

EA02-025

FORD 10/27/03

APPENDIX N

BOOK 38

PART 2 OF 3

AUTOMATIC SPEED CONTROL DEVICE (A.S.C.D.)

Trouble-shooting (Cont'd)

6	A/T model only	<ul style="list-style-type: none">• When A.S.C.D. is set while vehicle is operating in "O.D." range, O.D. will be cancelled and shifting to O.D. cannot be made thereafter.• O.D. will not be cancelled even if actual car speed is 8 km/h (4 MPH) lower than set speed. (Set speed cannot be maintained.)• O.D. will not be cancelled even if accelerator switch is turned "ON".
---	----------------	---

Check O.D. cancel circuit for A.S.C.D. control unit.

↓ O.K.

Replace A.S.C.D. control unit.

↓ N.G.

Check harness between A/T control unit and A.S.C.D. control unit.

- Turn ignition switch to "OFF".
- Check continuity between ③ and ①.

Check from harness side



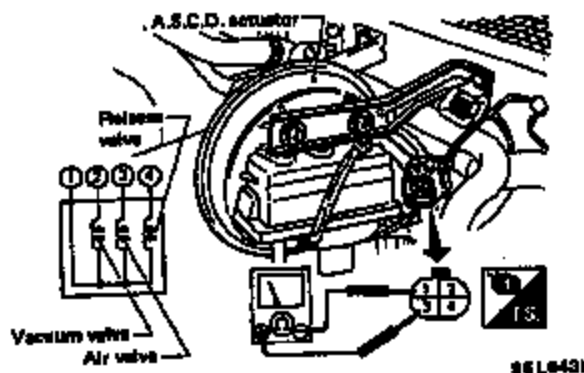
SEL737D

AUTOMATIC SPEED CONTROL DEVICE (A.S.C.D.)

A.S.C.D. Actuator Check

1. Check continuity between terminal ① and terminals ②, ③ and ④.

Continuity exist ... O.K.



CAUTION:

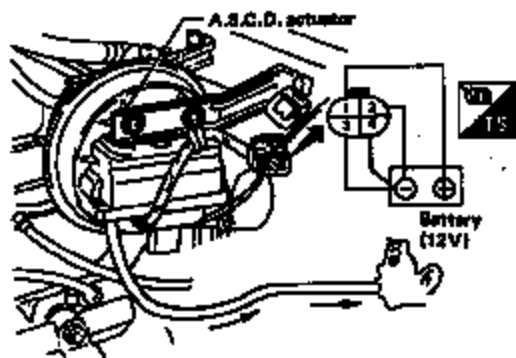
Do not attempt to remove valves from actuator.

2. Connect battery (approx. 12V) to harness connector of actuator as shown below, and apply vacuum to actuator.

If diaphragm moves smoothly, actuator is O.K.

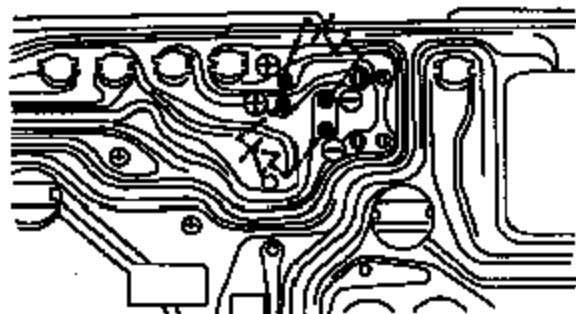
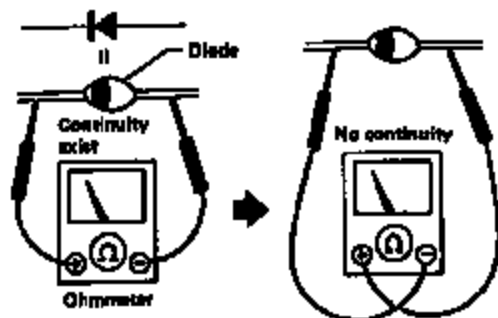
CAUTION:

When checking actuator by applying vacuum, do not apply engine vacuum directly as it is too strong to check actuator properly.



Diode Check

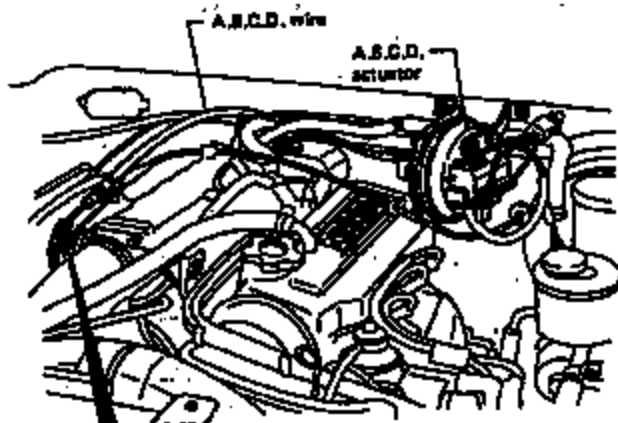
- Check continuity using an ohmmeter.
- Diode is functioning properly if test results are as shown below.



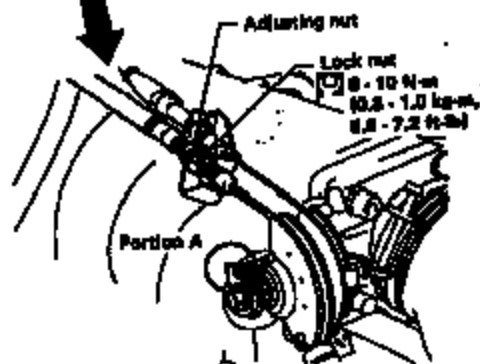
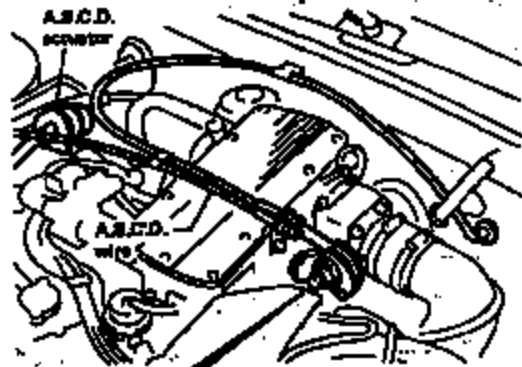
AUTOMATIC SPEED CONTROL DEVICE (A.S.C.D.)

A.S.C.D. Wire Adjustment

CA20E and CA18E engine models



VG30E engine model



5EL221K

CAUTION:

- Be careful not to twist wire when removing it.
- Do not tense wire excessively during adjustment.

After confirming that accelerator wire is properly adjusted, adjust the tension of A.S.C.D. wire in the following manner:

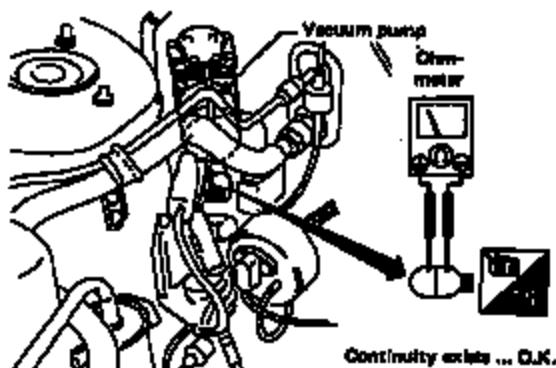
- (1) Tighten A.S.C.D. wire with adjusting nut until portion A of throttle lever comes into contact.
- (2) Then, back off adjusting nut 1/2 to 1 turn.
- (3) Securely tighten lock nut to hold adjusting nut in place.

- For A.S.C.D. stop switch and clutch switch adjustment, refer to BR and CL sections.

AUTOMATIC SPEED CONTROL DEVICE (A.S.C.D.)

Vacuum Pump Check

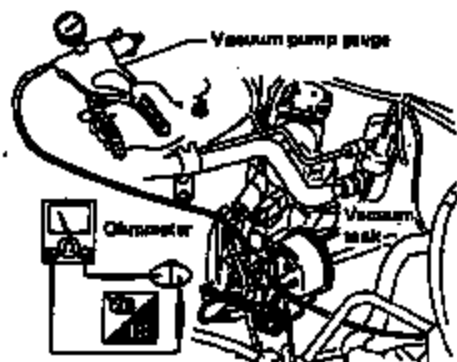
1. Disconnect harness connector from vacuum pump.
2. Check continuity between terminals at connector for vacuum pump.



SEL6481

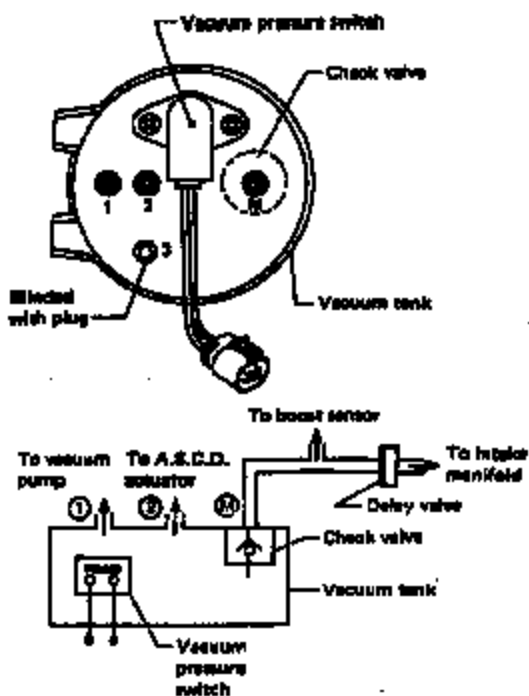
Vacuum Pressure Switch Check

1. Disconnect harness connector from vacuum tank.
2. Disconnect vacuum hose between vacuum pump and vacuum tank from vacuum pump.
3. Connect vacuum pump gauge to vacuum hose.
4. Check pressure switch using a vacuum pump gauge.



SEL6482

Vacuum Tank



SEL2838

Pressure	Resistance (Ω)
Atmospheric pressure	0
Vacuum pressure: approx. more than 38.7 kPa (280 mmHg, 11.42 inHg)	∞

NEKTOEN

01-Aug-81
14:02:11 AM

REVISED QMS. MPF (ALG. 1981)

NEXT GENERATION SPEED CONTROL SERVO TRASH DESIGN SERVO ASBY-ALTEC MP's.
AMPLIFIER- LANSDALE THICK FILM MP's.

MODEL YEAR 1982 1983 1984 1985 1986 1987
PPV 300K (148K) 302K 300K 300K 300K

SERVO ASSEMBLY: 1981 ECONOMICS

PART NUMBER	DESCRIPTION	QUANTITY	1981 ALTEC SUBMIT	1982 EXTENDED COST	1983 EXTENDED COST	1984 EXTENDED COST	1985 EXTENDED COST	REMARKS
P2VF-04819-AA	SERVO ACTUATOR ASSEMBLY	1		16.82	16.31	15.01	14.73	LATEST QUOTE RECEIVED 6-29-81.
ALTEC MANUFACTURE								
MHMM-32	SCREWS .008 EACH	4		0.34	0.34	0.34	0.34	
SERVO ASBY- TOTAL MATERIAL				16.82	16.31	15.02	14.77	
REBOUND FREIGHT (ALTEC ESTIMATE)				0.18	0.18	0.18	0.18	
MATERIAL & FREIGHT				16.14	17.16	14.80	14.66	
DIRECT LABOR (PER ALTEC COST)				0.11	0.09	0.09	0.09	
INDIRECT LABOR				0.04	0.04	0.04	0.04	
VARIABLE OVERHEAD				0.30	0.37	0.37	0.37	
VARIABLE COST-SERVO				16.65	17.62	14.89	15.41	

ELECTRONIC AMP. MODULE NORTH PENN

P2VF-30944-A1

LEADFRAME (GLDING COST /YR)	1		1.02	1.48	1.37	1.37	
MICRO MINICOM (100% BURR IN)			4.00	3.00			
MICRO MINICOM (CIRCUITRY MP'S (ITEM NO))					2.40	2.20	
ALL OTHER (PER MPF BOM & PRIME BOM DATED 4-18-81)			0.40	0.60	0.60	0.60	
TOTAL AMPLIFIER			11.02	16.71	6.45	6.27	
FREIGHT TO LANSDALE 3%			0.30	0.57	0.57	0.59	
MATERIAL & FREIGHT			11.30	16.76	6.88	6.95	
DIRECT LABOR 81.00 HRL							
DIRECT LABOR-BASE			1.84	1.22	1.18	0.80	
-FRINGE 30.27			1.66	0.94	0.74	0.67	
INDIRECT LABOR			0.00	0.37	0.30	0.30	
VARIABLE OVERHEAD (P.L.F. PRISON)			0.40	0.40	0.40	0.40	
SCVP			0.00	0.00	0.00	0.00	
VARIABLE COST-AMPLIFIER			15.39	14.89	12.78	11.89	
COST SUMMARY:							
SERVO ASBY			16.82	17.62	14.89	15.41	
AMPLIFIER ASBY			13.68	14.89	13.72	11.89	
TOTAL VAR. COST EXCLUDING MORTGAGE HARDWARE			30.50	31.36	28.61	27.30	

REFLECTS MPF NEW LABOR RATE / HRL

0002-025-A 250038

12.03
8.17
10.30

...to Metro/Suzuki Swift car
Geo Tracker/Suzuki Side-

...under way to raise the required
North American content level from
55 to 60 percent.

...under way to raise the required
North American content level from
55 to 60 percent.

Dealer Council and owner of
Stivers Lincoln-Mercury in Ellis-
ville, Mo.

Roberts not only likes trucks, he
also has worked with them. He was
Ford Division light-truck mer-
chandising manager in the Dallas
district in 1987, and he was Ford
Division general marketing man-
ager for cars and trucks from 1989
to 1992.

Trucks are vital to Ford Motor
Co. and Ford Division in terms of
sales, profits and bragging rights.

But through April 30, Ford had
sold 69,040 fewer trucks than dur-
ing the same period last year, and
Chevrolet was close to topping
Ford in total car and truck sales, a
title Ford has held since 1987.

Ford's F-series truck has been
the best-selling vehicle in the
United States for nine straight
years and the best-selling full-
sized truck for 14 years in a row.

But through April, the Chevrolet
C/K pickup series was leading
Ford's F-series trucks by 3,559

ies still search for silver lining

May was no help as deliveries plunged 17.8%

10-DAY CAR AND TRUCK SALES, BY MAKE

second-quarter rebound means
as early-May sales re-
at the recession levels of
991 periods.

of cars and light trucks
1-10 were down 17.8 per-
cent last year, with domestics
a bigger hit than imports:
down 13.5 percent.

May 1-10 period had same
sales this year and last.

Motor Co. was off only 12.4
General Motors sales were
1.8 percent, and Chrysler
is down 31.9 percent. As-
sociates estimates 10-day
Chrysler and for some in-

dip of 12.4 percent was an
amount over last month,
Ford's combined shortfall
to was 20.7 percent. Ford
its April numbers were
as usual because fleet car
temporarily cut back.

to 1,182 imported Trac-
Cape, Mercury enjoyed a
net gain over last year.

Chrysler continued to out-
the industry, enjoying a
sales gain, and Saturn
339 sales, 300 more than
at 10 days of April.

the Japanese-based com-
panies for American Honda
Inc. declined 6.4 percent.
as cut its imports from
and has reduced its U.S.
sales plans slightly. But
share of the market is ris-
ing as other makers are in-
more.

the 10-day period, Honda
3.3 percent of the market,
5.6 percent in 1990. For
four months of this year,
share was 6.1 percent, up
from the year before.
ly, Honda and Acura sold
cars from Jan. 1 through
about 12,000 more than
Dodge, Chrysler and
Ford.

truck sales for Nissan
up in U.S.A. were off 3.9
in early May, an improve-
Nissan's sales dip of 14.4
percent for this year. Nissan's
Centras were up 41.9
percent May 1-10.

May sales for Toyota
in U.S.A. Inc. were off
percent, but the decline was
as Toyota's 11.5 percent
year to date. Trucks
1.8 percent and cars
1.1 percent in early May.

	May 1-10 1991	May 1-10 1990	May 1-10 1991	May 1-10 1990
ACURA (Imp. car)	1,200	1,500		
ALFA ROMEO (Imp. car)	80	20		
ASTOR LANCIA (Imp. car)	1	1		
BMW (Imp. car)	210	200		
BWV (Imp. car)	802	1,170		
Domestic car	1,500	1,700		
Imported car	22	27		
Domestic truck	10	10		
Imported truck	10	10		
General Motors	1,500	1,700		
Domestic car	1,100	1,200		
Imported car	400	500		
Domestic truck	1,000	1,100		
Imported truck	100	100		
Chrysler	1,000	1,100		
Domestic car	1,000	1,100		
Imported car	100	100		
Domestic truck	1,000	1,100		
Imported truck	100	100		
Ford	1,000	1,100		
Domestic car	1,000	1,100		
Imported car	100	100		
Domestic truck	1,000	1,100		
Imported truck	100	100		
Honda	1,000	1,100		
Domestic car	1,000	1,100		
Imported car	100	100		
Domestic truck	1,000	1,100		
Imported truck	100	100		
Nissan	1,000	1,100		
Domestic car	1,000	1,100		
Imported car	100	100		
Domestic truck	1,000	1,100		
Imported truck	100	100		
Subaru	1,000	1,100		
Domestic car	1,000	1,100		
Imported car	100	100		
Domestic truck	1,000	1,100		
Imported truck	100	100		
Toyota	1,000	1,100		
Domestic car	1,000	1,100		
Imported car	100	100		
Domestic truck	1,000	1,100		
Imported truck	100	100		
Volvo	1,000	1,100		
Domestic car	1,000	1,100		
Imported car	100	100		
Domestic truck	1,000	1,100		
Imported truck	100	100		
Other	1,000	1,100		
Domestic car	1,000	1,100		
Imported car	100	100		
Domestic truck	1,000	1,100		
Imported truck	100	100		
GENERAL TOTALS	114,944	140,210		
Domestic car	101,001	108,000		
Imported car	13,943	32,210		
Domestic truck	11,000	12,000		
Imported truck	991	1,000		
TOTAL TRUCKS	12,991	13,000		
TOTAL CAR & TRUCKS	127,935	153,210		



The 400-horsepower Viper prototype will

PAGE CAR

Dodge charges up pe

By Raymond...

Dodge is revving up an advertising, merchandising and promotional effort to get maximum marketing mileage out of its pace car status at Sunday's Indianapolis 500.

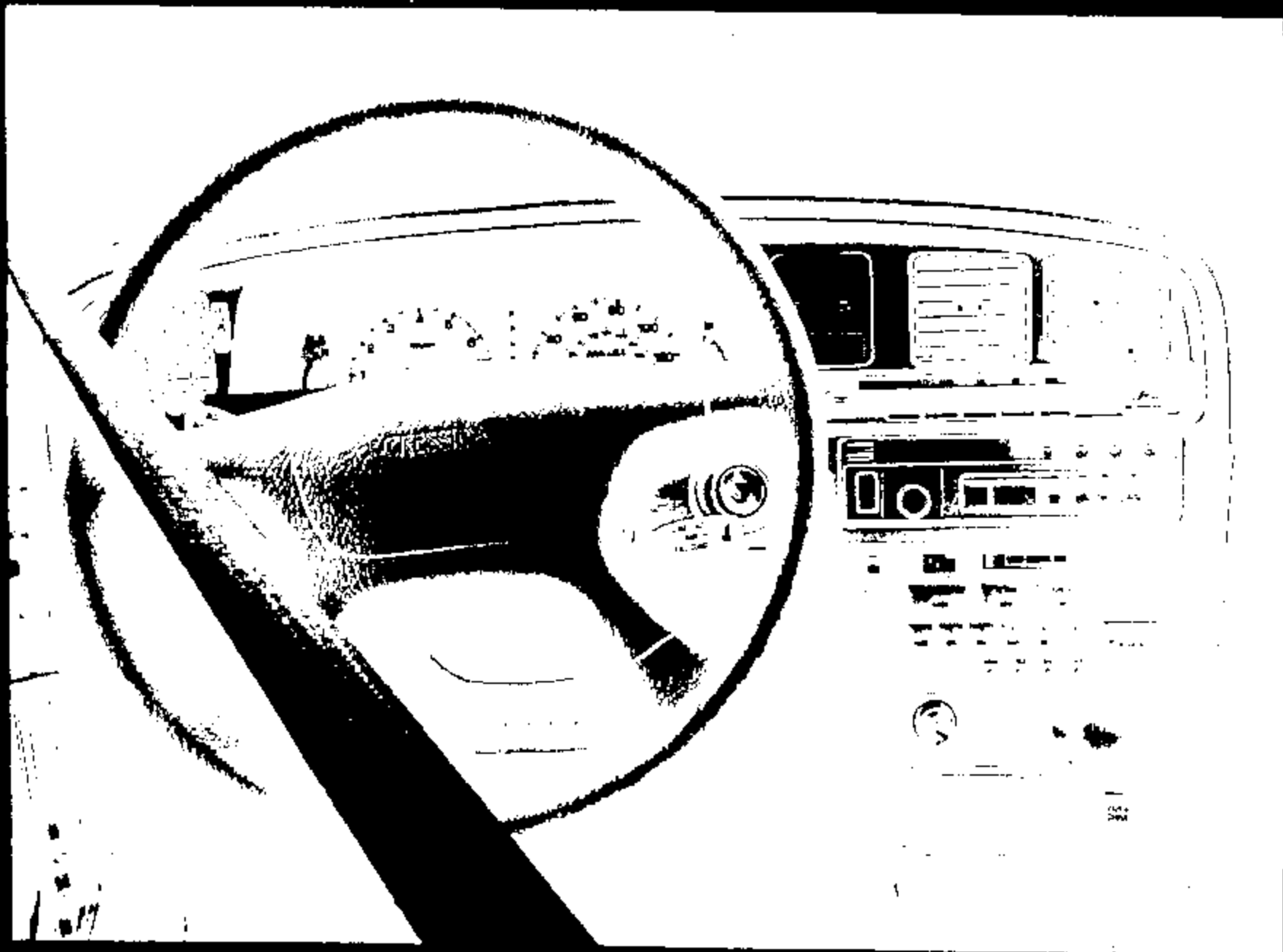
Dodge officials are counting on the muscular Viper sports car to lead the way as it tries to lay down an image as a performance brand.

Indy 500 cars test technology, Page 20

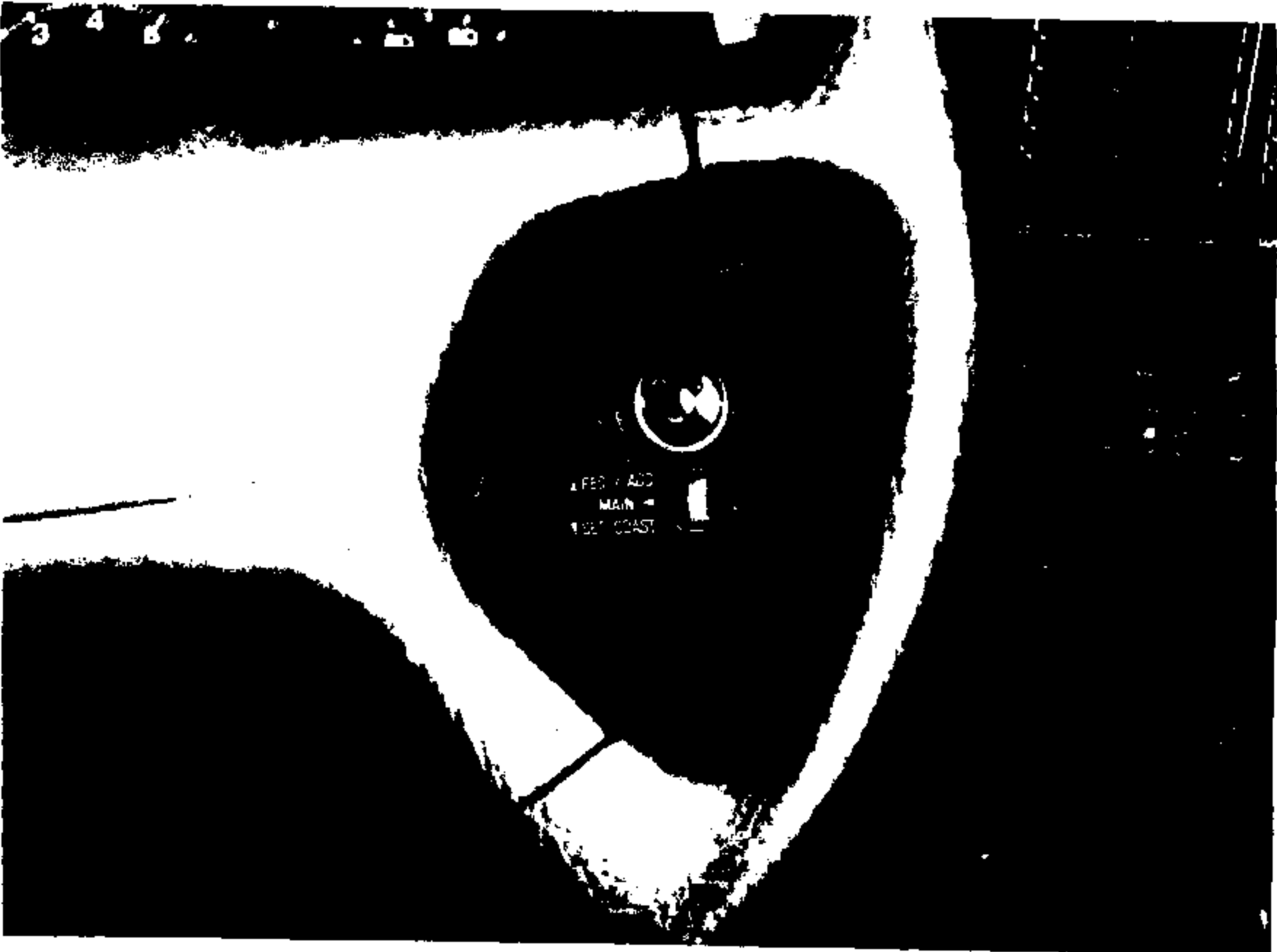
"This is a core marketing program for us," said Bill Klingler, manager of Dodge car and truck merchandising.

A prototype of the V-10-powered, two-seat Viper will lead the pace lap, even though the car won't actually go into production

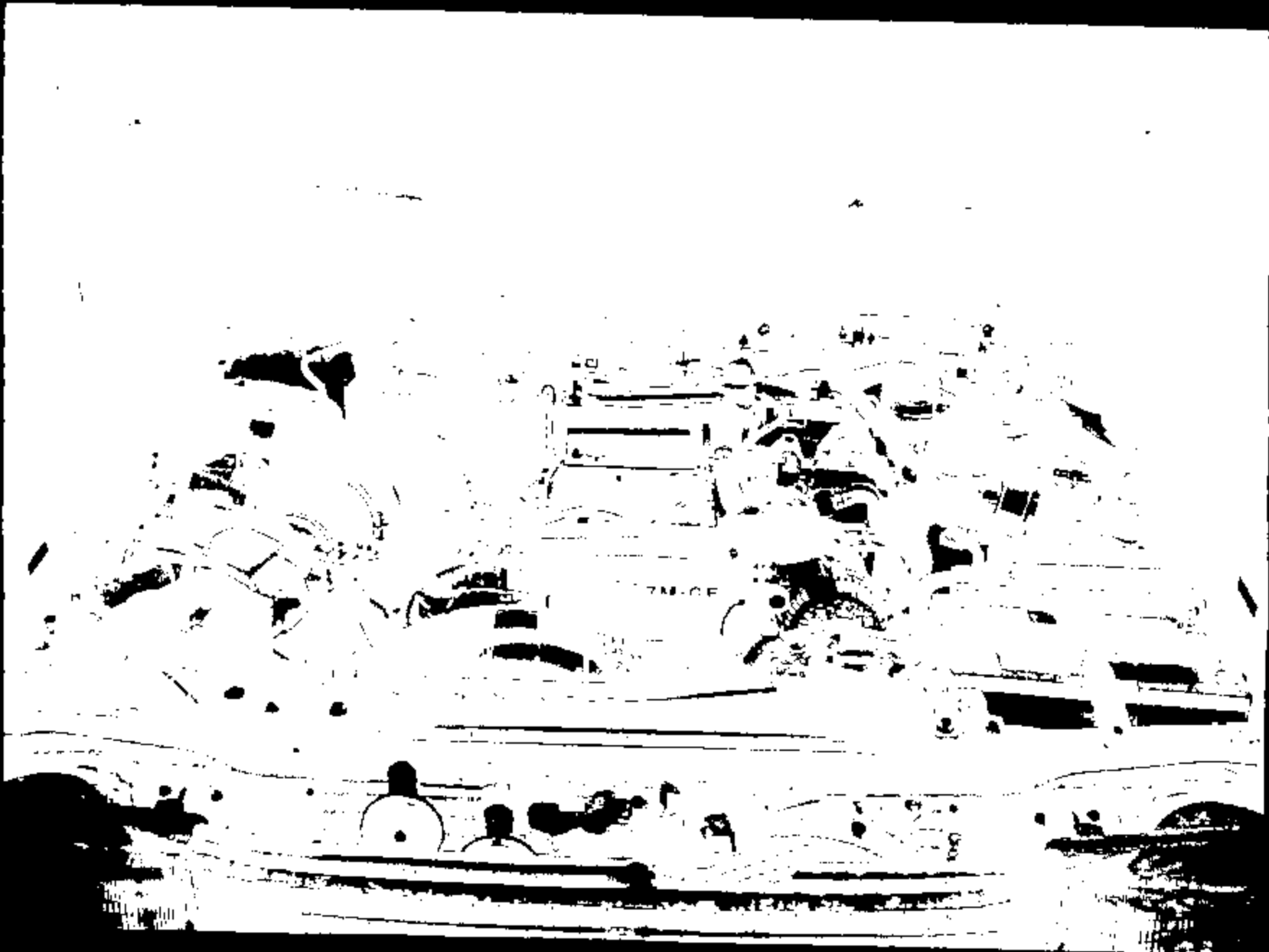
under way to raise the required North American content level from 55 to 60 percent.



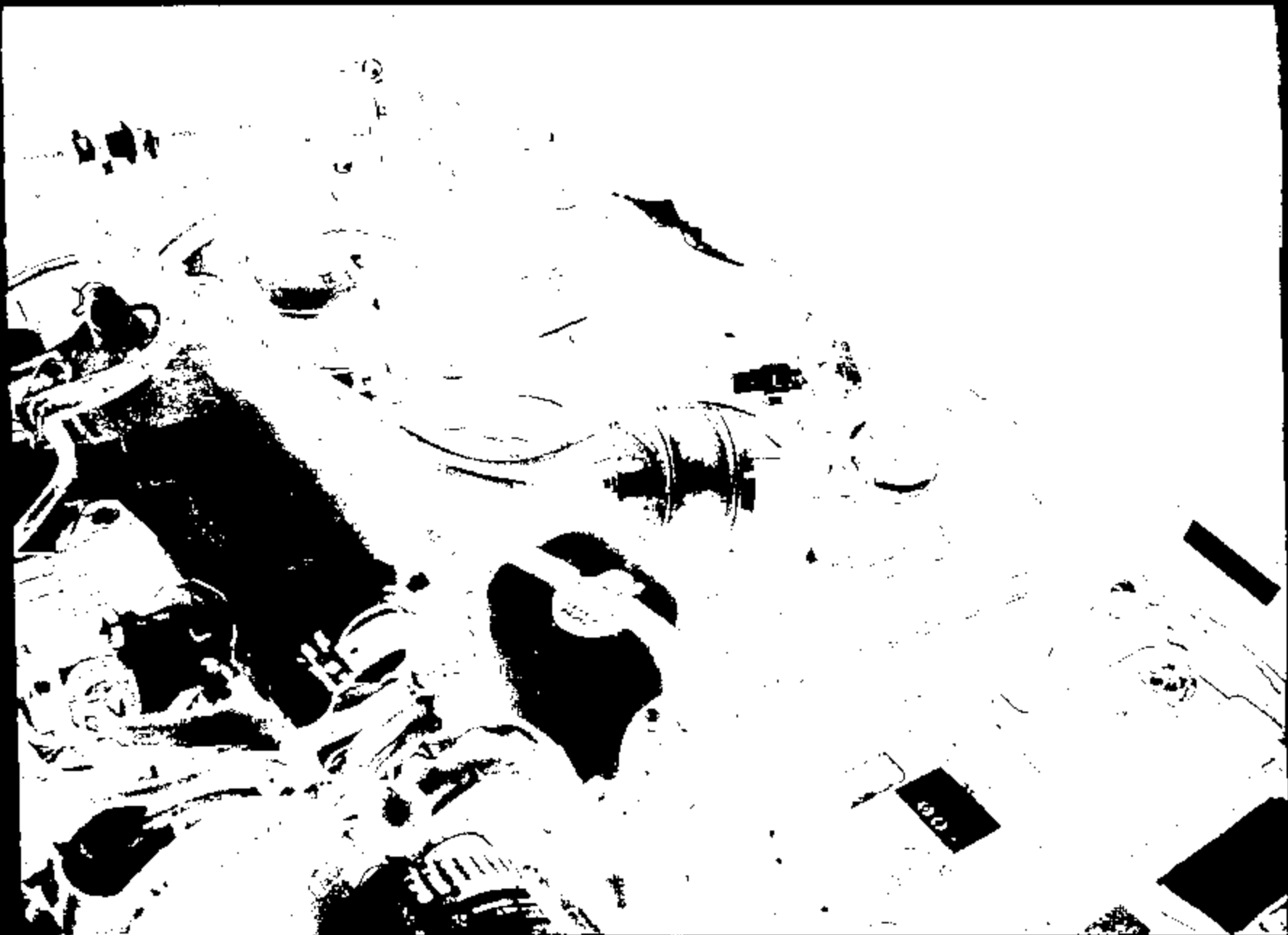
D102-025-1 20040



ENG2-025-R 2/20/11



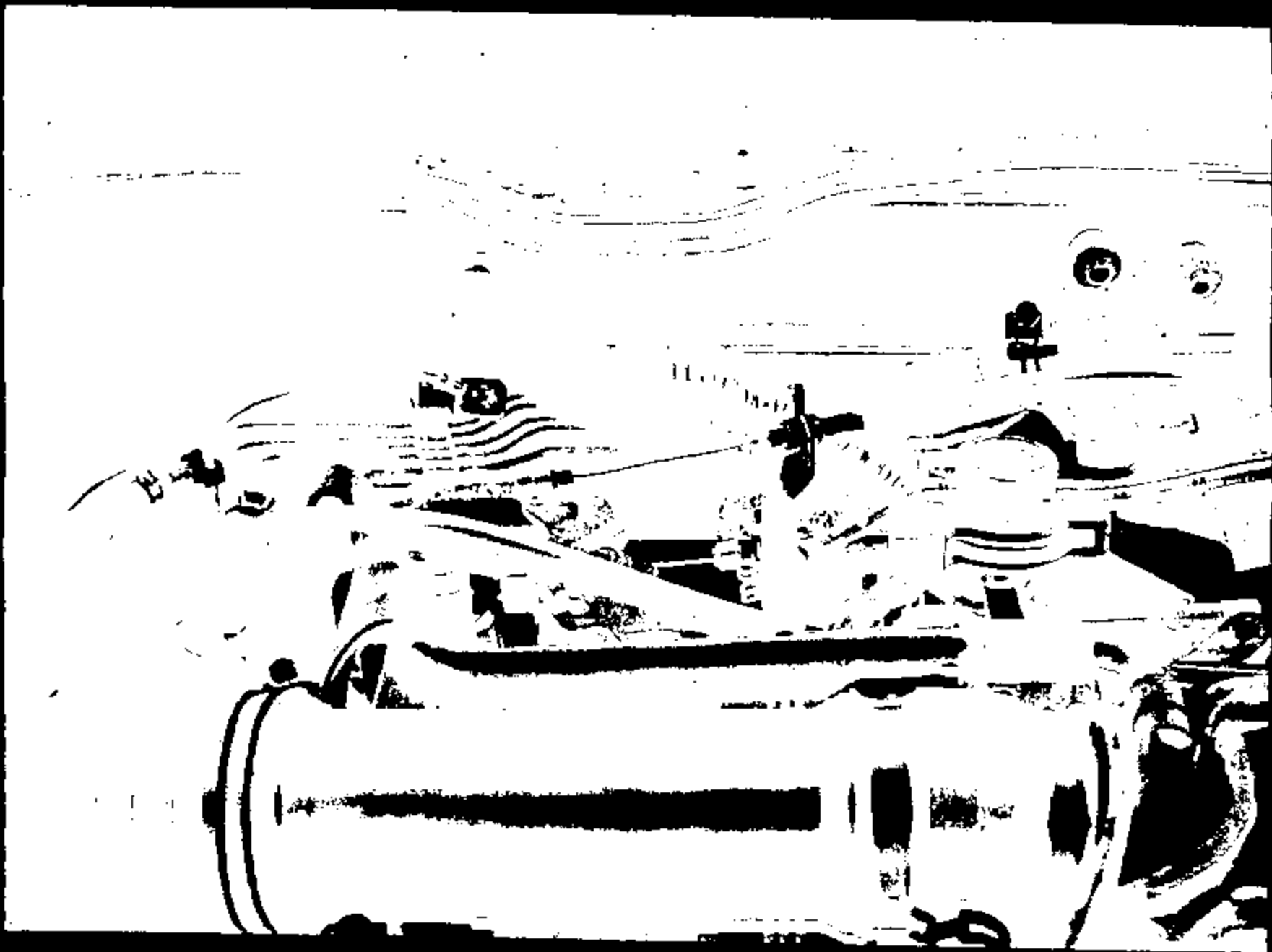
PHOT-822-9 20042



EA02-020-R 20043



PHOTO 625-9 2004



EM12-025-A 28045

56T301 - Toyota crossida

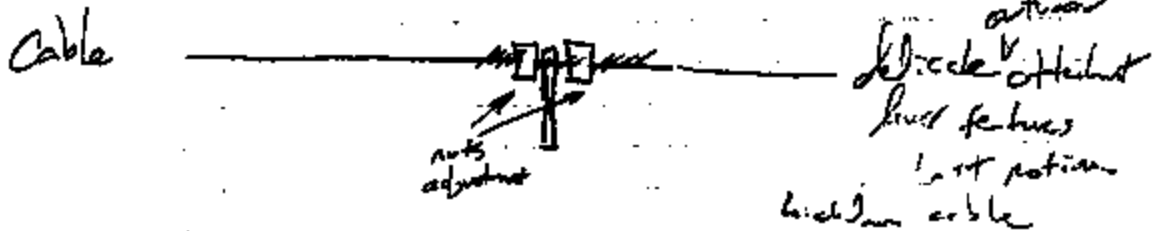
stalk control
low right of steering wheel



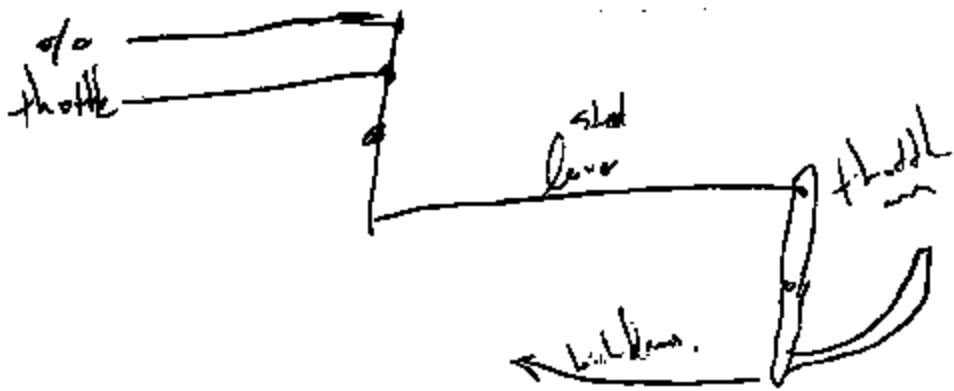
green "cruise"
lamp when
max is pulled.
deactivates when
position is changed.

overdrive transmission w/ OD lockout button - ^{o/d lock} - wavy like on paddle
w/ shift lock override button
w/ RE SET'S button - ^{o/d lock} - wavy like on dash
"SET'S P.A."

VAC send w/ AMP simulator only FUSE design.



190 CID
high cam
240 VV



IF slow res. speed, lift successful once - will occur only if
control steel. if lifted, drops, 1-600 - will have unit released.

Pushing brake react, system lifting accel (high speed) if
released consistently @ 525" (WOT = 800, rate = 0)

IF speed drops < 75, cannot use come - must reset.
only resumes if val brake & coast to speed limits
above 75 mph.



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.:	Model: <i>Cassida - Auto: 1989</i>	Eng.: <i>130 CID V6</i>	Trans.: <i>Auto</i>
Vehicle Mt.:	Colib.:	Servo: <i>vac.</i>	Ampl.: <i>?</i>
Location/Altitude: <i>DPG</i>	Temp: <i>35°F</i>	Date: <i>2/5/90</i>	Vac. Assist: <i>Pump</i>
T.P. reading at idle: <i>0</i> E.U.	NOT: <i>80</i> E.U.	Dog: <i>2</i>	Max T.P. at curve full strobe: <i>37.5</i> E.U.

SET SPEED ACCURACY - Record actual vs. set speed and drop in MPH $\frac{1}{2}$

Gear	Set Speed	30		40		50		60		70	
		Drop	Act	Drop	Act	Drop	Act	Drop	Act	Drop	Act
3rd / Drive		<i>3P</i>	<i>31</i>	<i>6</i>							
4th / O.D.				<i>4.2</i>	<i>41</i>	<i>51</i>	<i>51</i>	<i>35</i>	<i>60.5</i>	<i>69</i>	<i>70.5</i>
5th / ..											

Comments: *Consistency with 2/13/89 4: 2nd gear accel/act 1 MPH high on L19/4t.*

ROAD LOAD PERFORMANCE - Record Max & Min readings for: Manifold Vacuum & T.P. in E.M. and/or depress, & subjective rating (1 - 10)

Gear	Veh. End	30				40				50				60				70			
		Vacuum Min/Max	Surge Per/Act	T.P. Min/Max	Surge Per/Act	Vacuum Min/Max	Surge Per/Act	T.P. Min/Max	Surge Per/Act	Vacuum Min/Max	Surge Per/Act	T.P. Min/Max	Surge Per/Act	Vacuum Min/Max	Surge Per/Act	T.P. Min/Max	Surge Per/Act				
3rd / Drive		<i>15-20</i>	<i>0-4.5</i>	<i>8</i>	<i>5</i>																
4th / O.D.				<i>10-20</i>	<i>2-2.5</i>	<i>7</i>	<i>4</i>	<i>14-16</i>	<i>6-7</i>	<i>20</i>	<i>8</i>	<i>12-13</i>	<i>8-9</i>	<i>20</i>	<i>8</i>	<i>12-13</i>	<i>12-13</i>				
5th / ..																					

Auto Trans. D/S From High Gear: *39°* *65°* *64°* *66°* *75°*

Comments: *3rd gear accel/act x 20% to be consistent in study. That means with 20% less accel. use 5% more.*

ACCELERATION RATES - Record Accel. rate in sec. (3000 rpm mode) and max T.P. reading in E.U. and/or dog.

MPH	Run #1	Run #2	30 - 40			40 - 50			50 - 60			60 - 70		
			Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear
10 MPH Split Accels (Begin at speed shown, simultaneously depress accel and release pedal.)	Run #1	Run #2	<i>4.14</i>	<i>22</i>		<i>9.00</i>	<i>25</i>	<i>3-4</i>	<i>8.00</i>	<i>27</i>	<i>4-5</i>	<i>9.00</i>	<i>31</i>	<i>4</i>
	Run #1	Run #2	<i>4.73</i>	<i>19.0</i>	<i>3</i>	<i>6.42</i>	<i>27</i>		<i>6.79</i>	<i>28</i>		<i>9.07</i>	<i>41</i>	<i>4</i>
30 - 70 Accels (Run in high gear, begin accel at 27, begin timing at 30)	Run #1	Run #2	<i>7.90</i>			<i>16.16</i>			<i>23.21</i>			<i>32.44</i>		
	Run #1	Run #2	<i>9.5</i>			<i>16.5</i>			<i>24.26</i>			<i>32.78</i>		

Comments: *21st gear 3/4 e 4th L19 3rd*

Record no. of grooves/beads and inches or millimeters from test cable position.
 Record with engine running.
 For more accurate set speed data, depress Set Button X times and divide final reading by X (set speed stabilize before each "Set").
 scpts 07/19/89

EPR-828-9 20848

GRADE SPEED CONTROL DATA SHEET

Vehicle No. 1	Model:	R.T.:	Eng.:						
Vehicle Mt.:	Calib.:	Series:	App.:						
Cable Slack 1/:	Trans:	Driver:							
Location/Altitude:	Temp:	Date:	Vac. Assist:						
T.P. reading at idle: _____ E.U. WOT: _____ E.U. Eng. 2/									
Max T.P. at serve full stroke: _____ E.U. Eng.									
GRADE PERFORMANCE Record maximum speed droop, minimum manifold vacuum, and minimal supplemental vacuum.									
Gear _____ Veh Speed _____ Man. _____ A/K/S 2 X Grade 4 X Grade Shifts Cycling	50			60			70		
	Min. Manf.	Vacuum Suppl.	Max. Droop	Min. Manf.	Vacuum Suppl.	Max. Droop	Min. Manf.	Vacuum Suppl.	Max. Droop
Gear TP 1/ Period			Gear TP 2/ Period			Gear TP 3/ Period			
		
GRADE ACCELERATION Grade: _____ Record Accel. rate in sec. (Rumors made) and Max T.P. readings. 5/									
Gear _____ Veh Speed _____ Man. _____ A/K/S 2 X Grade 4 X Grade 50 - 70 WOT: (record splits) 50 - 70 Accel: (record splits) For this test, set resume speed to 70, or hold the accel down for duration of the test. Begin @ 27 MPH	50 - 60			50 - 60			60 - 70		
	Time	Max TP	Min Vac	Time	Max TP	Min Vac	Time	Max TP	Min Vac
Comments:									

1/ Record no. of grooves/beads and in inches/millimeters from test position.
 2/ Record with engine running.
 3/ Record TP at shift point.
 4/ To begin test, hold speed steady at starting speed, then simultaneously depress accel button, release accelerator, and begin timing.
 SCP2e 07/11/89

EMR2-425-4 20056

ARCADES Ben's 300


COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

Vehicle Make: MERCEDES BENZ Tag Number: 306 T 145
 Vehicle Model: 300 (1981) Evaluated By: MARK FREDRICK
 Powertrain: 180 CID STRAIGHT 6 Evaluation Date: FEBRUARY 21, 1990
ADD RND 177405700
RPM

TEST EVALUATION

VEHICLE EVALUATION RATING SYSTEM

	UNDESIRABLE				BORDER LINE	ACCEPTABLE				
NOTE: DOES	1	2	3	4	5	6	7	8	9	10
EVALUATION OF VEHICLE/COMPONENT PERFORMANCE	PERFECTION SUBJECT		CUSTOMER COMPLAINT		BORDER LINE	SHOULD ACCEPTABLE	Fair	GOOD	VERY GOOD	EXCELLENT

FEATURE/COMPONENT	RATING	COMMENT
1. Interior control placement	8	Location? STALK, UPPER LEFT OF STEERING WHEEL (10 O'CLOCK) 
2. Visibility of controls	6	FROM DRIVER'S SEAT, THE "OFF" AND "RESUME" COMMANDS WRITTEN ON THE TOP FACE OF THE STALK ARE <u>NOT</u> VISIBLE.
3. Ease of comprehending control operation	8	ACCEL-SET & DIRL-SET ARE SELF-EXPLANATORY, AS IS RESUME. "OFF" MAKES SENSE, BUT MAY MAKE DRIVER WONDER WHERE "ON" IS. "ON" OCCURS WHEN ACCEL OR DIRL IS FIRST ACTIVATED.
4. General control appearance	8	BLends well WITH OTHER CONTROLS AND VEHICLE INTERIOR DECOR.

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
5. Tactile feel upon setting	8	STALK HAS A TACTILE <u>FEEL</u> , BUT NO AUDIBLE <u>SOUND</u> .
6. Accel pedal compensation after setting speed	8	IMMEDIATE ACCELERATOR RESPONSE WHEN ACCEL.SET IS ACTIVATED.
7. On/Off switch (Yes/No)	No Rating	OFF ONLY, NO ON. - ACCEL.SET OR DECEL.SET ACT AS ON.
8. Set speed accuracy	8	Just of droop: Hl or Lo? Min set speed: Max: SEE DATA SHEET
9. "Cruise" light (Yes/No)		NO
10. "Neutral" switch (Yes/No)	No Rating	NO
11. Dump valve (Yes/No)	No Rating	BRAKE REDUNDANCY IS UNKNOWN, NOT A VACUUM SYSTEM.

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
12. Electric or vacuum servo	No Rating	DC MOTOR DRIVEN ACTUATOR
13. Vacuum reservoir (Yes/No)	No Rating	NOT APPLICABLE
14. "Coast" feature (Yes/No)	No Rating	YES, SIMILAR TO FORD, IC, DECELERATION LEVER IS RELEASED
15. "Coast" feature performance	8	SETS WITHIN ± 1 MPH.
16. Resume feature (Yes/No)	No Rating	YES
17. Resume performance	No Rating	SIMILAR TO FORD, RESUMES TO PREVIOUS SET IF SPEED IS ABOVE 25 MPH.
18. Accel switch (Yes/No)	No Rating	YES

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
19. Accel switch performance	8	SIMILAR TO FORD, ACCELERATES UNTIL LEVER IS RELEASED
20. Overall system performance	8	
21. Unusual features		VDD ACTUATOR ATTACHED DIRECTLY TO ENGINE BLOCK AND NOT INTAKE MANIFOLD. 8 INCH MECHANICAL LINKAGE FROM ACTUATOR TO THROTTLE BODY IS EXTREMELY COMPLEX (SEE PHOTOS).
22. Deficiencies		
23. Other Comments		CAN MANUALLY ATTAIN 2/2 SHIFT UP TO 55 MPH. NOT 2/3 SHIFT IS 65 MPH.



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.: 306 T 145	Model: MERCEDES 300	M.Y.: 1989	Eng.: 180 C.I. 603L	Trans.: 4D
Vehicle Wt.: _____	Calib.: 300	Servo: METEK -DC MOTOR	Amp.: _____	Cable Slack U: _____
Location/Altitude: DPG	Temp: 35°F	Date: 2/21/90	Vac. Assist: NA	Driver: M FENDRICH
T.P. reading at idle: _____ E.U.	WOT: _____ E.U.	Dep. 2/	Max T.P. at servo full stroke: _____ E.U.	Dep. _____

NET SPEED ACCURACY - Record actual vs. set speed and drop in MPH **2/**

Gear	Set Spd	30		40		50		60		70	
		DRP	ACT	DRP	ACT	DRP	ACT	DRP	ACT	DRP	ACT
3rd / Drive											
4th / O.D.		30	30	39 1/2	40	49 1/2	50	59 1/2	60 1/2	69 1/2	70
5th / ..											

Comments: **35/36** **44 1/2/45** **54 1/2/55** **64 1/2/65**

ROAD LOAD PERFORMANCE - Record Max & Min readings for: Manifold Vacuum & T.P. in E.U. and/or degrees, & subjective rating (1 - 10)

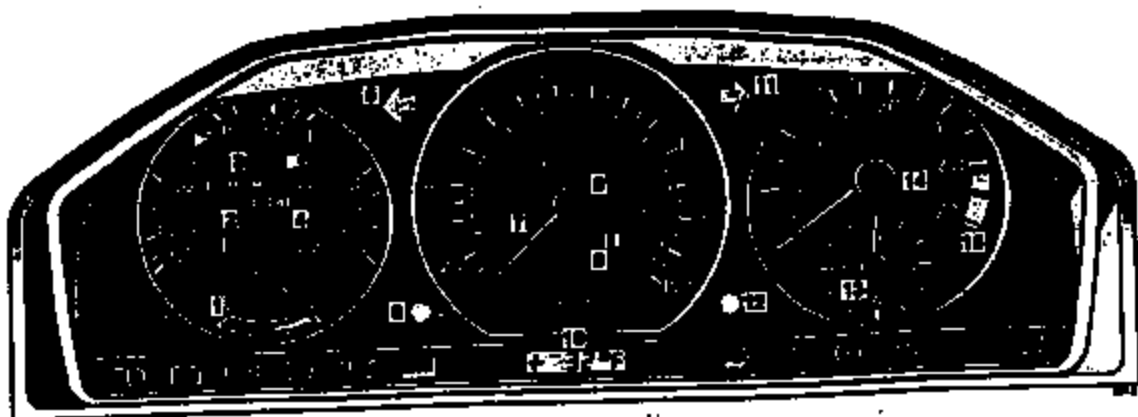
Gear	Veh Spd	30				40				50				60				70				
		Vacuum Min/Max	TP Min/Max	Surge Per/Sec	Surge Per/Sec	Vacuum Min/Max	TP Min/Max	Surge Per/Sec	Surge Per/Sec	Vacuum Min/Max	TP Min/Max	Surge Per/Sec	Surge Per/Sec	Vacuum Min/Max	TP Min/Max	Surge Per/Sec	Surge Per/Sec	Vacuum Min/Max	TP Min/Max	Surge Per/Sec	Surge Per/Sec	
3rd / Drive						16-19"		56	5													
4th / O.D.		17-18"		3	16-19"		8	16-17"		9	16-17"		9	16-17"		9	16-17"		9	16-17"		9
5th / ..																						
Auto Trans. O/S From High Gear		34 x 28mm			4th: 16-17"			15-16"			16-17"			15-16"			15-16"			15-16"		
Comments:					3rd: 16-17"			-19			0/9			0/9			0/9			0/9		

ACCELERATION RATES - Record Accel. rate in sec. (Kasum mode) and max T.P. reading in E.U. and/or deg.

MPH	Run #1	30 - 40			40 - 50			50 - 60			60 - 70		
		Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear
10 MPH Split Accels (Begin at speed shown, simultaneously depress accel and release pedal.)	Run #1	9.64		4	9.48		4	2.88		4	9.36		4
	Run #2	10.58		4	10.32		4	2.63		4	2.46		4
30 - 70 Accels (Run in high gear, begin accel at 27, begin timing at 30)	Run #1	4.38		4	2.76		4	12.97		4	17.38		4
	Run #2	4.43		4	2.34		4	2.54		4	12.43		4
Comments:													

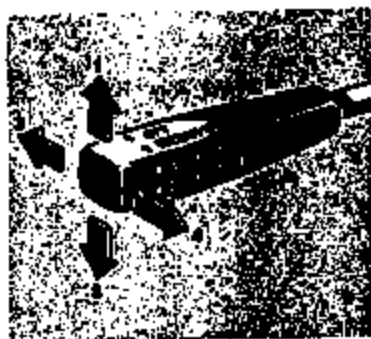
1/ Record no. of grooves/bands and inches or millimeters from test cable position.
 2/ Record with engine running.
 3/ For more accurate set speed data, depress set button x times and divide final reading by x (let speed stabilize before each "Set").
 4/ 07/19/89

E902-823-A 20085



Instrument Cluster

- 1 Economical driving indicator. See page 71
- 2 Coolant temperature gauge. See page 69
- 3 Fuel gauge with reserve warning lamp (yellow). See page 69
- 4 Oil pressure gauge (bar). See page 69
- 5 Turn signal indicator lamp, left (green)
- 6 Knob for instrument lamps and trip odometer
Rotate knob: to vary intensity of instrument lamps
Depress knob: to reset trip odometer
- 7 Speedometer
- 8 Main odometer
- 9 Trip odometer
- 10 Outside temperature indicator. See page 69
- 11 Turn signal indicator lamp, right (green)
- 12 Knob for clock adjustment
(press in and rotate for adjustments)
- 13 Electric clock
- 14 Tachometer
- 15 Red marking on tachometer:
Excessive engine speed



Cruise Control

Any given speed above approximately 40 km/h (25 mph) can be maintained with the cruise control by operating the lever.

- 1 Accelerate and set:
Lift lever briefly to set speed.
Hold lever up to accelerate.
- 2 Decelerate and set:
Depress lever briefly to set speed.
Hold lever down to decelerate.

Normally the vehicle is accelerated to the desired speed with the accelerator. Speed is set by briefly pushing the lever to position 1 or 2. The accelerator can be released.

The speed can be increased (e.g. for passing) by using the accelerator. As soon as the accelerator is released, the previously set speed will be resumed automatically.

If a set speed is to be increased or decreased slightly, e.g. to adapt to the traffic flow, hold lever in position 1 or 2 until the desired speed is reached, or briefly tip the control lever in the appropriate direction for increases or decreases in 1 km/h (0.6 mph) increments. When the lever is released, the newly set speed remains.

- 3 Cancelling
To cancel the cruise control, briefly push lever to position 3.
When you step on the brake pedal or the vehicle speed falls below approx. 40 km/h (25 mph), for example when driving upgrade, the cruise control will be cancelled.
- 4 Resume
If the lever is briefly pulled to position 4 when driving at a speed exceeding approximately 40 km/h (25 mph), the vehicle resumes the speed which was set prior to the cancellation of the cruise control. The last memorized speed is cancelled when the key is turned to steering lock position 1 or 0.

Notes:

If the engine does not brake the vehicle sufficiently while driving on a downgrade, the speed you set on the cruise control may be exceeded. As soon as the grade eases, the cruise controlled speed will again be maintained as long as the brakes were not applied.

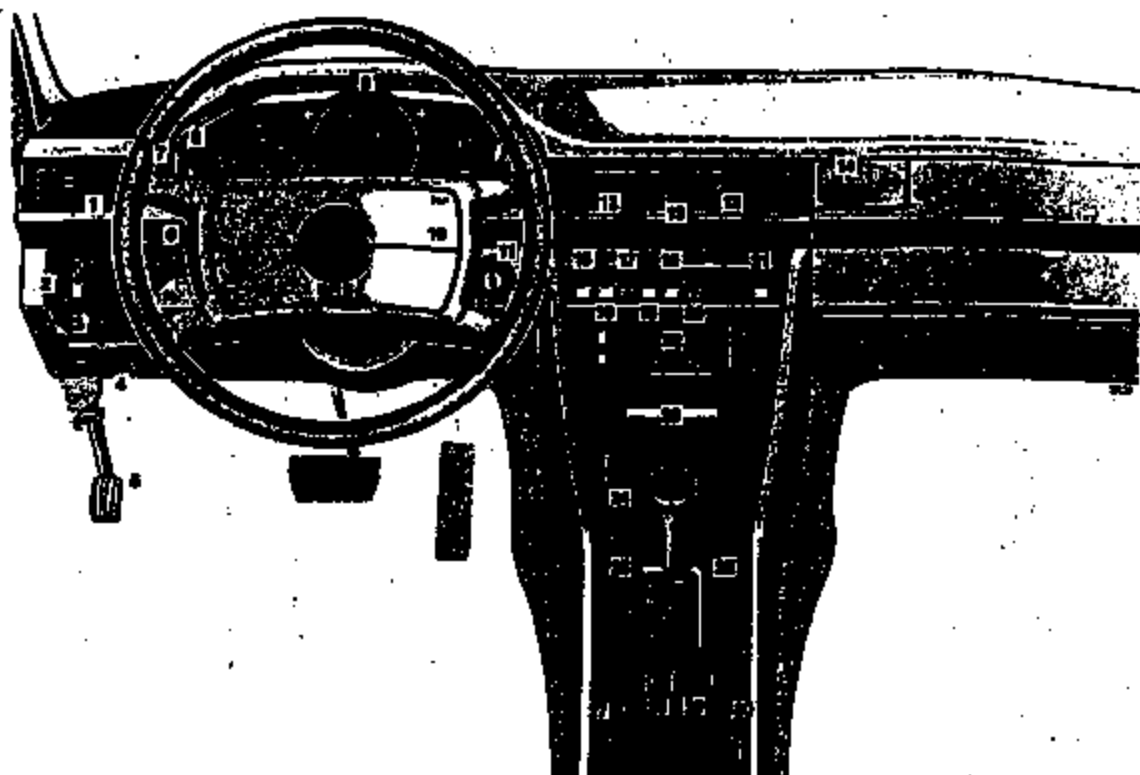
If the set speed was sufficiently exceeded such that the brakes had to be applied, the cruise control can be resumed by pulling the lever to position 4.

Warning!

Only use the cruise control if the traffic and weather conditions make it advisable to travel at a steady speed.

The "Resume" function should only be operated if the driver is fully aware of the previously set speed and wishes to resume this particular preset speed.

When driving with the cruise control, the transmission selector lever must not be shifted to position "N" as otherwise the engine will overrev.



Instruments and Controls

For more detailed descriptions see specified pages.

- 1 Adjustable side air outlets (page 22)
- 2 Exterior lamp switch (page 47)
- 3 Parking brake release (page 64)
- 4 Hood lock release (page 74)
- 5 Parking brake pedal (page 64)
- 6 Combination switch (page 48)
- 7 Air volume control for side air outlets (page 22)
- 8 Cruise control (page 68)
- 9 Instrument cluster (page 12)
- 10 Horn control, airbag (page 42)
- 11 Steering lock with ignition/starter switch (page 46)
- 12 Adjustable center air outlets (page 22)
- 13 Air volume control for center air outlets (page 22)
- 14 Glove compartment (illuminated in steering lock positions 1 or 2) is not installed in vehicles equipped with a front passenger airbag
- 15 Rear window defroster switch (page 51)
- 16 Switch for folding rear seat head restraints backward (page 38)
- 17 Switch for rear window sun shade
- 18 Air recirculation switch (page 22)
- 19 Hazard warning flasher switch
- 20 Automatic antenna switch (page 61)
- 21 Rear passenger compartment lamp switch (page 52)
- 22 Automatic climate control (page 22)
- 23 Radio (page 54)
- 24 Ashtray with lighter (pages 60, 64)
- 25 Left front seat heater switch (page 37)
- 26 Right front seat heater switch (page 37)
- 27 Left power window switch group (page 53)
- 28 Adjusting switch for exterior mirror on front passenger side (page 49)
- 29 Loudspeaker front to rear fader control
- 30 Right power window switch group (page 53)

Technical Data 300 E, 300 CE

Model	300 E (124030) ¹ 300 CE (124050) ¹
-------	---

Engine

Engine type	103
Mode of operation	4-stroke engine, gasoline injection
No. of cylinders	6
Bore	88.50 mm (3.48 in)
Stroke	80.35 mm (3.16 in)
Total piston displacement	2652 cm ³ (162.0 in ³)
Compression ratio	9.3
Output acc. to SAE J 1349	132 kW/5700 rpm (177 hp/5700 rpm)
Maximum torque acc. to SAE J 1349	255 Nm/4400 rpm (188 ft-lb/4400 rpm)
Firing order	1-5-3-6-2-4
Poly-V-belt	2255 mm

Rims - Tires

Rims (light alloy rims)	5 1/2 J x 15 H 2
Wheel offset	49 mm (1.9 in)
Summer tires:	
Radial-ply tires	195/65 VR 15
Winter tires:	
Radial-ply tires	195/65 R 15 91 T M+S

Electrical System

Alternator	14 V/70 A
Starter motor	12 V/1.7 kW
Battery	12 V/82 Ah
Spark plugs	see rear inside cover

Weights

See certification tag	
Roof load max.	100 kg (220 lb)
Trunk load max.	100 kg (220 lb)

Main Dimensions 300 E

Overall vehicle length	4755 mm (156.2 in)
Overall vehicle width	1740 mm (68.5 in)
Overall height	1448 mm (57.0 in)
Wheel base	2800 mm (110.2 in)
Track, front	1497 mm (59.0 in)
Track, rear	1488 mm (58.9 in)

Main Dimensions 300 CE

Overall vehicle length	4570 mm (183.0 in)
Overall vehicle width	1740 mm (68.5 in)
Overall height	1410 mm (55.5 in)
Wheel base	2718 mm (106.9 in)
Track, front	1497 mm (58.9 in)
Track, rear	1488 mm (58.9 in)

¹ The quoted data apply only to the standard vehicle. See an authorized Mercedes-Benz dealer for the corresponding data of all special bodies and special equipment.

**High Mileage Product Quality Improvement
Car Programs Management BIC Vehicles and Comparators**

<u>Vehicle Line</u>	<u>Program Manager</u> <u>BIC Vehicles</u>	<u>High Mileage</u> <u>BIC Comparator</u>	<u>High Mileage BIC</u> <u>Comparator Rationale</u>
Festiva	Dodge Charade	Geo Metro @ 1-YIS Chevrolet Sprint @ 2-YIS	Insufficient high mileage data available for Charade.
Escort/Tracer	Toyota Corolla	Toyota Corolla	Sufficient DTS data available.
Exiga	Nissan Pulsar	Honda Prelude	Sufficient DTS data available.
Mustang	Nissan 240 SX	Nissan 240 SX @ 1-YIS Toyota Supra @ 2-YIS⁺	Only one year of DTS data available for Nissan 240 SX.
Tempra/Tempra	Toyota Camry	Toyota Camry	Sufficient DTS data available.
Tempra/Scallo	Toyota Camry	Toyota Camry	Sufficient DTS data available.
Thunderbird/Contour	Toyota Camry	Toyota Camry	Sufficient DTS data available.
Tempra/Contour	Toyota Camry	Toyota Camry	Sufficient DTS data available.
Crown Vic/Grand Marquis	Toyota Camry	Toyota Camry	Sufficient DTS data available.
Contour	Lexus LS400	Acura Legend Sedan @ 1, 2, 3-YIS Mercedes @ 4-YIS⁺	Insufficient high mileage data available for Lexus.
Crown Vic/Grand Marquis	Lexus LS400	Toyota Camry	Insufficient high mileage data available for Lexus.
Town Car	Lexus LS400	Toyota Camry	Insufficient high mileage data available for Lexus.
Mark	Acura Legend Coupe	Acura Legend Coupe @ 1, 2, 3-YIS GM Personal Luxury @ 4-YIS⁺	Only 1 through 3 years of DTS data available for Legend.

*GM Personal Luxury vehicles = Seville/Eldorado/Toronado/Riviera/Cimarron

MIKE,
 PLS. MAKE LIST OF VEHICLES
 & SCHEDULE TIMES W/ MARK F.
 TO EVALUATE THESE 6 VEHICLE LINES

Make
 1/22
 WUE 1/26

**BEST IN CLASS VEHICLE COMPARISONS
 SPEED CONTROL EVALUATION**

<u>B.I.C. VEHICLE (1982 ONVO)</u>	<u>FORD COMPETITOR</u>
① <u>Toyota Corolla/Camry</u>	Tempo/Topaz, Taurus/Sable, T-Bird/Coop.
② <u>Mazda 929</u> → 2/5/70	Town Car, Continental, Mark VII
③ <u>Acura Legend, Honda Prelude</u> → 2/5/70	Ford/Mercury, Mustang

See Report 1/26/85

OTHER POTENTIAL B.I.C. VEHICLES

- ④ Mercedes 190/260/300 → 2/21/70
- ⑤ Nissan Infiniti → 6/14/70
- ⑥ Toyota Landcruiser → 2/25/70

TEST PROGRAM TO INCLUDE

1. Static evaluation including: MARK F. / MIKE G.
 - a. Basic design of components.
 - b. System features. } MARK F
 - c. System schematic.
 - d. Photographs of engine compartment and controls. - MIKE G.
2. Functional evaluation of level road performance. MARK F.
3. Cost and/or weight analysis of any components which could be utilized at Ford. - VEH. CONTROLS COMP. ANAL. CO-ORD.

**BEST IN CLASS VEHICLE COMPARISONS
SPEED CONTROL EVALUATION**

B.I.C. VEHICLE (1989 ONWARD)

Toyota-Camry/Corolla/Camry

Nissan 300

Acura Legend, Honda Prelude

FORD COMPETITOR

Tempo/Topaz, Taurus/Sable, T-Bird/Coxy.

Town Car, Continental, Mark VII

Ford/Mercury, Mustang

OTHER POTENTIAL B.I.C. VEHICLES

Mercedes 190/260/300

Nissan Infinity

Toyota Lexus

TEST PROGRAM TO INCLUDE

1. Static evaluation including:
 - a. Basic design of components.
 - b. System features.
 - c. System schematic.
 - d. Photographs of engine compartment and controls.
2. Frictional evaluation of level road performance.
3. Cost and/or weight analysis of any components which could be utilized at Ford.

Best in Class Comparator
(from '88 CNVQ)

<u>Carlisle</u>	<u>B.I.C. Comparator</u>
Escort	Chevrolet Nova
Taurus/Sable/T-Bird/Couag.	Toyota Cressida
Tempo/Topaz	Honda Accord
Mustang	Honda Prelude
Crown Vic./G.N.	Accura Legend
Town Car/Mark/Continental	Mercedes Benz

Carbine sets of surge

2 Accel ratings

10 mph inc @ 50-60 mph

30 → 70 w/ shifts.

+ Carbine
or

for 594-7143
3D
GLED
Hoffman
CPM
Mustang's
replacement.

Source- 1988 CNVQ/B&A P.O.R.

ENR2-825-A 20083

TOYOTA CARBIDA

CRUISE SPEED CONTROL PERFORMANCE EVALUATION

Vehicle Make: TOYOTA

Tag Number: 5G5 T 8G1

Vehicle Model: CRESSIDA
3.0L TWIN CAM 24 VALVE V6

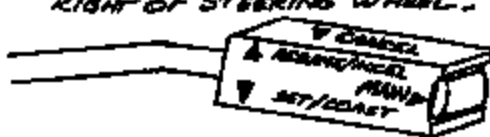
Evaluated By: MARK FRIEDRICH

Evaluation Date: FEBRUARY 5, 1990

JURY EVALUATION

VEHICLE EVALUATION RATING SYSTEM

	UNACCEPTABLE				BORDER LINE	ACCEPTABLE				
RATING INDEX	1	2	3	4	5	6	7	8	9	10
EVALUATION OF VEHICLE/COMPONENT PERFORMANCE	NOT ACCEPTABLE				CRUISE COMPLAIN	BORDER LINE	FAIRLY ACCEPTABLE	FAIR	GOOD	EXCELLENT

FEATURE/COMPONENT	RATING	COMMENT
1. Interior control placement	7	Location? SINGLE STALK CONTROL, LOWER RIGHT OF STEERING WHEEL. 
2. Visibility of controls	7	POTENTIAL LOSS OF VISIBILITY WITH TURN OF STEERING WHEEL.
3. Ease of comprehending control operation	8	FAIRLY SIMPLE, EXCEPT, IF THERE IS A PREVIOUS SET SPEED AND THE PRESENT SPEED IS LESS THAN THE SET SPEED, HOLDING THE ACCEL LEVER WILL FIRST ACTIVATE THE RESUME FUNCTION. TO ACCEL BEYOND THE SET SPEED, THE LEVER MUST BE RELEASED AND RETAINED.
4. General control appearance	8	A PLUS THAT 'MAIN' ON-OFF SWITCH IS INTEGRAL WITH OTHER CONTROLS.

COMPREHENSIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
5. Tactile feel upon setting	6	NO TACTILE FEEL WITH EITHER MAIN BUTTON OR 3 LEVER MODES. HOWEVER, MOVING LEVER UNTIL FIRM STOP ALWAYS RESULTS IN FUNCTION THAT IS DESIRED.
6. Accel pedal compensation after setting speed		
7. On/off switch (Yes/No)	No Rating	NON-TACTILE, NON-LOCKING "MAIN" BUTTON ON LEVER ARM. DEACTIVATES WHEN IGNITION IS CYCLED.
8. Set speed accuracy	7	Amt of droop: ± 1 MPH HI or LO? BOTH Min set speed: 25 MPH Max: ? (?90 MPH)
9. "Cruise" light (Yes/No)	8	GREEN "CRUISE" LIGHT ON LOWER RIGHT OF CLUSTER WHEN MAIN IS ACTIVATED.
10. "Neutral" switch (Yes/No)	No Rating	
11. Dump valve (Yes/No)	No Rating	NO SUPPLEMENTAL DUMP VALVE.

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
12. Electric or vacuum servo	No Rating	VACUUM SERVO WITH TWO SOLENOIDS
13. Vacuum reservoir (Yes/No)	No Rating	VACUUM PUMP ASSISTANCE WITH INTERNAL CHECK VALVE. SERVO IS SUPPLIED MANIFOLD VACUUM OR PUMP VACUUM (7" Hg.), WHICHEVER IS GREATER.
14. "Coast" feature (Yes/No)	No Rating	
15. "Coast" feature performance		TYPICALLY SETS 1 MPH LOWER THAN RELEASE POINT. PROBABLY DUE TO SPEEDOMETER HYSTERESIS SINCE ACCEL FUNCTION IS TYPICALLY 1 MPH HIGH.
16. Resume feature (Yes/No)	No Rating	YES. IF VEHICLE SPEED DROPS BELOW 25 MPH AFTER A BRAKE OR CANCEL, THE RESUME WILL NOT WORK, EVEN IF SPEED IS BROUGHT BACK ABOVE 25 MPH.
17. Resume performance	No Rating	SAME ACCEL RATE AS "ACCEL" FUNCTION. SEE DATA SHEET.
18. Accel switch (Yes/No)	No Rating	PART OF RESUME/ACCEL SWITCH. IF THERE HAS BEEN A PREVIOUS SET SPEED AND THE LEVER IS PULLED, THE SPEED WILL RETURN TO THE RESUME SPEED. THE LEVER MUST BE RELEASED AND PULLED AGAIN TO CONTINUE THE ACCEL.

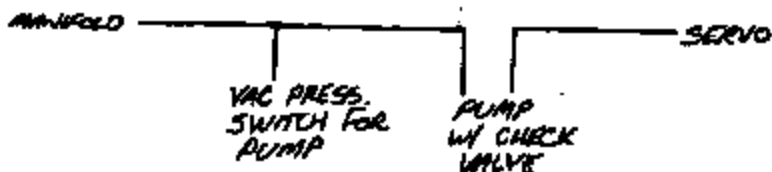
COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	IRLING	COMMENT
19. Accel switch performance		FAIR ACCELERATION RATES WITH NO HURRY SHIFTING. SYSTEM SEEMS TO CONTINUE ACCELERATION SLIGHTLY AFTER LEVER IS RELEASED; TENDS TO SET 1 MPH HIGH.
20. Overall system performance	8	WITH WOT SCALD TO 30°, SPEED CONTROL MAKES OUT AT 575° OF THROTTLE FULL.

21. Unusual features

SYSTEM DEACTIVATES WITH PARKING BRAKE APPLICATION.

Vacuum Pump
SCHEMATIC:



22. Deficiencies

23. Other Comments

CABLE ATTACHMENT FEATURES AN OUTBOARD MECHANISM TO WHICH THE SPEED CONTROL AND ACCELERATOR CABLES ARE ATTACHED. THE LOST MOTION IS ACHIEVED AT THIS POINT. FROM THIS MECHANISM IS A 10" METAL BAR THAT ATTACHES TO THE THROTTLE BODY.

CABLE ADJUSTMENT ACHIEVED BY 2 NUTS ON A THREADED FITTING AT OUTBOARD MECHANISM.

GRADE SPEED CONTROL DATA SHEET

Vehicle No.:		Model:		H.V.:		Eng.:				
Vehicle Mt.:		Calib.:		Servis:		App.:				
Cable Size 1/2:		Trans:		Driver:						
Location/Altitude:			Temp:		Date:		Voc. Assist:			
T.P. reading at idles _____ R.D. MOT: _____ R.D. _____ Deg. 1/2										
Max T.P. at curve full strokes: _____ R.D. _____ Deg. 1/2										
GRADE PERFORMANCE		Record maximum speed drop, minimum manifold vacuum, and minimum supplemental vacuum.								
Gear _____ Set Speed _____ R.D. _____		30			40			70		
		Min. Vacuum Manf.	Max. Droop	Min. Vacuum Manf.	Max. Droop	Min. Vacuum Manf.	Max. Droop	Min. Vacuum Manf.	Max. Droop	Min. Vacuum Manf.
2 1/2 Grade 4 1/2 Grade <u>Shift Cycling</u>		Gear	TP 1/2	Period	Gear	TP 1/2	Period	Gear	TP 1/2	Period
			
GRADE ACCELERATION		Grade: _____ Record Accel. rate in sec. (Excess mode) and Max T.P. readings. 1/2								
Gear _____ Veh. Speed _____ R.D. _____		30 - 30			30 - 40			40 - 70		
		Time	Max TP	Min Vac	Time	Max TP	Min Vac	Time	Max TP	Min Vac
30 - 70 MOTs (record splits)										
30 - 70 Assel: (record splits)										
For this test, set revolve speed to 70, or hold the wheel down for duration of the test. Begin at 27 MPH										
Comments:										

- 1/ Record no. of grooves/beads and in inches/millimeters from test position.
- 1/ Record with engine running.
- 1/ Record TP at shift point.
- 1/ To begin test, hold speed steady at starting speed, then simultaneously depress accel button, release accelerator, and begin timing.

SCP2a 07/11/59



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.:	Model: <u>TOYOTA CELESIDA</u>	Yr.: <u>1989</u>	Eng.: <u>3.0L 24V V6</u>	Trans.: <u>AOD</u>
Vehicle No.:	Calib.:	Serv: <u>VACUUM & RAMP</u>	Amp.: <u>?</u>	Cable Slack \downarrow : <u>2-3 mm</u>
Location/Altitude: <u>DPG</u>	Temp: <u>35°F</u>	Date: <u>2/5/90</u>	Vac. Assist: <u>RAMP</u>	Driver: <u>M. FRIEDRICH</u>
T.P. reading at idle: <u>0</u> E.U.	VDI: <u>80</u> E.U.	Req. <u>2</u>	Max T.P. at curve full stroke: <u>57.5</u> E.U.	Req. <u>?</u>

NET SPEED ACCURACY - Record actual vs. set speed and drop in MPH $\frac{1}{2}$

Gear	Set Speed	30		40		50		60		70	
		Err	Act	Err	Act	Err	Act	Err	Act	Err	Act
3rd / Drive		31	31								
4th / O.D.				42	41	51	51	59	60.5	69	70.5
5th / ..											

Comments: CONSISTANTLY SETS 2 TO 3 MPH DURING ACCEL/SET
SETS 1-2 MPH LOW DURING COAST/SET

ROAD LOAD PERFORMANCE - Record Max & Min readings for Manifold Vacuum & T.P. in E.U. and/or degrees, & subjective rating (1 - 10)

Gear	Vacuum	T.P.	Surge	Vacuum	T.P.	Surge	Vacuum	T.P.	Surge	Vacuum	T.P.	Surge	Vacuum	T.P.	Surge
3rd / Drive	15-20	0-45	8 5												
4th / O.D.				10-20	2-7.5	7 4	14-16	6-7	2-8	2-13	8-9	2-9	12-13	10-12	2-9
5th / ..															

Auto Trans. D/S
Prog High Gear

37° 63° 43
70-92 64° 43 65° 4-3 75° 4-3

Comments: * INITIALLY AFTER SET, OR FLUCTUATES W/ UP TO 10" VAC SWING OVER 7 or 9 SECONDS HOLDER.
STRATEGY SEEMS TO BE ABLE TO DAMPEN OUT SWINGS AFTER A FEW CYCLES.

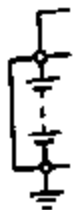
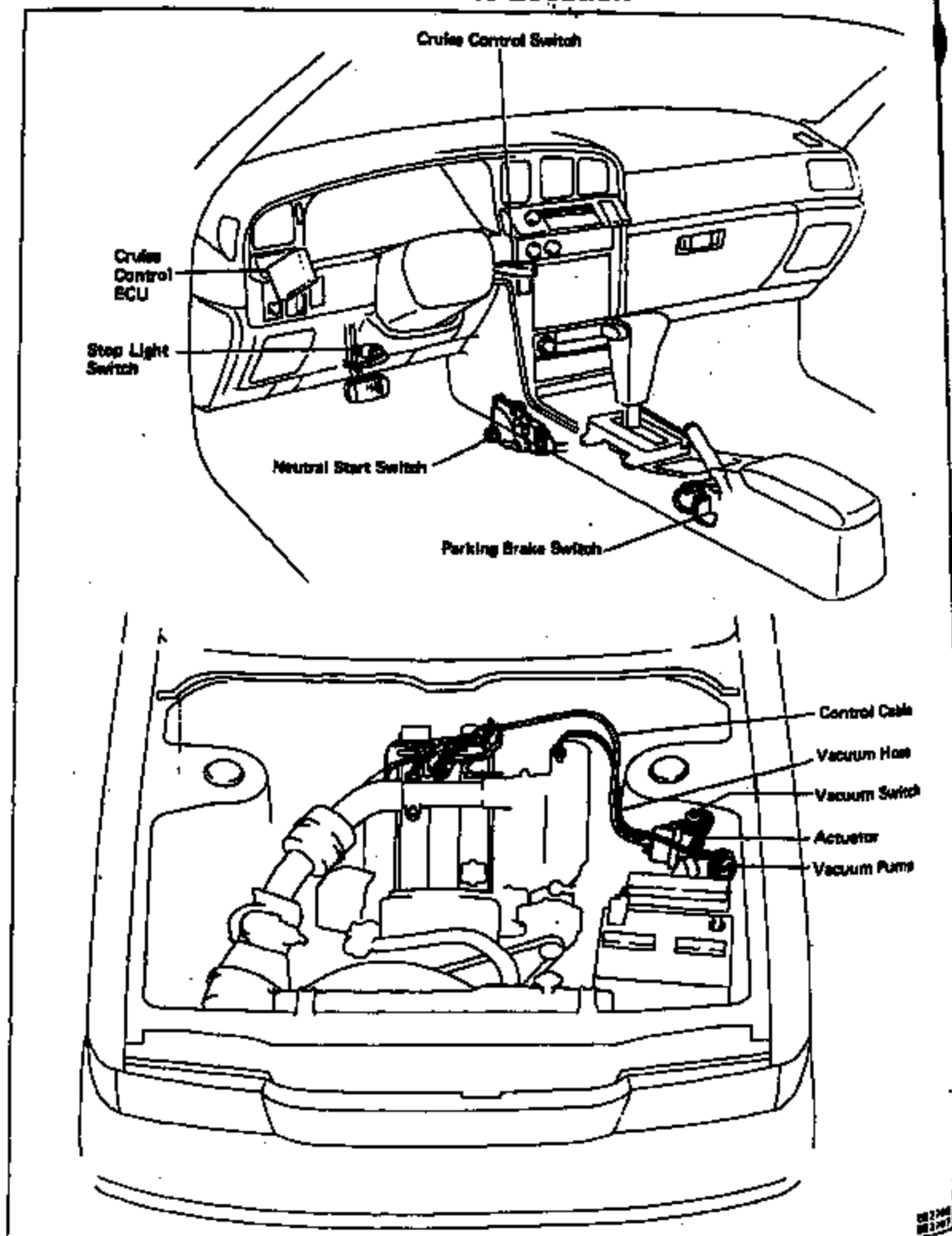
ACCELERATION RATES - Record accel. rate in sec. (Resume mode) and max T.P. reading in E.U. and/or deg.

Run	30 - 40			40 - 50			50 - 60			60 - 70		
	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear
10 MPH Split Accels (Begin at speed shown, simultaneously depress accel and release pedal.)	Run #1	8-14	22°				8-15	27	4	8-15	27	4
	Run #2	8-73	19°	3	6-42	27	8-73	28	4	9-07	51°	4
30 - 70 Accels (Run in high gear, begin accel at 27, begin timing at 30)	Run #1	7-90			16-16		23-84			32-44		
	Run #2	8-30			16-5		24-96			32-79		

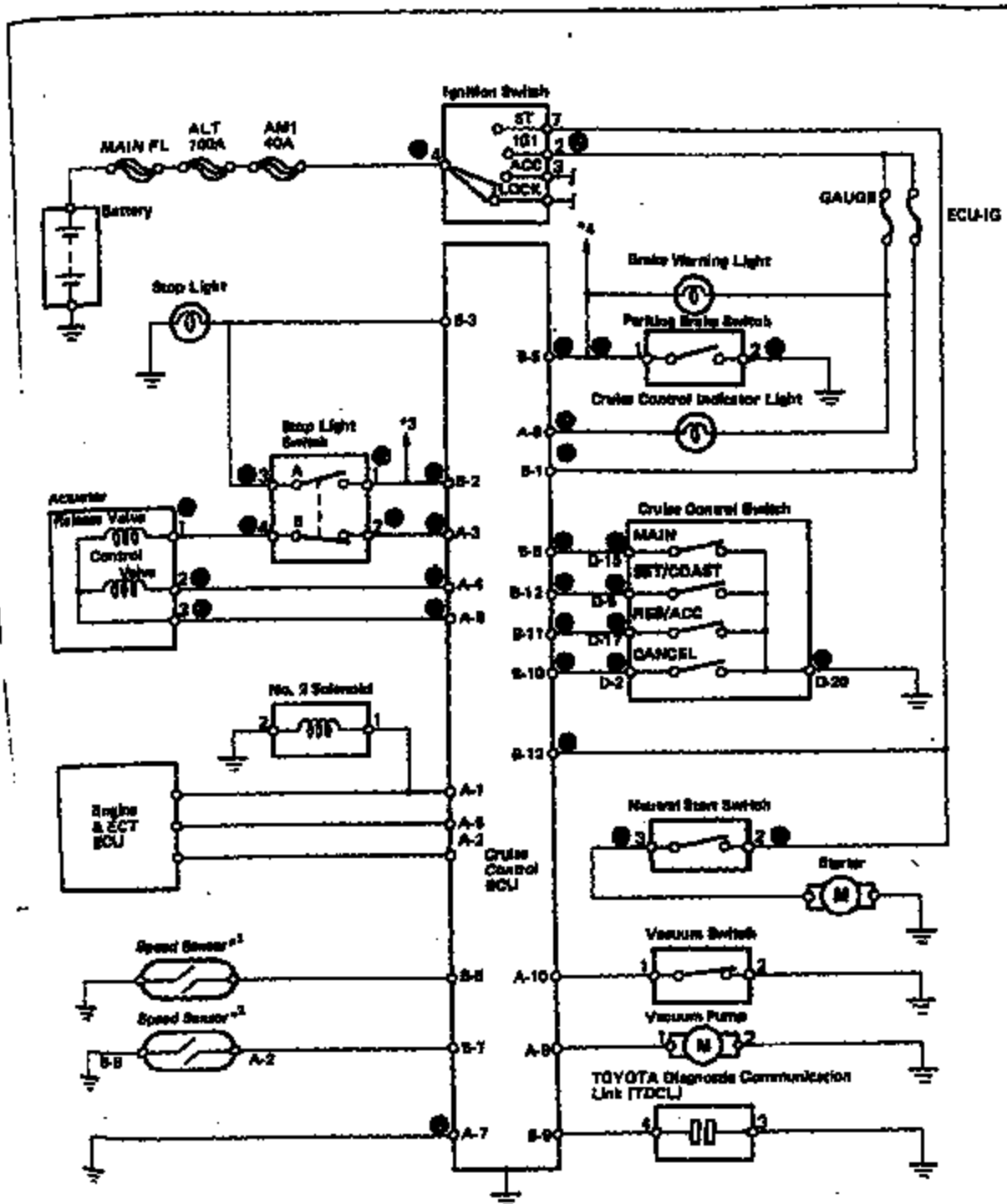
Comments: 2/3 @ 30 MPH 3/4 @ 44 MPH

FORM 425-9 2/89

1/ Record no. of grooves/bands and inches or millimeters from cable position.
 2/ Record with engine running.
 3/ For more accurate set speed data, depress Set Button x times and divide final reading by x (let speed stabilize before each "Set").
 4/ 07/10/89

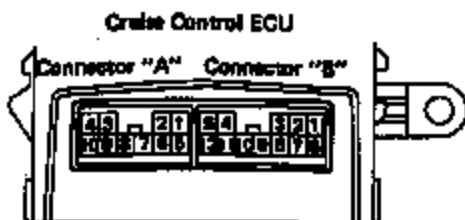
1991 TOYOTA
CRESSIDACRUISE CONTROL SYSTEM
Parts LocationActuator
Relay

Wiring Diagram



- *1: In ECT
- *2: In Combination Meter
- *3: From STDP Fuse
- *4: to Brake Fluid Level Warning Switch

Connector Diagrams



Stop Light Switch



Parking Brake Switch



Neutral Start Switch



Vacuum Switch



Actuator



Vacuum Pump



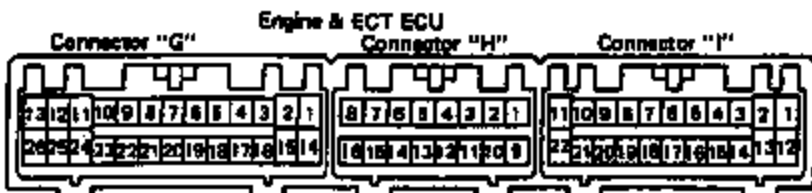
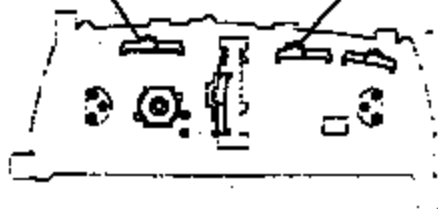
TOYOTA Diagnostic Communication Link (TDCL)



Ignition Switch



Speed Sensor (in Combination Meter)



882700 V-302
882700 H-22 E-32
8-3-2-A 8-3-1-0
-10-1-8 BE1560
VAD-04-3

CONTROL

Ignition

The cr

MA

Ignition

CC MA

2. SE

Ignition

CC M/

SET/C

Condi

<Actu

If the :

3. R

Ignit

CC N

RESL

Condi

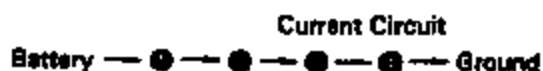
<Act

If the

System Description

CONTROL SWITCH operation

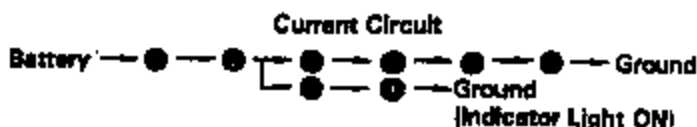
Switch	Position
Ignition switch	ON



The cruise control switch controls MAIN switch, SET/COAST, RESUME/ACCEL and CANCEL function.

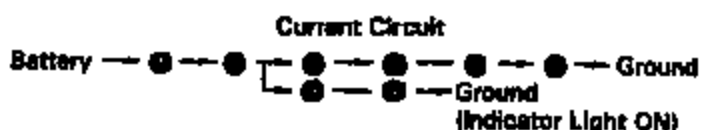
1. MAIN SWITCH operation

Switch	Position
Ignition switch	ON
CC MAIN switch	ON



2. SET/COAST SWITCH operation

Switch	Position
Ignition switch	ON
CC MAIN switch	ON
SET/COAST switch	ON



Condition: Continuity ● — ● — ● — Ground (SET/COAST switch ON)

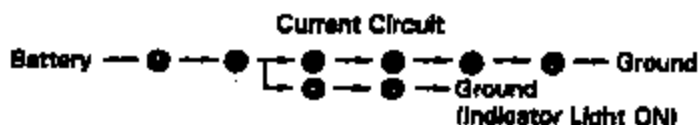
Actuator Operation > (Current Circuit)



As SET/COAST switch is released at the moment, the vehicle speed is registered in memory.

3. RESUME/ACCEL SWITCH operation

Switch	Position
Ignition switch	ON
CC MAIN switch	ON
RESUME/ACCEL switch	ON



Condition: Continuity ● — ● — ● — Ground (RESUME/ACCEL switch ON)

Actuator Operation > (Current Circuit)



As RESUME/ACCEL switch is released at the moment, the vehicle speed is registered in memory.

EXPLODED
N 2 2 0 0 1
2 2 0 0 1
708 21 1 1
68-500
6-55 68-1

4. CANCEL operation

The Cruise Control is provided with several types of the cancel switch, such as the cruise control switch (CANCEL), the stop light switch, the parking brake switch and the neutral start switch.

(a) Cruise Control Switch (CANCEL)

Switch	Position
CANCEL switch	ON

Condition: Continuity ● — ● — ● — Ground

Then, cancellation signal is send to CC ECU.

(b) Stop Light Switch

Switch	Position
Stop light switch (Brake pedal depressed)	ON

Condition: Continuity ● — ● — ● — Ground
● — ●
● — ●

Condition: No continuity ● — ●

Then, cancellation signal is send to CC ECU.

(c) Parking Brake Switch

Switch	Position
Parking brake switch (Parking brake lever pulled)	ON

Condition: Continuity ● — ● — ● — Ground

Then, cancellation signal is send to CC ECU.

(d) Neutral Start Switch

Switch	Position
Neutral start switch	ON

Condition: Continuity ● — ● — ● — Ground

Then, cancellation signal is send to CC ECU.

Therefore, the operation of the CCS is canceled and the actuator is shut off due to the operation of these switches.

No.	
1	T S
2	T F
3	
4	
5	
6	
7	


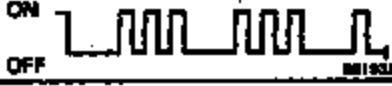

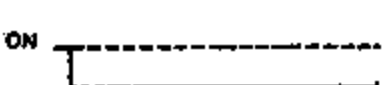
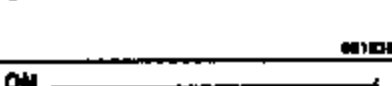
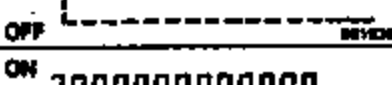
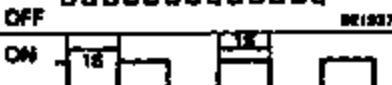
Diagnosis System

Output of Diagnostic Code

READ DIAGNOSTIC CODE

(Type A)

- (a) Turn the ignition switch on
- (b) Turn the control switch to SET/COAST position, and keep it.
- (c) Push the main switch ON.
- (d) Check that the indicator light "CRUISE" in the combination meter.
- (e) Turn the SET/COAST switch off.
- (f) Meet the conditions listed below.
- (g) Read the diagnostic code on the cruise control indicator light.

No.	Conditions	Indication code	Diagnosis
1	Turn the control switch to SET/COAST position.	ON  OFF BE1021	SET/COAST circuit is normal.
2	Turn the control switch to RES/ACC position.	ON  OFF BE1022	RES/ACC circuit is normal.
3	Vacuum switch is turned ON.	ON  OFF BE1024	Vacuum switch circuit is normal.
4	Each cancel switch is turned ON. • Control switch (to CANCEL) • Stop light switch • Parking brake switch • Neutral start switch (to N or P range)	ON  OFF BE1025	Each cancel switch is normal.
5	Drive approx. 40 km/h (25 mph) or below.	ON  OFF BE1026	Speed sensor circuit is normal.
6	Drive approx. 40 km/h (25 mph) or over. (w/o ECT)	ON  OFF BE1027	Speed sensor (in meter) circuit is normal.
7	Drive 40 km/h (25 mph) or over. (w/ ECT)	ON  OFF BE1028	Speed sensor (in ECT) circuit is normal.

HINT:

- After inspecting No.3, turn the vacuum switch OFF and perform No.4-7.
- Disconnect the vacuum switch connector.
- Idle the engine.
- If there is no indication code, perform diagnosis and inspection. (See page BE-89)
- Indication is stopped when the MAIN switch is re-pushed.

TOYOTA Diagnostic Communication Link (TDCL)



BE2710 P0889

(Type B)

(a) If while driving with the cruise control on, the system is canceled by a malfunction in either the actuator, speed sensor or control switch circuit, the cruise control indicator light will blink 6 times.

(b) While stopped, connect terminals 3 and 4 of the TOYOTA Diagnostic Communication Link (TDCL).

HINT: Should the power be cut, the diagnostic code will be erased from the ECU memory.

(c) Read the diagnostic code on the cruise control indicator light.

Indication code	Diagnosis
 001000	Normal.
 001040	Actuator circuit or Actuator (Control Valve Circuit) is abnormal.
 002711	Actuator circuit or Actuator (Release Valve Circuit) is abnormal.
 001041	Speed sensor (In Meter) circuit is abnormal.
 001042	Speed sensor (In ECT) circuit is abnormal.
 001043	*Vehicle speed has decreased by 10 km/h (10 mph) or more from the set speed.
 001044	RES/ACC switch circuit is abnormal. (Switch signal always turned on.)
 002712	SET/COAST switch signal and RES/ACC switch signal turned on simultaneously.
 004343	ECU malfunction.

*: If the set speed can be maintained when the speed control switch is again set at SET/COAST, there is no malfunction.

HINT:

- Indication codes appear in order from No. 11.
- If there is no indication code, perform diagnosis and inspection. (See page BE-89)

You will find
priority of c

Chart No.
Inspection I

Diagnosis
Problem

- "CRUISE" blinks 6
- Cruise c not set.
- Cruise c not open

Setting sp
side.

Vehicle sp
control sv

Setting sp
brake ped

Setting sp
parking b

Setting sp
shifted to

Vehicle s
speed co

Vehicle s
speed co

Vehicle i
read spe
on RESU

Setting c
speed cr
CANCEL

Speed c
125 mph

Cruise c
at abou

Accel:
speed c
"ACCE

"1: In
"2: Va

EMC-825-A 20077

EAGLE VISION



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.: <i>SLT 211</i>	Model: <i>Contour</i>	Yr.: <i>1993</i>	Eng.: <i>3.6L I4 V</i>	Trans.: <i>AXOD</i>	Axles:																
Vehicle U.I.:	Calib.:	Servo: <i>Vacuum</i>	Amp.: <i>CEL</i>	Vac Assist: <i>ASSM</i>	Cable Slack 1/:																
Location/Altitude: <i>DPS</i>		Temp: <i>38°F</i>	Date: <i>2/10/93</i>	Driver: <i>MVF</i>	Recorder: <i>MVF</i>																
T.P. reading at idle: _____ E.U.		UOI: _____ E.U.	Seq. <i>2</i>	Max T.P. at serve full strokes _____ E.U.																	
KEY SPEED ACCURACY - Record actual vs. set speed and drop in MPH <input checked="" type="checkbox"/>																					
SETR	Set SPD	30		40		50		60		70											
MAN	AUTO	RRP	ACT	RRP	ACT	RRP	ACT	RRP	ACT	RRP	ACT										
3rd / Drive		<i>35</i>	<i>36</i>	-	-																
4th / O.D.				<i>39</i>	<i>39.5</i>	<i>48.5</i>	<i>49</i>	<i>* 68</i>	<i>60</i>	<i>* 72</i>	<i>70</i>										
5th / --																					
Comments: <i>MIN SPEED LOCKOUT = 35 MPH</i>						<i>LOCKED 2ND HIGH ON 1ST, AFTER 5-10 SECS WEATHER SETTLED</i>															
ROAD LOAD PERFORMANCE - Record Max & Min readings for: Manifold Vacuum & T.P. in E.U. and/or degrees, & subjective rating (1 - 10)																					
Gear	Veh. Spd.	30				40				50				60				70			
		Vacuum	TP	Surge		Vacuum	TP	Surge		Vacuum	TP	Surge		Vacuum	TP	Surge		Vacuum	TP	Surge	
MAN	AUTO	Min/Max	Min/Max	Per	Per	Min/Max	Min/Max	Per	Per	Min/Max	Min/Max	Per	Per	Min/Max	Min/Max	Per	Per	Min/Max	Min/Max	Per	Per
3rd / Drive																					
4th / O.D.				<i>4.5</i>	<i>6</i>			<i>0.5</i>	<i>6</i>			<i>8.5</i>	<i>6</i>	<i>± 1 MPH</i>	<i>6</i>			<i>± 1 MPH</i>	<i>6</i>		
5th / --																					
Auto Trans. O/S																					
From High Gear																					
Comments: <i>@ 30, 40, 50 MPH - Surge available by 1/2 MPH on SPEEDOMETER. 60, 70 - SERVED LAST TIME. Full stroke shift speed</i>												<i>ALWAYS SEARCHING - UNPREDICTABLE</i>									
ACCELERATION RATES - Record Accel. rate in sec. (Roum mode) and max T.P. reading in E.U. and/or deg.																					
	MPH	30 - 40				40 - 50				50 - 60				60 - 70							
		Time	Max T.P.	Gear		Time	Max T.P.	Gear		Time	Max T.P.	Gear		Time	Max T.P.	Gear					
10 MPH Split Accels	Run #1					<i>8.37</i>		<i>4</i>	<i>10.34</i>			<i>4</i>	<i>10.46</i>			<i>4</i>					
(Begin at speed shown, simultaneously depress accel and release pedal.)	Run #2																				
30 - 70 Accels	Run #1				<i>0.93</i>			<i>4</i>	<i>7.85</i>			<i>4</i>	<i>13.34</i>			<i>4</i>					
(Run in high gear, begin accel at 27, begin timing at 30)	Run #2																				
Comments: <i>TAP UP = 2 MPH/TAP - NO TAP DOWN</i>												<i>(Slowed as reached lower speed)</i>									

1/ Record no. of grooves/beads and inches or millimeters from east cable position.
 2/ Record with engine running.
 3/ For more accurate set speed data, depress Set button x times and divide final reading by x (let speed stabilize before each "Set").
 scp4a 07/17/90

DMEC-025-R 2087B



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.:		Model:		E.Y.:		Eng.:		Trans.:		Axles:																																																																																																																																																																											
Vehicle Wt.:		Calif.:		Servo:		Amp.:		Vac Auxlets:		Cable Slack 1/2:																																																																																																																																																																											
Location/Altitude:				Temp:		Dates:		Driver:		Recorder:																																																																																																																																																																											
T.P. reading at idles _____ E.U.		MOT: _____ E.U.		Deg. 1/2		Max T.P. at serve full strokes _____ E.U.		Deg.																																																																																																																																																																													
SET SPEED ACCURACY - Record actual vs. set speed and drop in MPH 1/2																																																																																																																																																																																					
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Gear</th> <th rowspan="2">Set Spd</th> <th colspan="2">30</th> <th colspan="2">40</th> <th colspan="2">50</th> <th colspan="2">60</th> <th colspan="2">70</th> </tr> <tr> <th>Err</th> <th>Act</th> <th>Err</th> <th>Act</th> <th>Err</th> <th>Act</th> <th>Err</th> <th>Act</th> <th>Err</th> <th>Act</th> </tr> </thead> <tbody> <tr> <td>3rd / Drive</td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>4th / O.D.</td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>5th / ..</td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>												Gear	Set Spd	30		40		50		60		70		Err	Act	Err	Act	Err	Act	Err	Act	Err	Act	3rd / Drive												4th / O.D.												5th / ..																																																																																																																											
Gear	Set Spd	30		40		50		60		70																																																																																																																																																																											
		Err	Act	Err	Act	Err	Act	Err	Act	Err	Act																																																																																																																																																																										
3rd / Drive																																																																																																																																																																																					
4th / O.D.																																																																																																																																																																																					
5th / ..																																																																																																																																																																																					
Comments:																																																																																																																																																																																					
ROAD LOAD PERFORMANCE - Record Max & Min readings for: Halfload Vacuum & T.P. in E.U. and/or degrees, & subjective rating (1 - 10)																																																																																																																																																																																					
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Gear</th> <th rowspan="2">Veh Spd</th> <th colspan="4">30</th> <th colspan="4">40</th> <th colspan="4">50</th> <th colspan="4">60</th> <th colspan="4">70</th> </tr> <tr> <th colspan="2">Vacuum</th> <th colspan="2">TP</th> <th colspan="2">Surge</th> <th colspan="2">Vacuum</th> <th colspan="2">TP</th> <th colspan="2">Surge</th> <th colspan="2">Vacuum</th> <th colspan="2">TP</th> <th colspan="2">Surge</th> <th colspan="2">Vacuum</th> <th colspan="2">TP</th> <th colspan="2">Surge</th> </tr> <tr> <th>Min/Max</th> <th>Avg</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> <th>Min/Max</th> <th>Per/Rat</th> </tr> </thead> <tbody> <tr> <td>3rd / Drive</td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>4th / O.D.</td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>5th / ..</td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Auto Trans. D/R From High Gear</td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>												Gear	Veh Spd	30				40				50				60				70				Vacuum		TP		Surge		Vacuum		TP		Surge		Vacuum		TP		Surge		Vacuum		TP		Surge		Min/Max	Avg	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	3rd / Drive																									4th / O.D.																									5th / ..																									Auto Trans. D/R From High Gear																								
Gear	Veh Spd	30				40				50				60				70																																																																																																																																																																			
		Vacuum		TP		Surge		Vacuum		TP		Surge		Vacuum		TP		Surge		Vacuum		TP		Surge																																																																																																																																																													
Min/Max	Avg	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat	Min/Max	Per/Rat																																																																																																																																																														
3rd / Drive																																																																																																																																																																																					
4th / O.D.																																																																																																																																																																																					
5th / ..																																																																																																																																																																																					
Auto Trans. D/R From High Gear																																																																																																																																																																																					
Comments:																																																																																																																																																																																					
Full Stroke Shift Speed <input type="checkbox"/>																																																																																																																																																																																					
ACCELERATION RATES - Record accel. rate in sec. (Resume mode) and max T.P. reading in E.U. and/or deg.																																																																																																																																																																																					
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2">RPM</th> <th colspan="3">30 - 40</th> <th colspan="3">40 - 50</th> <th colspan="3">50 - 60</th> <th colspan="3">60 - 70</th> </tr> <tr> <th>Time</th> <th>Max T.P.</th> <th>Gear</th> <th>Time</th> <th>Max T.P.</th> <th>Gear</th> <th>Time</th> <th>Max T.P.</th> <th>Gear</th> <th>Time</th> <th>Max T.P.</th> <th>Gear</th> </tr> </thead> <tbody> <tr> <td rowspan="2">10 MPH Split Accels (Begin at speed shown, simultaneously depress accel and release pedal.)</td> <td>Run #1</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Run #2</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td rowspan="2">30 - 70 Accels (Run in high gear, begin accel at 27, begin timing at 30)</td> <td>Run #1</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Run #2</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>													RPM	30 - 40			40 - 50			50 - 60			60 - 70			Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	10 MPH Split Accels (Begin at speed shown, simultaneously depress accel and release pedal.)	Run #1												Run #2												30 - 70 Accels (Run in high gear, begin accel at 27, begin timing at 30)	Run #1												Run #2																																																																																																									
	RPM	30 - 40			40 - 50			50 - 60			60 - 70																																																																																																																																																																										
		Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear																																																																																																																																																																								
10 MPH Split Accels (Begin at speed shown, simultaneously depress accel and release pedal.)	Run #1																																																																																																																																																																																				
	Run #2																																																																																																																																																																																				
30 - 70 Accels (Run in high gear, begin accel at 27, begin timing at 30)	Run #1																																																																																																																																																																																				
	Run #2																																																																																																																																																																																				
Comments:																																																																																																																																																																																					

1/ Record no. of grooves/bands and inches or millimeters from test cable position.
 2/ Record with engine running.
 3/ For more accurate set speed data, depress Set Button x times and divide final reading by x (let speed stabilize before each "Set").
 4/ 07/17/90

E102-022-A 20079



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.:	Model:	E.Y.:	Eng.:	Trans.:	Axles:																				
Vehicle Wt.:	Calif.:	Series:	App.:	Vac Assist:	Cable Slack 1/1																				
Location/Altitude:		Temp:	Dates:	Driver:	Recorder:																				
T.P. reading at idle: _____ E.U.		NOT: _____ E.U.		Dog. 2/ Max T.P. at serve full stroke: _____ E.U. _____ Dog.																					
SET SPEED ACCURACY - Record actual vs. set speed and droop in RPM 3/																									
Gear	Set Spd	30		40		50		60		70															
Run	Auto	Dro	Act	Dro	Act	Dro	Act	Dro	Act	Dro	Act														
3rd / Drive																									
4th / O.D.																									
5th / --																									
Comments:																									
ROAD LOAD PERFORMANCE - Record Max & Min readings for: Manifold Vacuum & T.P. in E.U. and/or degree, & subjective rating (1 - 10)																									
Gear	Vel Spd	30				40				50				60				70							
Run	Auto	Vacuum		TP		Surge		Vacuum		TP		Surge		Vacuum		TP		Surge		Vacuum		TP		Surge	
		Min/Max	Min/Max	Per	Rate	Min/Max	Min/Max	Per	Rate	Min/Max	Min/Max	Per	Rate	Min/Max	Min/Max	Per	Rate	Min/Max	Min/Max	Per	Rate	Min/Max	Min/Max	Per	Rate
3rd / Drive																									
4th / O.D.																									
5th / --																									
Auto Trans. D/S From High Gear																									
Comments:						Full Stroke Shift Speed																			
ACCELERATION RATES - Record Accel. rate in sec. (Neutral mode) and max T.P. reading in E.U. and/or deg.																									
		RPM		30 - 40		40 - 50		50 - 60		60 - 70															
		Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear												
10 RPM Split Accels (Begin at speed shown, simultaneously depress accel and release pedal.)		Run #1																							
		Run #2																							
30 - 70 Accels (Run in high gear, begin accel at 27, begin timing at 38)		Run #1																							
		Run #2																							
Comments:																									

DNR-878-A 20000

1/ Record no. of grooves/beads and inches or millimeters from taut cable position.
 2/ Record with engine running.
 3/ For more accurate set speed data, depress set button x times and divide final reading by x. (Let speed stabilize before each "Set").
 scp4a 07/17/98



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.:		Model:		N.Y.:		Eng.:		Trans.:		Axle:			
Vehicle Wt.:		Culib.:		Serves:		Amp.:		Vac Assist:		Cable Slack 1/2			
Location/Altitude:				Temp:		Date:		Driver:		Recorder:			
T.P. reading at Idle: _____ E.U.		NOT: _____ E.U.		Deg. 2/		Max T.P. at servo full stroke: _____ E.U.		Deg. _____					
SET SPEED ACCURACY - Record actual vs. set speed and drop in MPH 1/													
Gear		Set Spd		30		40		50		60			
Rev. Auto		RPM		ACT		DPR		ACT		DPR			
3rd / Drive													
4th / D.D.													
5th / --													
Comments:													
ROAD LOAD PERFORMANCE - Record Max & Min readings for: Manifold Vacuum & T.P. in E.U. and/or degrees, & subjective rating (1 - 10)													
Gear		Veh Spd		30		40		50		60		70	
Man. Auto		Vacuum		TP		Surge		Vacuum		TP		Surge	
		Min/Max		Min/Max		Per/Ret		Min/Max		Min/Max		Per/Ret	
3rd / Drive													
4th / D.D.													
5th / --													
Auto Trans. D/S													
From High gear													
Comments:													
Full Stroke Shift Speed													
ACCELERATION RATES - Record Accel. rate in sec. (Resume mode) and max T.P. reading in E.U. and/or deg.													
		MPH		30 - 40		40 - 50		50 - 60		60 - 70			
		Time		Max T.P.		Gear		Time		Max T.P.			
10 MPH Split Accels		Run #1											
(Begin at speed shown, simultaneously depress accel and release pedal.)		Run #2											
30 - 70 Accels		Run #1											
(Run in high gear, begin accel at 27, begin timing at 30)		Run #2											
Comments:													

1/ Record no. of grooves/beads and inches or millimeters from taut cable position.
 2/ Record with engine running.
 For more accurate set speed data, depress Set Button x times and divide final reading by x (let speed stabilize before each "set").
 3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.:		Model:		M.Y.:		Eng.:		Trans.:		Axles:						
Vehicle Mt.:		Calib.:		Servos:		Amp.:		Vac Anslts:		Cable Black 1/:						
Location/Altitude:				Temp:		Date:		Driver:		Recorder:						
T.P. reading at idles: _____ E.U.		VOT: _____ E.U.		Deg. 2/		Max T.P. at servo full stroke: _____ E.U.		Deg.								
SET SPEED ACCURACY - Record actual vs. set speed and drop in MPH 3/																
Gear - Set Spd		30		40		50		60		70						
Min. Auto		D/B		ACT		D/B		ACT		D/B						
3rd / Drive																
4th / D.D.																
5th / --																
Comments:																
ROAD LOAD PERFORMANCE - Record Max & Min readings for: Manifold Vacuum & T.P. in E.U. and/or degrees, & subjective rating (1 - 10)																
Gear - Veh Spd		30		40		50		60		70						
Min. Auto		Vacuum		TP		Surge		Vacuum		TP						
		Min/Max		Min/Max		Per/Ret		Min/Max		Min/Max						
3rd / Drive																
4th / D.D.																
5th / --																
Auto Trans. D/B																
From High Gear																
Comments:																
Full Stroke Shift Speed																
ACCELERATION RATES - Record Accel. rate in sec. (Resume mode) and max T.P. reading in E.U. and/or deg.																
		RPM			30 - 40			40 - 50			50 - 60			60 - 70		
		Time			Max T.P.			Time			Max T.P.			Time		
10 MPH Split Anslts		Run #1														
(Begin at speed shown, simultaneously depress accel and release pedal.		Run #2														
30 - 70 Accels		Run #1														
(Run in high gear, begin accel at 27, begin timing at 30)		Run #2														
Comments:																

1/ Record no. of grooves/bands and inches or millimeters from zero cable position.
 2/ Record with engine running.
 3/ For more accurate set speed data, depress Set Button x times and divide final reading by x (set speed stabilize before each "set").
 acc'n 07/17/90

EPM2-025-9 28092

COMPENSATIVE SPEED CONTROL PERFORMANCE EVALUATION

Vehicle Make: 1993 EAGLE
 Vehicle Model: VISION
 Powertrain: 3.3L V6 4WD AWD

Tag Number: _____
 Evaluated By: A. J. [Signature]
 Evaluation Date: 11/14/92

JURY EVALUATION

VEHICLE EVALUATION RATING SYSTEM

	UNDESIRABLE				BORDER LINE	ACCEPTABLE						
RATING SCORE	1	2	3	4	5	6	7	8	9	10		
EVALUATION OF VEHICLE/COMPONENT PERFORMANCE	FUNCTION SUBJECT		CUSTOMER COMPLAINT		BORDER LINE		QUALITY ACCEPT- ABLE		FAIR	GOOD	VERY GOOD	EXCELLENT

FEATURE/COMPONENT	RATING	COMMENT
1. Interior control placement	9	Location? <u>STEERING WHEEL</u>
2. Visibility of controls	8	<u>WALK / NO TACTILE FEEL</u> <u>DIFFICULT TO LOOK AT NIGHT</u>
3. Ease of comprehending control operation	8	<u>STANDARD GOUNT</u> <u>LEFT TOGGLE = ON / OFF</u> <u>RIGHT TOGGLE = RESUME / ACCEL</u> <u>SET / COAST</u>
4. General control appearance	8	<u>VERY COMMON TO JAPANESE</u>

COMPENSATIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
5. Tactile feel upon setting	7 8 1/2	LITTLE PERCEPTIBLE "DETENT"
6. Accel pedal compensation after setting speed	9	IMMEDIATE
7. On/Off switch (Yes/No)	No Rating	YES LUNARD DEPT - 2100 - 2, 12 - 1 - equal increment (3.5L) AND SET SPEED = 35 MPH
8. Set speed accuracy		Ast of droop: 1/2 HI or LO? Min set speed: 32 MPH Max: WOULD PICK UP FEEL & HOLD IMMEDIATELY AT SET, BUT WOULD THEN DROOP ~ 1/2 MPH, THEN COME BACK.
9. "Cruise" Light (Yes/No)		YES - GREEN "CRUISE" ON CLUSTER WHEN SET ENGAGED. STAYS ON w/ COAST, OFF w/ BRAKE.
10. "Neutral" switch (Yes/No)	No Rating	YES
11. Damp valve (Yes/No)	No Rating	NO - OIL CONTACT BRAKE SWITCH, 3RD SOLENOID IN SERVO

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
12. Electric or vacuum servo	No Rating	VACUUM - 3 SOLENOIDS NO FEEDBACK
13. VACUUM reservoir (Yes/No)	No Rating	YES x 55 G.F.
14. "Coast" feature (Yes/No)	No Rating	YES
15. "Coast" feature performance	9	GOOD, ABOUT 1/2 INCH DROOP AFTER RELEASE
16. Resume feature (Yes/No)	No Rating	YES, x 1 MPH/SEC RATE
17. Resume performance	9	A LITTLE SLOW
18. Accel switch (Yes/No)	No Rating	YES - PART OF RESUME/ACCEL

COMBUSTIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	MARKS	COMMENT
19. Accel switch performance	9	Quick
20. Overall system performance	9 <hr/> 7 Leonard	

21. Unusual features No ACCEL OBLT, BAR CODE TO CONTROL
 WIRE PINS OVER OPA,
 LOW MOTION & SERVO
 CRUISE WENT INTO THRUST BOOST.
 TAP UP, NO TAP DOWN

22. Deficiencies SPEEDOMETER FLICKER - PERCEPTION THAT S/C
 WAS ALWAYS HUNTING - LOW SPEEDS HAD DROP
 AT SET, HIGH SPEEDS - LURCHED AHEAD, THEN
 AFTER 5 OR 50 SECONDS CAME BACK

23. Other Comments

f:\friedric\perf2

8002-028-A 20067

MERCURY VILLAGER

ENG2-025-A 20049

QFTF

COMPETITIVE SEED CONTROL PERFORMANCE EVALUATION

Vehicle Make: MERCURY
 Vehicle Model: VILLASER
 Powertrain: 3.0L AXC

Tag Number: 566 T224
 Evaluated By: NFF
 Evaluation Date: 11/9/92

JURY EVALUATION

VEHICLE EVALUATION RATING SYSTEM

	UNACCEPTABLE				NEUTRAL LINE	ACCEPTABLE				
ARTICLE NO:	1	2	3	4	5	6	7	8	9	10
EVALUATION OF VEHICLE/COMPONENT PERFORMANCE	PRODUCTION READY		CUSTOMER COMPLAINT		NEUTRAL LINE	BARELY ACCEPTABLE	FAIR	GOOD	VERY GOOD	EXCELLENT
	POOR									

FEATURE/COMPONENT	RATING	COMMENT
1. Interior control placement	7 8	Location? ON - OFF : UPPER LEFT RD ON IP CANCEL/RESUME/SET : MIDDLE OF STEERING WHEEL ACCEL/COAST
2. Visibility of controls	7 10	ON-OFF : HIDDEN BY WHEEL CANCEL/RESUME/SET : NO OBSTRUCTIONS ACCEL/COAST
3. Ease of comprehending control operation	9	TYPICAL JAPANESE OPERATION
4. General control appearance	8	CENTER LOCATION ON WHEEL IS DIFFICULT TO REACH - MUST MOVE HAND FROM WHEEL.

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMMENT	RATING	COMMENT
5. Tactile feel upon setting	9	LOW CLICK w/ BUTTON PUSH.
6. Accel pedal compensation after setting speed		NO - PEDAL IS "LOOSE", BUT DOESN'T TRACK SPEED CONTROL
7. On/Off switch (Yes/No)	No Rating	YES - UPPER LEFT PAD - SEPARATE ON & OFF, SMALL GREEN LIGHT ON "ON" BUTTON WHEN "ON" ENGAGED
8. Set speed accuracy	6	Amt of droop: +1 ^{GD or 10?} Min set speed: ~28 MPH Max: ? SETS 1 MPH HIGH
9. "Cruise" light (Yes/No)	9 9	YES, GREEN ON INDICATOR ON "ON" BUTTON WHEN ENGAGED. GREEN "CRUISE" INDICATOR WHEN SET ENGAGED
10. "Neutral" switch (Yes/No)	No Rating	YES
11. Damp valve (Yes/No)	No Rating	SEPARATE BRAKE PEDAL SWITCH BOTH SWITCHES MANUALLY ADJUSTED

CONTINUOUS SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
12. Electric or vacuum servo	No Rating	VACUUM w/ DEDICATED VAC PUMP. NO MANIFOLD VAC USED
13. Vacuum reservoir (Yes/No)	No Rating	N/R
14. "Coast" feature (Yes/No)	No Rating	YES, SETS 1 MPH HIGH AFTER RELEASE
15. "Coast" feature performance	7	SETS 1 MPH HIGH AFTER RELEASE
16. Resume feature (Yes/No)	No Rating	YES, DOES NOT LOSE MEMORY AFTER COMPLETE STOP
17. Resume performance	8	1 MPH/SEC RATE
18. Accel switch (Yes/No)	No Rating	YES

CONTINUOUS SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
19. Accel switch performance	7	SETS 1 MPH. HIGH AFTER RELEASE
20. Overall system performance	8	

21. Unusual features

TAP UP/TAP DOWN - DOES NOT COUNT TAPS - ALLOWS ONE TAP AT A TIME.
TAPS IN 1 MPH INCREMENT

22. Deficiencies

VERY LOW GAIN. ±1 MPH ON TRACK
+1, -2½ ON SOUTHFIELD

23. Other Comments

DOES NOT TURN OFF WITH PARKING BRAKE

f:\friedric\perf2

**Ford Next Generation Speed Control
Competitive Analysis**

<i>VEHICLE</i>	<i>SYSTEM</i>	<i>ACTUATOR</i>	<i>CONTROLLER</i>	<i>1</i>	<i>2</i>	<i>-1000</i>	<i>YES</i>	<i>YES</i>	<i>YES</i>	<i>YES</i>	
Electric Motor Application	System Supplier	Complexity				Total Weight (kg)	Total Volume (cm ³)	Features			
		Engine Compartment	Passenger Compartment	Parts Count	Cable Adj.			Resume	Cancel	Set Lamp Output	Tap Up/ Tap Down
Ford vehicles (1)	Ford ELD NGSC	- Integrated Actuator		56	0	1.26	690	Yes	Yes	Yes	Yes
Toyota Camry	Aisin Seiki or Denso/Fujitsu Ten	- Actuator	- Controller	132	2	1.42	1090	Yes	Yes	(2)	Yes
Mazda vehicles	Mitsubishi or NALDEC	- Actuator	- Controller	92	2	1.29	840	Yes	No	Yes	No
GM vehicles	AC Delco	- Integrated Actuator		69	1	1.19	1150	Yes	No	(2)	Yes
GM Saturn	VDO/Yazaki		- Integrated Actuator	79	0	1.05	1020	Yes	No	(2)	Yes
Acura Legend	Mitsuba	- Actuator	- Controller	TBD	1	TBD	TBD	Yes	Yes	Yes	No

(1) All Ford vehicles will use NGSC by 1997. This includes exports to Europe and Japan starting in 1994.

(2) "SET" Lamp not used on evaluation vehicle, however, output may be available.

October 26, 1992

Ford Motor Co. - Electronics Division

CONFIDENTIAL

APP PARTS : 13 } VILLAGER
SERVO PARTS : 4 }

~~Mark Fi~~
Roy P.

Pg 1 of 2

93 Mercury Villager S/c Teardown

Vacuum pump/Actuator on one bracket assy &
Stand Alone Amplifier (Jideco system)

Weight 1.16 Kg total (includes ~ 2 ft non-detach-
able cable & Bracket) (Cable wgt = 112.5 gm)

Actuator/pump/bracket	902 gm	1131 cc
Amplifier	257 gm	335.7 cc
- cable	112.5 gm	

Totals 1047 grams & 1467 cc volume
= 103 parts

Parts count:

Actuator/Pump:

- 2 Actuator/Pump Bracket
- 3 Rubber Grommets
- 3 eyelets
- 3 screw/washer assy (pump)
- 1 Vacuum hose
- 4 screws (Actuator)
- 1 solenoid cover
- 1 Gasket
- 1 Passage plug
- 1 Pigtail assy (16 components)
- 4 motor screws
- 1 O-ring seal
- 2 Motor screw-washer-washer assy
- 1 eccentric
- 1 set screw

Amplifier:

- 1 Amplifier cover
- 3 cover lid (3 pc assy)
- 1 PW Board

Dave Porter 12-15-92

- | | |
|---------------------|--------------------------------|
| 1 motor can | 1 Diaph connecting rod |
| 1 O-ring seal | 1 Ball Bearing assy |
| 2 magnets | 1 attaching screw |
| 1 magnet glue | 2 solenoid screws |
| 1 Bearing | 2 Solenoid O-Rings |
| 1 " Retainer | 1 solenoid/pump housing |
| 1 thrust washer | 1 wire grommet |
| 1 Armature shaft | 1 solenoid bracket |
| 1 Lamination stack | 2 insulator tubes |
| 1 Wire-windings | 1 solenoid connex board |
| 1 Commutator | 2 solenoid bobbins |
| 1 thrust washer | 2 solenoid pole face |
| 2 spacers | 2 O-ring seals |
| 1 Brushcard | 2 armature springs |
| 2 Brush terminals | 2 solenoid cores |
| 2 Brushes | 2 Bobbins winding |
| 1 Wire grommet | 4 Bobbin leads |
| 1 thrust washer | 2 glue to fix wires |
| 1 Ball Bearing assy | 2 valve plungers (molded tips) |
| 1 Vent cover | Servo → |
| 1 Vent foam plug | 1 Front housing |
| 1 Diaphragm cover | 1 Rear housing |
| 1 O-ring | 1 Bedspring |
| 1 elbow | 1 Diaphragm |
| 1 Duckbill valve | 1 Diaph. plate |
| 1 Diaphragm | 1 Cable slug snapping |

ENR2-025-A 200106

QUALITY ROADMAP

EP02-425-A 20007

NVQ/CNVQ

ENC2-025-A 20000

WARR.

2002-025-A 20000

GUIDO - 1989 m. 12
2. BL 5.0.

CONFIDENTIAL

EA92-0215-A 20100



SPEED CONTROL COMPETITIVE ANALYSIS - BENCHMARK SYSTEMS - 1991

SPEED CONTROL SYSTEM CHARACTERISTIC	ACQUA LEGEND	SAIURI (V80-TA2M2)	Team Car (Next Gen. Speed Control)
On / Off Switch	Yes - On Middle left of dash	Yes - On steering wheel.	Yes - On steering wheel.
Controls	Switch Pod on side of wheel. - Resume / Accel Set / Cancel Cancel	Steering Wheel Switches - Resume / Accel	On steering wheel - Set / Accel Coast Resume
Indicator Lamps	Light on On / Off switch to indicate when "Off". "Cruise Control" light on dash to indicate when system is operating.	Yes - Next to On / Off switch. Indicates when switch is in "Off" position.	"Speed Control" when system is controlling. Only on vehicles with digital clusters.
Servo Type / Location	Electronic DC Motor. Cam output pulley with exposed core wire. Mounted with iso-pads on left shock tower.	DC motor driven, fits in vehicle interior. cable pulls on accelerator pedal. Includes clutch and position limit switches.	Stepper motor with clutch and geartrain. Mounted under hood on fender apron near left hand shock tower.
Cable / Throttle Attachment Method	Bushin cable w/ dual nut adjust at both servo and throttle. Lost motion achieved by concentric cams at throttle body.	Bushin cable, 3 inches long. Attaches servo directly to accelerator pedal.	Bushin cable that comes to BSA pre-adjusted. Piggy back attachment wraps over accelerator cable.
Brake Redundancies	- Stop Lamp switch on brake pedal has dual function. Normally open switch for speed control & stop lights, normally closed sw. dedicated to speed control. - Neutral shutoff for ATX cars		- Stop Lamp SW. on brake pedal. - Pressure switch on brake prop valve. powers servo clutch.
Amplifier Type / Location	uP Based, 5 IC's, Top side SMD Mounted under dash, 16 pin connector	uP based, 2 IC's, 2 sided phenolic board, all discrete components. Board is integral to servo assembly, seven contacts to motor/clutch. 6 pin connector to veh.	
PERFORMANCE			
Set Accuracy / Droop	Droops 1/2 MPH (1 MPH above 65). Sets right on set speed. Drops 2 MPH after coast, then sets about 1 MPH low. after	No droop below 45 MPH, up to 1 MPH droop above 55 MPH. Typically sets right on set speed.	
Acceleration Rates	1.5 MPH/s during 10 MPH accel. Remains in 4th gear thru-out accel at all speeds. 2.9 MPH/s during continuous resume from 30 to 70 MPH.	Near 2.9 MPH/s below speeds of 50, near 1.5 MPH/s above. Usually pulls 4/5 early in accel, when above 40 MPH.	
OTHER			
Favorable (+) or Objectionable (-) Features	+ Smooth level road maintenance + Excellent set accuracy + Steering switches with cancel feature + Both on/off light and "CRUISE CONTROL" light. - Resume rates too fast - Droops / sets low with coast	+ Steering switches easy to reach/see + Amp / servo integrated in one package + Interior placement precludes design for engine compartment environment. + Tap Up / Tap Down - Noisy actuator at low speeds - Pedal slip w/th brake or OFF	

EPR2-025-A 20101

ENG2-025-A 20102

1991 SATURN



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.: 110 Y 506	Model: SATURN	N.Y.: 1991	Eng.:	Trans.: 4 SPD AUTO	Axle:																
Vehicle Mt.:	Calib.:	Servo: ELC.	Amp.:	Vac Assist: 1/2	Cable Slack 1/:																
Location/Altitude: DFG		Temp: 90° F	Date: 8/29/94	Driver: MFF	Recorder: MFF																
T.P. reading at Idle: _____ E.U.		NOT: _____ E.U.		Deg. 2/ Max T.P. at servo full stroke: _____ E.U. _____ Deg.																	
SET SPEED ACCURACY - Record actual vs. set speed and drop in MPH 1/																					
Gear	Set Spd	30		40		50		60		70											
MAN	AUTO	SPD	ACT	SPD	ACT	SPD	ACT	SPD	ACT	SPD	ACT										
3rd / Drive		30	30.5																		
4th / O.D.				40	40	49 1/2	50 1/2	57	60	67	70										
5th / ..																					
Comments: TRANS: NORM SETTING																					
ROAD LOAD PERFORMANCE - Record Max & Min readings for: Halfload Vacuum & T.P. in E.U. and/or degree, & subjective rating (1 - 10)																					
Gear	Yeh Spd	30				40				50				60				70			
MAN	AUTO	Vacuum Min/Max	TP Min/Max	Surge Per/Rat	Vacuum Min/Max	TP Min/Max	Surge Per/Rat	Vacuum Min/Max	TP Min/Max	Surge Per/Rat	Vacuum Min/Max	TP Min/Max	Surge Per/Rat	Vacuum Min/Max	TP Min/Max	Surge Per/Rat	Vacuum Min/Max	TP Min/Max	Surge Per/Rat		
3rd / Drive																					
4th / O.D.		3" SW		20 8	3 1/2 SW		20 8	2" SW		20 9	2" SW		20 1/2	2" SW		20 8					
5th / ..																					
Auto Trans. 0/8 From High Gear																					
Comments: TRANS: NORM SETTING												Full Stroke Shift Speed									
ACCELERATION RATES - Record Accel. rate in sec. (Resume mode) and Max T.P. reading in E.U. and/or deg.																					
		MPH		30 - 40		40 - 50		50 - 60		60 - 70											
		Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear								
10 MPH Split Accel (Begin at speed shown, simultaneously depress accel and release pedal.)		Run #1 SW	6.01	3	6.90	4 1/2 @ 43		7.39	4 1/2 @ 63		8.17	4 1/2 @ 63									
		Run #2 NORM	6.04	3	8.12	4 1/2 @ 43		8.07	4 1/2 @ 58		9.42										
30 - 70 Accel (Run in high gear, begin accel at 27, begin timing at 30)		Run #1 SW	3.99	3	4.25	3 1/4 @ 50	4	9.30	4 1/2 @ 57	3	6.59	3 1/4 @ 68	4								
		Run #2 NORM	3.60	3	4.23	3 1/4 @ 47	4	9.41		4	8.30		4								
Comments:																					

E902-R29-4 20103

1/ Record no. of grooves/heads and inches or millimeters from test cable position.
 2/ Record with engine running.
 3/ For more accurate set speed data, depress Set Button x times and divide final reading by x (set speed stabilize before each "set").
 scp4a 07/17/98

CONVENTIONAL SPEED CONTROL PERFORMANCE EVALUATION

Vehicle Make: SATURN
 Vehicle Model: _____
 Powertrain: _____

Tog Number: 1104506
 Evaluated By: MAF
 Evaluation Date: 9/29/91

JURY EVALUATION

VEHICLE EVALUATION RATING SYSTEM

RATING SCORE	UNDESIRABLE				SCORE LINE	DESIRABLE				
	1	2	3	4		5	6	7	8	9
EVALUATION OF VEHICLE/COMPONENT PERFORMANCE	PERFECT		GOOD		SATISFACTORY		POOR		EXCELLEN	
	POOR		GOOD		SATISFACTORY		POOR		EXCELLEN	

FEATURE/COMPONENT	RATING	COMMENT
1. Interior control placement	8 1/2	Location? ON WHEEL, INCLUDES OFF-ON TOGGLE (W/ ON LIGHT), A SET-COAST MOMENTARY SWITCH AND A RESUME-ACCEL MOMENTARY SWITCH.
2. Visibility of controls	10	
3. Ease of comprehending control operation	9	SIMILAR TO ALL GM W/ MOMENTARY SWITCHES FOR SET-COAST AND RESUME-ACCEL.
4. General control appearance	9	SET-COAST IS LOCATED TO THE LEFT, RESUME-ACCEL TO THE RIGHT. THIS IS A LITTLE CLUMSY.

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
5. Tactile feel upon setting	8	CAN BE FELT, NOT HEARD.
6. Accel pedal compensation after setting speed	9	YES, IMMEDIATE.
7. On/Off switch (Yes/No)	No Rating	YES, WITH LIGHT (CRUISE ●)
8. Set speed accuracy		Amt of droop: UP TO 1 MPH HI OR LO? LOW Min set speed: 26 MAXI FIRST SET AFTER ON/OFF CYCLE IS IMMEDIATE... SUBSEQUENT SETS DROOP UP TO 1 MPH, FOR 50% ABOVE.
9. "Cruise" light (Yes/No)	NO	ON/OFF LIGHT ONLY
10. "Neutral" switch (Yes/No)	No Rating	NO
11. Dump valve (Yes/No)	No Rating	NO

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
12. Electric or vacuum servo	No Rating	ELECTRIC - VEHICLE INTERIOR
13. Vacuum reservoir (Yes/No)	No Rating	N/A
14. "Coast" feature (Yes/No)	No Rating	YES
15. "Coast" feature performance	P	WOULD DROP MPH LOW AND STAY. ALSO, TAKES ABOUT 1 SECOND AFTER ACTIVATION FOR PEDAL TO RELEASE.
16. Resume feature (Yes/No)	No Rating	YES
17. Resume performance	8 1/2	LITTLE OR NO OVERTSHOT, SOMEWHAT AGGRESSIVE - DOWNSHIFTS OFTEN IN NORMAL TRANSMISSION MODE. DOWNSHIFTS QUICKLY IN SPORT MODE.
18. Accel switch (Yes/No)	No Rating	YES

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
19. Accel switch performance	6	OVERSHOTS UP TO 2 MPH, SEEMS TO SET 2-2 1/2 HIGH. PARTIALLY DUE TO SPEEDOMETER LAG.
20. Overall system performance	8	

21. Unusual Features ON LIGHT ON STEERING WHEEL, INTERIOR MOUNTED SERVO, ELECTRONICS INSTEAD OF SERVO, TAP UP/DOWN.

22. Deficiencies NOISE AT LOW SPEEDS, BUTTON DELAY, OVERSHOOT W/ACCEL. PEDAL SLAP W/ BRAKE OR OFF BUTTON.

23. Other Comments

f:\Friedric\part2

SATURN (VDO/ YAZAKI) SPEED CONTROL

VARIABLE COST ESTIMATE SUMMARY

AUGUST 7, 1981

ACTUATOR:

	\$	
. MATERIAL & FREIGHT		10.00
. DIRECT LABOR		2.29
. INDIRECT LABOR & OVERHEAD		1.81
		<hr/>
. ACTUATOR VARIABLE COST	\$	14.58

N692 (8/7/91)

19.66

AMPLIFIER:

. MATERIAL & FREIGHT		8.55
. DIRECT LABOR		3.62
. INDIRECT LABOR & OVERHEAD		1.30
		<hr/>
. AMPLIFIER VARIABLE COST	\$	13.77

15.89

TOTAL VARIABLE COST \$ 28.35

35.54 (1992)

ANALYSIS DATA:

- . LOW VOLUME, 50,000 UNITS ANNUAL.
- . ACTUATOR BUILD IS A NON AUTOMATED, BENCH BUILD, THREE OPERATORS AT 25 UNITS PER HOUR.
- . THE ACTUATOR DESIGN IS NOT COMPATABLE WITH AUTOMATION. THE MOTOR, CAST FRAME AND LEADSCREW AND CLUTCH MUST BE PREASSEMBLED BEFORE PLACING IN THE HOUSING CAVITY.
- . THE CABLE ASSEMBLY IS EXCLUDED FROM THE COST. ONLY THE BRASS FULLER STEM IS INCLUDED.
- . DRIVE MOTOR IS PURCHASED COMPLETE. ASSUMED THE MOTOR IS AN "OFF THE SHELF" SPECIES.
- . THE LABOR RATE OF \$18.05 PER HOUR (FRINGED) IS INDICATIVE OF A JAPAN RATE AS WELL AS A USA SUPPLIER OF ELECTRONIC MODULES.

. THE ESTIMATED MATERIAL COST FOR THE ELOYDANA WARNER DESIGN SERVO ACTUATOR IS \$8.40 THEREFORE THE SATURN IS AN ESTIMATED \$2.28 MORE THAN THE ELD DESIGN.

. A LABOR COST COMPARISON TO THE ELD DESIGN IS NOT MEANINGFUL BECAUSE OF THE BENCH BUILD PROCESS EMPLOYED FOR THE SATURN VS. THE AUTOMATED LINE USED FOR THE ELD DESIGN.

ELD VEHICLE CONTROLS
COST ESTIMATING

X

ENG-2-025-A 28100

1991 ACURA LEGEND



LEVEL ROAD SPEED CONTROL DATA SHEET

Vehicle No.: 313 T 771	Model: ACURA LEGEND	Y.: 1991	Eng.: 3.2 L V6	Trans.: 4spd Auto	Axles:																				
Vehicle Mt.:	Calib.:	Servic: ELEC.	AMP.:	Vac Asslet:	Cable Black 1/:																				
Location/Altitude: SPS	Temp: 45° F	Date: 4/2/91	Driver: ONE	Recorder: MF																					
T.P. reading at Idle: _____ E.U.	WOT: _____ E.U.	Deg. 21	Max T.P. at serve full stroke: _____ E.U.	Deg.																					
SET SPEED ACCURACY - Record actual vs. set speed and droop in MPH %																									
Gear	Set Spd	30		40		50		60		70															
Man	Auto	Dro	Act	Dro	Act	Dro	Act	Dro	Act	Dro	Act														
3rd / Drive																									
4th / O.D.		29 1/2	30	39 1/2	40	49 1/2	50	59 1/2	60	69	70														
5th / ..																									
Comments:																									
ROAD LOAD PERFORMANCE - Record Max & Min readings for: Multifold Vacuum & T.P. in E.U. and/or degrees, & subjective rating (1 - 10)																									
Gear	Veh Spd	30				40				50				60 *				70 *							
Man	Auto	Vacuum	TP	Surge	Vacuum	TP	Surge	Vacuum	TP	Surge	Vacuum	TP	Surge	Vacuum	TP	Surge	Vacuum	TP	Surge	Vacuum	TP	Surge			
		Min/Max	Min/Max	Per	Rat	Min/Max	Min/Max	Per	Rat	Min/Max	Min/Max	Per	Rat	Min/Max	Min/Max	Per	Rat	Min/Max	Min/Max	Per	Rat	Min/Max	Min/Max	Per	Rat
3rd / Drive																									
4th / O.D.		4 1/2 - 17 1/2	-	20	9	17 - 19		20	9	6 1/2 - 17 1/2		20	8	15 1/2 - 16 1/2	20	8	15 - 16	20	8						
5th / ..																									
Auto Trans. O/E																									
From High Gear																									
Comments: * NOTE: QUICK 1" V6 NEEDLE MOVEMENTS LITTLE MAINTAINING SPEED, NOT PERCEPTIBLE TO DRIVER																									
ACCELERATION RATES - Record Accel. rate in sec. (Resume mode) and max T.P. reading in E.U. and/or deg.																									
		MPH			30 - 40			40 - 50			50 - 60			60 - 70											
		Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear	Time	Max T.P.	Gear									
10 MPH Split Accels (Begin at speed shown, simultaneously depress accel and release pedal. (Hit SET, then ACCEL) 30 - 70 Accels (Run in high gear, begin accel at 27, begin timing at 30)	Run #1	8.4		4	9.31		4	9.59		4	AN 78		4			4									
	Run #2	8.22		4	8.68		4	9.12		4	AN 75		4			4									
	Run #1	3.96		4	4.18		4	5.50		4	5.28		4			4									
	Run #2	3.93		4	4.82		4	5.71		4	5.25		4			4									
Comments:																									

1) Record no. of grooves/beads and inches or millimeters from taut cable position.
 2) Record with engine running.
 3) For more accurate set speed data, depress Set Button x times and divide final reading by x (let speed stabilize before each "set").
 scpla 07/17/90

COMPETITIVE SPEED CONTROL PERFORMANCE EVALUATION

Vehicle Make: ACURA LEGEND

Tag Number: 513 T 771

Vehicle Model: _____

Evaluated By: M. ADRIAN

Powertrain: 3.2 L V6 4/40 Auto

Evaluation Date: 4/3/91

JURY EVALUATION

VEHICLE EVALUATION RATING SYSTEM

	UNACCEPTABLE				BORDER LINE	ACCEPTABLE				
RATING INDEX	1	2	3	4	5	6	7	8	9	10
EVALUATION OF VEHICLE/COMPONENT PERFORMANCE	NEGLECTED SELECT POOR		CUSTOMER COMPLAINT		BORDER LINE	BARELY ACCEPT- ABLE	FAIR	GOOD	VERY GOOD	EXCELLENT

FEATURE/COMPONENT	RATING	COMMENT
1. Interior control placement	9	Location? <u>RESUME/ACCEL, CANCEL, SET/RESL ALL ON RIGHT SIDE OF STEERING WHEEL.</u>
	7	<u>ON/OFF TOGGLE (CRUISE) ON LEFT ON INST. CLUSTER</u>
2. Visibility of controls	9	
	7	<u>"CRUISE" SLIGHTLY HIDDEN BY WHEEL</u>
3. Ease of comprehending control operation	9	<u>EXCELLENT, TYPICAL JAPANESE, INCLUDES CANCEL.</u>
4. General control appearance		<u>EASY TO READ, BLENDS WELL WITH INTERIOR CONTROLS.</u>

CONTINUOUS SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
5. Tactile feel upon setting	9	EXCELLENT, BEST IN INDUSTRY. CONSTANT TRAVEL, COULD USE LARGER BUMP ON ACCEL, LARGER DEPRESSION ON SET.
6. Accel pedal compensation after setting speed		NONE - TWIN CONCENTRIC CAMS AT THROTTLE BODY DON'T PULL ACCEL CABLE.
7. On/Off switch (Yes/No)	No Rating	YES - "CRUISE" TOGGLE ON LEFT SIDE OF IP. GREEN LIGHT WHEN ENGAGED. DOES <u>NOT</u> TURN OFF WITH IGNITION.
8. Set speed accuracy	8	Amt of droop: $\frac{1}{2}$ to 1% HI or LO? LO Min set speed: 15 Max: VERY GOOD. DROOP, BUT REGAINS SET SPEED QUICK & ACCURATE.
9. "Cruise" light (Yes/No)		YES - ON IP WITH "CRUISE" SWITCH. "CRUISE CONTROL" LIGHT ON IP ON WHEN SET, DURING ACCEL OR RESUME OR DECEL. OFF w/ BRAKE OR CANCEL.
10. "Neutral" switch (Yes/No)	No Rating	YES
11. Dump valve (Yes/No)	No Rating	N/R, NO VAC. OVAL FUNCTION BRAKE LAMP SW.

CONTINUOUS SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
12. Electric or vacuum servo	No Rating	ELECTRIC
13. Vacuum reservoir (Yes/No)	No Rating	N/R
14. "Coast" feature (Yes/No)	No Rating	YES - SET/DECEL SWITCH
15. "Coast" feature performance	7	DROOPS UP TO 2MPH WHEN RELEASED. DOESN'T COME BACK TO RELEASE SPEED. HARD TO SET LOWER SPEED WITH SET/DECEL
16. Resume feature (Yes/No)	No Rating	YES, QUICK RATE, ABOUT 2MPH/S.
17. Resume performance	8	GOOD - RANGE TOO QUICK.
18. Accel switch (Yes/No)	No Rating	YES WITH RESUME. MUST BE SET, FIRST.

COMPARATIVE SPEED CONTROL PERFORMANCE EVALUATION

FEATURE/COMPONENT	RATING	COMMENT
19. Accel switch performance	9	QUICK, OVERSHOTS 1-2 MPH, RETURNS TO RELEASE SPEED
20. Overall system performance	8 1/2	

21. Unusual features *ON/OFF LIGHT AND CRUISE INDICATOR LAMP.*

22. Deficiencies

23. Other Comments

f:\friedric\parf2