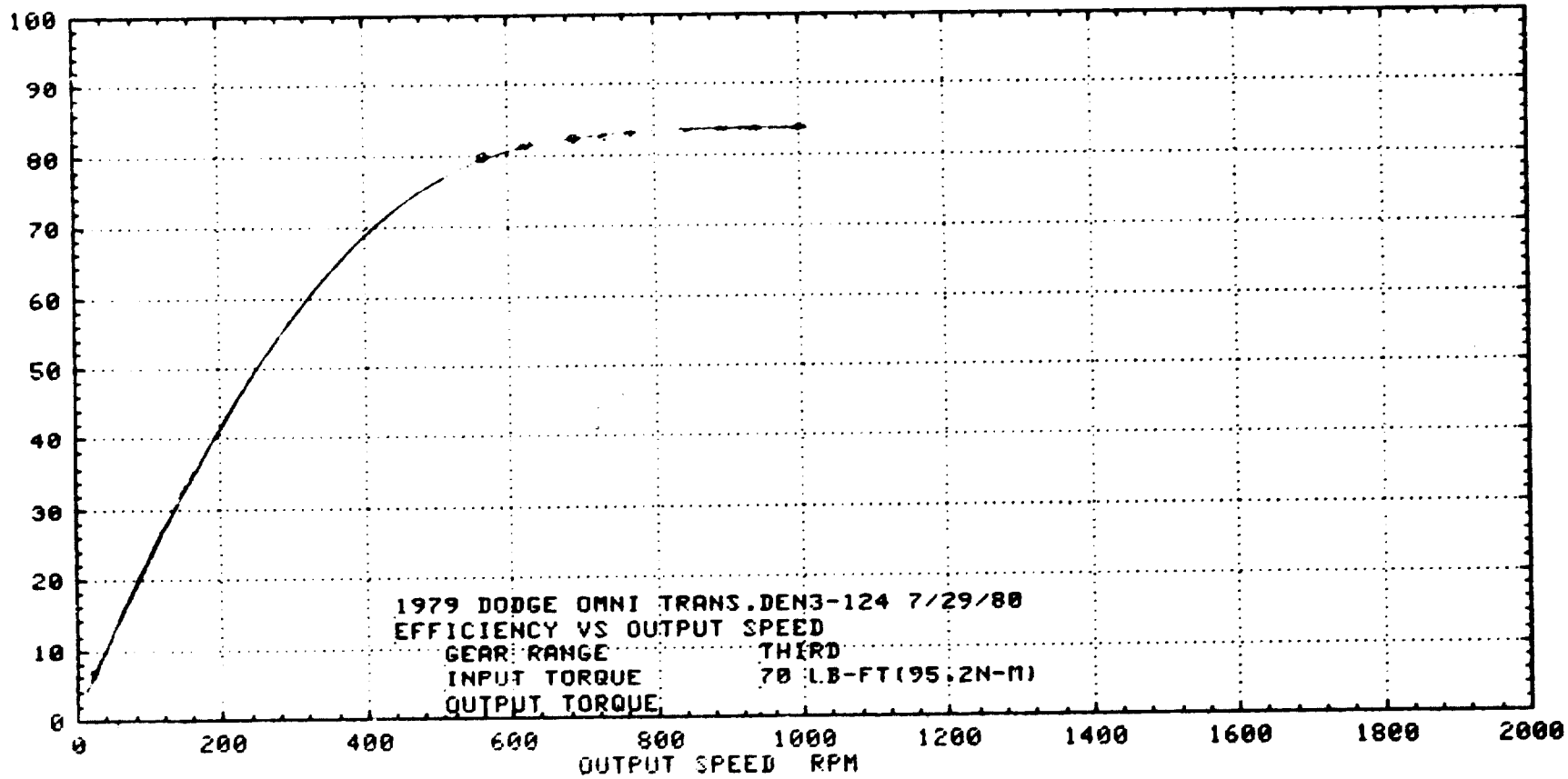

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE

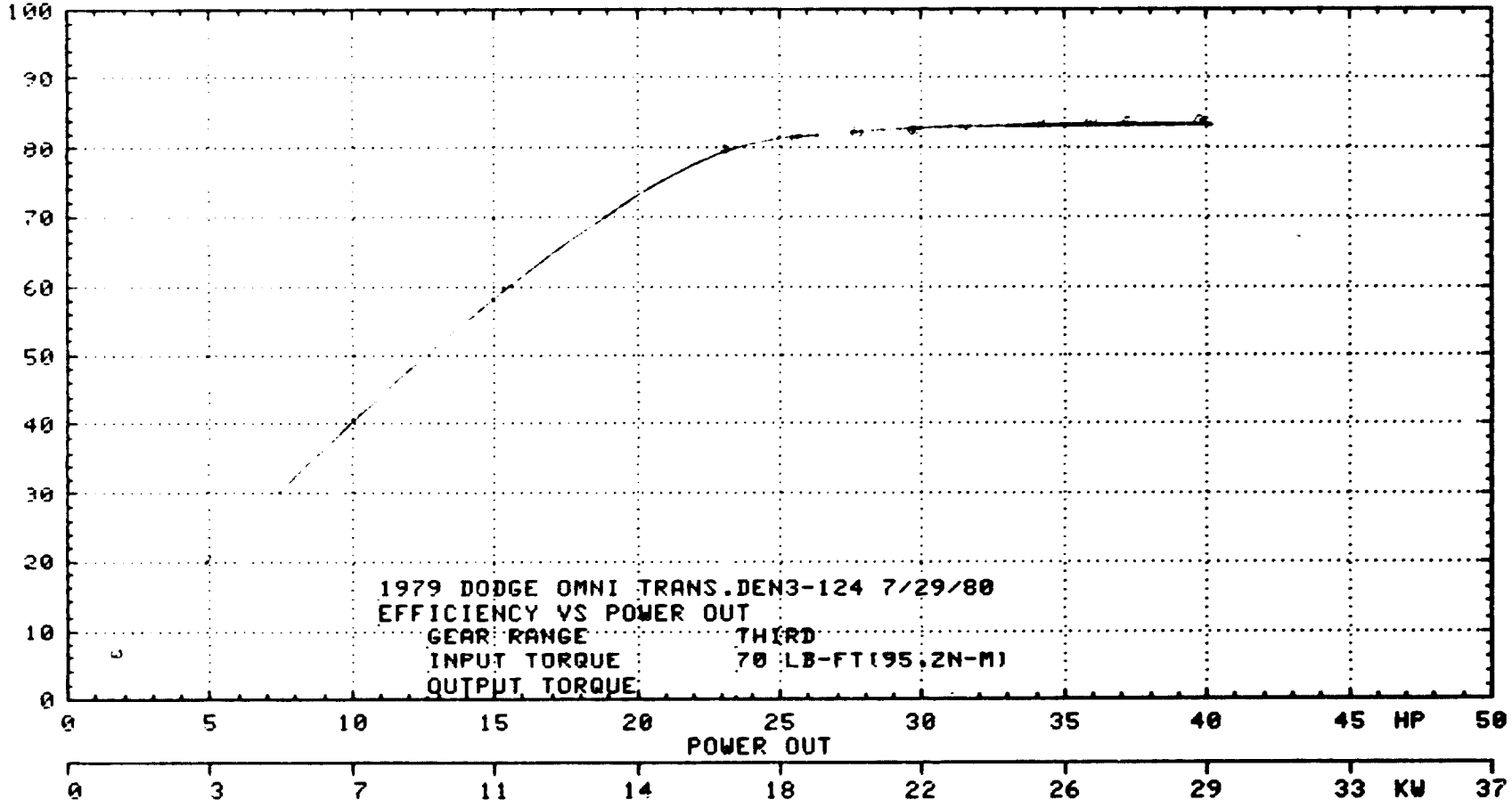

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

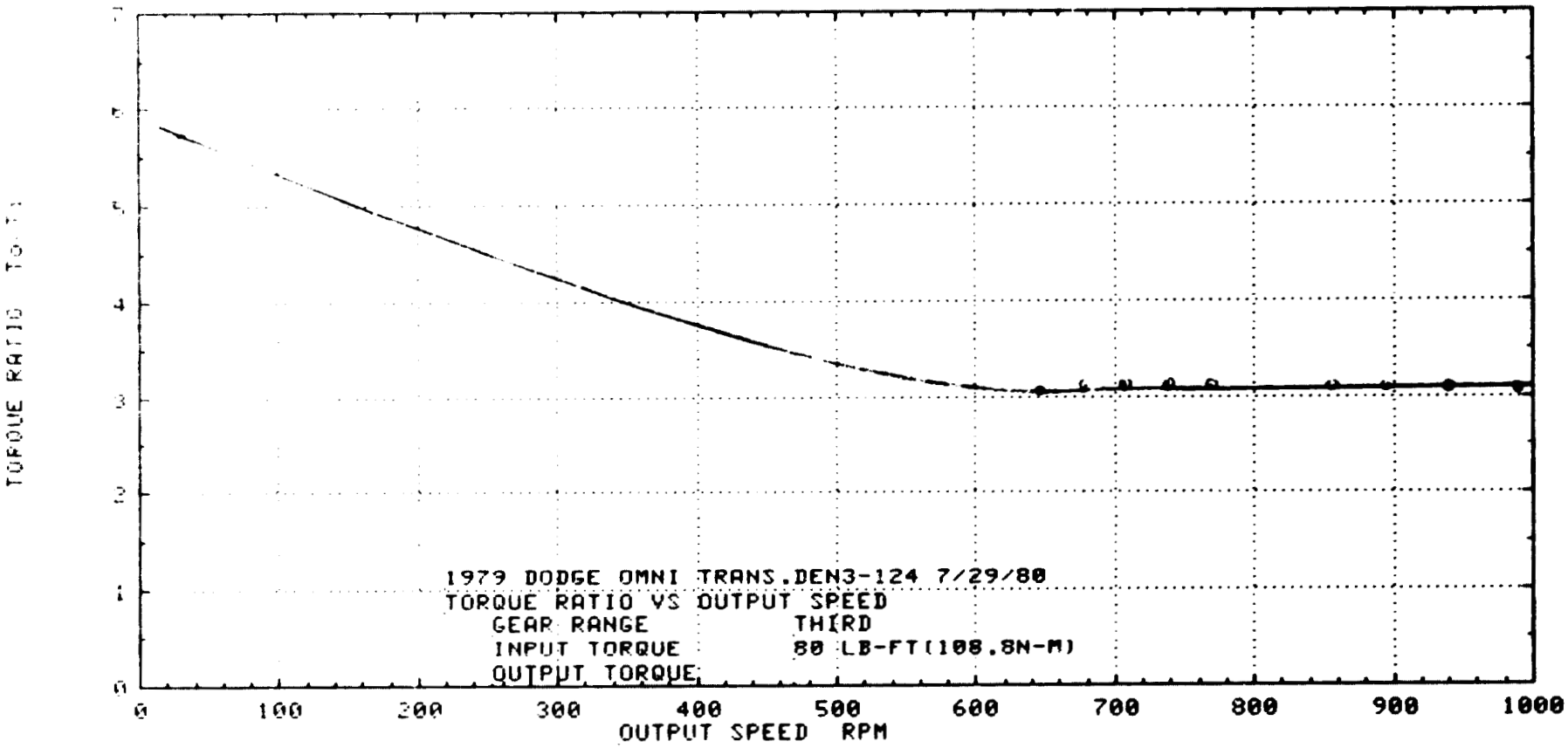

TORQUE RATIO To/Ti
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
0
1
4
5
6
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM

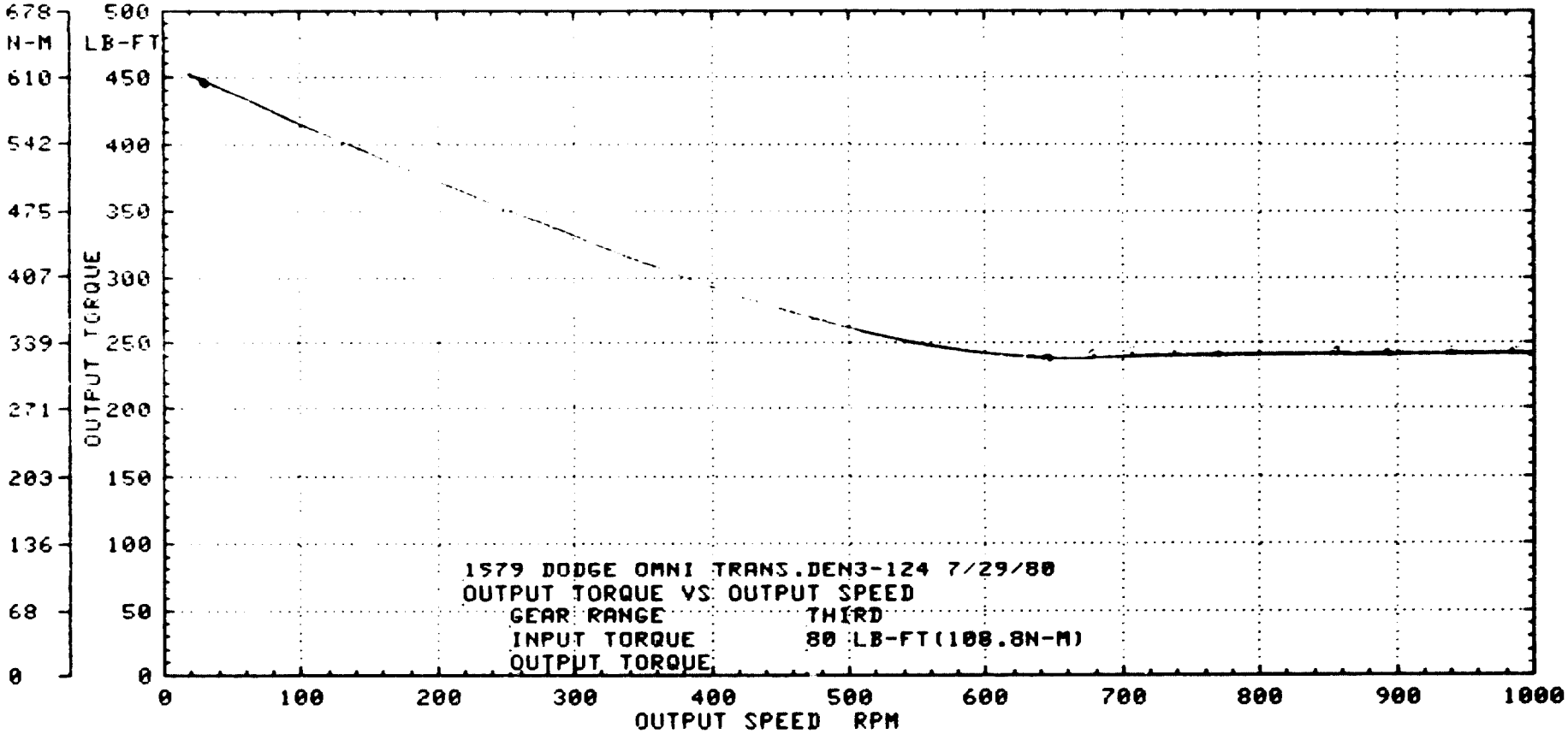

1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
OUTPUT TORQUE
LB-FT
N-M
500
450
400
350
300
250
200
150
100
50
0
678
610
542
475
407
339
271
203
136
68
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM

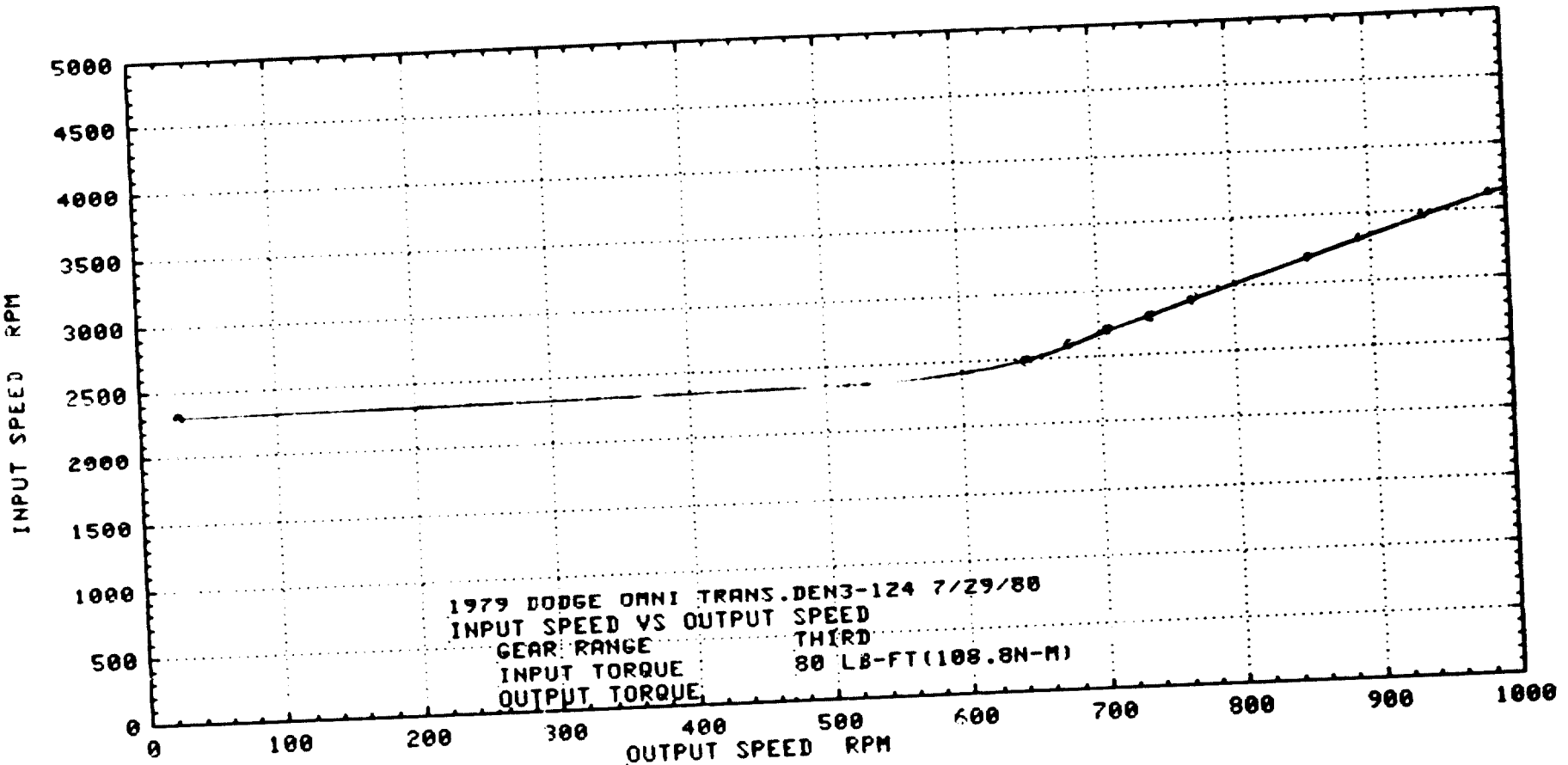

5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
INPUT SPEED RPM
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE

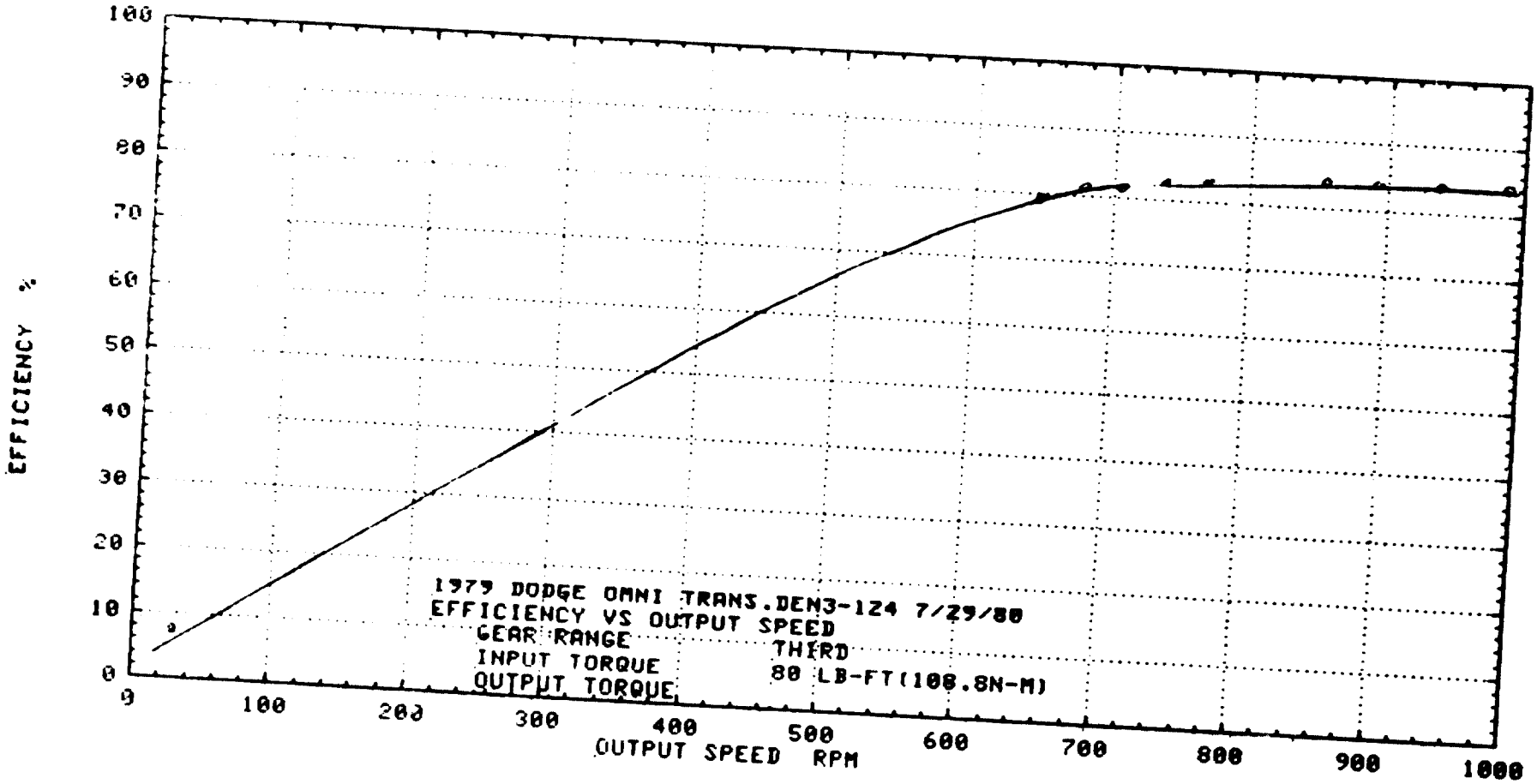

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE

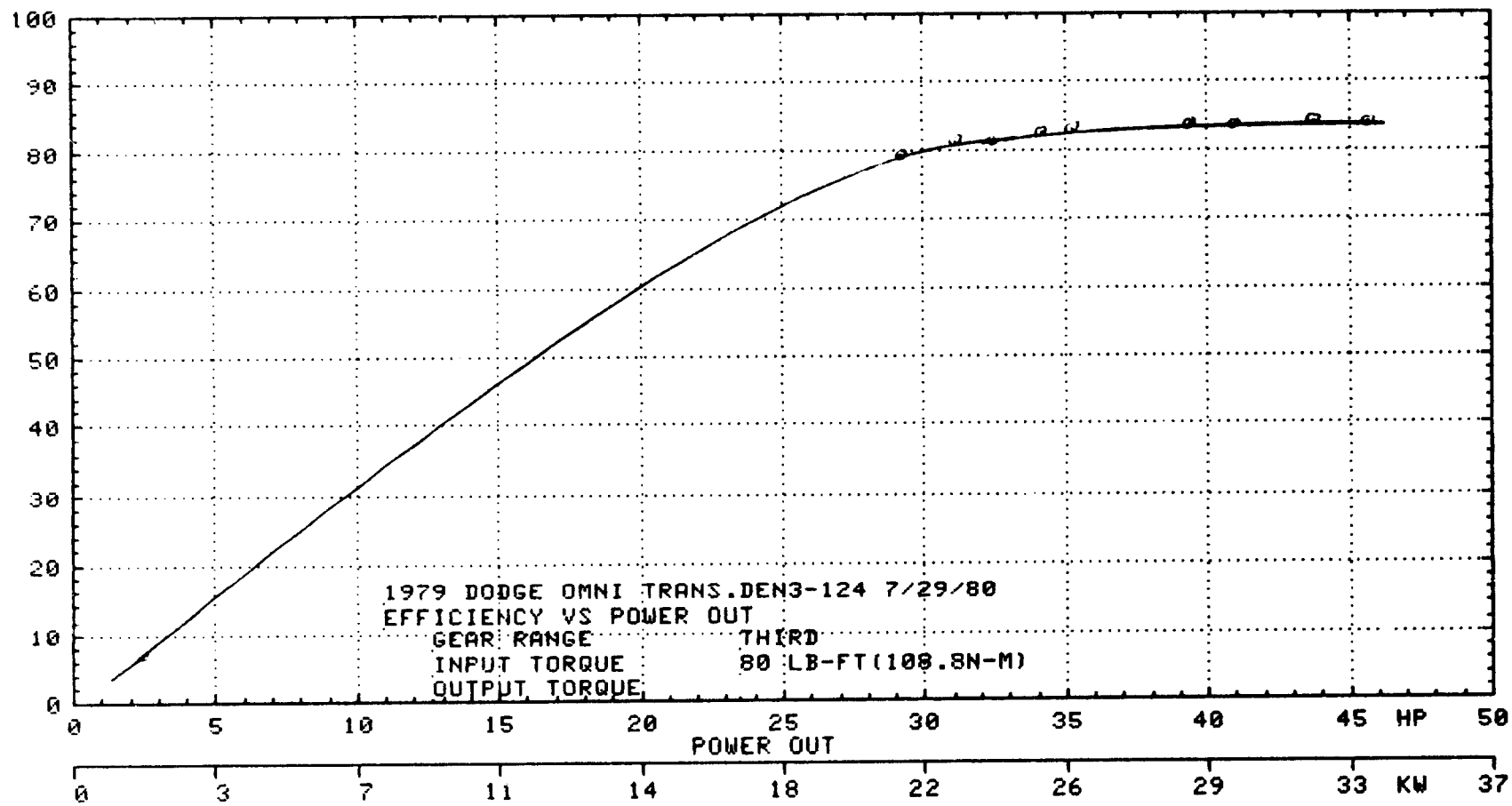

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 70 LB-FT(95.2N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

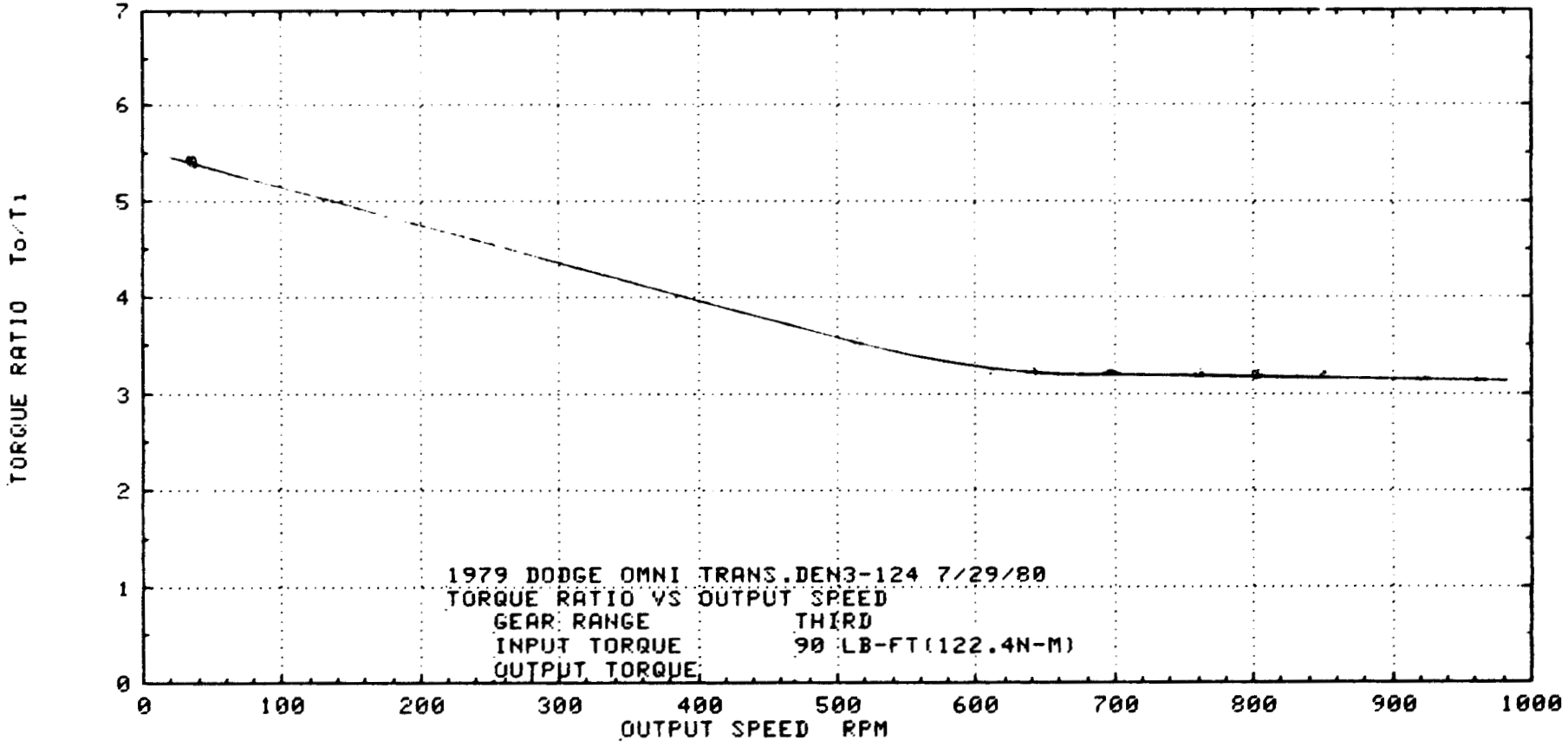

TORQUE RATIO TO 1
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM


678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
1579 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM

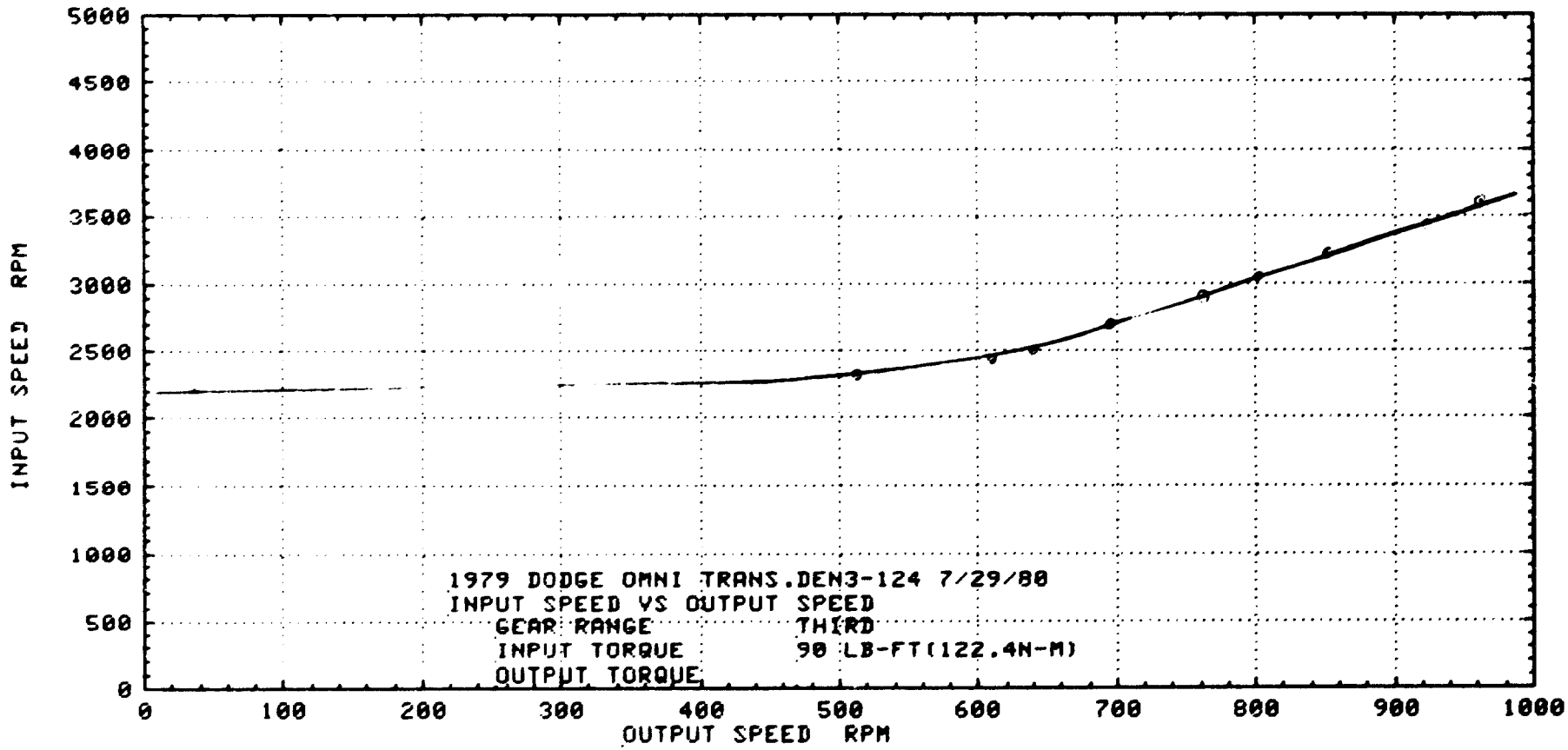

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE

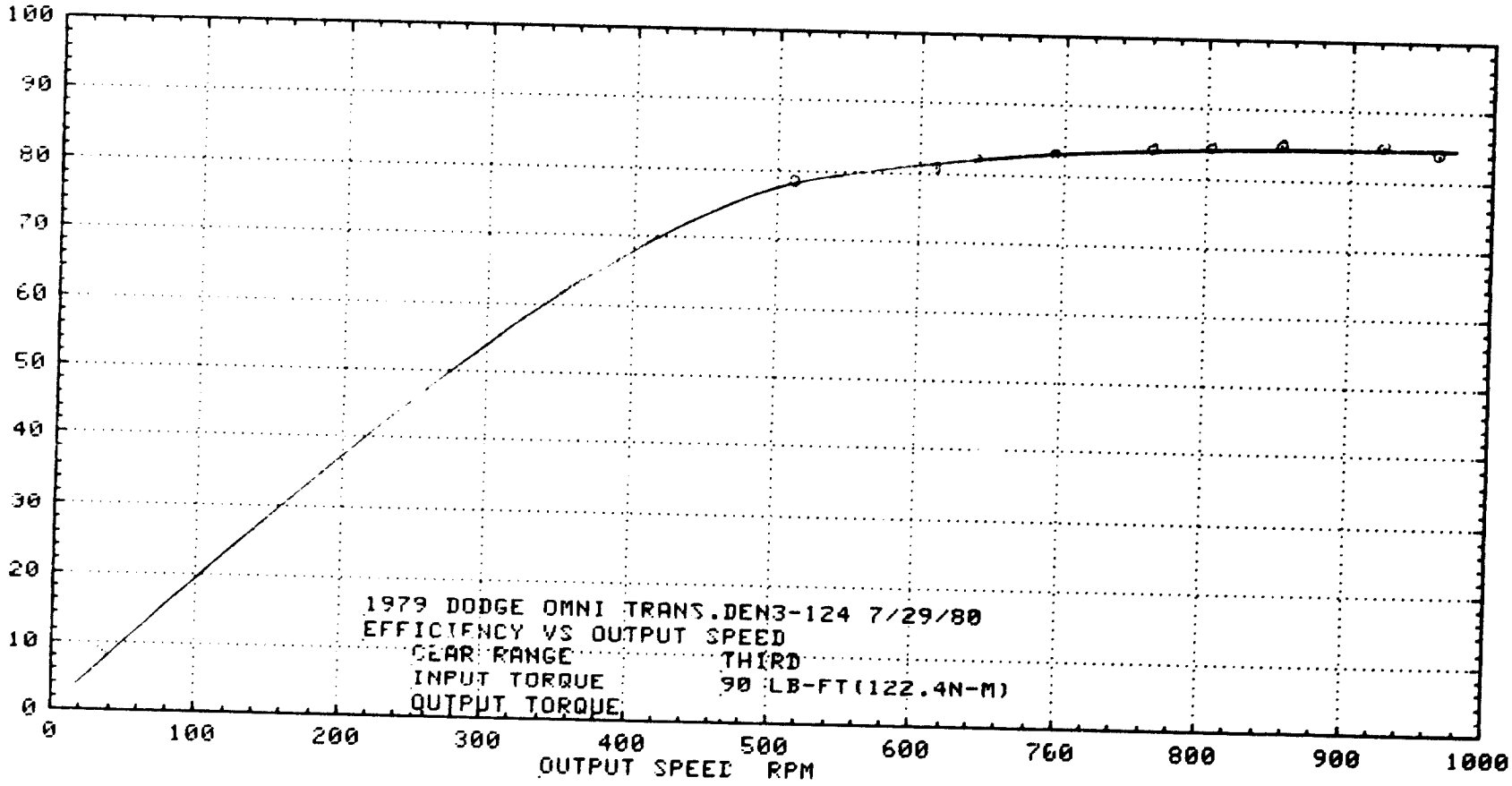

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)

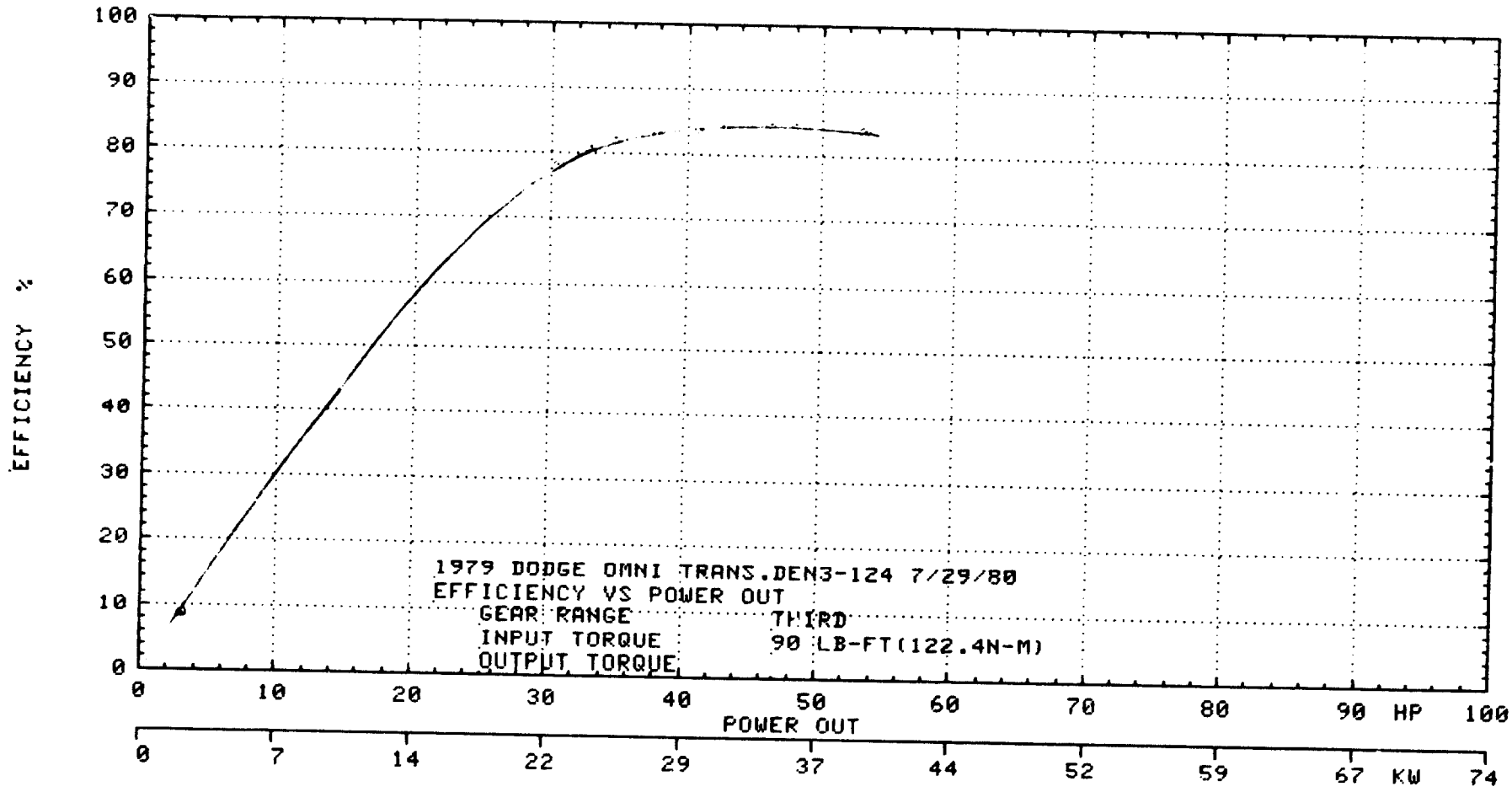

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT TORQUE
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37


TORQUE RATIO To/Ti
7
6
5
4
3
2
1
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
OUTPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM


5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
INPUT SPEED RPM
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 90 LB-FT(122.4N-M)
OUTPUT TORQUE
0 10 20 30 40 50 60 70 80 90 HP 100
POWER OUT
0 7 14 22 29 37 44 52 59 67 KW 74

CROSS SECTIONAL ROAD LOAD PERFORMANCE

3rd Gear

Graphs Contained in This Section

Torque Ratio -vs- Output Speed

Output Torque -vs- Output Speed

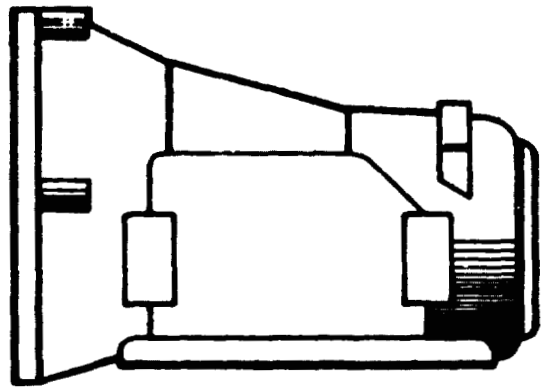
Input Speed -vs- Output Speed

Efficiency -vs- Output Speed

Efficiency -vs- Power Out

Torque In

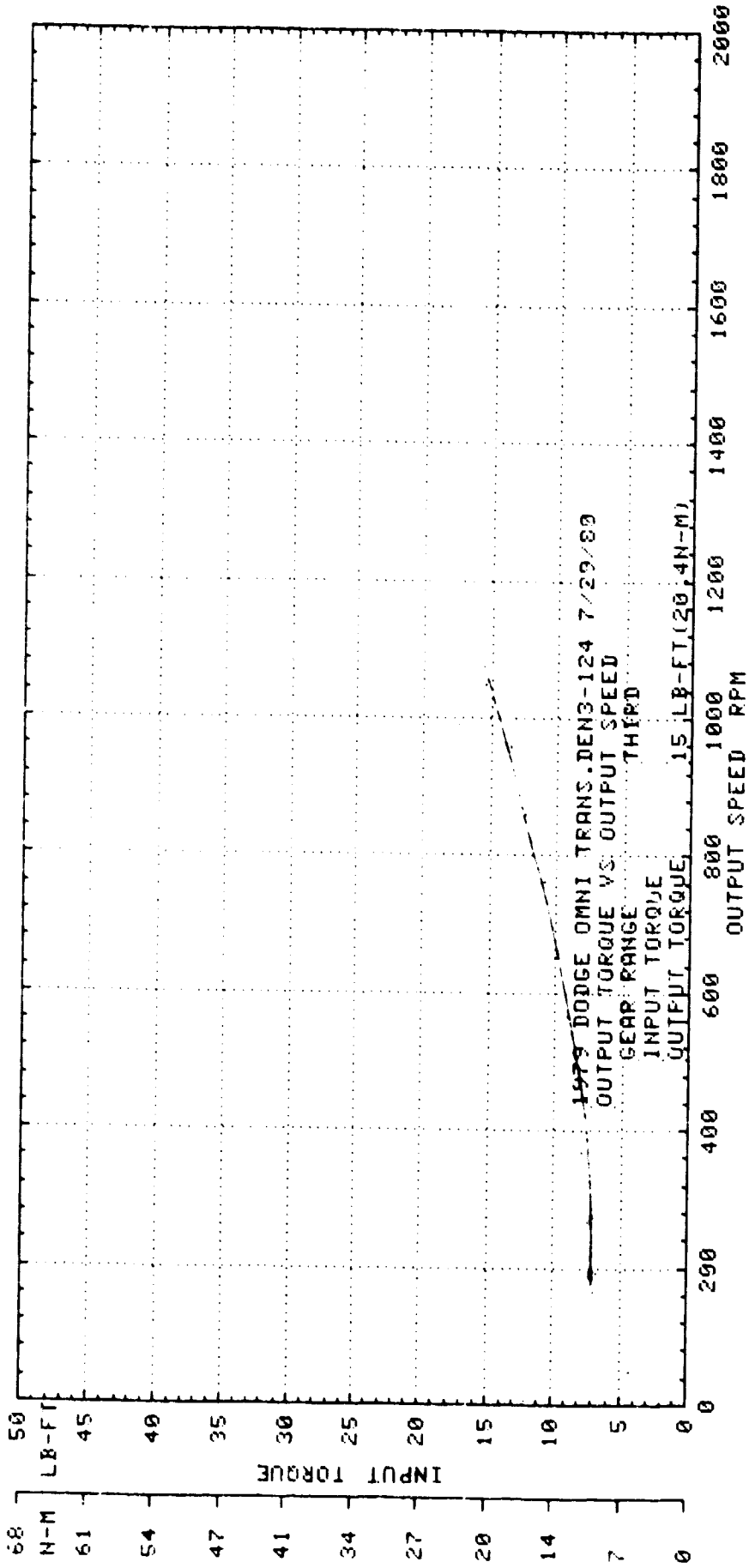
Speed In

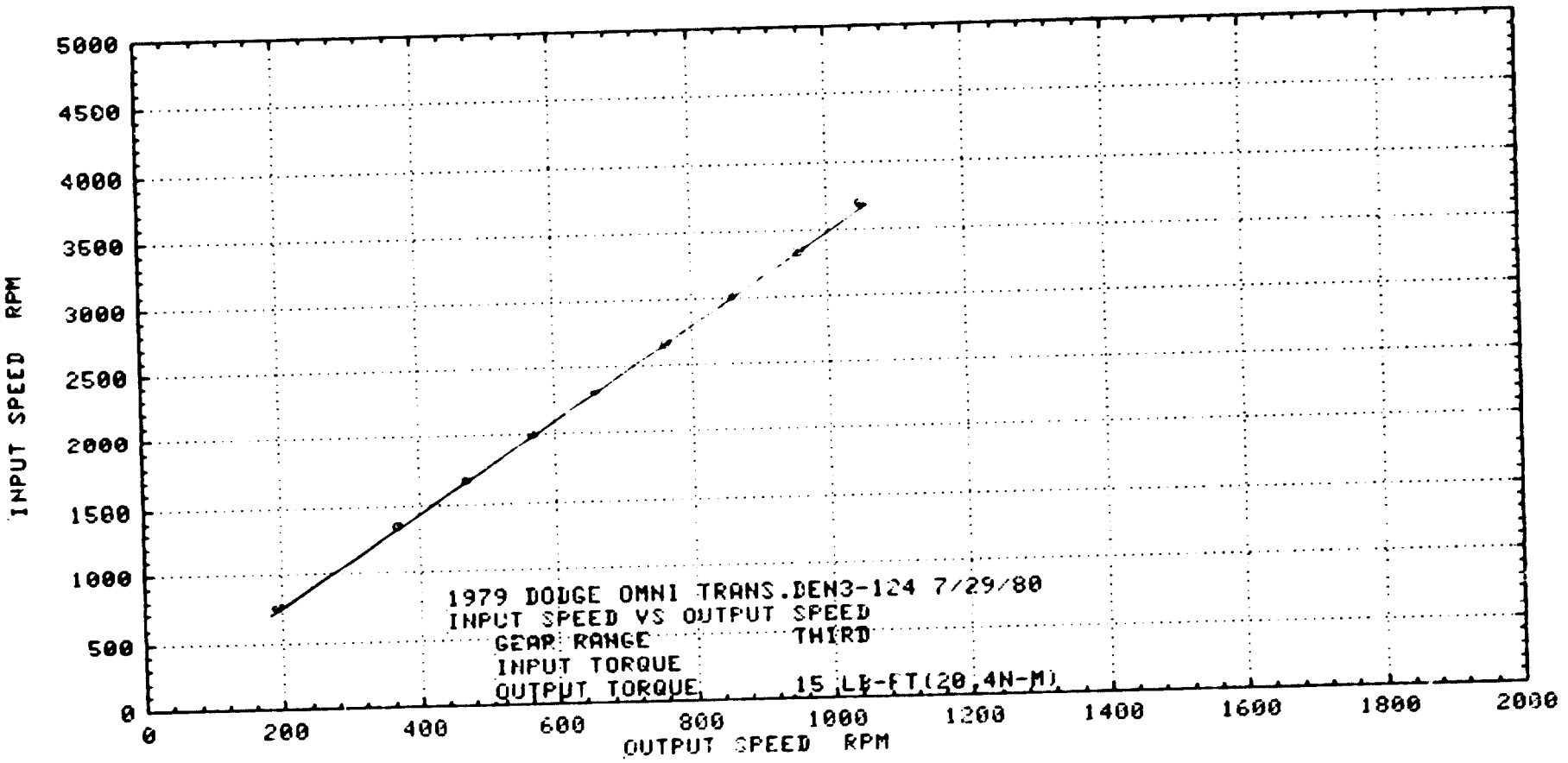


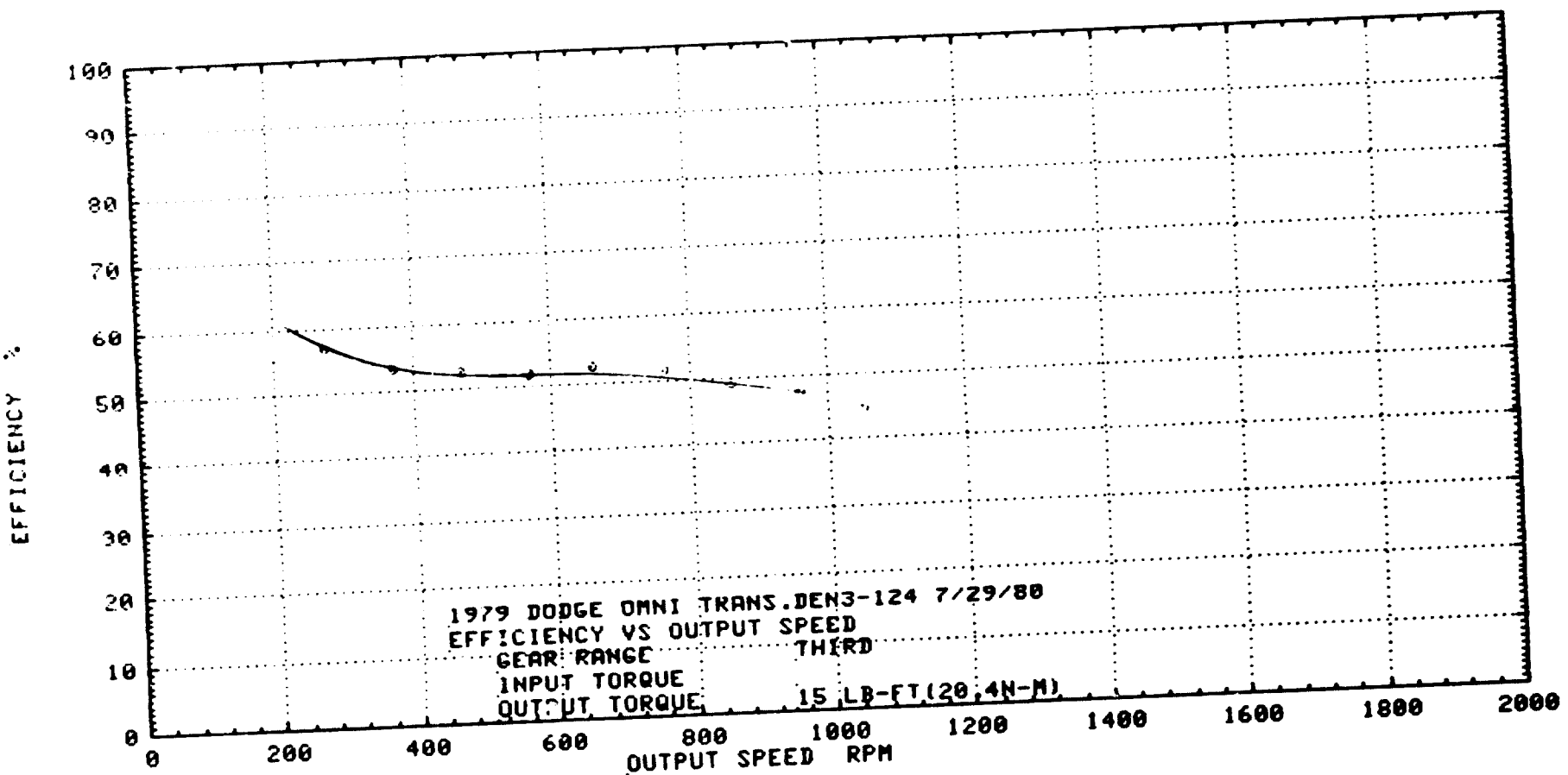
Torque Out

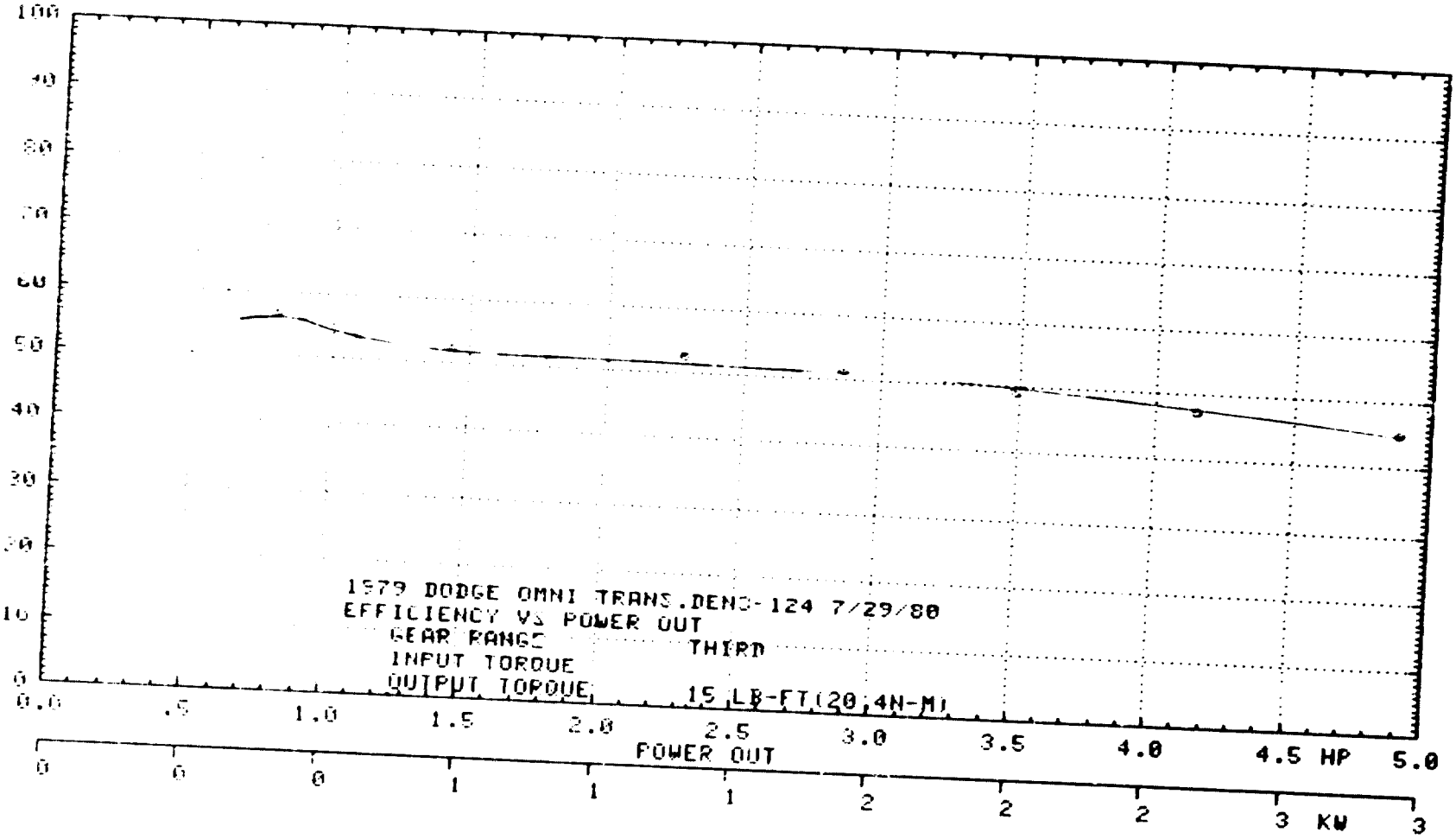
Speed Out

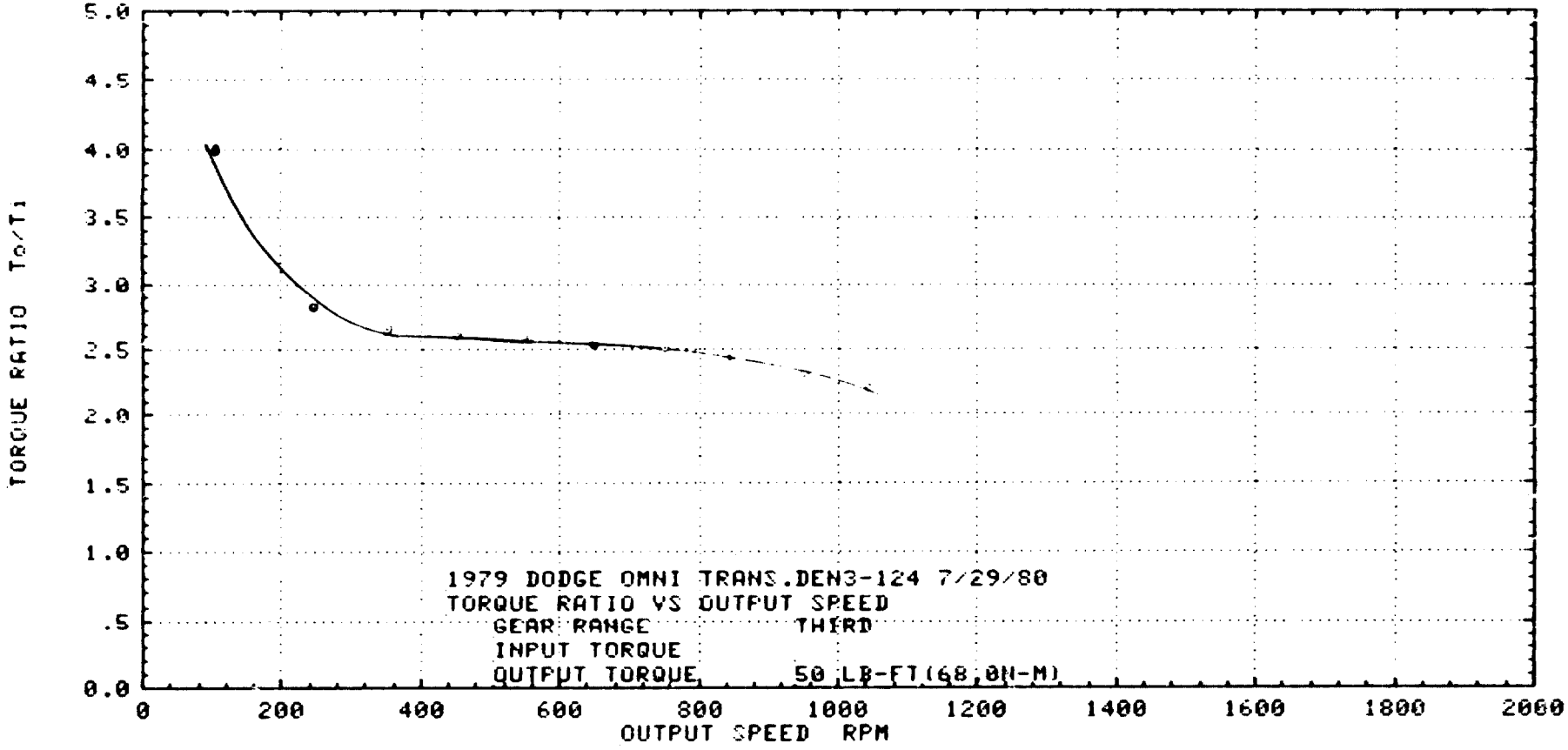
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 15 LB-FT(20.4N-M)
TORQUE RATIO To/Ti
OUTPUT SPEED RPM
0.0
.2
.4
.6
.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000

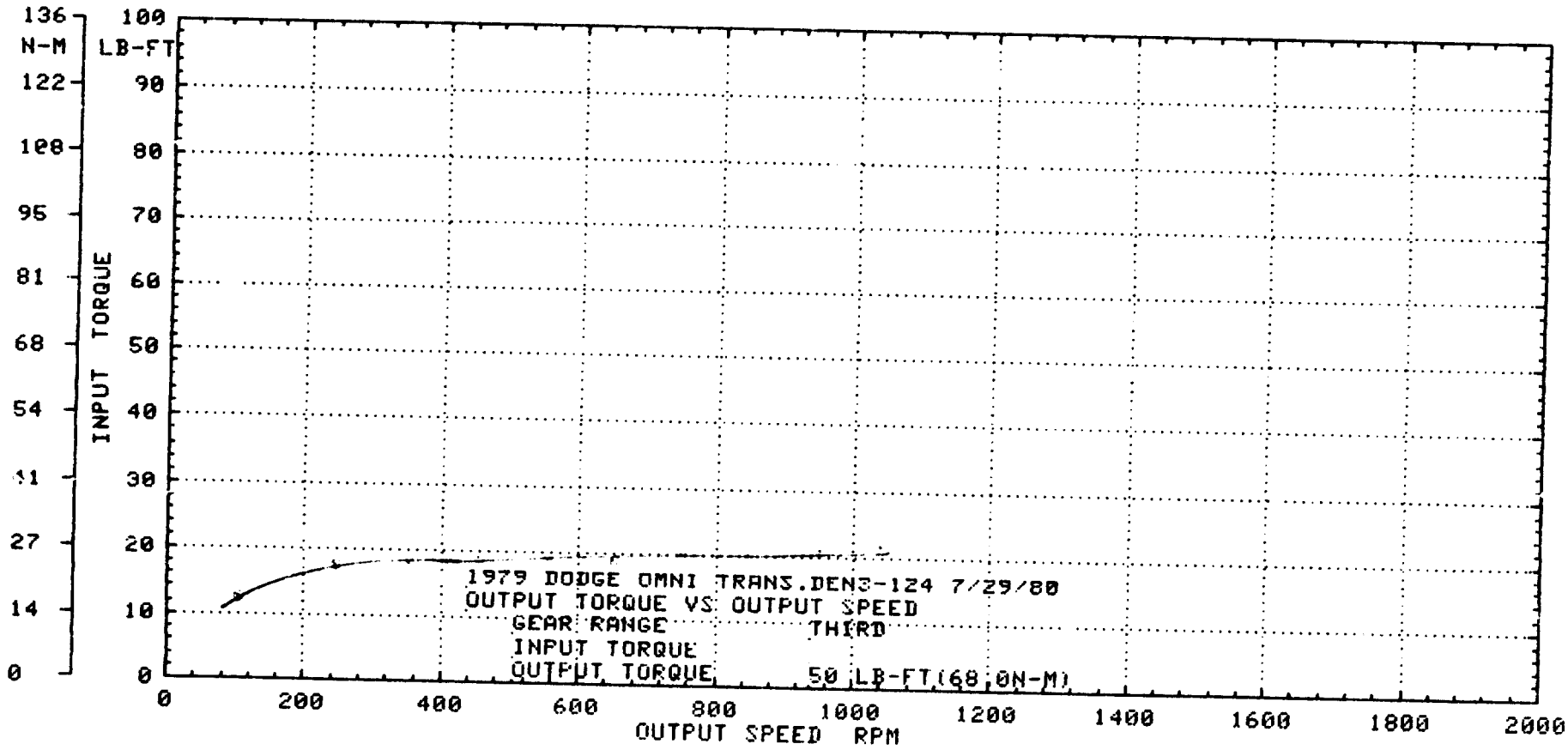

1979 DODGE OMNI TRANS.DEN3-124 7/29/83
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 15 LB-FT(20.4N-M)
INPUT TORQUE
LB-FT
N-M
OUTPUT SPEED RPM
0
200
400
600
800
1000
1200
1400
1600
1800
2000
50
45
40
35
30
25
20
15
10
5
0
68
61
54
47
41
34
27
20
14
7
0

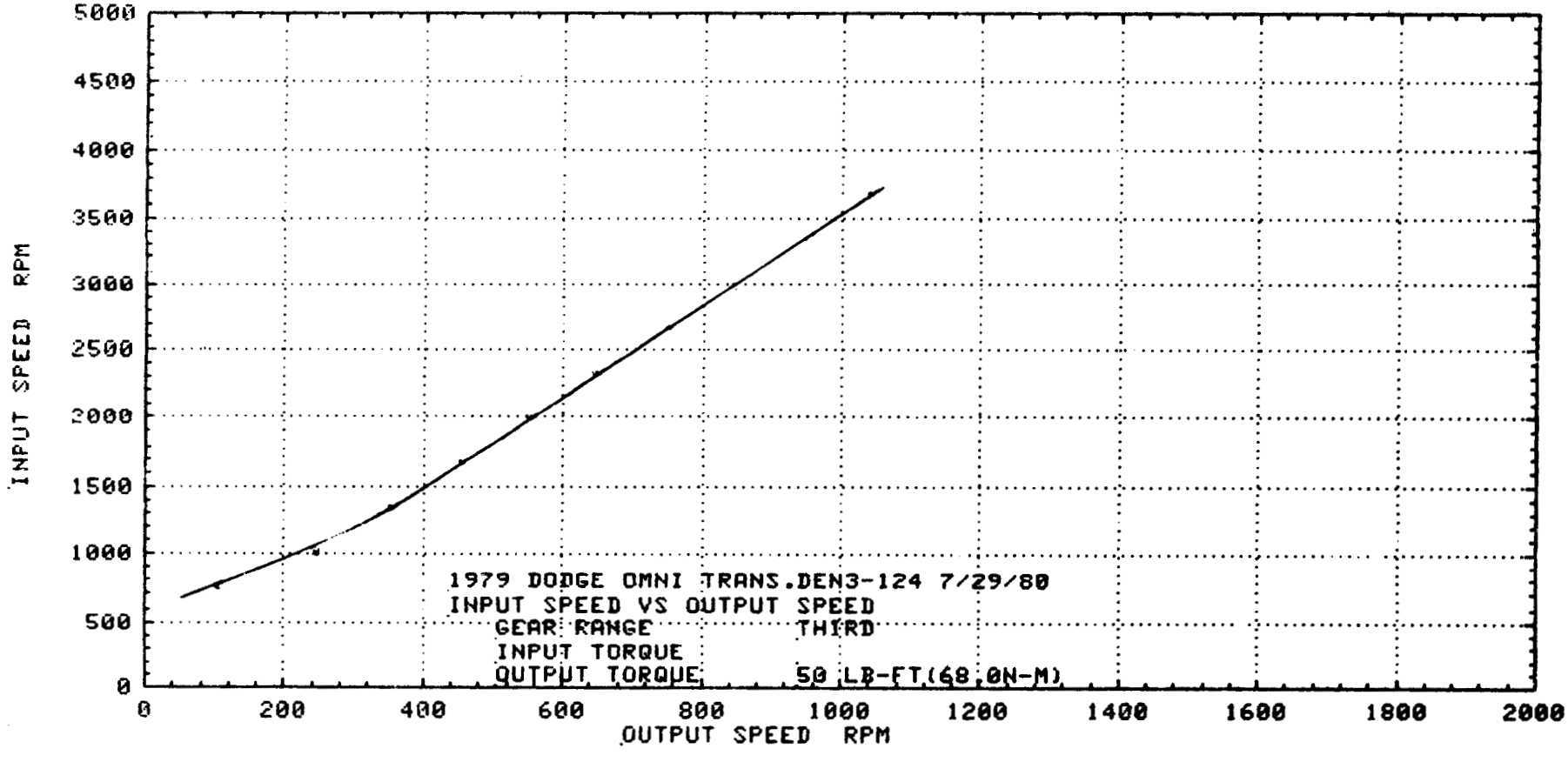

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 15 LB-FT(20.4N-M)

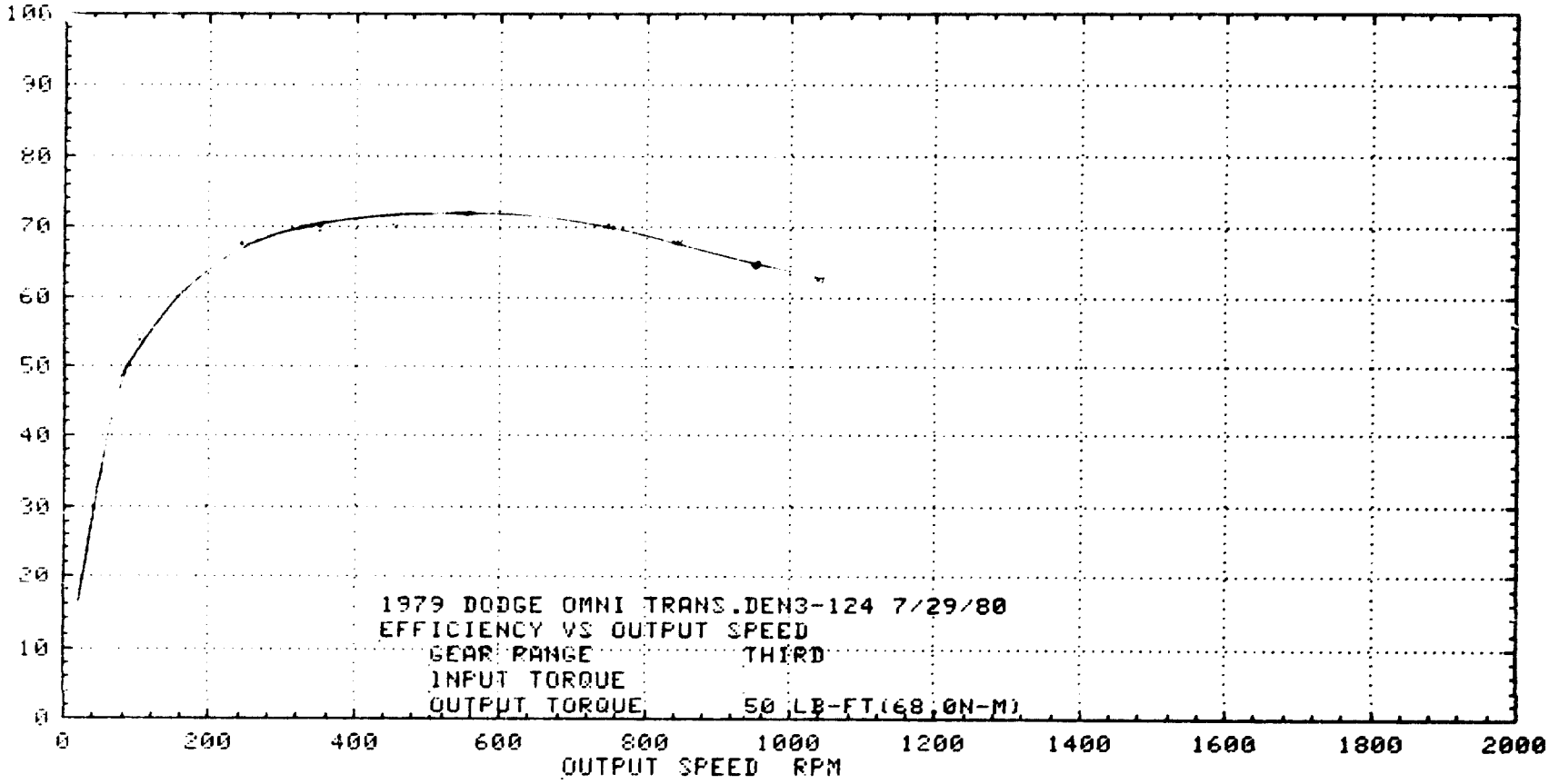

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 15 LB-FT(20.4N-M)

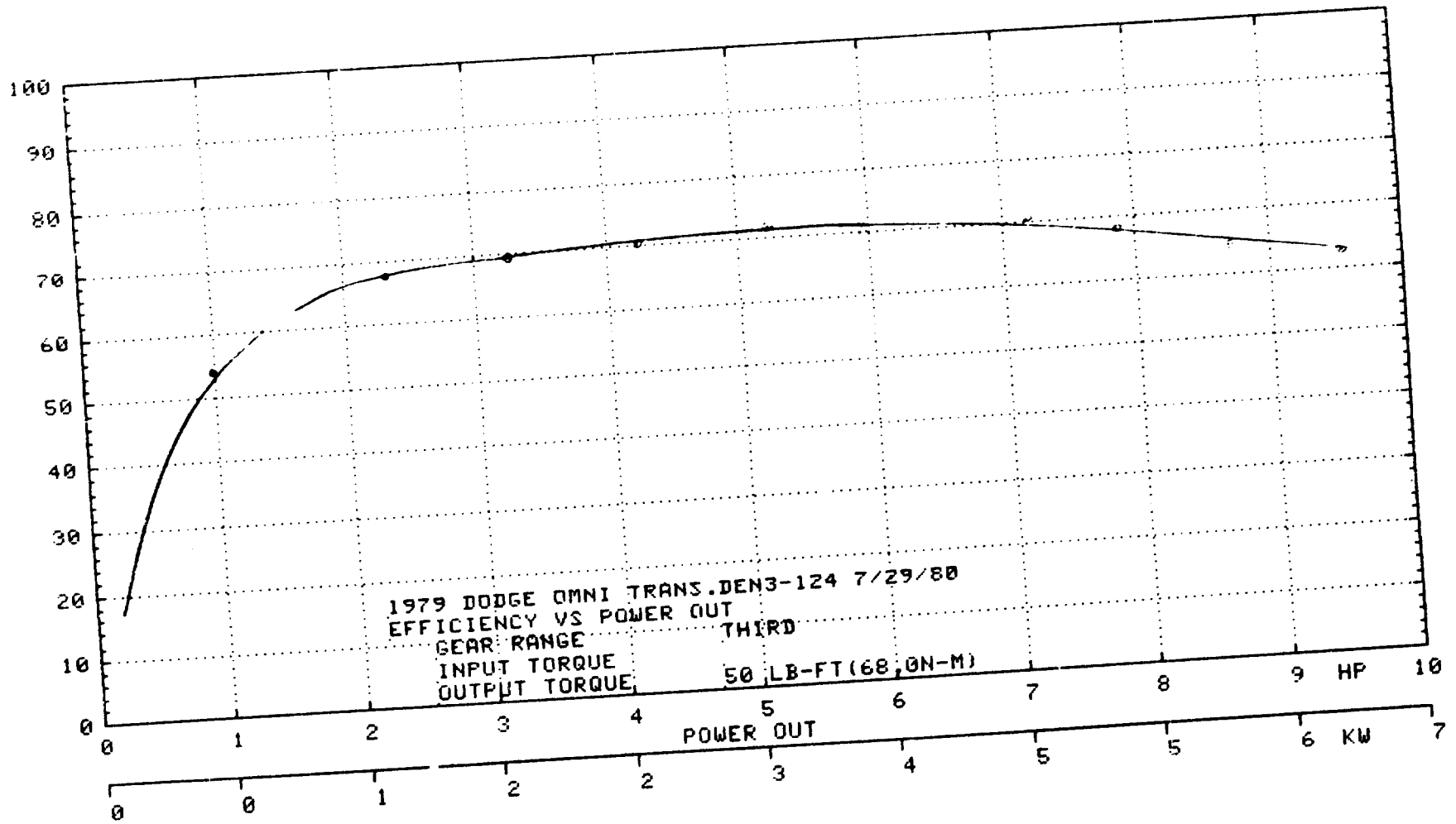

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY Vs POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 15 LB-FT(20.4N-M)
0.0 .5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 HP 5.0
POWER OUT
0 0 0 1 1 1 2 2 2 3 KW 3

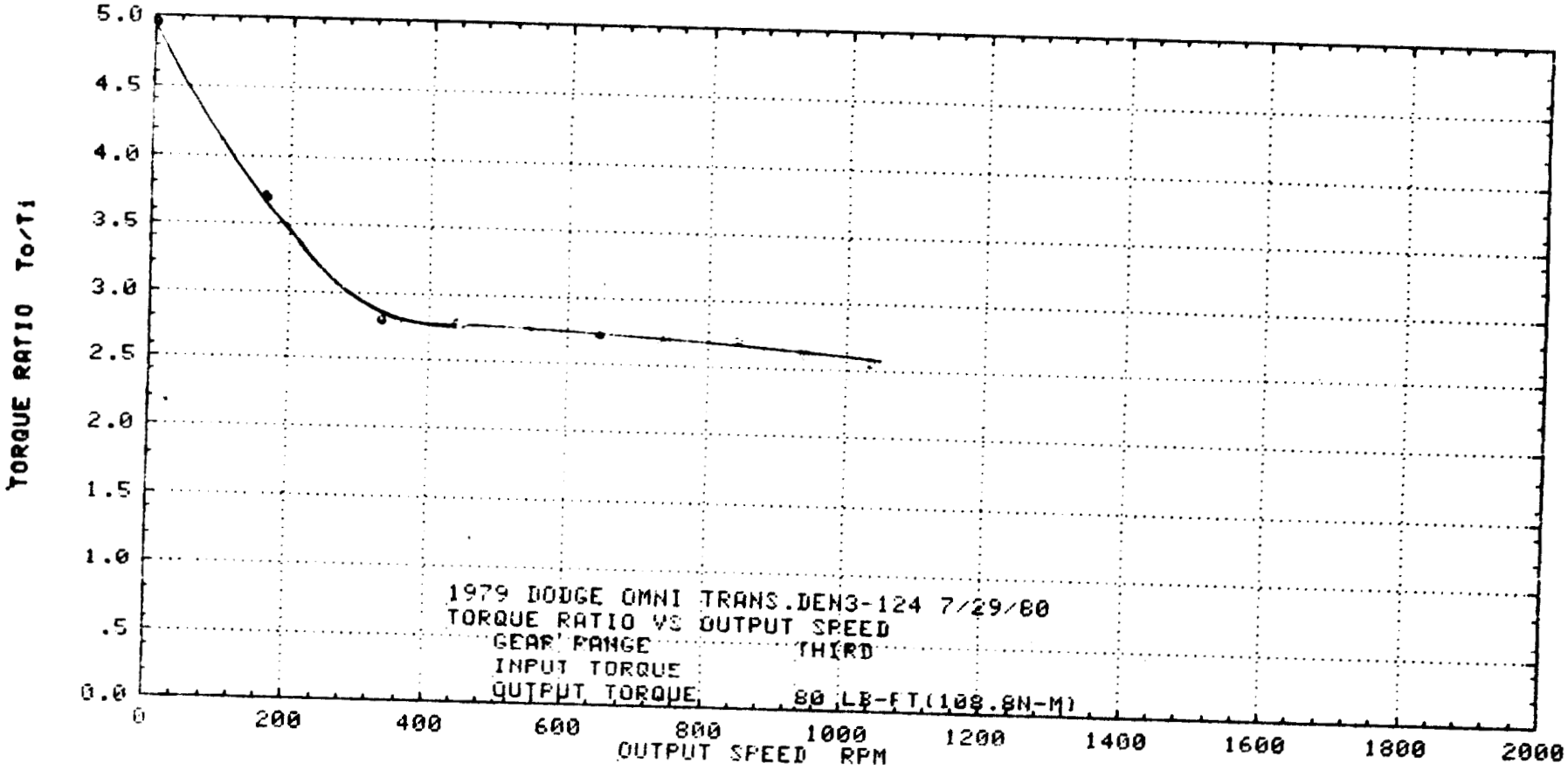

TORQUE RATIO To/Ti
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68.0N-M)

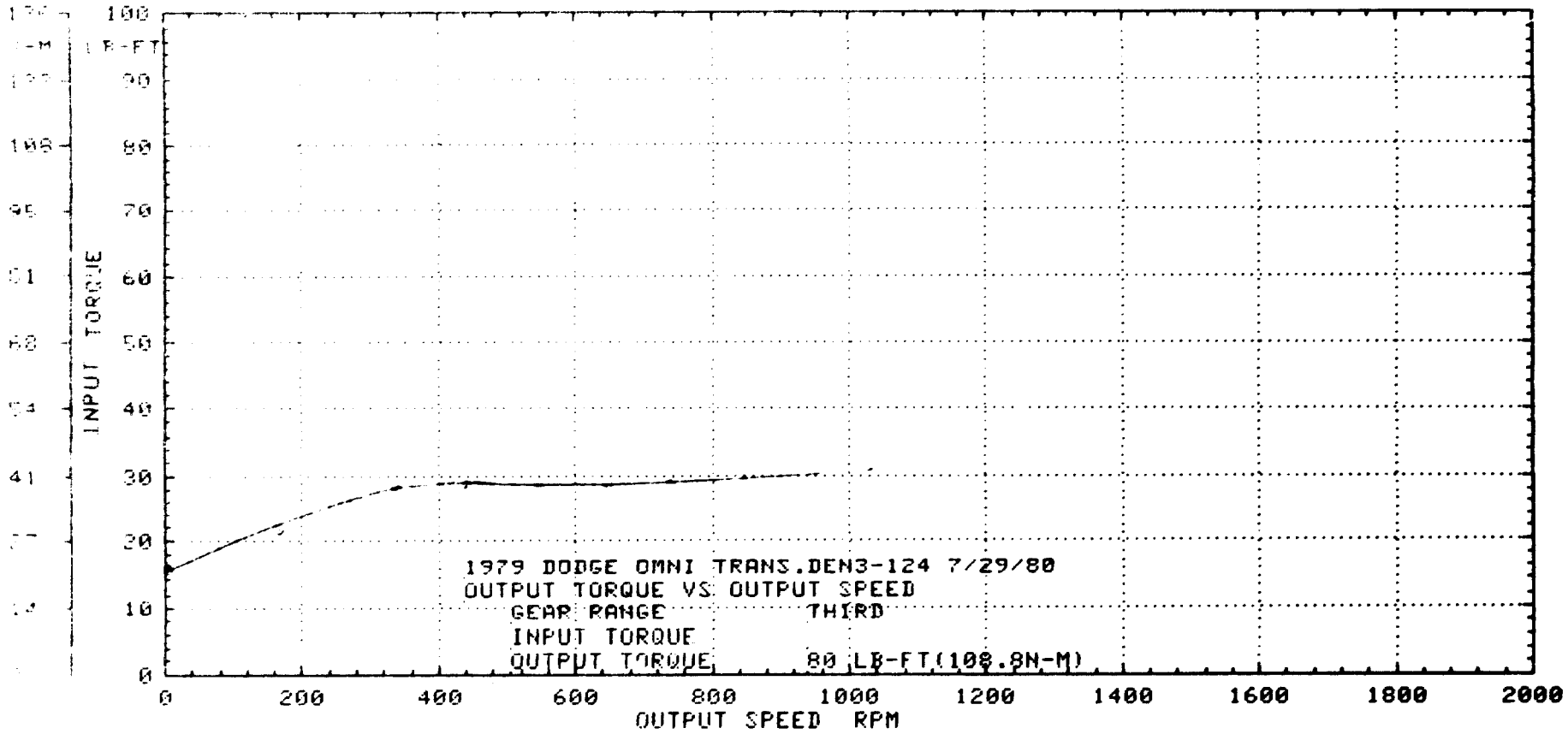

136
N-M
122
108
95
81
68
54
41
27
14
0
100
LB-FT
90
80
70
60
50
40
30
20
10
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68.0N-M)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM

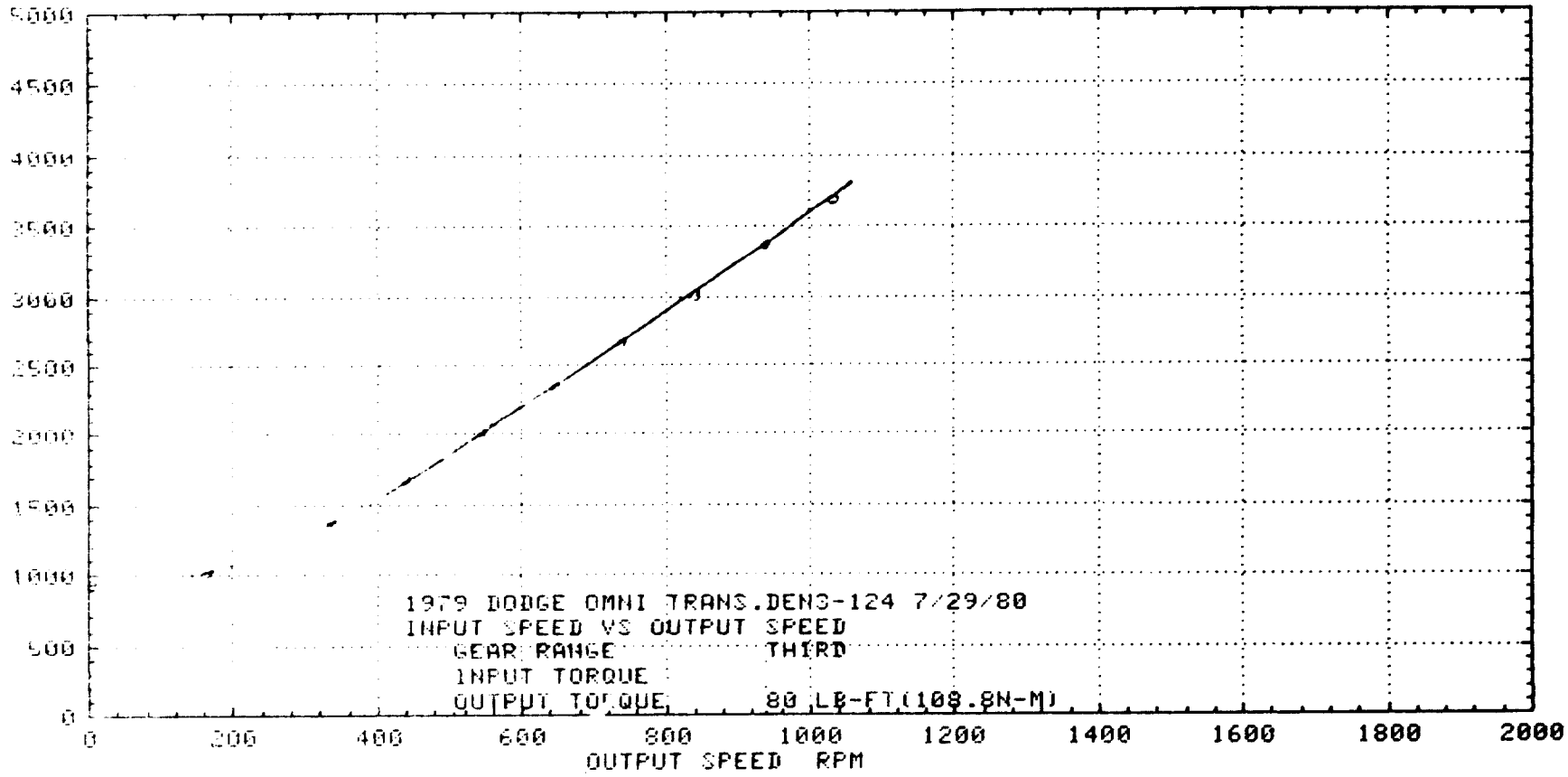

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68.0N-M)

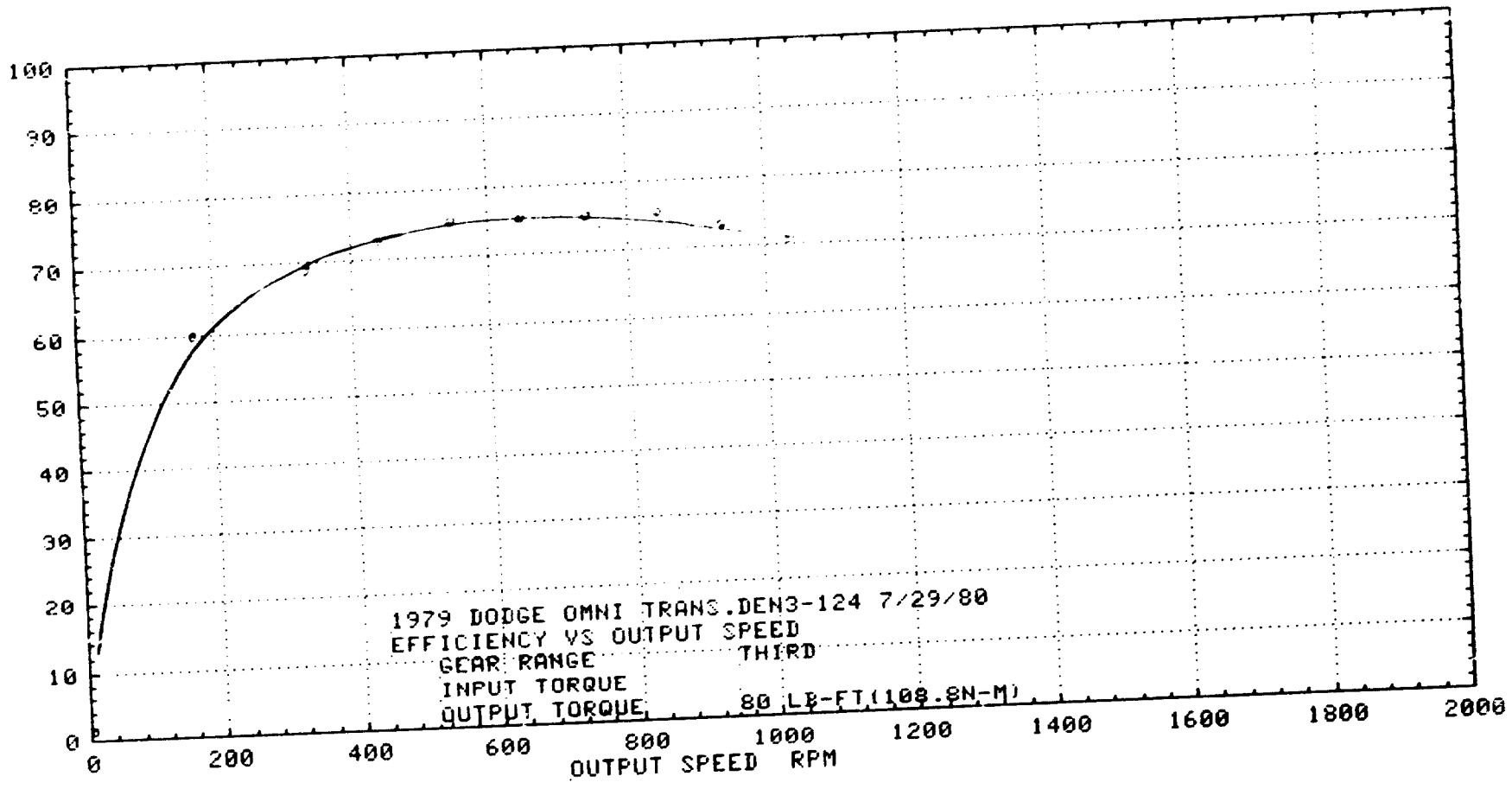

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68.0N-M)

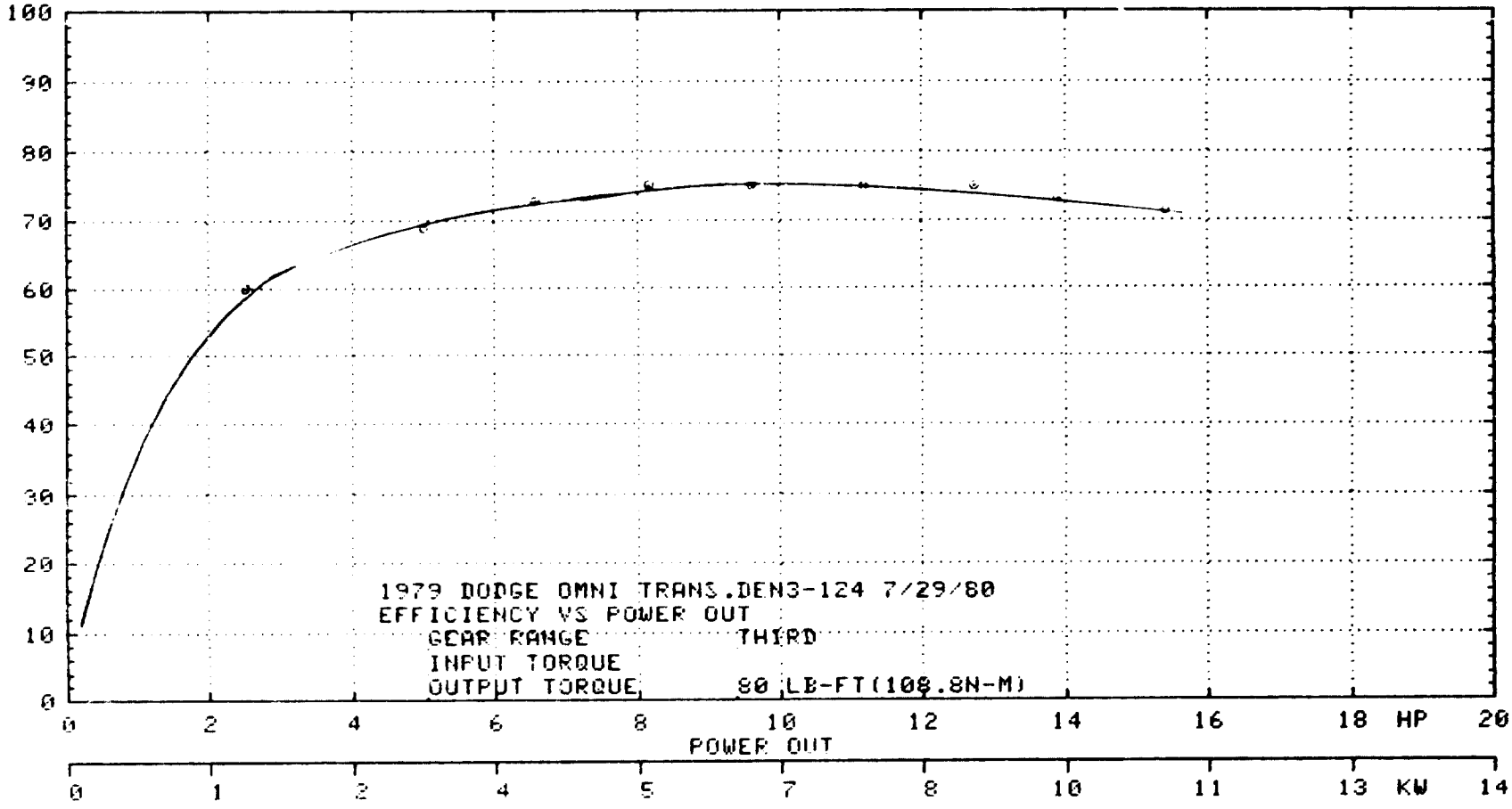

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE 50 LB-FT(68.0N-M)
OUTPUT TORQUE
0 1 2 3 4 5 6 7 8 9 HP 10
POWER OUT
0 0 1 2 2 3 4 5 5 6 KW 7

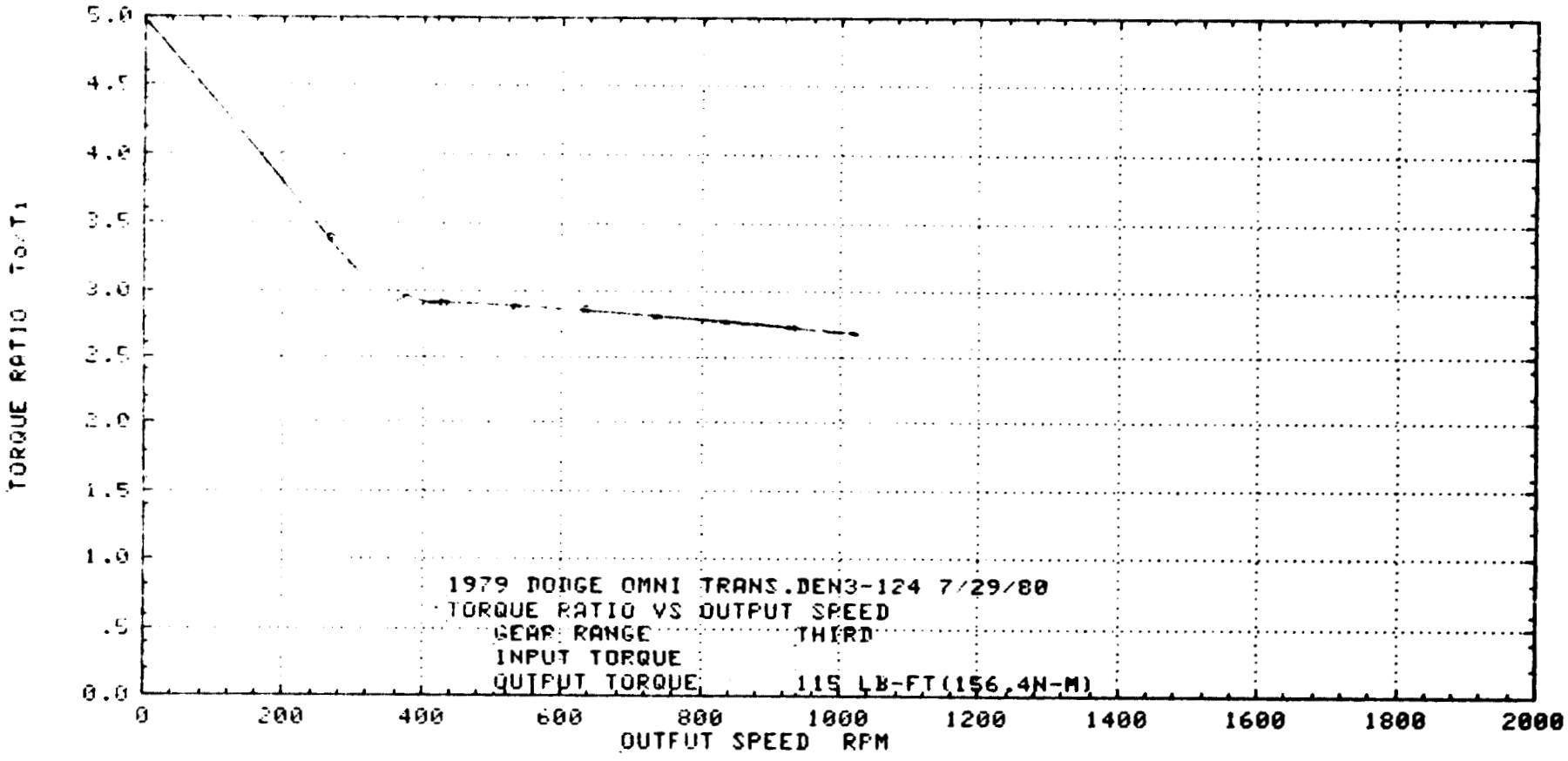

TORQUE RATIO To/Ti
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)


LB-FT
INPUT TORQUE
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM

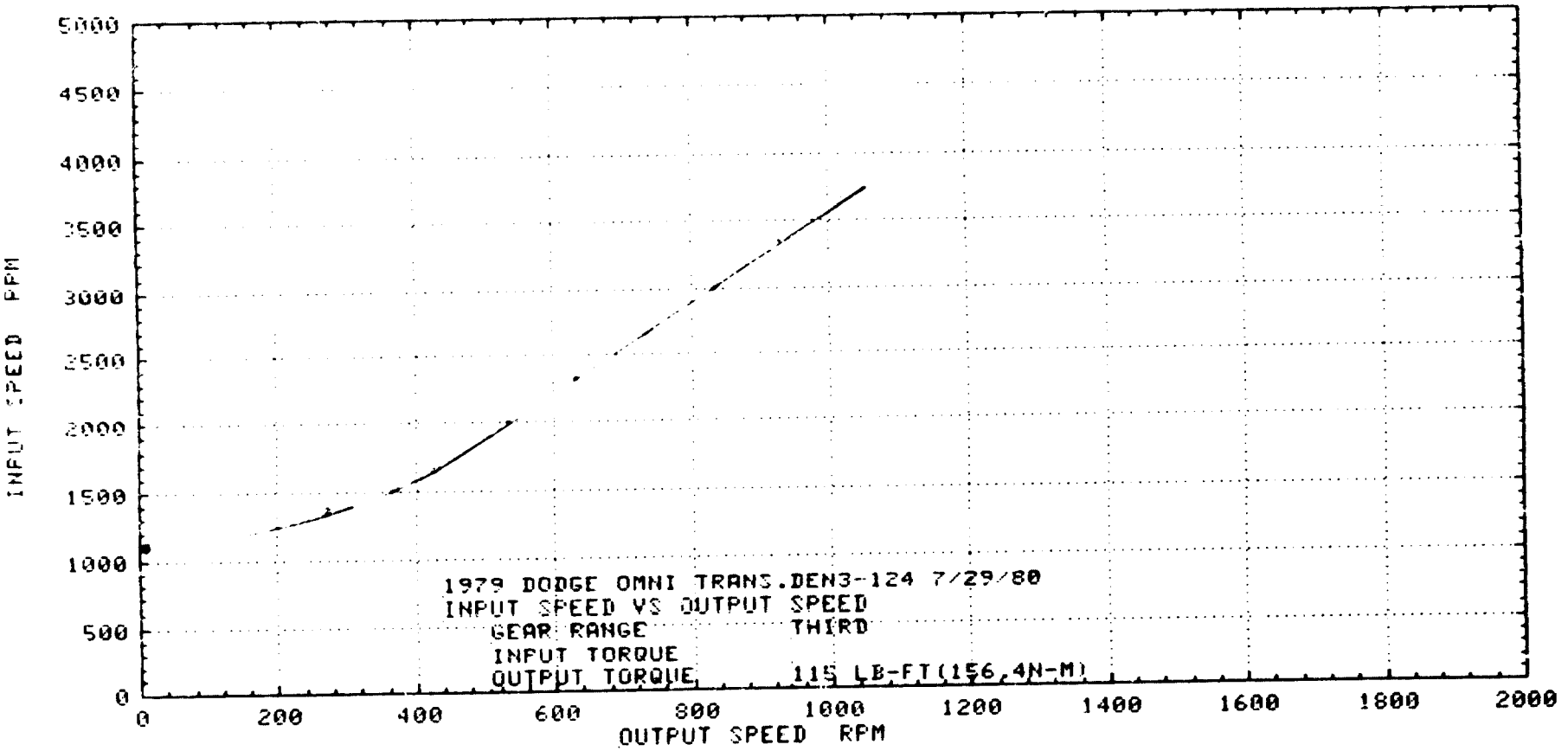

5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
INPUT SPEED RPM
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)

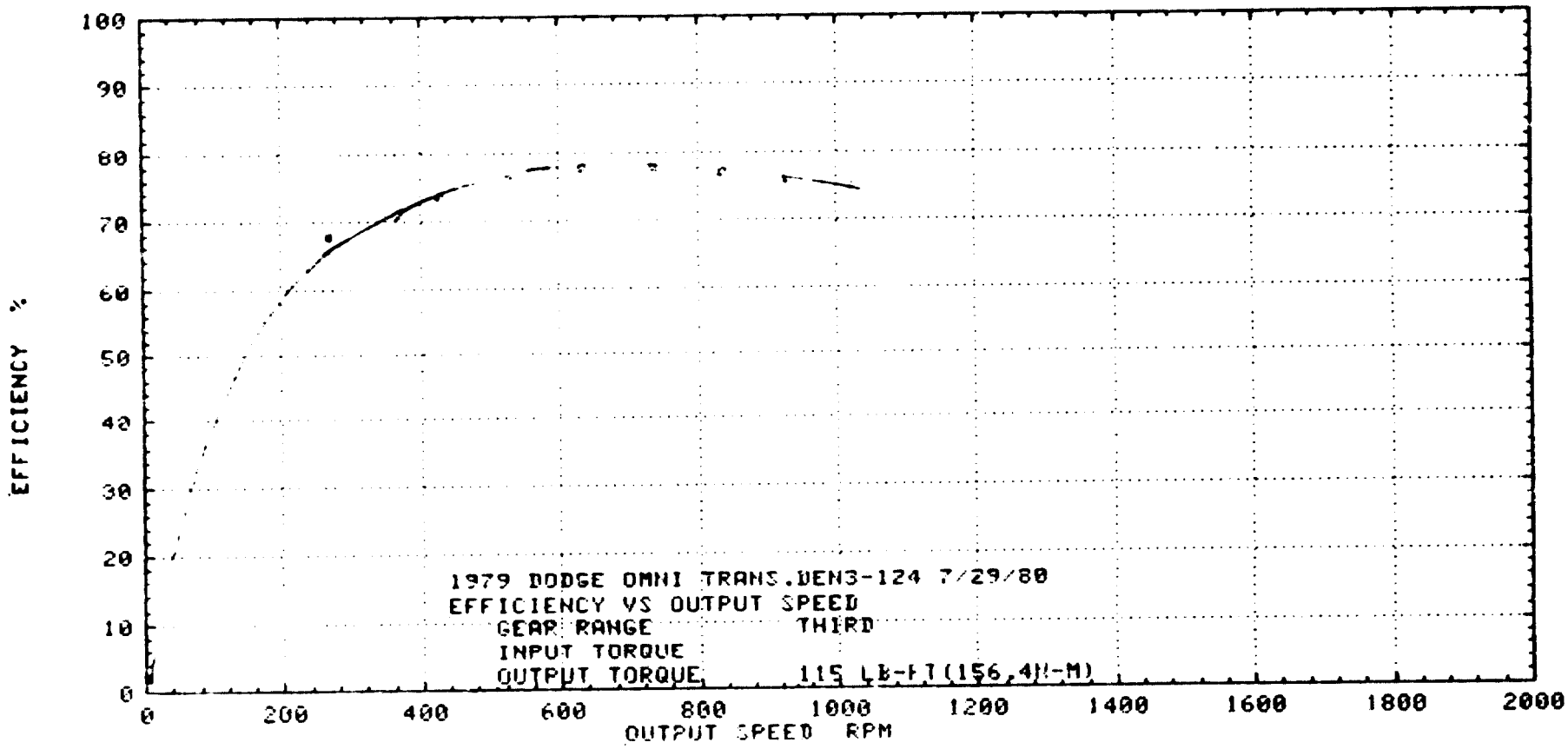

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)

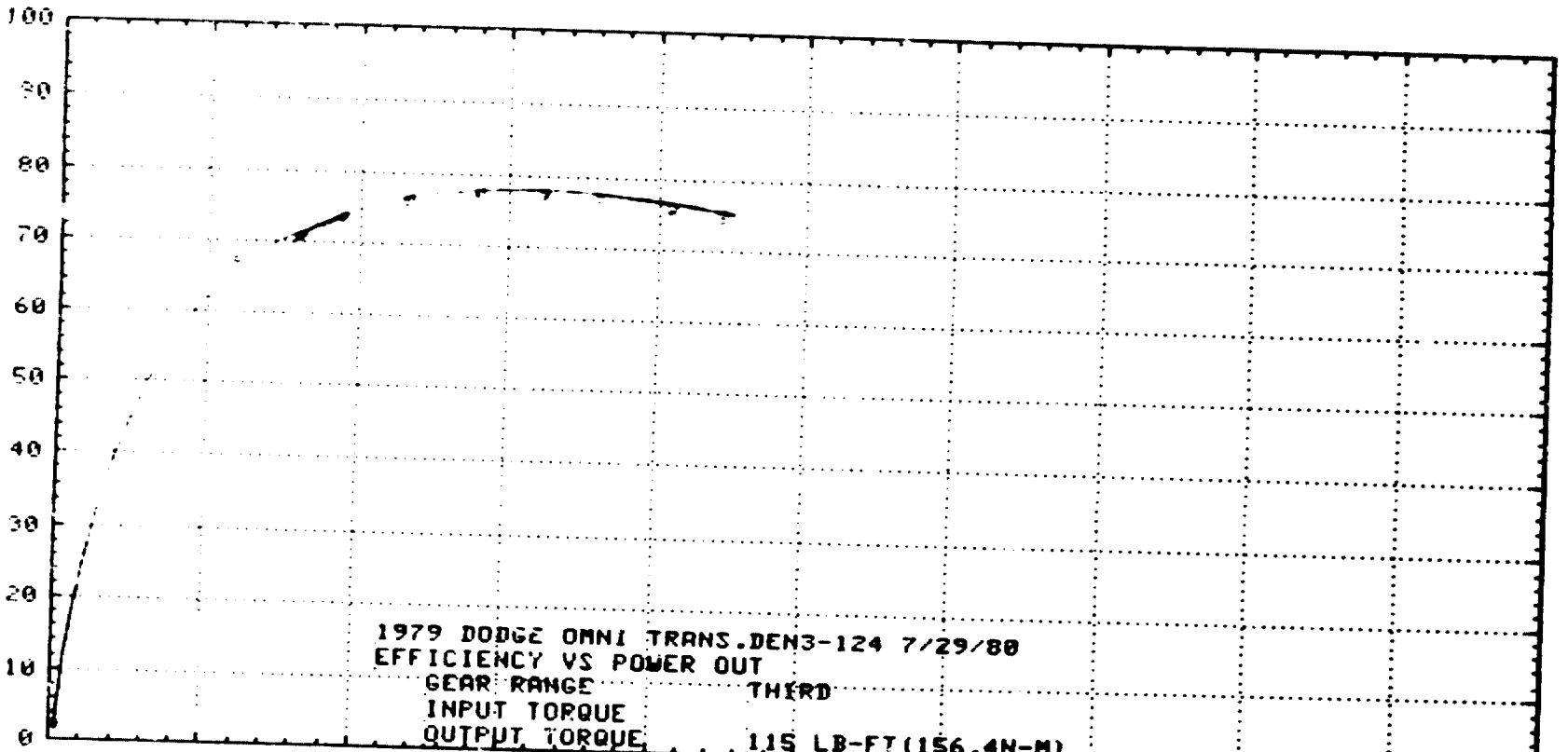

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)
0 2 4 6 8 10 12 14 16 18 HP 20
POWER OUT
0 1 2 4 5 7 8 10 11 13 KW 14

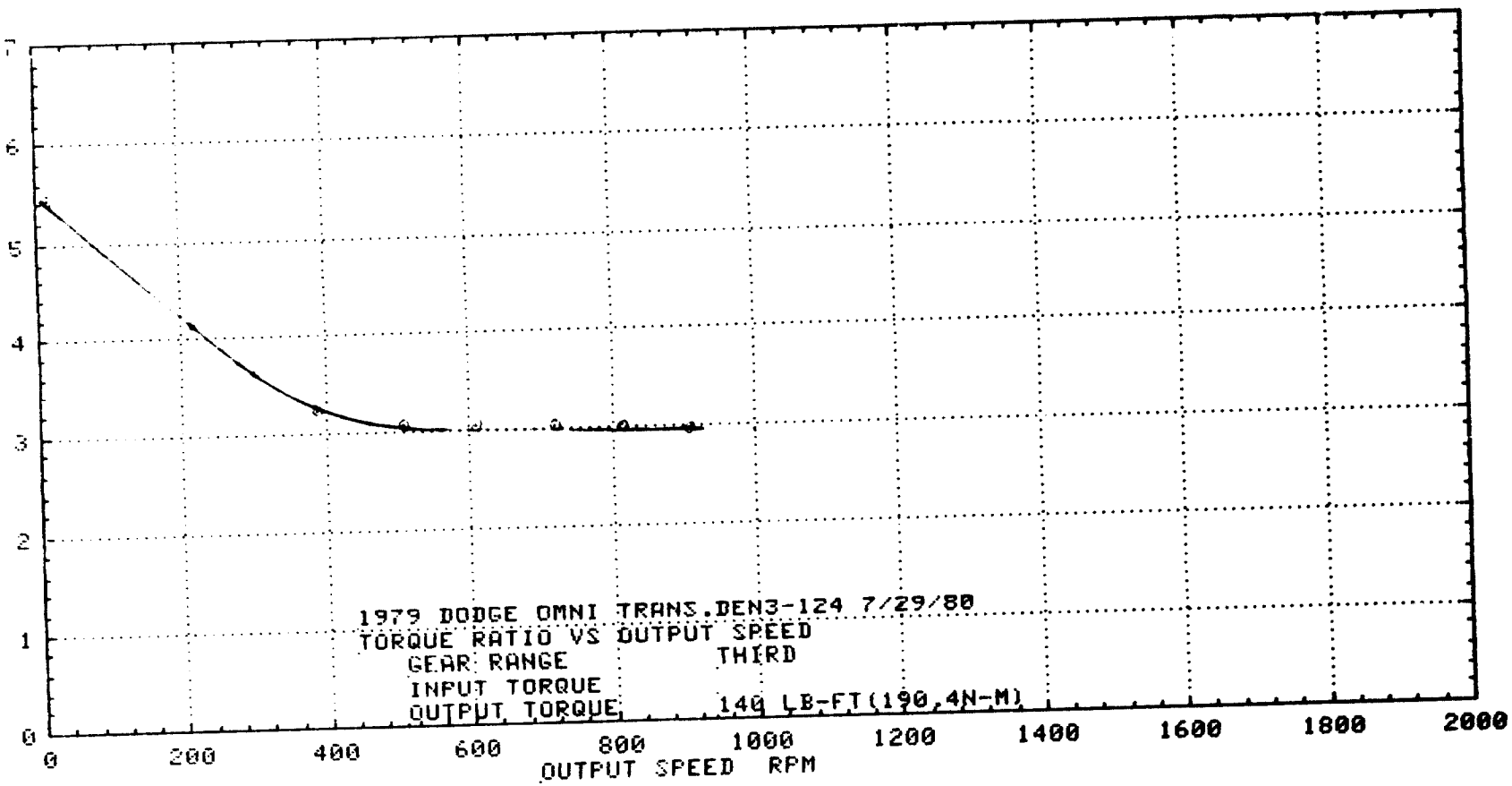

TORQUE RATIO To:Ti
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 115 LB-FT(156.4N-M)

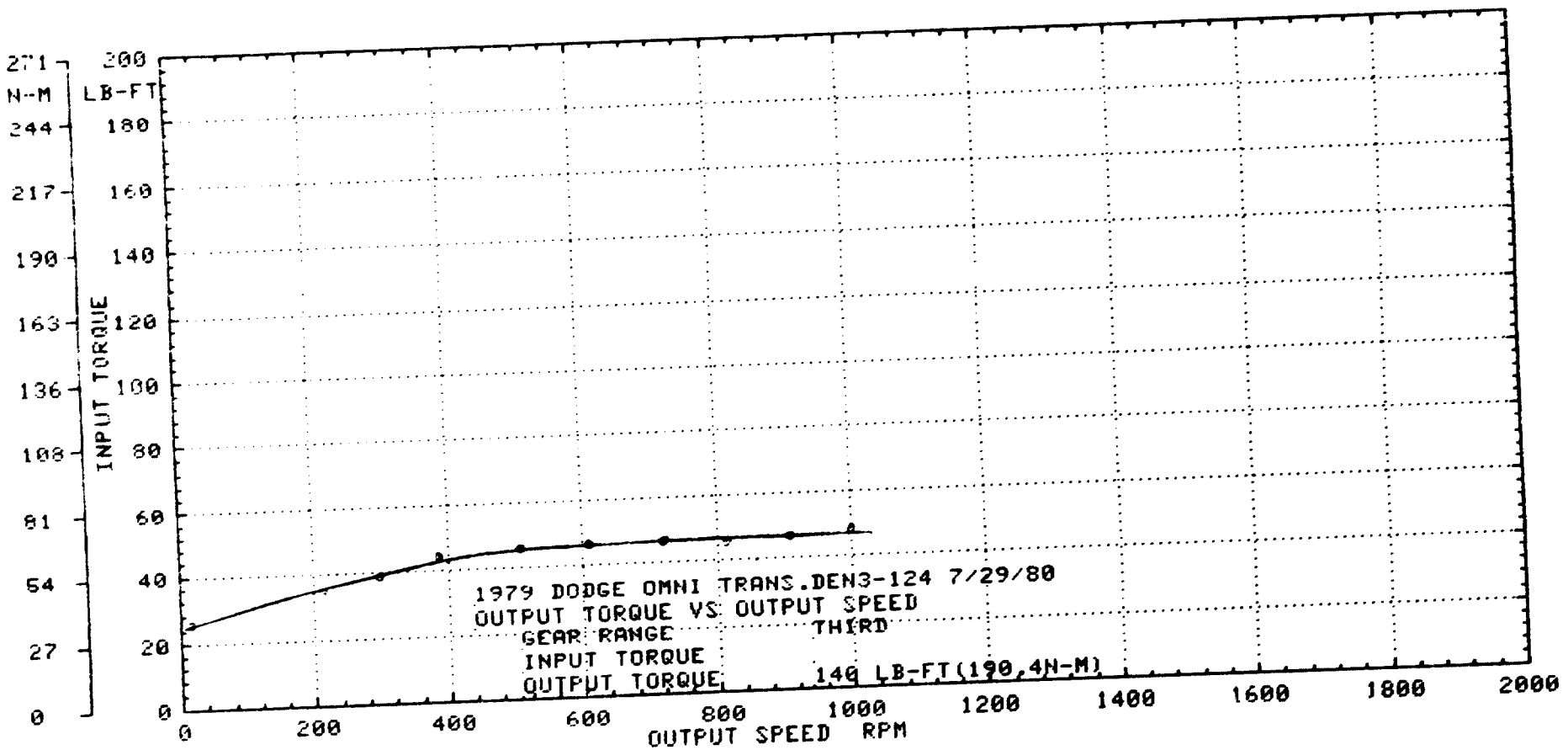
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE
THIRD
INPUT TORQUE
OUTPUT TORQUE
115 LB-FT (156.4N-M)
OUTPUT SPEED RPM
INPUT TORQUE

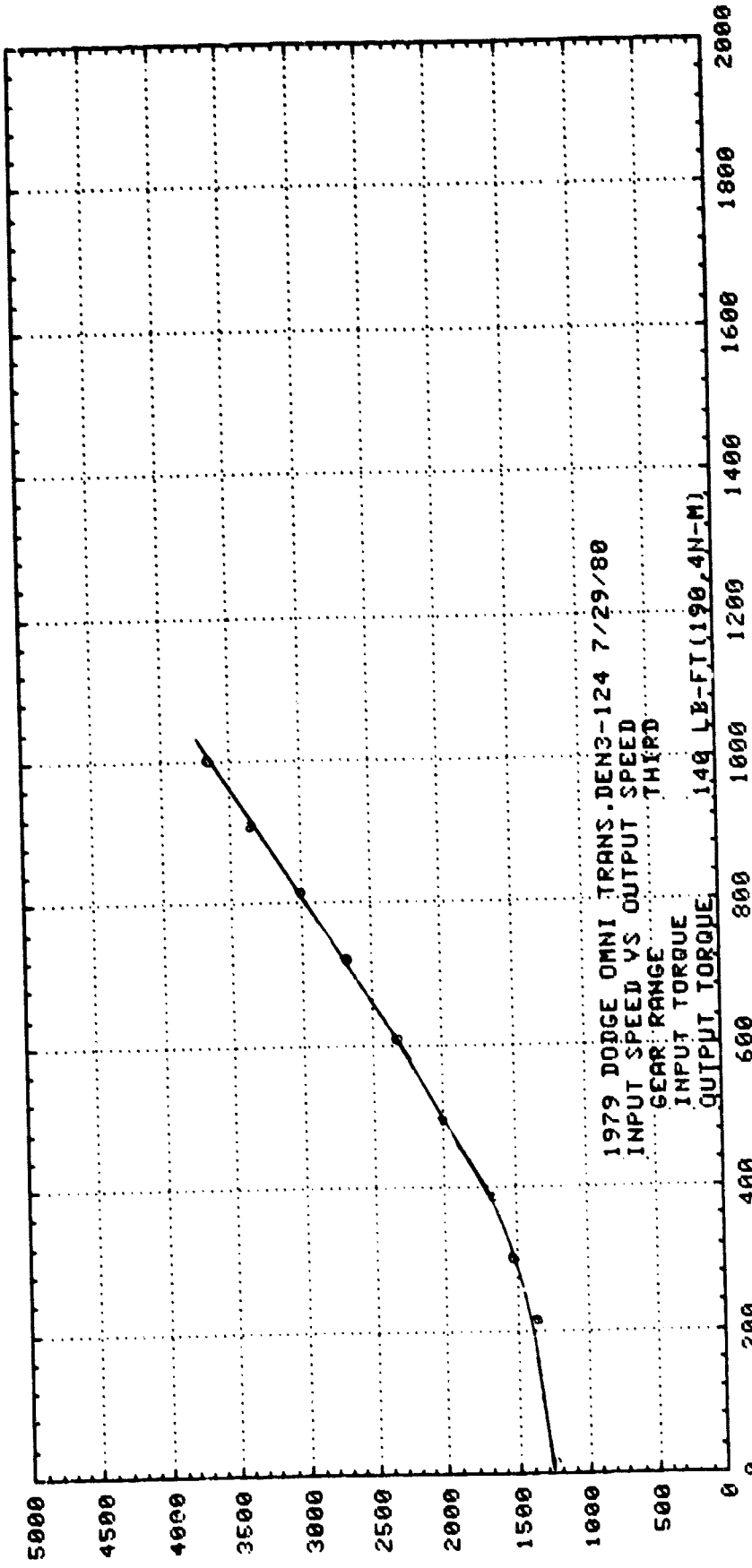

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 115 LB-FT(156.4N-M)

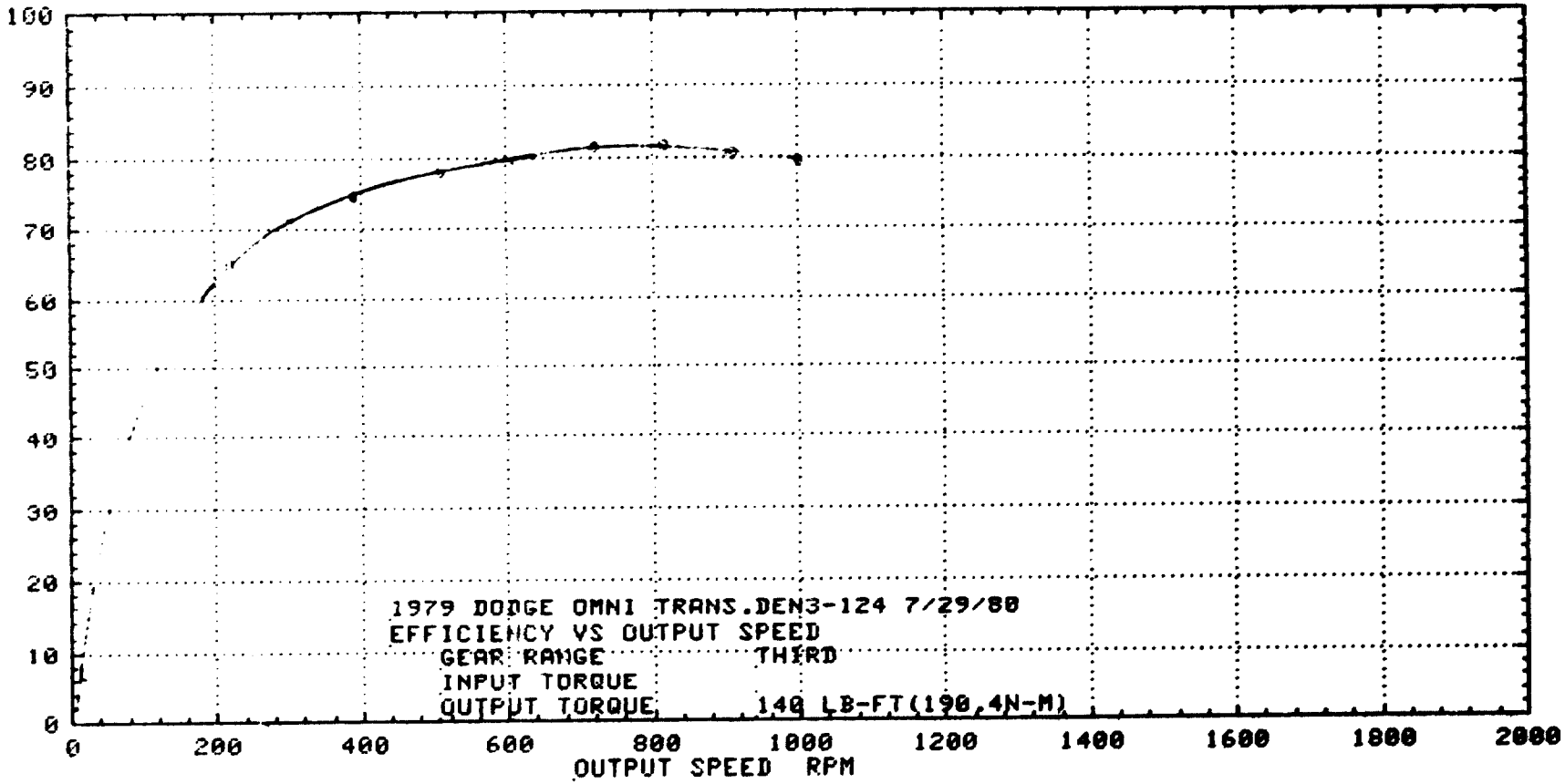

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 115 LB-FT(156,4N-M)

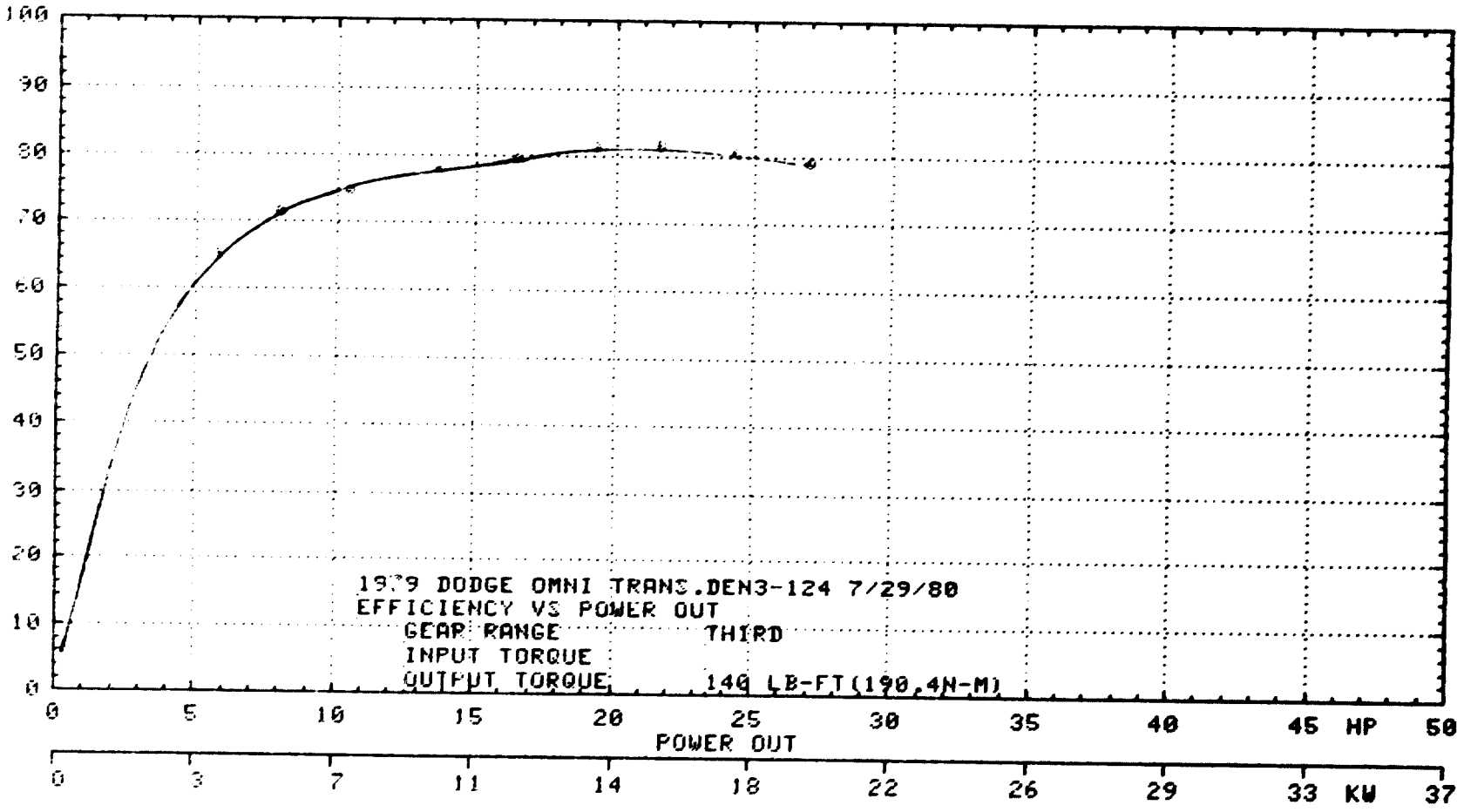

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 115 LB-FT (156.4N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

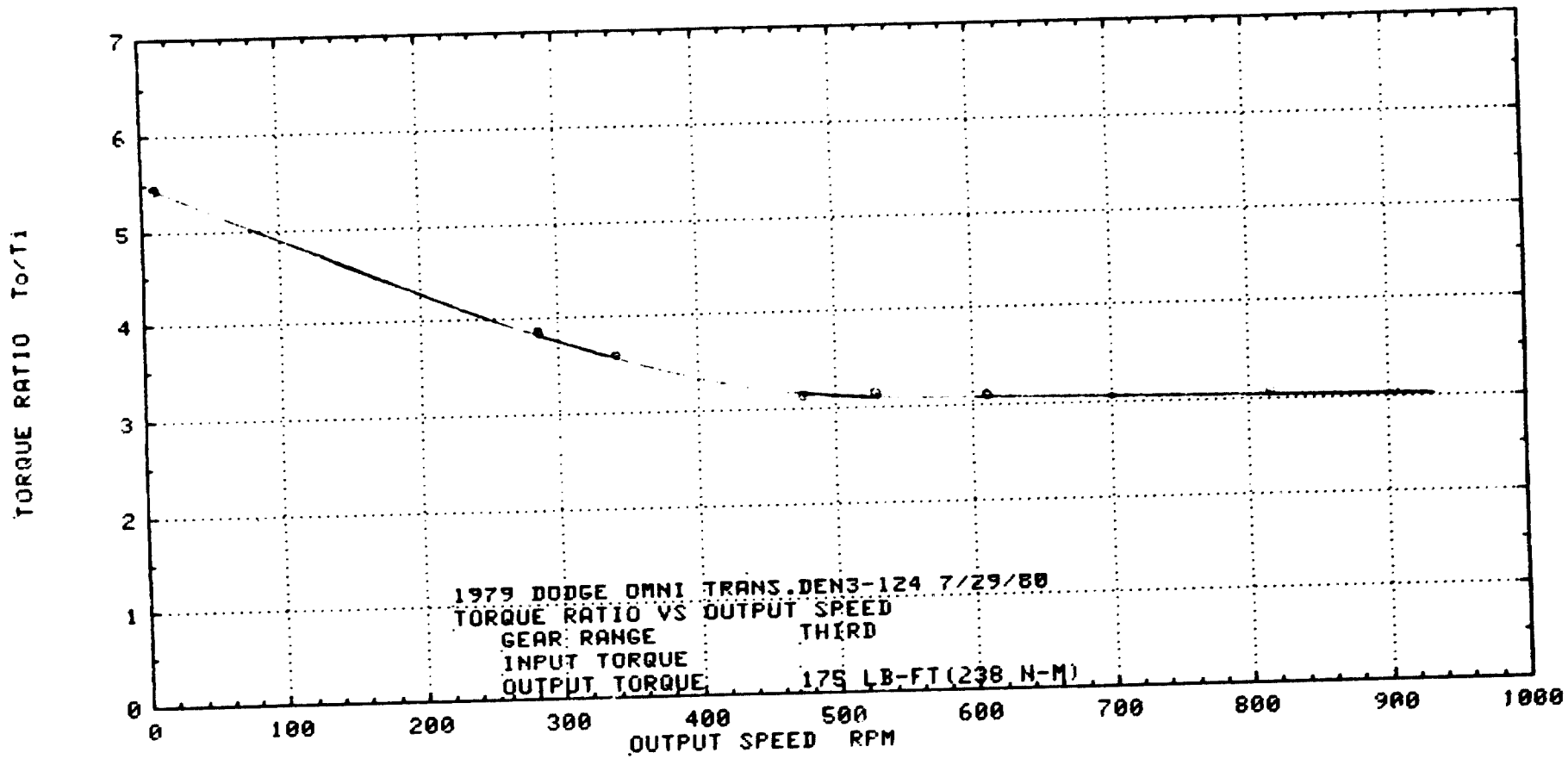

TORQUE RATIO To/Ti
0
1
2
3
4
5
6
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 140 LB-FT(190.4N-M)

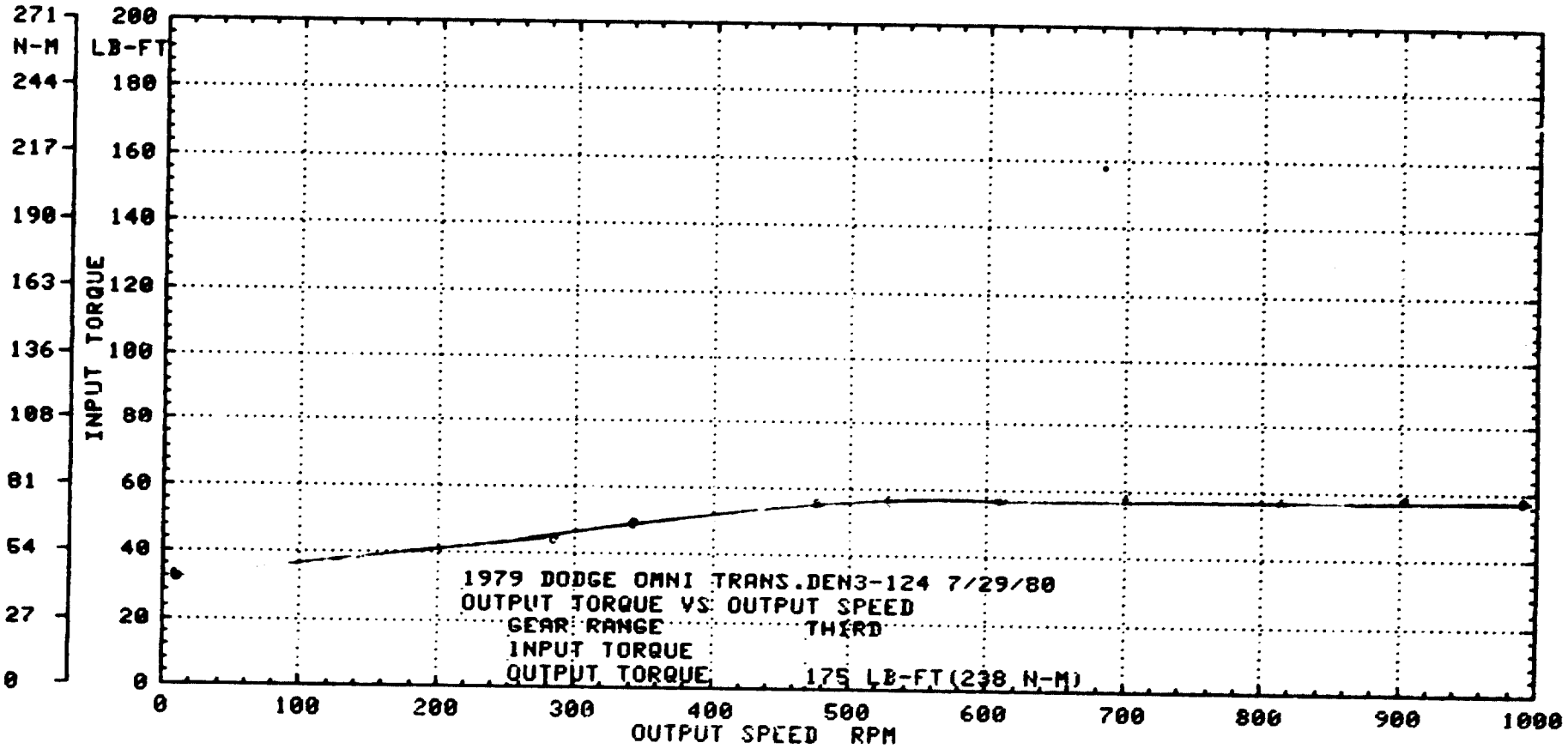

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 140 LB-FT(190.4N-M)

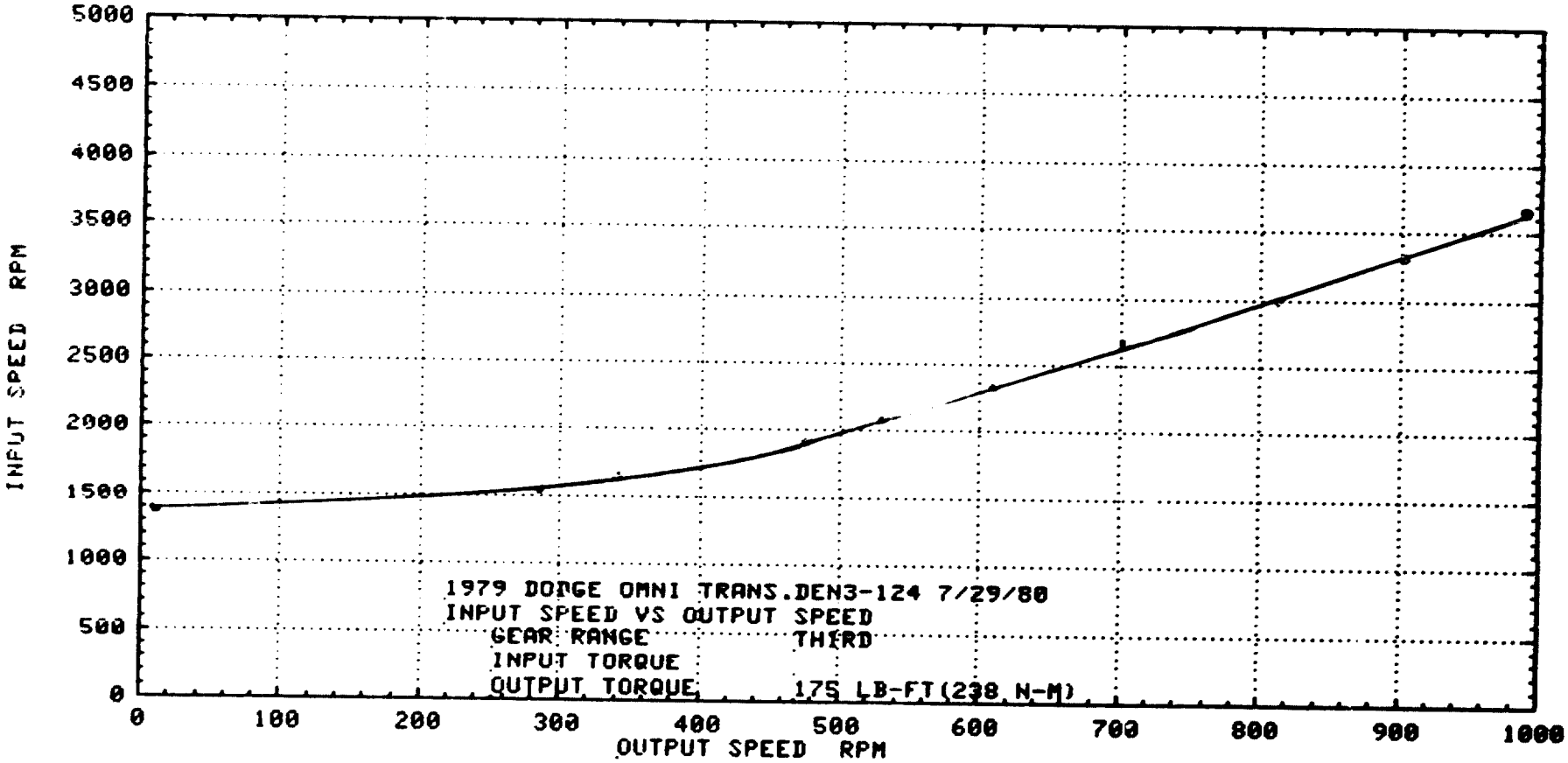

1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 140 LB-FT(190.4N-M)
INPUT SPEED RPM
OUTPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
200
400
600
800
1000
1200
1400
1600
1800
2000

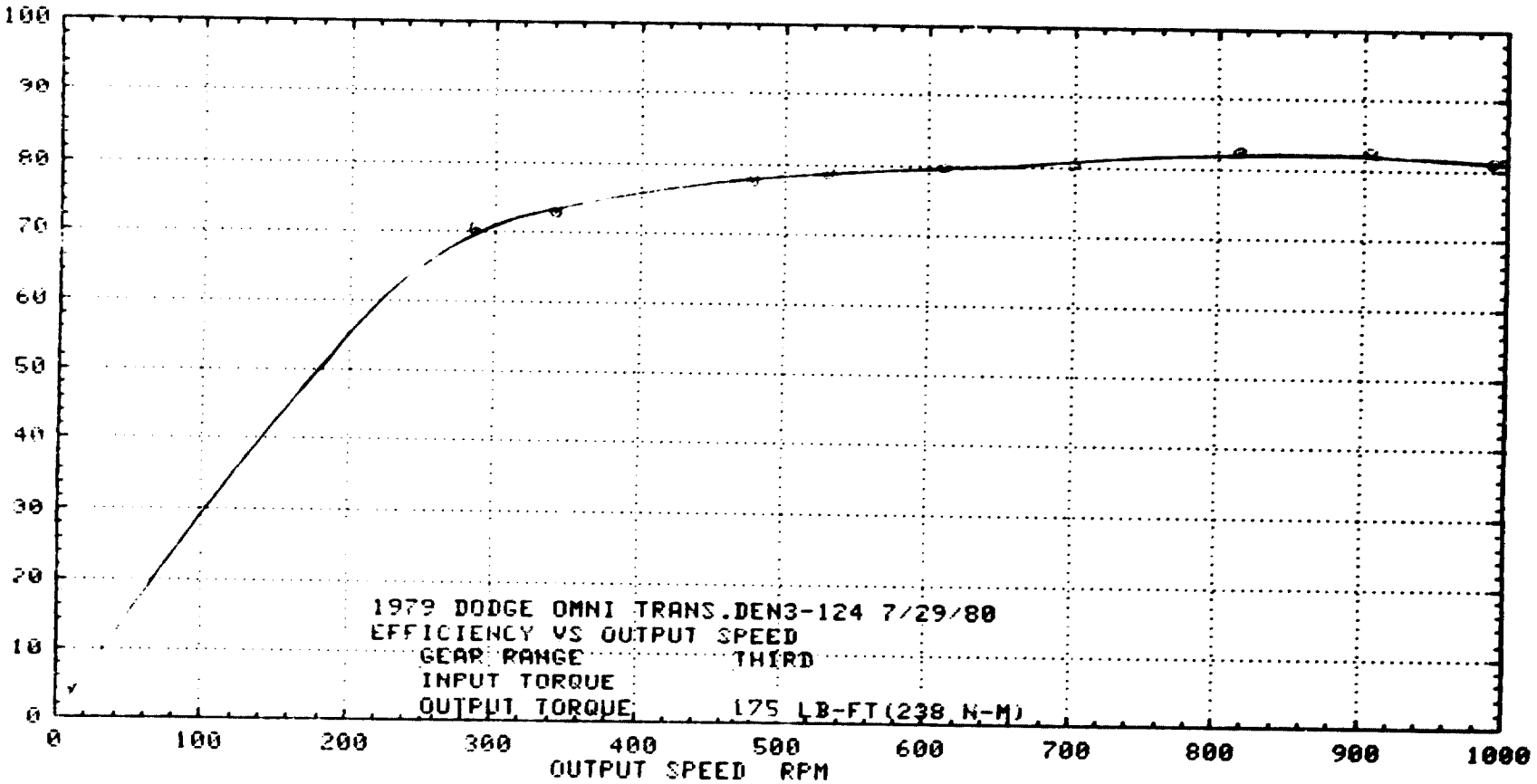

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 140 LB-FT(190.4N-M)

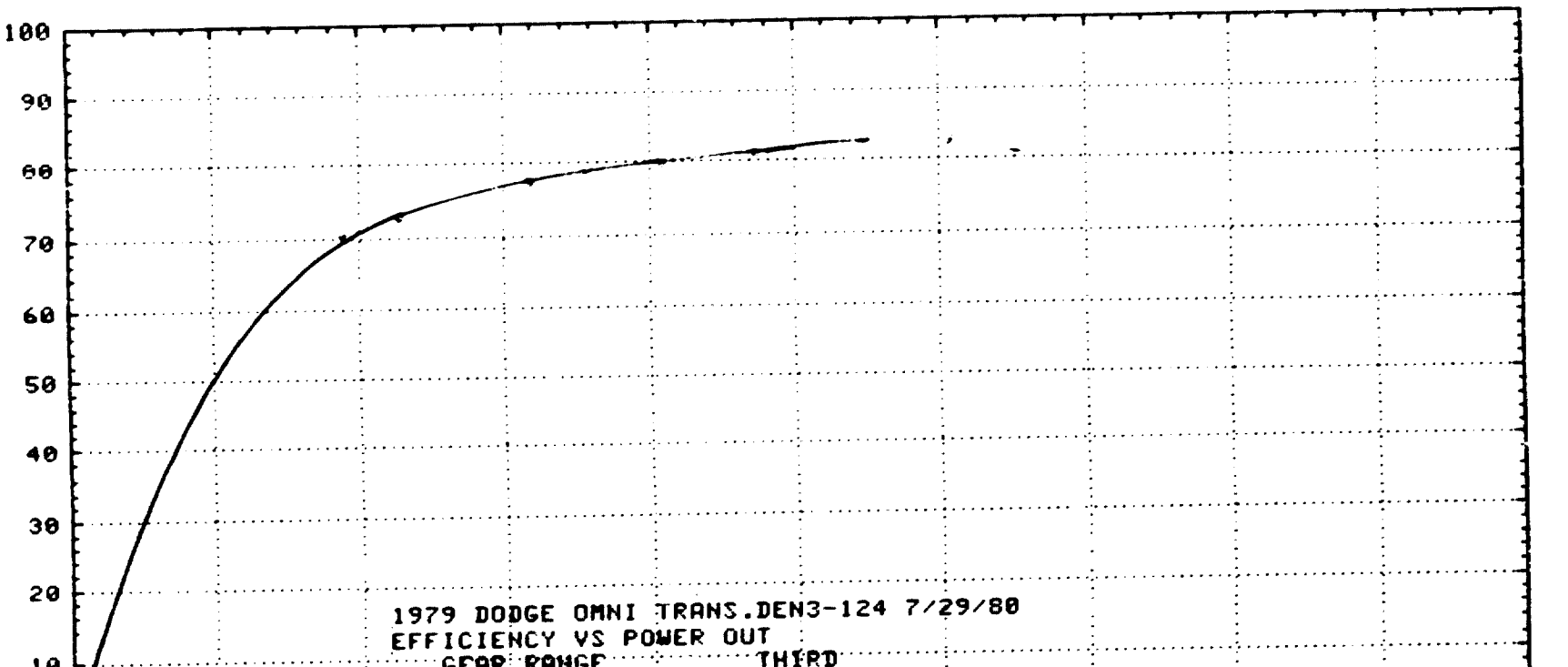

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 140 LB-FT(190.4N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

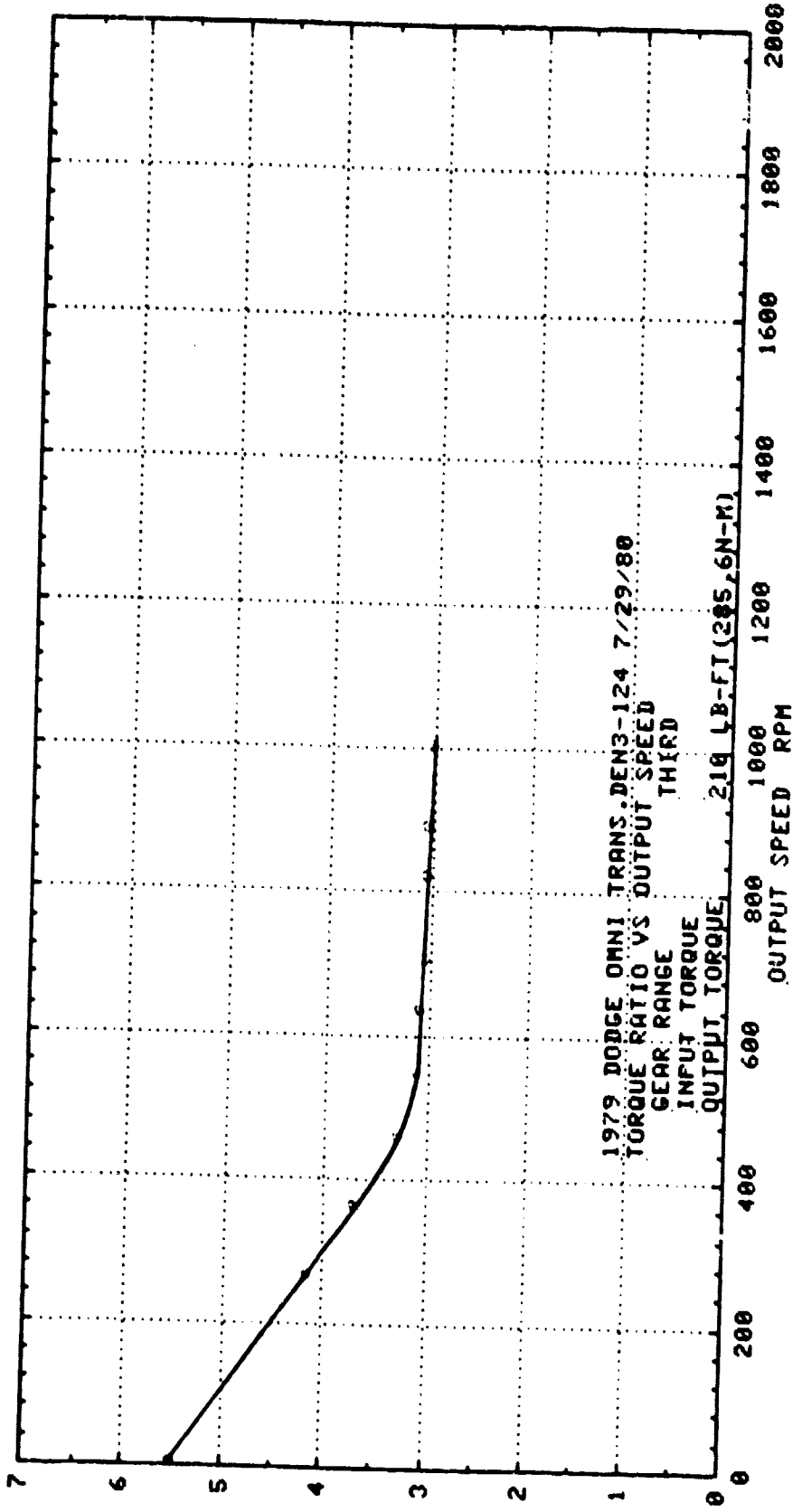

TORQUE RATIO To/Ti
7
6
5
4
3
2
1
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 175 LB-FT(238 N-M)

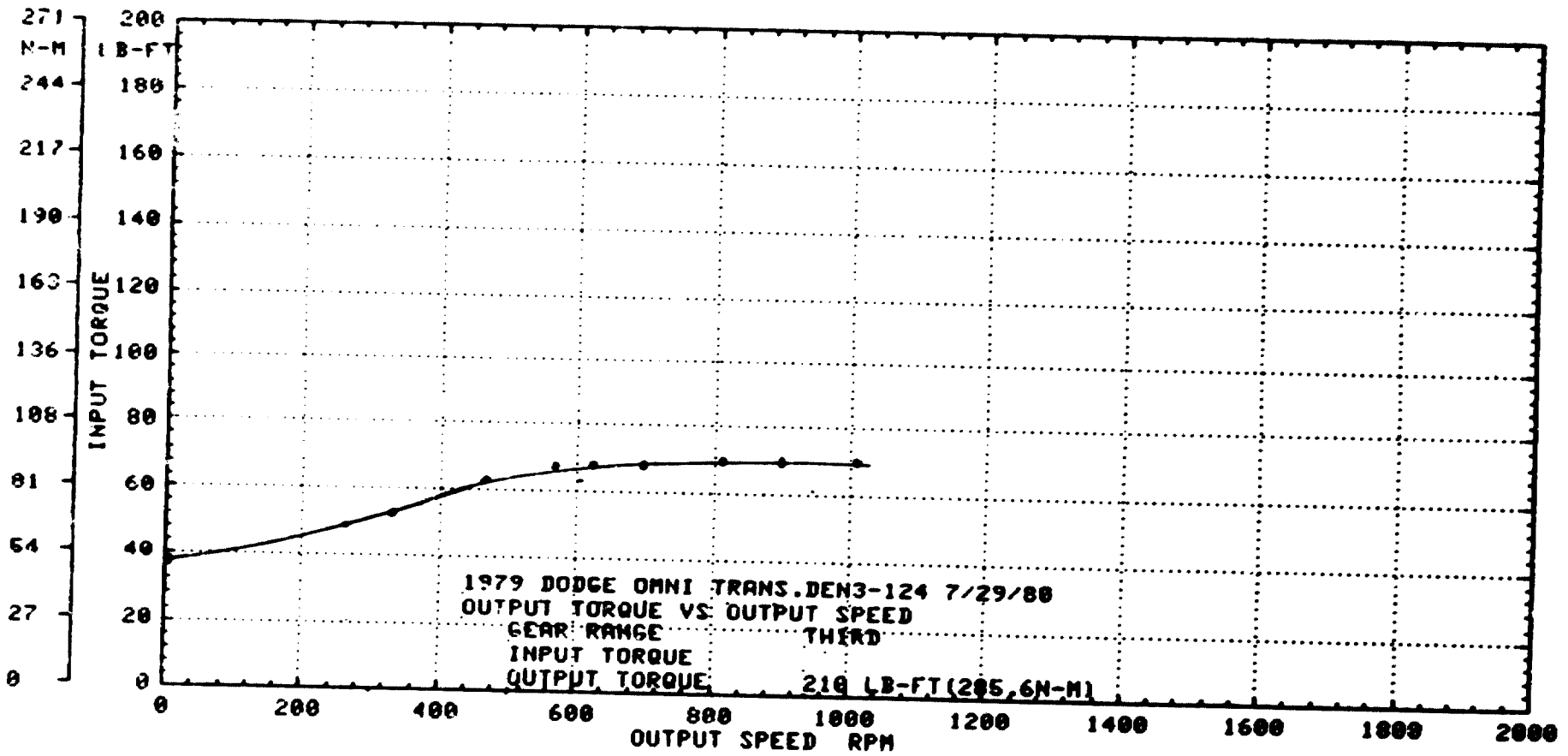

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 175 LB-FT(238 N-M)
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM

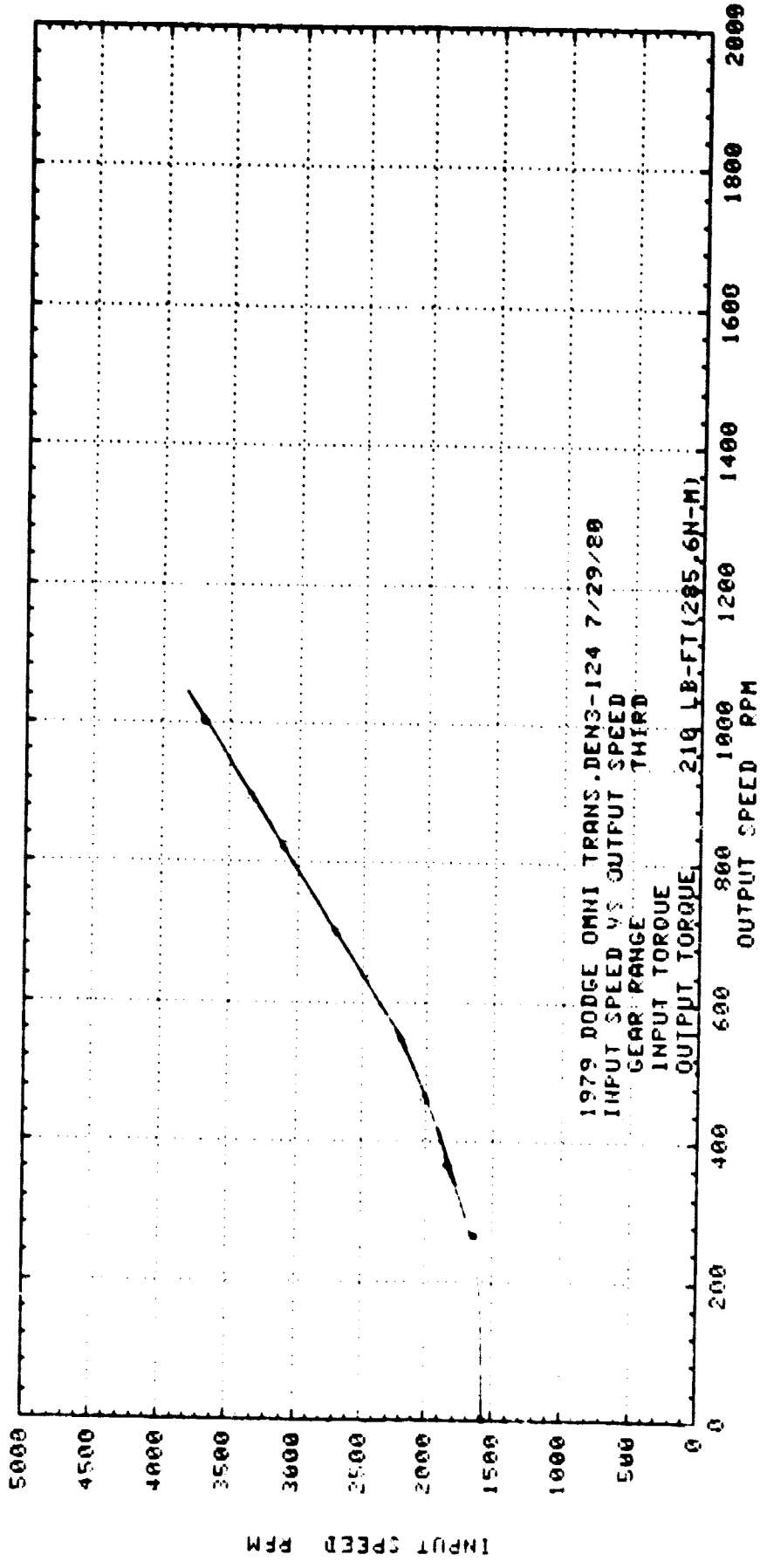

INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 175 LB-FT(238 N-M)

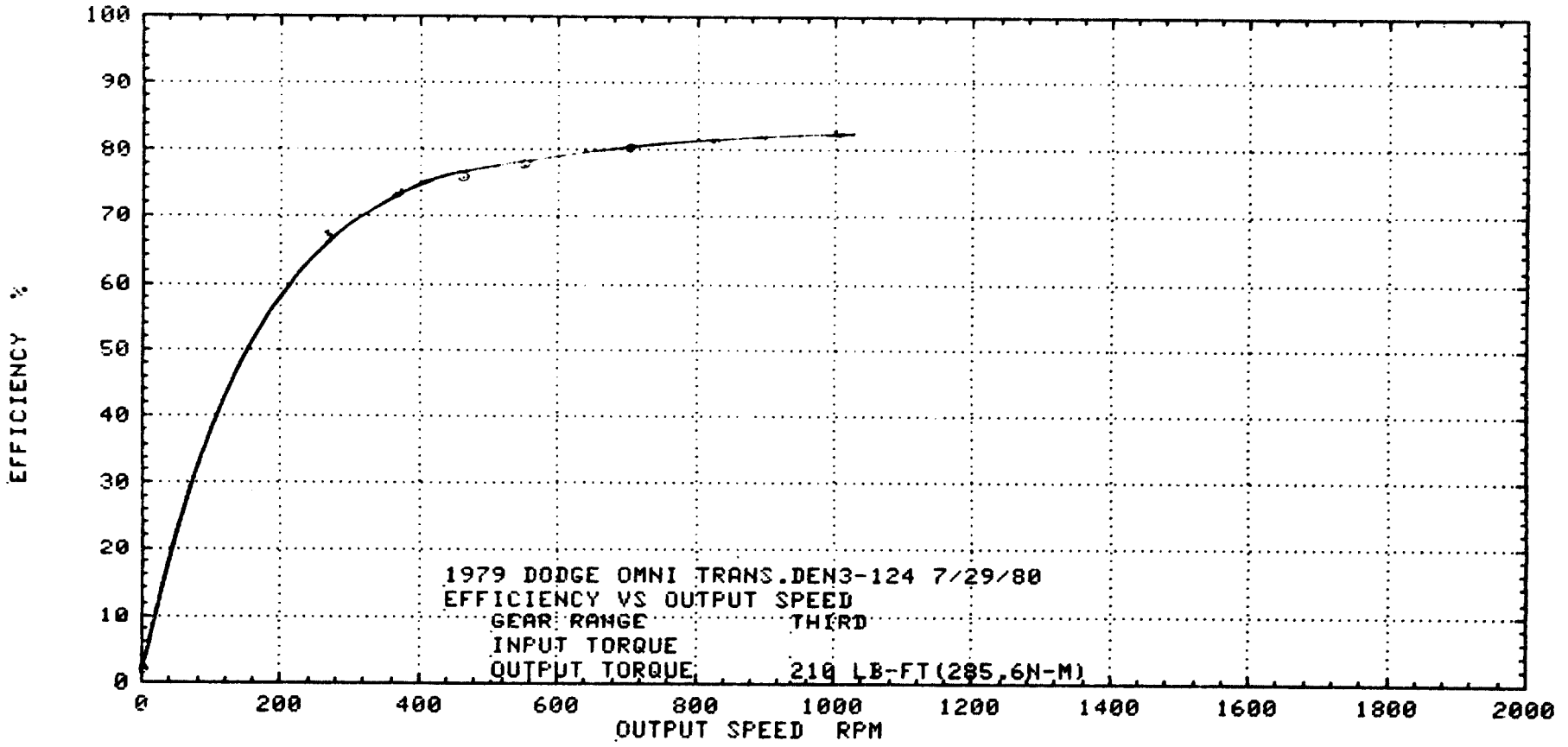

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 175 LB-FT(238 N-M)

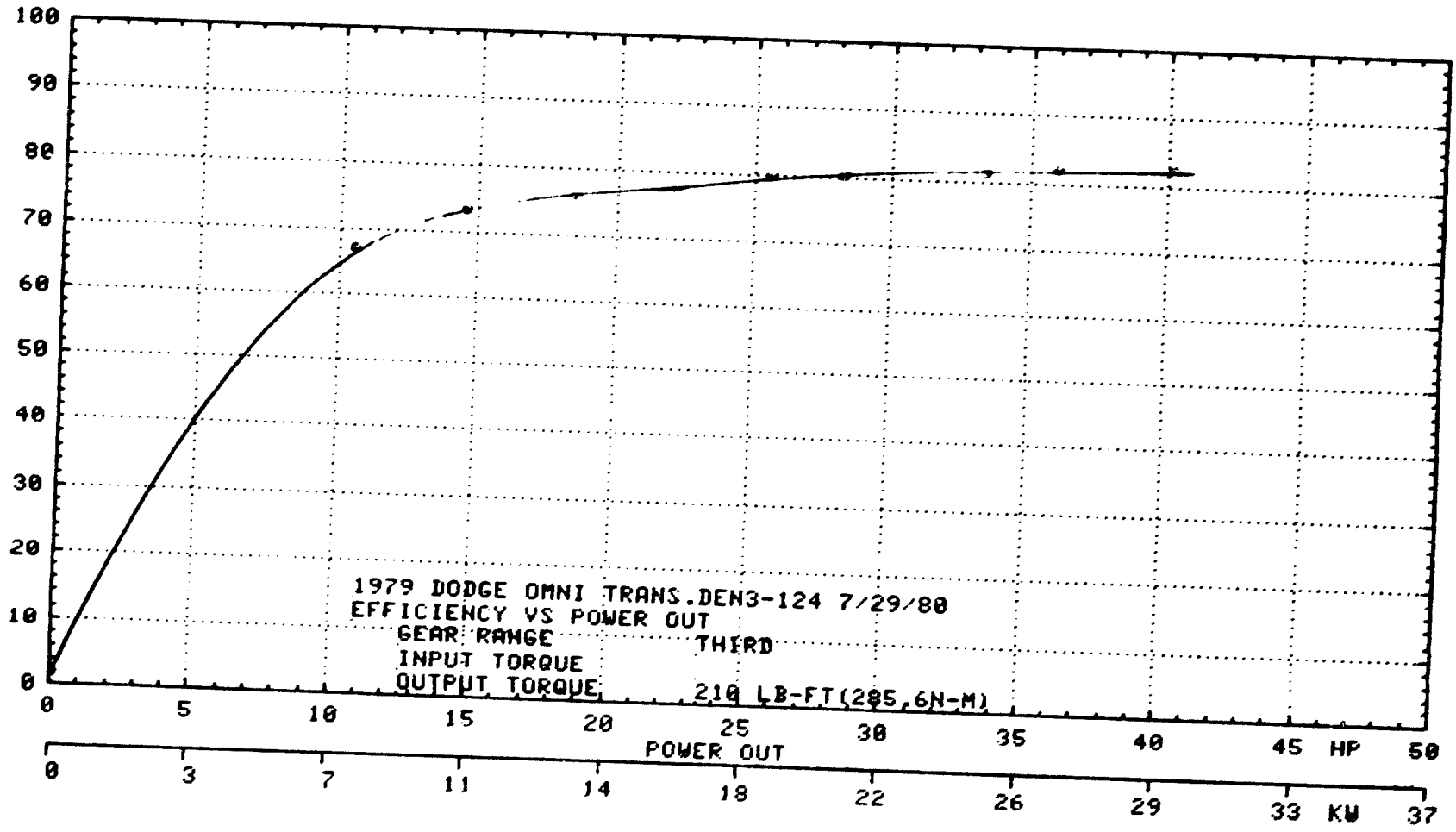

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 175 LB-FT(238 N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

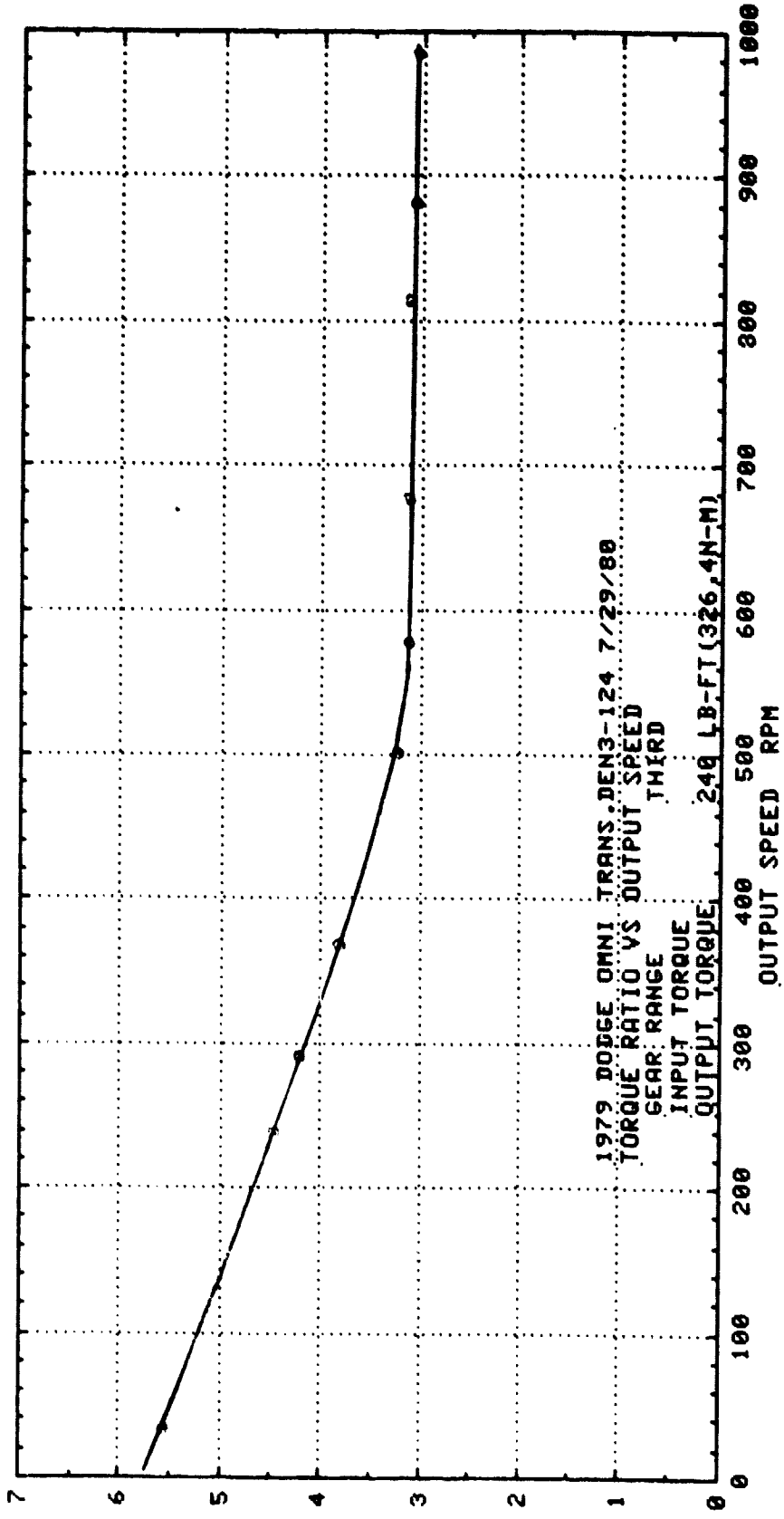

1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 219 LB-FT(295.6N-M)
OUTPUT SPEED RPM
TORQUE RATIO To/Ti
0
200
400
600
800
1000
1200
1400
1600
1800
2000
1
2
3
4
5
6
7

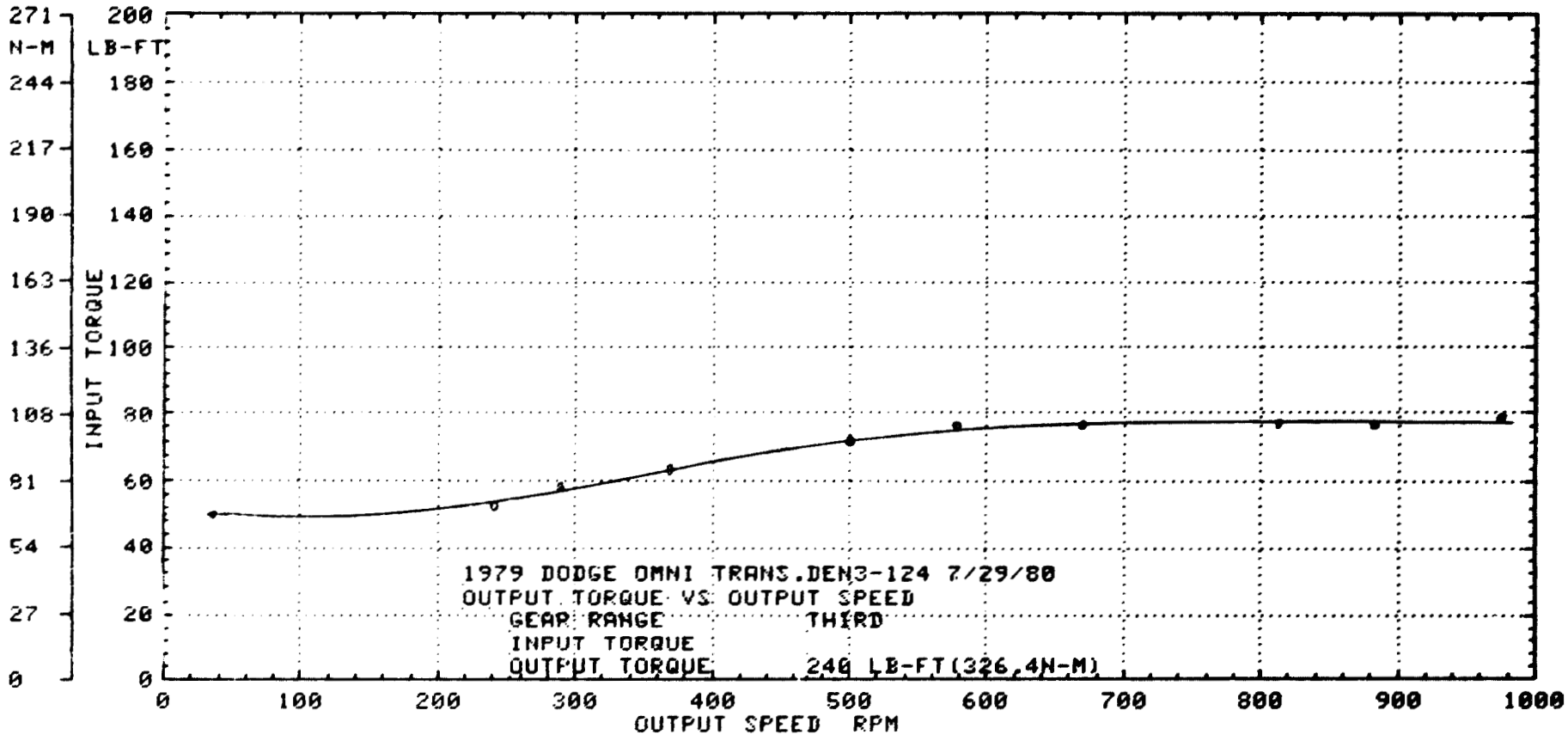

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 210 LB-FT(285.6N-M)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM

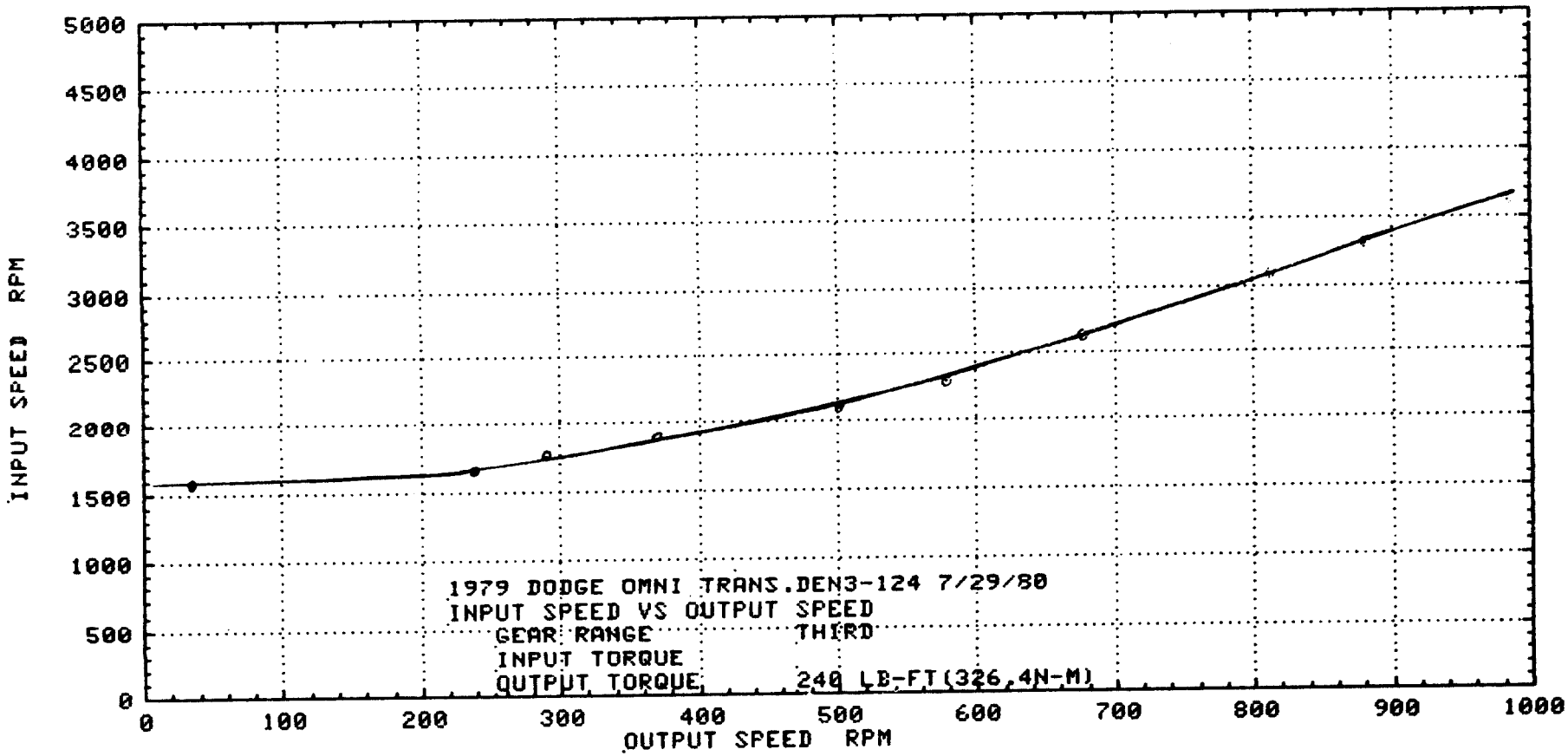

1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 210 LB-FT(285.6N-M)
INPUT SPEED RPM
OUTPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
200
400
600
800
1000
1200
1400
1600
1800
2000

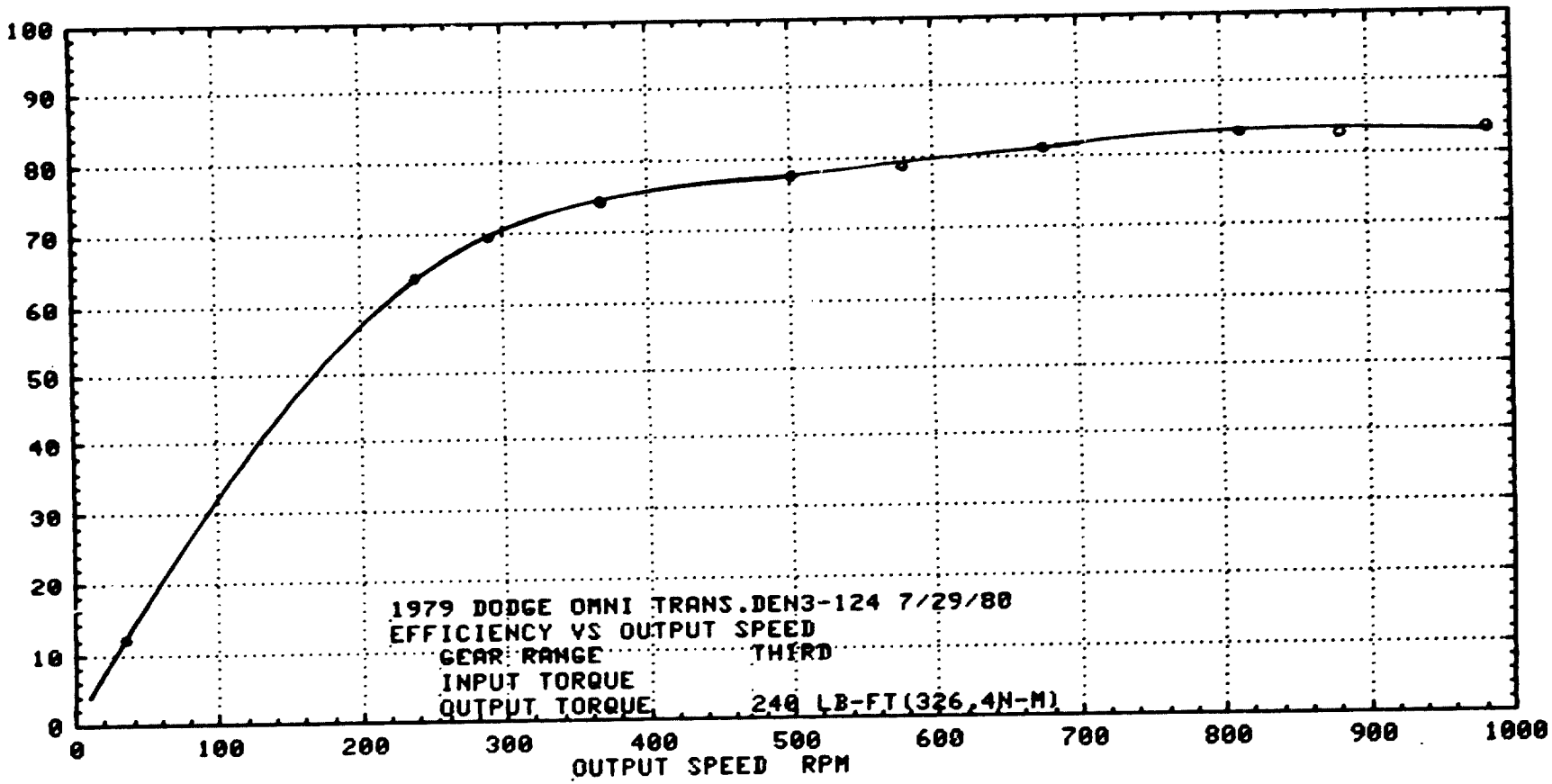

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 210 LB-FT(285.6N-M)

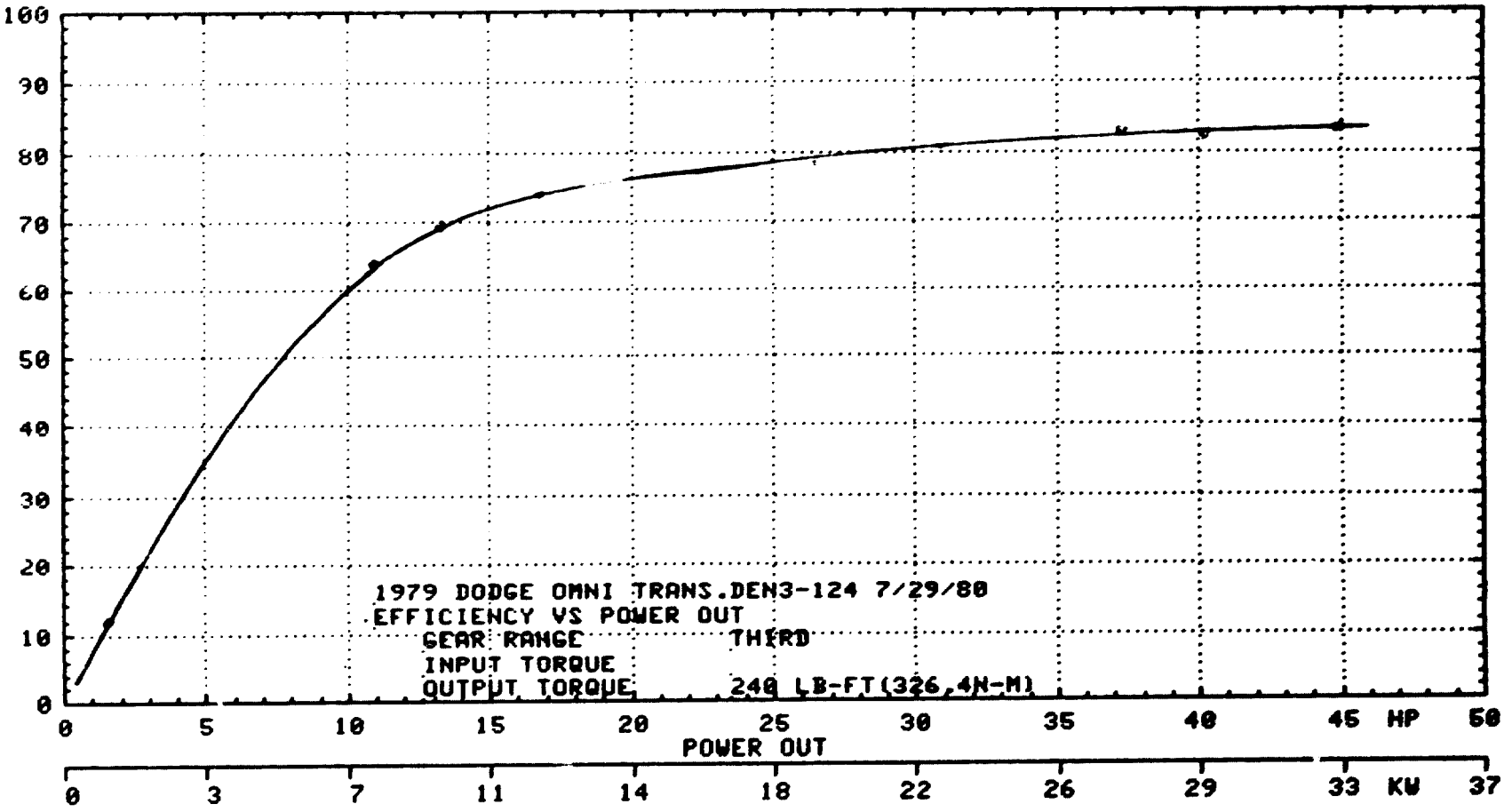

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 210 LB-FT(285.6N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

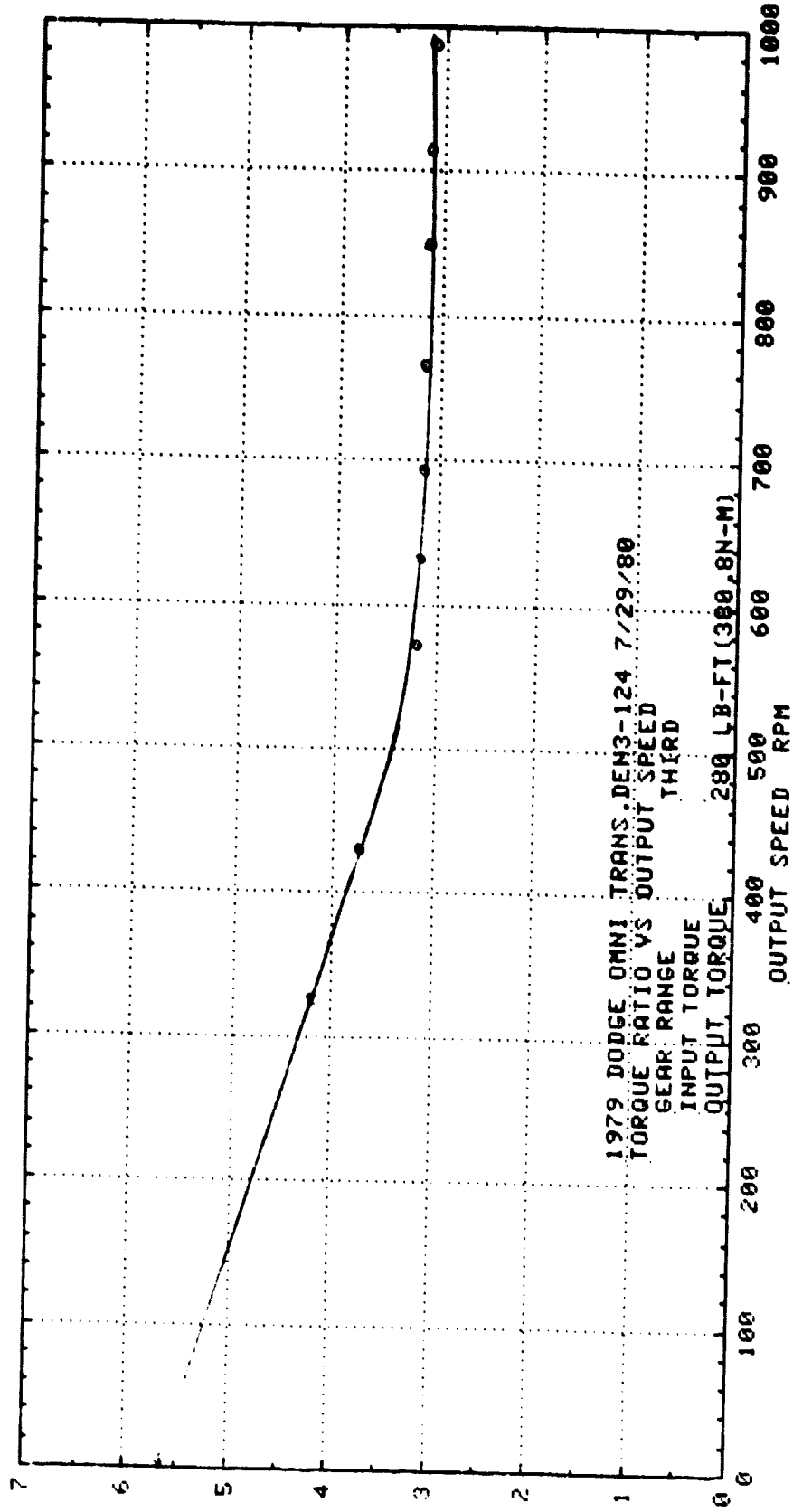

1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 240 LB-FT(326.4N-M)
OUTPUT SPEED RPM
TORQUE RATIO To/Ti
0
1
2
3
4
5
6
7
0
100
200
300
400
500
600
700
800
900
1000

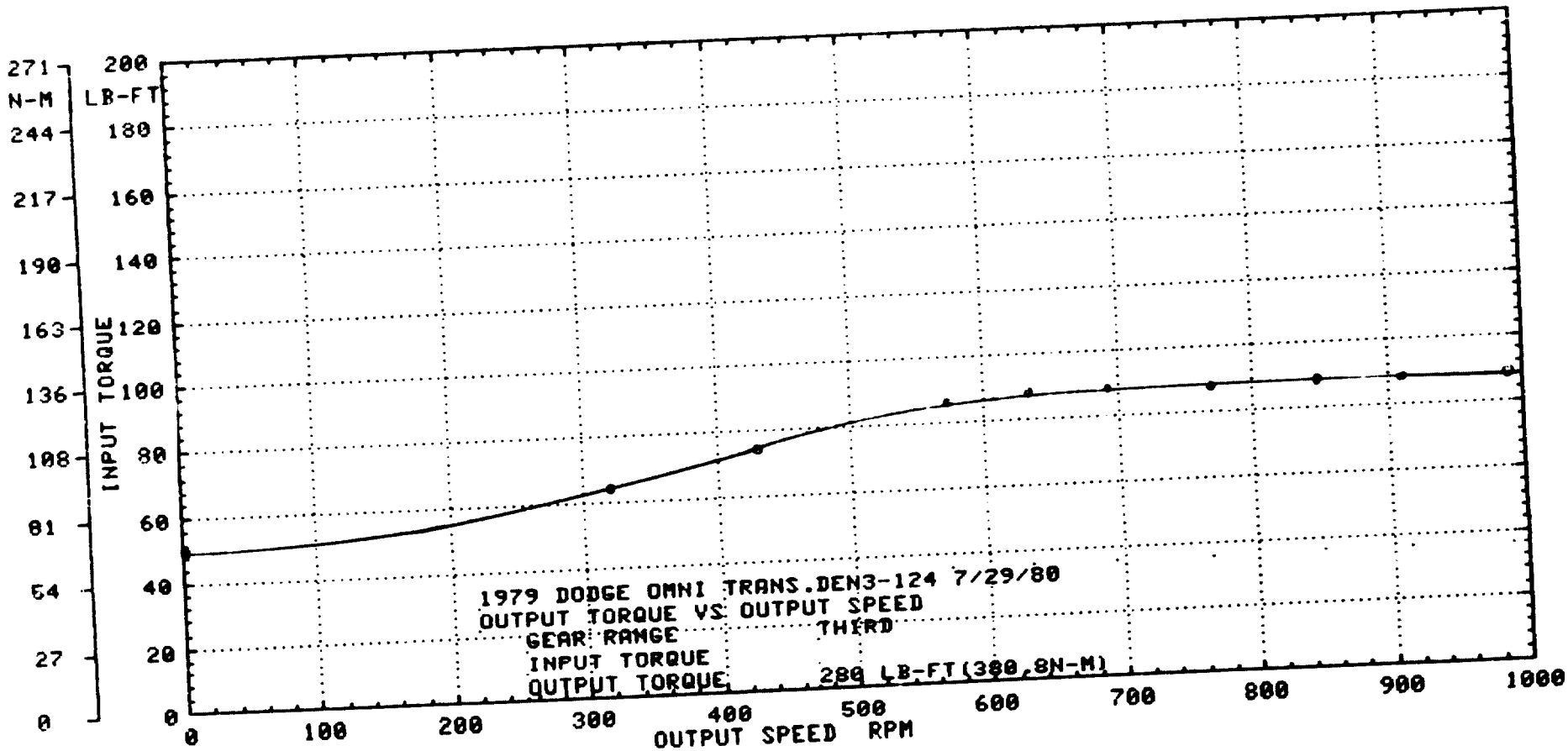

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 240 LB-FT(326.4N-M)
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM

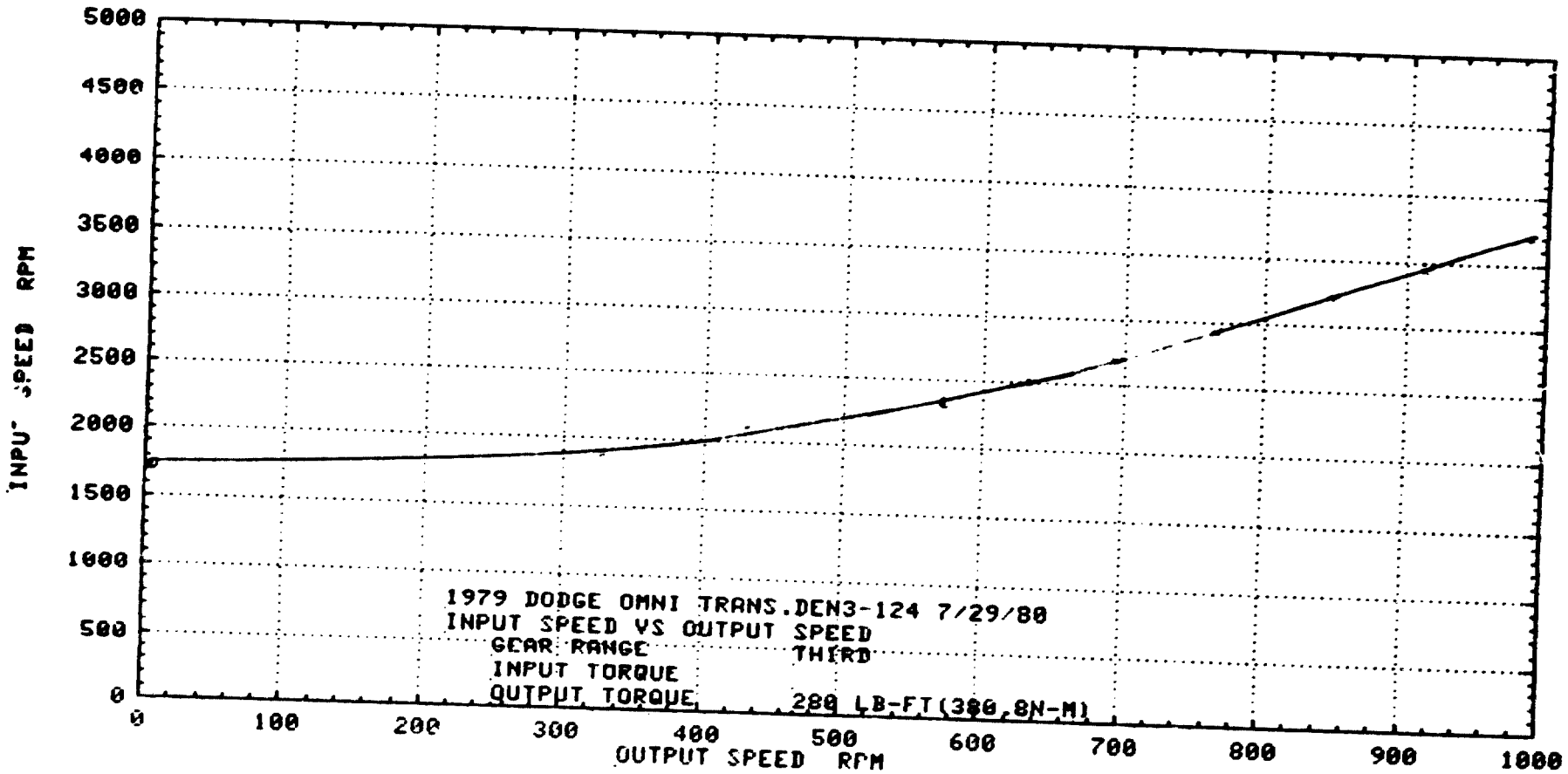

5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
INPUT SPEED RPM
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 240 LB-FT(326.4N-M)

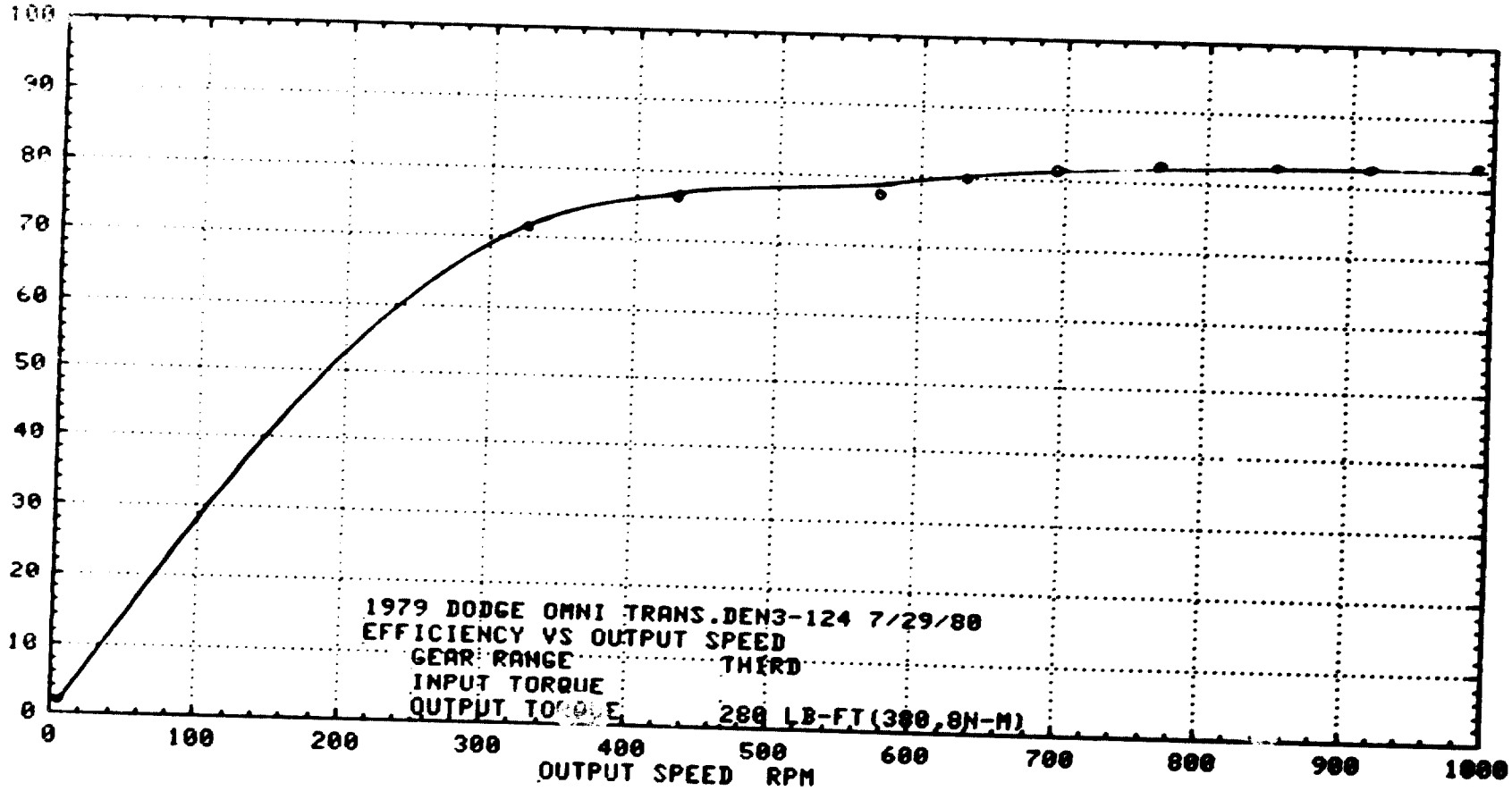

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 240 LB-FT(326.4N-M)

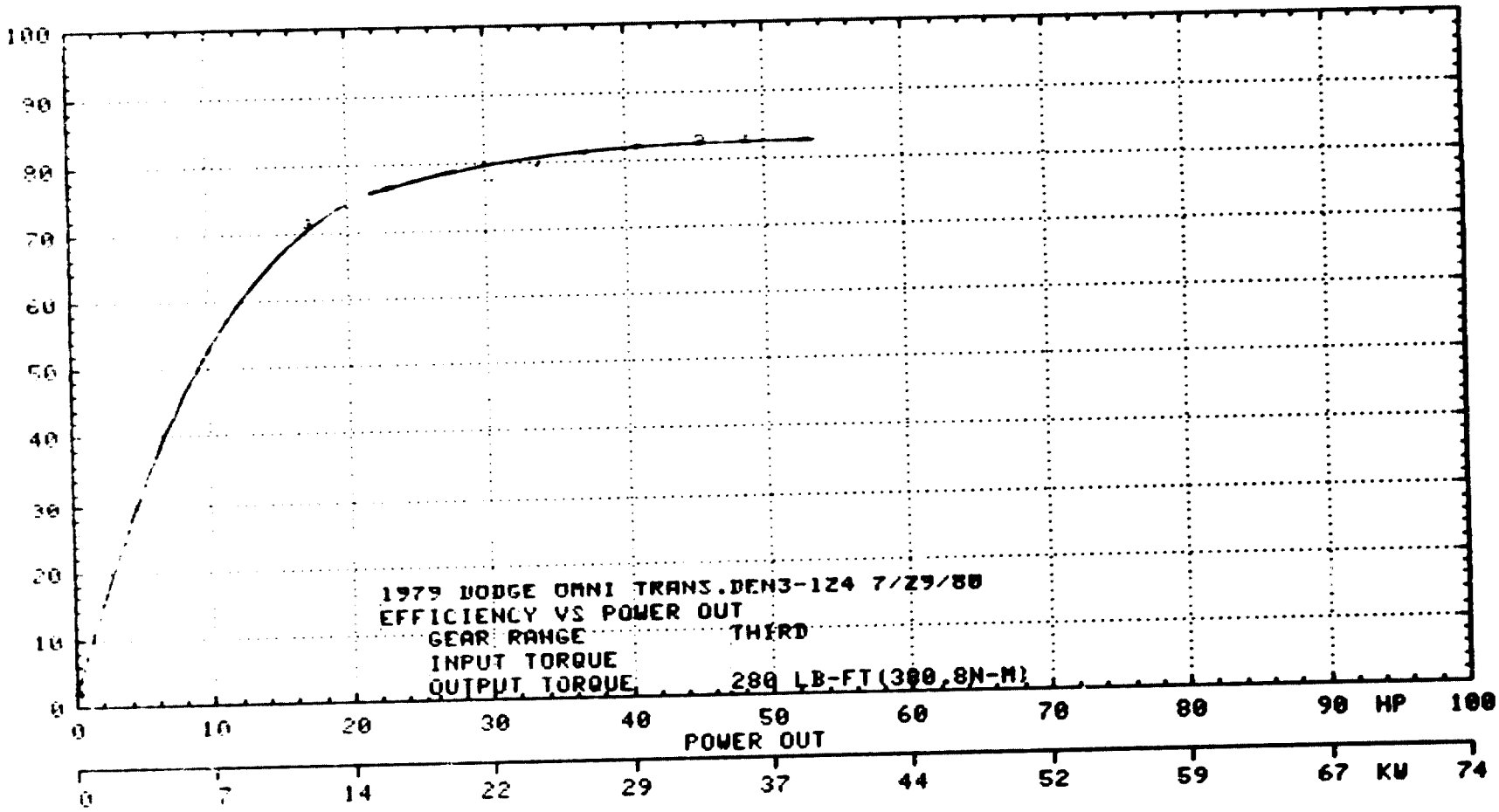

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 240 LB-FT(326.4N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37


1979 DODGE OMNI TRANS.DEN3-124 7/29/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 280 LB-FT(380.8N-M)
OUTPUT SPEED RPM
TORQUE RATIO To/Ti
0
100
200
300
400
500
600
700
800
900
1000
1
2
3
4
5
6
7


271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
OUTPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 280 LB-FT(380.8N-M)


INPUT SPEED RPM
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 280 LB-FT(380.8N-M)


100
90
80
70
60
50
40
30
20
10
0
EFFICIENCY %
0
100
200
300
400
500
600
700
800
900
1000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 280 LB-FT(380.8N-M)


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 7/29/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 280 LB-FT(380.8N-M)
0 10 20 30 40 50 60 70 80 90 HP 100
POWER OUT
0 7 14 22 29 37 44 52 59 67 KW 74

COAST PERFORMANCE

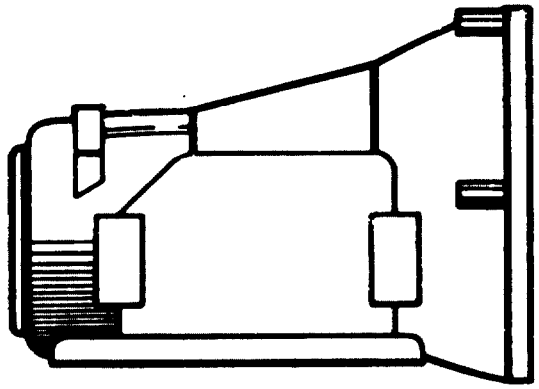
1st Gear

Graphs Contained in This Section

Torque Ratio -vs- Output Speed
Output Torque -vs- Output Speed
Input Speed -vs- Output Speed
Efficiency -vs- Output Speed
Efficiency -vs- Power Out

Torque In

Speed In

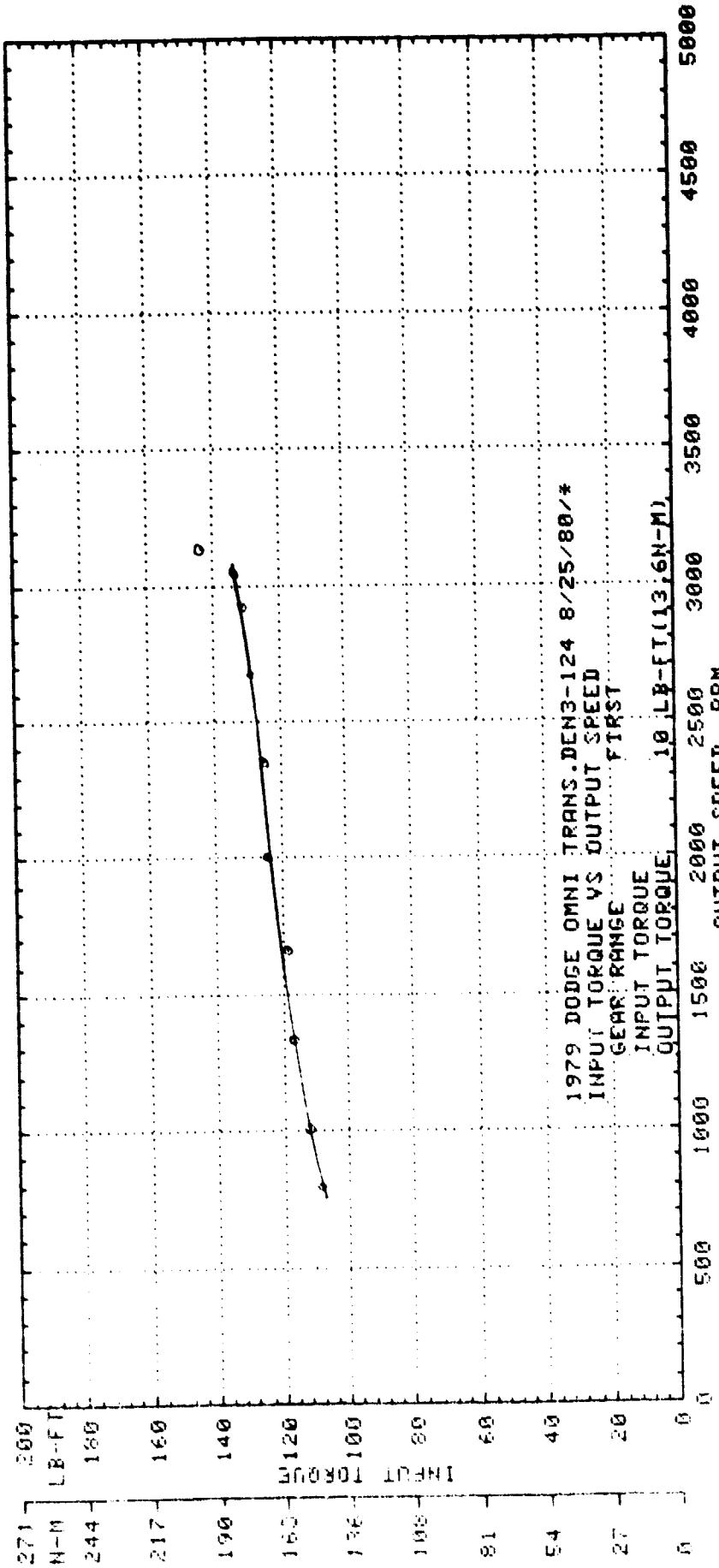


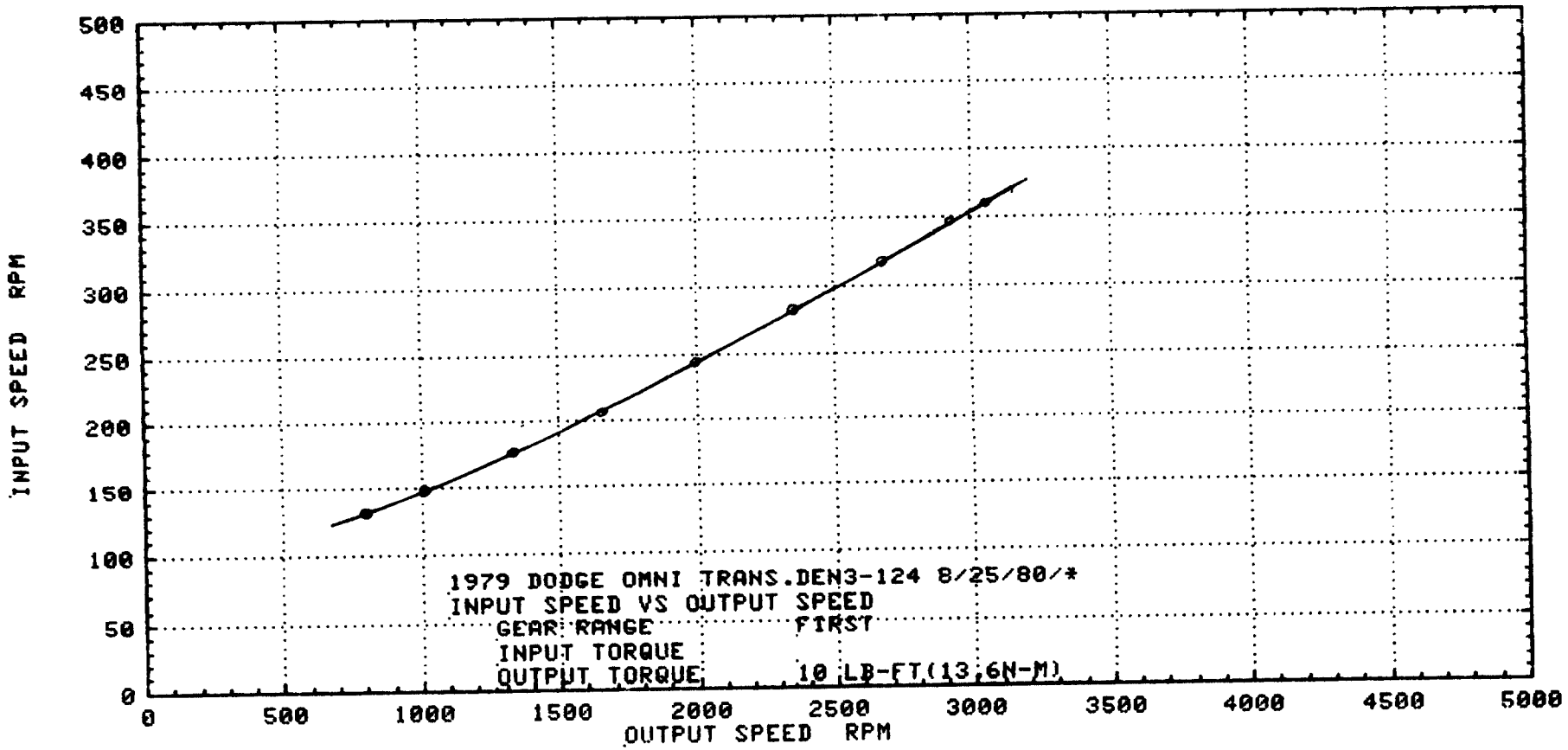
Torque Out

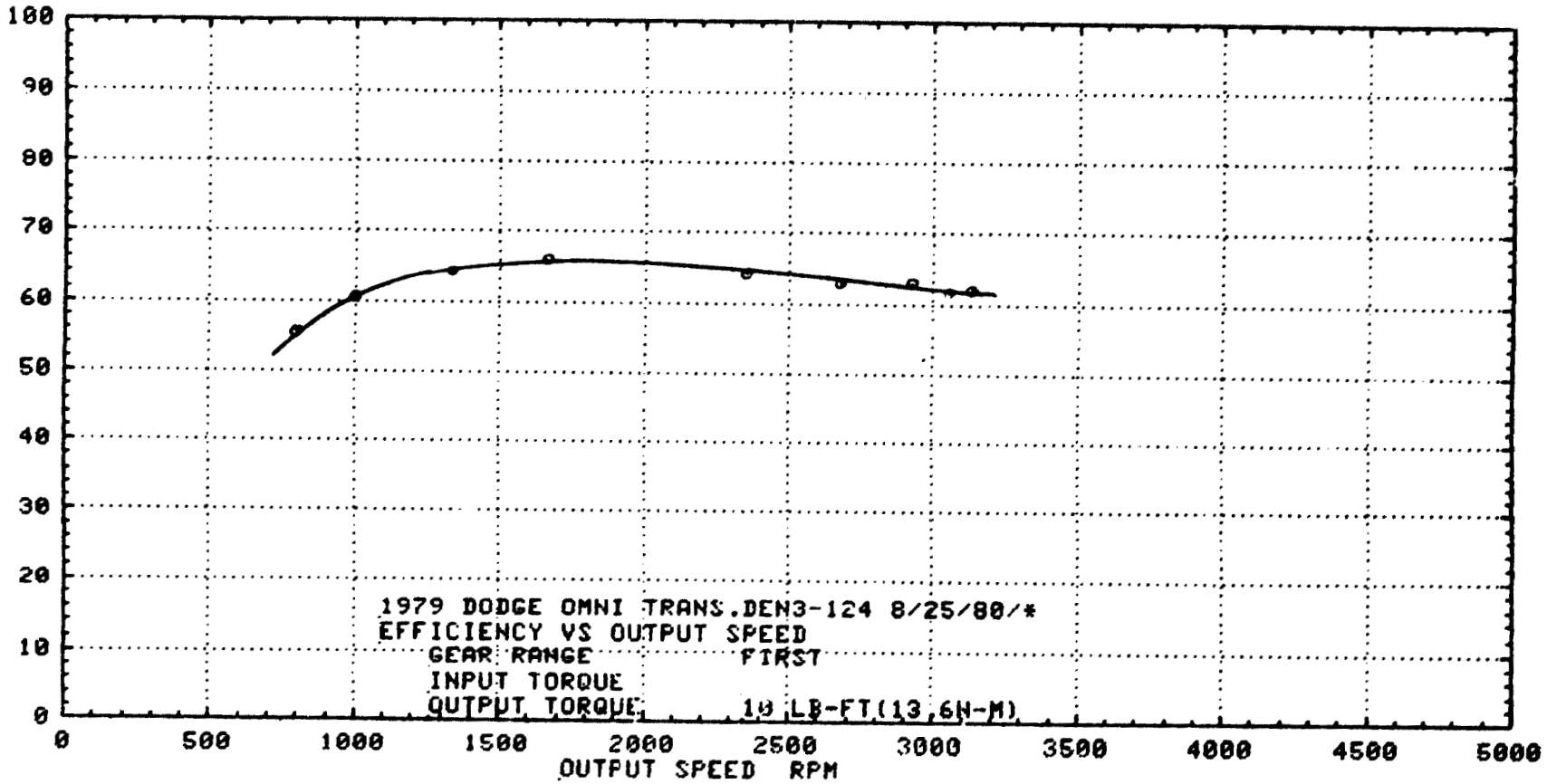
Speed Out

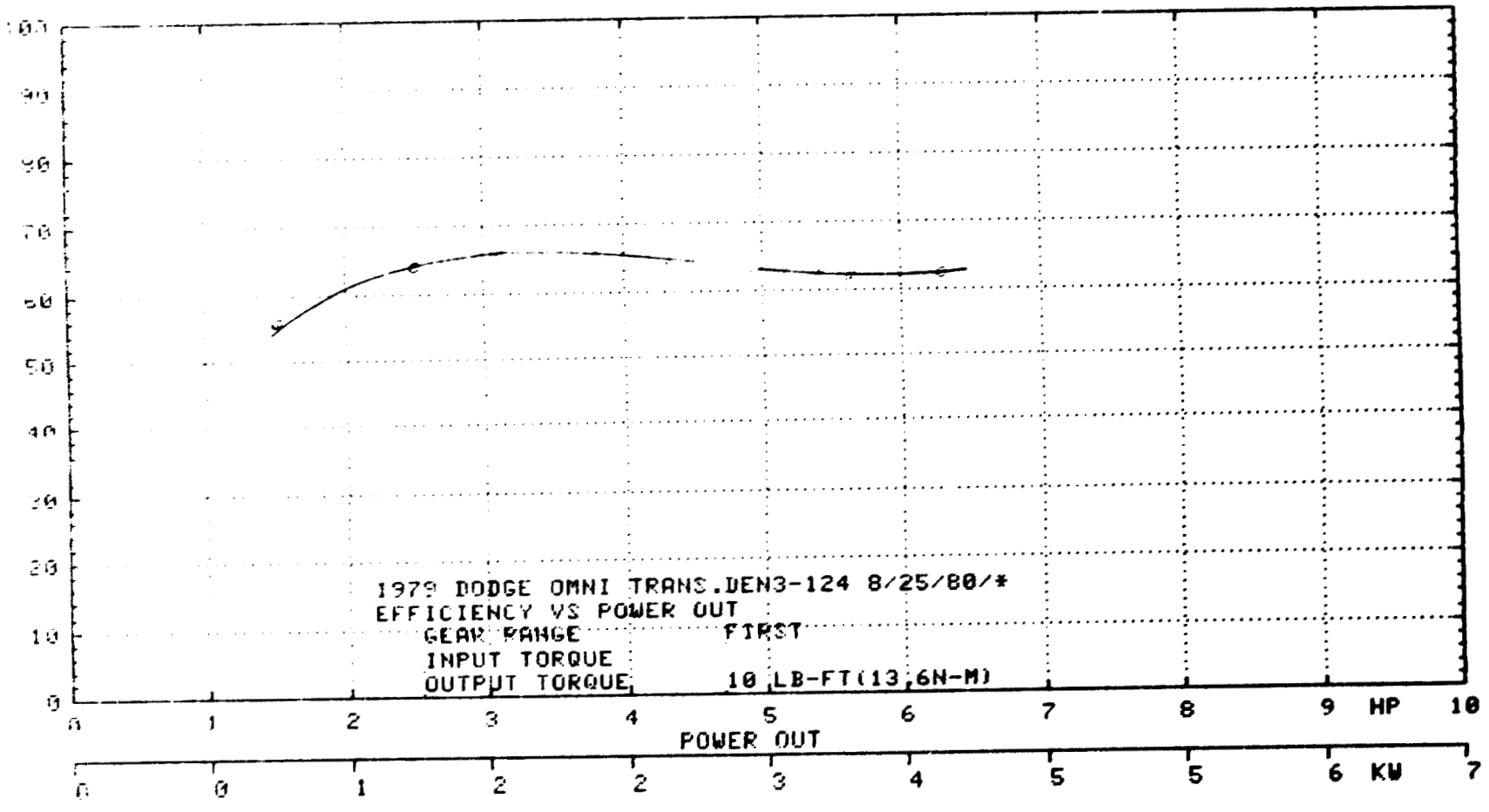
Coast Performance Tests

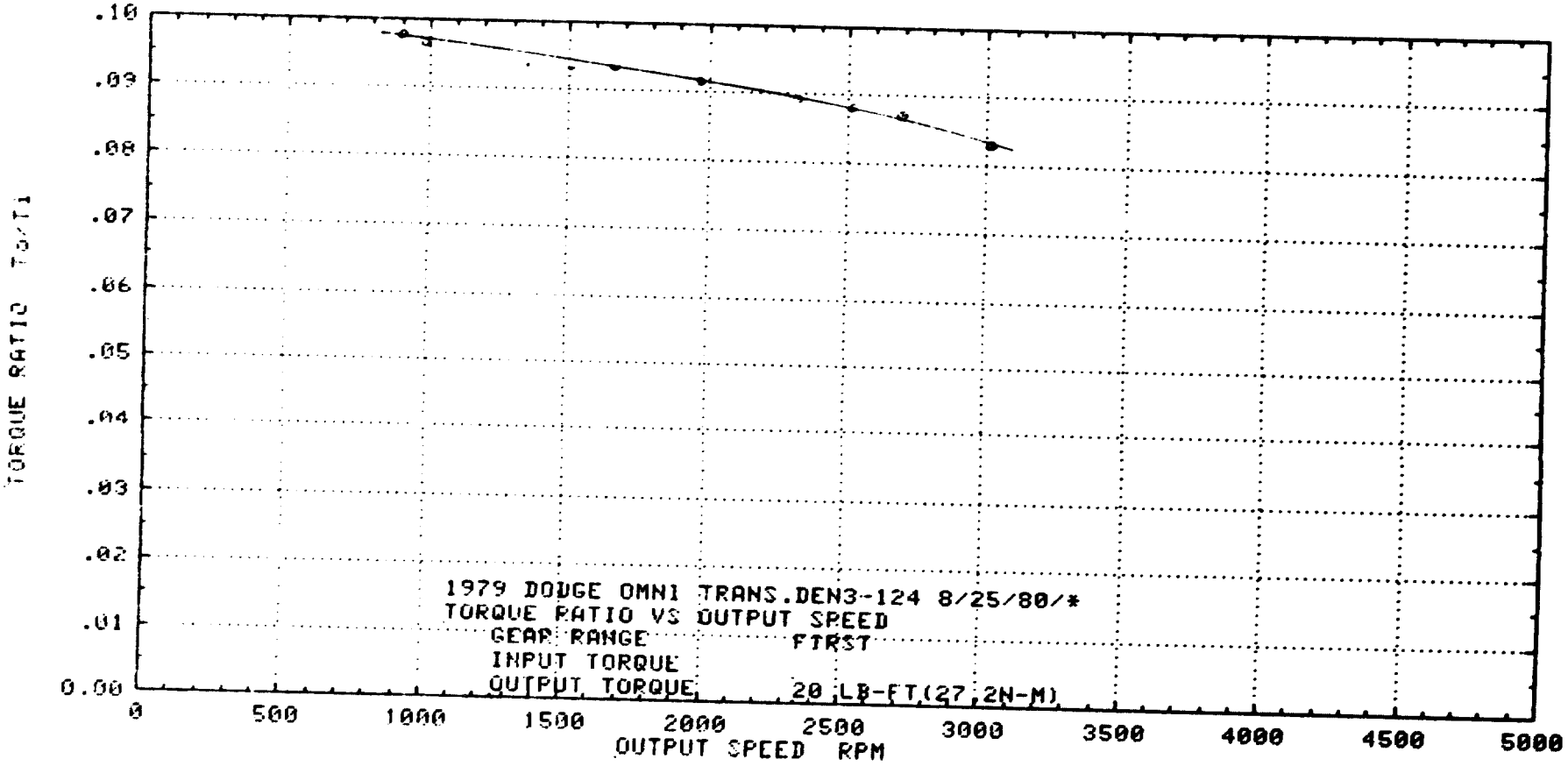
ORIGINAL PAGE IS
OF POOR QUALITY

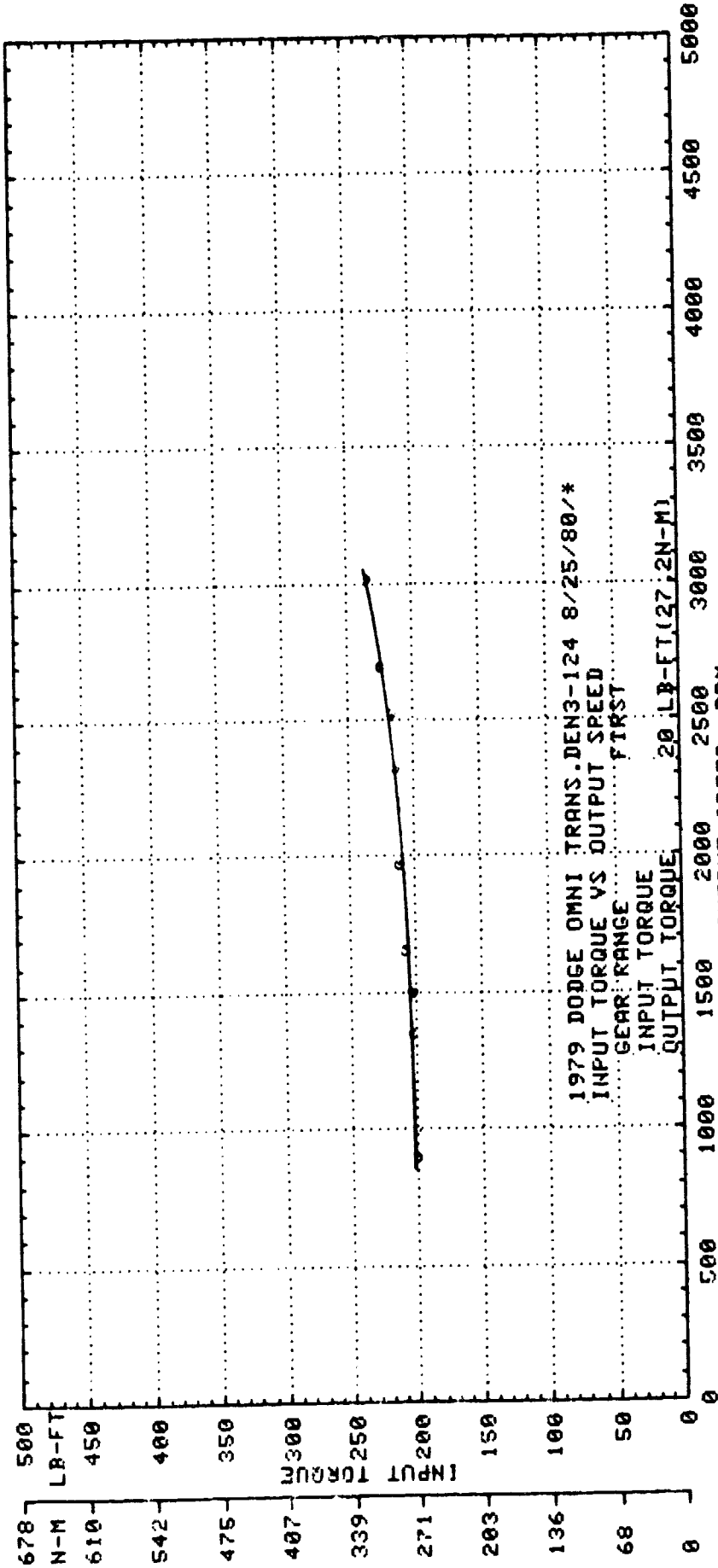

1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT SPEED RPM
INPUT TORQUE
LB-FT
N-M
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
20
40
60
80
100
120
140
160
180
200
27
54
81
108
135
163
190
217
244
271


INPUT SPEED RPM
500
450
400
350
300
250
200
150
100
50
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)

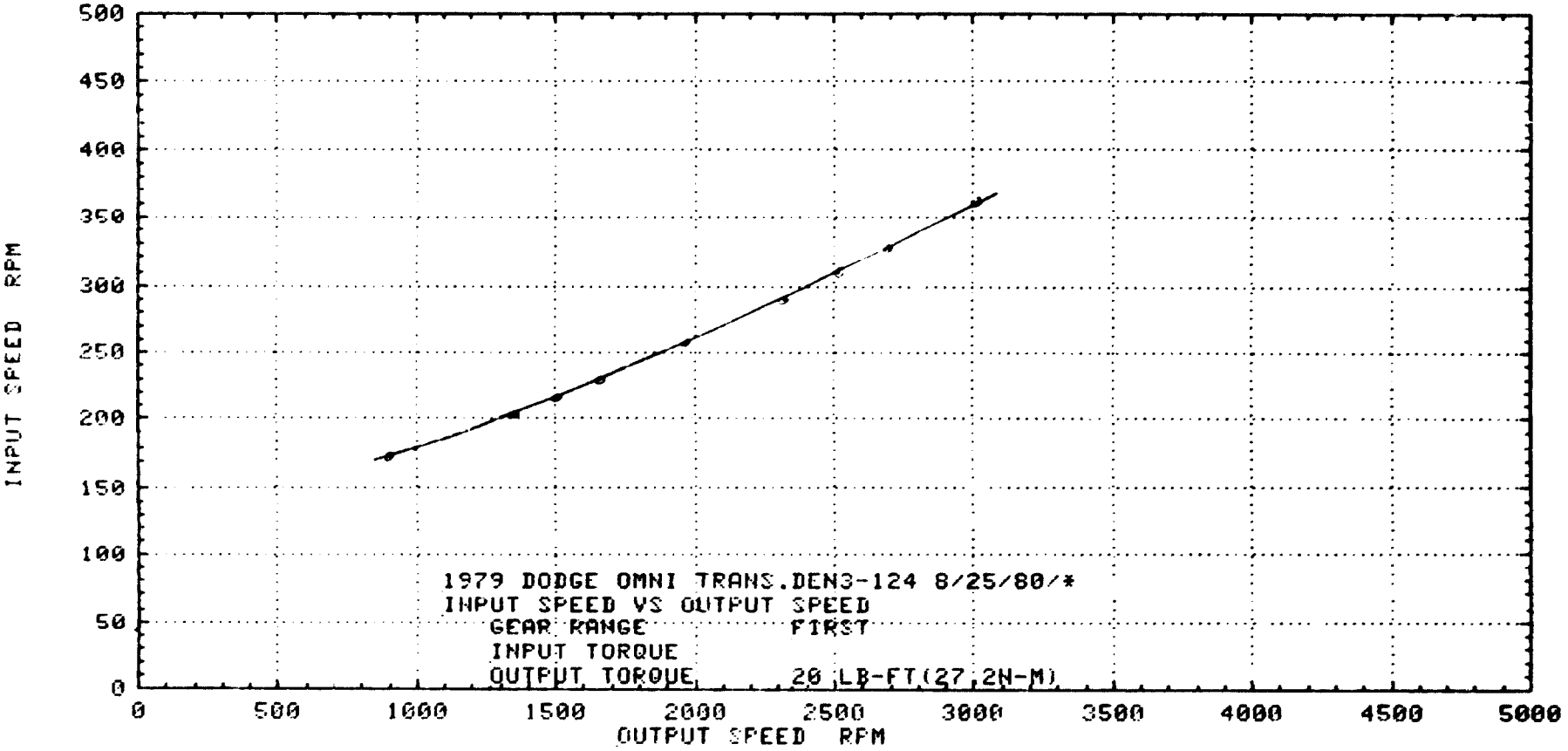

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)

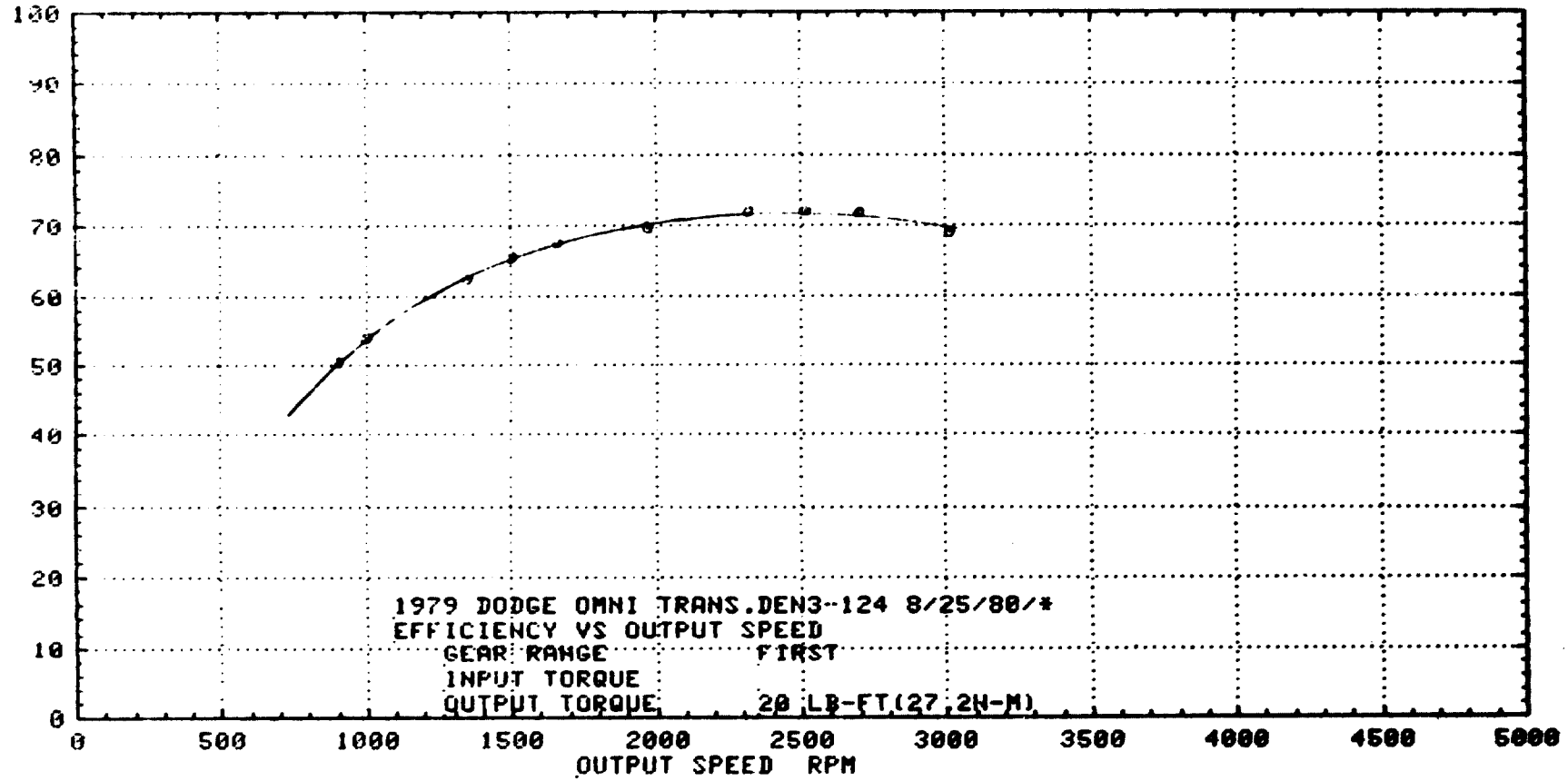

1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
POWER OUT
HP
KW

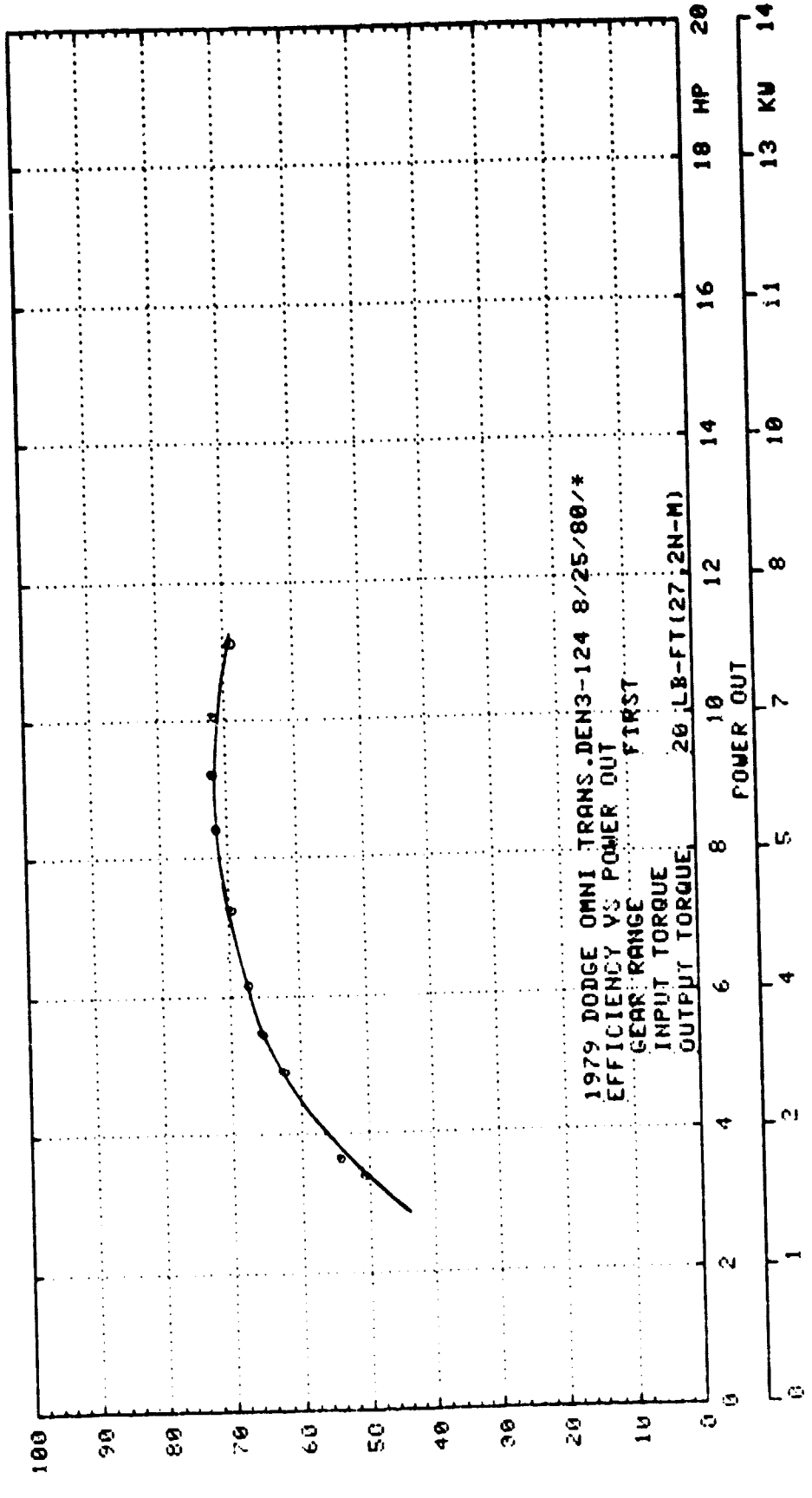

TORQUE RATIO To/Ti
.10
.09
.08
.07
.06
.05
.04
.03
.02
.01
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)


1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE
INPUT TORQUE
OUTPUT SPEED RPM
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000
0 50 100 150 200 250 300 350 400 450 500
LB-FT
0 68 136 203 271 339 407 475 542 610 678
N-M

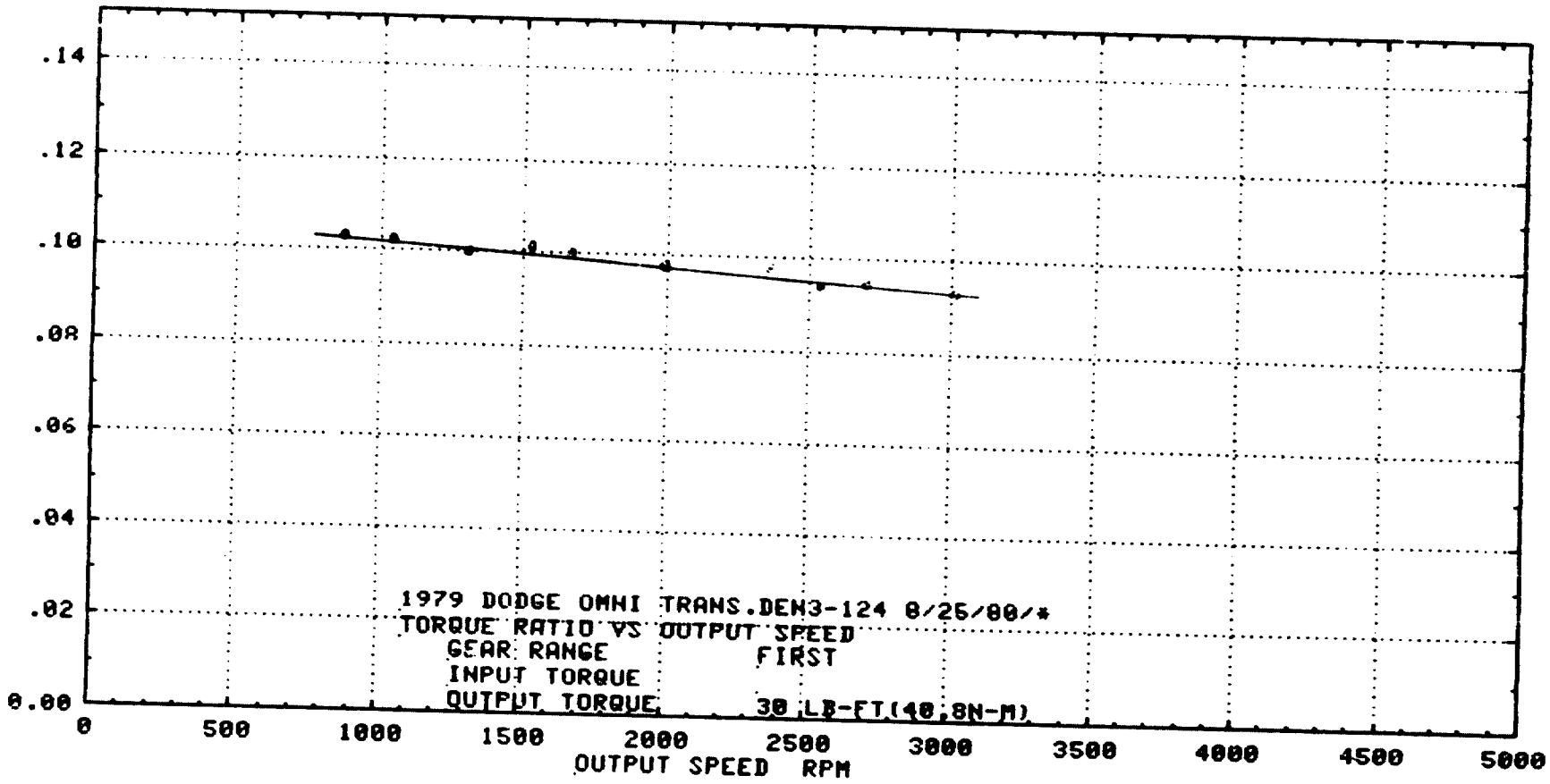
QUALITY

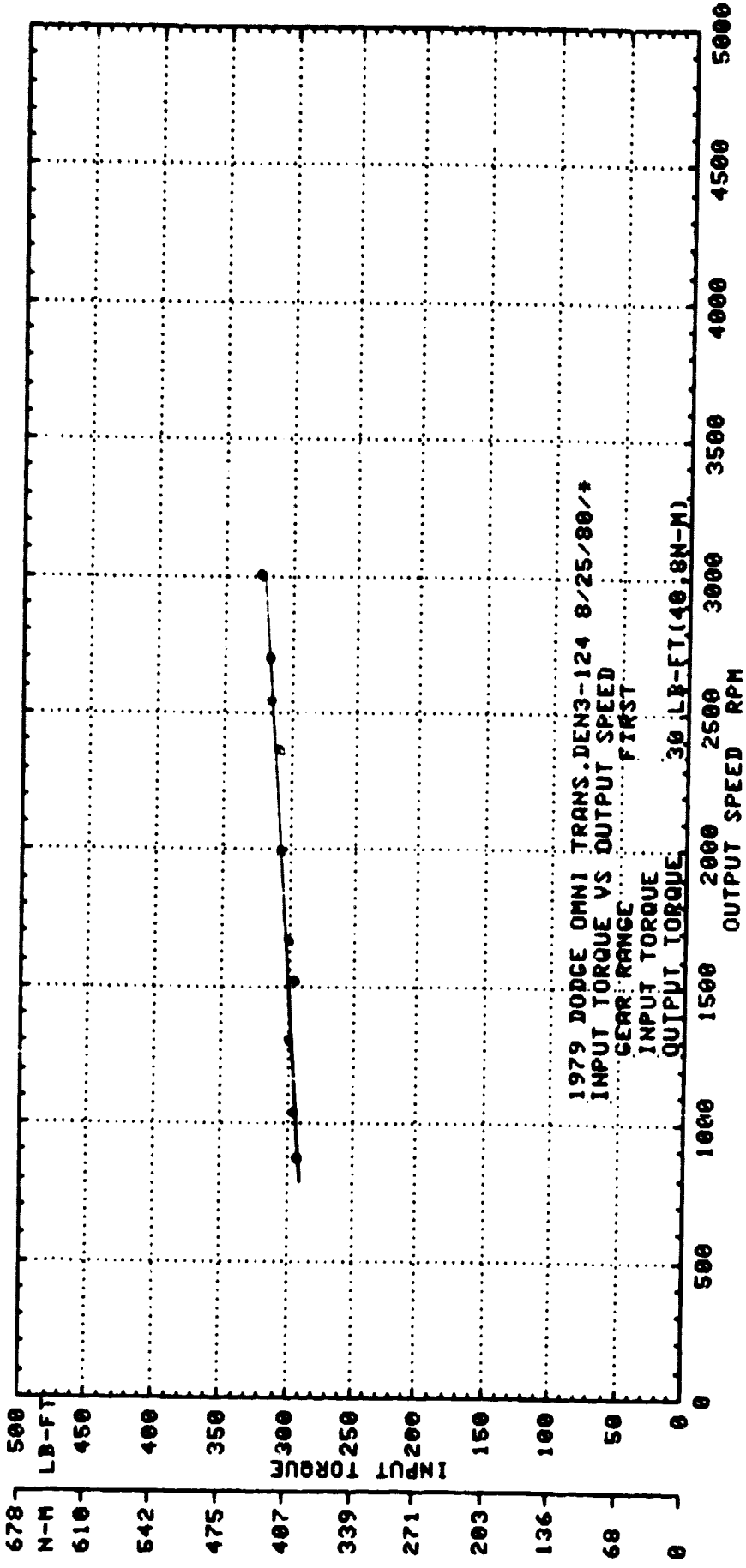

INPUT SPEED RPM
500
450
400
350
300
250
200
150
100
50
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)

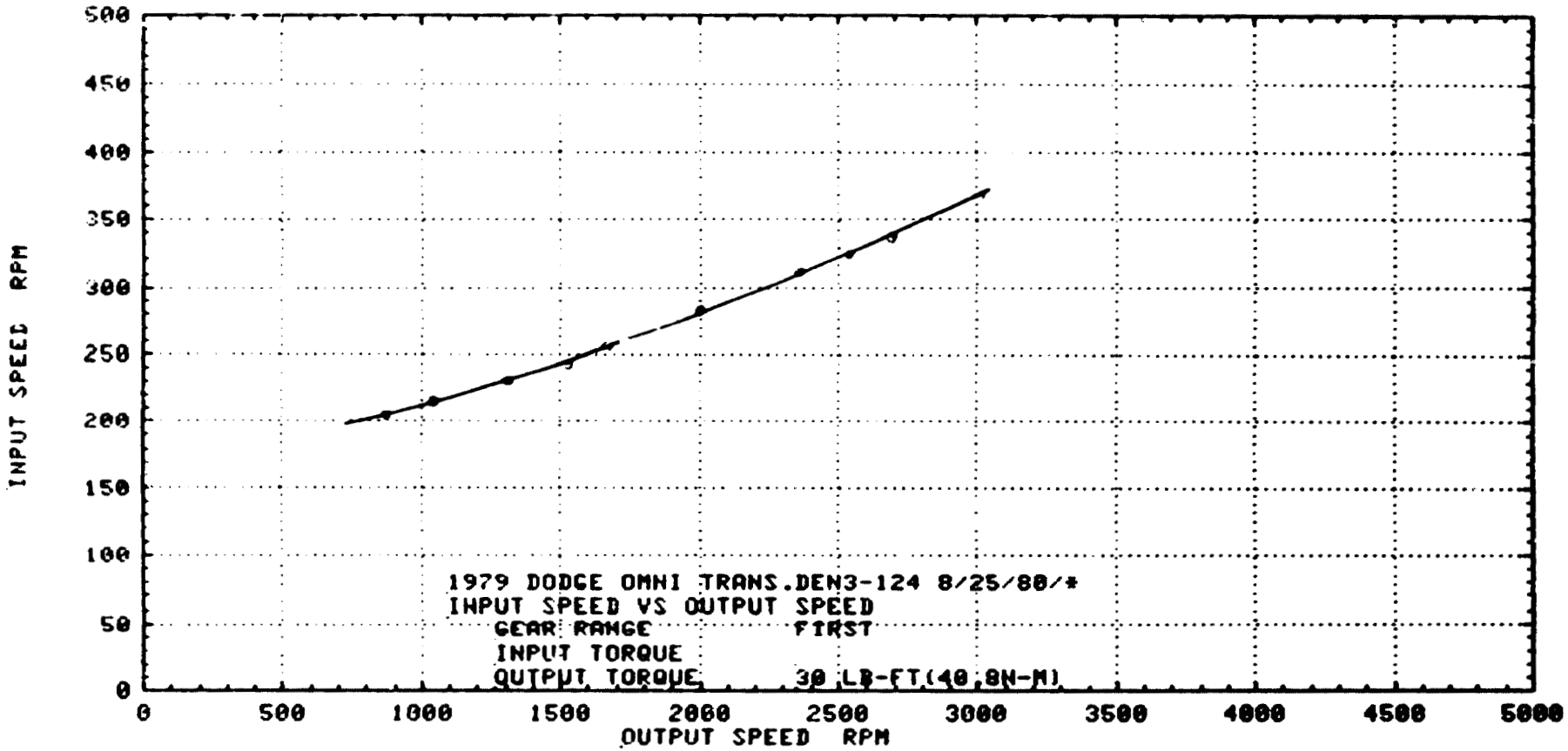

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3--124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)

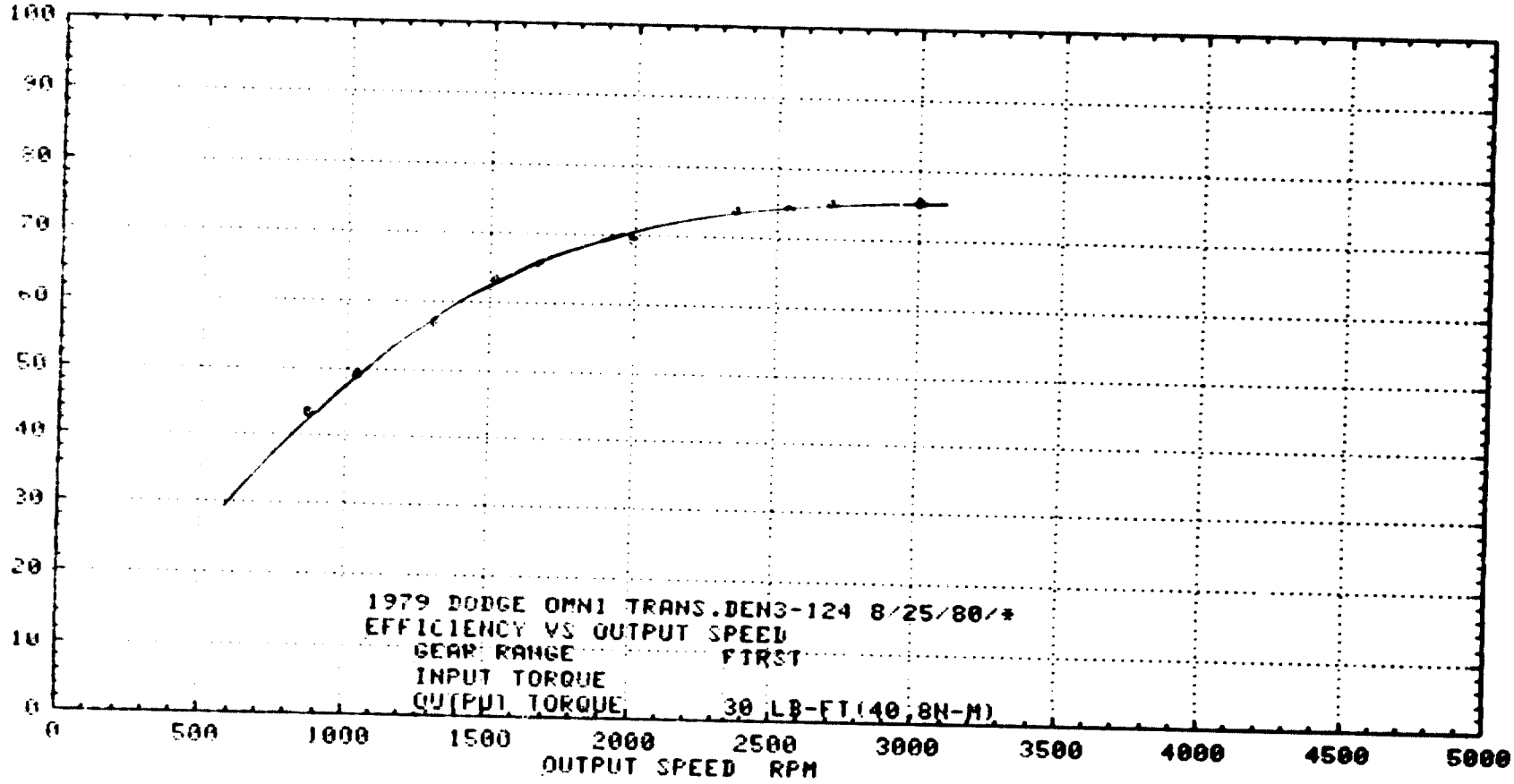

1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE
POWER OUT
EFFICIENCY %
HP
KW

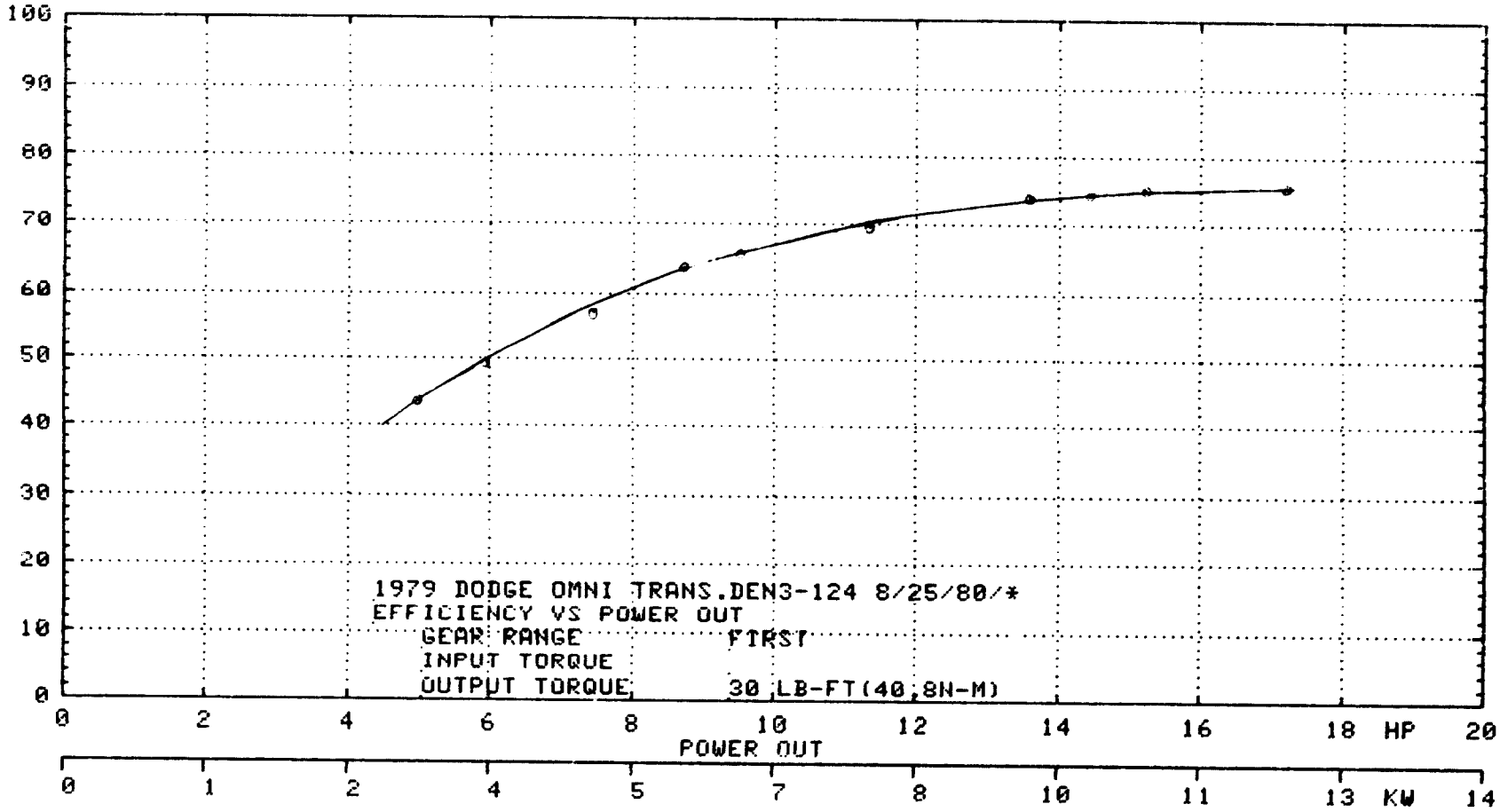
QUALITY

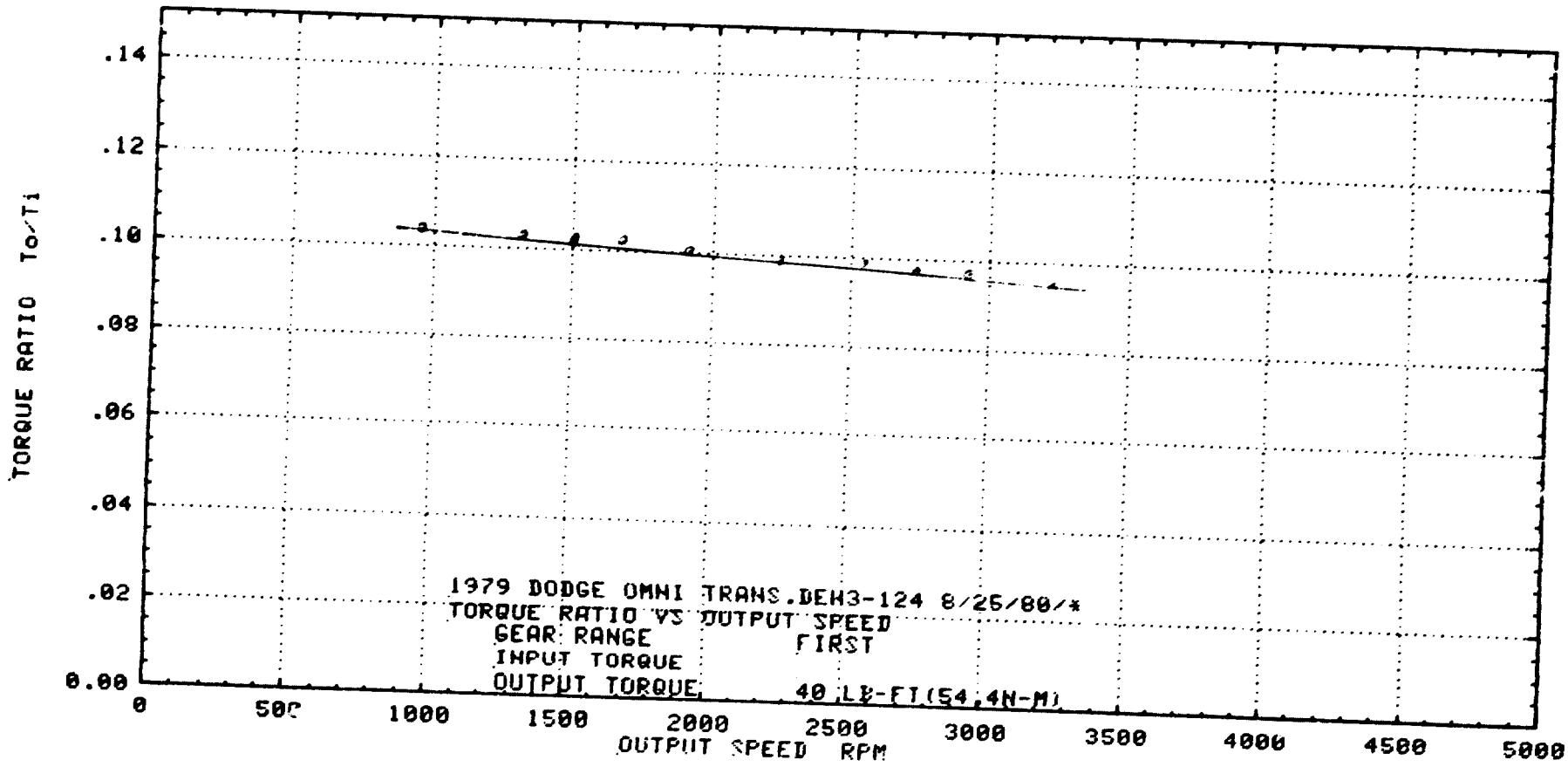

TORQUE RATIO To/Ti
.14
.12
.10
.08
.06
.04
.02
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEM3-124 8/25/80/*
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)

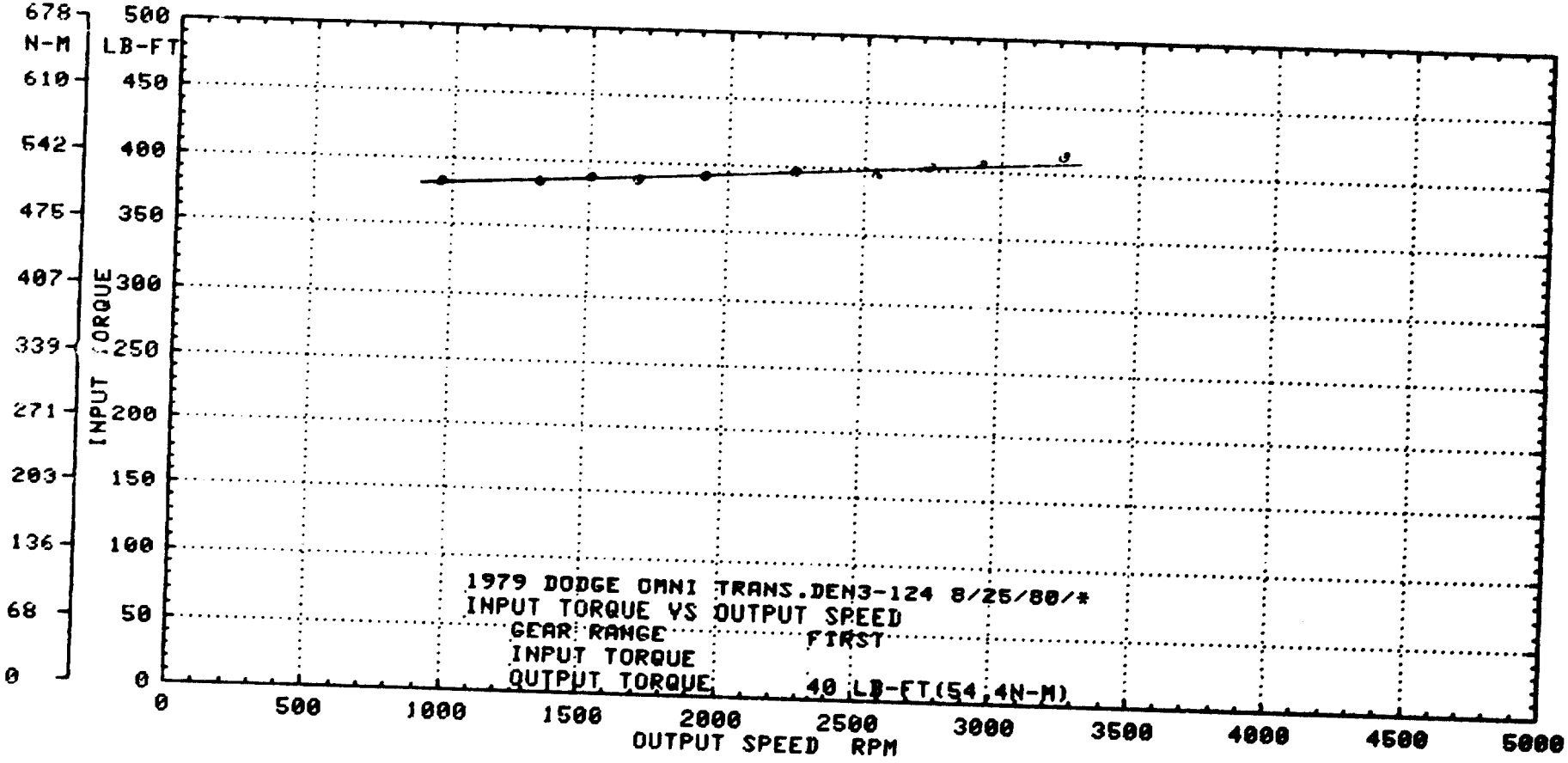

1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)
OUTPUT SPEED RPM
INPUT TORQUE
LB-FT
N-M
0
68
136
203
271
339
407
475
542
610
678
0
50
100
150
200
250
300
350
400
450
500
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000

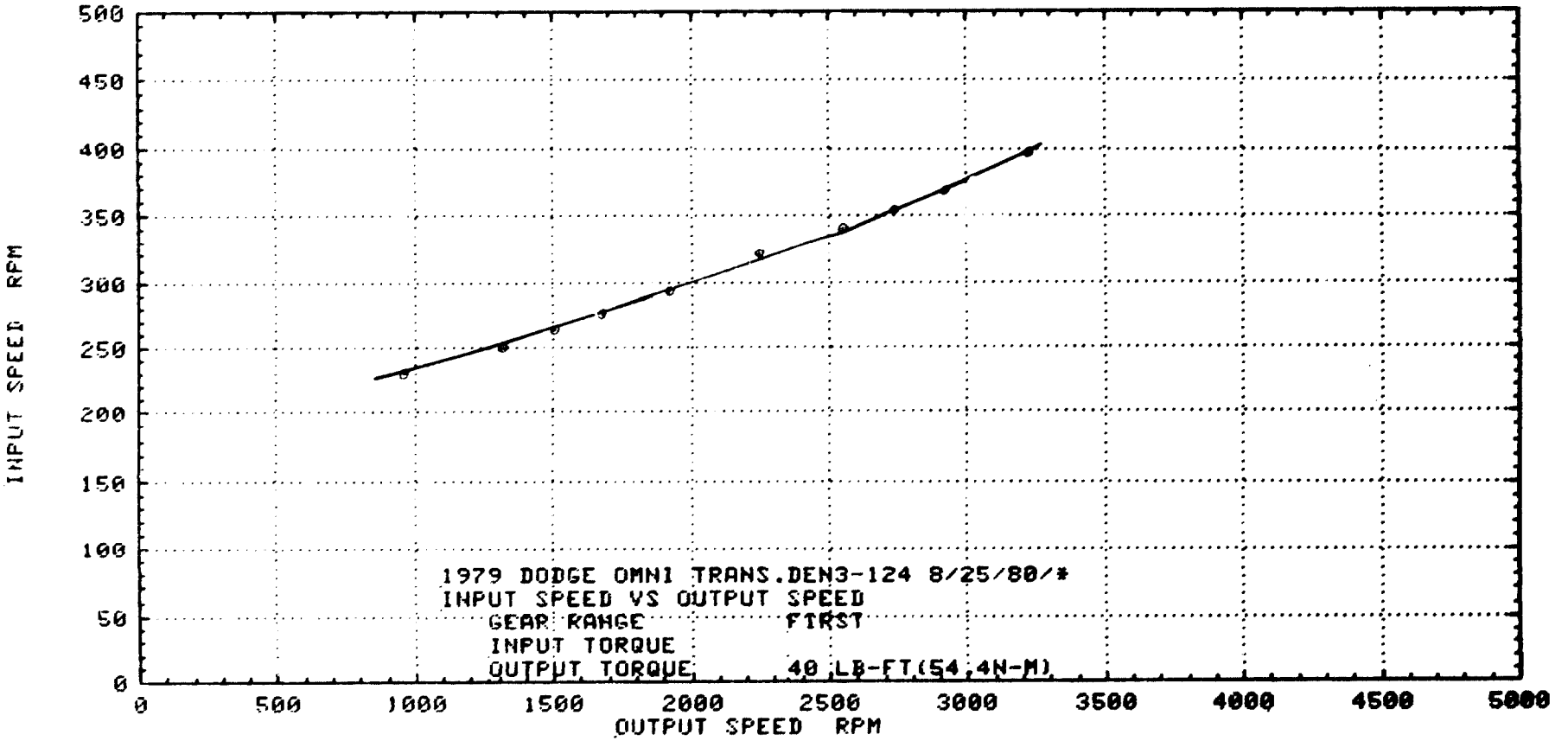

INPUT SPEED RPM
500
450
400
350
300
250
200
150
100
50
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)

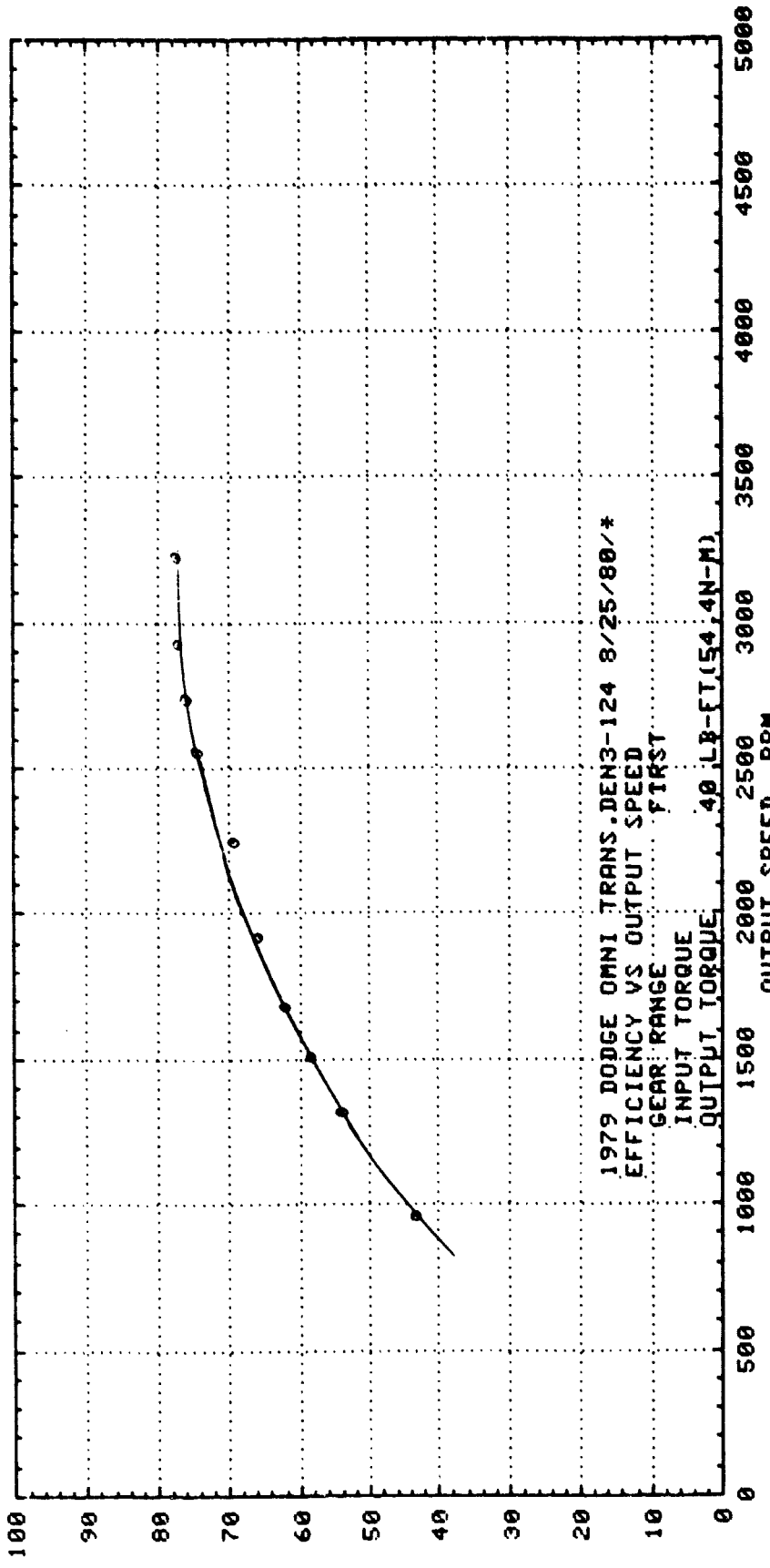

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)

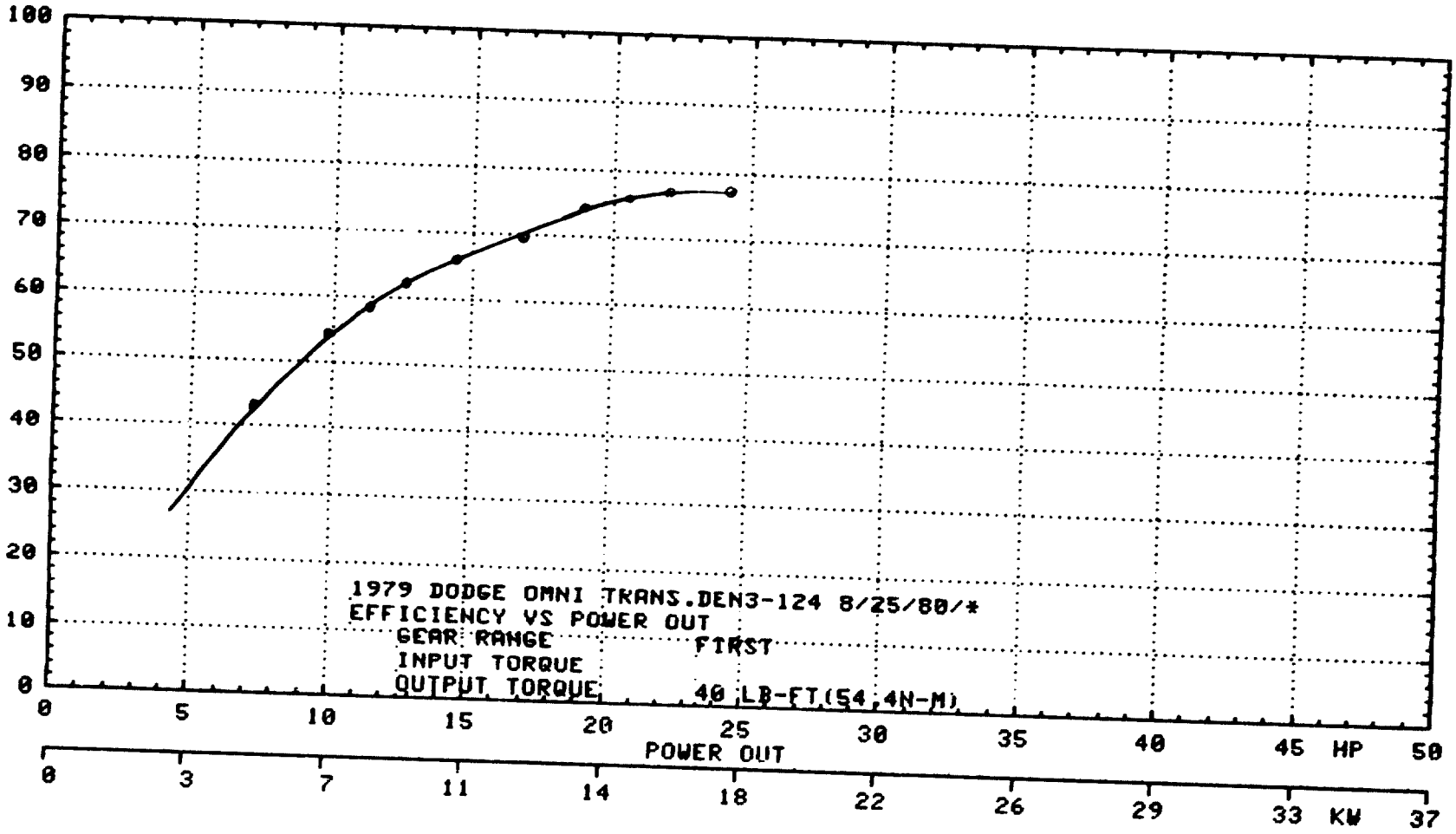

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)
0 2 4 6 8 10 12 14 16 18 HP 20
POWER OUT
0 1 2 4 5 7 8 10 11 13 KW 14

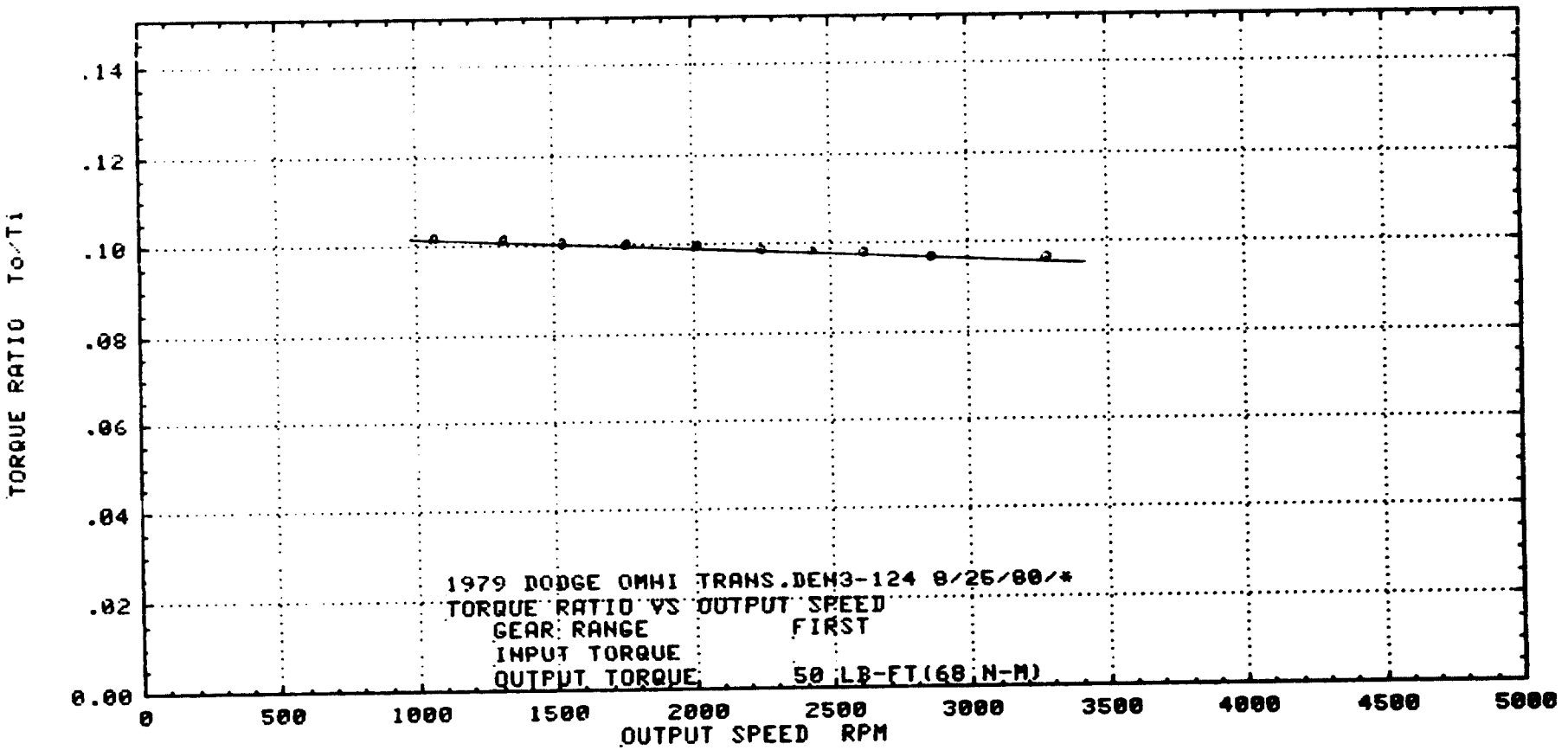

TORQUE RATIO To/Ti
.14
.12
.10
.08
.06
.04
.02
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEH3-124 8/25/80/*
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)

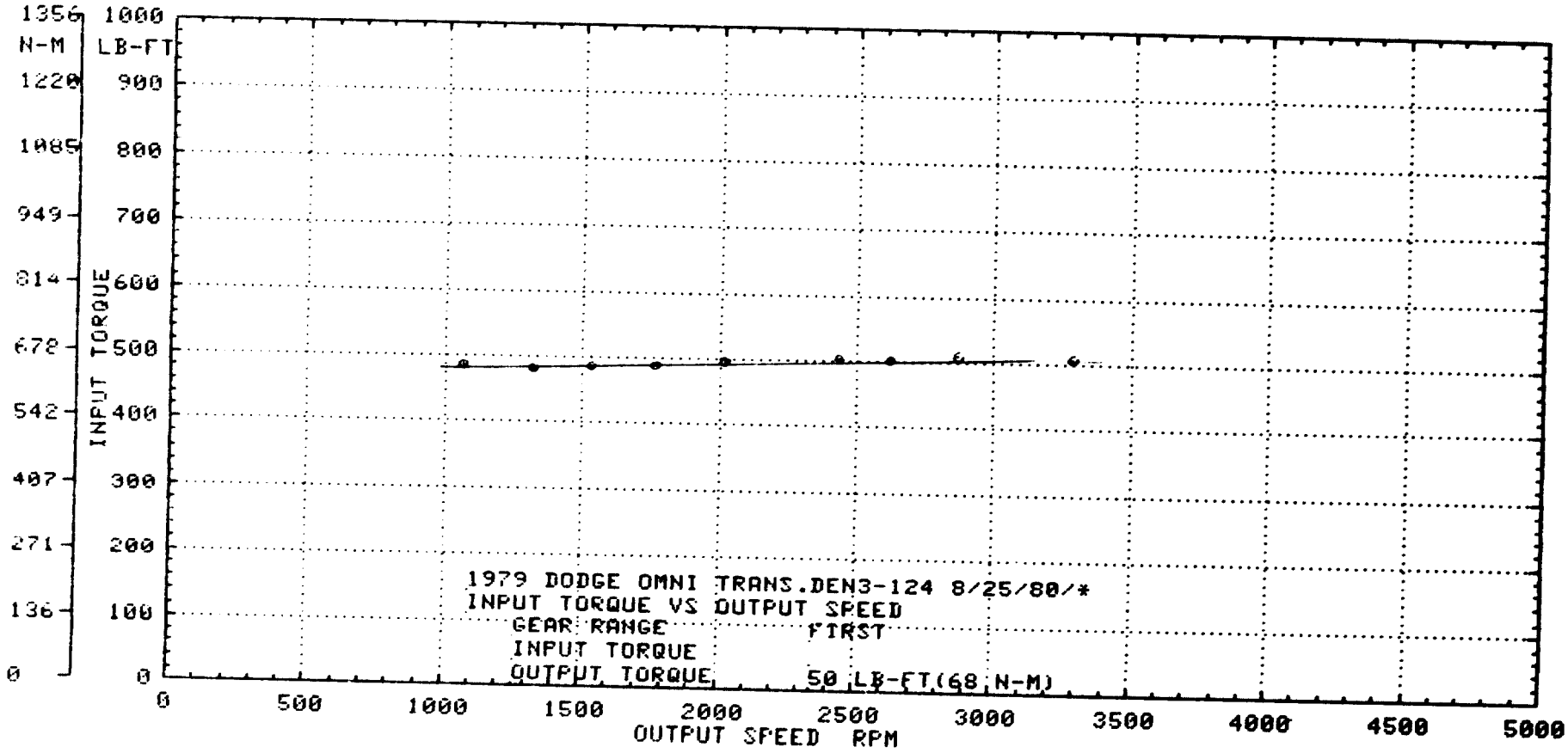

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

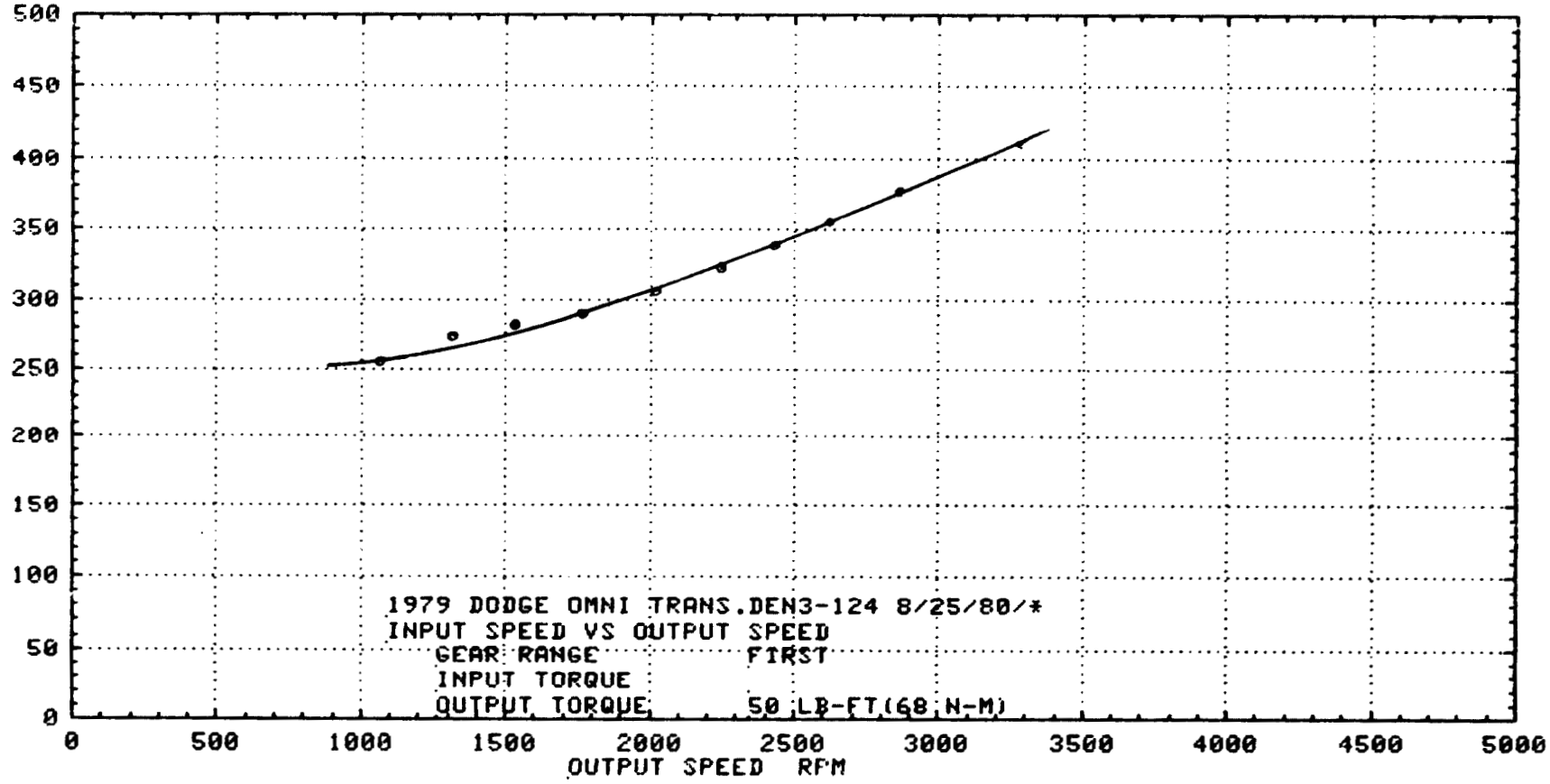

500
450
400
350
300
250
200
150
100
50
0
INPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)

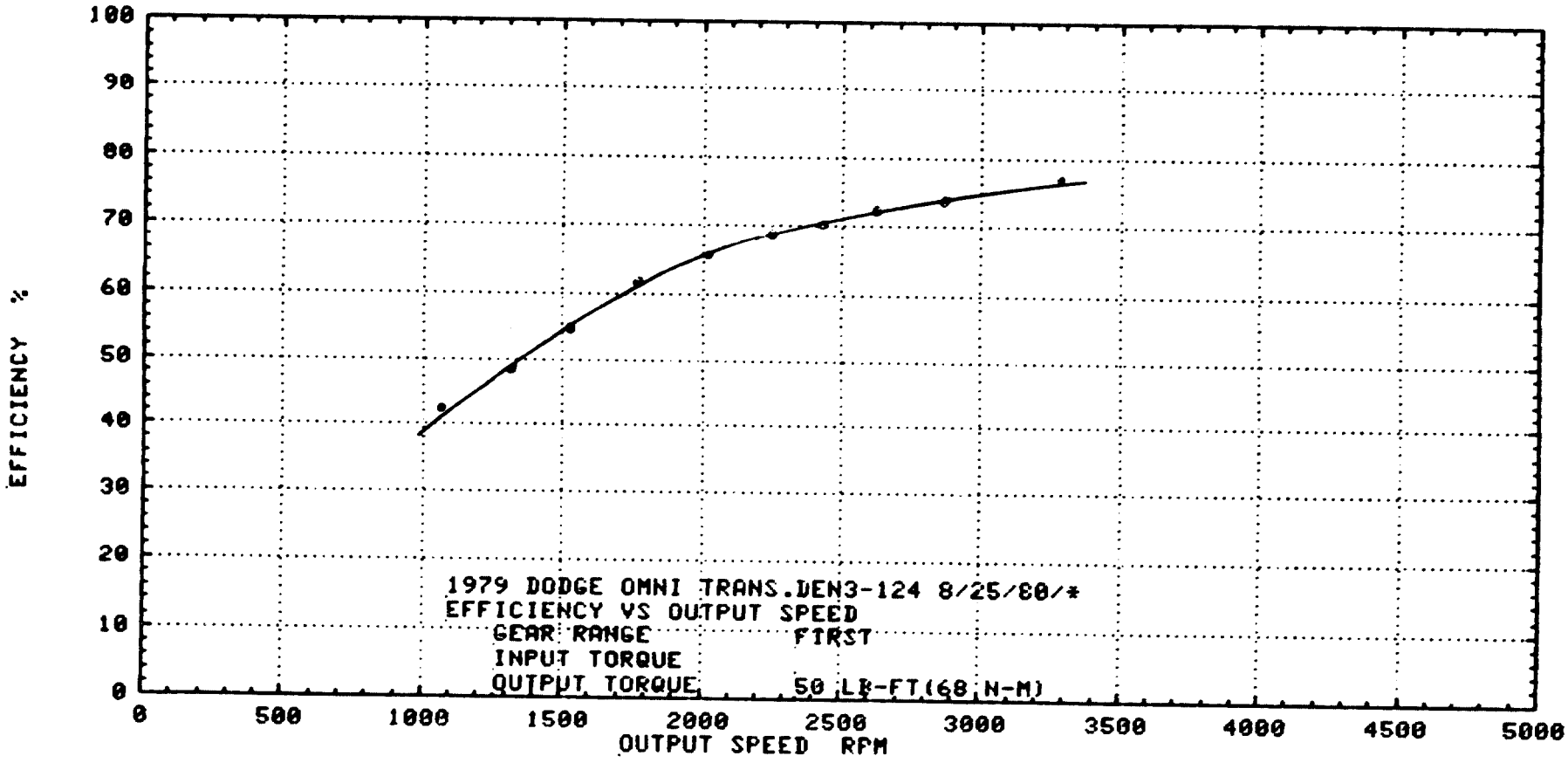

1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)
OUTPUT SPEED RPM
EFFICIENCY %
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
10
20
30
40
50
60
70
80
90
100

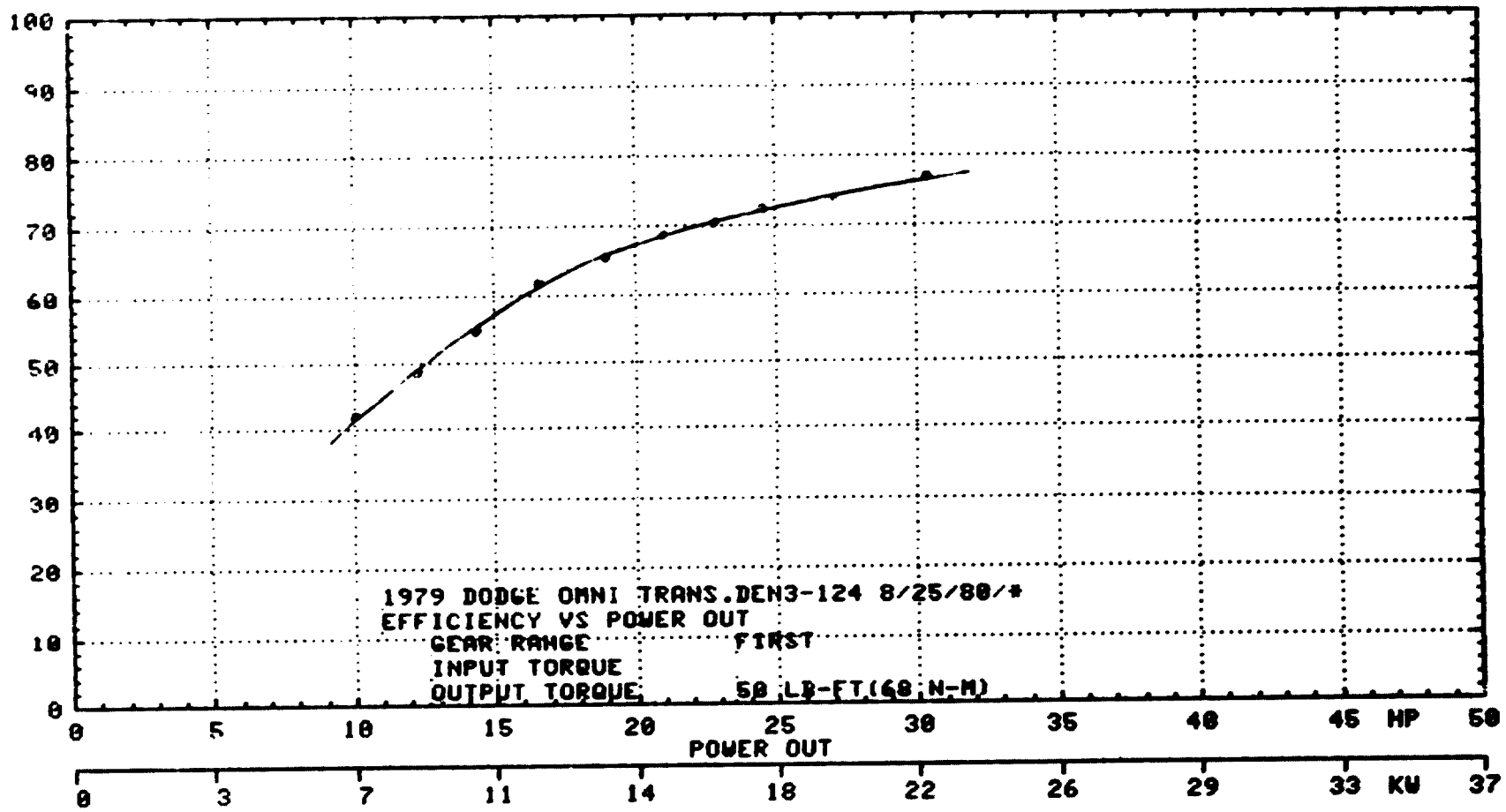

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

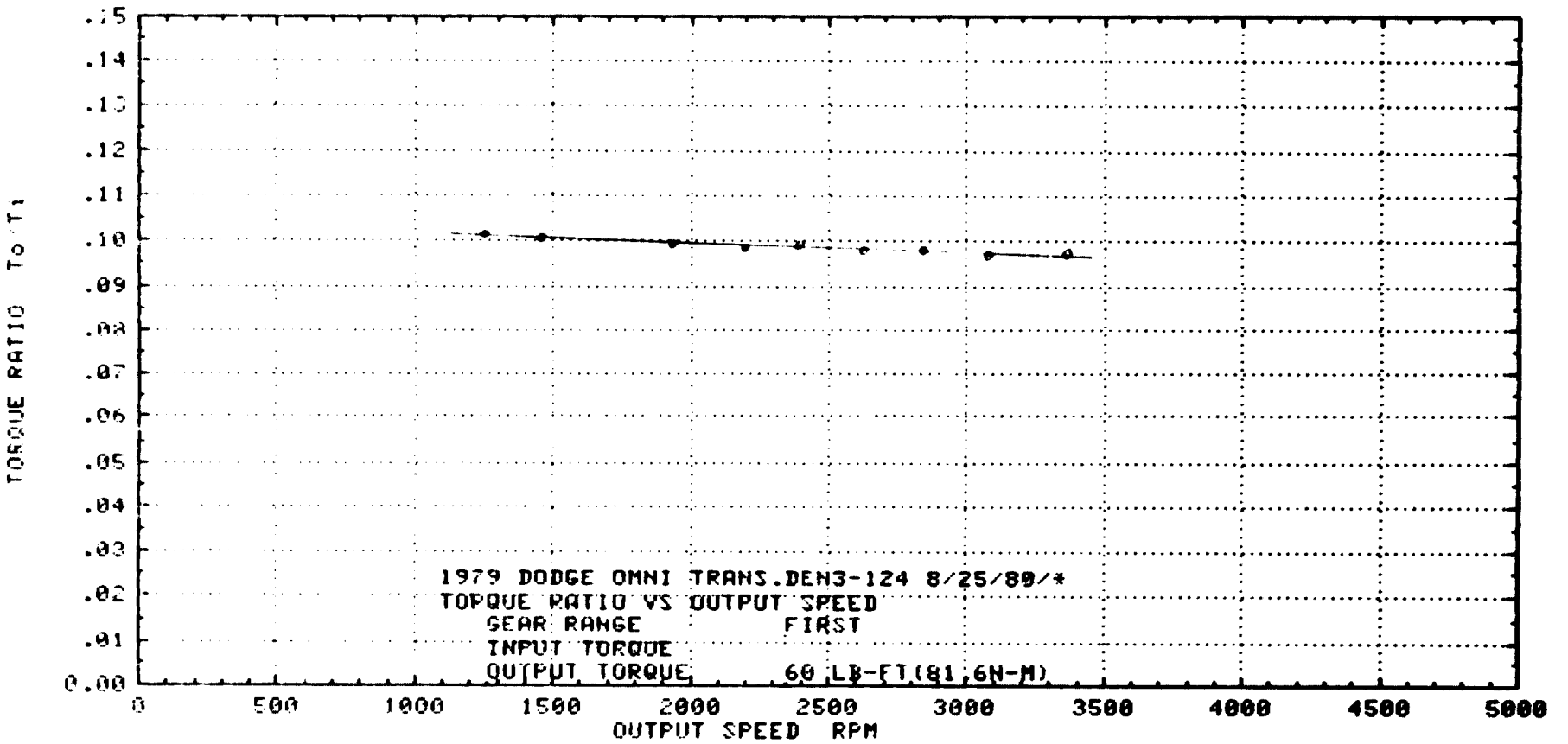

TORQUE RATIO To/Ti
.14
.12
.10
.08
.06
.04
.02
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEM3-124 8/25/80/*
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68 N-M)

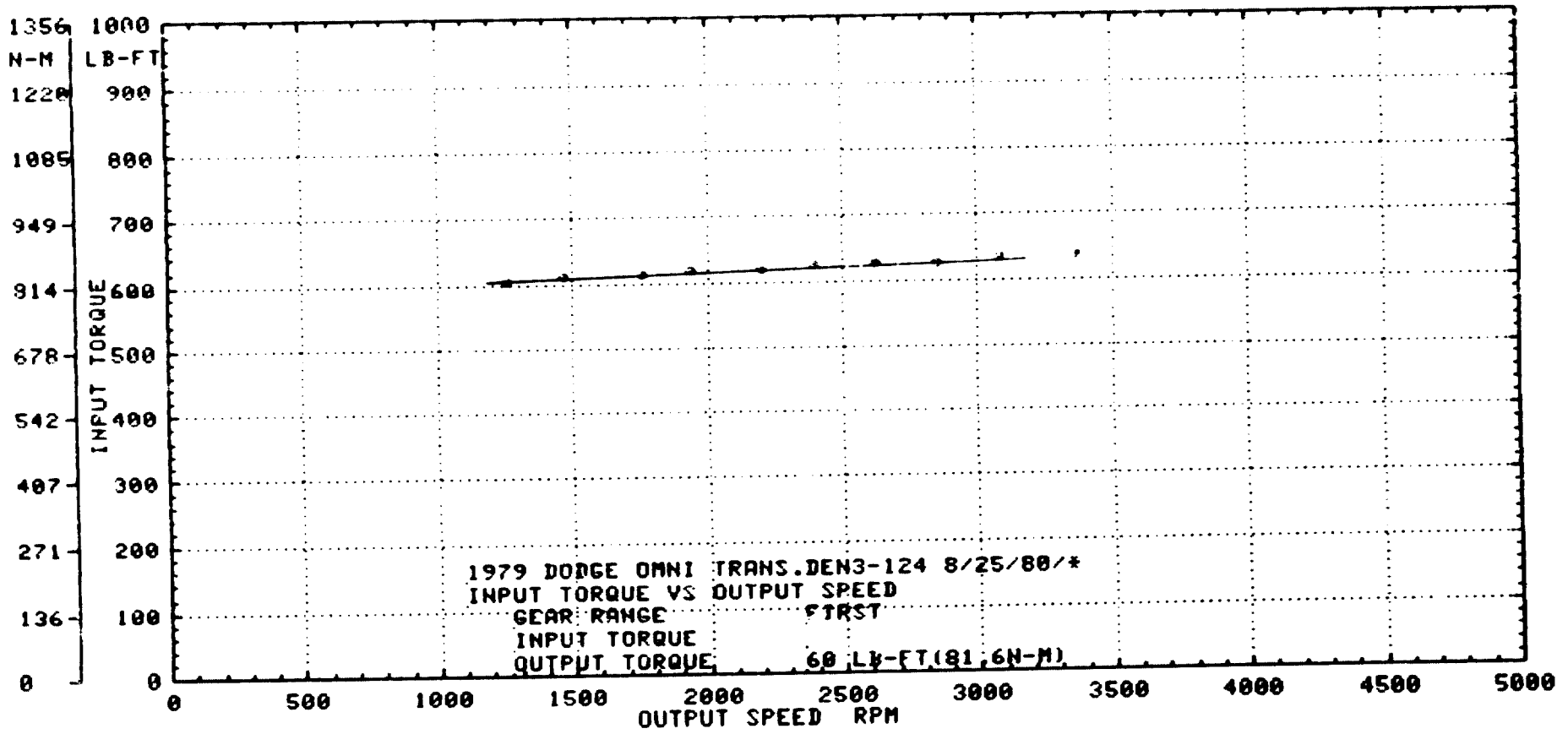

1356 1000
N-M LB-FT
1220 900
1085 800
949 700
814 600
678 500
542 400
407 300
271 200
136 100
0 0
INPUT TORQUE
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68 N-M)

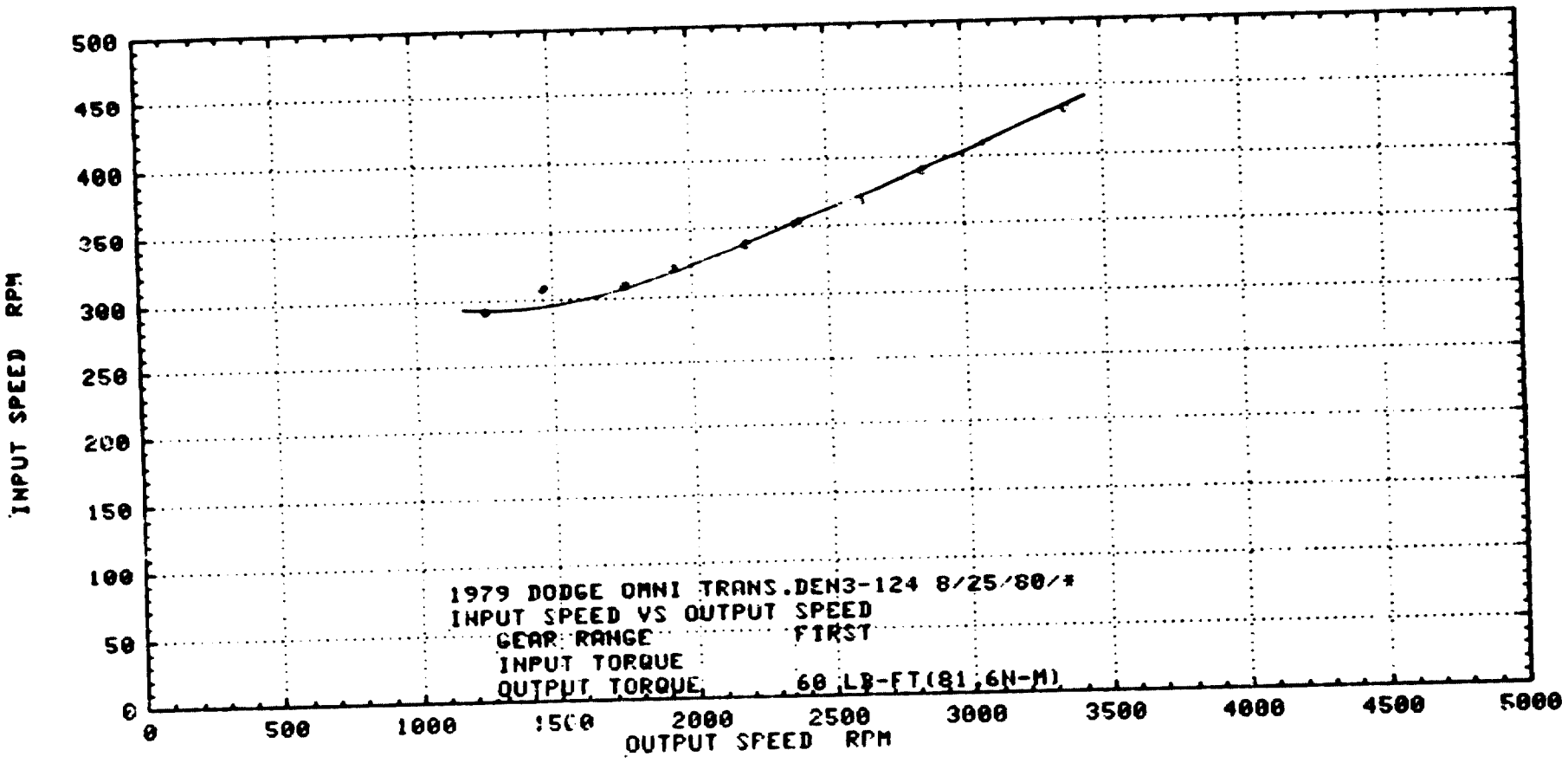

INPUT SPEED RPM
500
450
400
350
300
250
200
150
100
50
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68 N-M)

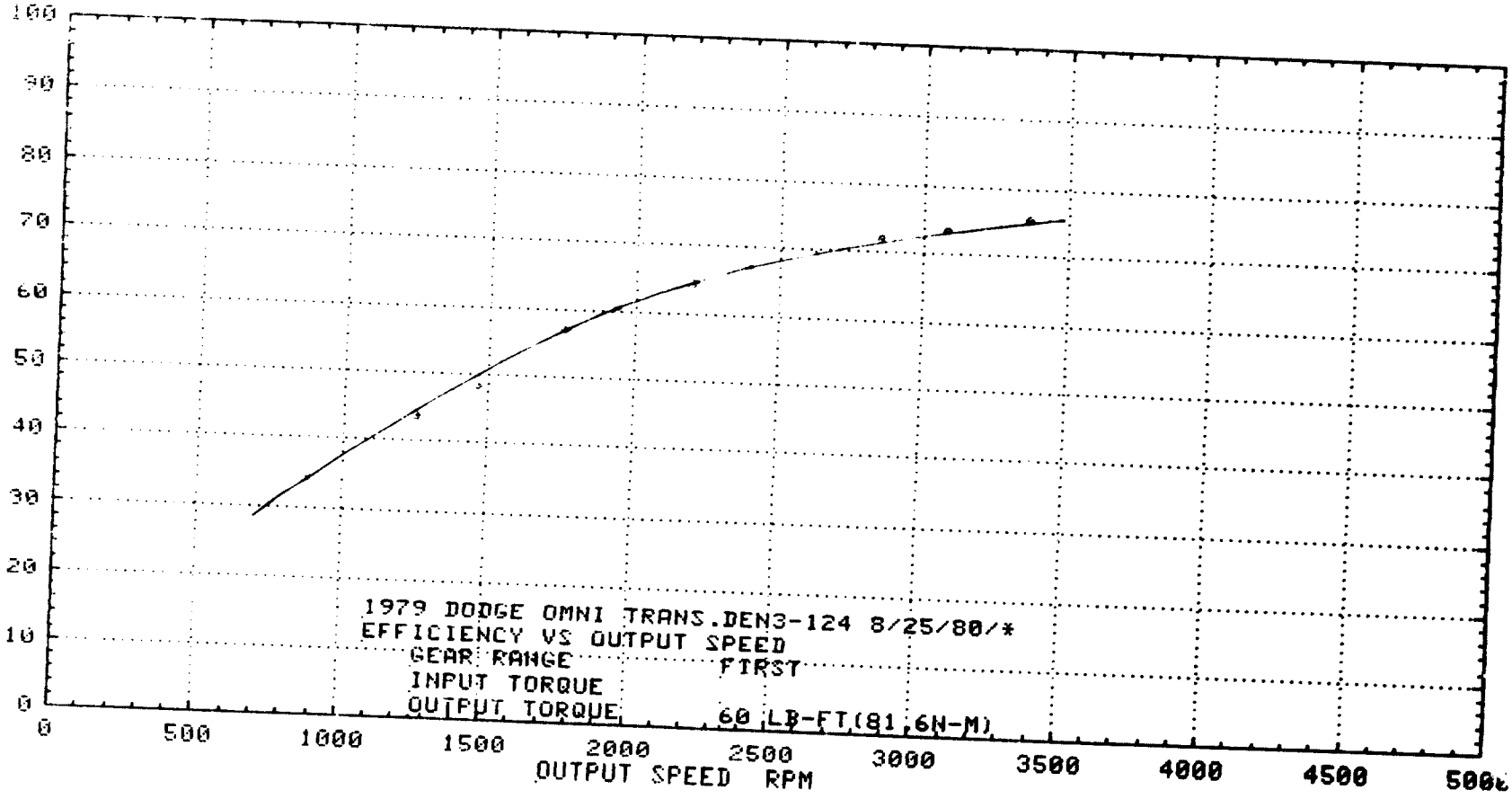

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68 N-M)

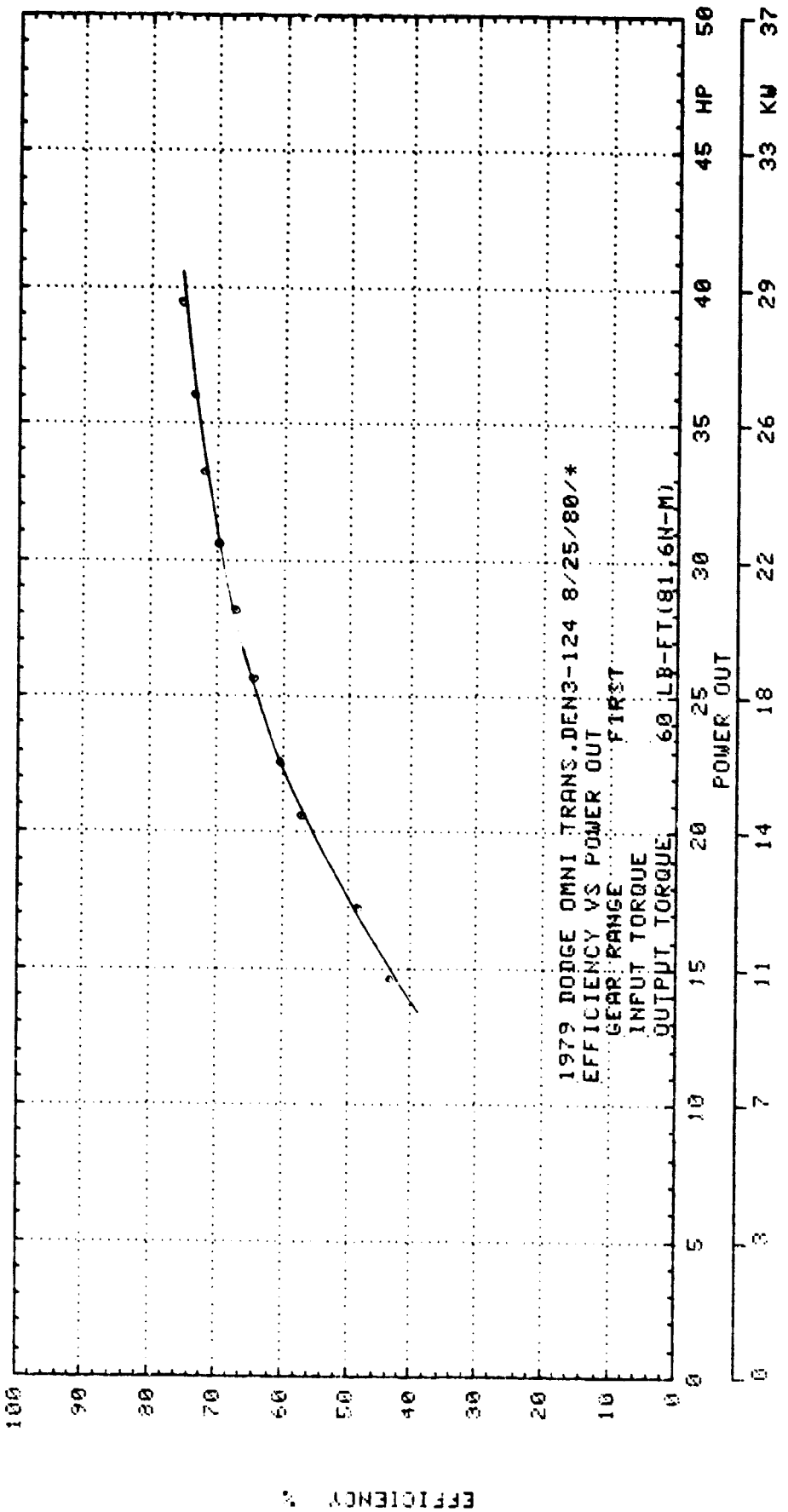

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68 N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37


TORQUE RATIO To T1
.15
.14
.13
.12
.11
.10
.09
.08
.07
.06
.05
.04
.03
.02
.01
0.00
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM


1356 1000
N-M LB-FT
1220 900
1085 800
949 700
814 600
678 500
542 400
407 300
271 200
136 100
0 0
INPUT TORQUE
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)


INPUT SPEED RPM
500
450
400
350
300
250
200
150
100
50
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)


1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE FIRST
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)
POWER OUT
HP
KW
EFFICIENCY %

COAST PERFORMANCE

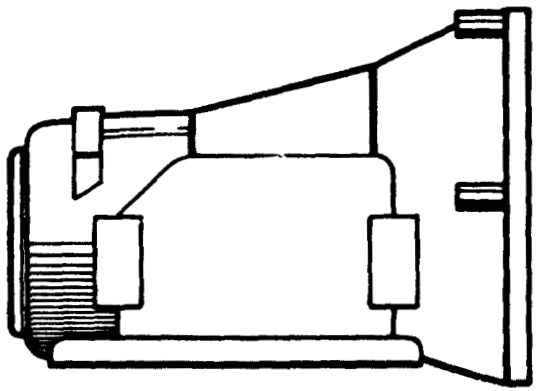
2nd Gear

Graphs Contained in This Section

Torque Ratio -vs- Output Speed
Output Torque -vs- Output Speed
!nput Speed -vs- Output Speed
Efficiency -vs- Output Speed
Efficiency -vs- Power Out

Torque In

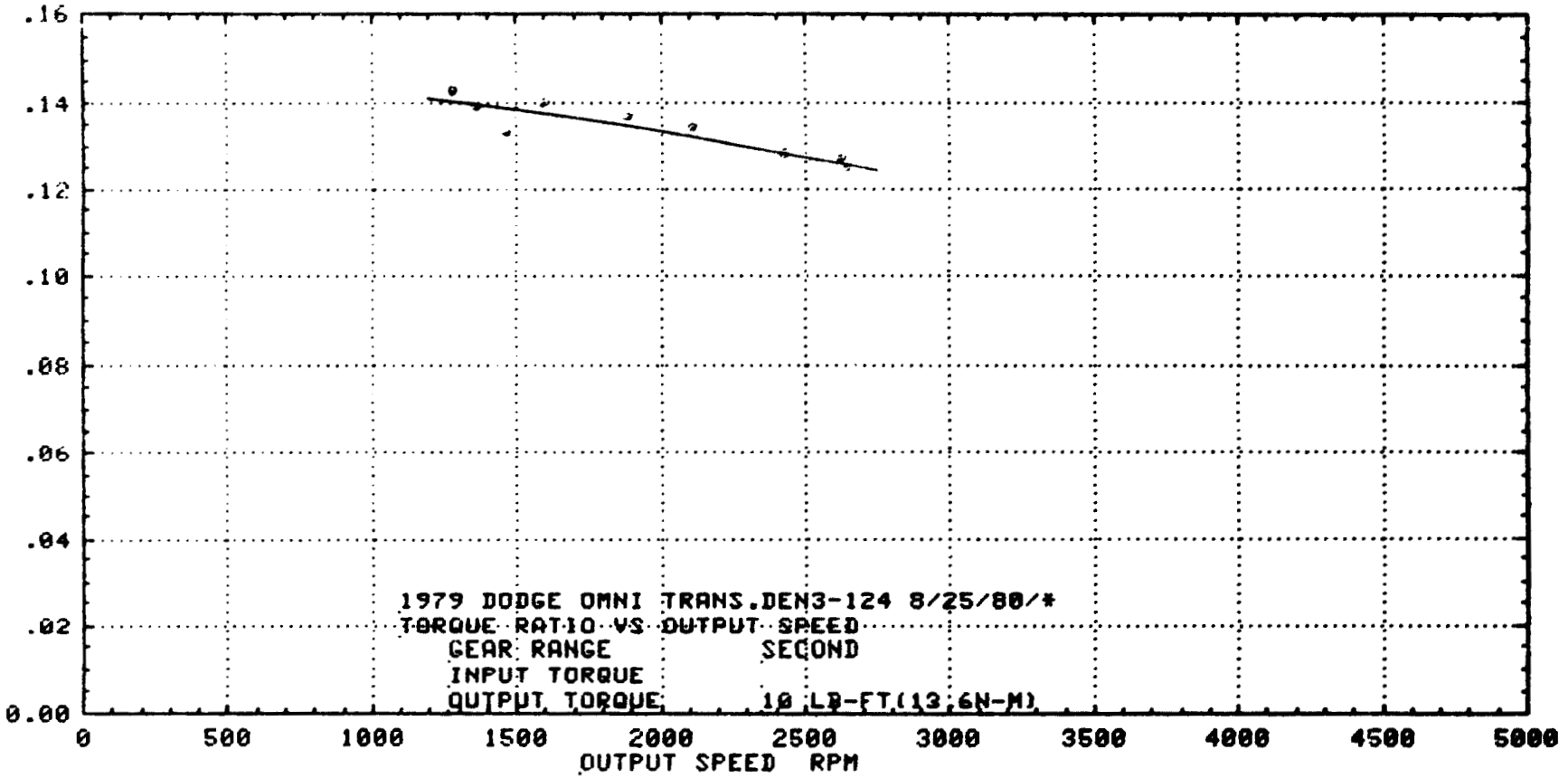
Speed In

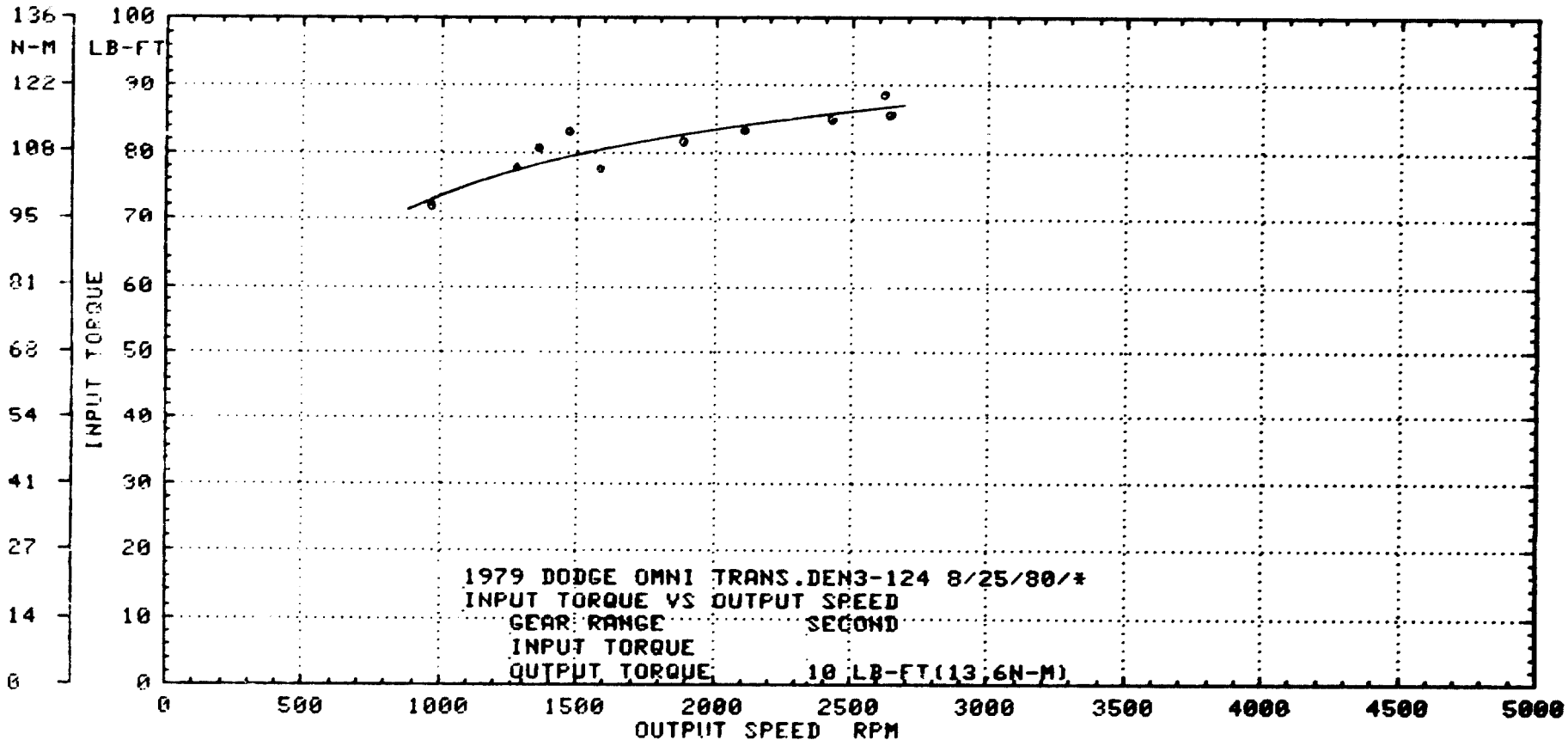


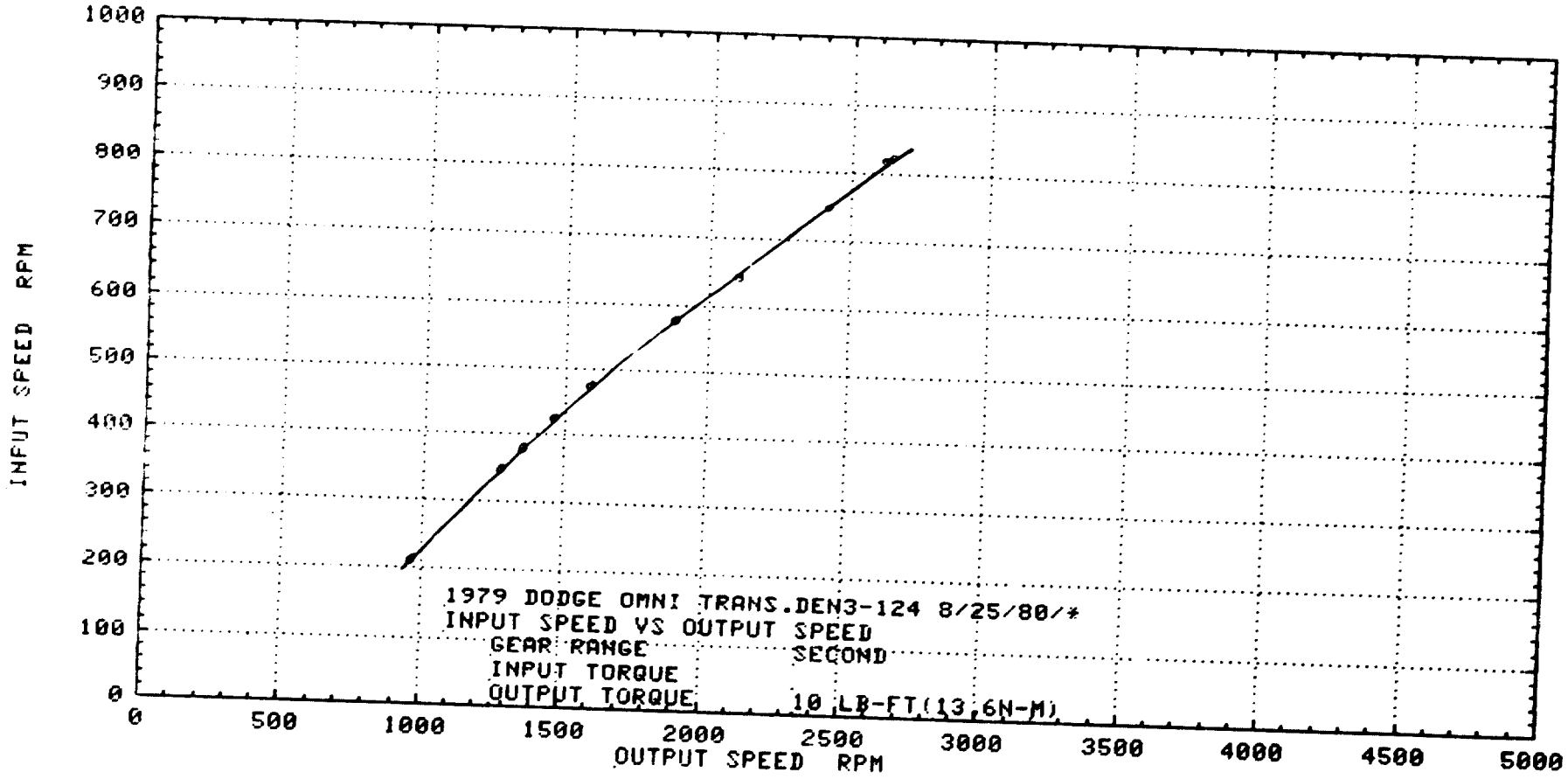
Torque Out

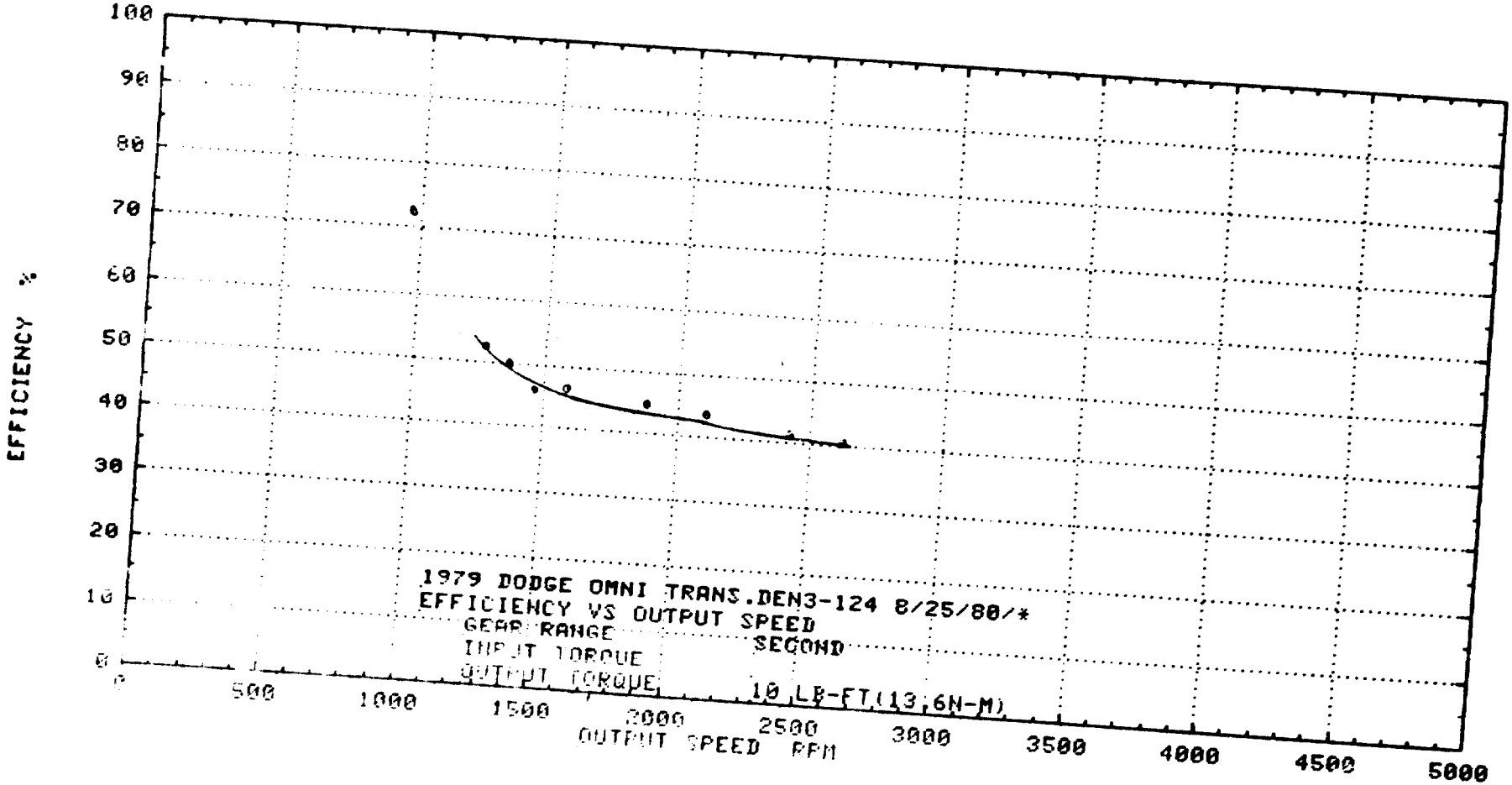
Speed Out

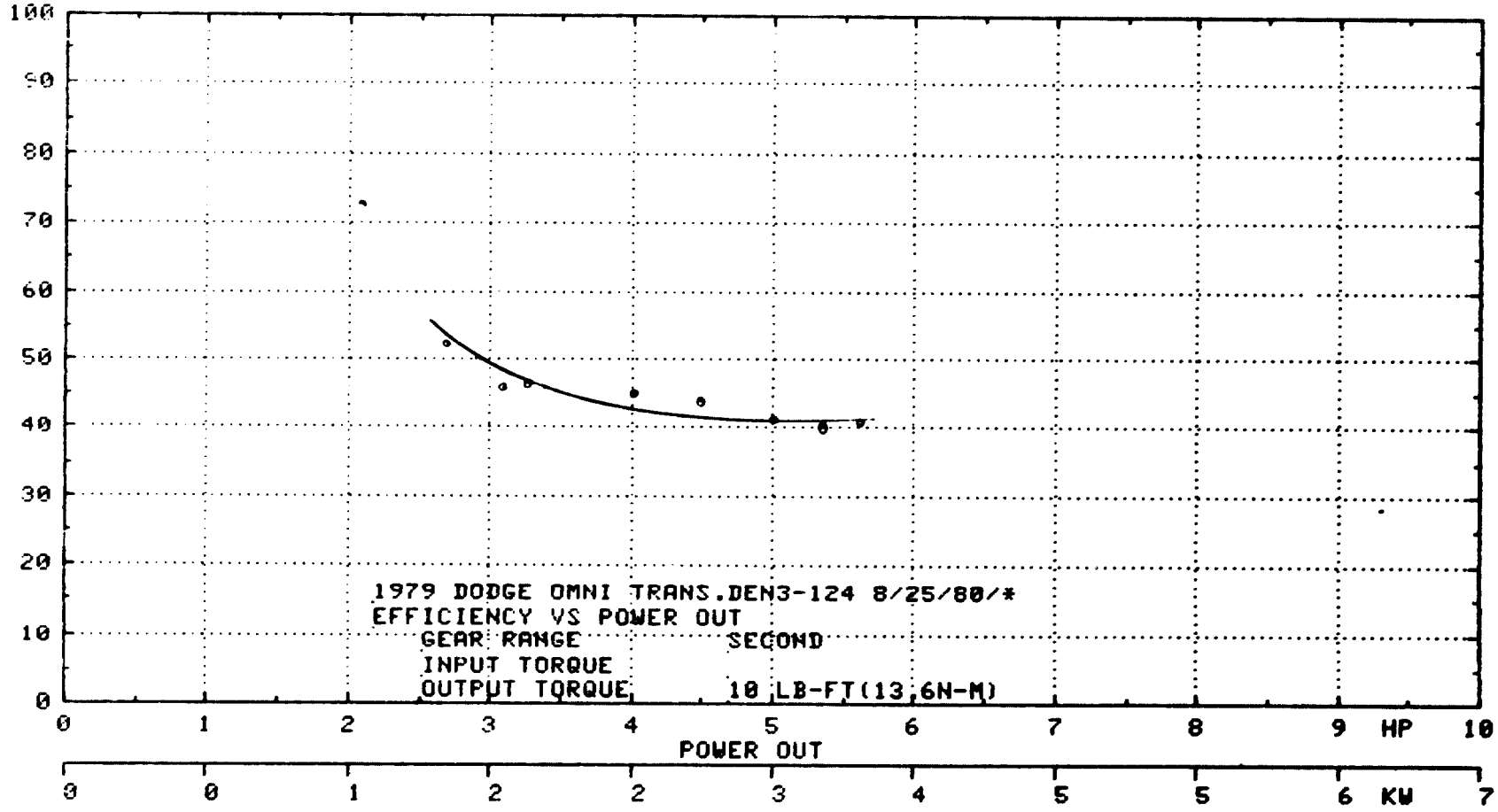
Coast Performance Tests

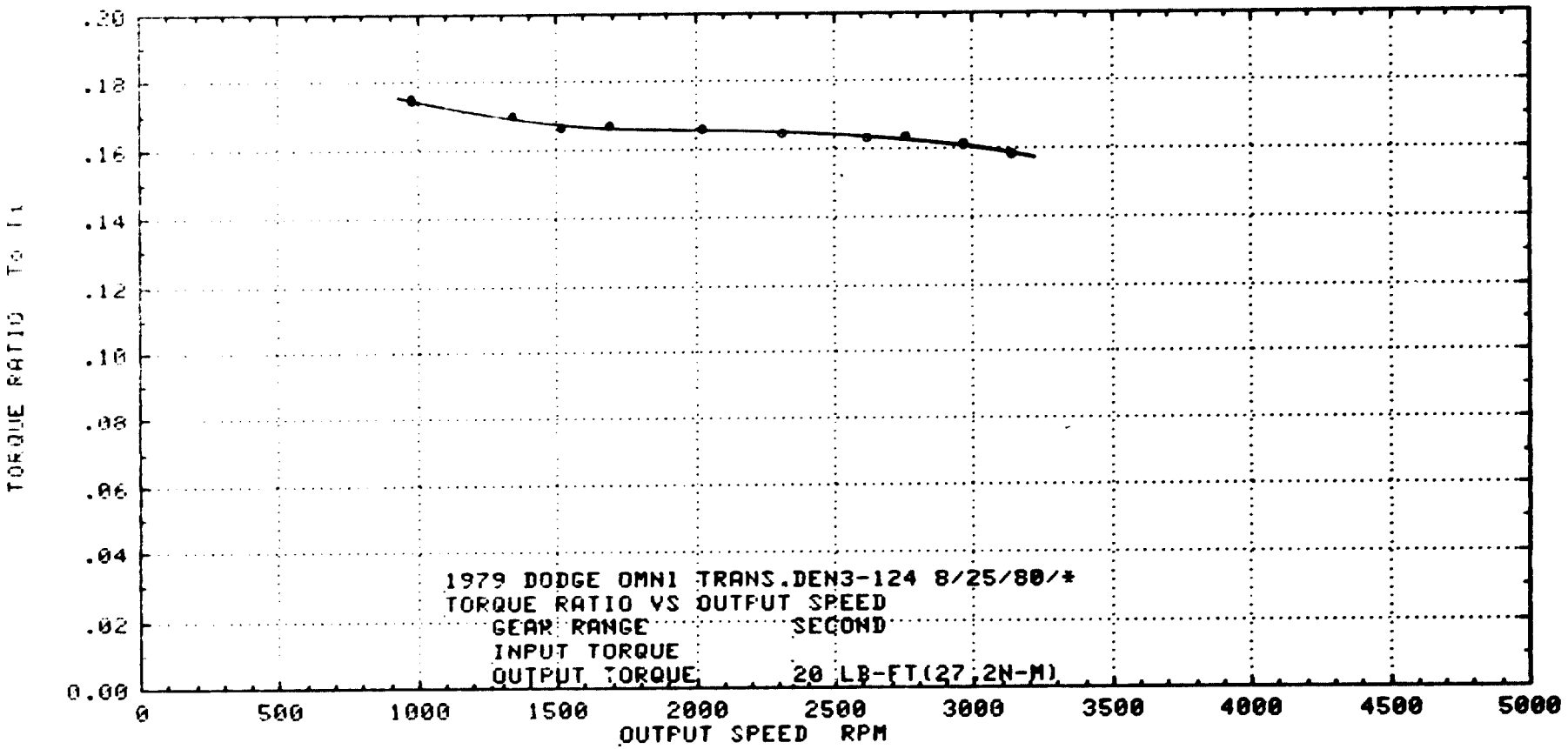

.16
.14
.12
.10
.08
.06
.04
.02
0.00
TORQUE RATIO To/Ti
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

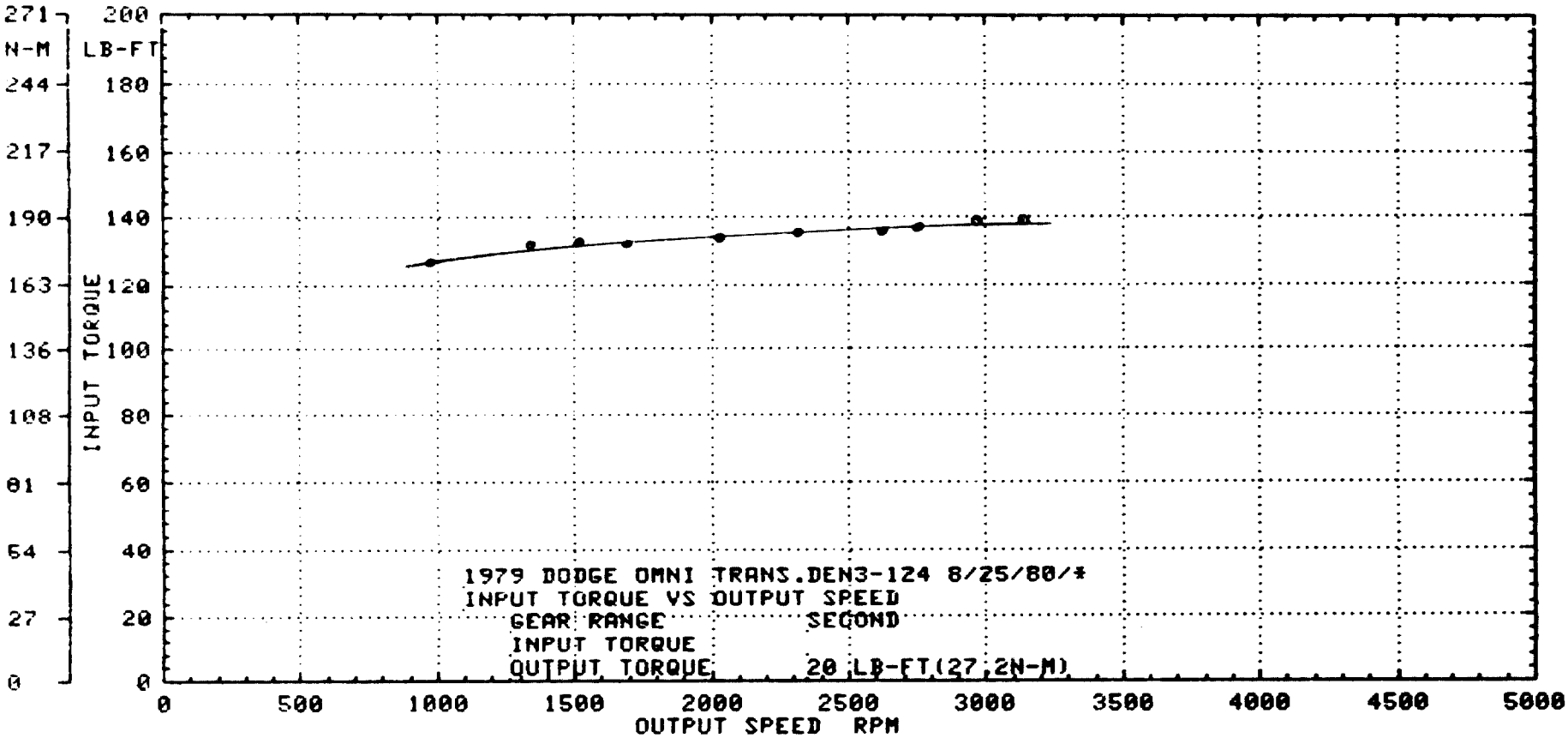

136
N-M
122
108
95
81
68
54
41
27
14
0
100
LB-FT
90
80
70
60
50
40
30
20
10
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM


INPUT SPEED RPM
1000
900
800
700
600
500
400
300
200
100
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)

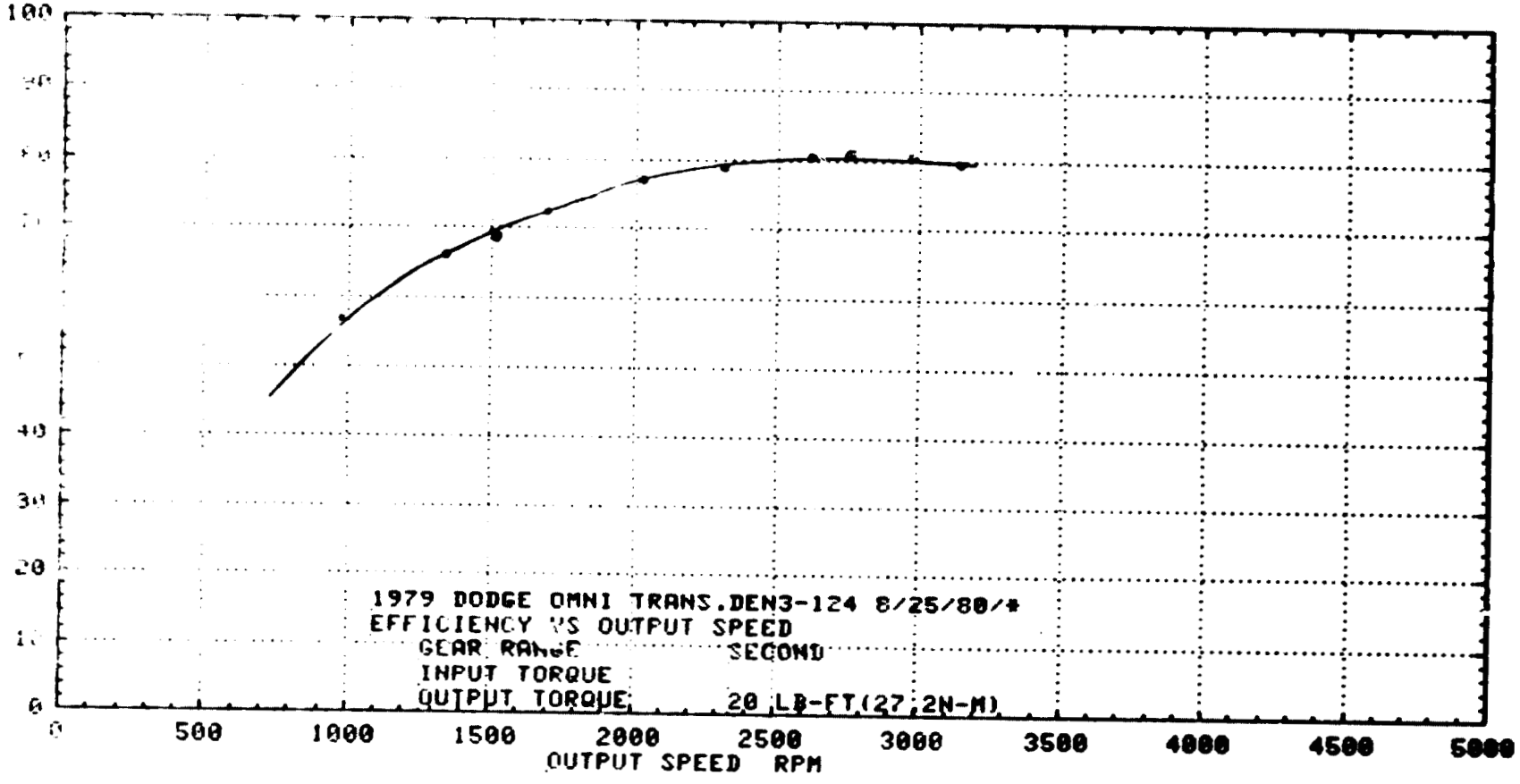

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
0 1 2 3 4 5 6 7 8 9 HP 10
POWER OUT
0 0 1 2 2 3 4 5 5 6 KW 7

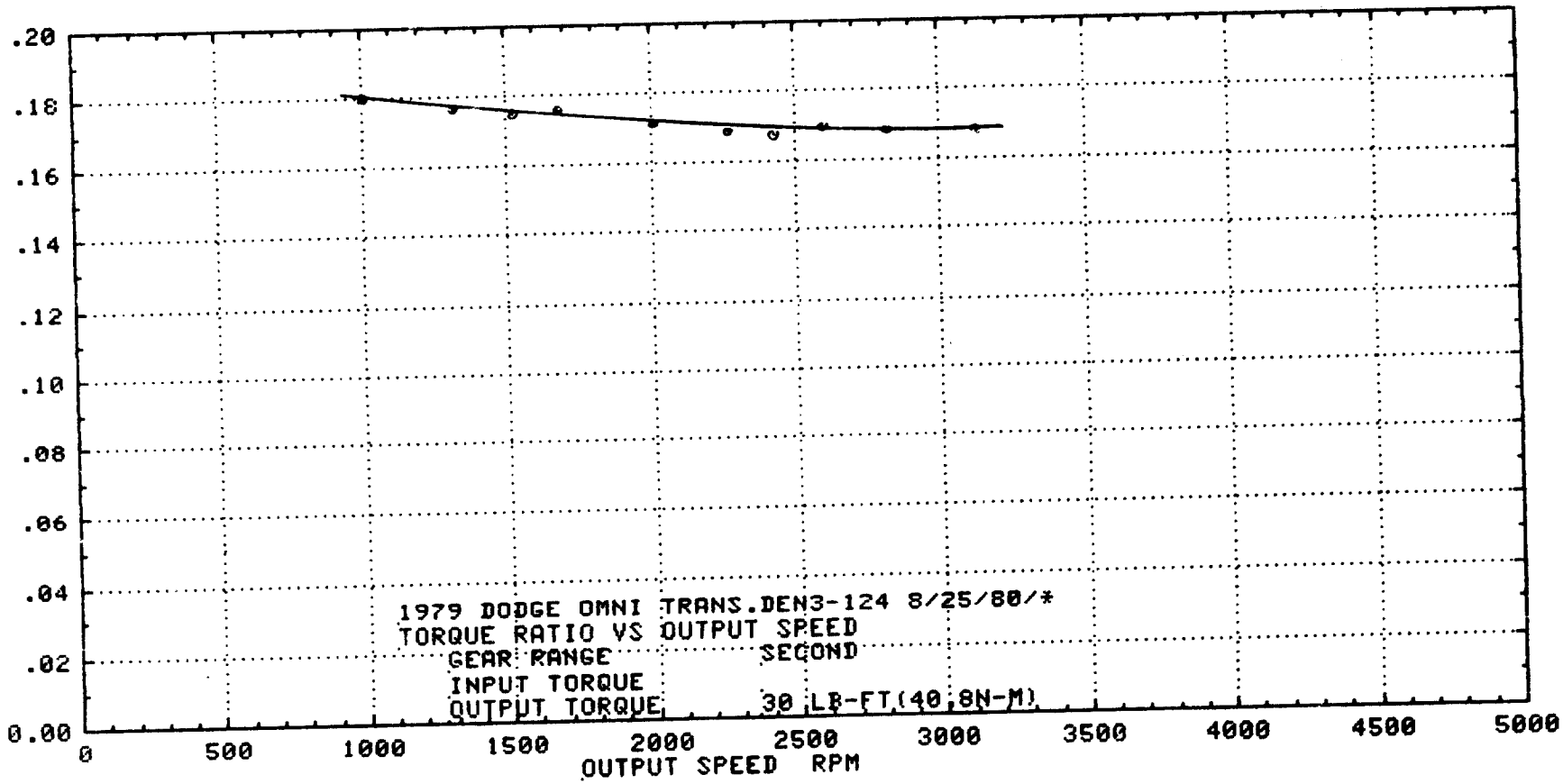

TORQUE RATIO To 1
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)

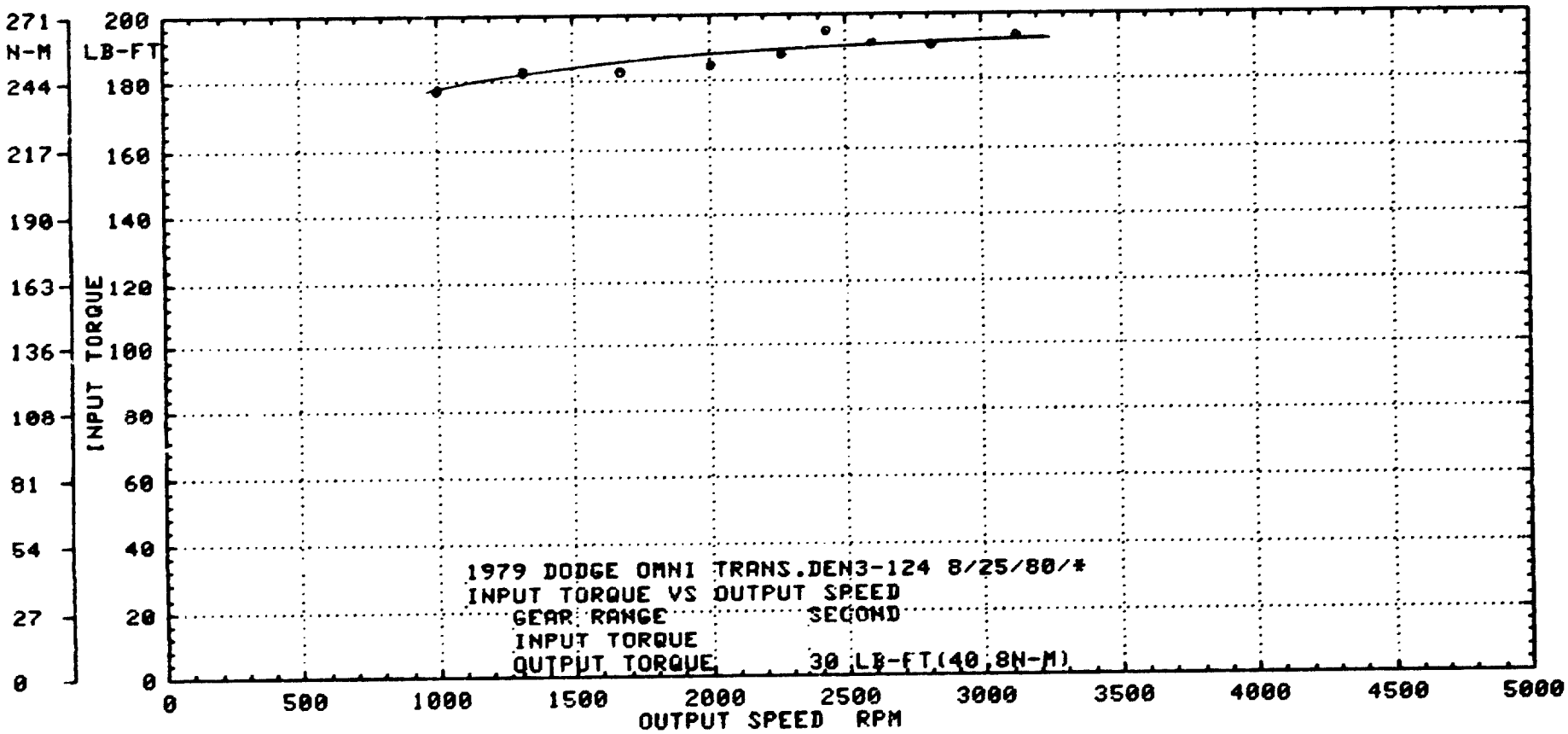

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

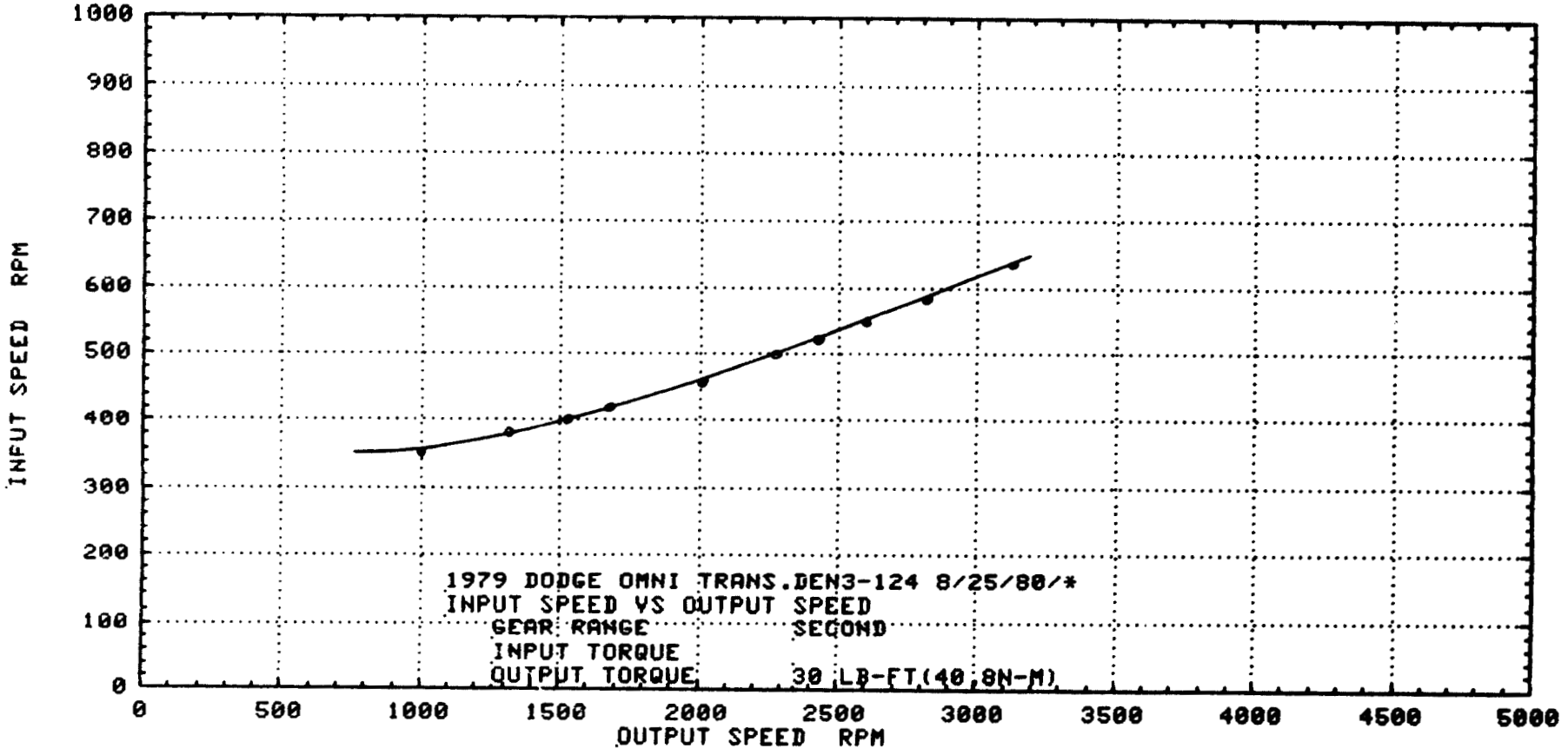
1000
900
800
700
600
500
400
300
200
100
0
INPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)

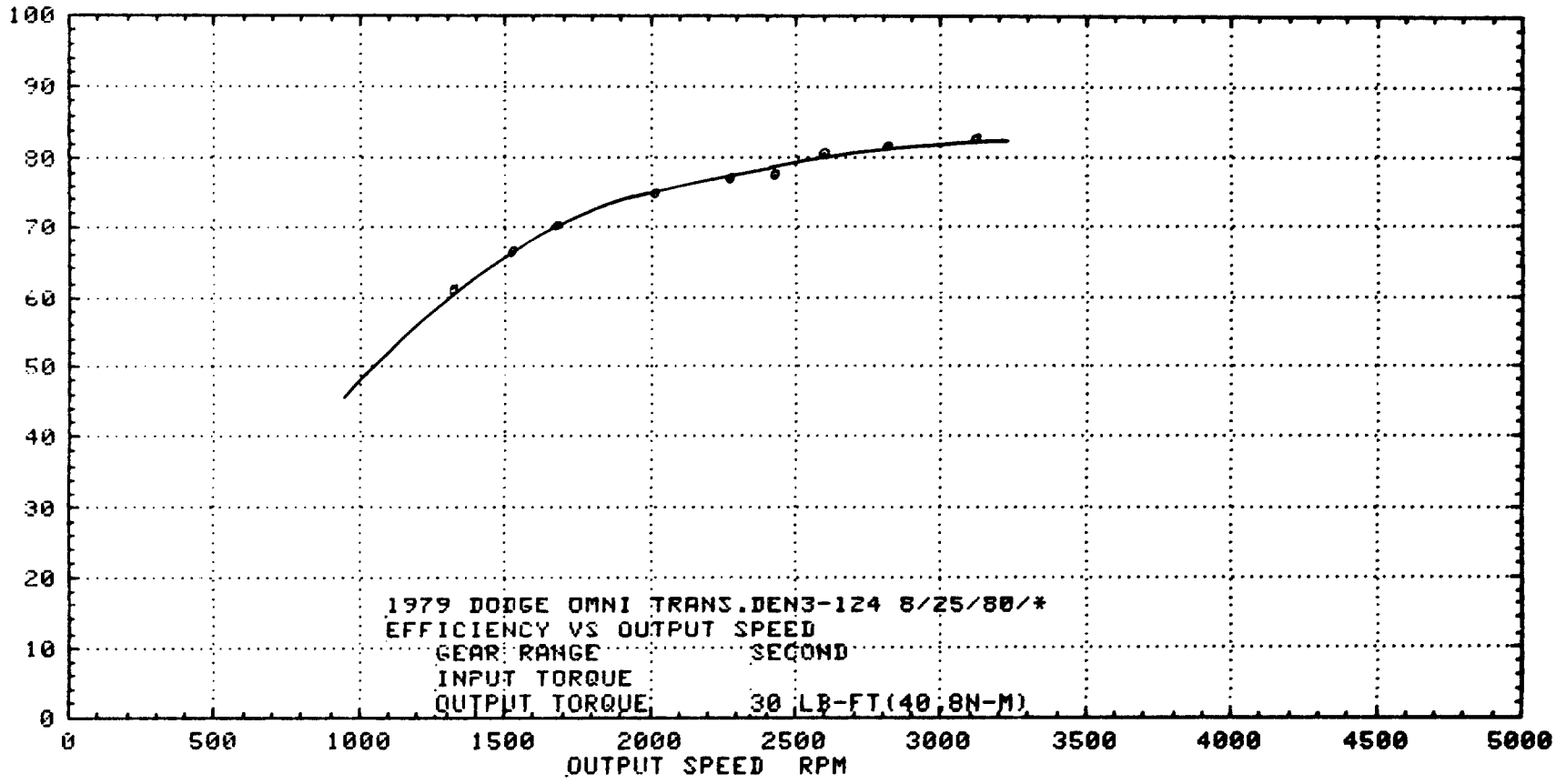

EFFICIENCY %
100
40
30
20
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)

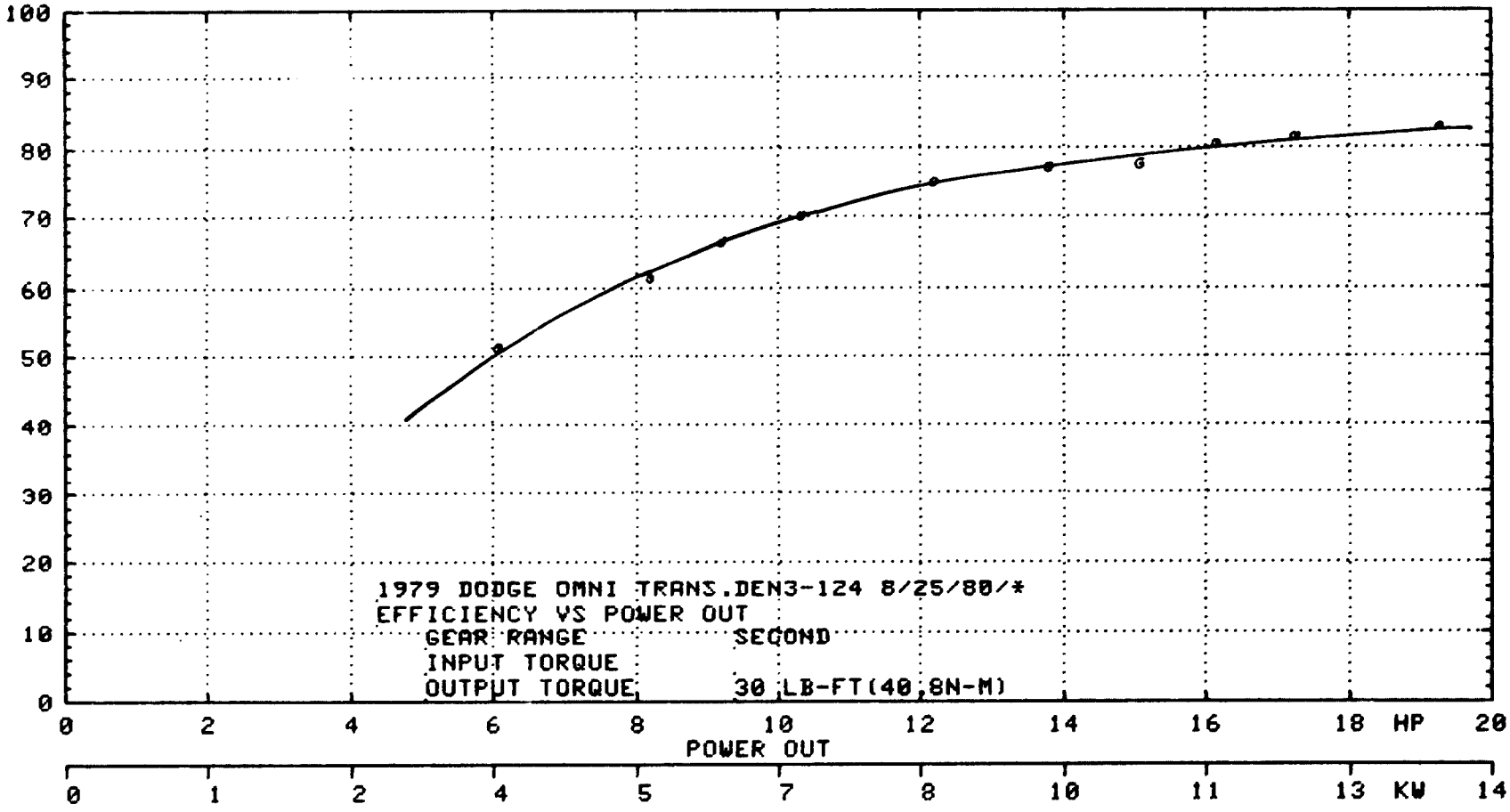
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE 20 LB-FT(27.2N-M)
OUTPUT TORQUE
POWER OUT
EFFICIENCY %
HP
KW


TORQUE RATIO To/Ti
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)

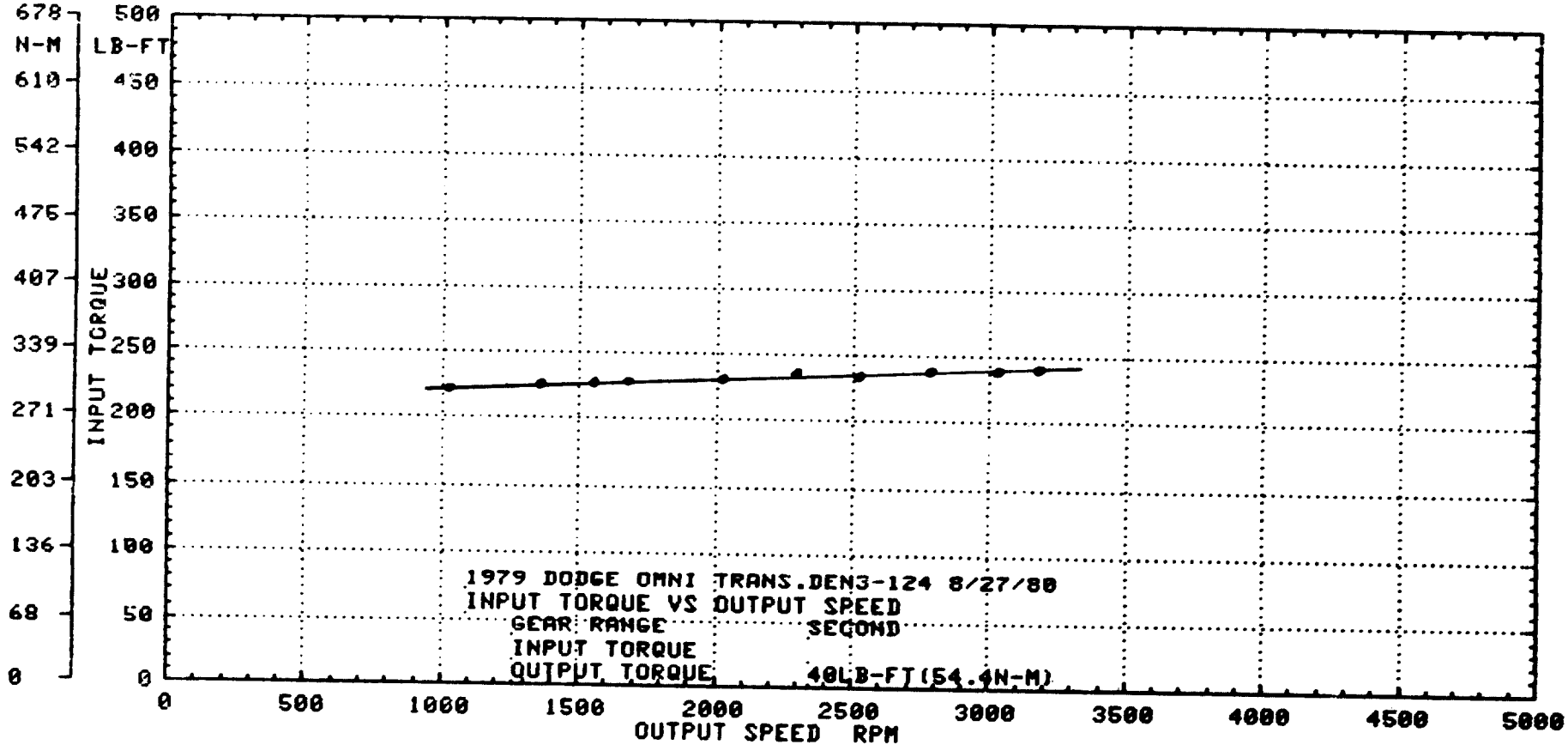

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

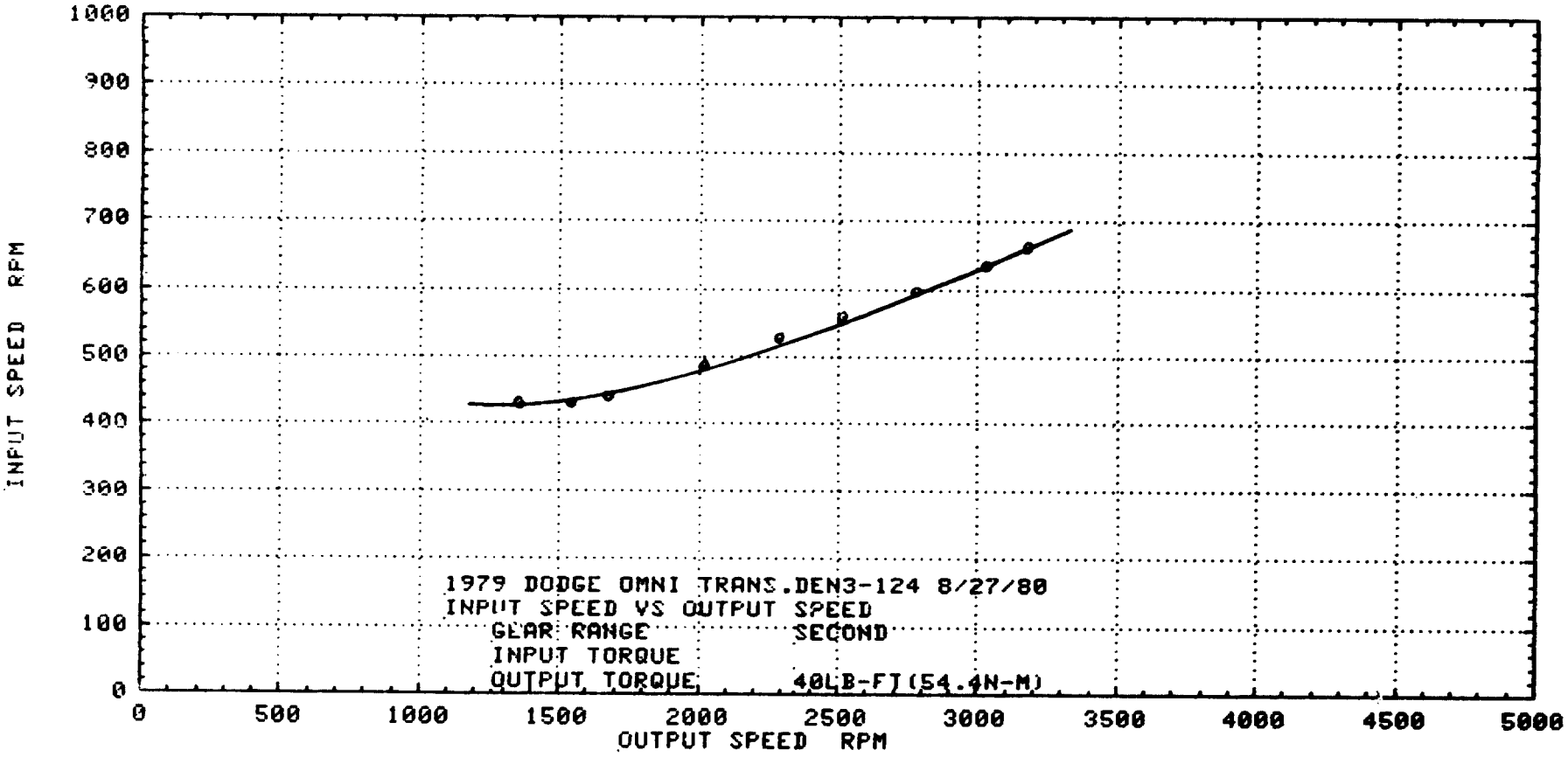

1000
900
800
700
600
500
400
300
200
100
0
INPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)

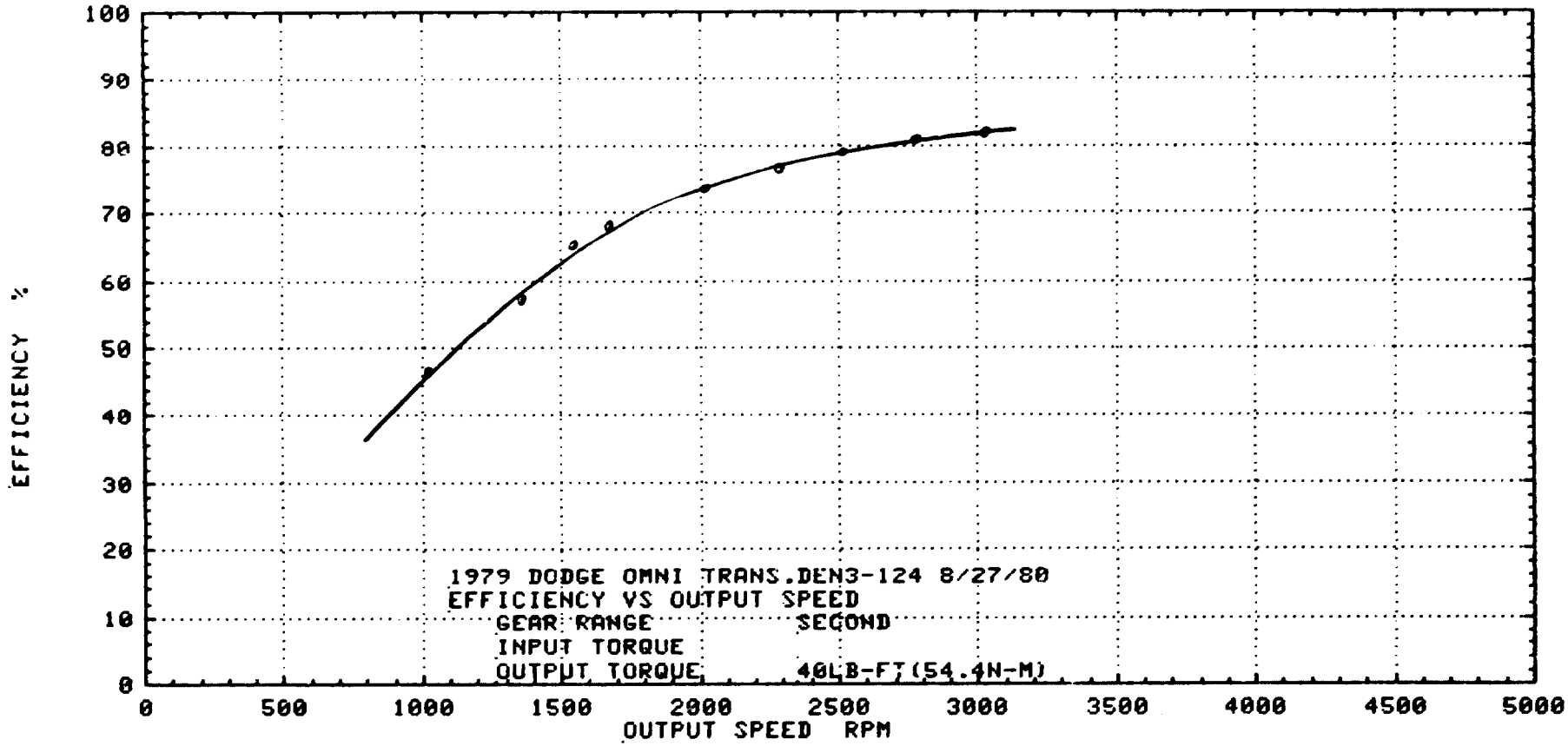

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)

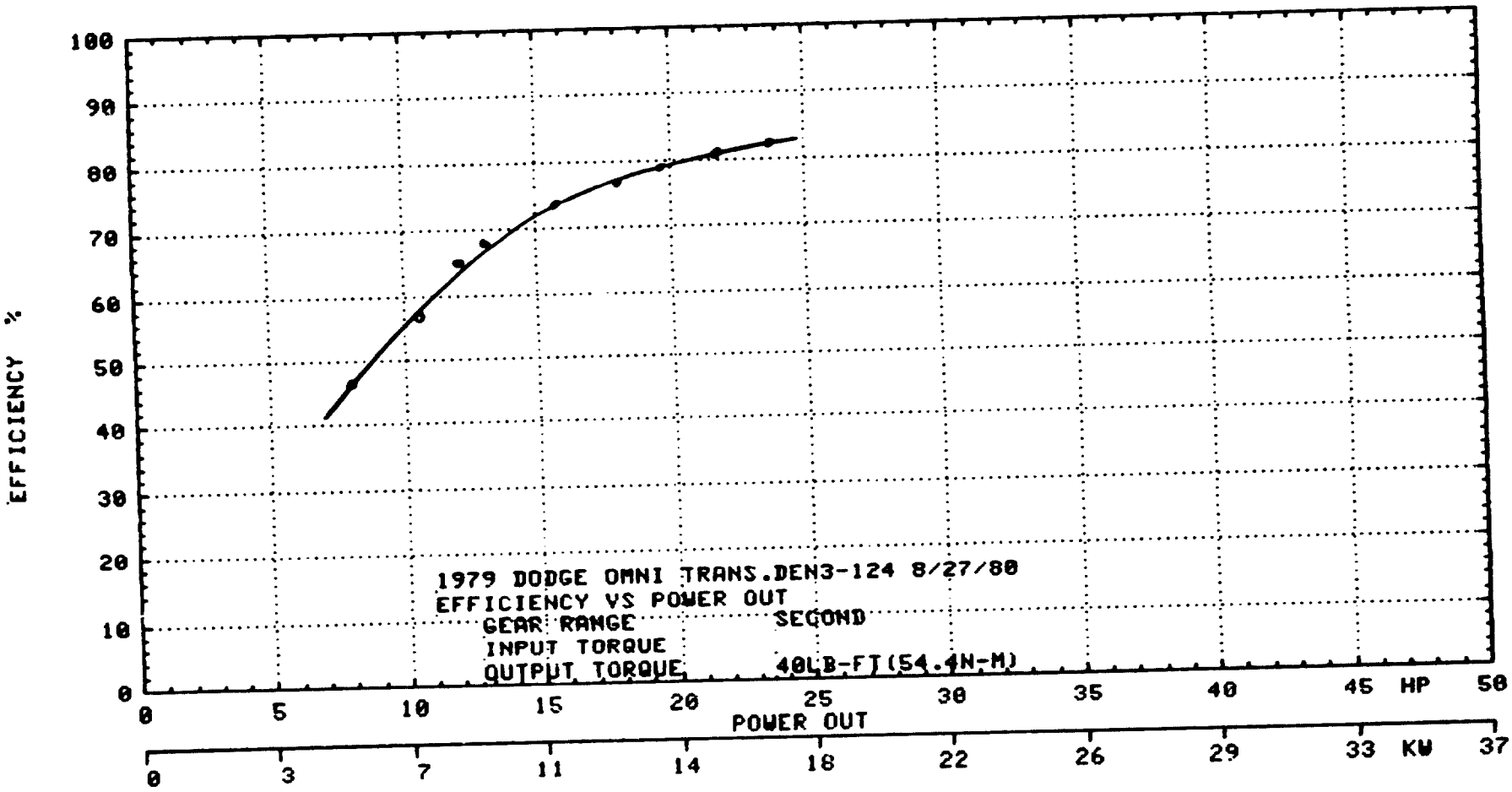

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/25/80/*
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)
0 2 4 6 8 10 12 14 16 18 HP 20
POWER OUT
0 1 2 4 5 7 8 10 11 13 KW 14

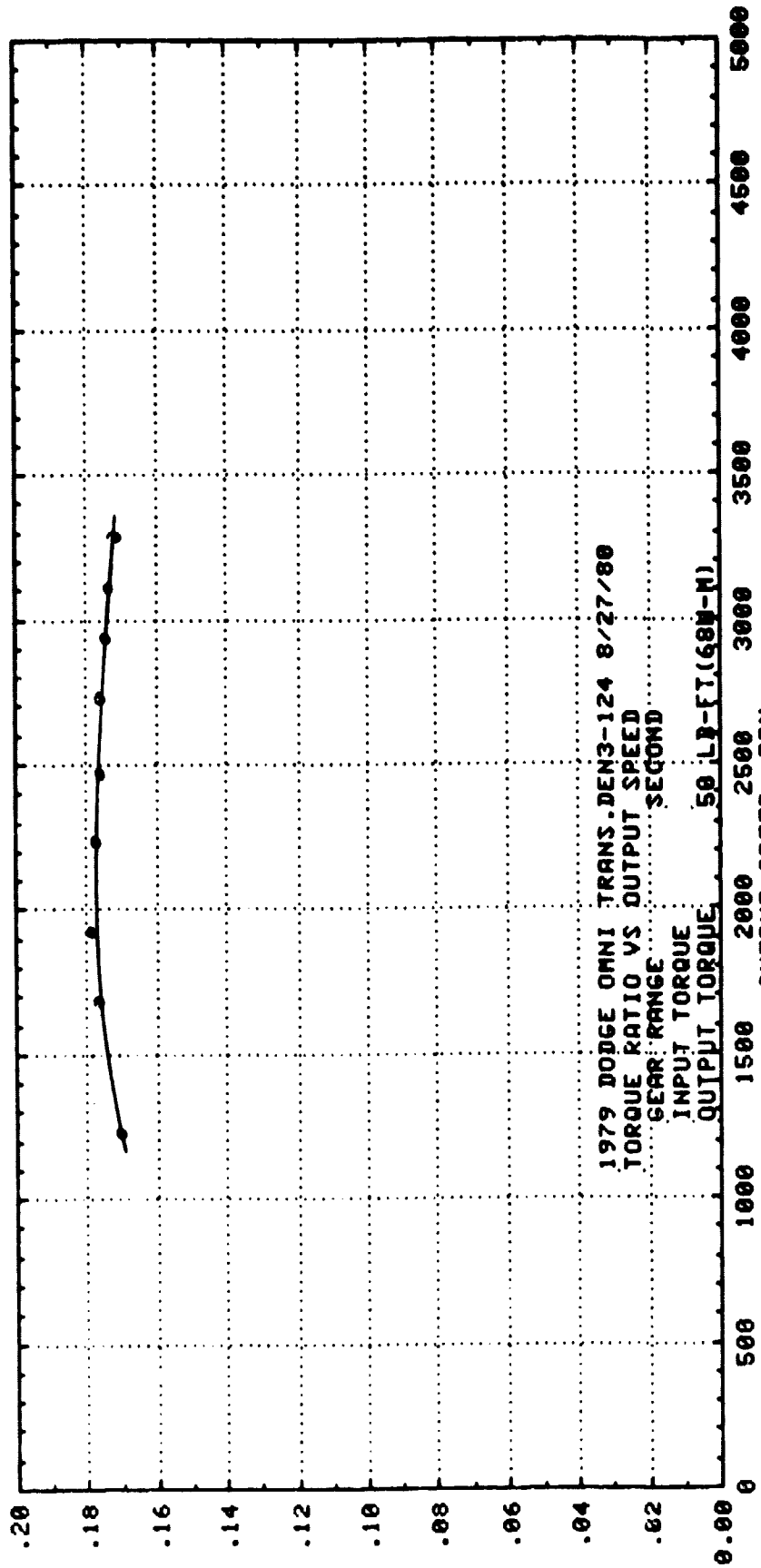
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 40LB-FT(54.4N-M)
OUTPUT TORQUE
TORQUE RATIO To/Ti
OUTPUT SPEED RPM
0.00
.02
.04
.06
.08
.10
.12
.14
.16
.18
.23
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000


678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 40LB-FT(54.4N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

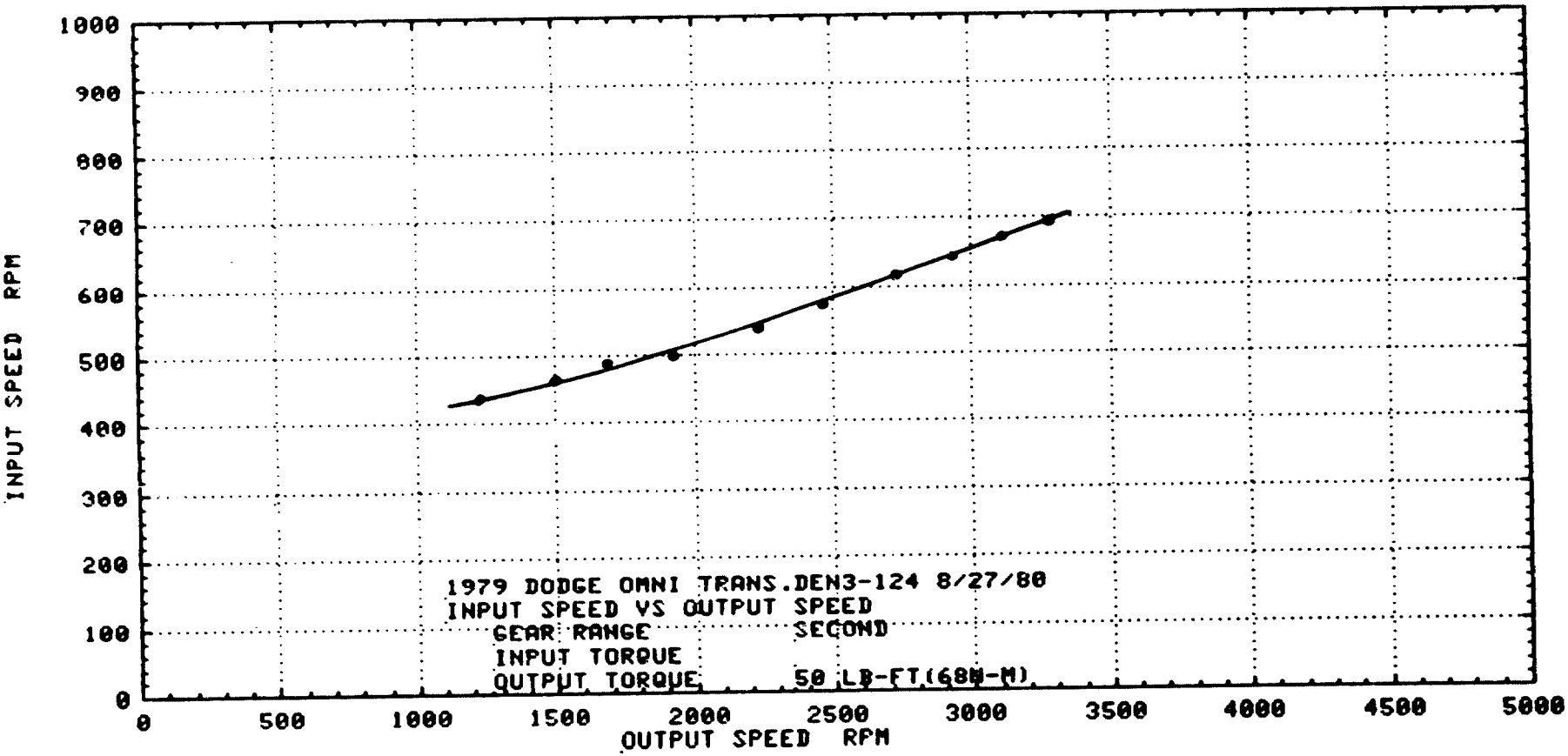

INPUT SPEED RPM
1000
900
800
700
600
500
400
300
200
100
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 40LB-FT(54.4N-M)

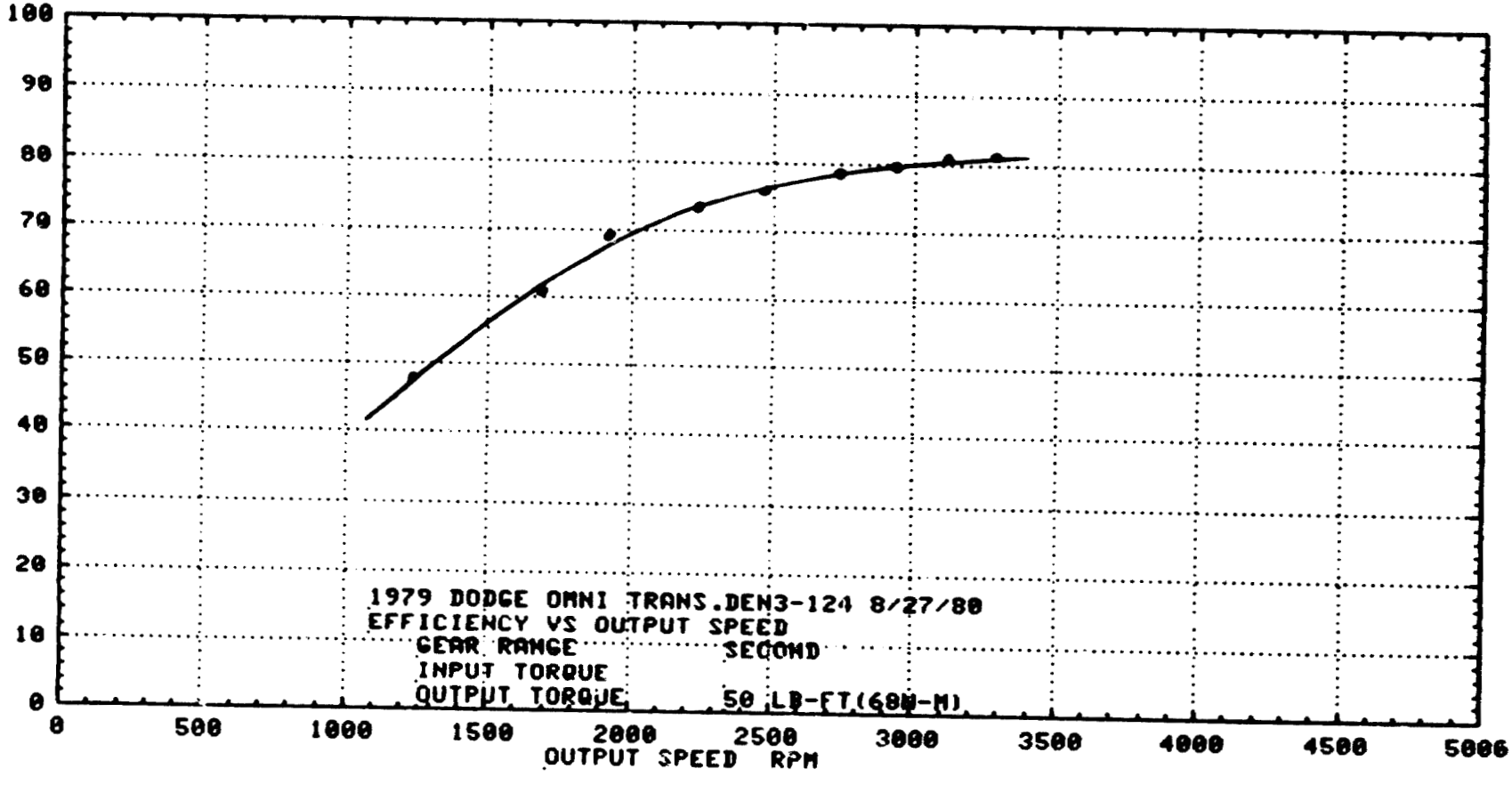

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 40LB-FT(54.4N-M)

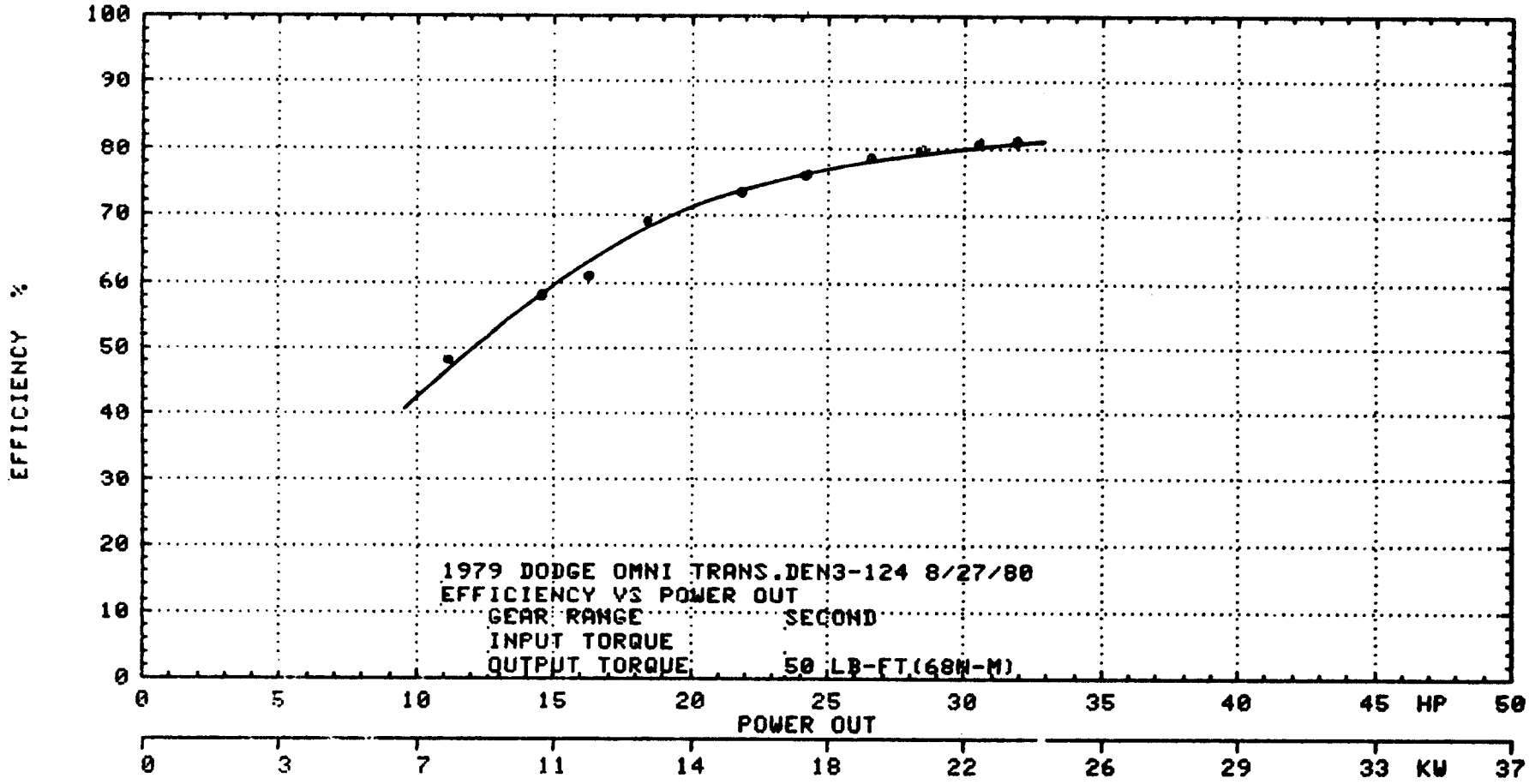

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 40LB-FT(54.4N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

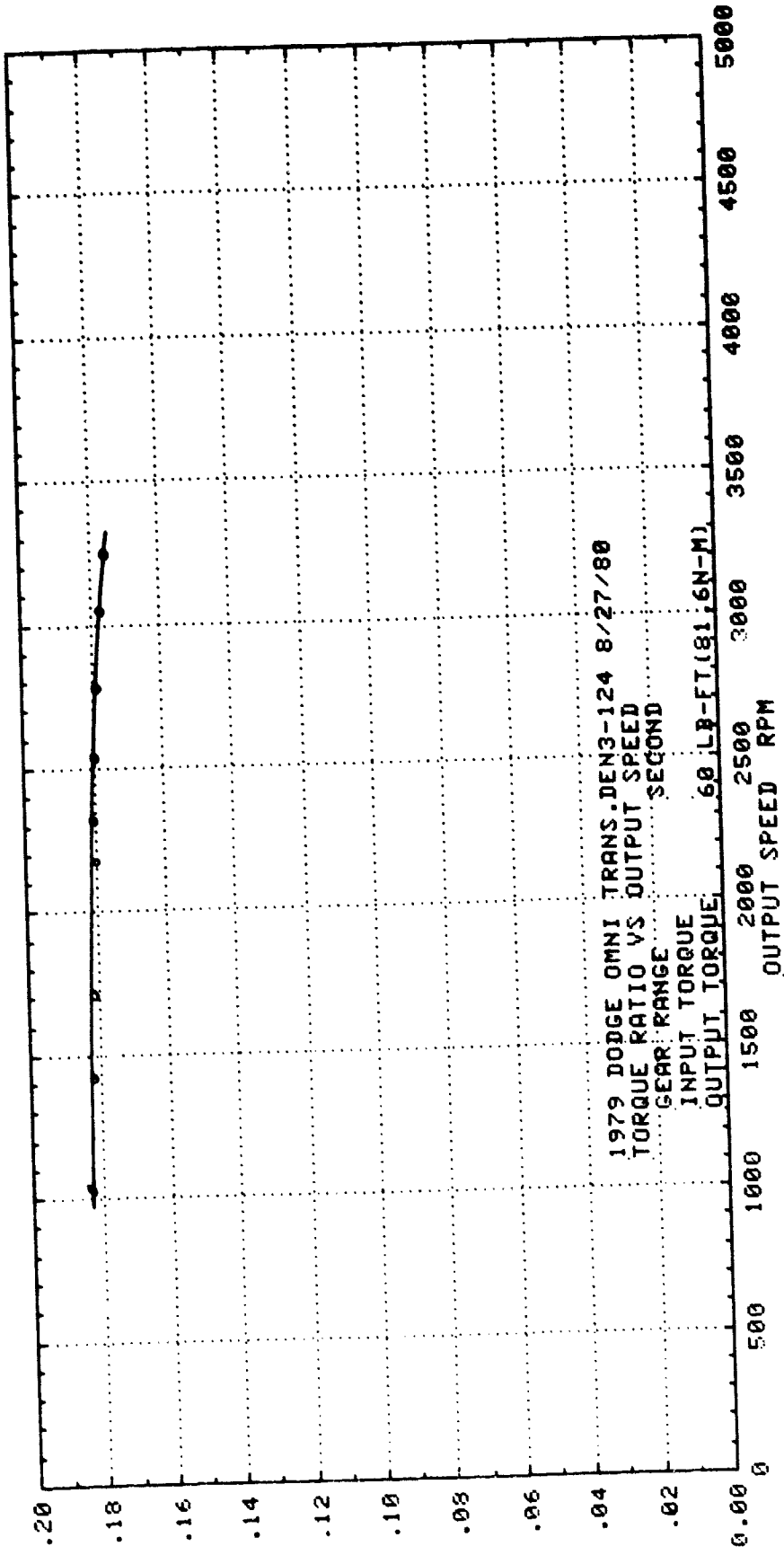

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT (68N-M)
OUTPUT SPEED RPM
TORQUE RATIO To/Ti
0.00
.02
.04
.06
.08
.10
.12
.14
.16
.18
.20
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000

678
N-M
610
542
475
407
339
271
203
136
68
0
LB-FT
500
450
400
350
300
250
200
150
100
50
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

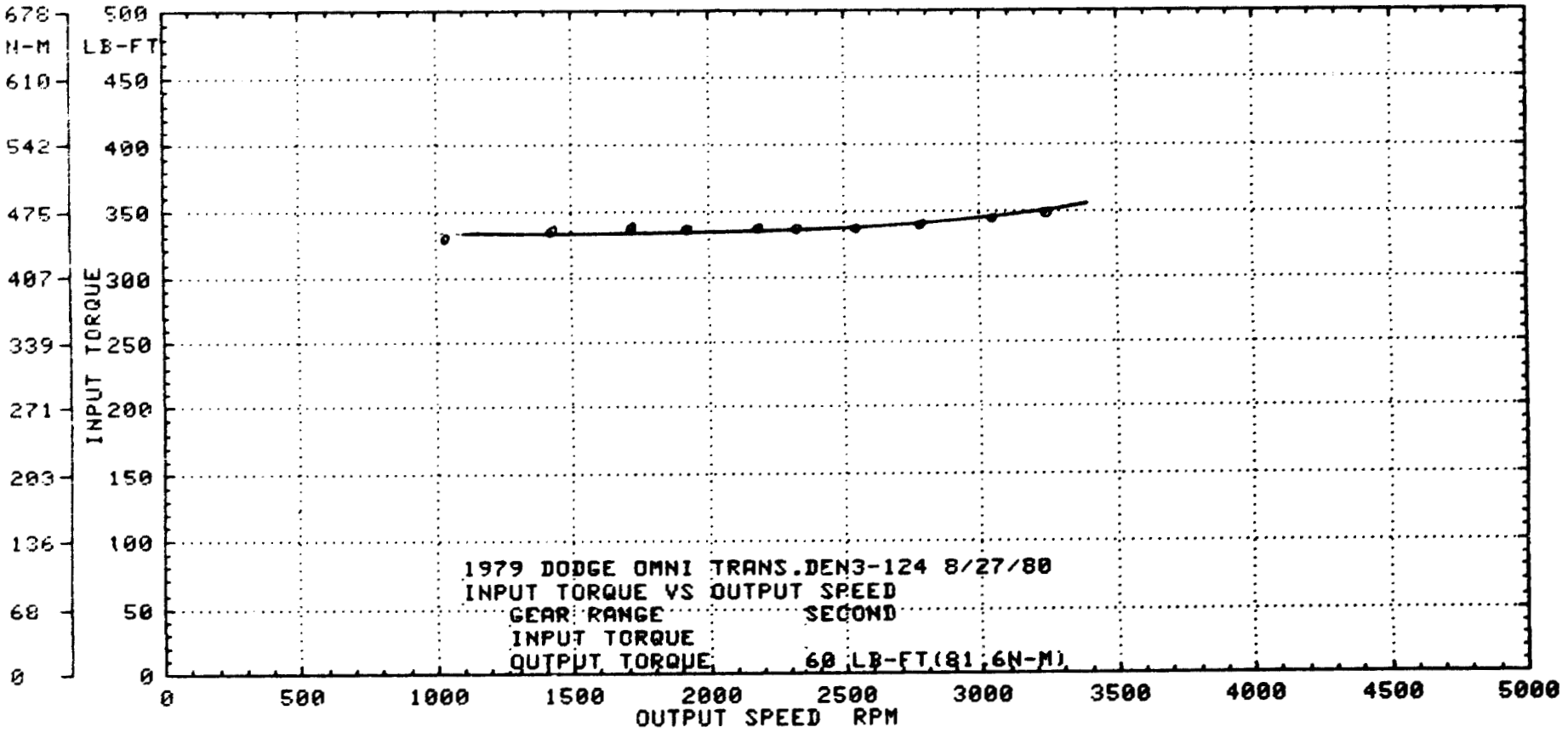

1000
900
800
700
600
500
400
300
200
100
0
INPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68N-M)

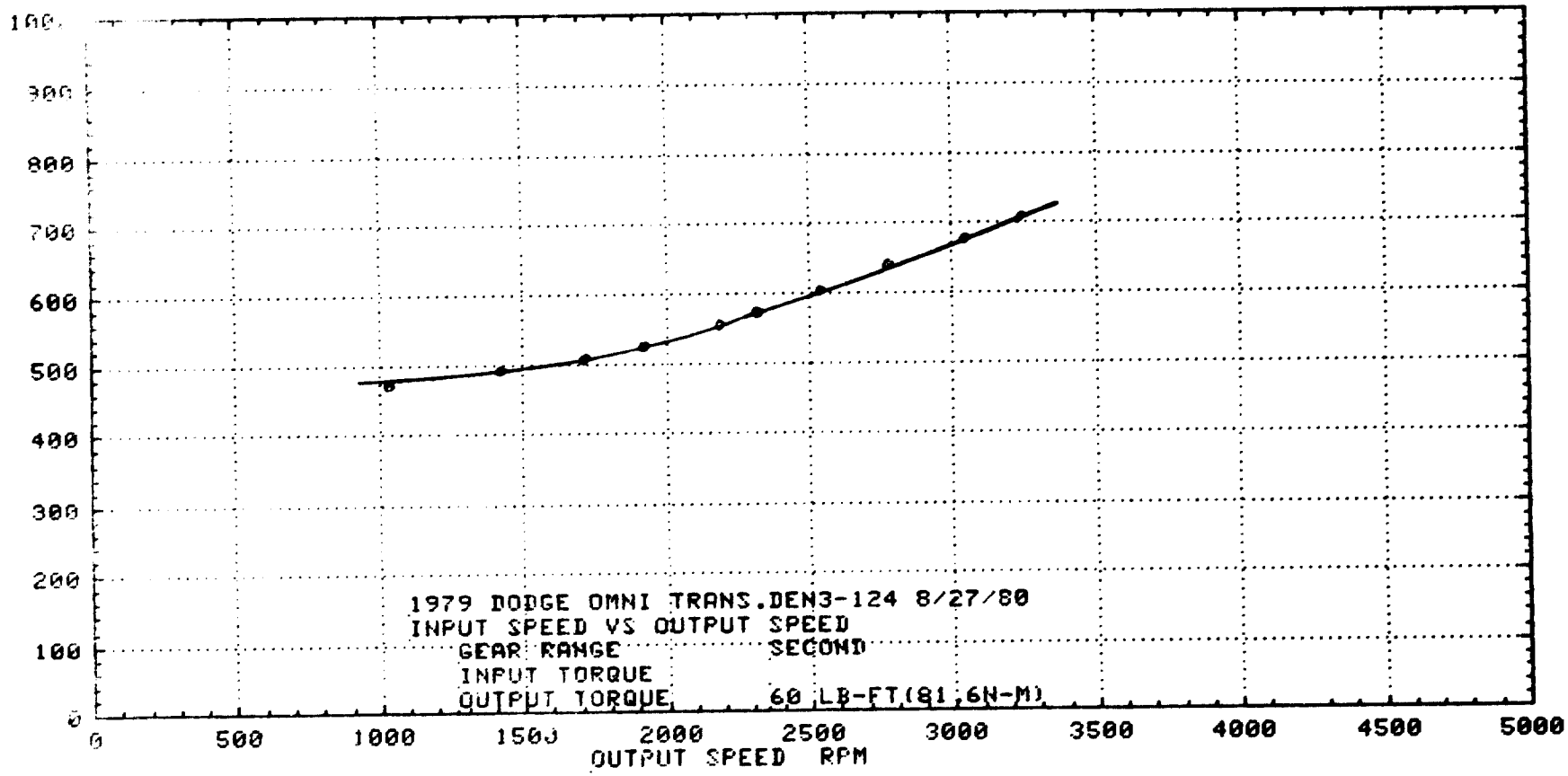

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68N-M)

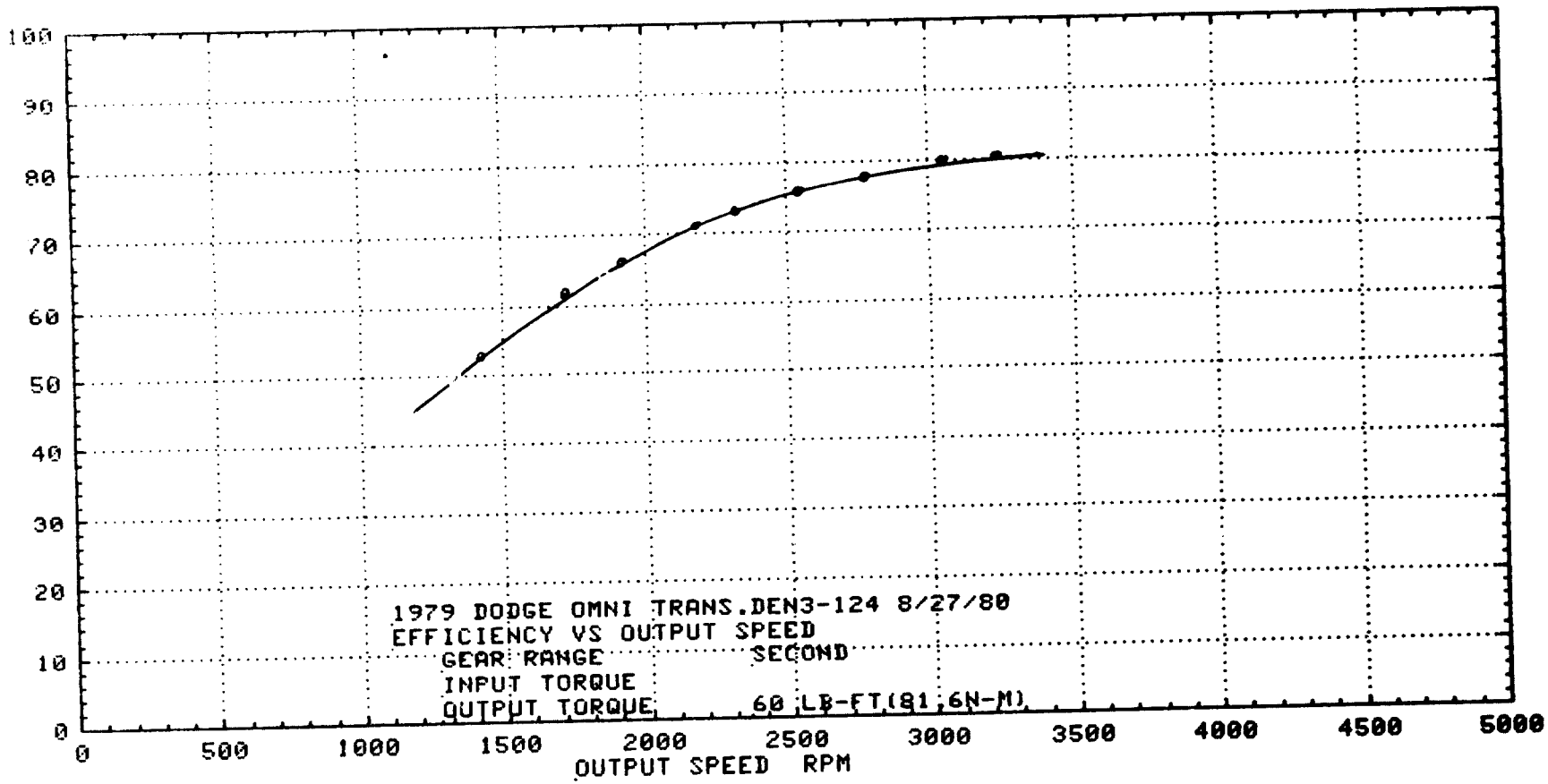

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

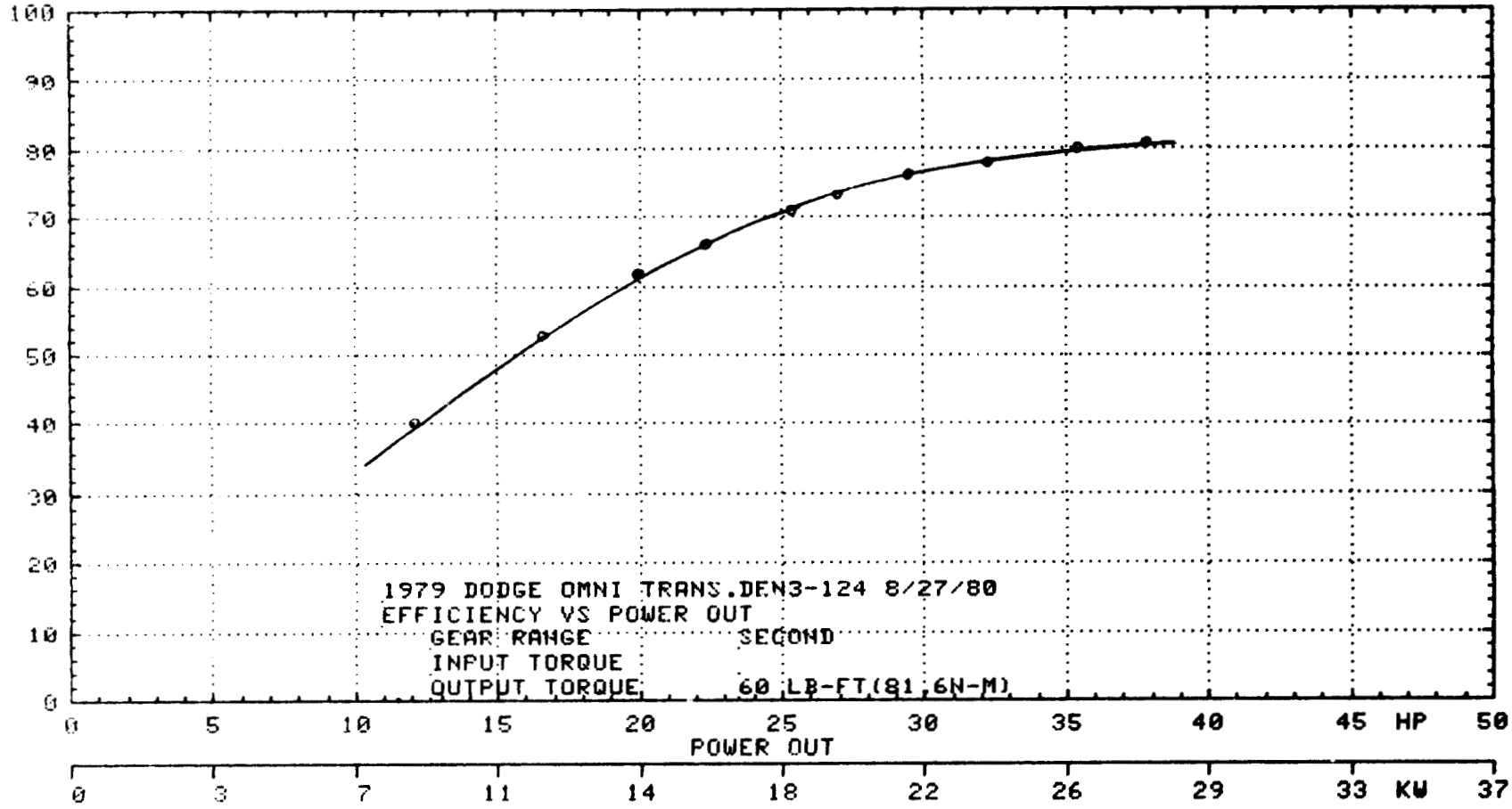

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE 60 LB-FT(81.6N-M)
OUTPUT TORQUE
TORQUE RATIO To/Ti
OUTPUT SPEED RPM
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000

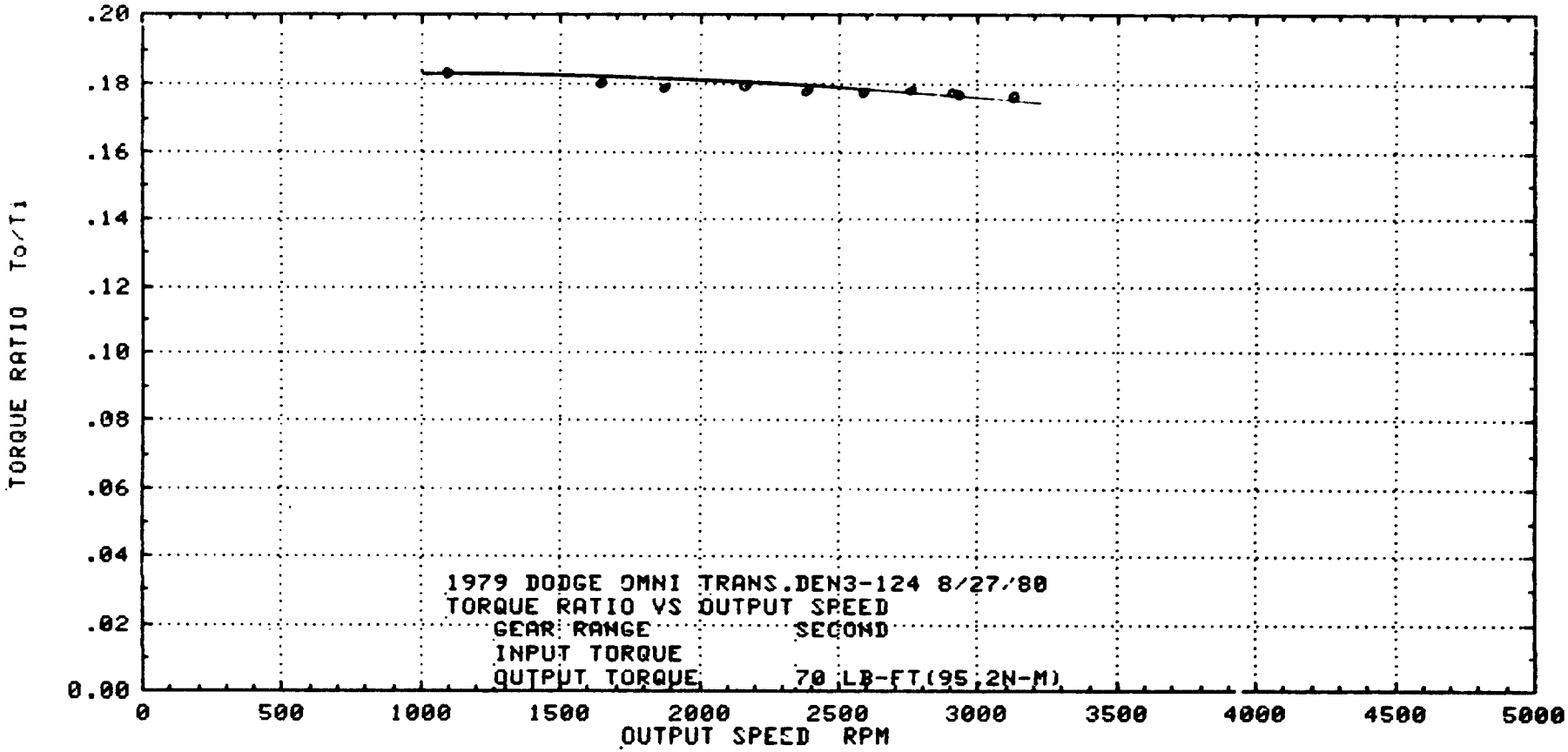
QUALITY

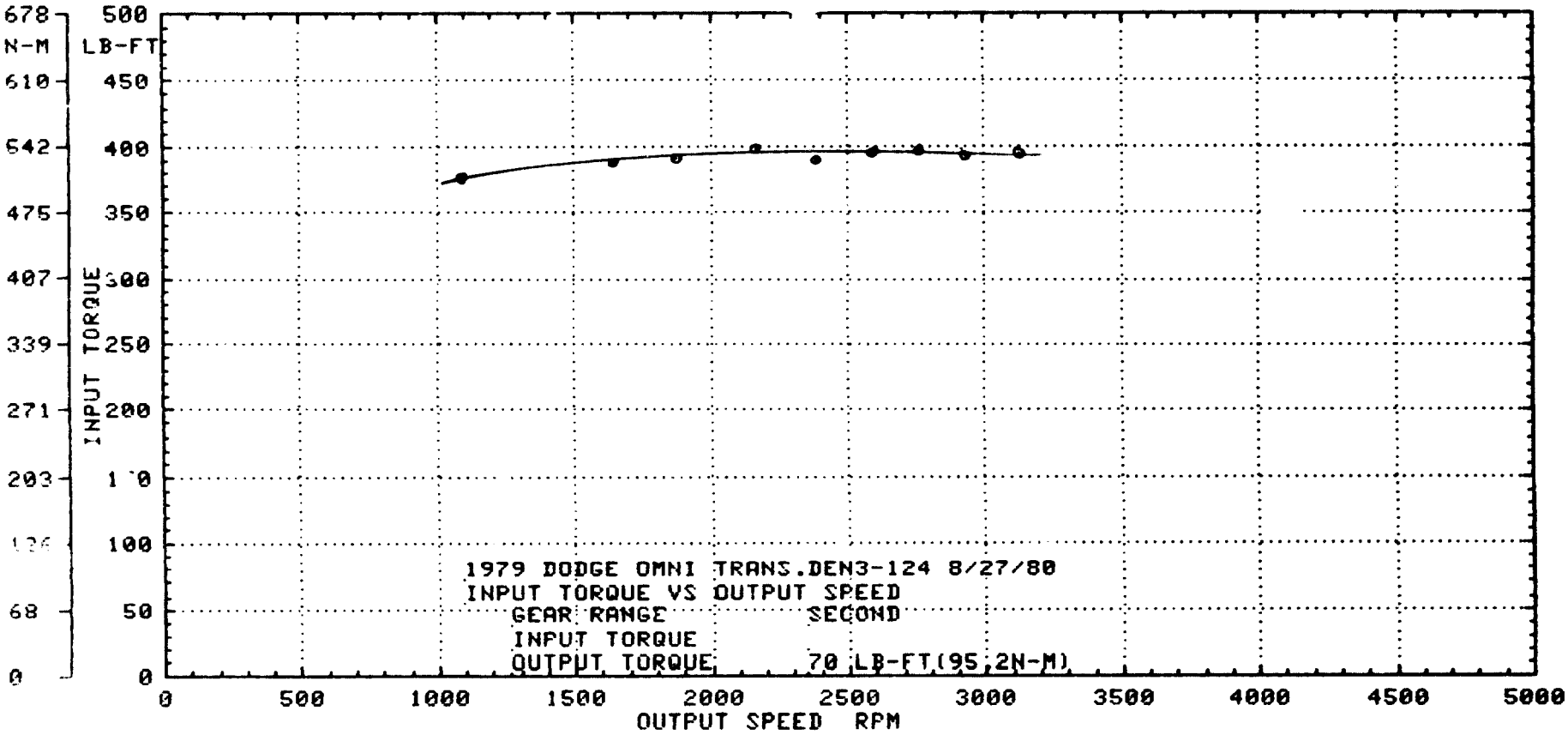

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

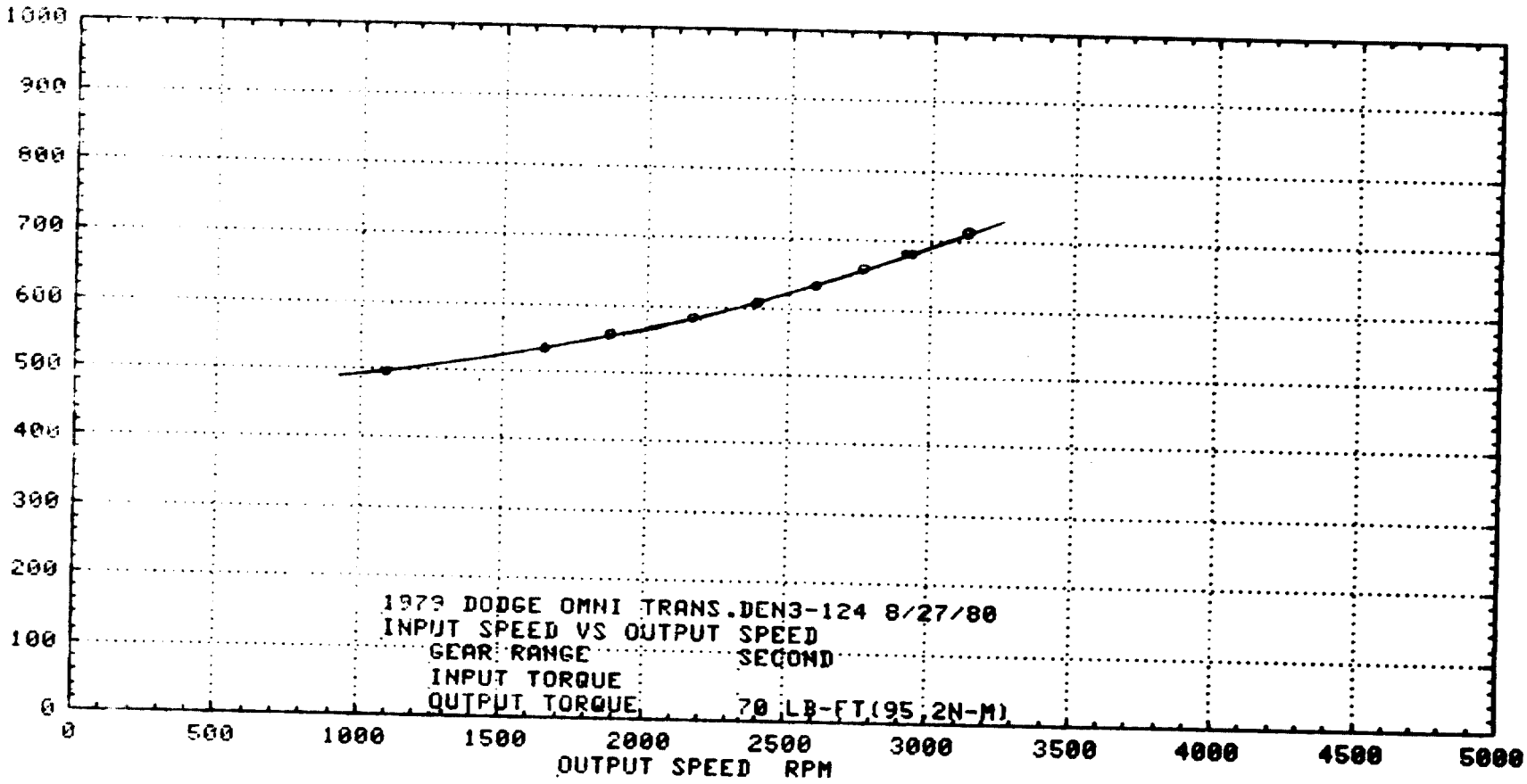

INPUT SPEED RPM
100
300
800
700
600
500
400
300
200
100
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)

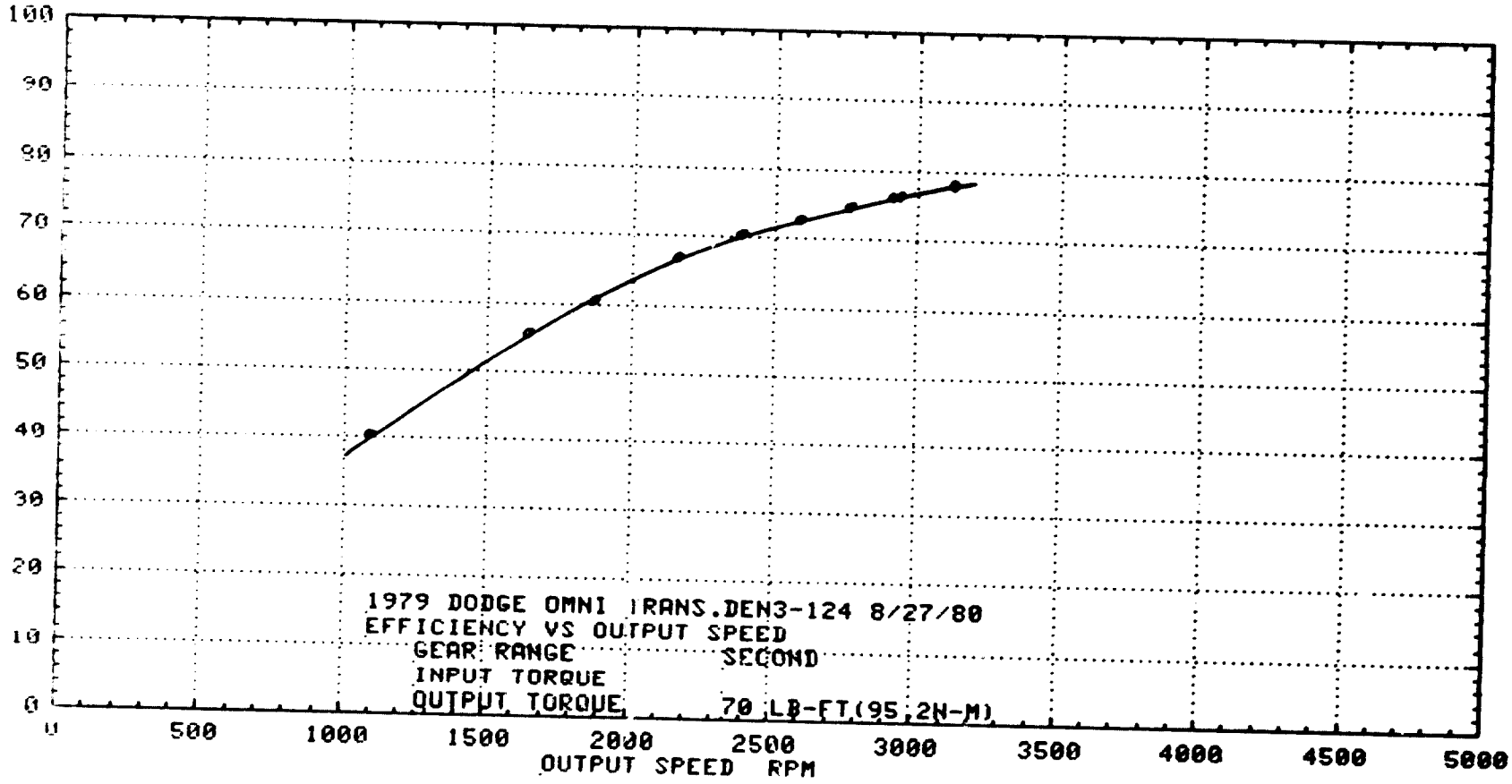

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)

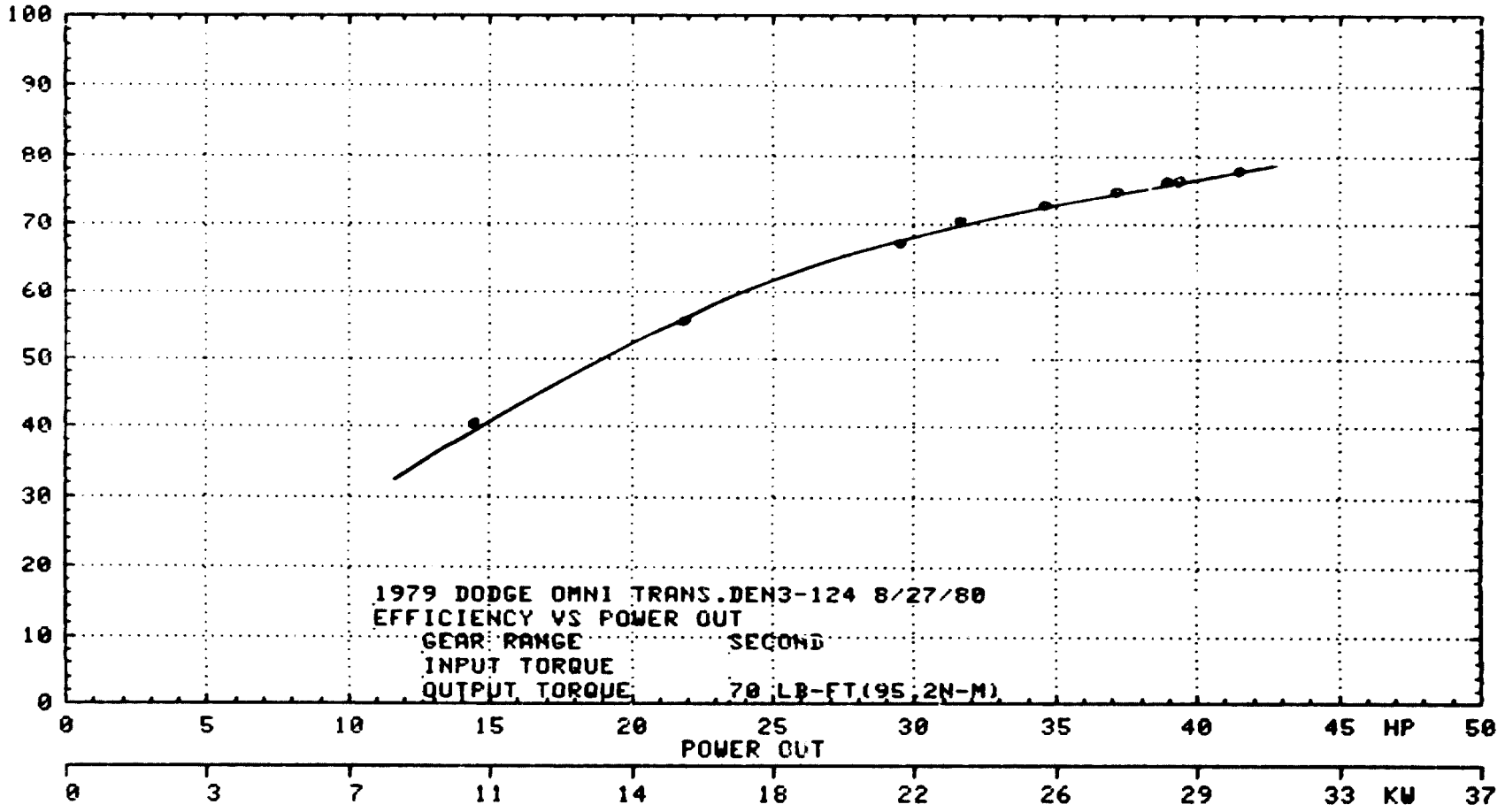

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37


TORQUE RATIO To/Ti
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)

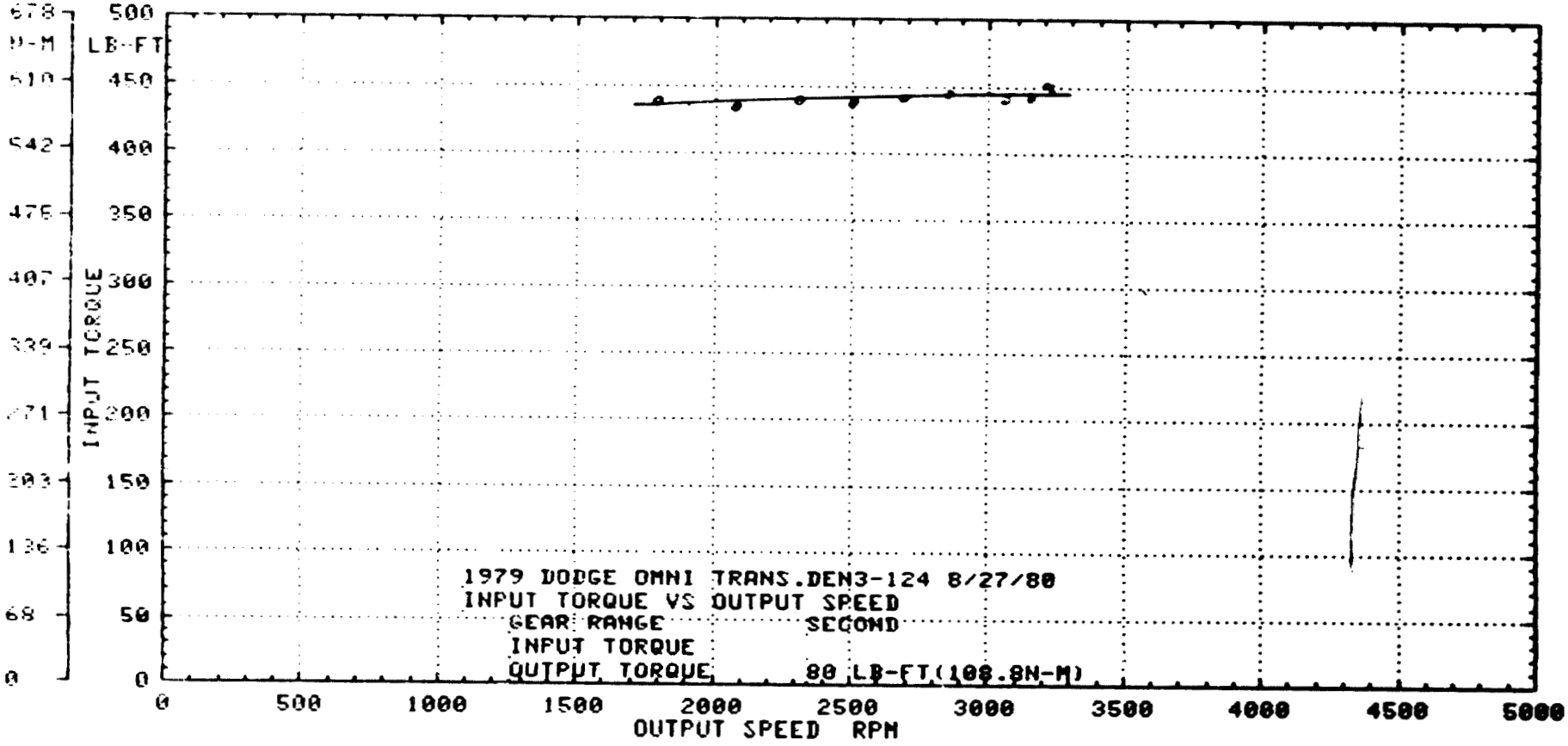

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

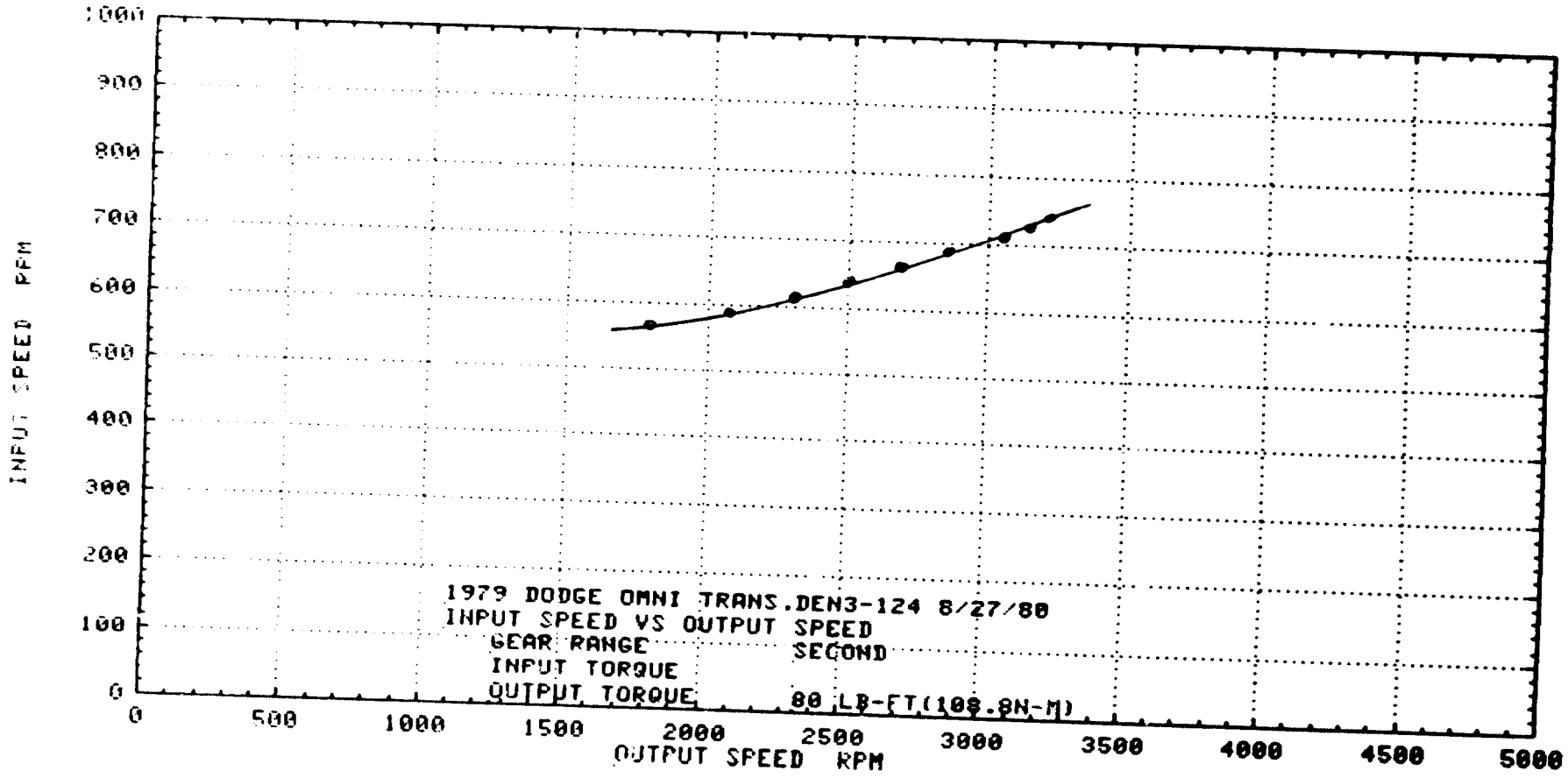

1000
900
800
700
600
500
400
300
200
100
0
INPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

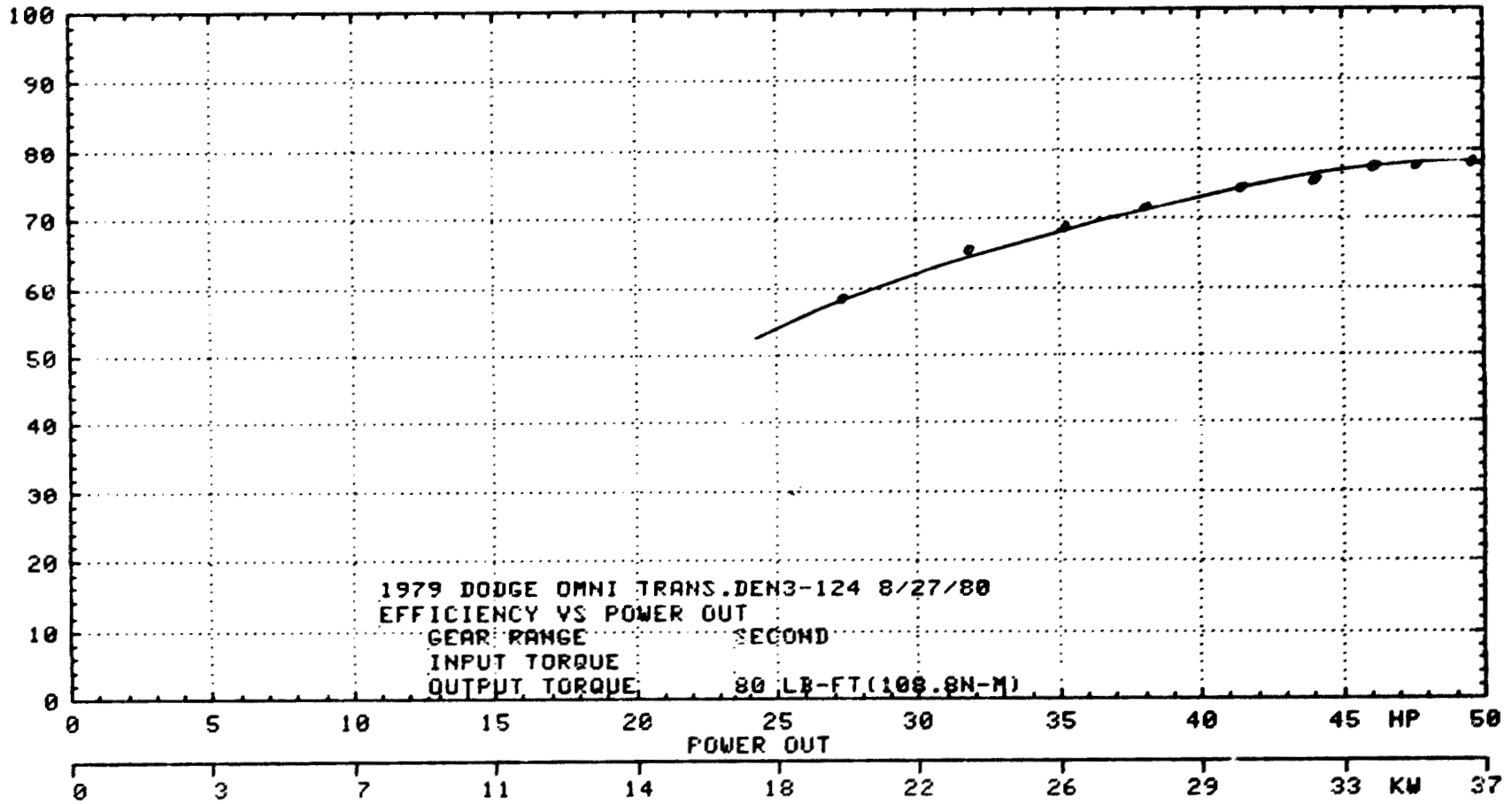
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)
TORQUE RATIO To/Ti
OUTPUT SPEED RPM
0.00
.02
.04
.06
.08
.10
.12
.14
.16
.18
.20
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000


678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM


INPUT SPEED RPM
1000
900
800
700
600
500
400
300
200
100
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)
OUTPUT SPEED RPM
EFFICIENCY %
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
10
20
30
40
50
60
70
80
90
100

C-4


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE SECOND
INPUT TORQUE
OUTPUT TORQUE 80 LB-FT(108.8N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

COAST PERFORMANCE

3rd Gear

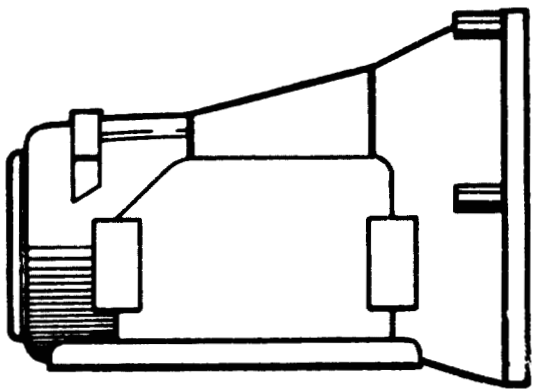
POOR QUALITY

Graphs Contained in This Section

Torque Ratio -vs- Output Speed
Output Torque -vs- Output Speed
Input Speed -vs- Output Speed
Efficiency -vs- Output Speed
Efficiency -vs- Power Out

Torque In

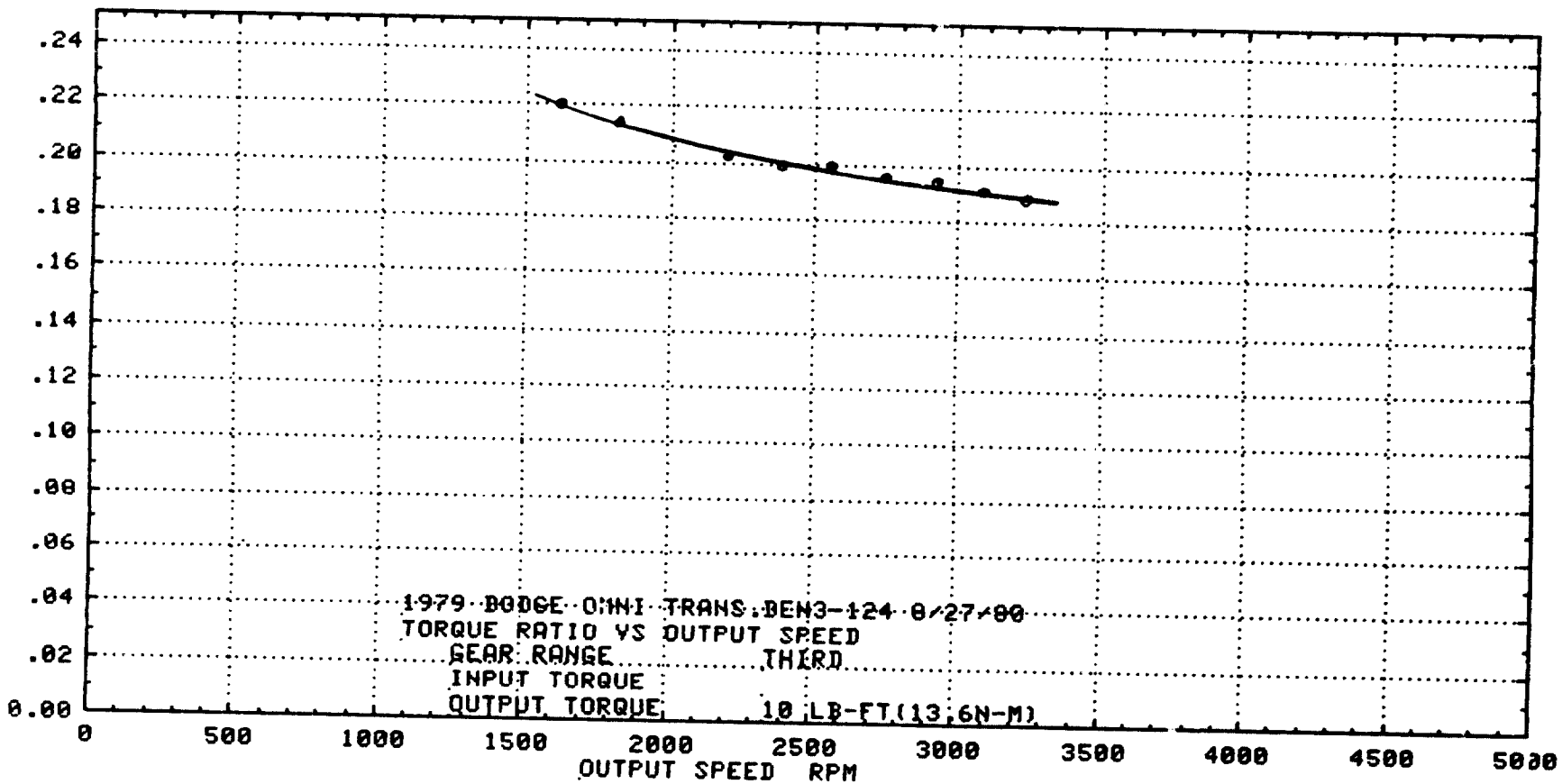
Speed In

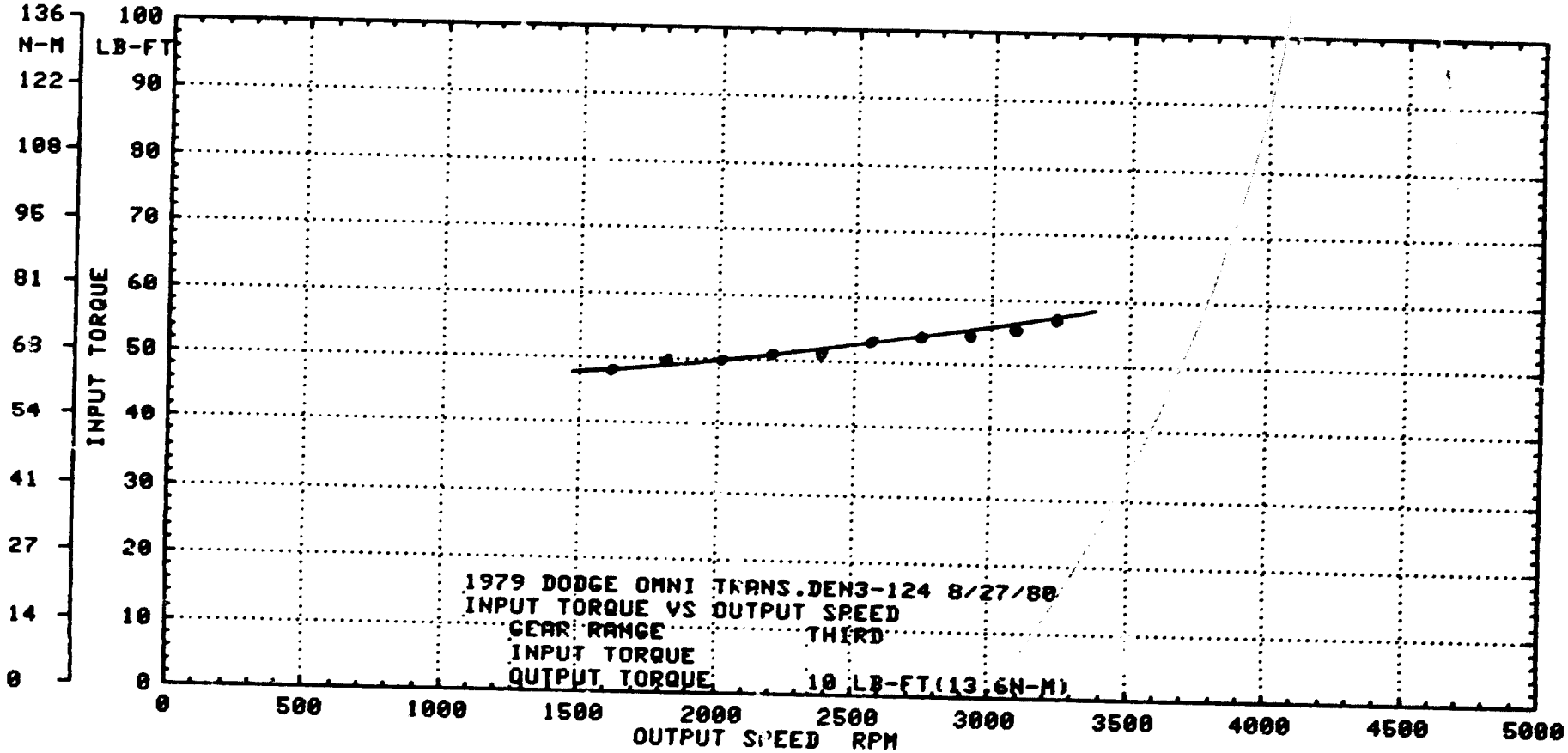


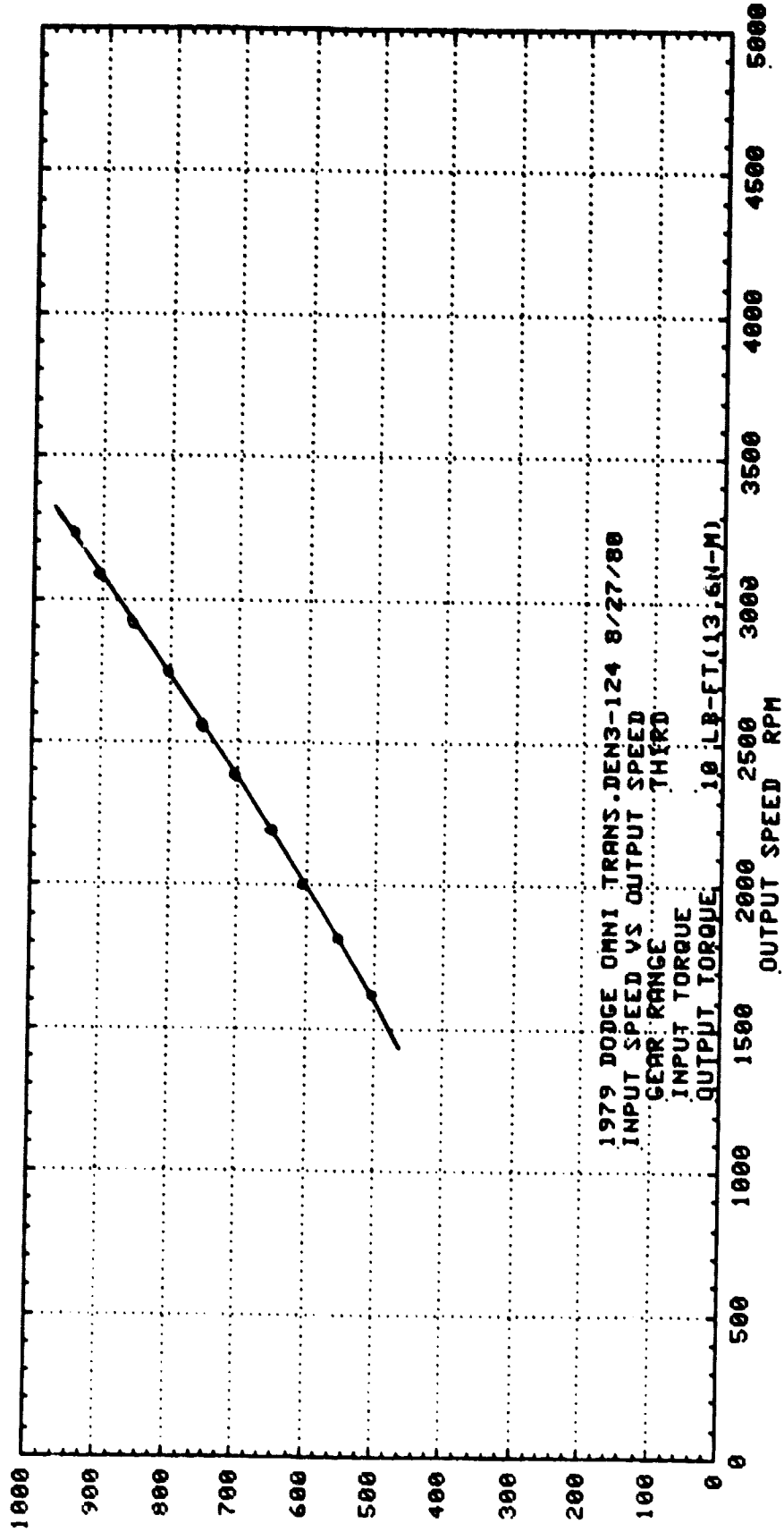
Torque Out

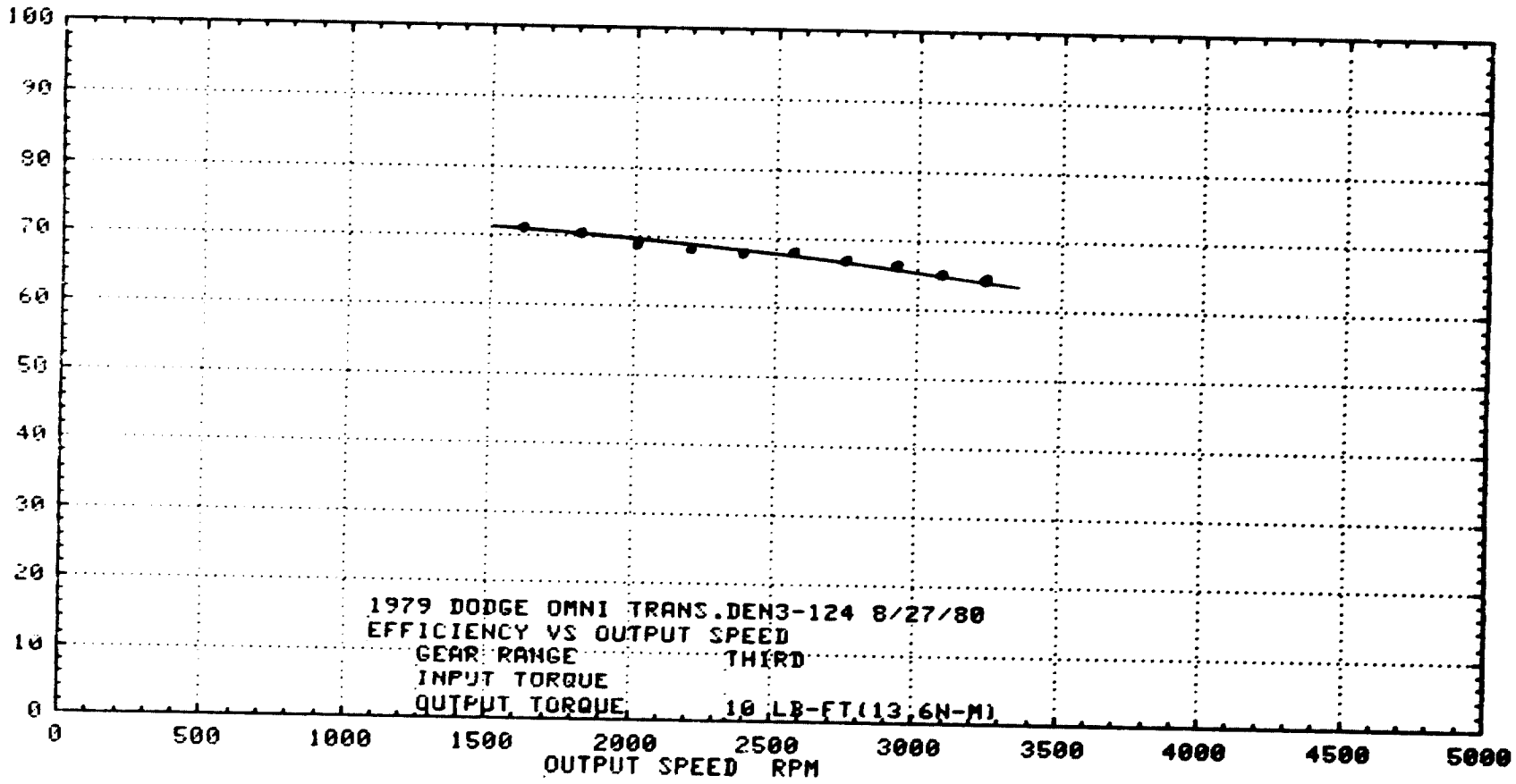
Speed Out

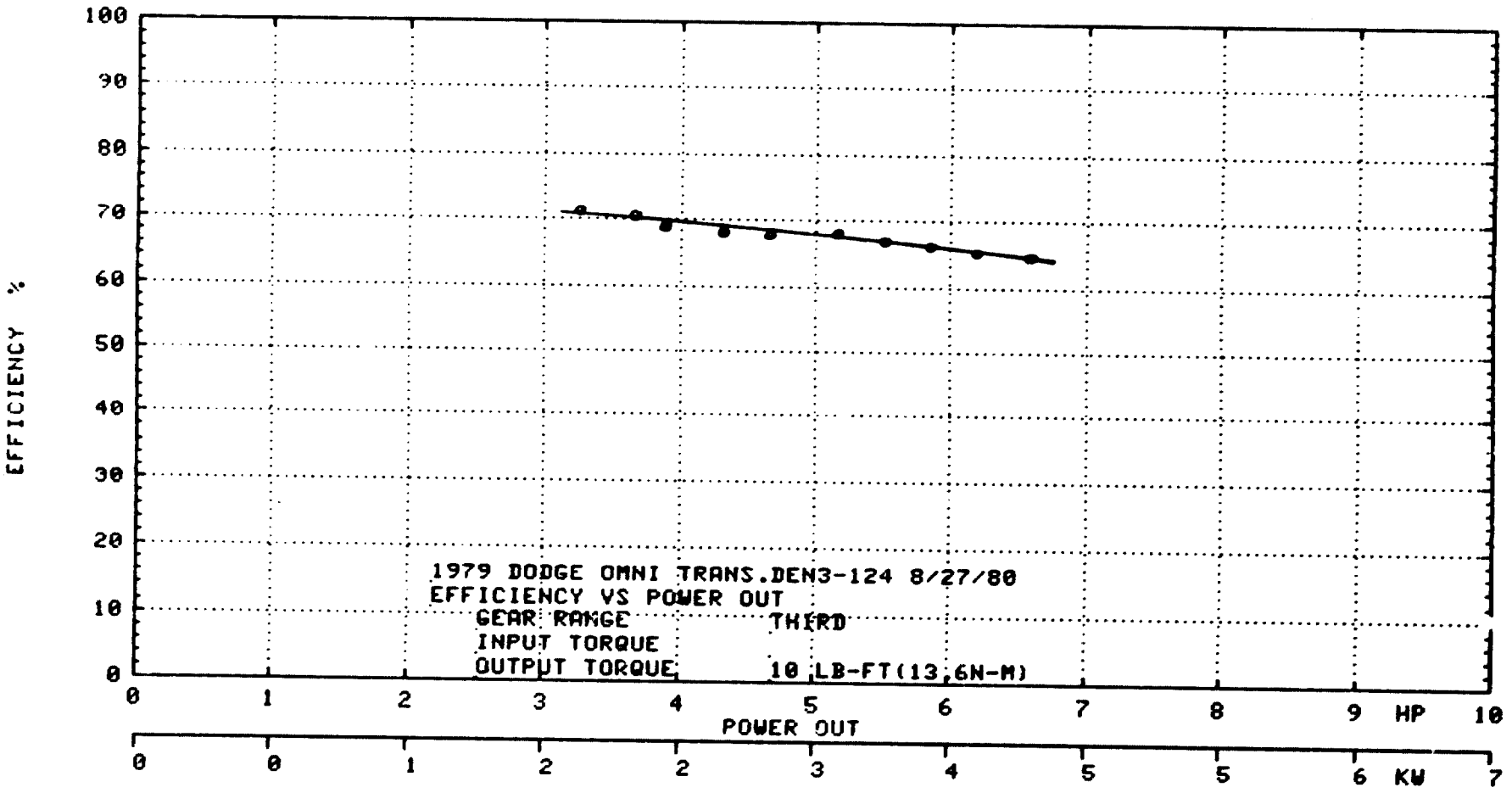
Coast Performance Tests

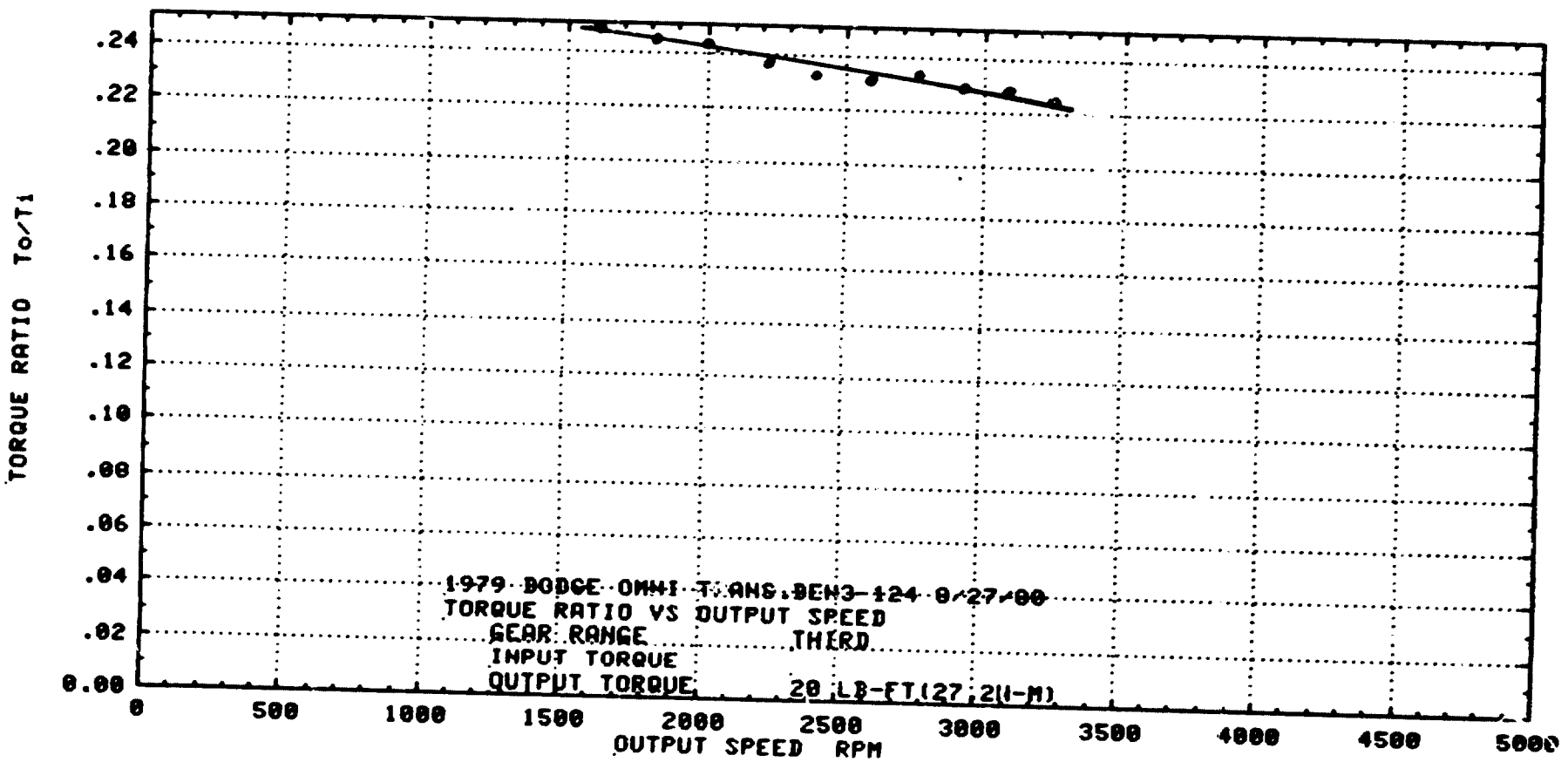

TORQUE RATIO To/Ti
.24
.22
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
0.00
1979 DODGE OMNI TRANS:DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

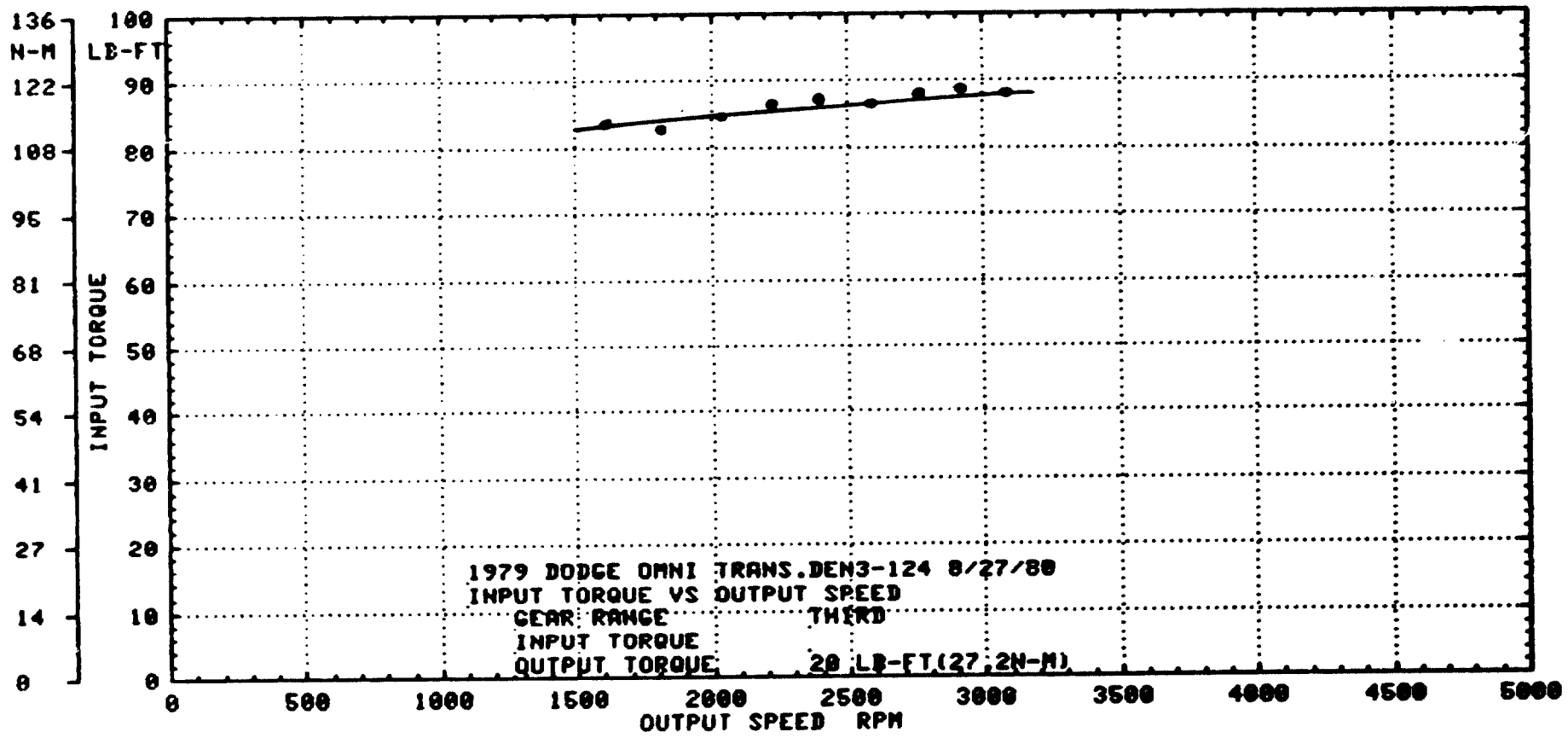

136
N-M
122
108
95
81
68
54
41
27
14
0
100
LB-FT
90
80
70
60
50
40
30
20
10
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

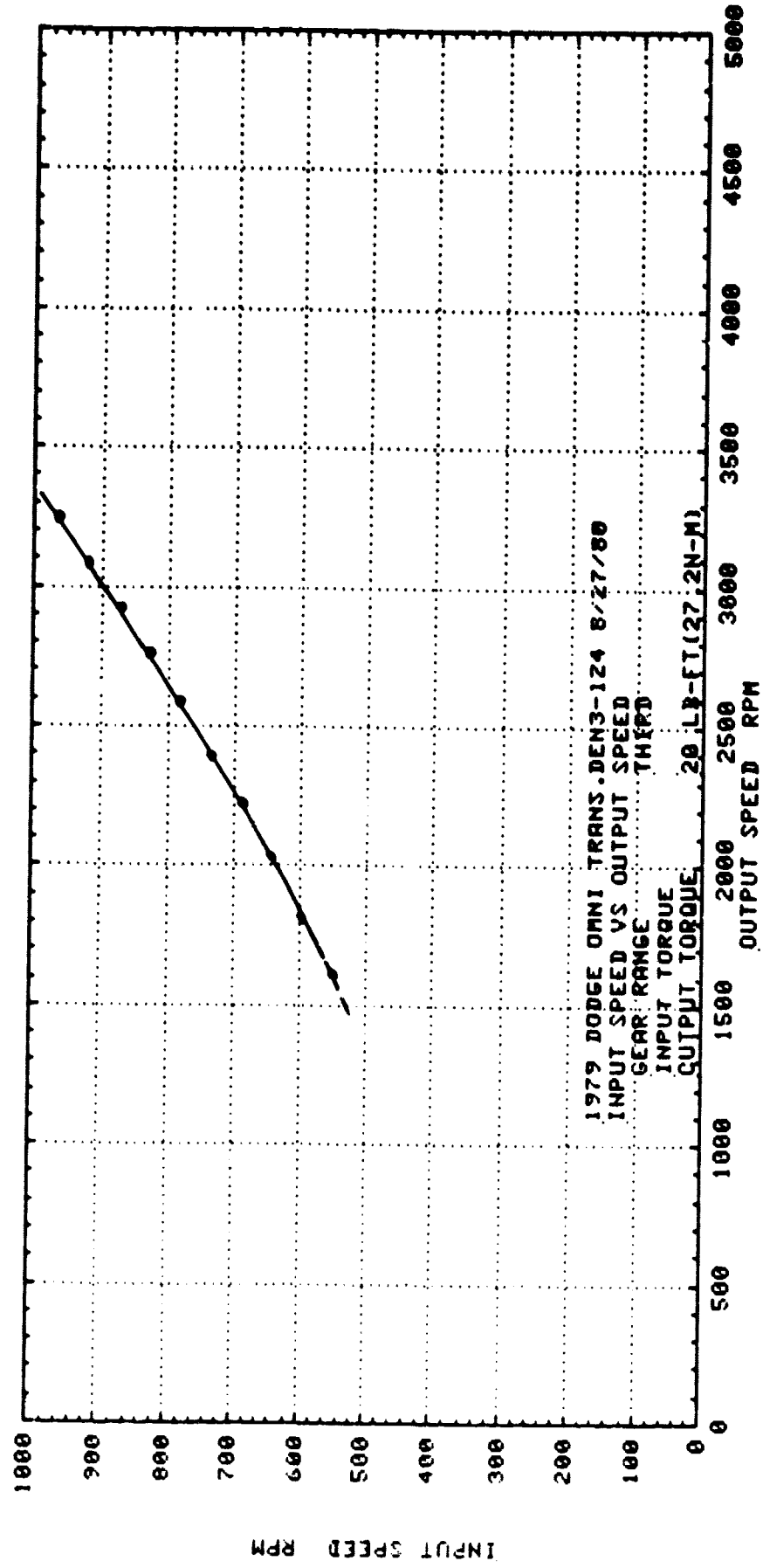

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
OUTPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
INPUT SPEED RPM
0
100
200
300
400
500
600
700
800
900
1000


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)

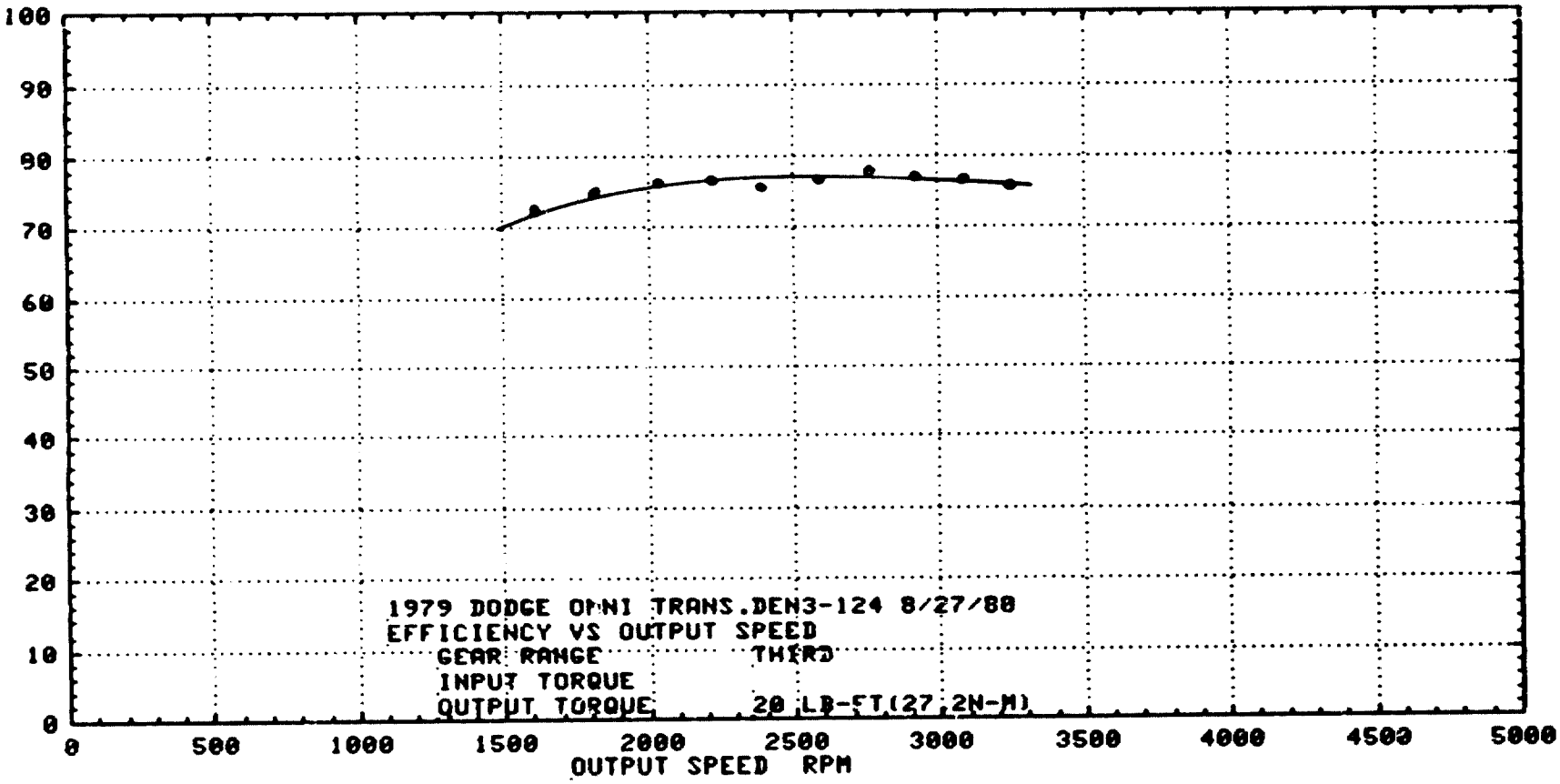

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 10 LB-FT(13.6N-M)
0 1 2 3 4 5 6 7 8 9 HP 10
POWER OUT
0 0 1 2 2 3 4 5 5 6 KW 7


TORQUE RATIO To/Ti
.24
.22
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)

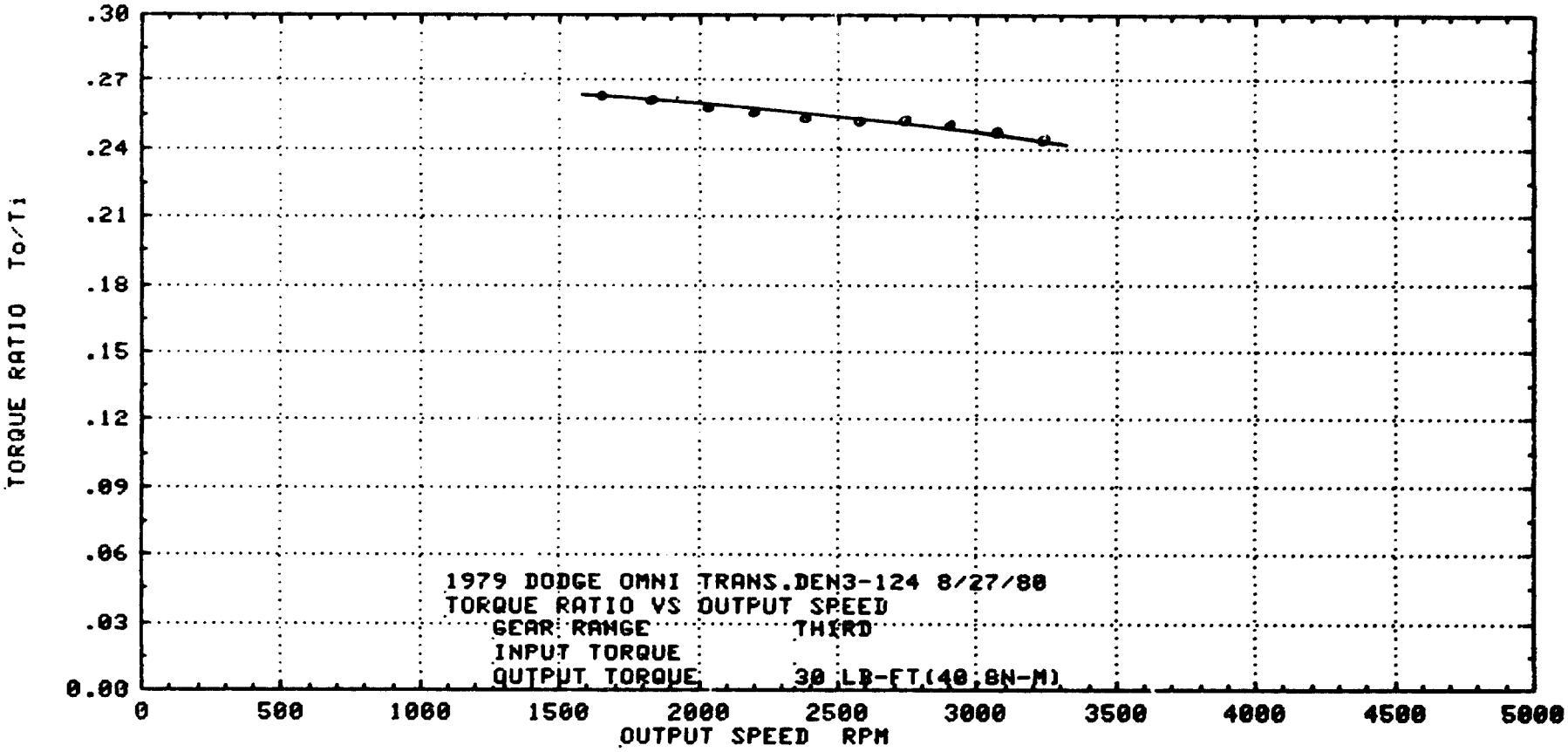

136
N-M
122
108
95
81
68
54
41
27
14
0
100
LB-FT
90
80
70
60
50
40
30
20
10
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

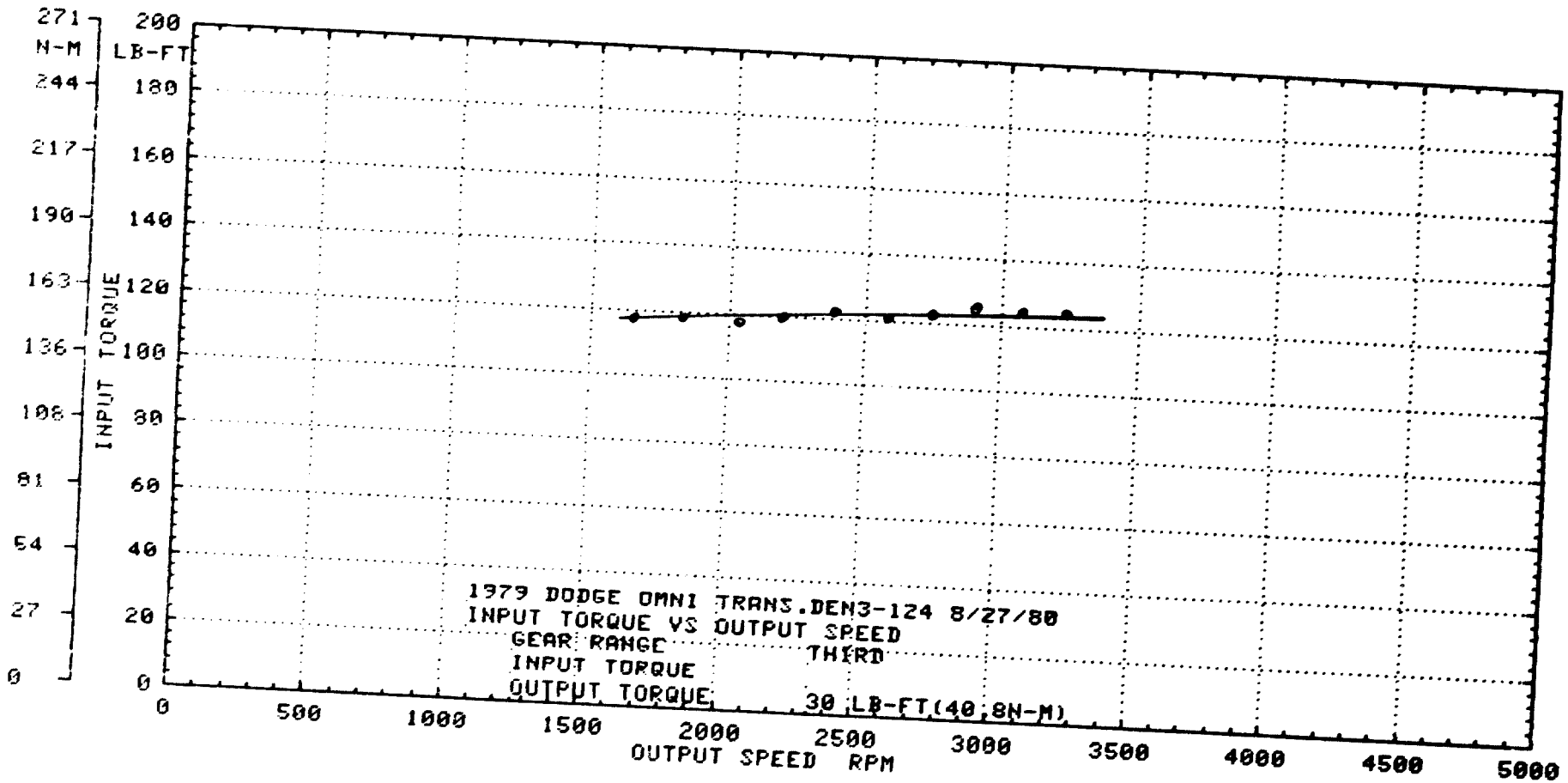

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)
INPUT SPEED RPM
OUTPUT SPEED RPM
0
100
200
300
400
500
600
700
800
900
1000
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000

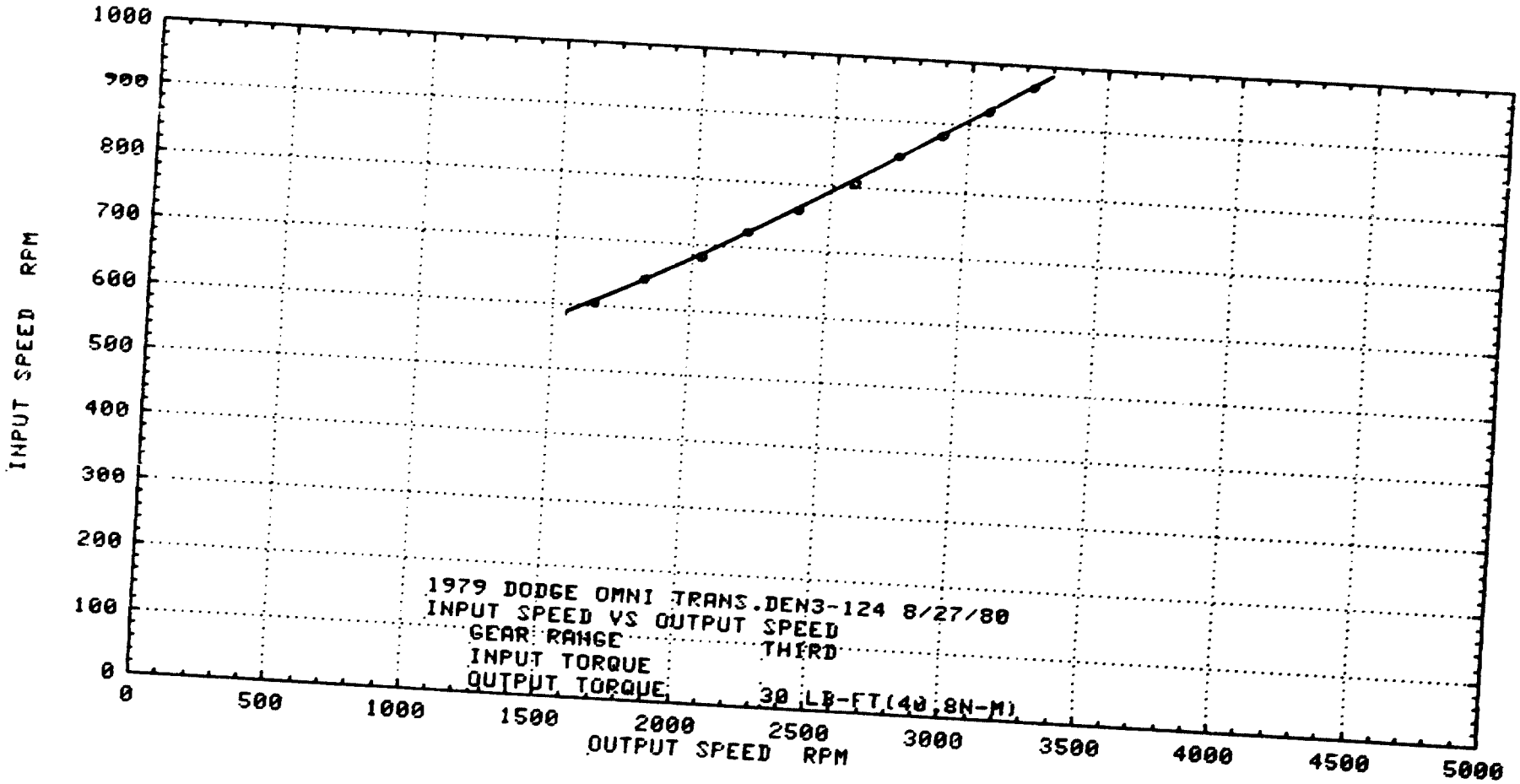
QUALITY

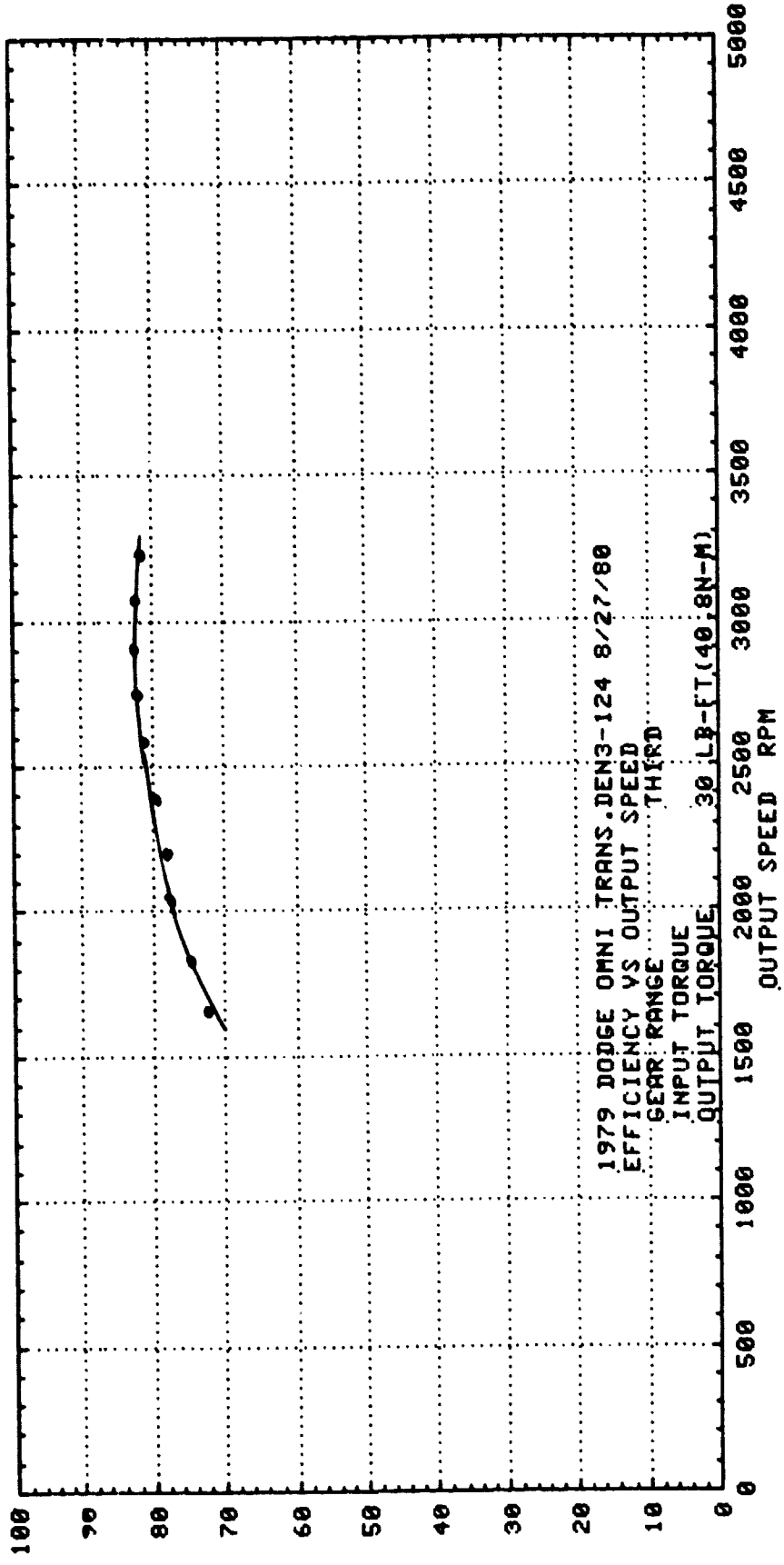

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 20 LB-FT(27.2N-M)
POWER OUT
HP
KW
EFFICIENCY %

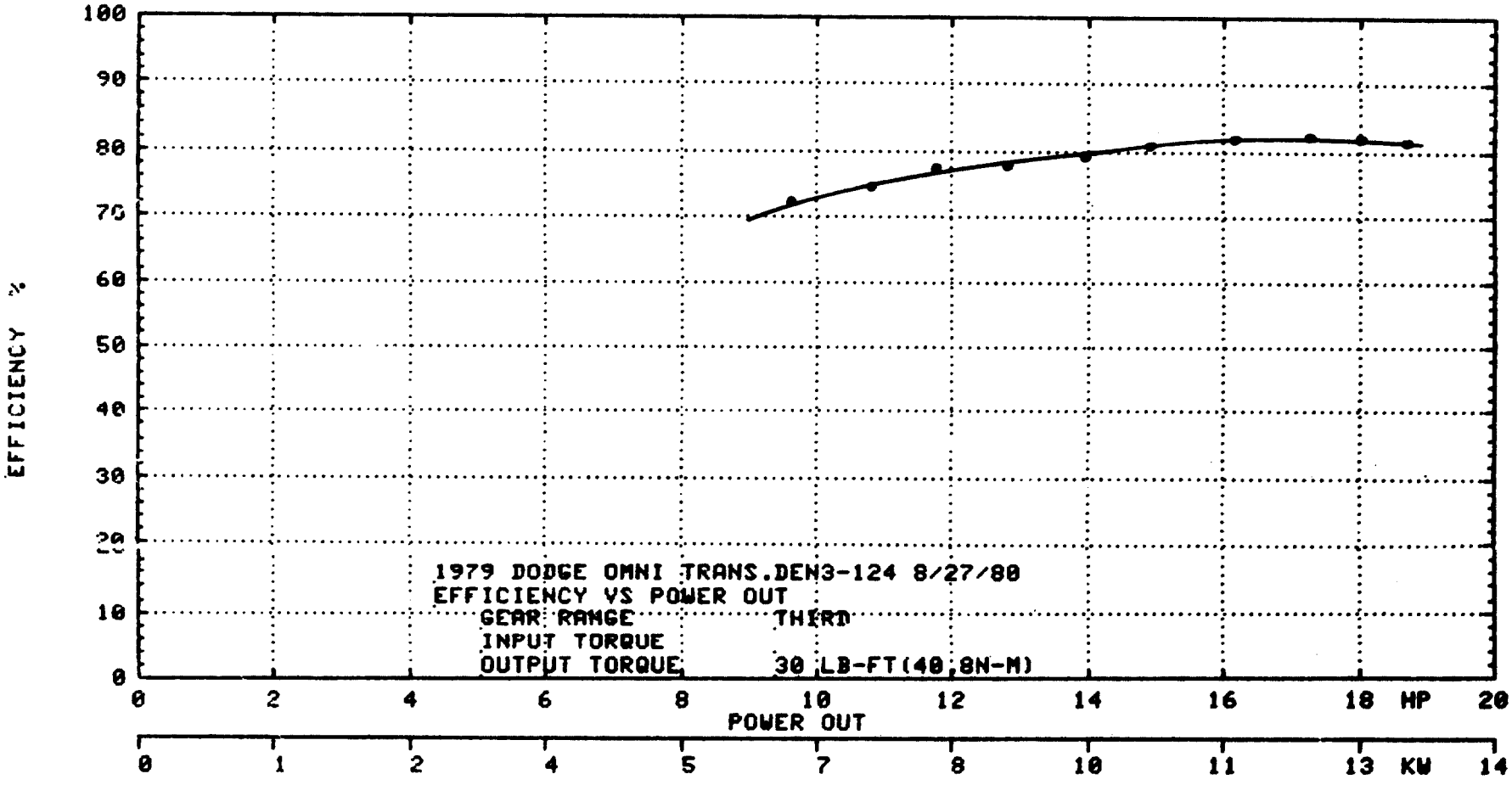

.30
.27
.24
.21
.18
.15
.12
.09
.06
.03
0.00
TORQUE RATIO To/Ti
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

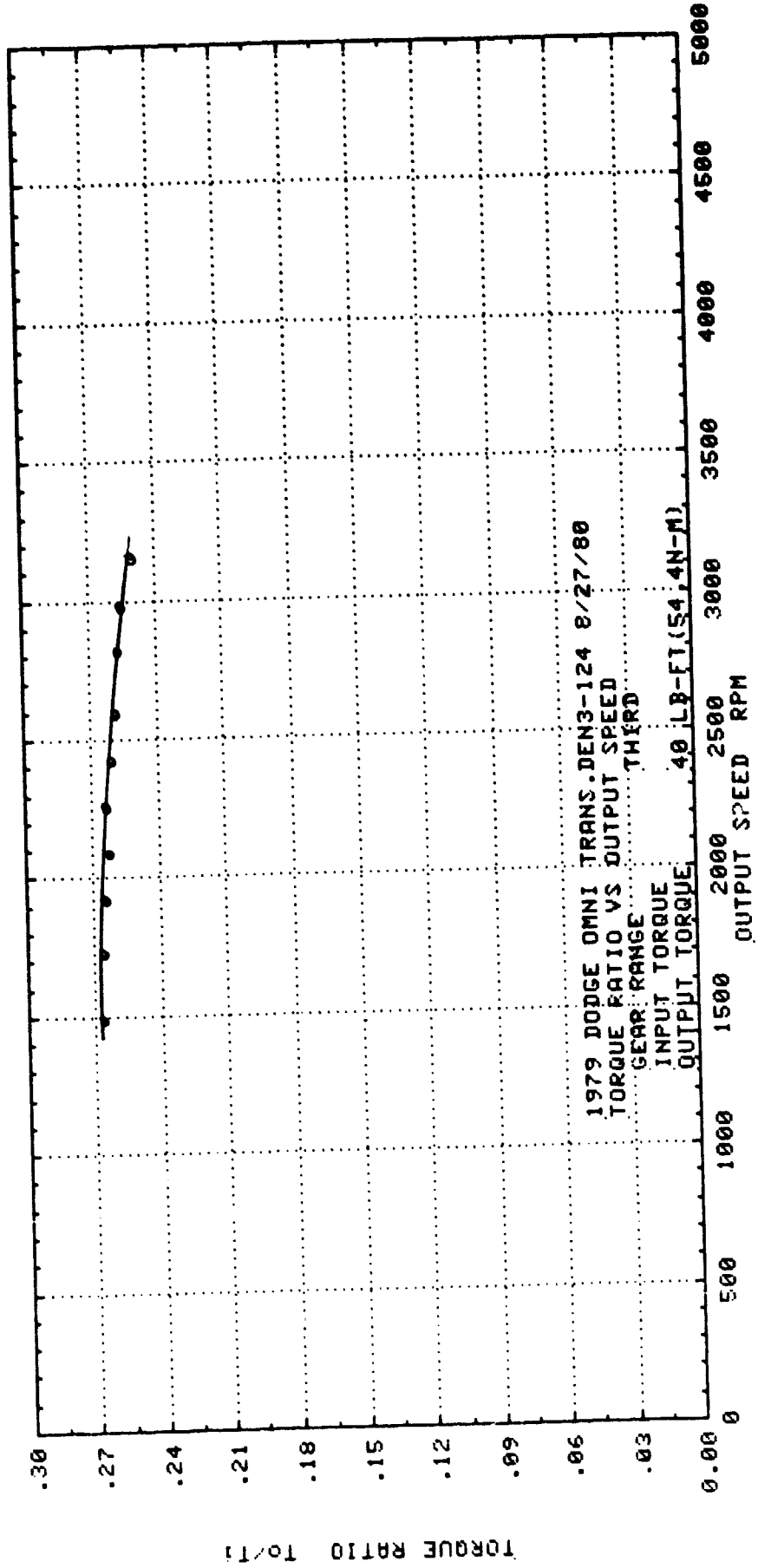

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM


INPUT SPEED RPM
1000
900
800
700
600
500
400
300
200
100
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)

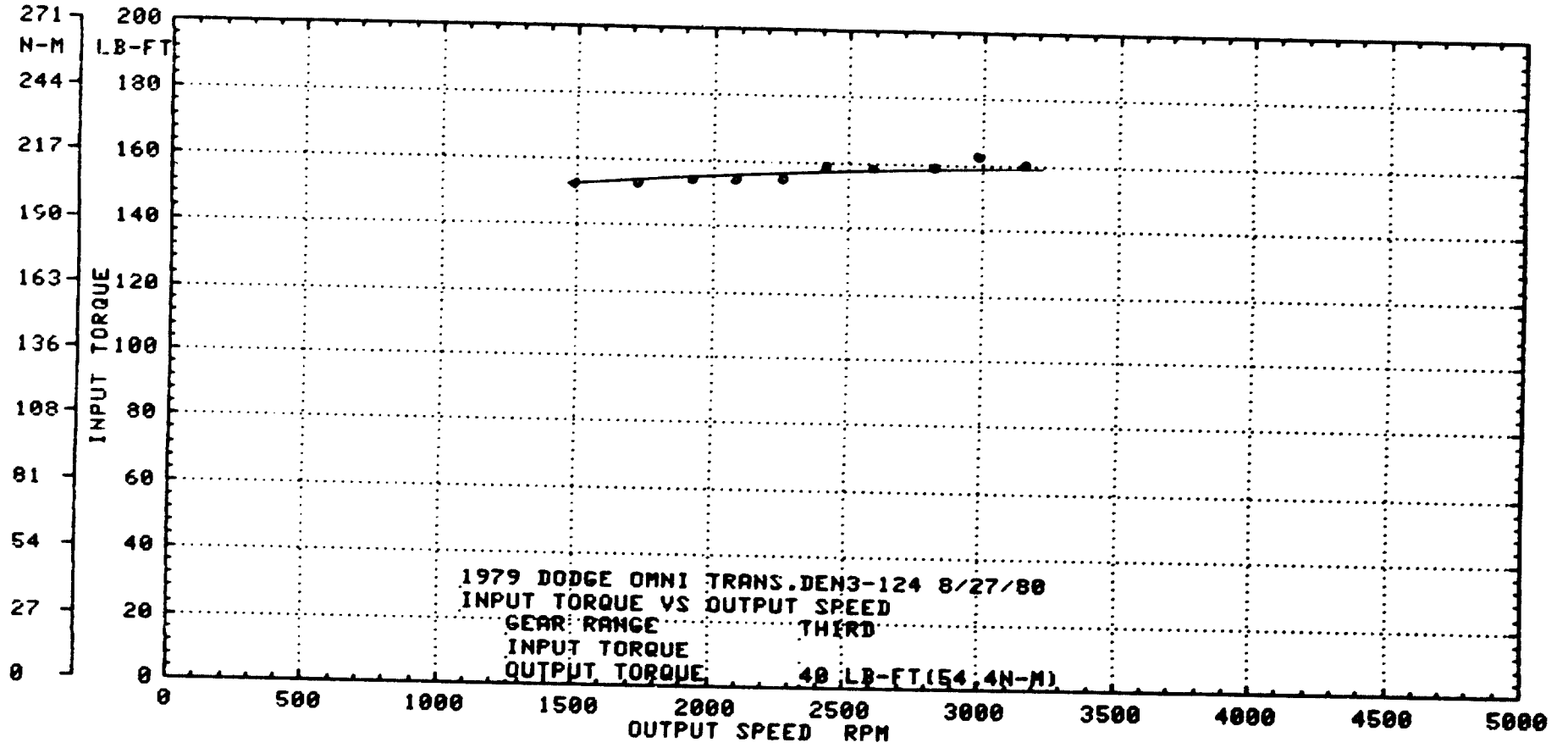

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)
OUTPUT SPEED RPM
EFFICIENCY %
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
10
20
30
40
50
60
70
80
90
100

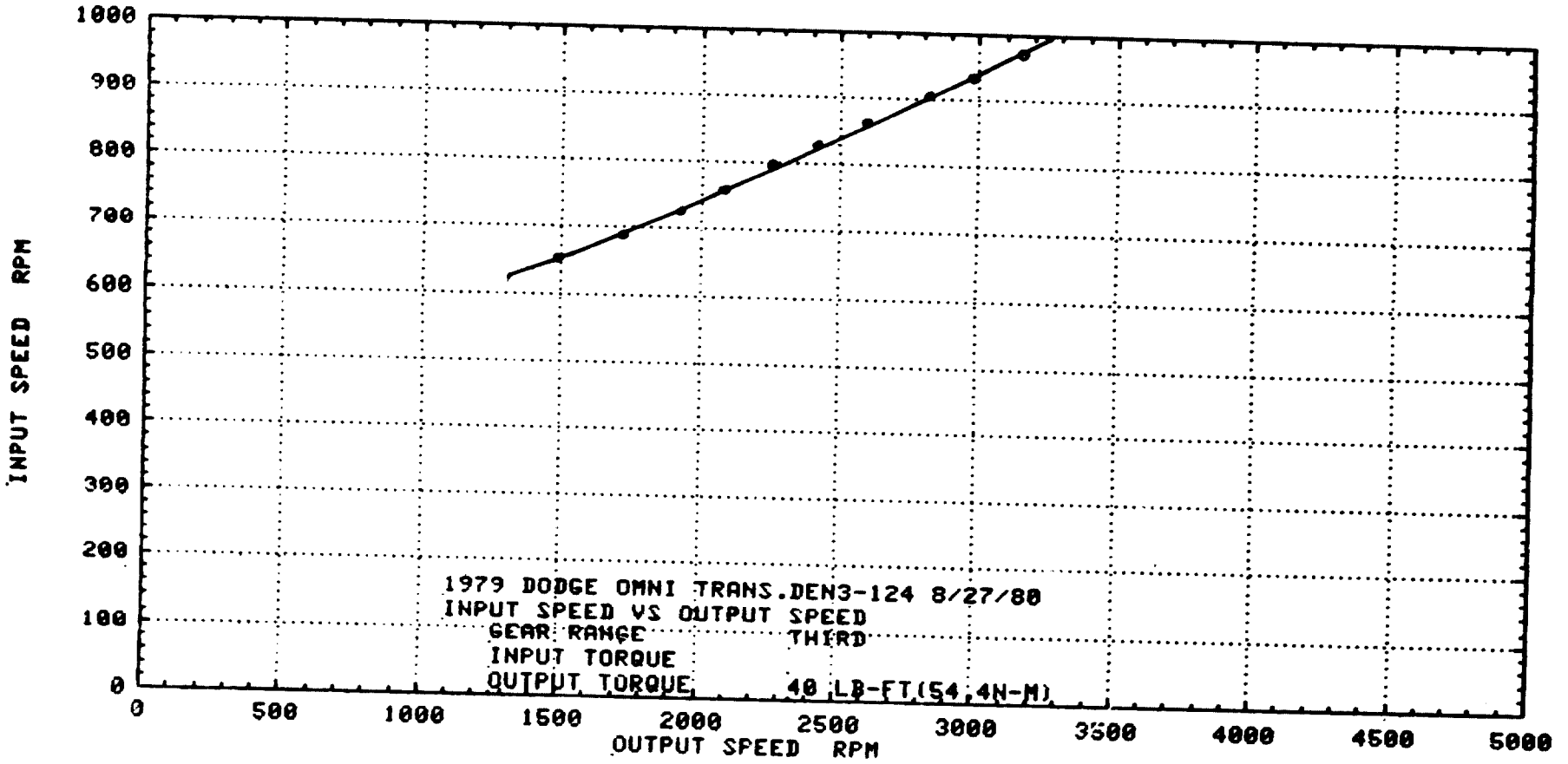
OR QUALITY

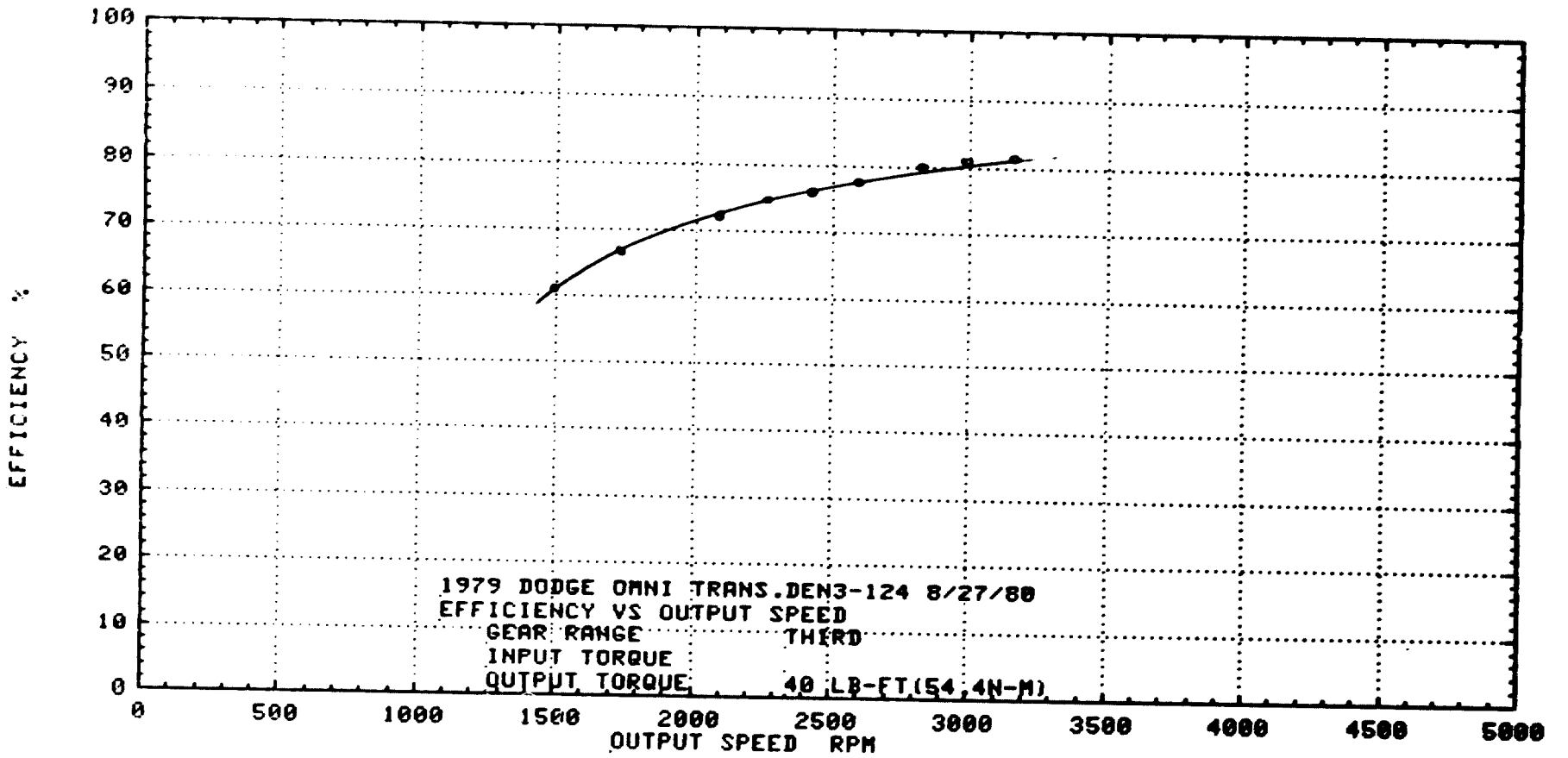

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 30 LB-FT(40.8N-M)
0 2 4 6 8 10 12 14 16 18 HP 20
POWER OUT
0 1 2 4 5 7 8 10 11 13 KW 14


1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 40 LB-FT(54.4N-M)
OUTPUT TORQUE
TORQUE RATIO To/Ti
.30
.27
.24
.21
.18
.15
.12
.09
.06
.03
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

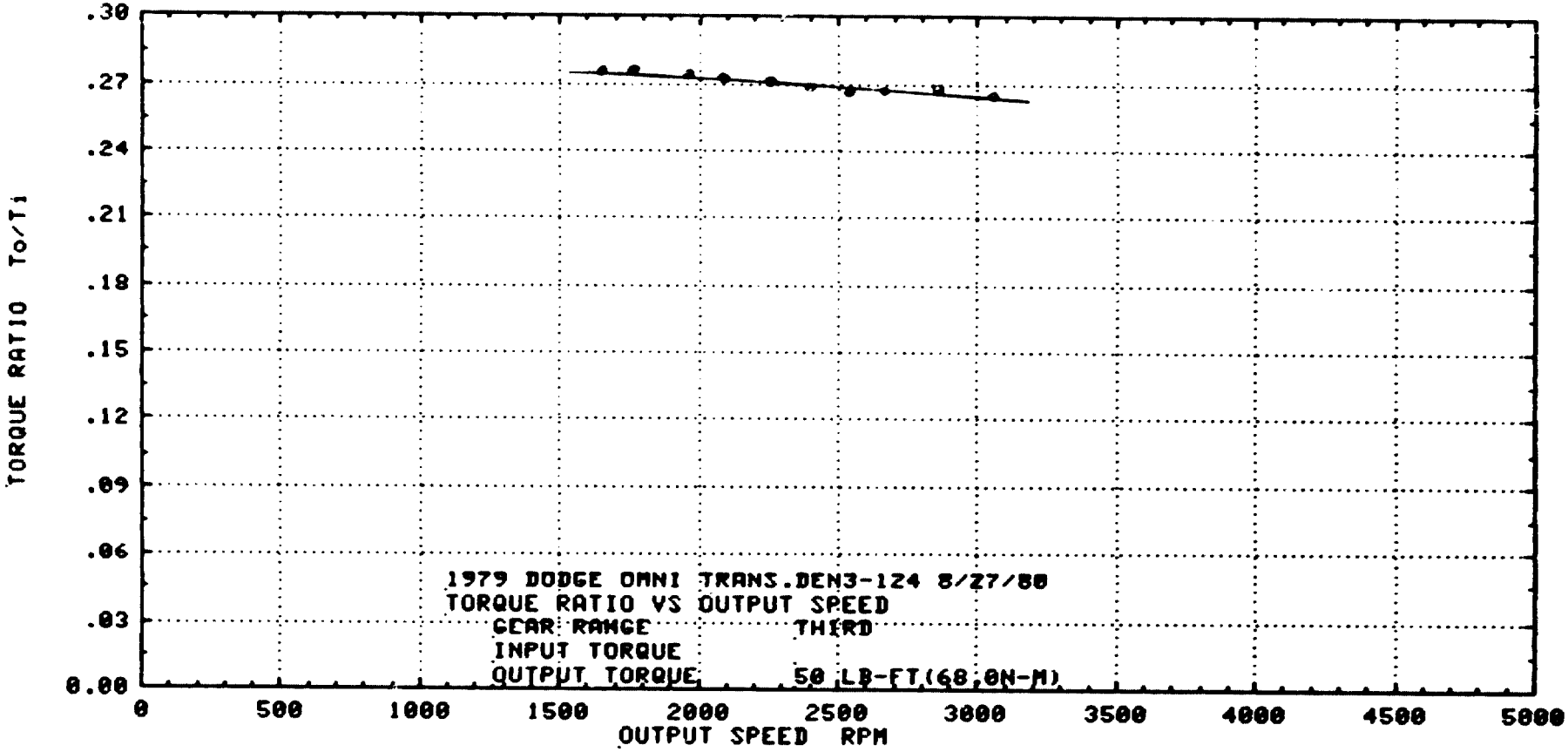
QUALITY

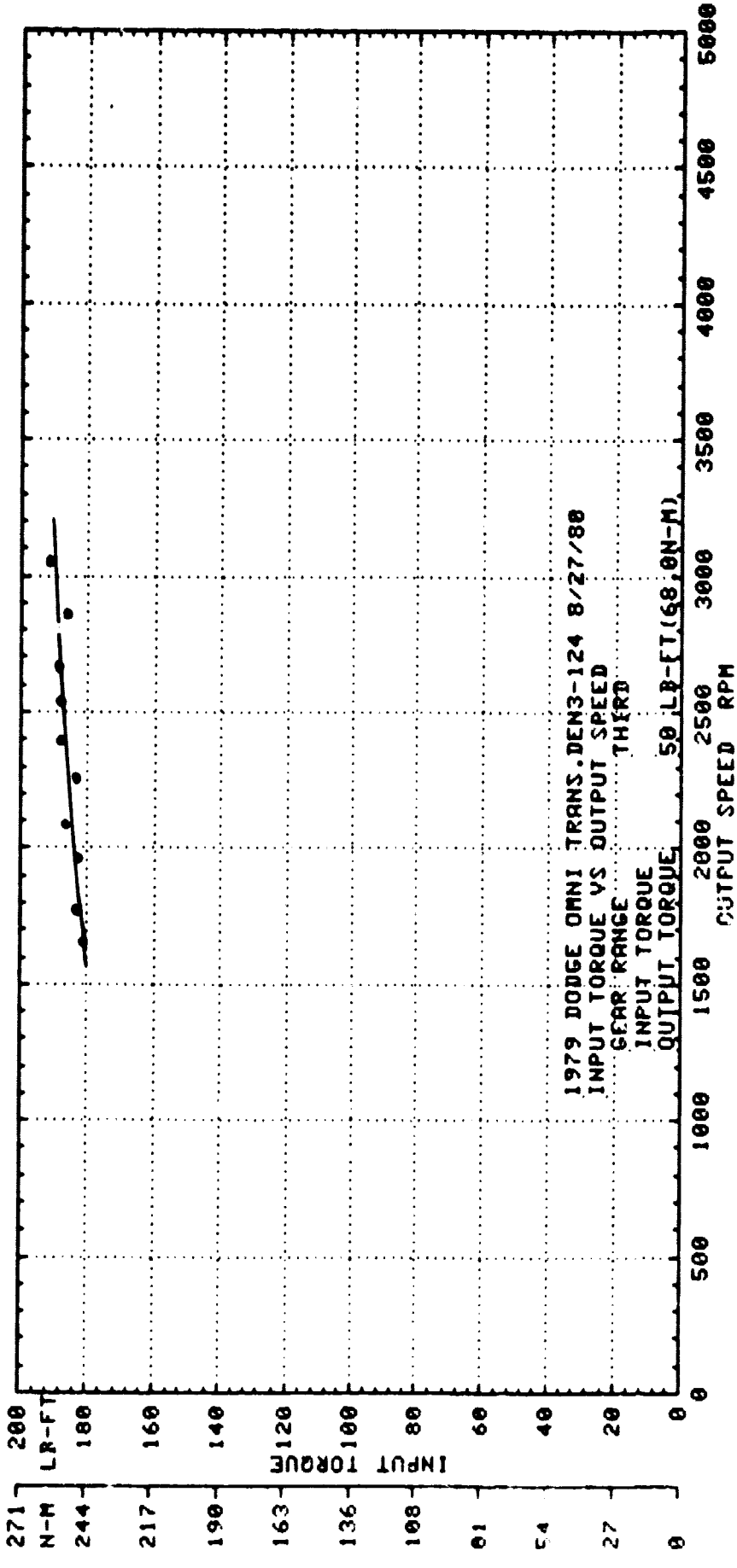

271
N-M
244
217
190
163
136
108
81
54
27
0
200
LB-FT
180
160
140
120
100
80
60
40
20
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

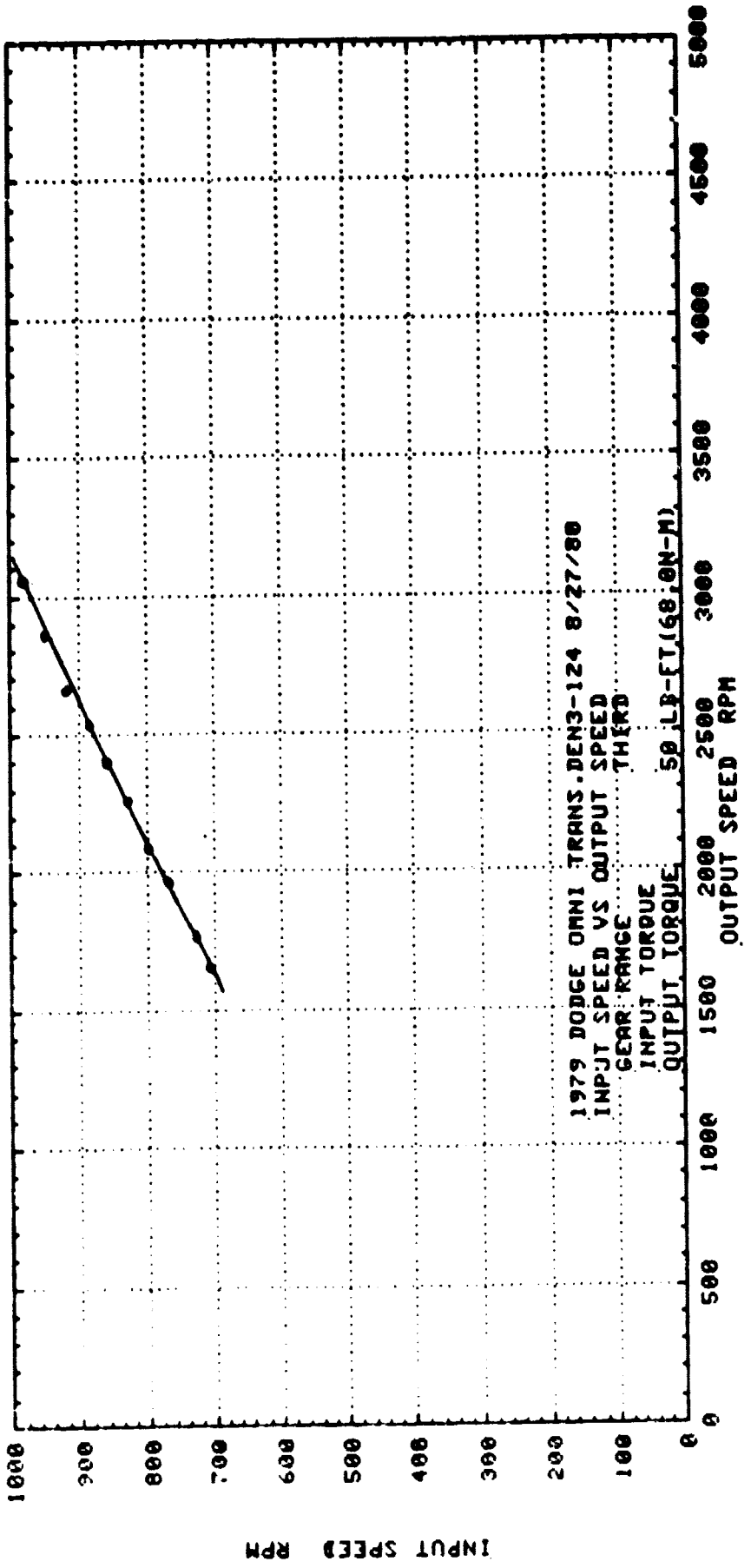

INPUT SPEED RPM
1000
900
800
700
600
500
400
300
200
100
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)

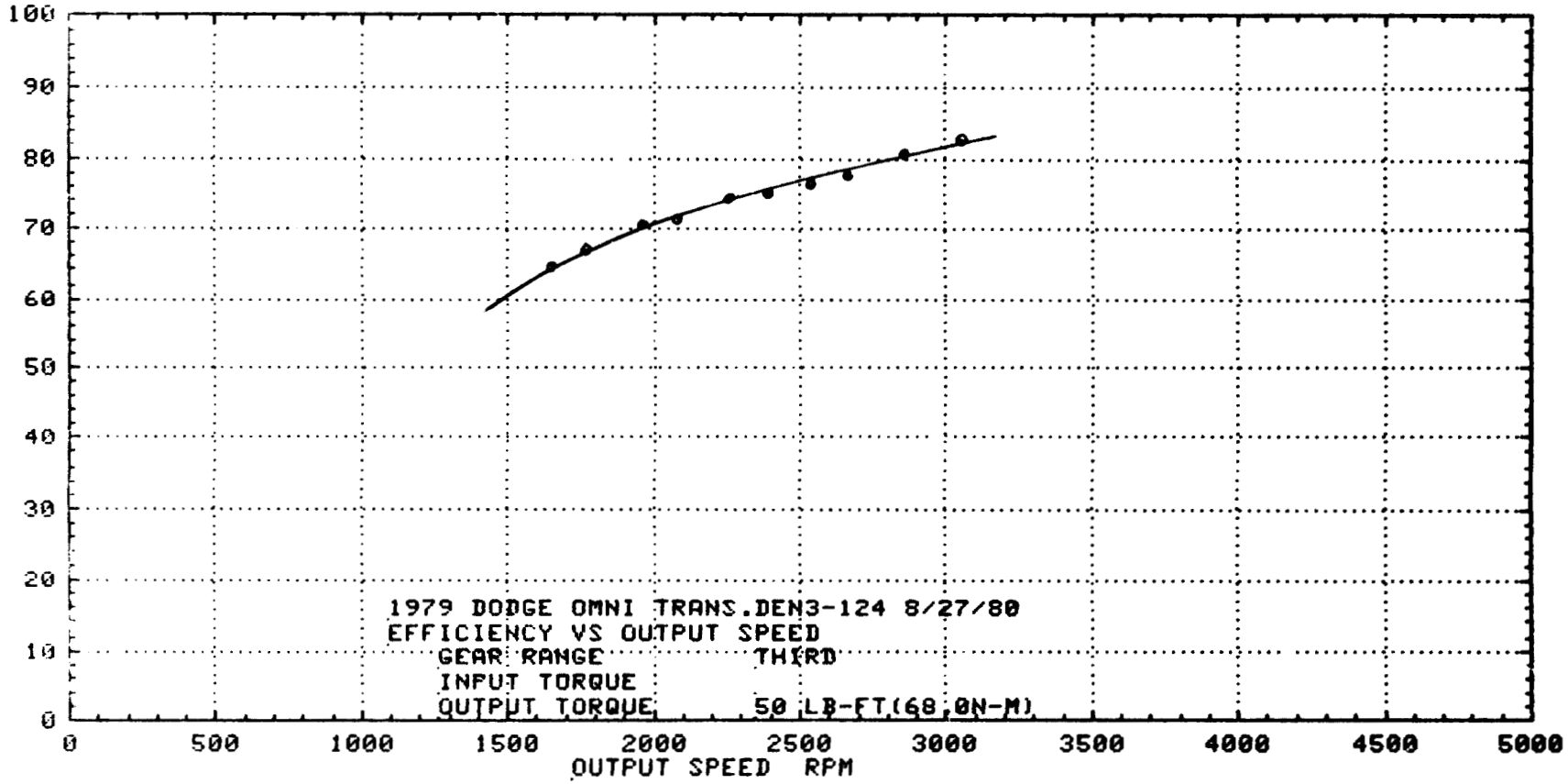

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)

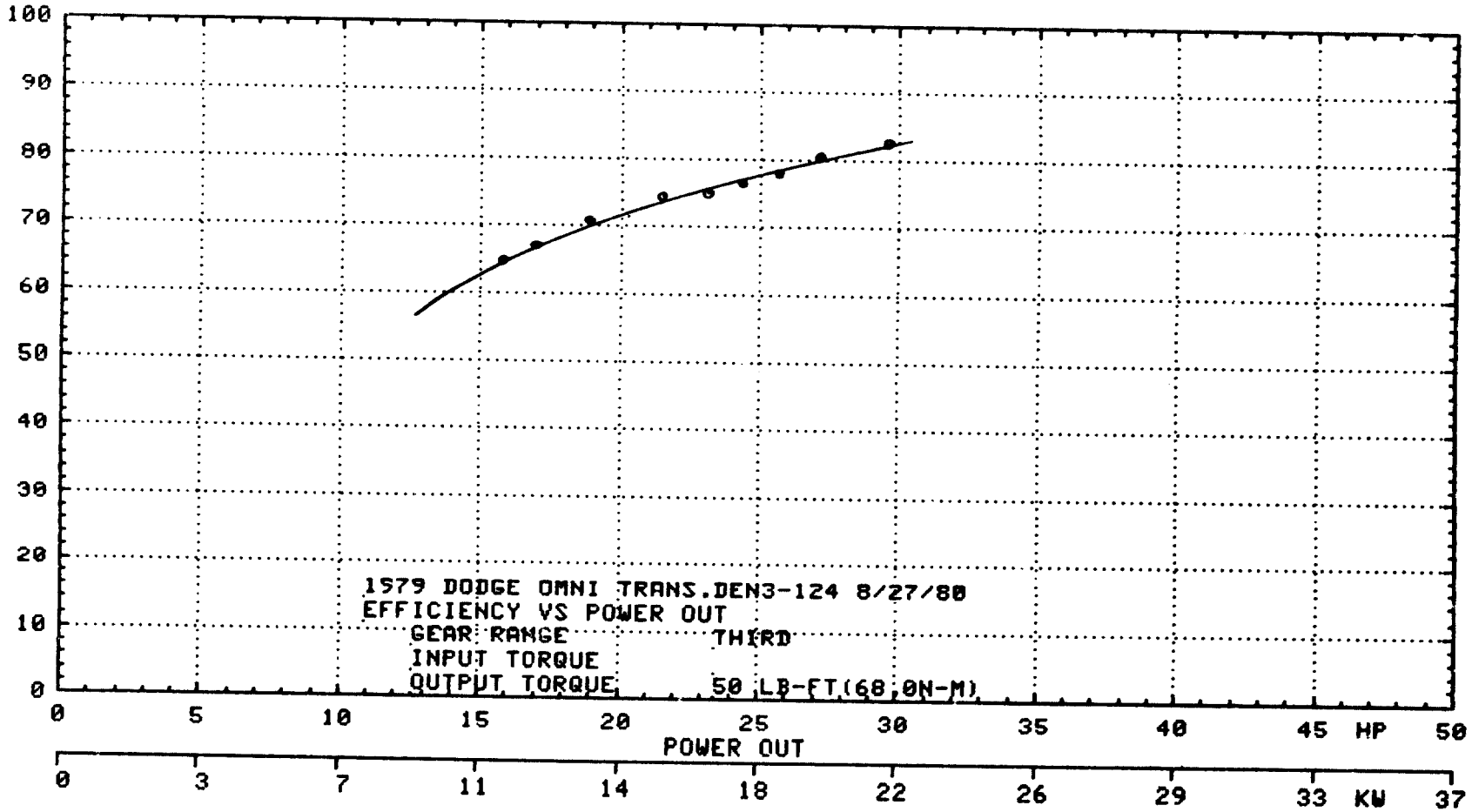
EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 40 LB-FT(54.4N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

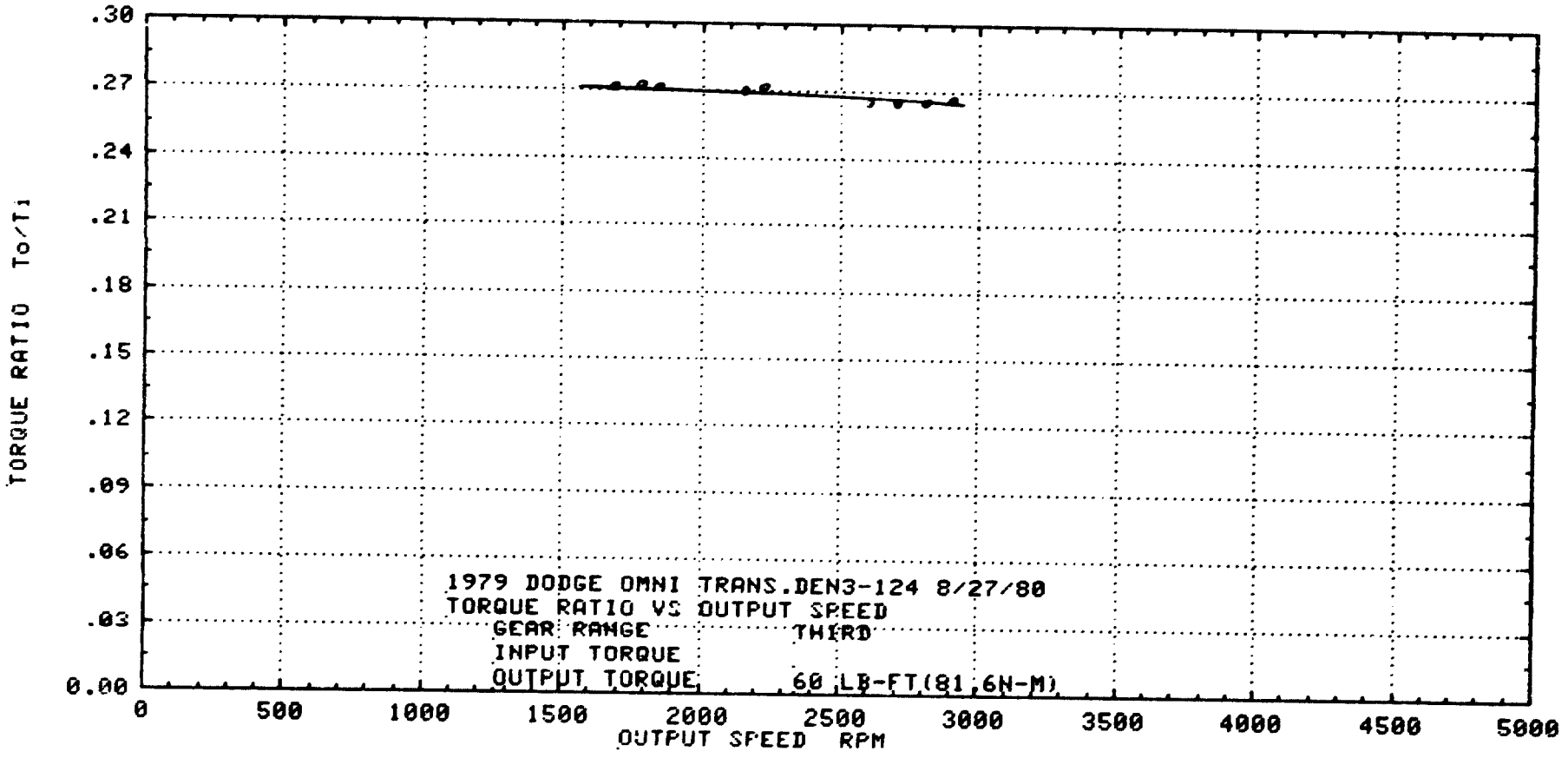

TORQUE RATIO To/Ti
.30
.27
.24
.21
.18
.15
.12
.09
.06
.03
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68.0N-M)

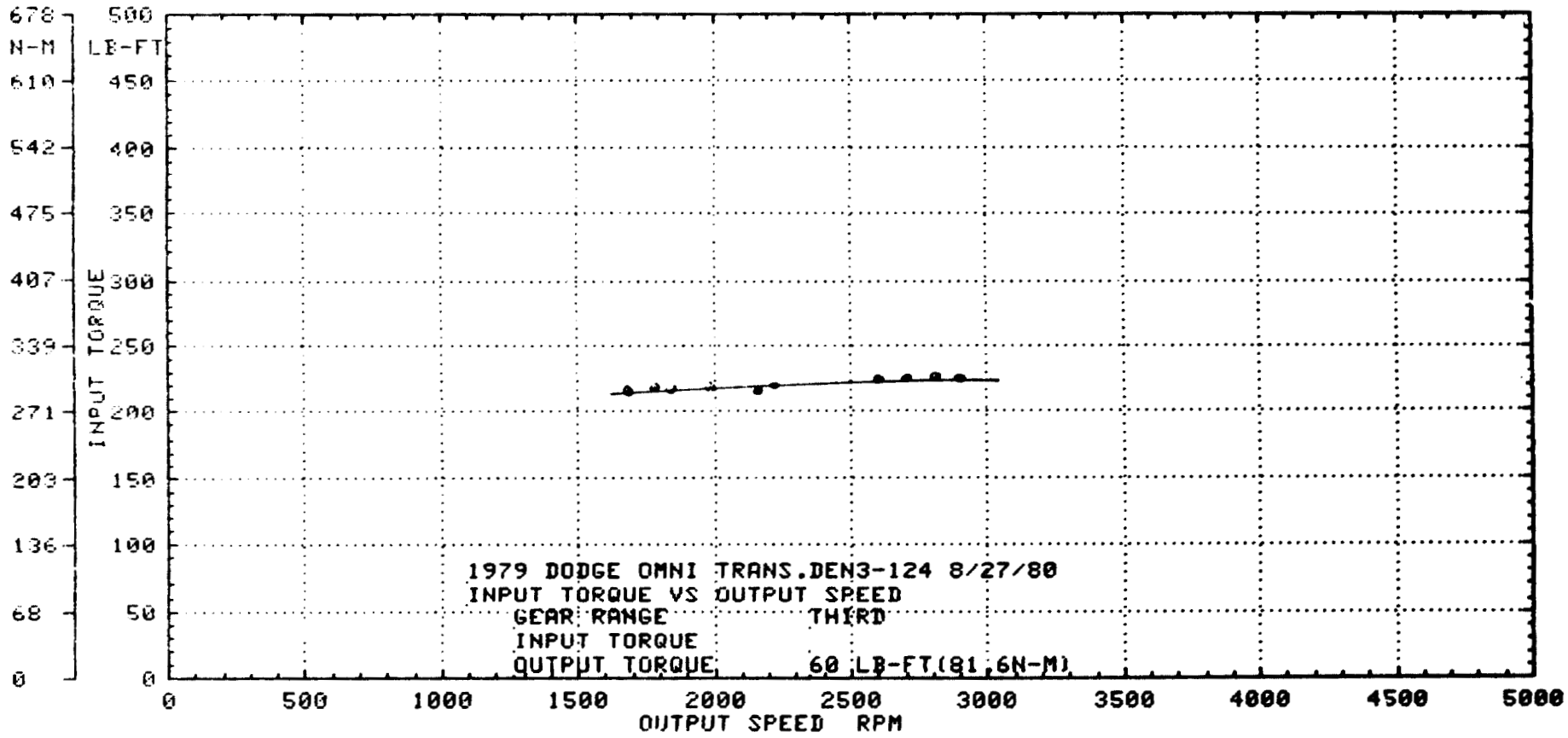

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68.0N-M)
OUTPUT SPEED RPM
INPUT TORQUE
LB-FT
N-M
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000
0 20 40 60 80 100 120 140 160 180 200
0 27 54 81 108 136 163 190 217 244 271

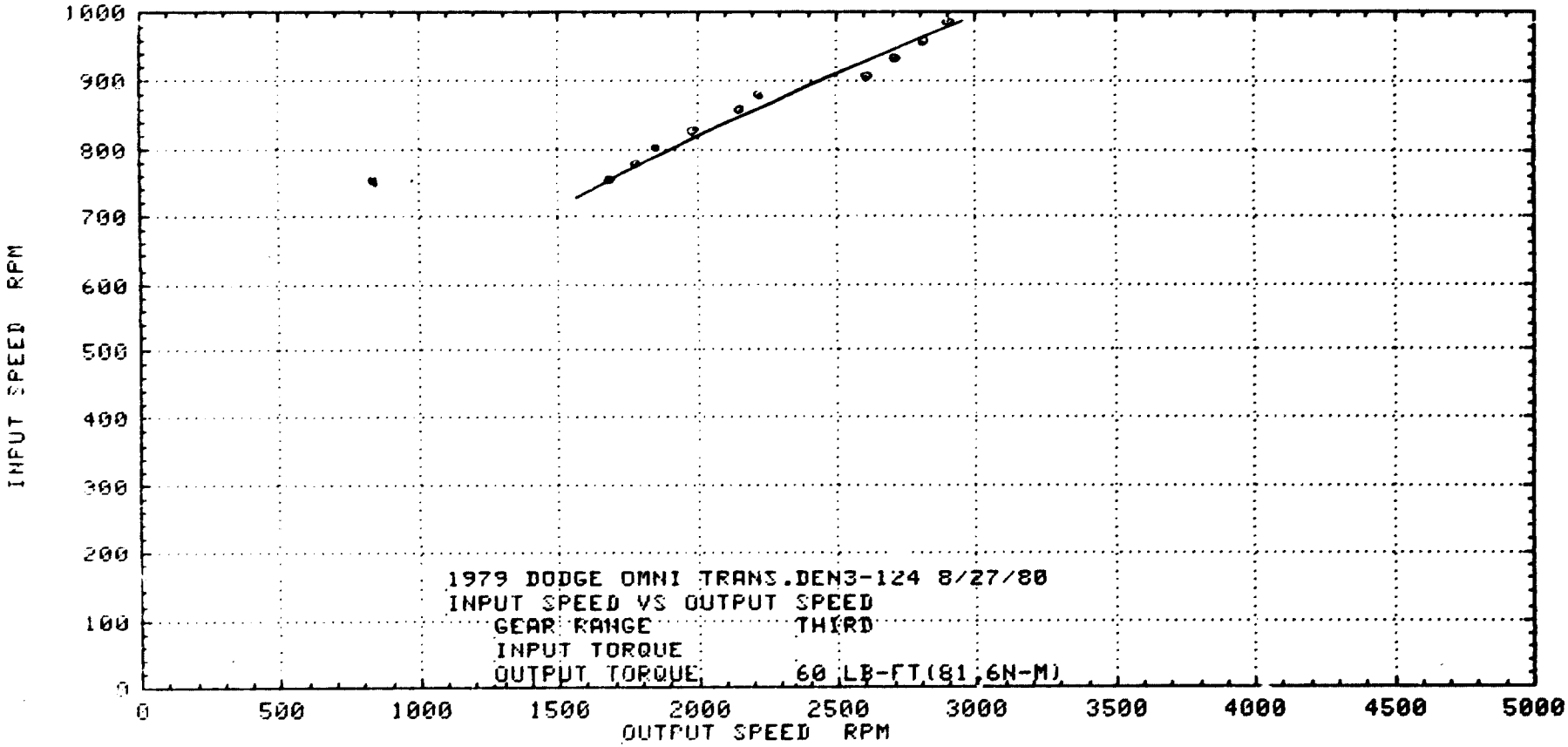

1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE 50 LB-FT(68.0N-M)
OUTPUT TORQUE
INPUT SPEED RPM
OUTPUT SPEED RPM
0
100
200
300
400
500
600
700
800
900
1000
500
1000
1500
2000
2500
3000
3500
4000
4500
5000

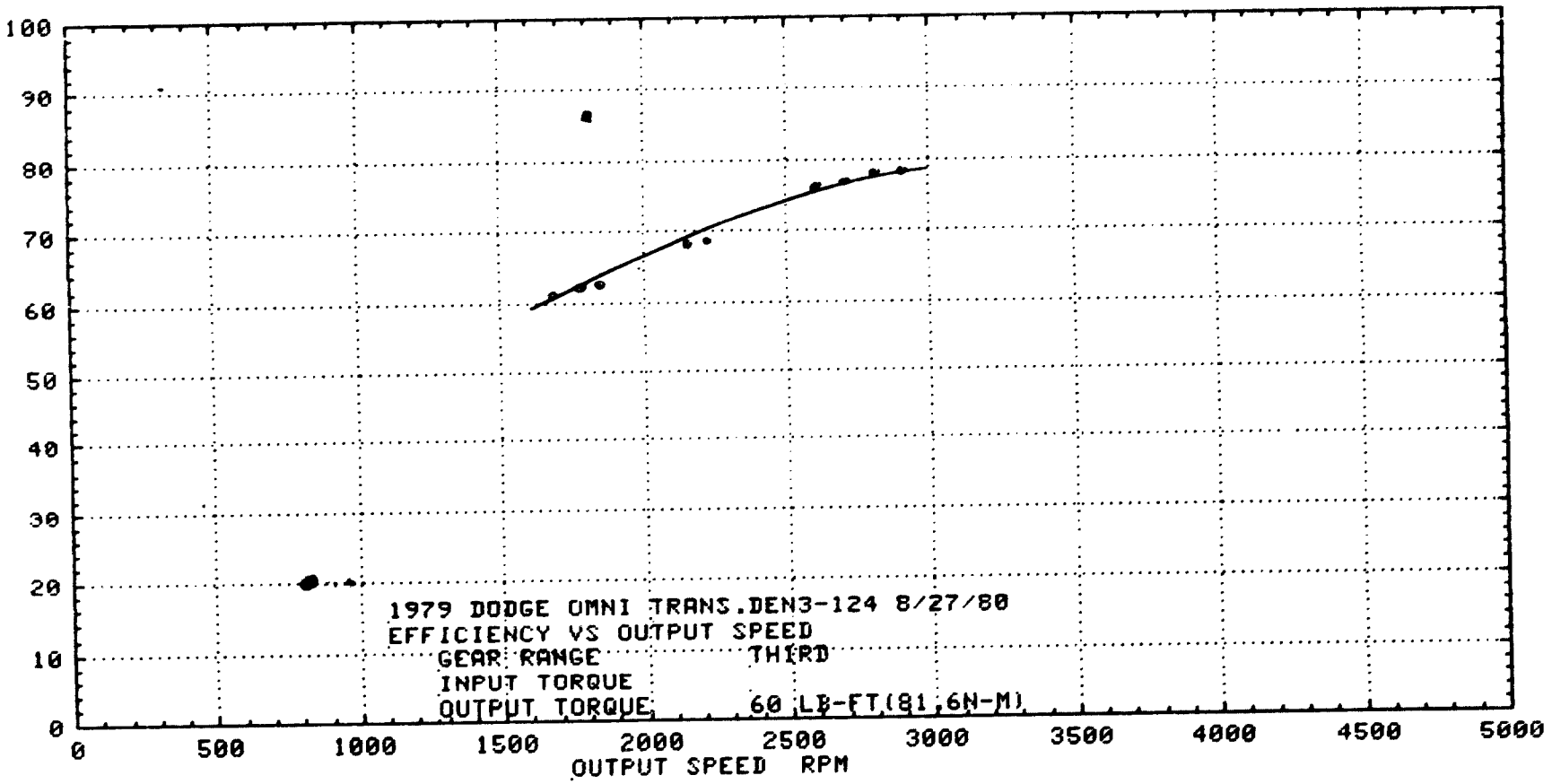

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68.0N-M)

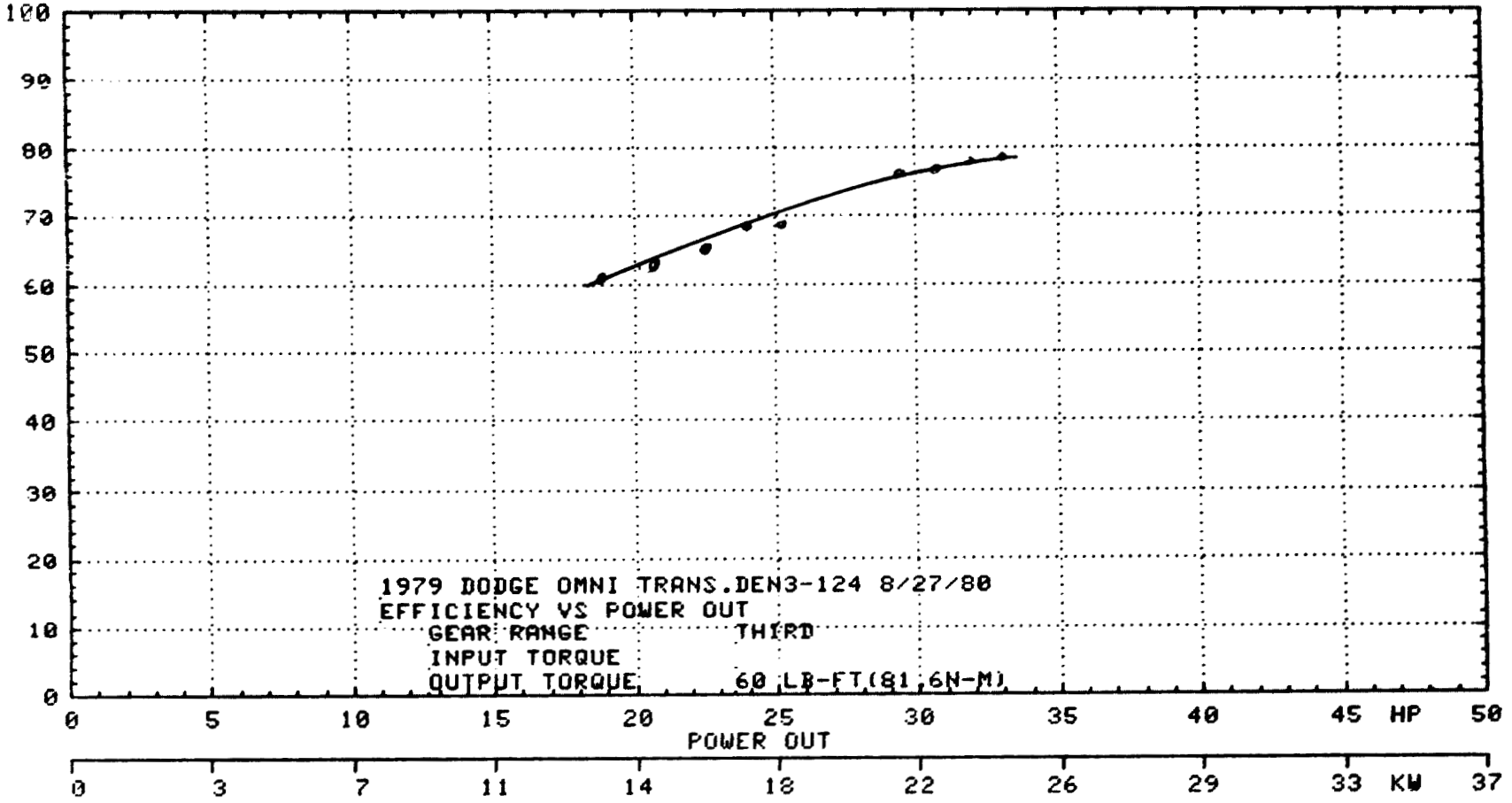

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 50 LB-FT(68.0N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

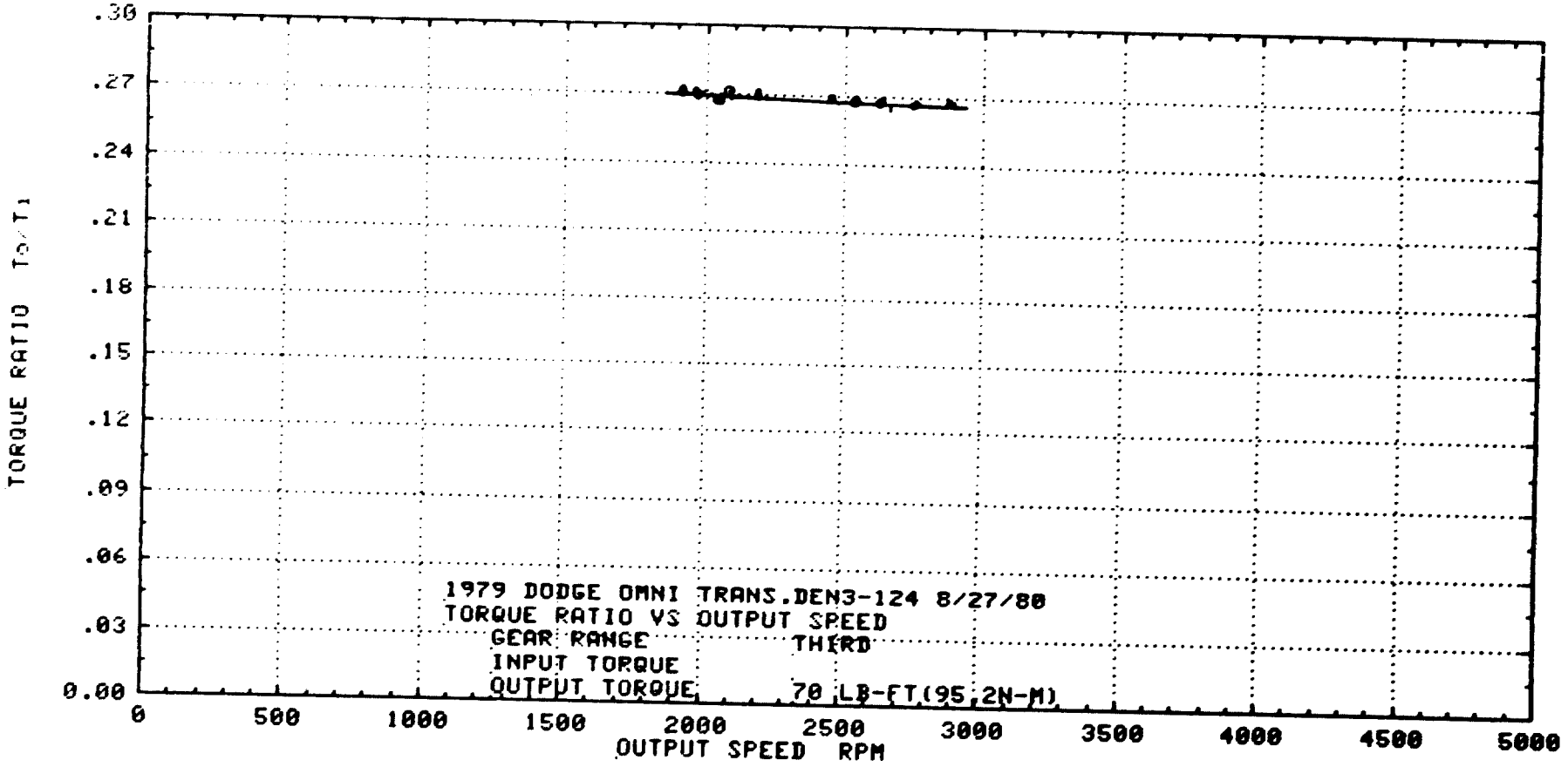

TORQUE RATIO To/Ti
.30
.27
.24
.21
.18
.15
.12
.09
.06
.03
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)

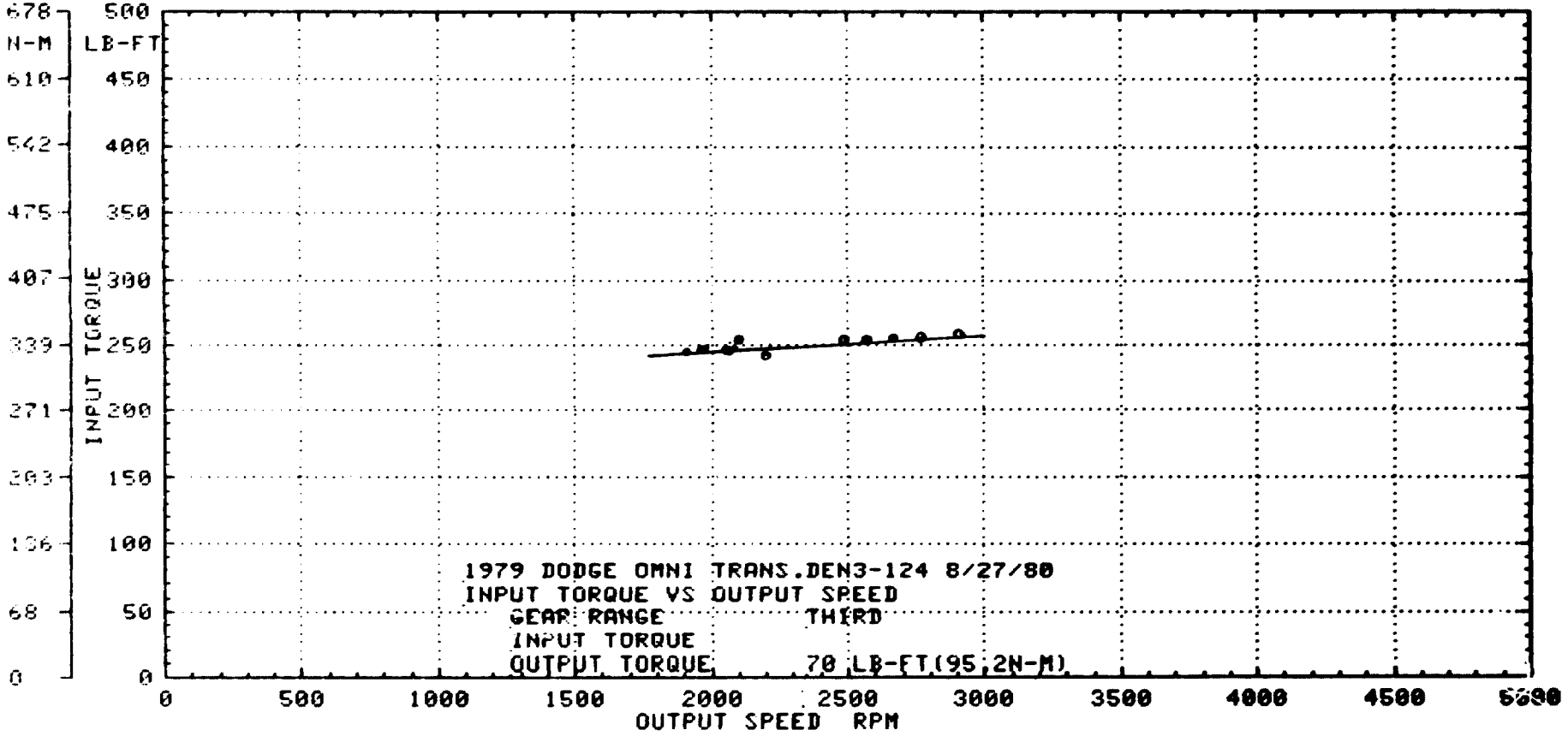

678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM

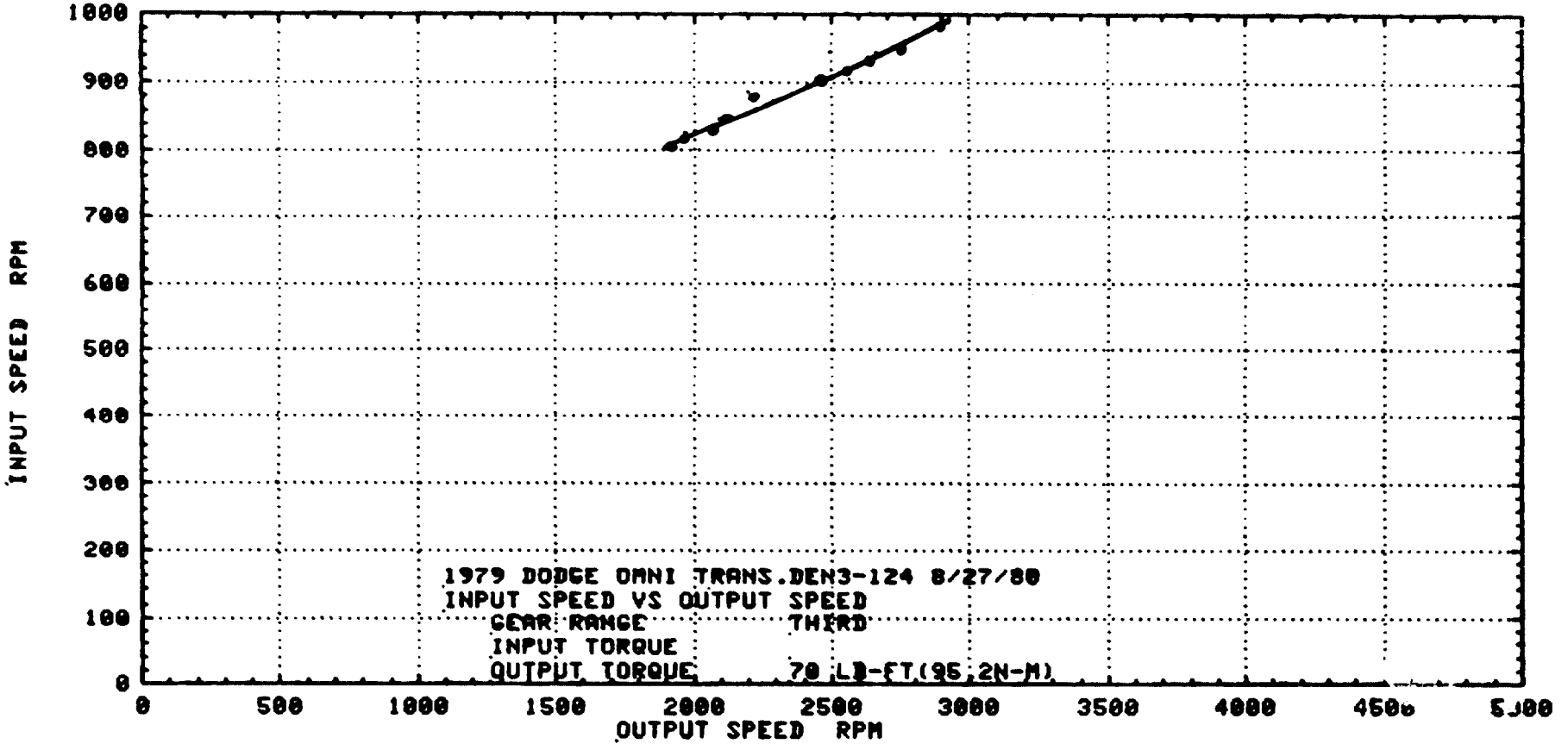

INPUT SPEED RPM
1000
900
800
700
600
500
400
300
200
100
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)

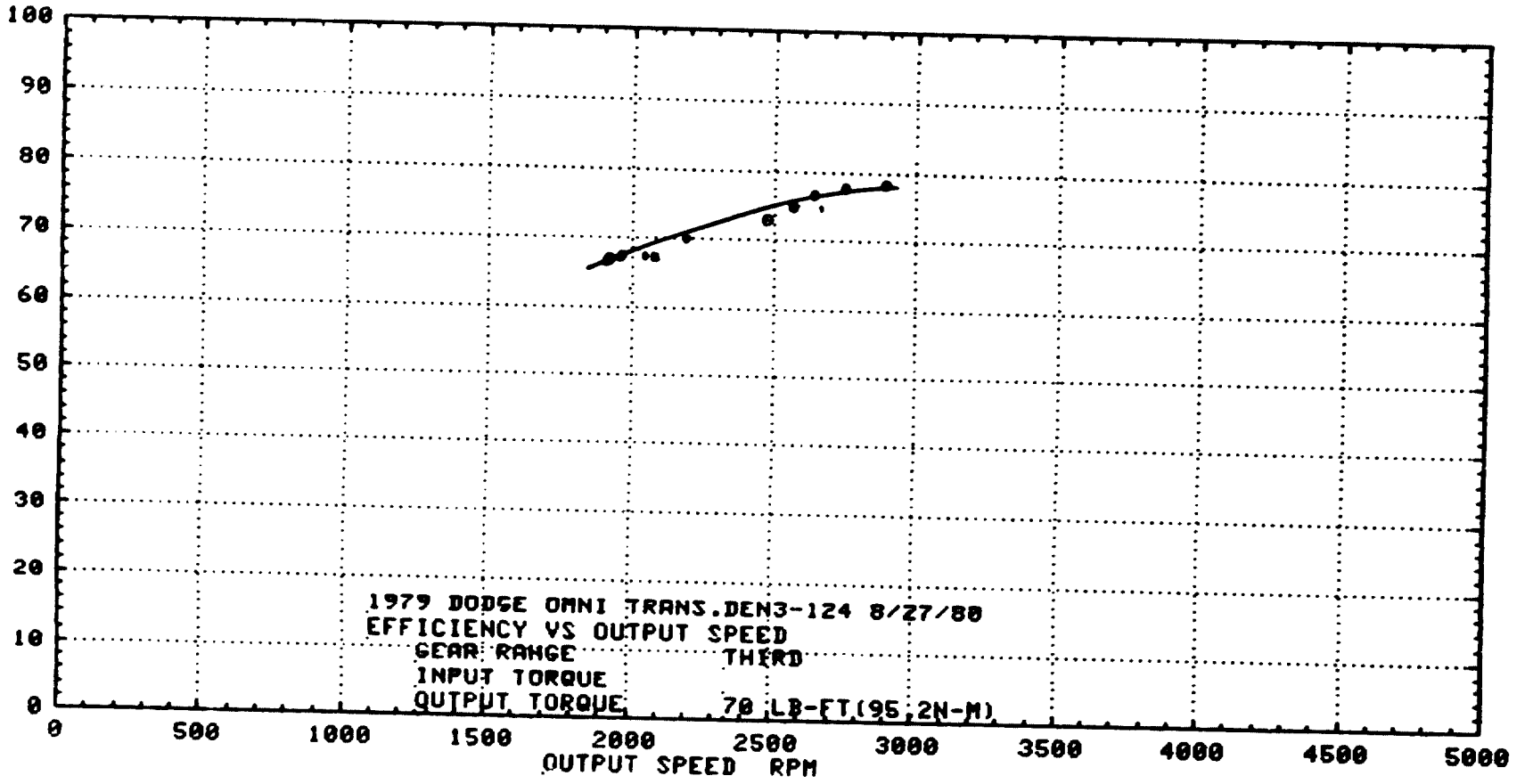

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)

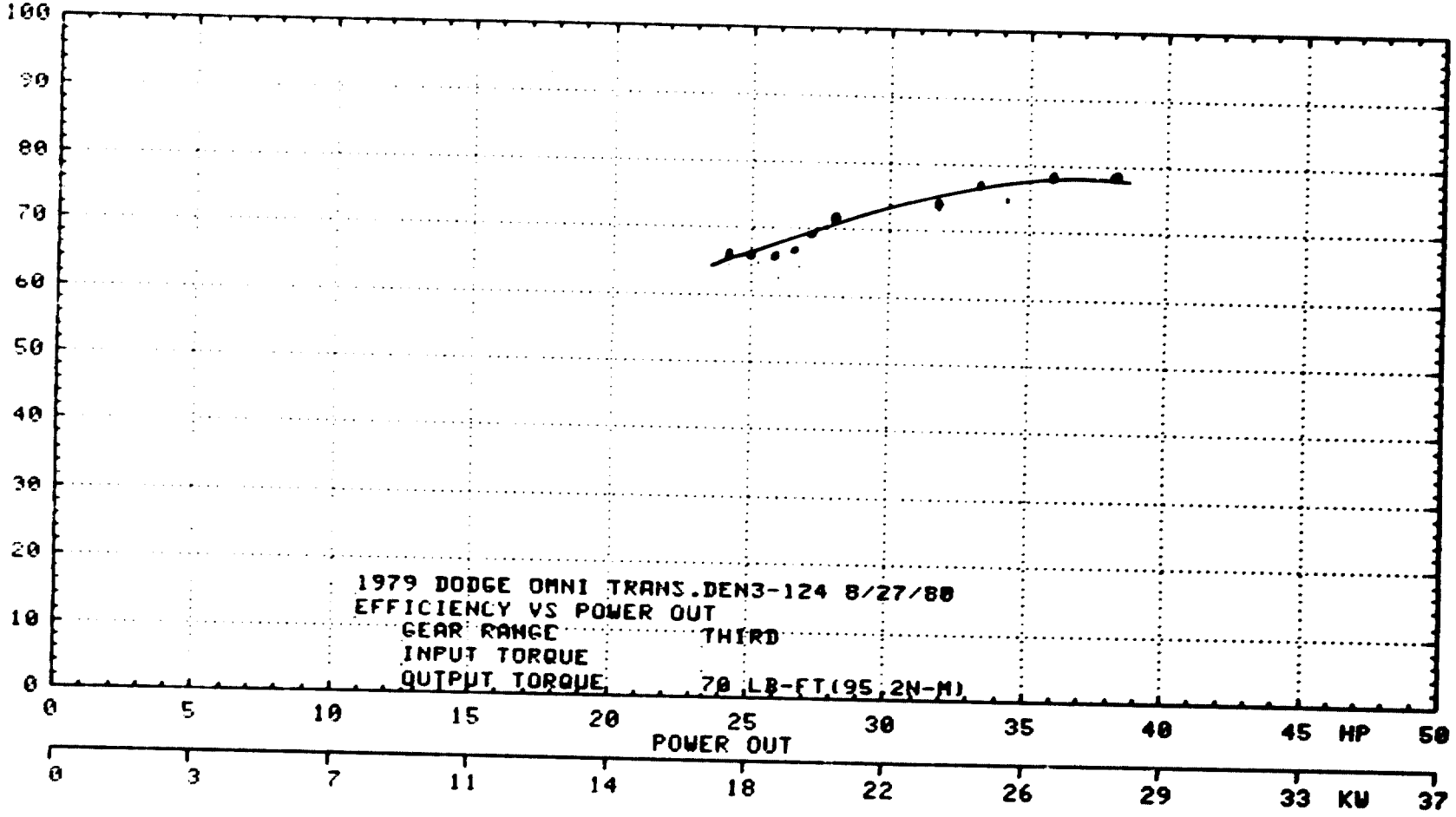

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 60 LB-FT(81.6N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37


TORQUE RATIO To/Ti
.30
.27
.24
.21
.18
.15
.12
.09
.06
.03
0.00
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
TORQUE RATIO VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)


678
N-M
610
542
475
407
339
271
203
136
68
0
500
LB-FT
450
400
350
300
250
200
150
100
50
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT TORQUE VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM


1000
900
800
700
600
500
400
300
200
100
0
INPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
INPUT SPEED VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM


EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
OUTPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS OUTPUT SPEED
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)

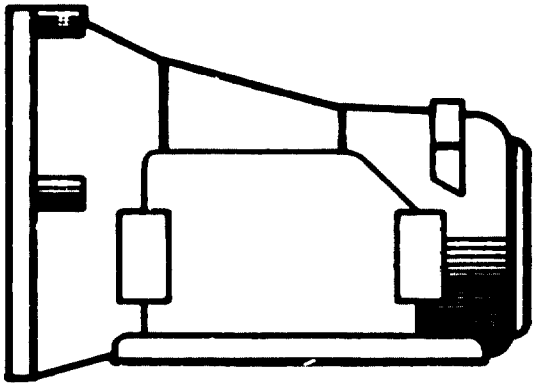

EFFICIENCY %
100
90
80
70
60
50
40
30
20
10
0
1979 DODGE OMNI TRANS.DEN3-124 8/27/80
EFFICIENCY VS POWER OUT
GEAR RANGE THIRD
INPUT TORQUE
OUTPUT TORQUE 70 LB-FT(95.2N-M)
0 5 10 15 20 25 30 35 40 45 HP 50
POWER OUT
0 3 7 11 14 18 22 26 29 33 KW 37

Graphs Contained in This Section

Torque Loss -vs- Input Speed

Torque In

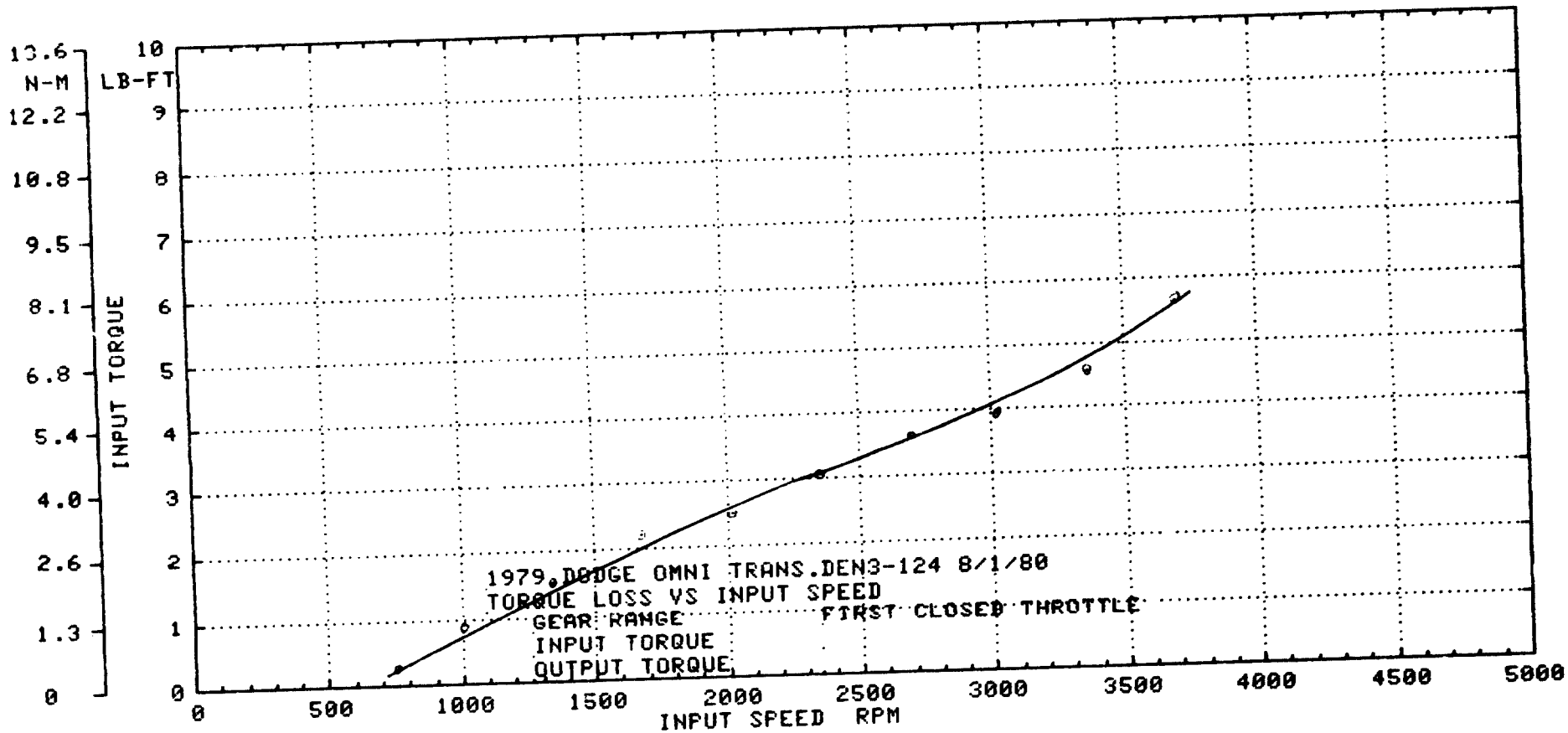
Speed In



No Load Losses

NO LOAD LOSSES

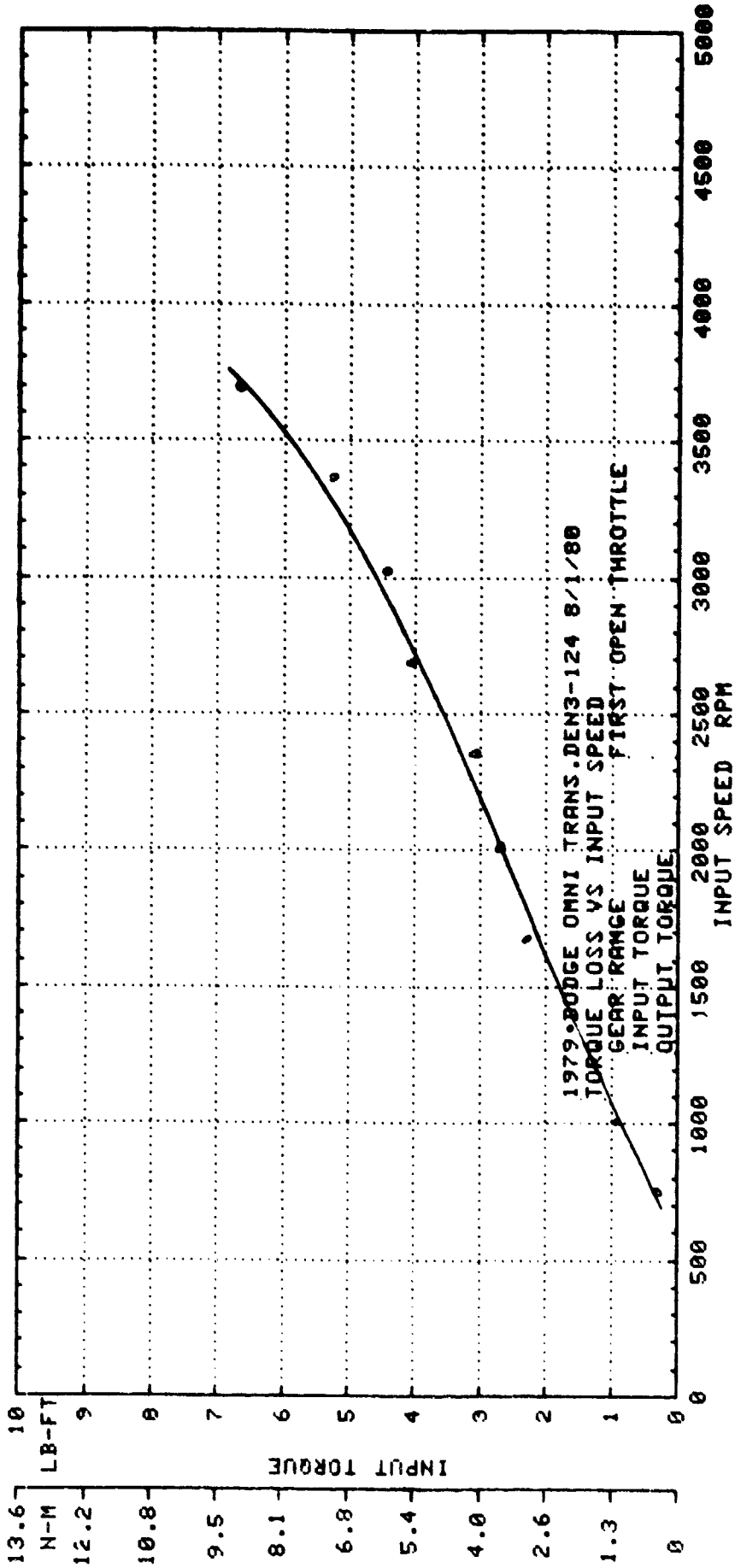
1st Gear (Closed Throttle)


13.6
N-M
12.2
10.8
9.5
8.1
6.8
5.4
4.0
2.6
1.3
0
LB-FT
10
9
8
7
6
5
4
3
2
1
0
INPUT TORQUE
1979 DODGE OMNI TRANS.DEN3-124 8/1/80
TORQUE LOSS VS INPUT SPEED
GEAR RANGE FIRST CLOSED THROTTLE
INPUT TORQUE
OUTPUT TORQUE
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
INPUT SPEED RPM

NO LOAD LOSSES

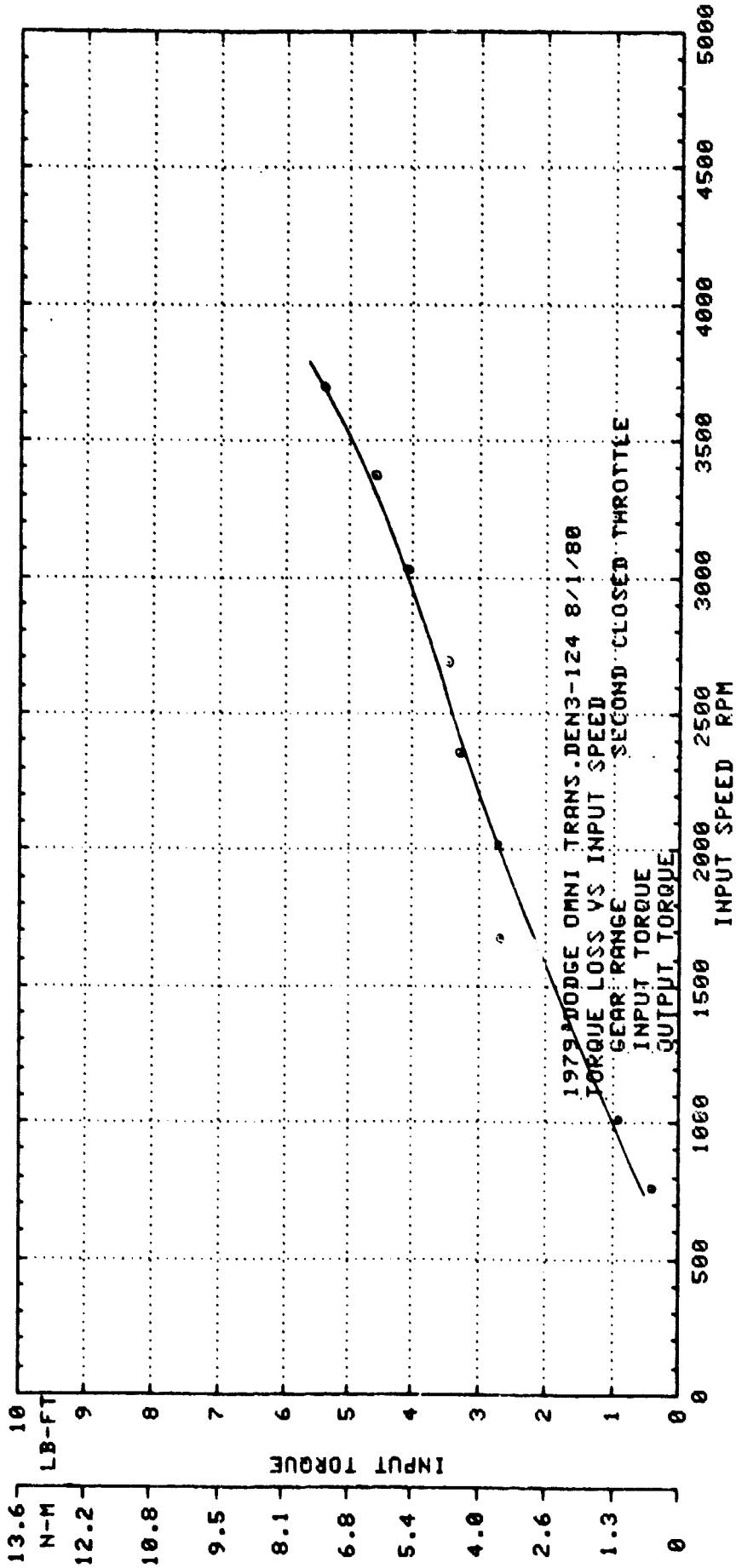
1st Gear (Open Throttle)

R QUALITY


1979 DODGE OMNI TRANS.DEN3-124 8/1/80
TORQUE LOSS VS INPUT SPEED
GEAR RANGE FIRST OPEN THROTTLE
INPUT TORQUE
OUTPUT TORQUE
INPUT TORQUE
LB-FT
N-M
10
9
8
7
6
5
4
3
2
1
0
13.6
12.2
10.8
9.5
8.1
6.8
5.4
4.0
2.6
1.3
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
INPUT SPEED RPM

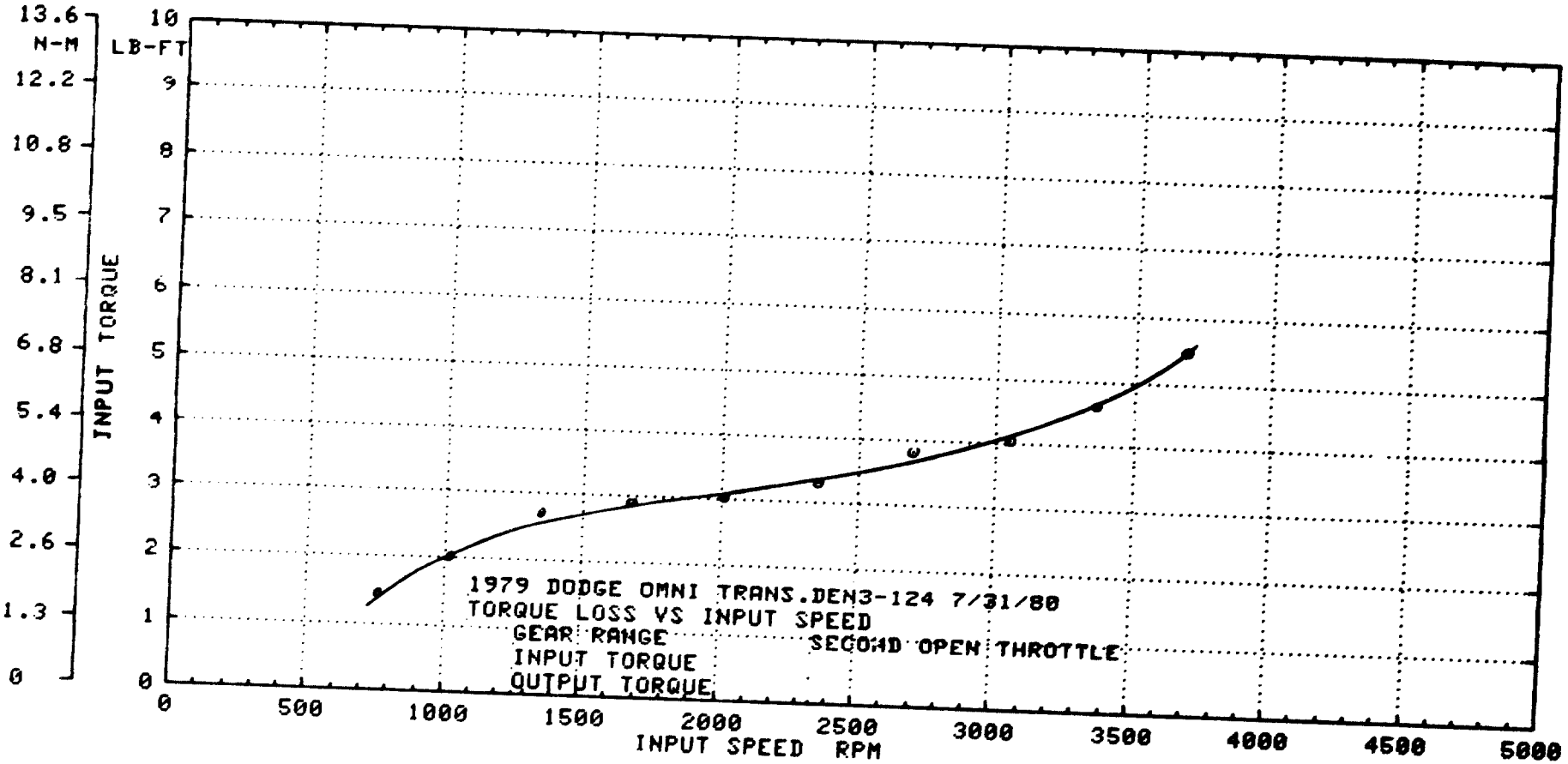
NO LOAD LOSSES

2nd Gear (Closed Throttle)


1979 DODGE OMNI TRANS.DEN3-124 8/1/80
TORQUE LOSS VS INPUT SPEED
GEAR RANGE SECOND CLOSED THROTTLE
INPUT TORQUE
OUTPUT TORQUE
INPUT TORQUE
LB-FT
N-M
INPUT SPEED RPM
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
1.3
2.6
4.0
5.4
6.8
8.1
9.5
10.8
12.2
13.6

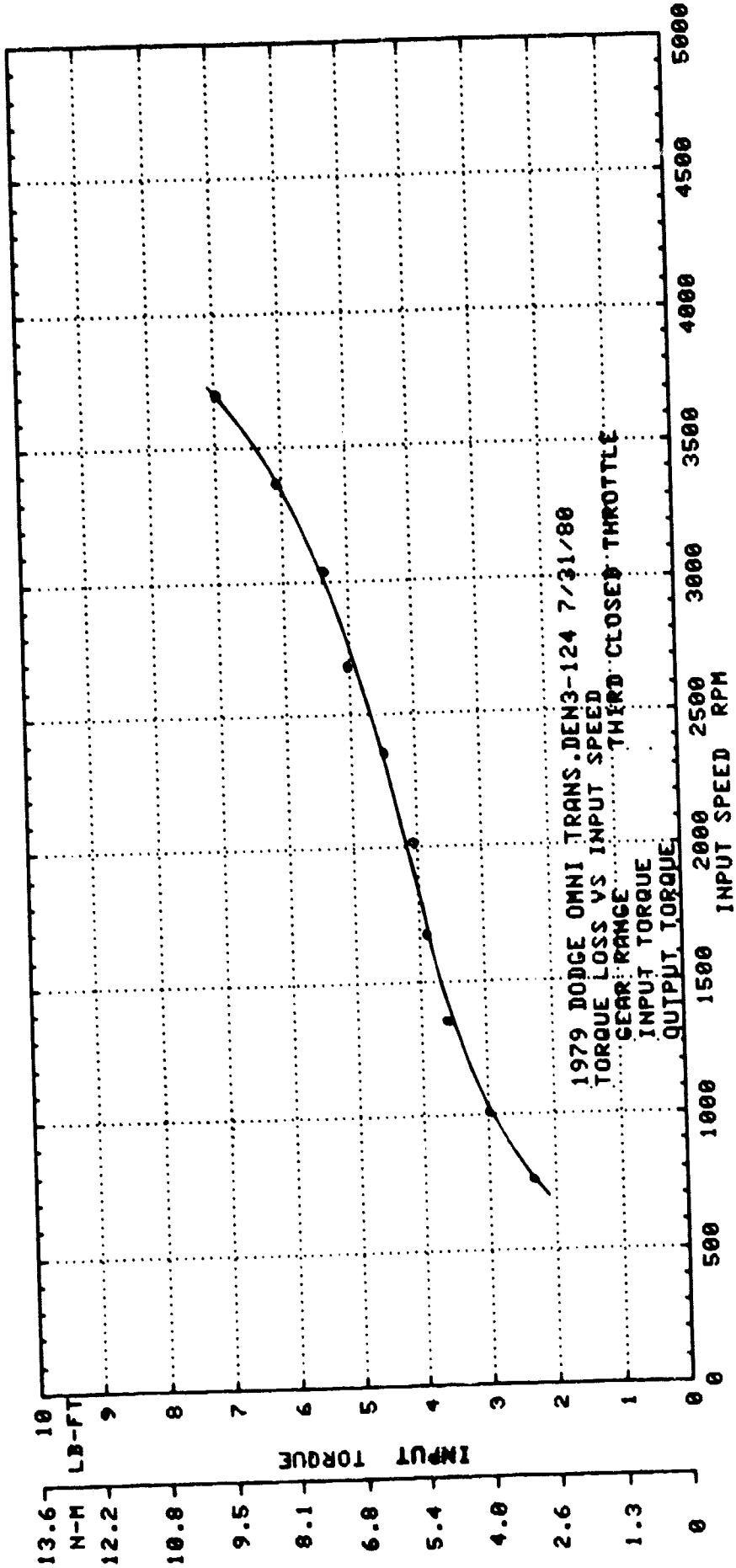
NO LOAD LOSSES

2nd Gear (Open Throttle)


13.6
N-M
12.2
10.8
9.5
8.1
6.8
5.4
4.0
2.6
1.3
0
INPUT TORQUE
10
LB-FT
9
8
7
6
5
4
3
2
1
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
INPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/31/80
TORQUE LOSS VS INPUT SPEED
GEAR RANGE
SECOND OPEN THROTTLE
INPUT TORQUE
OUTPUT TORQUE

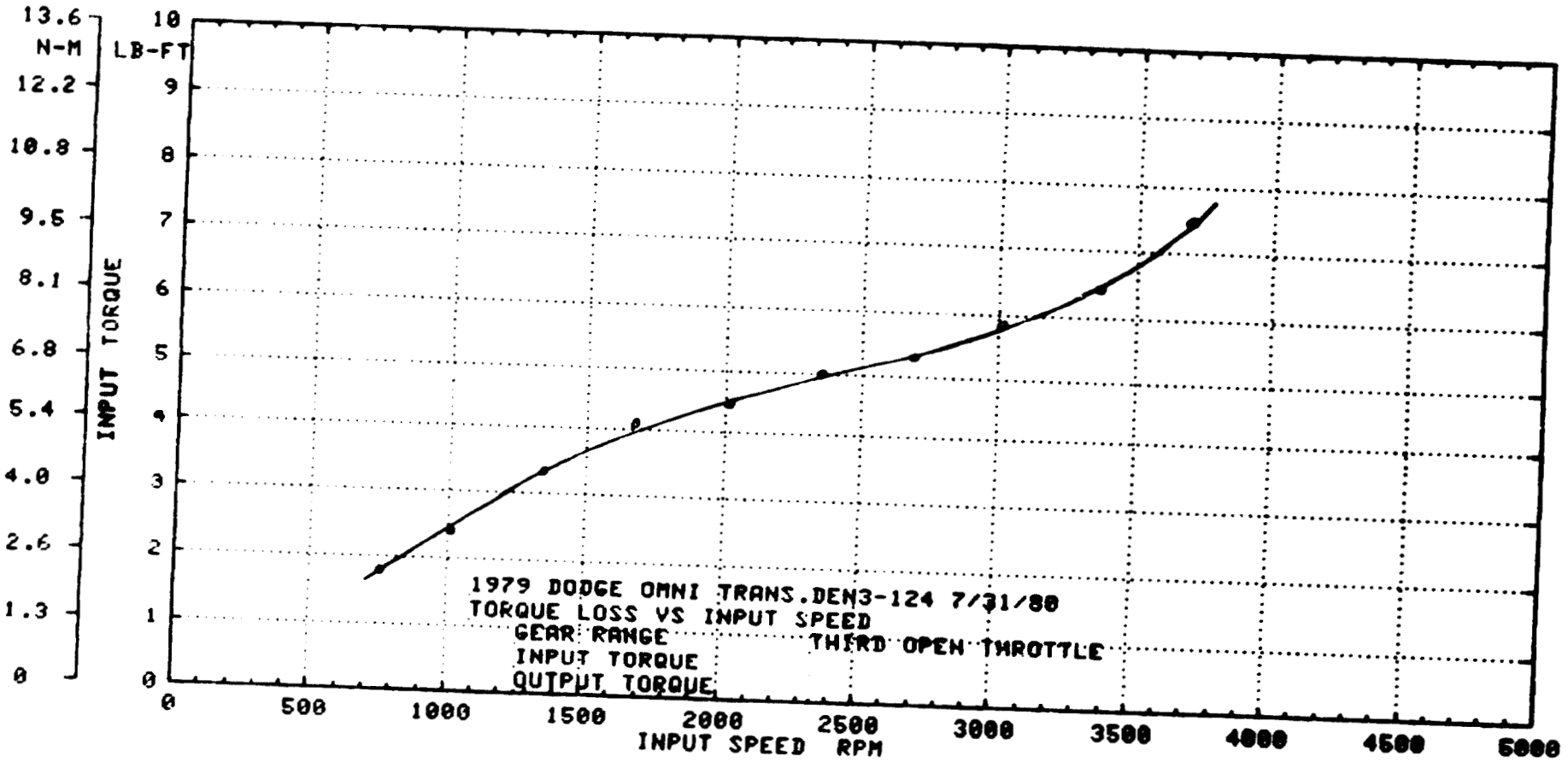
NO LOAD LOSSES

3rd Gear (Closed Throttle)


1979 DODGE OMNI TRANS.DEN3-124 7/31/80
TORQUE LOSS VS INPUT SPEED
GEAR RANGE THIRD CLOSED THROTTLE
INPUT TORQUE
OUTPUT TORQUE
INPUT TORQUE
LB-FT
N-M
13.6
12.2
10.8
9.5
8.1
6.8
5.4
4.0
2.6
1.3
0
10
9
8
7
6
5
4
3
2
1
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
INPUT SPEED RPM

NO LOAD LOSSES

3rd Gear (Open Throttle)


13.6
N-M
12.2
10.8
9.5
8.1
6.8
5.4
4.0
2.6
1.3
0
INPUT TORQUE
10
LB-FT
9
8
7
6
5
4
3
2
1
0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
INPUT SPEED RPM
1979 DODGE OMNI TRANS.DEN3-124 7/31/80
TORQUE LOSS VS INPUT SPEED
GEAR RANGE THIRD OPEN THROTTLE
INPUT TORQUE
OUTPUT TORQUE

APPENDIX

ROOT MEAN SQUARE METHOD

TORQUE ERROR (HIMMELSTEIN) $= \sqrt{(\text{TORQUE TRANS. ERROR})^2 + (\text{TAPE RECORDER ERROR})^2 + (\text{ANALYZER ERROR})^2}$
$= \sqrt{(0.21)^2 + (0.05)^2 + (0.048)^2} = \pm 0.221\%$ of Full Scale

TORQUE ERROR (LEBOW) $= \sqrt{(\text{TORQUE TRANS. ERROR})^2 + (\text{TAPE RECORDER ERROR})^2 + (\text{ANALYZER ERROR})^2}$
$= \sqrt{(0.05)^2 + (0.05)^2 + (0.046)^2} = \pm 0.08\%$ of Full Scale

SPEED ERROR $= \sqrt{(\text{SPEED SENSOR})^2 + (\text{SPEED CONDITIONER})^2 + (\text{TAPE RECORDER ERROR})^2 + (\text{ANALYZER ERROR})^2}$
$= \sqrt{(0.025)^2 + (0.10)^2 + (0.05)^2 + (0.048)^2} = \pm 0.124\%$ of Full Scale

POWER OUT ERROR $= \sqrt{(\text{TORQUE ERROR (LEBOW)})^2 + \text{SPEED ERROR})^2 + (\text{COMPUTER CALCULATION ERROR})^2}$
$= \sqrt{(0.08)^2 + (0.124)^2 + (0.5)^2} = \pm 0.5\%$ of Full Scale

EFFICIENCY ERROR $= \sqrt{(\text{TORQUE ERROR (LEBOW)})^2 + (\text{SPEED ERROR})^2 + (\text{TORQUE ERROR (HIMM)})^2 + (\text{SPEED ERROR})^2 + (\text{COMPUTER CALCULATION ERROR})^2}$
$= \sqrt{(0.08)^2 + (0.124)^2 + (0.221)^2 + (0.124)^2 + (0.5)^2} = \pm 0.579\%$ of Full Scale

SUM OF ERROR METHOD

TORQUE ERROR HIMMELSTEIN = (TORQUE TRANSDUCER ERROR) + (TAPE RECORDER ERROR) + (ANALYZER ERROR)
= (0.21) + (0.05) + (0.048) = $\pm 0.308\%$ of Full Scale

TORQUE ERROR (LEBOW) = (TORQUE TRANS. ERROR) + (TAPE RECORDER ERROR) + (ANALYZER ERROR)
= (0.05) + (0.05) + (0.046) = $\pm 0.146\%$ of Full Scale

SPEED ERROR = (SPEED SENSOR) + (SPEED CONDITIONER) + (TAPE RECORDER ERROR) + (ANALYZER ERROR)
= (0.025) + (0.1) + (0.05) + (0.048) = $\pm 0.223\%$ of Full Scale (1 Volt = 4000 RPM)

POWER OUT ERROR = (TORQUE ERROR (LEBOW)) + (SPEED ERROR) + (COMPUTER CALCULATION ERROR)
= (0.06) + (0.124) + (0.5) = $\pm 0.704\%$ of Full Scale

EFFICIENCY ERROR = (TORQUE ERROR (LEBOW)) + (SPEED ERROR) + (TORQUE ERROR HIMM.) + (SPEED ERROR)
+ (COMPUTER CALCULATION ERROR)
= (0.08) + (0.124) + (0.221) + (0.124) + (0.5) = $\pm 0.1049\%$ of Full Scale

The inter number computer calculation error was determined by taking a set of sample calculations and comparing the accurate multiplication to the computer multiplication. A sample comparison is given below.

DATA DRIVE
PERFORMANCE
2ND GEAR

T_i=40 lb/ft	ACCURATE CALCULATION	COMPUTER CALCULATION
T_i=39.500, T_o=116.3369	T_o/T_i=2.9452	T_o/T_i=2.9367

Comparison = (2.9452 - 2.9367)/2.9452 x 100 = 0.288%

Since every calculation was not checked in this manner, a factor of safety was added to 0.288%, and 0.5% was used as the inter number computer calculation error.

OTHER MANUALS

To locate specific manuals in the documentation shipped with the system, refer to the System Configuration Notice for the contents of each binder.

SYSTEM SPECIFICATIONS & CHARACTERISTICS

The specifications in Table 1-1 describe the system's warranted performance. Those items under the heading of "Characteristics" go beyond the guaranteed specifications and give typical performance for some additional parameters and operations. These are included only to give you information which may be useful in applying the system.

Table 1-1. System Specifications and Characteristics

SPECIFICATIONS
(Specifications describe the standard system's warranted performance.)

ANALOG-TO-DIGITAL CONVERTER

Input Voltage Range: ±0.125V to ±8V peak in steps of 2.
Input Coupling: dc or ac.
Input Channels: 2 channels wired for 4 standard. 4 channels optional with plug-in cards.
Resolution: 12 bits including sign.
Input Frequency Range: dc to 50 kHz, 5 Hz to 50 kHz, ac coupled (100 kHz optional).
Sample Rate:
Internal: 100 kHz max. (1, 2, 3, or 4 channels simultaneously). 200 kHz optional on 1, 2, 3, or 4 channels. (150 kHz max. 3 or 4 channels simultaneously.†)
External: An external time base may be used to allow external control of the sampling rate up to 100 kHz (200 kHz optional). One sample can be taken for each clock pulse (TTL level).
Internal Clock Accuracy: ±0.01%.

DISPLAY UNIT

Vertical Scale Calibration: Data in memory is automatically scaled to give a maximum on-screen calibrated display. The scale factor is given in volts/division, volts²/division, or in dB offset.
Log Display Range: 80 dB with a scale factor ranging from 0 to +998 dB. Offset selectable in 4 dB steps.
Linear Display Range: ±4 divisions with scale factor ranging from 1×10^{-512} to 5×10^{512} in steps of 1, 2, and 5.
Digital UP/DOWN Scale: Allows 8 up-scale and 2 down-scale steps (calibrated continuous scale factor).
Horizontal Scale Calibration:
Linear Sweep Length: 10, 10.24 or 12.8 divisions.
Log Horizontal: 0.5 decades/division.
Markers: Intensity markers every 8th or every 32nd point.

BASE SOFTWARE

Transform Accuracy: The expected rms value of computational error introduced in either the forward or inverse FFT will not exceed 0.1% of the rms value of the transform result.
Dynamic Range: >75 dB for a minimum detectable spectral component in the presence of one full scale spectral component after twenty ensemble averages for a block size of 1024.

EXECUTION TIMES*

Fourier Transform: <55 ms
Stable Power Spectrum Average: <80 ms
Stable Tri-Spectrum Average: <220 ms

REAL TIME BANDWIDTHS*

Fourier Transform: >7.5 kHz
Stable Power Spectrum Average: 5.4 kHz
Stable Tri-Spectrum Average: 1.9 kHz

MASS STORAGE SOFTWARE

MAXIMUM REAL TIME DATA ACQUISITION RATE (Single Channel):
BS 256: 10 kHz
BS 1024: 39 kHz (25 kHz†)
BS 4096: 80 kHz (30 kHz†)

OFF-LINE BSFA SOFTWARE

Center Frequency Range: dc to one-half the Real Time Data Acquisition Rate.
Center Frequency Resolution: Continuous resolution to the limit of the frequency accuracy for center frequencies >0.02% of the sampling frequency.
Frequency Accuracy: ±0.01%.
Bandwidth Selection: In steps of f/5n where n = 2, 3, 4, etc.
Max. Resolution Enhancement: >400
Dynamic Range:** 90 dB from peak out-of-band spectral component to the peak level of the passband noise.
80 dB from peak in-band spectral component to the peak level of the passband noise.
Out-of-Band Rejection: >90 dB
Passband Flatness of the Digital Filter: ±0.01 dB

ENVIRONMENTAL CONDITIONS

Temperature Range: 0°C to 40°C (104°F).

*For band limited random noise type signals at block size 1024, no display, no Hanning.
**After eight ensemble averages of a power spectrum at block size 1024. Reduced by 10 dB at the exact center of the band.
†These rates apply to systems with modules 54668 and 54651A, B having a serial prefix lower than 1842.

FM RECORD/REPRODUCE SPECIFICATIONS

Input Sensitivity:	**0.1 to 2.5 volts rms; adjustable with input attenuator for ±40% deviation. Can be extended to 10 volts.**
Nominal Input Level:	**±1.4 volts peak.**
Nominal Input Impedance:	**100 K ohms resistive, shunted by less than 100 pf, unbalanced to ground.**
Frequency Response:	
Flat Amplitude Filter	**DC to 20 KHz, at 60 ips, ±0.5 db; ±40 deviation.**
Linear Phase Filter	**DC to 12 KHz, at 60 ips, ±0.5 db; ±40% deviation.**
	DC to 20 KHz at 60 ips, ±0.5, -3 db; ±40% deviation.
Frequency Responses (Optional):	**DC to 80 KHz at 120 ips using ±40% deviation with IRIG intermediate band center frequency of 432 KHz. Upper frequency limit and center frequencies are proportionately lower at lower speeds, to 3-3/4 ips. DC to 10 KHz at 60 ips using ±40% deviation with IRIG low band frequency of 54 KHz for improved S/N ratios. Upper frequency limit and center frequencies are proportionately lower at lower speeds.**
DC Drift (Oscillator and Discriminator):	Less than ±0.5% of peak-to-peak deviation per 10°F after 20 minute warm-up.
Signal/Noise Ratio	46 db at 60 ips.

DC Linearity:	Less than ±0.5% of peak-to-peak deviation reference to best straight line through zero.
AC Distortion:	Less than 1.5% total harmonic distortion at all speeds.
Transient Response (60 ips):	
Flat Amplitude Filter (±1/2db)	Rise Time (10% to 90% points) - 22 microseconds. Overshoot - less than 15%.
Linear Phase Filter (+1/2, -3 db)	Rise Time (10% to 90% points) - 18 microseconds. Overshoot - less than 2.5%.
Output Level (±40% deviation):	±1.4 volts peak, into 1000 ohms, with short circuit protection (SCP).
Output Current (±40% deviation):	±3 milliamperes peak with SCP.
Output Impedance:	Less than 50 ohms, unbalanced to ground, with SCP.

GENERAL

Configuration:	One standard 19 inch wide equipment enclosure for 14 channel FM or Direct Record/Reproduce System. For 28-32 vdc operation. Additional enclosure furnished for operation from other power supplies. Optional Rack Mounting Kit available.
Recorder Size (28-32 v):	26-1/8 inches high by 19 inches wide by 12 inches deep for a 7 channel-6 speed record/reproduce system or a 14 channel-6 speed record, 2 speed reproduce system. Additional enclosure (7-1/2 inches height) which attaches to portable

Rotating Shaft Torque Sensors

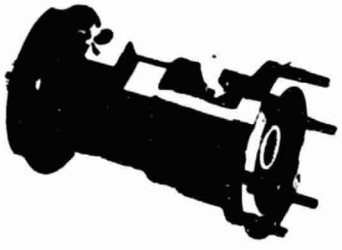
Model 1602
Low capacity torque sensor.

Capacity (Oz. In.)	Max. Speed (RPM)	Model	Protected for Overloads to (Oz. In.)	Torsional Stiffness (Lb. In./Rad.)	Rotating Inertia (Lb.-In.²)	Weight (Lbs.)
50	20,000	1602-50	150	400	.35	3¼
100	20,000	-100	300	1,000	.35	3¼
200	20,000	-200	600	2,500	.35	3¼
500	20,000	-500	1,500	5,500	.35	3¼
1,000	20,000	-1K	1,500	8,000	.35	3¼

Models 1604, 1605 & 1607
Utility rotating shaft torque sensor recommended for general application.

Capacity (Lb. In.)	Max. Speed (RPM)	Model	Protected for Overloads to (Lb. In.)	Torsional Stiffness (Lb. In./Rad.)	Rotating Inertia (Lb.-In.²)	Weight (Lbs.)
50	15,000	1604-50	150	5,000	1.0	18
100	15,000	-100	300	13,500	1.0	18
200	15,000	-200	600	33,000	1.0	18
500	15,000	-500	1,500	85,000	1.0	18
1,000	15,000	-1K	3,000	150,000	1.0	18
2,000	15,000	-2K	6,000	225,000	1.0	18
2,000	15,000	1605-2K	6,000	700,000	3.25	28
5,000	15,000	-5K	15,000	950,000	3.25	28
10,000	15,000	-10K	20,000	1,000,000	3.25	28
20,000	4,000	1607-20K	60,000	6,800,000	52.0	75
50,000	4,000	-50K	150,000	11,800,000	57.0	75
100,000	4,000	-100K	150,000	19,950,000	180.0	75

Model 1615
Standard flange [illegible] mount with AND pads to match Army-Navy mounting standard.



Capacity (Lb. In.)	Max. Speed (RPM)	Model	Protected for Overloads to (Lb. In.)	Torsional Stiffness (Lb. In./Rad.)	Rotating Inertia (Lb.-In.²)	Weight (Lbs.)
50	15,000	1615A-50	150	1,500	1.0	24
100	15,000	-100	300	4,000	1.1	24
200	15,000	-200	600	10,000	1.2	24
500	15,000	-500	1,500	20,000	1.3	24
1K	15,000	-1K	1,500	25,000	1.4	24
50	15,000	1615K-50	75	1,620	1.04	25
100	15,000	-100	150	4,570	1.05	25
200	15,000	-200	300	12,900	1.06	25
500	15,000	-500	750	940,000	1.97	25
1,000	15,000	-1K	1,500	204,000	2.00	25
2,000	15,000	-2K	3,000	347,000	2.08	26
5,000	15,000	-5K	7,500	500,000	2.38	26
10,000	15,000	-10K	15,000	574,000	2.76	26

Model 1648
Flange drive units recommended for use when short length is mandatory.

Capacity (Lb. In.)	Max. Speed (RPM)	Model	Protected for Overloads to (Lb. In.)	Torsional Stiffness (Lb. In./Rad.)	Rotating Inertia (Lb.-In.²)	Weight (Lbs.)
2,000	5,000	1648-2K	3,000	742,000	23.0	23
5,000	5,000	-5K	7,500	1,811,000	23.0	23
10,000	5,000	-10K	15,000	2,248,000	23.0	23
20,000	5,000	-20K	30,000	3,507,000	23.5	23

GENERAL SPECIFICATIONS: (All Models)

SENSOR: Four arm bonded foil strain gage bridge
BRIDGE RESISTANCE: 350 ohms nominal
BRIDGE VOLTAGE: 20 volts maximum, 3 KHz
OUTPUT: 2 to 2.5 millivolt/volt nominal
LINEARITY: 0.1% of full scale

COMPENSATED TEMPERATURE RANGE: 30°F to 150°F
USEABLE TEMPERATURE RANGE: 0°F to 200°F
EFFECT OF TEMPERATURE ON ZERO: .002% of full scale/°F
EFFECT OF TEMPERATURE ON OUTPUT: .002% of reading/°F

TECHNICAL SPECIFICATION

MCRT®6-02T Non-Contact Torquemeter

MAX. TORQUE – 15,000 lb.-in.
SPEED – 0 - 7,500 rpm

GENERAL DESCRIPTION

The MCRT™6-02T is a compact, high accuracy, flanged torquemeter well adapted for vehicle drive-line measurements and continuous monitoring and feedback applications. It uses a rotating strain gage torque bridge, temperature compensated for drift and modulus. The bridge is connected to a stationary electronic readout via integral, non-contact rotary transformers.

The torquemeter is immune to water, lubricants, coolants, vibration, etc. The elimination of slip rings permits high accuracy low level measurements with long, maintenance free life. Thrust and bending loads are inherently cancelled by the transducer design. An optional, integral non-contact speed pickup may be specified when ordering.

Linearity: 0.1%

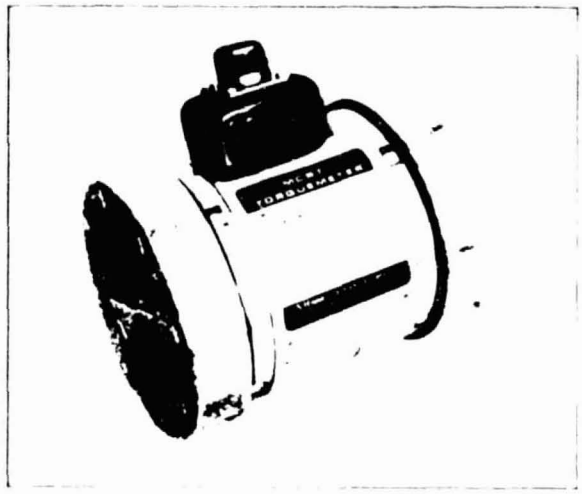
Temperature Effects: From 75 to 175° F maximum drift is 0.2% of full scale and maximum error due to modulus change is 0.2% of reading.

Maximum Operating Temperature: 220° F, assuming permanent lubrication. Above 175° F, the maximum shaft speed may have to be de-rated.

Readout: Any carrier amplifier suitable for strain gage service may be used.

Excitation Voltage: 10 volts rms, maximum.

Nominal Output: 0.75 millivolts/volt (open circuit).



Standard Ratings

MODEL	FULL SCALE TORQUE	TORSIONAL STIFFNESS	MAXIMUM BENDING MOMENT	MAXIMUM ROTATING INERTIA	MAXIMUM WEIGHT
MCRT 6-02T	(lb - in.)	(lb - in./rad.)	(lb - in.)	(in - oz - sec^2)	(lbs.)
(1.3)	1,000	602,000	500	0.60	13.8
(2.3)	2,000	1,375,000	1,000	0.60	13.8
(4.3)	4,000	2,640,000	2,000	0.60	13.8
(6.3)	6,000	2,430,000	3,000	0.90	17.0
(10.3)	10,000	2,930,000	5,000	0.90	17.0
(15.3)	15,000	3,530,000	5,500	0.90	17.0

Overload Capacity: 2 times full scale rating.

Shaft Speed: 0 to 7,500 rpm, bi-directional. Optional speed pickup produces 60 pulses per shaft revolution.

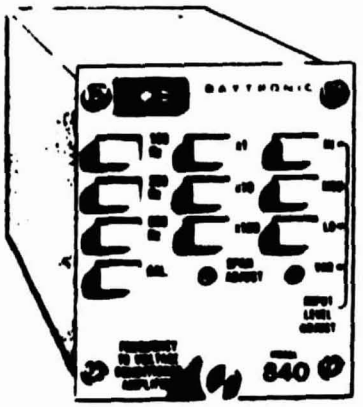
Construction: Load carrying members (flanges, shaft) are 17-4 PH high strength stainless steel.

NOTES

(1) Maximum speed rating assumes permanent lubrication. Consult factory for higher speed [illegible]

(2) When combined axial and bending loads are present, the bending capacity must be de-rated [illegible]

(3) Stator should be compliantly restrained from rotating.



MODEL
840

FREQUENCY-TO-VOLTAGE CONVERTER

The Model 840 Frequency-to-Voltage Converter is a conditioner amplifier module that accepts input signals in a wide range of frequencies, wave shapes, and voltage levels and produces standard system output voltages precisely proportional to the frequency or repetition rate of the input signal. It is intended for use in "800" systems for measurement of **flow, rpm,** and similar phenomena that can be derived from magnetic pickups, turbine flowmeters, or other frequency producing sources.

Nine selectable frequency ranges accommodate virtually all mechanical measurement requirements. An internal crystal oscillator reference and adjustable output span allow precise calibration of the indicating device in terms of *frequency, rpm,* or any other chosen units appropriate to the particular measurement. In flow measurement, for example, the Model 840 can be used with the Model 890 Digital Indicator and calibrated, using the front panel controls, so as to indicate directly in *gallons per minute* or *gallons per hour,* provided only that the flowmeter **K Factor** *(cycles per gallon)* is known.*

The Model 840 is also used in conjunction with the Model 862 Multiplier Module in an instrument that can display *torque, rpm, and shaft horsepower* in digital engineering units. Additional information on this and other instrument combinations is contained under the Model 862 description.

*If fluid specific gravity is also known, calibration can be made in units of *mass flow*, such as Pounds per Hour. For applications where specific gravity is subject to change, corrections can be entered manually on a calibrated dial (see Model 868, p 46) or applied automatically by a temperature sensing channel (see Model 862, page 42).

SPECIFICATIONS

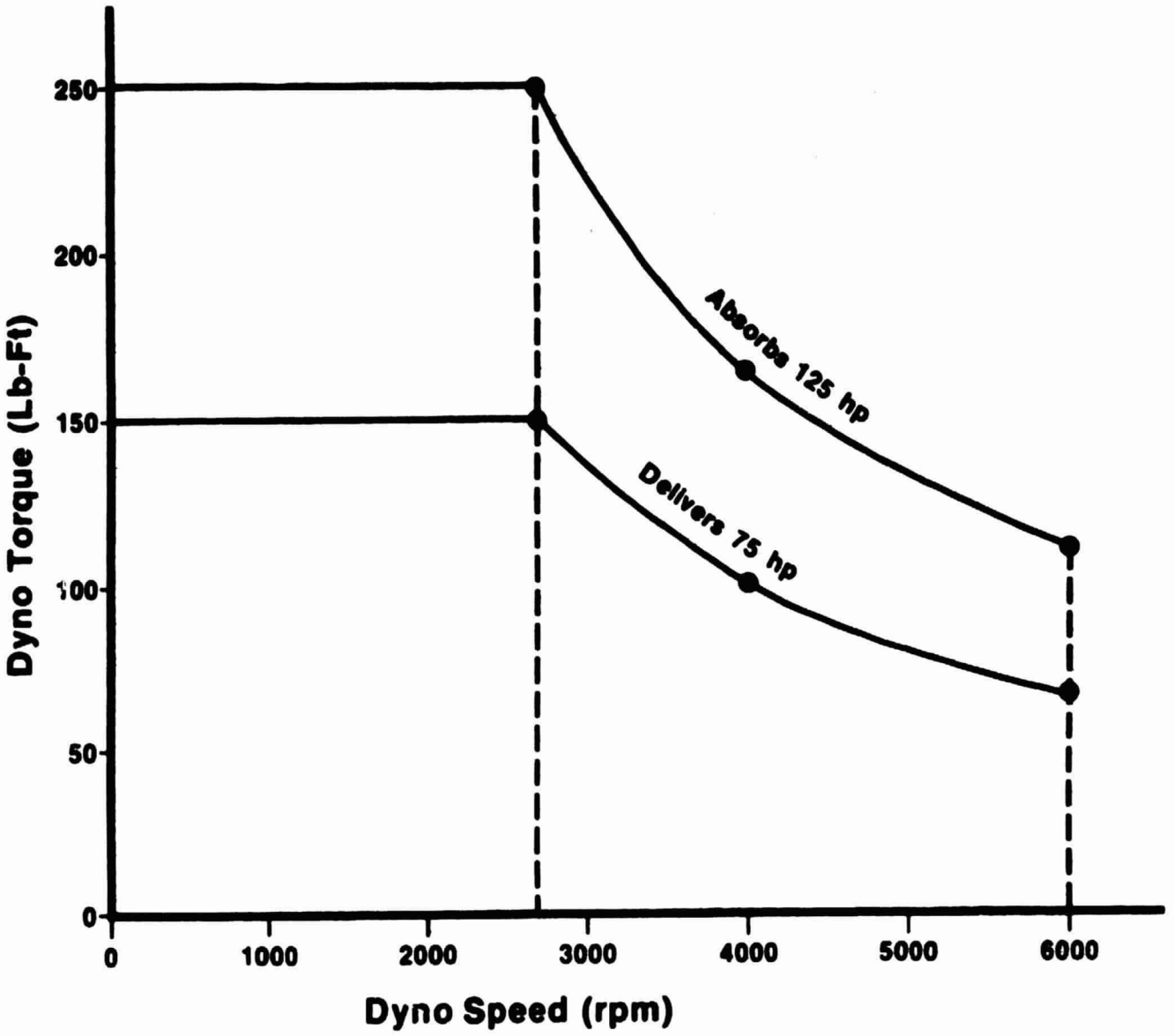
Input:

Type	any AC signal, grounded or floating, irrespective of waveform
Sensitivity	Three ranges (Lo, Med, & Hi), plus vernier, allow adjustment of threshold level from 5 mv to 50 volts (peak). Maximum continuous input voltage is 25 v, 100 v, & 250 v (RMS) respectively. Input is undamaged by momentary peak voltage of 500 volts on any range. Differential input impedance is 20K ohms, 400K ohms, and 8 Megohms, respectively
Common mode rejection	greater than 60 dB to 2 kHz and greater than 30 dB to 100 kHz
Frequency ranges	100 Hz, 200 Hz, and 500 Hz, with multipliers of X1, X10, and X100, each with 100% overrange

Output:

Standard One Volt Data Signal	(see Table One, page 7)
Standard Ten Volt Output Signal	(see Table One, page 7)
Step function response (to 99% of final value)	800 ms for X1 multiplier, 80 ms for X10 and X100 multipliers
Step function response (to 99.9% of final value)	2.5 sec for X1 multiplier, 250 ms for X10 and X100 multipliers
Ripple and noise (max.)	less than 0.2% of full scale from 10% to 100% of scale
Accuracy:	0.05% of scale (based on average value of DC output)
Housing:	standard full width module
Operating temperature range:	+50 to +120 degrees F
Power requirements:	105-130 volts, 50-400 Hz

PRICE Model 840 Frequency-to-Voltage Converter **$495.00**

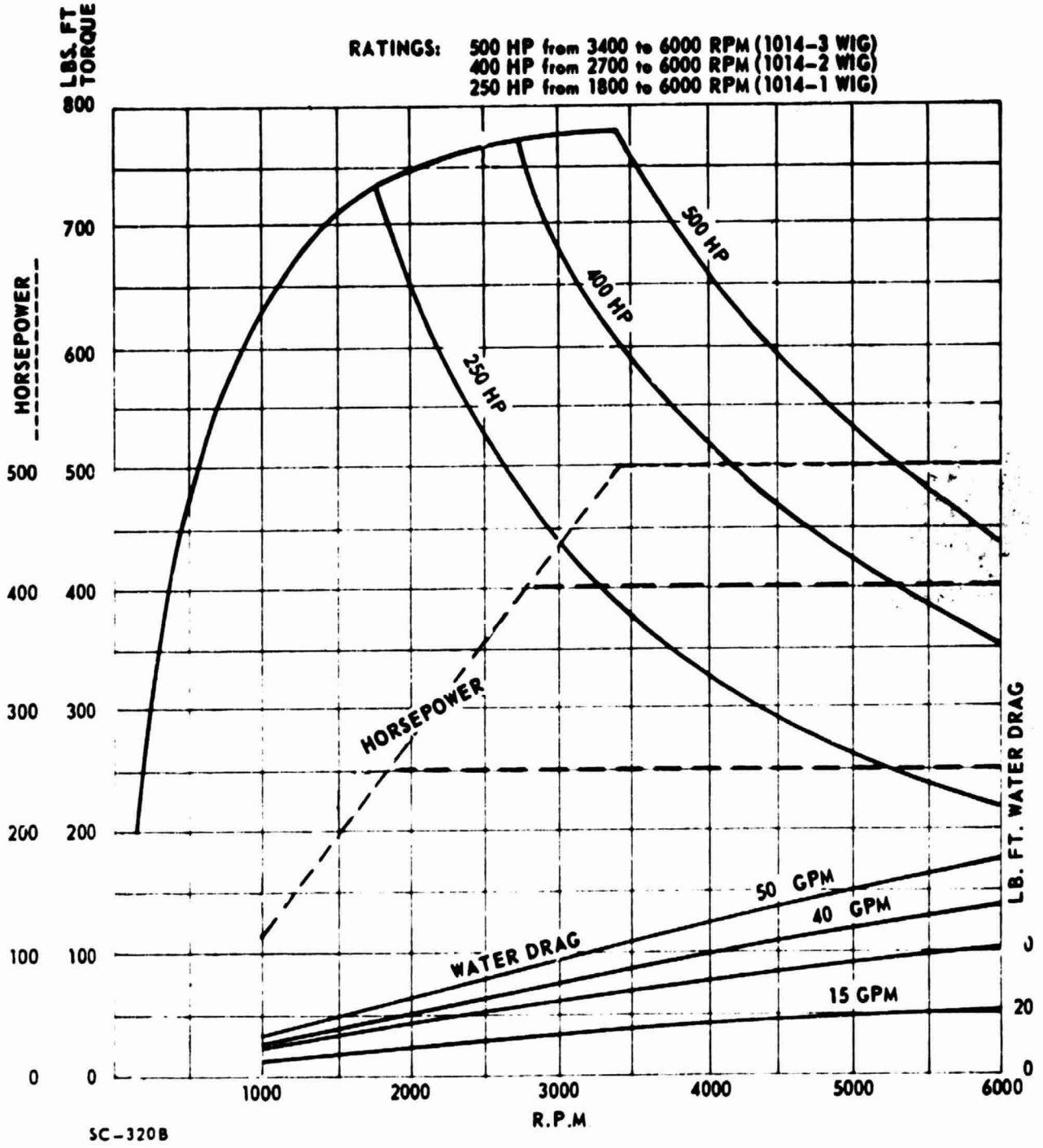


Dynamometer Characteristics

General Electric

No 1739498	Type TCL-20	Class 4-125-2700
Amperes 360	Volts 250	
Absorbs 125 hp	Delivers 75 hp	
Speeds 2700/6000		
Torque Arm 15.756	Insts. GE I-7360-B	

Absorption Model 1014WIG • Speed-Torque Curve



SLIP RING TORQUE SENSORS

Model 1102 **Model 1103**

Low capacity torque sensors.

Capacity (Oz. In.)	Max. Speed (RPM)	Model	Protected for overloads to (Oz. In.)	Torsional Stiffness (Lb. In./Rad.)	Rotating Inertia (Lb.-In.-Sec.²)	Weight (Lbs.)	Brush Life Factor × 10⁹	Ring Diameter (In.)
10	20,000	1103-10	20	112	.01	¼	NA	NA
20	20,000	-20	40	113	.01	¼	NA	NA
50	20,000	1102-50	150	665	676	2	8.2	0.750
100	20,000	-100	300	1,070	678	2	8.2	0.750
200	20,000	-200	600	1,790	680	2	8.2	0.750
500	20,000	-500	1,000	3,480	682	2	8.2	0.750
1,000	20,000	-1K	1,500	4,850	685	2	8.2	0.750

Models 1104 thru 1109, 1114, 1118 and 1121

Standard rotating shaft torque sensor for general application

Capacity (Lb. In.)	Max. Speed (RPM)	Model	Protected for overloads to (Lb. In.)	Torsional Stiffness (Lb. In./Rad.)	Rotating Inertia (Lb.-In.-Sec.²)	Weight (Lbs.)	Brush Life Factor × 10⁹	Ring Diameter (In.)
100	16,000	1114-100	300	7,800	1.11	11	25.9	1.187
200	16,000	-200	600	17,200	1.12	11	25.9	1.187
500	16,000	-500	1,000	25,300	1.09	11	25.9	1.187
1,000	16,000	-1K	1,500	36,200	1.10	11	25.9	1.187
100	9,000	1104-100	150	6,430	1.52	11	15.4	2.000
200	9,000	-200	300	17,000	1.53	11	15.4	2.000
500	9,000	-500	750	45,200	1.59	11	15.4	2.000
1,000	9,000	-1K	1,500	103,000	1.59	11	15.4	2.000
2,000	9,000	-2K	3,000	182,500	1.60	11	15.4	2.000
5,000	8,500	1105-5K	7,500	475,000	3.59	28	14.0	2.187
10,000	8,500	-10K	15,000	750,000	4.09	28	14.0	2.187
20,000	6,500	1106-20K	30,000	2,610,000	15.18	42	10.2	3.000
50,000	4,000	1107-50K	75,000	7,220,000	53.06	74	7.2	4.250
100,000	4,000	-100K	150,000	12,450,000	58.14	74	7.2	4.250
120,000	2,400	1108-120K	180,000	15,400,000	265.41	162	5.3	5.750
240,000	2,400	-240K	360,000	23,300,000	285.35	162	5.3	5.750
360,000	2,100	1109-360K	540,000	28,000,000	400.00	240	4.4	7.000
600,000	2,100	-600K	900,000	40,000,000	577.00	240	4.4	7.000
840,000	450	1118-840K	1,260,000	Consult Factory			3.3	9.000
1,200,000	450	-1200K	1,800,000	Consult Factory			3.3	9.000
1,800,000	450	-1800K	2,700,000	Consult Factory			3.3	9.000
2,400,000	350	1121-2400K	3,600,000	Consult Factory			3.0	10.000
3,000,000	350	-3000K	4,500,000	Consult Factory			3.0	10.000

Model 1115

Flange housing mount with AND pads to match Army-Navy mountings standard Spline drive

Capacity (Lb. In.)	Max. Speed (RPM)	Model	Protected for overloads to (Lb. In.)	Torsional Stiffness (Lb. In./Rad.)	Rotating Inertia (Lb.-In.-Sec.²)	Weight (Lbs.)	Brush Life Factor × 10⁹	Ring Diameter (In.)
100	24,000	1115A-100	300	5,230	2.44	24	25.9	1.187
200	24,000	-200	600	14,700	2.92	24	25.9	1.187
500	24,000	-500	1,000	25,900	2.43	24	25.9	1.187
1,000	24,000	-1K	1,500	37,600	2.44	24	25.9	1.187
100	8,000*	1115K-100	300	5,740	3.01	28	15.4	2.000
200	8,000*	-200	600	19,600	3.49	28	15.4	2.000
500	8,000*	-500	1,000	46,400	3.00	28	15.4	2.000
1,000	8,000*	-1K	1,500	103,000	3.01	28	15.4	2.000
2,000	8,000*	-2K	3,000	156,000	3.03	28	15.4	2.000
5,000	8,000*	-5K	7,500	342,000	3.05	28	15.4	2.000
10,000	8,000*	-10K	12,000	420,000	3.25	28	15.4	2.000

*12,000 RPM with air oil mist lubrication

Models 1228, 1248, 1241

Flange drive for use when short length is mandatory

Capacity (Lb. In.)	Max. Speed (RPM)	Model	Protected for overloads to (Lb. In.)	Torsional Stiffness (Lb. In./Rad.)	Rotating Inertia (Lb.-In.-Sec.²)	Weight (Lbs.)	Brush Life Factor × 10⁹	Ring Diameter (In.)
2,000	5,000	1228-2K	3,000	1,455,000	4.38	8	12.7	2.530
5,000	5,000	-5K	7,500	2,141,000	4.39	8	12.7	2.530
10,000	5,000	-10K	15,000	2,870,000	4.59	8	12.7	2.530
20,000	5,000	1248-20K	30,000	4,657,000	15.53	17	9.4	3.750
50,000	3,000	1241-50K	75,000	12,840,000	193.7	54	6.5	4.750
100,000	3,000	-100K	150,000	23,460,000	196.3	54	6.5	4.750

Specifications	Standard	"N" Option
Output at rated capacity millivolts per volt nominal	2 to 2.5	5
Nonlinearity of rated output	±0.1%	±0.15%
Hysteresis of rated output	0.1%	±0.15%
Repeatability of rated output	±0.05%	±0.07%
Zero balance of rated output	1.0%	±1.0%
Bridge resistance ohms nominal	350	350
Temperature range compensated °F	70 to 170	-70 to +170
Temperature range useable °F	65 to 200	-65 to +200

Specifications	Standard	"N" Option
Temperature effect on output of reading per °F	±0.002%	±0.003%
Temperature effect on zero of rated output per °F	±0.002%	±0.003%
Excitation voltage maximum volts DC or AC rms	20	20
Insulation resistance bridge case megohms at 50 VDC	5000	5000
Number of bridges	1	1