## AUTOMATIC TRANSMISSION

Move the selector dever from the 'IP/Prenge to trange. You should be able to feel the detents in each range.

If the detents cannot be felt or the pointer indicating the range is improperly aligned, the linkage

OpenitaujbAdelpednish libunsMiL

Disconnect harness at connector, then remove inhibitor sy Check con uity A langes.

SECTION STATES AND SECTION OF THE SECTION

Place selector lever in "P" range.
 Loosen lock nuts.

#### DESCRIPTION:

The automatic transmission for model Z31 has been modified as follows.

trientsuibe sheen

- The E4N71B automatic transmission (model code No. X8203) has been applied to the VG30E engine model.
- The E4N71B automatic transmission (model code No. X8206) has been applied to the VG30ET engine model.
- The major features of the E4N71B A/T are
  - 1) By use of the A/T control unit, the lock-up function is applied in the D<sub>3</sub> and D<sub>4</sub> range.
  - 2) The lock-up function is released when a shift is made, the throttle is fully closed, the accelerator pedal is depressed abruptly or the temperature of A.T.F. is low.
  - 3) Shifting over D<sub>3</sub> and D<sub>4</sub> ranges is controlled by the A/T control unit.
- 4) The D<sub>4</sub> range is canceled when the temperature of A.T.F. is low.
  - 5) The kickdown control is used to prevent the engine from overreving.
- 6) The self-diagnosis function is applied.
- The O.D. control switch has been located on the selector lever.
- The manual linkage adjustment has been changed.

(0.8 - 1.1 kg-m, 5.8 - 8.0 ft-R)ON3 JOS

Do not push

"P" range noitspool

Lock nut (\*\*)

Lock nut (\*\*)

SAT293A

Lock nut (\*\*)

5. Move selector lever from per grange to "1" sange Make sure that selector lever can move

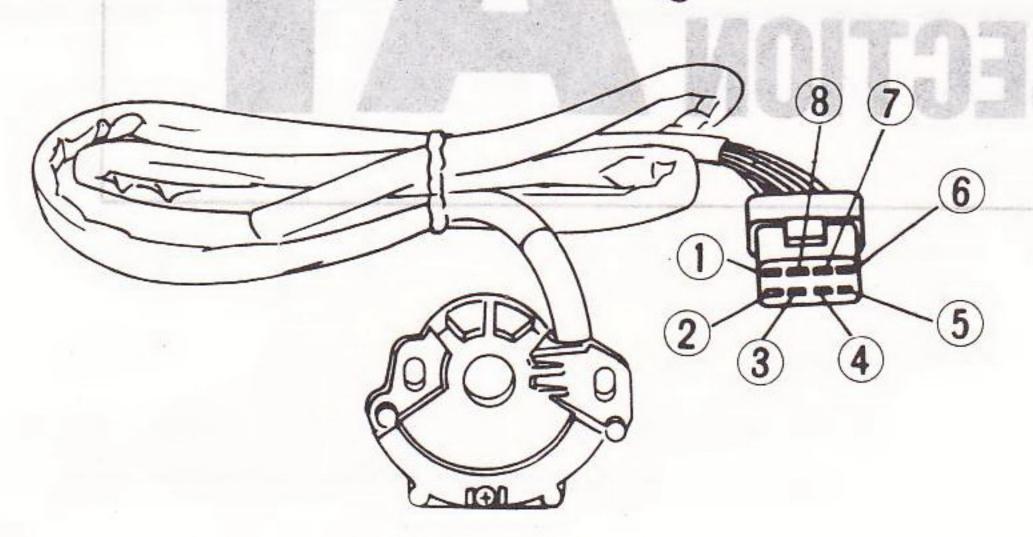
AT

#### ON-VEHICLE SERVICE

#### \_\_Inhibitor Switch Adjustment.

Disconnect harness at connector, then remove inhibitor switch.

Check continuity at all ranges.



	1	P	1	2	1	J		)	2	2	1	
	1		1	7	5	2	(	2	(	)	ζ	7
7000	2	Q					-8			-0		
3050	3	3	(	5	3.				7		1	Name of
	4	П	T		(	5						
	5	0										
G30ET	6	91	t			alamo,	(	5	17			1
	7		T						(	5		
	8		T								2	5

A000TAZOlied in the Da and Da range. -ols entire deservation and the state of the

by the A/T control unit.

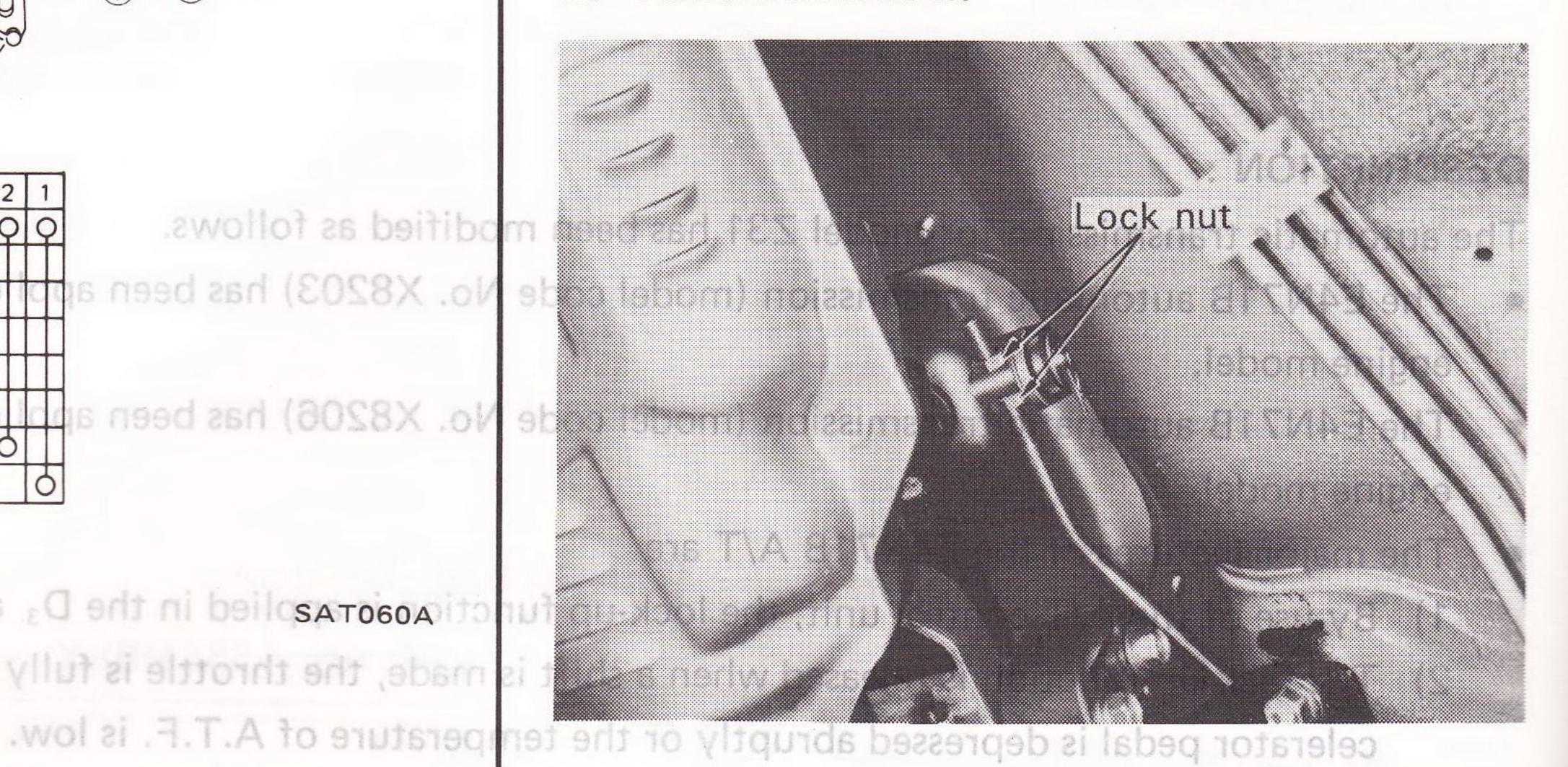
the selector lever.

#### Manual Linkage Adjustment\_

Move the selector lever from the "P" range to "1" range. You should be able to feel the detents in each range.

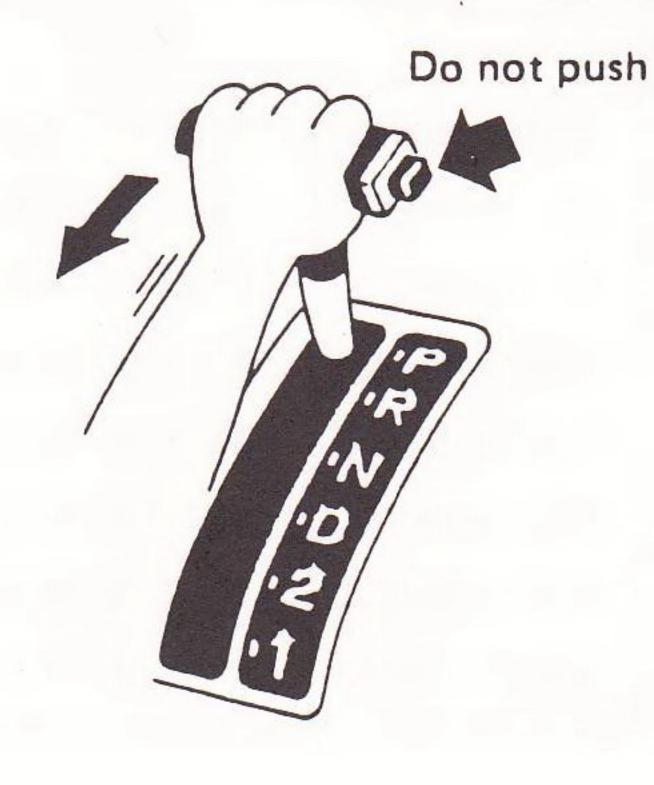
If the detents cannot be felt or the pointer indicating the range is improperly aligned, the linkage needs adjustment.

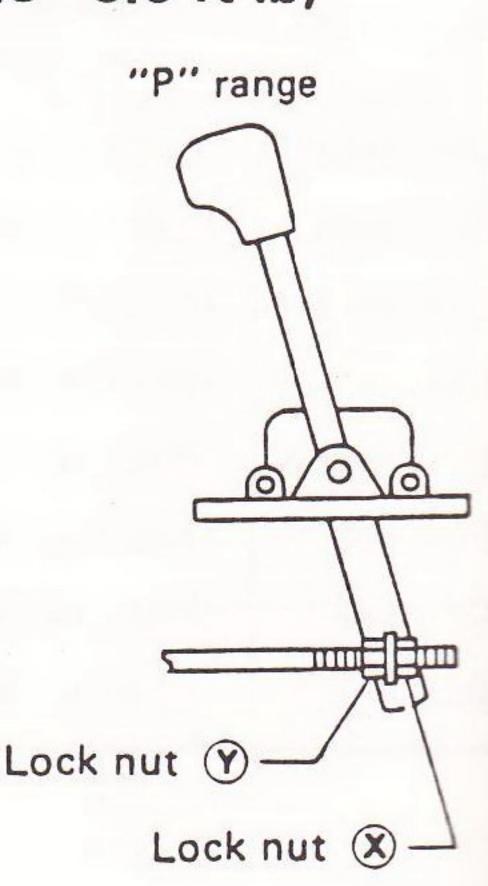
- 1. Place selector lever in "P" range.
- 2. Loosen lock nuts.



- 3. Tighten lock nut X until it touches trunnion wol at .T.A to pulling selector lever toward "R" range side the engine from overreving. without pushing button; awobabia adT (2
  - 4. Back off lock nut x 1/4 1/2 turns and tighten lock nut Y to the specified torque.
  - The manual linkage adjustmentunas 201 c 8 - 11 N·m

(0.8 - 1.1 kg-m, 5.8 - 8.0 ft-lb)



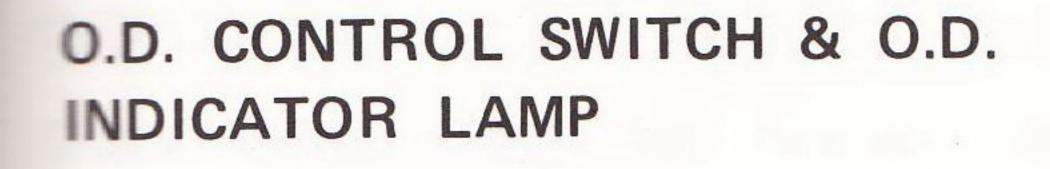


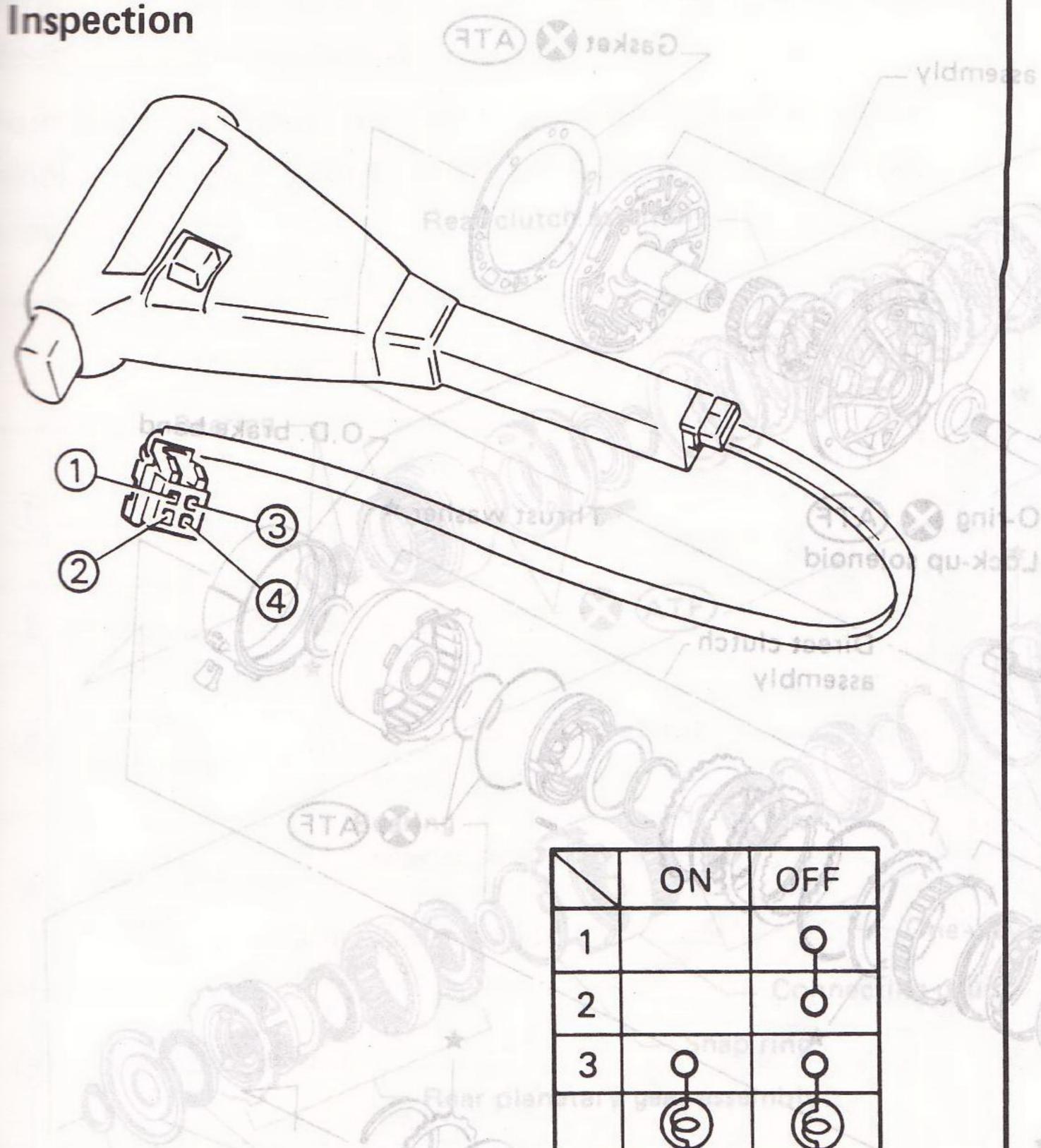
SAT293A

5. Move selector lever from "P" range to "1" range. Make sure that selector lever can move smoothly.

#### ON-VEHICLE SERVICE

#### \_Overdrive and Lockup Control.



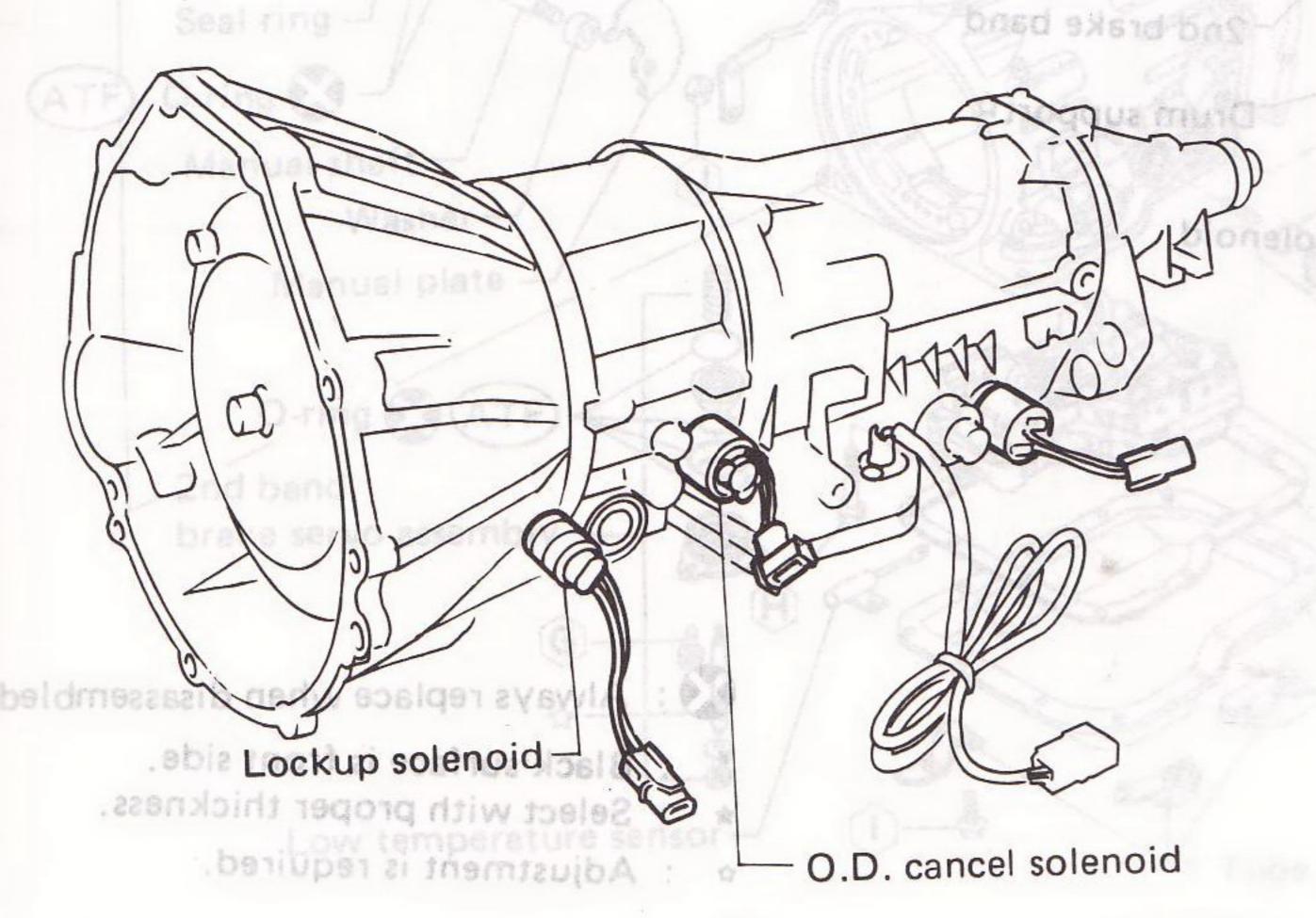


SAT634A

Thrust washer a

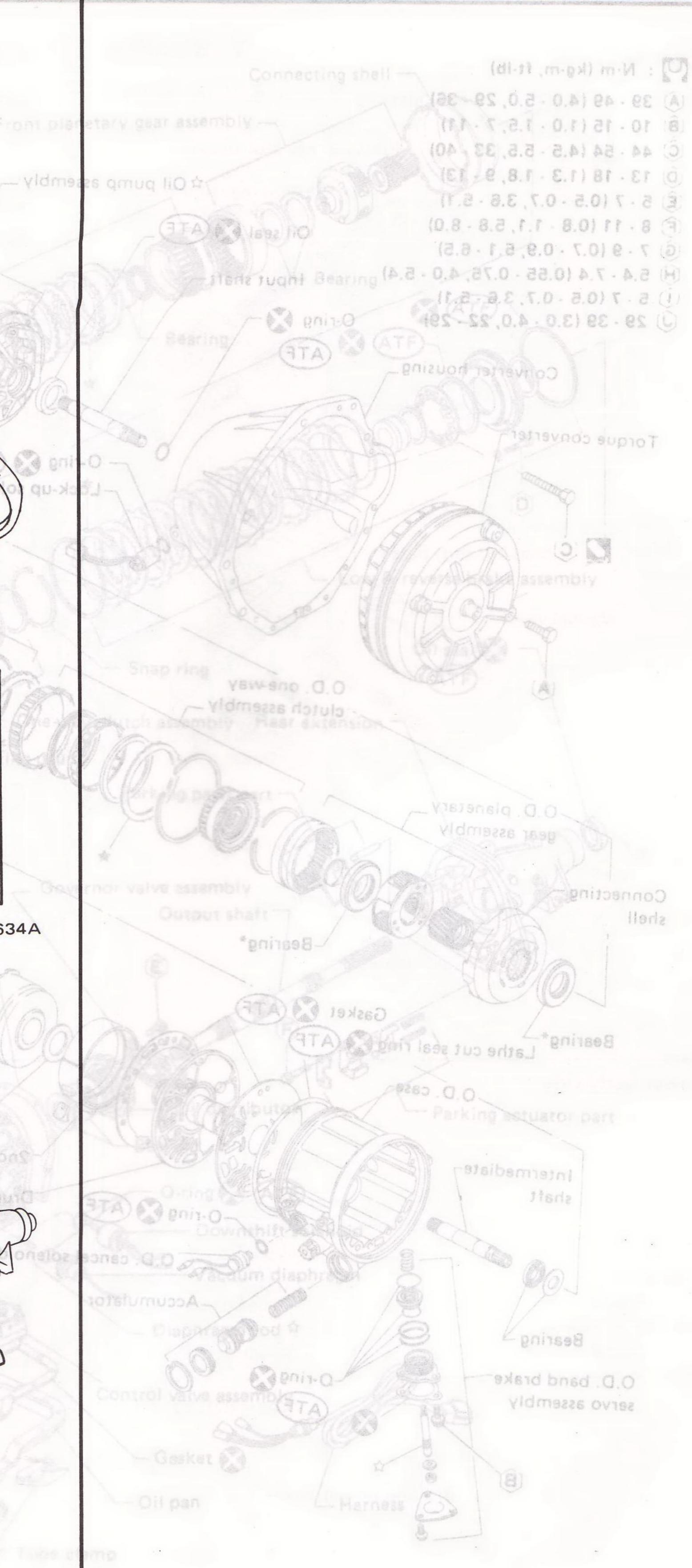
# O.D. CANCEL SOLENOID AND LOCKUP SOLENOID

Location



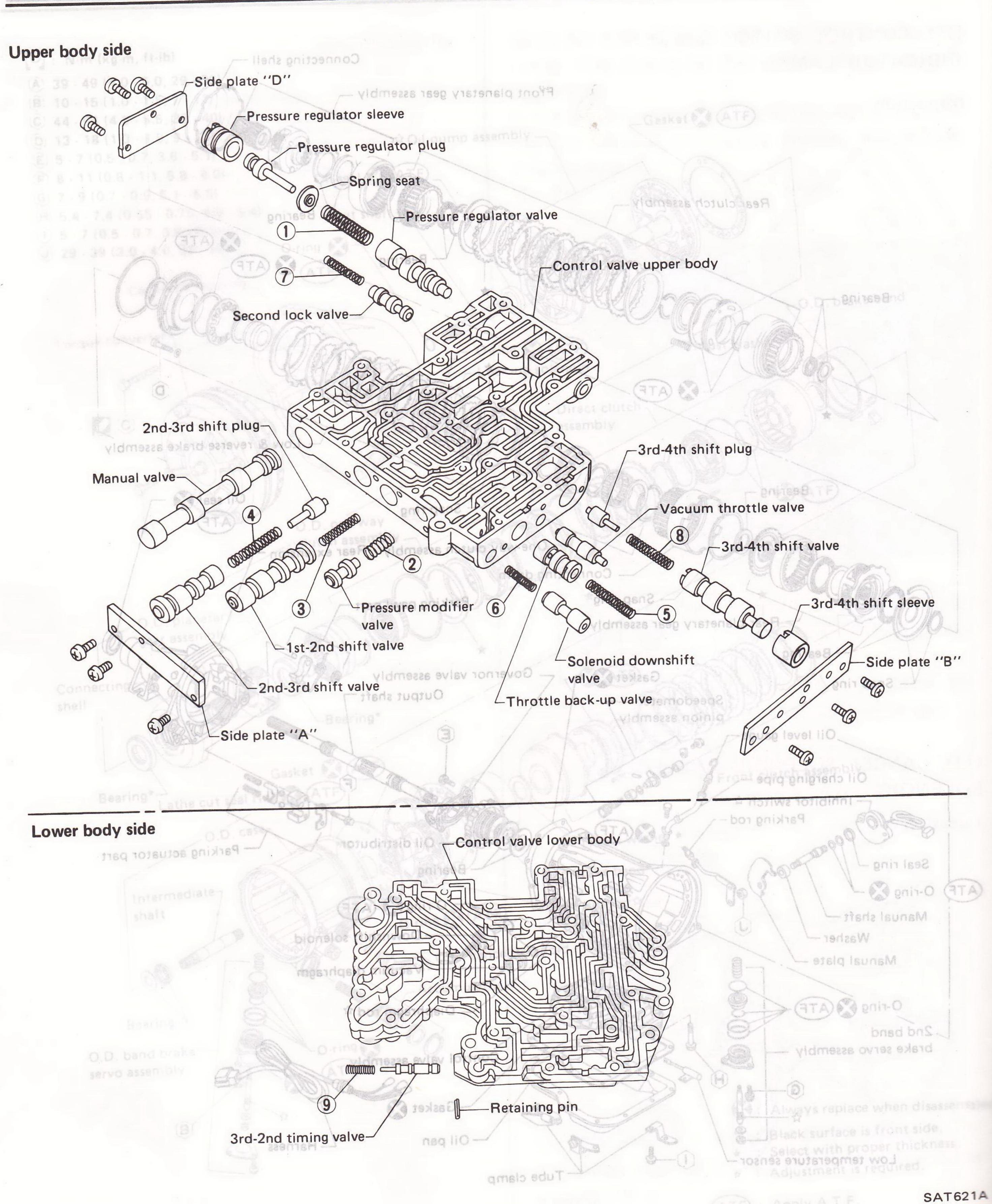
(ATF) : Apply A.T.F.

SAT063A



## REPAIR FOR COMPONENT PARTS

Control Valve Body \_\_\_\_



SATSSBA

### REPAIR FOR COMPONENT PARTS

Control Valve Body (Cont'd)

#### VEHICLE SPEED WHEN SHIFTINNOITS THE VINIONITS OF THE SHIFTINNOITS OF THE SHIFTINNOITS

eneck valve springs for damage. Measure free ength of valve springs. If the free length is out of ecification, replace it.

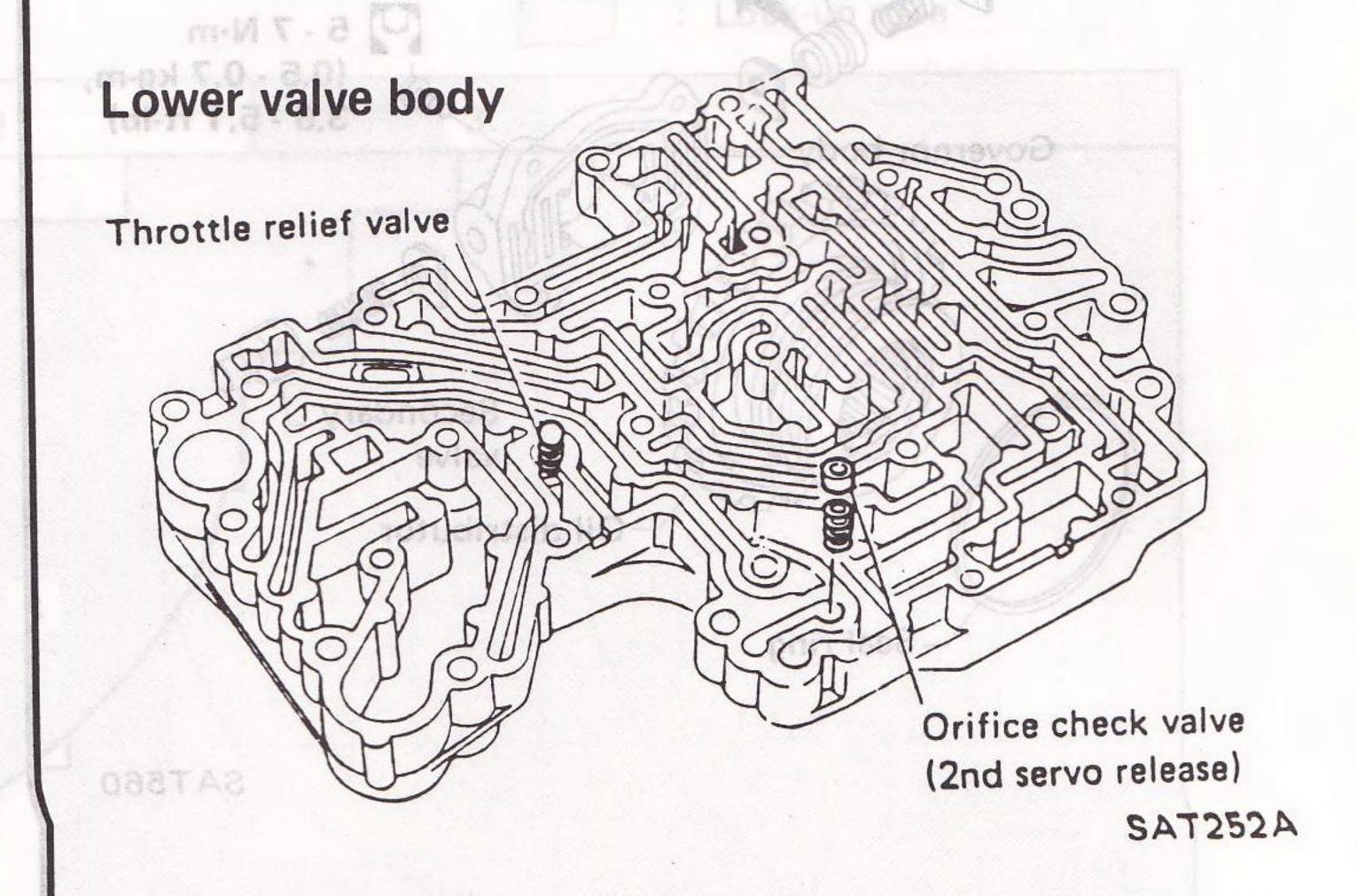
numbers stamped on valve springs listed in table below are the same as those in the figure on revious page.

Valve sp	Valve spring  VG30E					
Pressure re-	VG30E	43.0 (1.693)				
gulator valve	VG30E turbo	38.9 (1.531)				
2 Pressure modifie	er valve svlav re	18.5 (0.728)				
(d1st-2nd - da	VG30E	32.0 (1.260)				
3 shift valve	VG30E turbo	28.3 (1.114)				
2nd - 3rd shift	VG30E	42.0 (1.654)				
valve	VG30E turbo	39.2 (1.543)				
Throttle back-	VG30E	31.8 (1.252)				
up valve	VG30E turbo	36.0 (1.417)				
6 Solenoid down	shift valve	22.0 (0.866)				
7 Second lock va	Gearshift	33.5 (1.319)				
Throttle relief	VG30E	26.8 (1.055)				
check valve	VG30E turbo	24.9 (0.980)				
Orifice check v	alve ed + d	15.5 (0.610)				
8 3rd - 4th shift	valve d - so	30.3 (1.193)				
3rd - 2nd	VG30E	23.2 (0.913)				
9 timing valve	VG30E turbo	22.2 (0.874)				

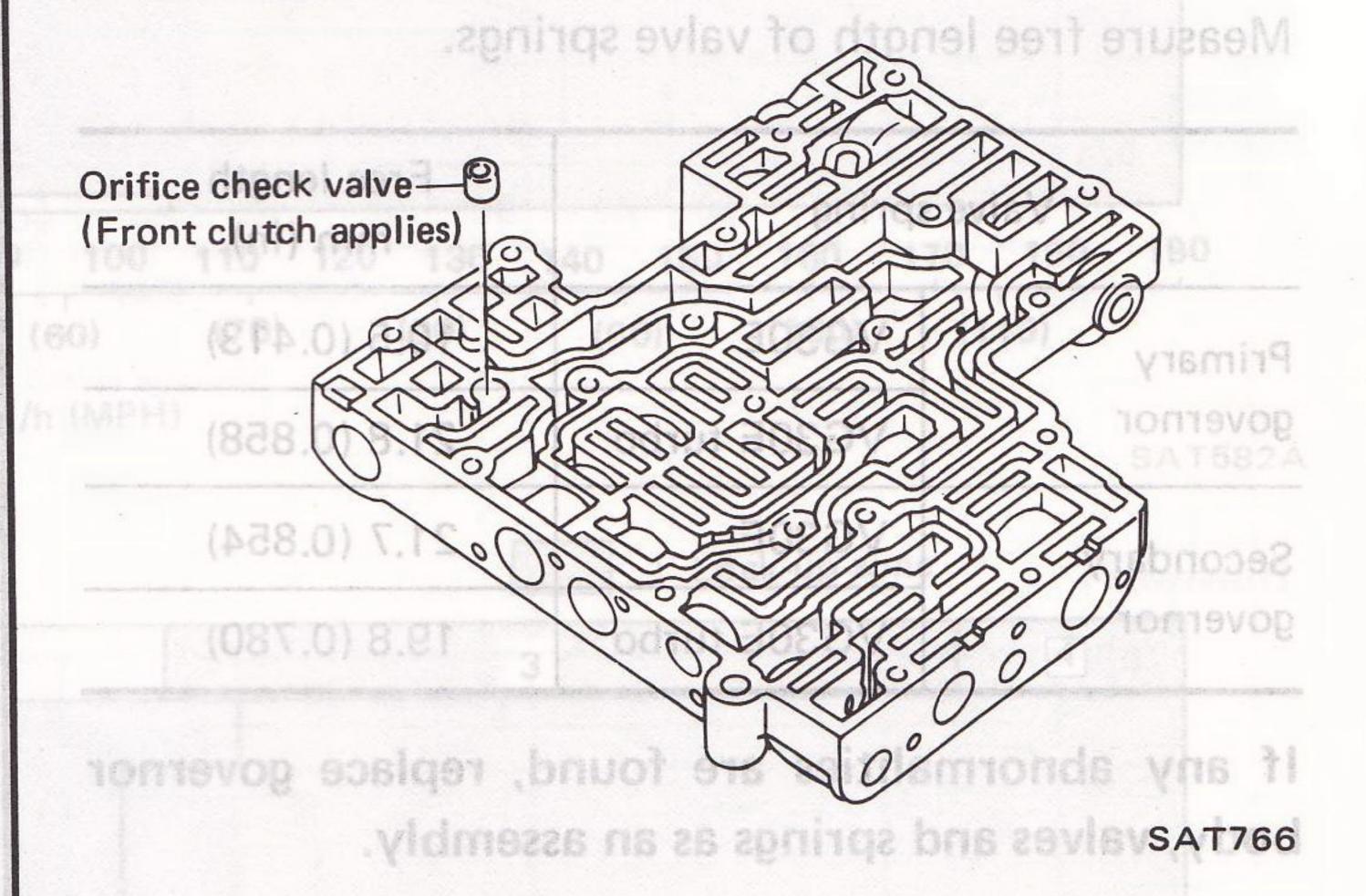
(10)

#### **ASSEMBLY**

Install orifice check valves, valve springs, throttle relief valve spring and steel ball in valve body.

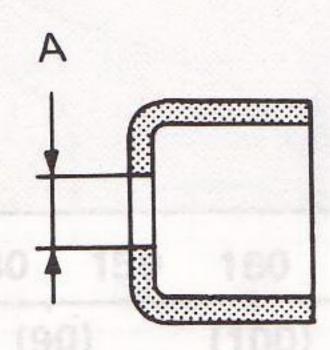


#### Upper valve body



#### Orifice check valve

		Unit: mm (in)
Orifice check valve	Diameter "A"	Identification
2nd servo release	1.5 (0.059)	Green
Front clutch applies	2.2 (0.087)	Black



**SAT924** 

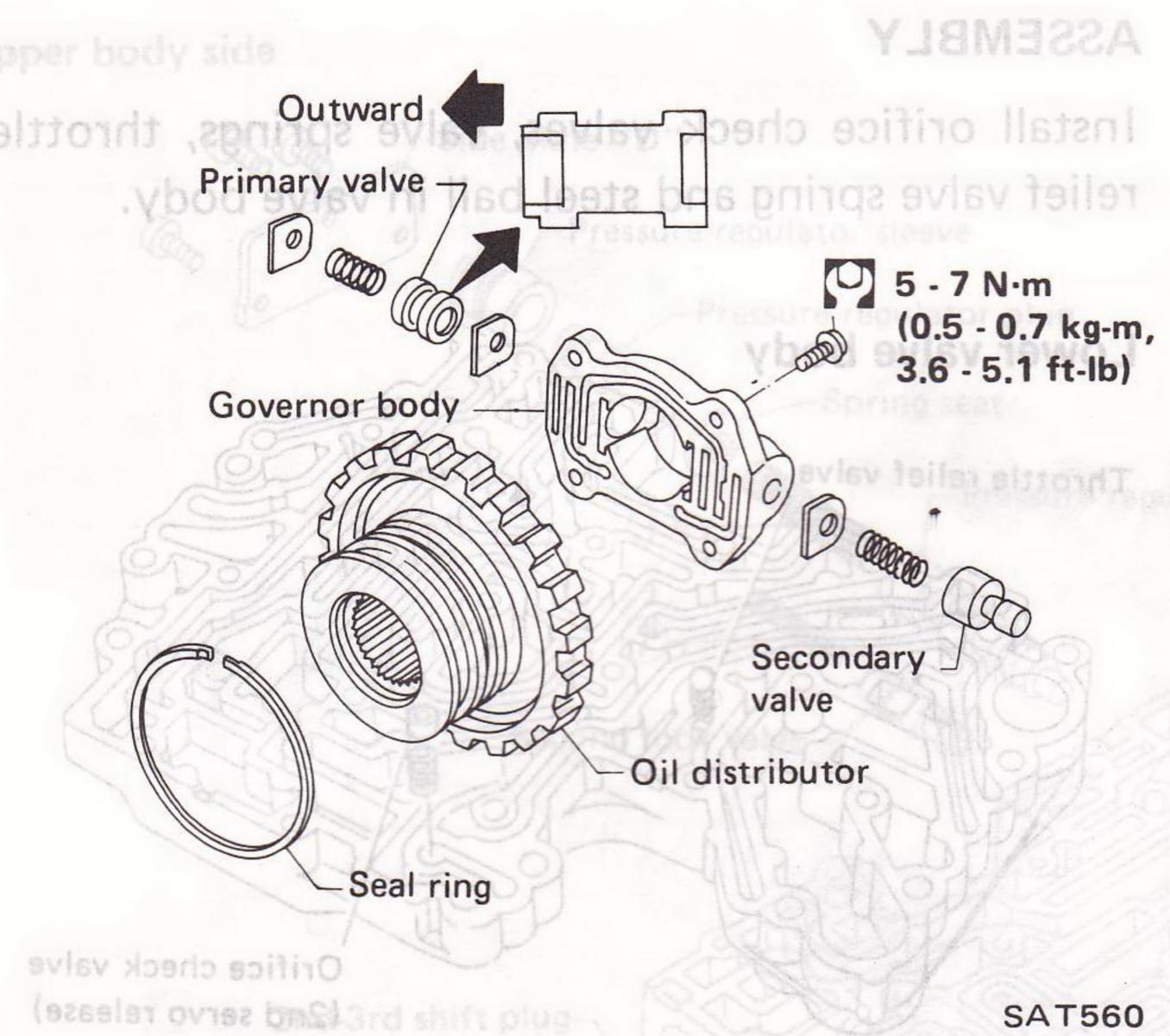
INSPECTION

### REPAIR FOR COMPONENT PARTS

**SAT560** 

Upper valve body

Governor (b) thoo Nobel evist Journe Road Testing -VEHICLE SPEED WHEN SHIFTING GEARS



#### INSPECTION

SAT252A

SAT924

Measure free length of valve springs.

Val	ve spring	Free length and the mm (in)
Primary	VG30E	10.5 (0.413)
governor	VG30E turbo	21.8 (0.858)
Secondary	VG30E	21.7 (0.854)
governor	VG30E turbo	19.8 (0.780)

If any abnormalities are found, replace governor body, valves and springs as an assembly.

evls		0.79	100
Apr. 10 3/ 25/0			

Identification	Diameter "A"	Orifice check velve
Green	1.5 (0.059)	2nd servo release
Black	2.2 (0,087)	Front clutch applies

- 1. Disconnect harness from A/T control unit. Road test the vehicle to determine if all items listed in the following chart are within their
- 2. Reconnect harness to A/T control unit. Road test the vehicle to see if shifting corresponds to the specified shift schedule pattern.

Valve spring

the state of the s		
VG30E engine	VG30E	Pressure re-
Throttle position	Gearshift	Vehicle speed km/h (MPH)
22.0 (1.260) 28.3 (1.114) Full throttle	$D_1 \rightarrow D_2$ $D_2 \rightarrow D_3$ $D_3 \rightarrow D_4$ $D_4 \rightarrow D_3$ $D_3 \rightarrow D_2$ $D_2 \rightarrow D_1$	65 - 73 (40 - 45) 110 - 118 (68 - 73) - 98 - 106 (61 - 66) 44 - 52 (27 - 32)

VG30E

Throttle back-

up valve

#### VG30E turbo engine

31.8 (1.252)

Contignal sendocer body

(mi) mm

Throttle position	Gearshift	Vehicle speed km/h (MPH)
26.8 (1.055)	$D_1 \rightarrow D_2 080$	62 - 70 (39 - 43)
(0.980) Full throttle	$D_2 \rightarrow D_3$ $D_3 \rightarrow D_4$	108 - 116 (67 - 72)
15.5 (0.610)	$\begin{array}{c} D_4 \rightarrow D_3 \\ D_3 \rightarrow D_2 \end{array}$	Orifice check val
30.3 (1.193)	$D_3 \rightarrow D_2$ $D_2 \rightarrow D_1 \qquad 9$	82 - 90 (51 - 56) 42 - 50 (26 - 31)
23.2 (0.913) [[	VG30E	
22,210,874)	VG30E turbo	g timing valve.

Road Testing (Cont'd)\_ SHIFT SCHEDULE VG30E engine Upshift Lock-up zone Upshift : Lock-up zone 8/8 Kickdown range 7/8 6/8 Throttle valve opening 5/8 3 4/8 3/8 2/8 1/8 0/8 30 40 60 120 190 110 130 170 180 140 160 150 (70)(100)(20)(50)(80)(110)(30)(40)(60)(90)Vehicle speed km/h (MPH) Vehicle speed km/h (MPH) SAT582A Downshift : Lock-up zone Downshift Lock-up zone 8/8 4 Kickdown range 7/8 6/8 3 Throttle valve opening 3 5/8 4/8 3/8 4 2/8 1/8 0/8 60 20 70 10 30 40 50 90 100 80 120 140 180 190 110 150 160 130 170 (80) (90)

(60)

Vehicle speed km/h (MPH)

(70)

(100)

(110)

SAT583A

(50)

(40)

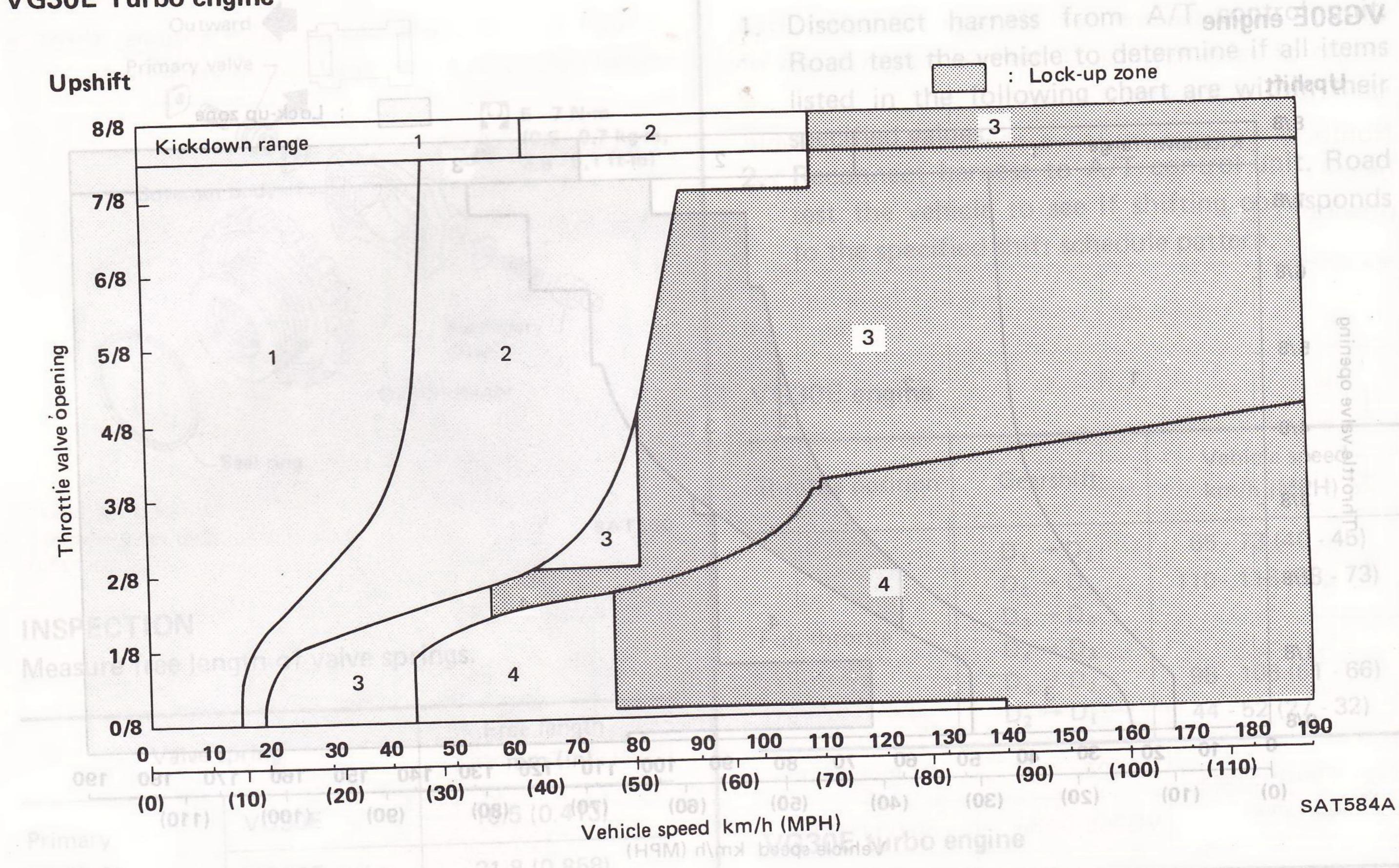
km/h (MPH)

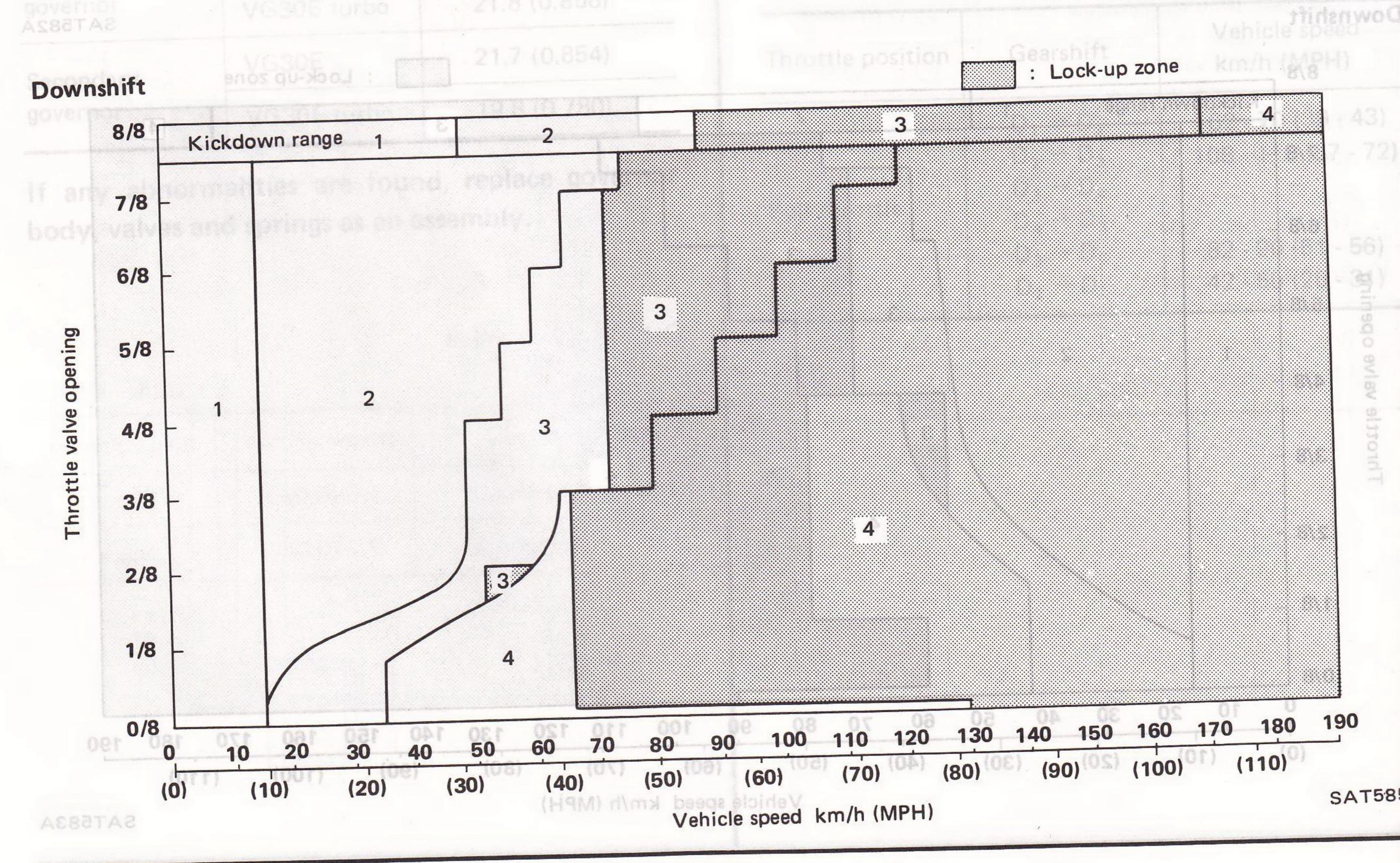
SATSSE

.Road Testing (Cont'd)-

VEHICLE SPEED WHEN SHADUOSHSE-THINS

#### VG30E Turbo engine





#### \_\_\_Trouble-shooting Chart\_\_\_\_

and wo	ers are arranged in order of probability.  m inspections starting with number one orking up. Circled numbers indicate that insmission must be removed from the extension.			ringappection	piping	tch and wiring			ON	veh	icle	Tor State was the	Ce inspection	UOUDANA			d semsons we me	d sensors	ate	ndic	1 87	wit	ingri mur	tart ed r	ns s irel	tio o,c	g up	1	nio
Refer- ence	O-D- cancel naive  Direct clutch  Direct clutch  Coll branch  Direct clutch  Coll branch  Direct clutch  Coll branch  Coll	Oil level	Range select linkage	Vacinity of Switch and will	Kickdown colongia	Engine idling rpm	Line pressure	Control valve	2nd haza	Transmission air of	Oil quality	Ignition switch and start	Engine adjustment, brak	O.D. band servo	O.D. control SW.	Lock-up solong:	Lock-up control	Direct clutch	Forward clutch (Rear)	High-reverse clutch (Fro	2nd band brake	Low and reverse brake	Oil pump	Oil passage leak	Transmissi	Park linkage	Planetary gear	O.D. cancel valve	Accumulator
A	Engine does not start in "N", "P" ranges.	.3	2 3		eT .	3	. 5	.8			· G	1	1.	. 5	٠.	4	5	243 C	4.1	1 1	no,	t eğir	e.Ab	ni x	od říž	s.q	is/ts	or.	
(4)	Engine starts in range other than "N" and "P".		1 2	2	٠.		٠,۵	·a .		8 •8			.,					.01	"ber	121	non	i spr	ch,ai	k in	oo de	8.0	is/ta	ooT.	
B	Transmission noise in "P" and "N" ranges.	1					2														•		3						•
C	Vehicle moves when changing into "P" range or parking gear does not disengage when shifted . out of "P" range.	1	1 .	•		•3	· T	.8		4.		•		. 4	\$ .	1	.9	oner ener	15 111	ghic	no, i	89 1	āţul:	ana.	la ge	2	tad r	A.	
<b>D</b>	Vehicle runs in "N" range.		1 .			-2	•7	3 .		a • h	2					1.		. m	4	nangi	is n	ign	ogil	8.70 0	lace	2.00	1201	alA.	
E	Vehicle will not run in "R" range (but runs in "D", "2" and "1" ranges). Clutch slips.  Very poor acceleration.	1	2 .			•ē	3	5.	7 .0	6	4		3.		2	1		.IZE		3) 16.0	ח כן	7	ogil(	10.			13C (	: 2n .Alm	•
(A)	Vehicle braked when shifting into "R" range.	, ,				1.	• 4		3	2	1							01	4	0,0	5	) prier	10, 16	98 At	1 50	6	eloir	leV.	
F	Sharp shock in shifting from "N" to "D" range.			2		1	3	4 .										. (	5			1	•				. 2	2	
G	Vehicle will not run in "D" range (but runs in "2", "1" and "R" ranges).		1.		•		2	3.	. 8	•									2110	4/152	ा ।	in les		AG Ac	4	) •	elbir O''b	sV 1811	
H	Vehicle will not run in "D", "1", "2" ranges (but runs in "R" range). Clutch ships.  1 Very poor acceleration.		2 .	. 8	•	co.	4	5 .	2 .	6	3		7	•	2		nod	g m	8 1	0 .	A	pan	• ( 8778	9.	b990	ie di	oluir Alli.	1/4: 1/4:	
1	Clutches or brakes slip somewhat in starting.	ν,:	2 .	6		\$	3	5 .	3. 14	7	4	.3	.0	.,				./*6	· 30	Q :	116		8	9.	9161	9.01	end	Fai	
	Excessive creep.					1	•8:	·a !	.8							1.		."b	120	g :'	grc'	930	17 f. f. f. f.	op e	gher	0.01	6101	. Fai	
	No creep at all.	1 2	2 .			3		5 .			4					1.		8	9 (	0 .			<b>6</b>	7.	1.	• 11	103	HTIS .	
J	Failure to change gear from "1st" to "2nd".	-	٠.	2	3	12	₫	5 6	8	7	4		1				•	•		91 176	9	198	• (	10 .	1 145	100	and Monit	10	
K	Failure to change gear from "2nd" to "3rd".		١.	2	3			5 6	8	7	4		:		2	13		red n	. (9	)	g de	n • 14	6 11	10.	o rie y	D.18	rko na	•Ge	
L	Failure to change gear from "3rd" to "4th".		L .	2	3			5 6	8	7	4								•	9	) .	1.18	baq	10.	10/60	os p	nisec	rele	
	Too high a gear change point from "1st" to "2nd", from "2nd" to "3rd", from "3rd" to "4th".		•	1	2		3	5 6	5	4	4	3	2	•	-		•	tr".	2010	d" to	2ne	mo mo	fric nt, 'fr	7 · (T	el el	bis di	pirio	fro fro	
	Gear change directly from "1st" to "3rd" occurs.		•		•		•	2 4		3	1							peeq	s eio	inev L	<b>5</b>	kdo	n kn	6.	6	18"	ni ist	980	
The state of the s	Gear change directly from "2nd" to "4th" occurs.					4.	7	2 4	s.	3	1-	•	2		١.			ner	pb(5	) b .b	nç y	ed ;	18 10 1-1E(	6 .	abac	spec spec	obsi:	Ku des	•
M	Lock-up does not occur in any range (E4N71B).				•										•	1	2	from	pnie	ensit:	ı ni	adib	10	• (3)		9112	9 2 10	. 4	
N	Large jolt changing from lock-up "OFF" to "ON".		-				2	. 3			1	•				1	4	•	.16	6	gnis •	9168	eb n	ediv:	bul	e" o	2 17 12	. (5)	
		-		_		0	2	9	1	- 0	Ļ		F	_		-		(ron	gring let.	nan:	in o	sqile spres	to de	y fast whe	'bni	אנופ	cd'' t	SH	1
,		£				3		. 3	4			f	2											70n idtiw				Kic	(3)
Water the Control of						4	7	. 8	5	8			2											ates o	ebeq	gni		de	
	. (8)		. 2	5	4				7	-		ε	1			- Control		-			. 9	gnan	ot ci	rr 29/	ab a	19118	er thi	da	

## Trouble-shooting Chart (Cont'd)\_

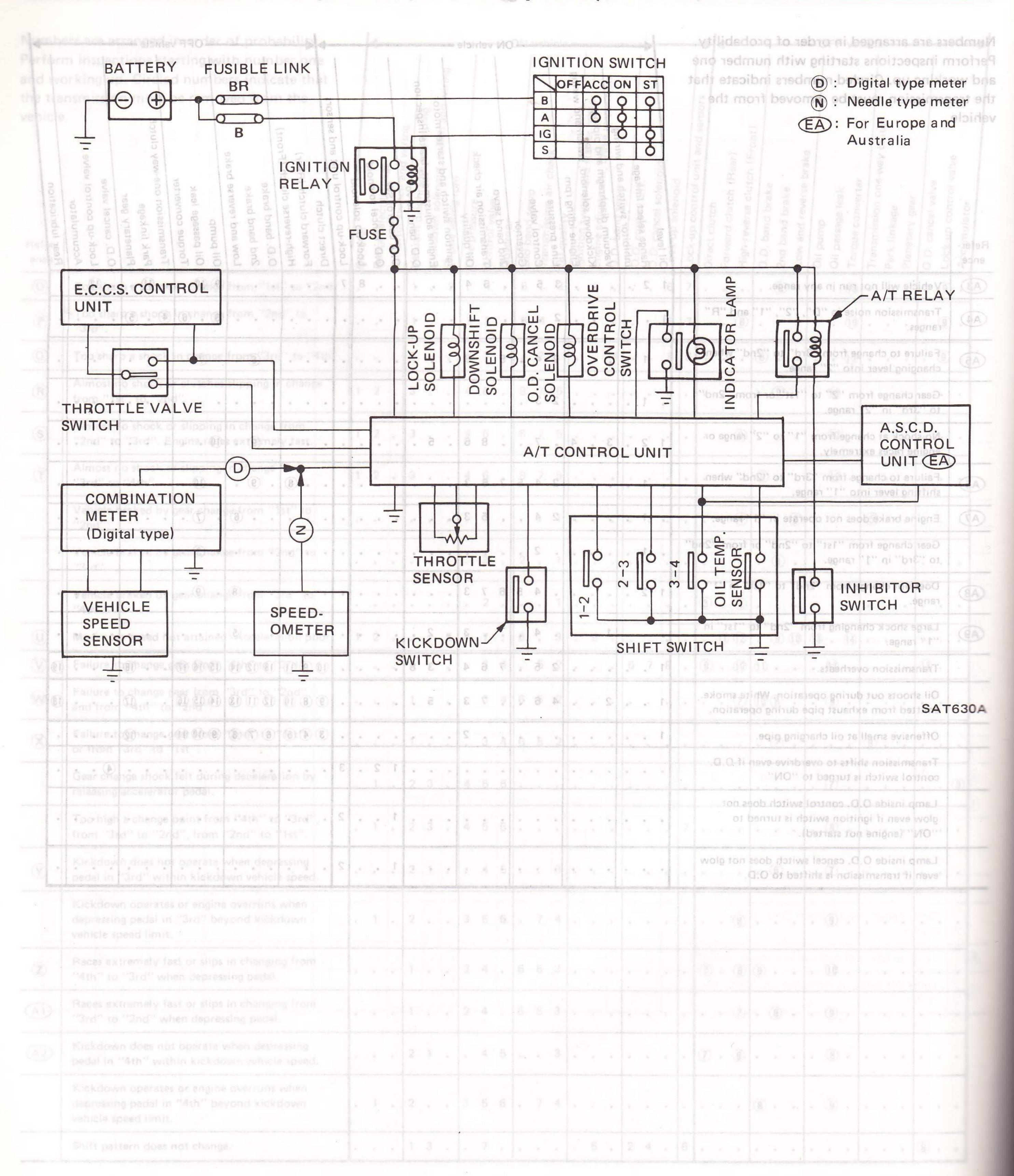
orm i work	are arranged in order of probability.  nspections starting with number one ing up. Circled numbers indicate that mission must be removed from the			wiring absection	and piping	switch and wiring	36.					icle	has dations	hrake incorp.	Diane ilispection				it and sensors				ers	dmı	un	ircled ircled idst be	1.0	dn Bi	n Ins	milo Wor	t to
gylsy long gu-doo.	Pockard charce one-was produced by the particular produce charce one-was produced produced by the particular produced charce one-was produced produ	Oil level	Range select linkage	Inhibitor switch and	Vacuum diaphragm	Kickdown solenoid,	Engine idling rpm	Line pressure	Control valve	Governor	2nd band servo	Oil ansmission air che	Ignition switch and	Engine adjustment	O.D. band servo	O.D. control SW	O.D. cancel solenoic	Lock-up solenoid	Lock-up control un	Direct clutch	High-reverse cluster	O D bard bard	2nd band brake	Low and reverse br	Oil pump	Oil passage leak Torque converter	Transmission one-w	Park linkage Planetary gear	O.D. cancel valve	Lock-up control va	Accumulator
0	Too sharp a shock in change from "1st" to "2nd".		• ,	• 4	1.	.1	2		4	. !	5	3			.  •ε		•,	6	7		ege.	1611	8		•11	• 10	el 20	ob an	ligh E	9	• (
	Too sharp a shock in change from "2nd" to "3rd".		•		1			2	3	•	5 4	4 .		_	.   S	•		6	7	di ib	8	0 .	nan d t	1 19	to	. 10	1 115	ESTITI	161	9	*
<u>o</u>	Too sharp a shock in change from "3rd" to "4th".				1	•	•	2	3		•	7 .		•	4	1.	•	5	6	·	- KA	• (0	8) •	, original	iorl.	• 10	5340	oni ol	110	9	•
1 2	Almost no shock or clutches slipping in change from "1st" to "2nd".	1	2		3	ż		4	6	•	8	7	5	·			1	1	•	bet 1	ida	ned	. 9			10 .	D 1E	ng ger	is is	0.	•
S	Almost no shock or slipping in change from "2nd" to "3rd". Engine races extremely fast.	1	2	Ŀ	3		2	4	6		8	7	5	•			1	•		•	. (	9	ogn.	•		10 .	18.31	HIVE B	0 118 0 118	V .	•
	Almost no shock or slipping in change from "3rd" to "4th".	1	2	•	3	•		4	6	•	8	7	5	• •	•	- 4	2	1	•	•	•	gilla	9.	, CII	ges li	10 .	3000	1000 a	719	v ·	•
The state of the s	Vehicle braked by gear change from "1st" to "2nd".		<b>1</b>	•		•		\$	2	•	•	•	1					•	•	1101	• (	4	otn N	3	110	z nonw grififfik	5	logne	LI HE	18	
	Vehicle braked by gear change from "2nd" to "3rd".		e co	•		•			3		2	2	1		-		4		•	ni ar	יעו ס	100	ge*(	0.	180	ni nui i	on 0	liw e	en cl	V.	
	Vehicle braked by gear change from "3rd" to "4th".	1	•	40			5	0	2		•	•	1	•77	•		. (	a þ.	•	3	P\$ 180 1	- 3	1118	•		ni nu in	ions	e with	io inte	N.	100
(U)	Maximum speed not attained. Acceleration poor.	1	2	•		/ e		100	7	100		1.5			8							_			-	3 . 14	1				-
(V)	Failure to change gear from "4th" to "3rd".				. 1	•		7.	3	4	-8	5	2	•.	•9	• ,	6	/ 8	•	9	11571	(10)	(1)			12 .		10 20	22.0	90.	-
W	Failure to change gear from "3rd" to "2nd" and from "4th" to "2nd".	0			1	•			3	4	6	5	2	•	•		· .	+		ŀ	•	7	10(	8 •	4	9 •	116	16 CM	910	oyl	
X	Failure to change gear from "2nd" to "1st" or from "3rd" to "1st".				1			2 -7	3	4	6	5	2	•8	·x		•	1	•		2nd	• 0	• 178	7.	901	e gear t	8	to of		Fa	-
*	Gear change shock felt during deceleration by releasing accelerator pedal.		•	١.	2	2 3		4	5	6	1 3	•		9		•	•	•		-	dia		11/2	<u>C., .</u>		7.	g ic	do ot		13	-
	Too high a change point from "4th" to "3rd", from "3rd" to "2nd", from "2nd" to "1st".		•	1 .	. 2	2 3	3 .	4	5	6		•	•	•	•		•	•	7		)) • '	185	•nc	1 30 2 116	ieq	. 8 .	6.0	g a rti	ari o	OT.	- Comment
Y	Kickdown does not operate when depressing pedal in "3rd" within kickdown vehicle speed.		•	-		2 1	١.		4	5	s 5	•	3	•	•	•	•	•		0030	· ·		•	6.		. 7 .	anib	appas	do u		1
0.08m	Kickdown operates or engine overruns when depressing pedal in "3rd" beyond kickdown vehicle speed limit.		•	1.	• .	2 .		3	3 5	5 6		7	4		••	•	•	•			"di	8	41 ''	'2nc	. 1	. 9	SHE	ange	tir ch	Gea	A STATE OF THE PARTY OF THE PAR
<b>Z</b>	Races extremely fast or slips in changing from "4th" to "3rd" when depressing pedal.		•	3		1	•		2 4	1.	6	5	.3		•	•				7	) •	8	9	es rie	ool	. 10	ipor	it cha	oi se	Ler	
(A1)	Races extremely fast or slips in changing from "3rd" to "2nd" when depressing pedal.	Lann			•	1			2 4	4 .	6	5	3		•	1.	•	•	•		•	7	•	8	•	• 9.	•	•	•		
(A2)	Kickdown does not operate when depressing pedal in "4th" within kickdown vehicle speed.			•		2	1			4 !	5.	•	3		•			•	•	. 0	) •	6	) •	•		. 8	•	•	•	•	
	Kickdown operates or engine overruns when depressing pedal in "4th" beyond kickdown vehicle speed limit.			1	•	2	•		3	5 (	6 .	. 7	4			•		•		.   .			8	•	•	. 9	•	•	•		•
	Shift pattern does not change.	,				1	3		•	7					5		2	4		6 .		•		•	•		•		•	8	•

(40) (50) (60) (70) (80) (90) (100) (110)

### \_Trouble-shooting Chart (Cont'd)\_\_\_\_

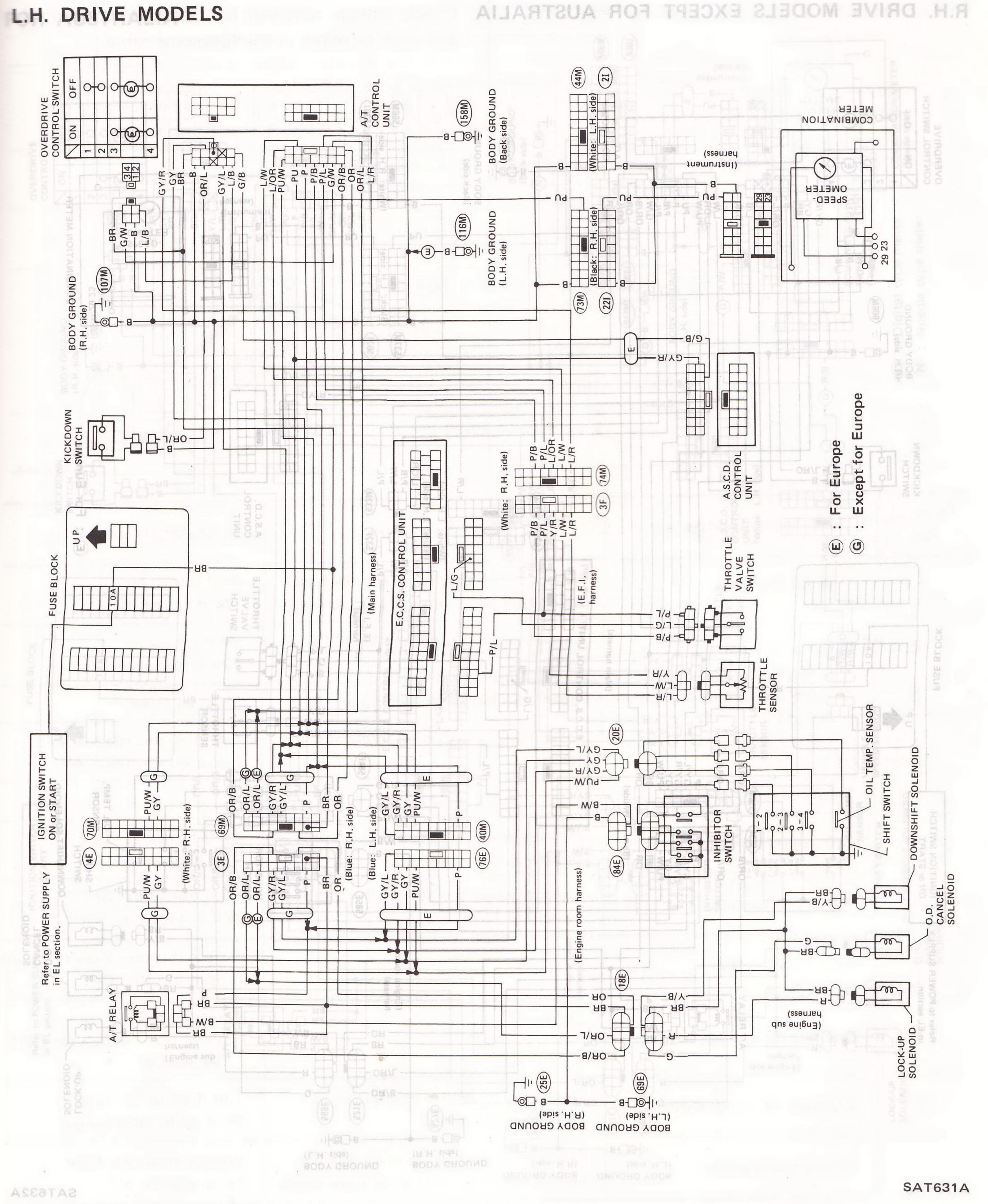
	rs are arranged in order of probability.	1	4						(	ON	vehi	cle							<b>→</b>  -	-				_	OFF	veh	nicle				
and wo	n inspections starting with number one rking up. Circled numbers indicate that esmission must be removed from the	evel	ge select linkage	bitor switch and wiring	uum diaphragm and piping	down solenoid, switch and wiring	to and	trol valve	ernor	band servo	nsmission air check	quality	tion switch and starter motor	the adjustment, brake inspection	Sailu servo	Cancel colo	k-up solenoid	k-up control unit and	ect clutch	ward clutch (Rear)	). band brake	I band brake	v and reverse brake	dwnd	Passage leak	nemicaio	k linkage	netary gear	). cancel valve	k-up control valve	ar lubrication
ence	5373   44-44-44-44	ō	Rar	Inh	Vac	Fig	Li.	Cor	Go	2nc	Tra	ō	Ign	0.0	6	0.0	Loc	Loc	Ö	For Hig	0.0	2nc	Lo	ō	io t	1	Par	Pla	0.	Ac	Re
(A3)	Vehicle will not run in any range.	1	2	•		ų.	3	5	•	•	6	4	•	•		•	8	7	•	• •	•=	•	•	9) (	10 .	11:1	(11)	0.1	• 0	2) •	
(A4)	Transmission noise in "D", "2", "1" and "R" ranges.	1		TO	S S		2	2		1		1	h			•		•	•					3	. 6	4		5		T.	2
(A5)	Failure to change from "3rd" to "2nd" when changing lever into "2" range.		1	SIMIL			2	4	3 6	5	TANK OF THE PARTY	3		N EN	3		•		•	-8/5	•	6	•	. (	7 .	F	0	•			•
printered	Gear change from "2" to "1st" or from "2nd" to "3rd" in "2" range.	-	1				2	3	5.		000	•		1					367 A	•	•	•			JV.	I I A	V :	ij	ro	ЯĤ	
	No shock at change from "1" to "2" range or engine races extremely.	1	2	j	3 )A	ги	oo	7	A		8	6		5 .			•	·	•			9		10				urope	HU	TVV.	
A6	Failure to change from "3rd" to "2nd" when shifting lever into "1" range.		1				2	4	5	7	6	3				7			•,,	. 8		9	9)	• (	10 .	11	agod a	118	MO	2	-
(A7)	Engine brake does not operate in "1" range.	1.	1				2	4			5	3								7			6	• (	⑦·		W.	7	TBI	И.	
	Gear change from "1st" to "2nd" or from "2nd" to "3rd" in "1" range.		1	3	. 6	in .		2	•			-\ \ \	OF							1		•		. (	3 •	9	di.	187	igit	)) 	
(A8)	Does not change from "2nd" to "1st" in "1" range.	1	2	5	. 0	10		4	5	6	7	3	)SV	3S				•	•				8	. (	9.		(B)	10	НЭ	L.	•
(A9)	Large shock changing from "2nd" to "1st" in "1" range.		11	4	1			4	1.	1	٠	3	oc.	2 .	tqt	•	•	•	H31	134	12.		5			Manager Browner		D	ENS	S.	
	Transmission overheats.	1	•				2	5	-	7	6	4	HO	3 8	3				10	9 11	13	12	14)	15	16 (17			18	Ī		19
A088	Oil shoots out during operation. White smoke. emitted from exhaust pipe during operation.	1	•		2		4	6	•		7	3	•	5.				•	9	8 10	12	11)	13	14)	15 (6			17)			18
	Offensive smell at oil charging pipe.	1						-				2							3	4 5	6	7	8	9	10 (1	) .		12			
	Transmission shifts to overdrive even if O.D. control switch is turned to "ON"		•		•						•					1 2	<b>8</b> ).	3				1.0				1.			4		
	Lamp inside O.D. control switch does not glow even if ignition switch is turned to "ON" (engine not started).	. 188	- J	•	OKE SAD		Pulmer 1 th				•		•		AZI	1 .		2	·				•				•		•		
	Lamp inside O.D. cancel switch does not glow even if transmission is shifted to O.D.		1 8		× L					West .						1 .	•	2		•		•	•	•		1		•	•		

E4N71B Electrical System/Schematic.



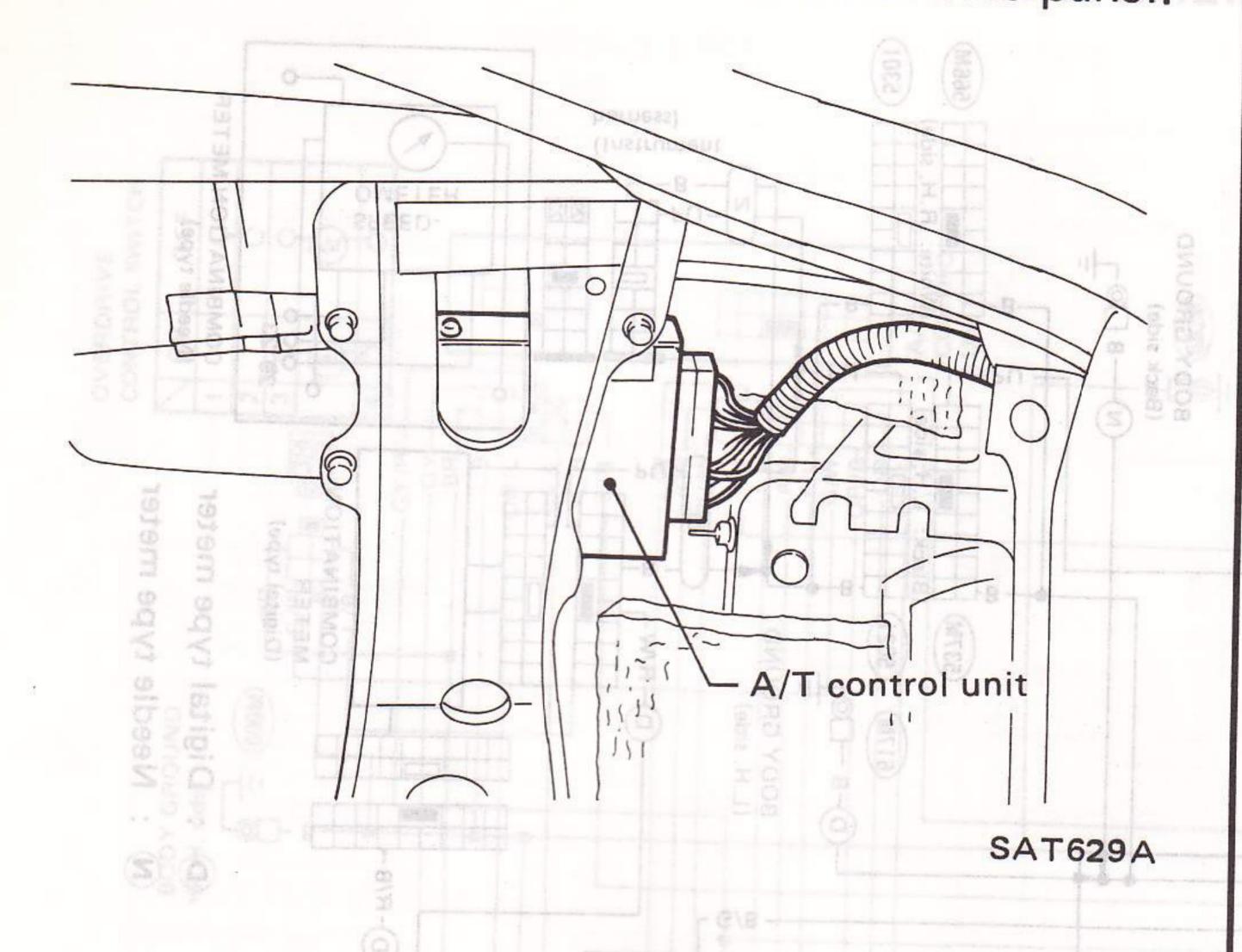
\_\_\_E4N71B Electrical System/Wiring Diagram\_\_\_

#### L.H. DRIVE MODELS

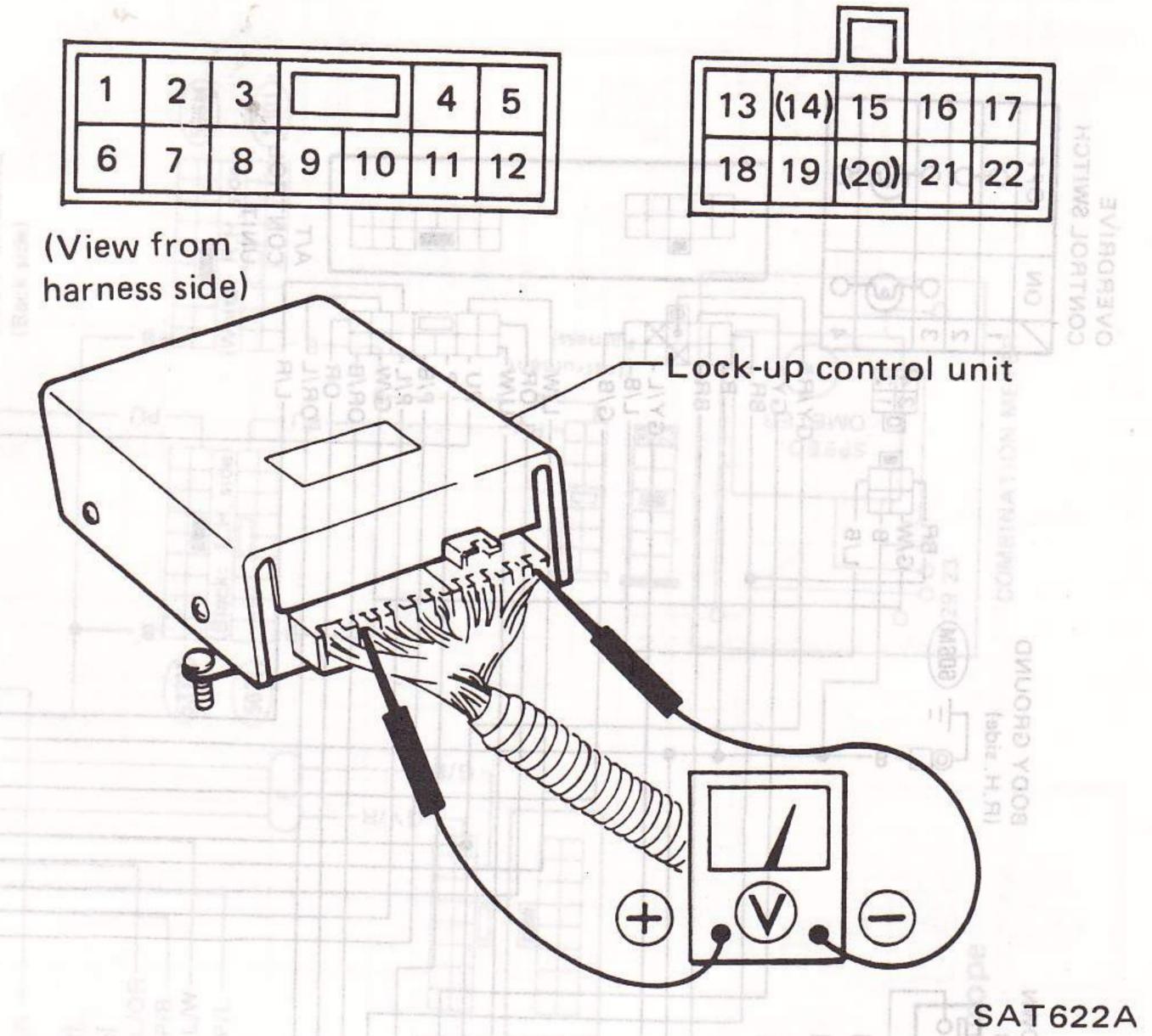


## \_\_\_Location of A/T Control Unit \_\_\_\_Inspection of A/T Control Unit \_\_\_\_

A/T control unit is located on R.H. rear side panel.



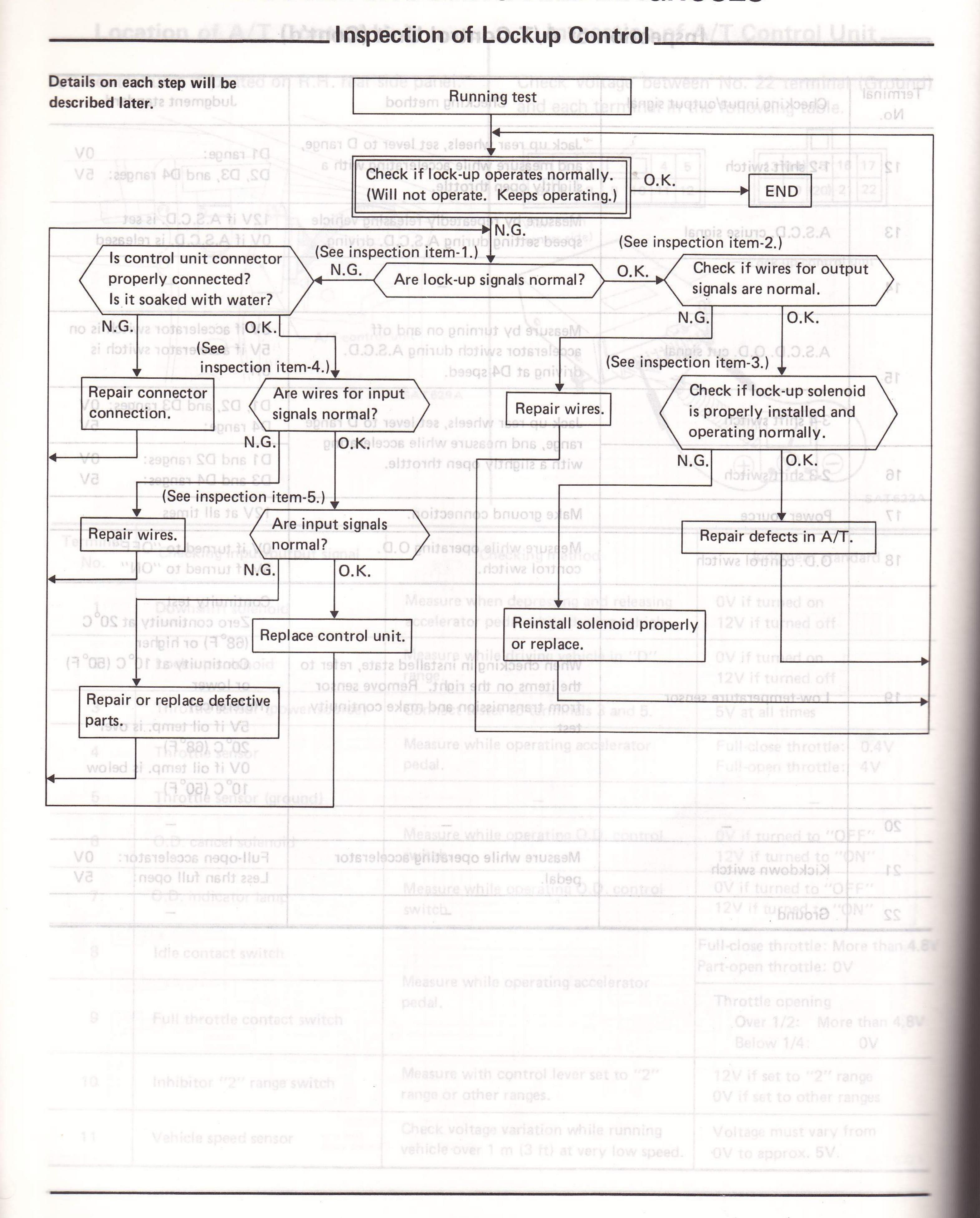
Check voltage between No. 22 terminal (Ground) and each terminal in the following table.

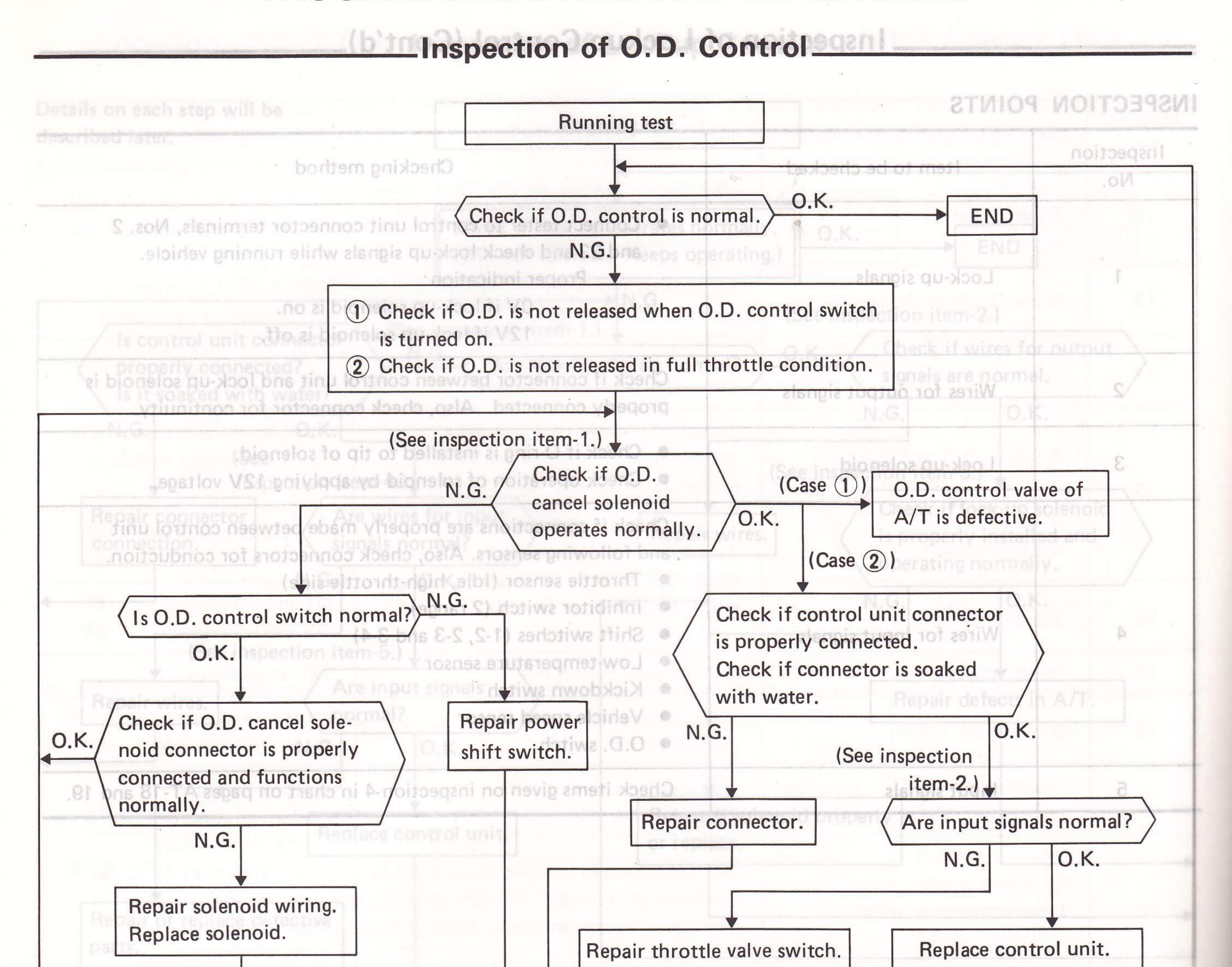


Terminal No.	Checking input/output signal	Checking method	Judgment standard
1	Downshift solenoid	Measure when depressing and releasing accelerator pedal while driving vehicle.	0V if turned on 12V if turned off
2	Lock-up solenoid	Measure while driving vehicle in "D" range.	0V if turned on 12V if turned off
3	Throttle sensor (power source)	Connect tester to terminals 3 and 5.	5V at all times
4	Throttle sensor	Measure while operating accelerator pedal.	Full-close throttle: 0.4V Full-open throttle: 4V
5	Throttle sensor (ground)	- EXELLER THE HEAD TO BE BE SEE	Toper unottie. 4v
WE WILL 2016	O.D. cancel solenoid	Measure while operating O.D. control switch.	0V if turned to "OFF" 12V if turned to "ON"
7 0 0	O.D. indicator lamp	Measure while operating O.D. control switch.	0V if turned to "OFF" 12V if turned to "ON"
8	Idle contact switch	33	Full-close throttle: More than 4.8 Part-open throttle: 0V
9	Full throttle contact switch	Measure while operating accelerator pedal.	Throttle opening Over 1/2: More than 4.8V Below 1/4: OV
10 SOLEMO	Inhibitor "2" range switch	Measure with control lever set to "2" range or other ranges.	12V if set to "2" range 0V if set to other ranges
11 atas	Vehicle speed sensor	Check voltage variation while running vehicle over 1 m (3 ft) at very low speed.	Valtage much were force

### Inspection of A/T Control Unit (Cont'd) \_\_

Terminal No.	Checking input/output signal	Checking method	Judgment standard
12	1-2 shift switch	Jack up rear wheels, set lever to D range, and measure while accelerating with a slightly open throttle.	D1 range: 0V D2, D3, and D4 ranges: 5V
13	A.S.C.D. cruise signal	Measure by repeatedly releasing vehicle speed setting during A.S.C.D. driving.	12V if A.S.C.D. is set 0V if A.S.C.D. is released
14	O.K. Check if wires for outpout signals are normal.	Signals normal?	properly connected?    properly connected?   properly connected?   properly connected?   properly connected?   properly connected?   properly continued with water?
15	A.S.C.D. O.D. cut signal	Measure by turning on and off accelerator switch during A.S.C.D. driving at D4 speed.	OV if accelerator switch is on 5V if accelerator switch is off
bi	3-4 shift switch	Jack up rear wheels, set lever to D range	D1, D2, and D3 ranges: 0V D4 range: 5V
16	2-3 shift switch	range, and measure while accelerating with a slightly open throttle.	D1 and D2 ranges: 0V D3 and D4 ranges: 5V
17	Power source	Make ground connection.	12V at all times
18	O.D. control switch	Measure while operating O.D. control switch.	0V if turned to "OFF" 5V if turned to "ON"
19	Low-temperature sensor	When checking in installed state, refer to the items on the right. Remove sensor from transmission and make continuity test.	Continuity test  Zero continuity at 20°C  (68°F) or higher  Continuity at 10°C (50°F)  or lower  (Reference)  5V if oil temp. is over  20°C (68°F)  0V if oil temp. is below  10°C (50°F)
20		_	
21	Kickdown switch	Measure while operating accelerator pedal.	Full-open accelerator: 0V Less than full open: 5V
22	Ground	_	_



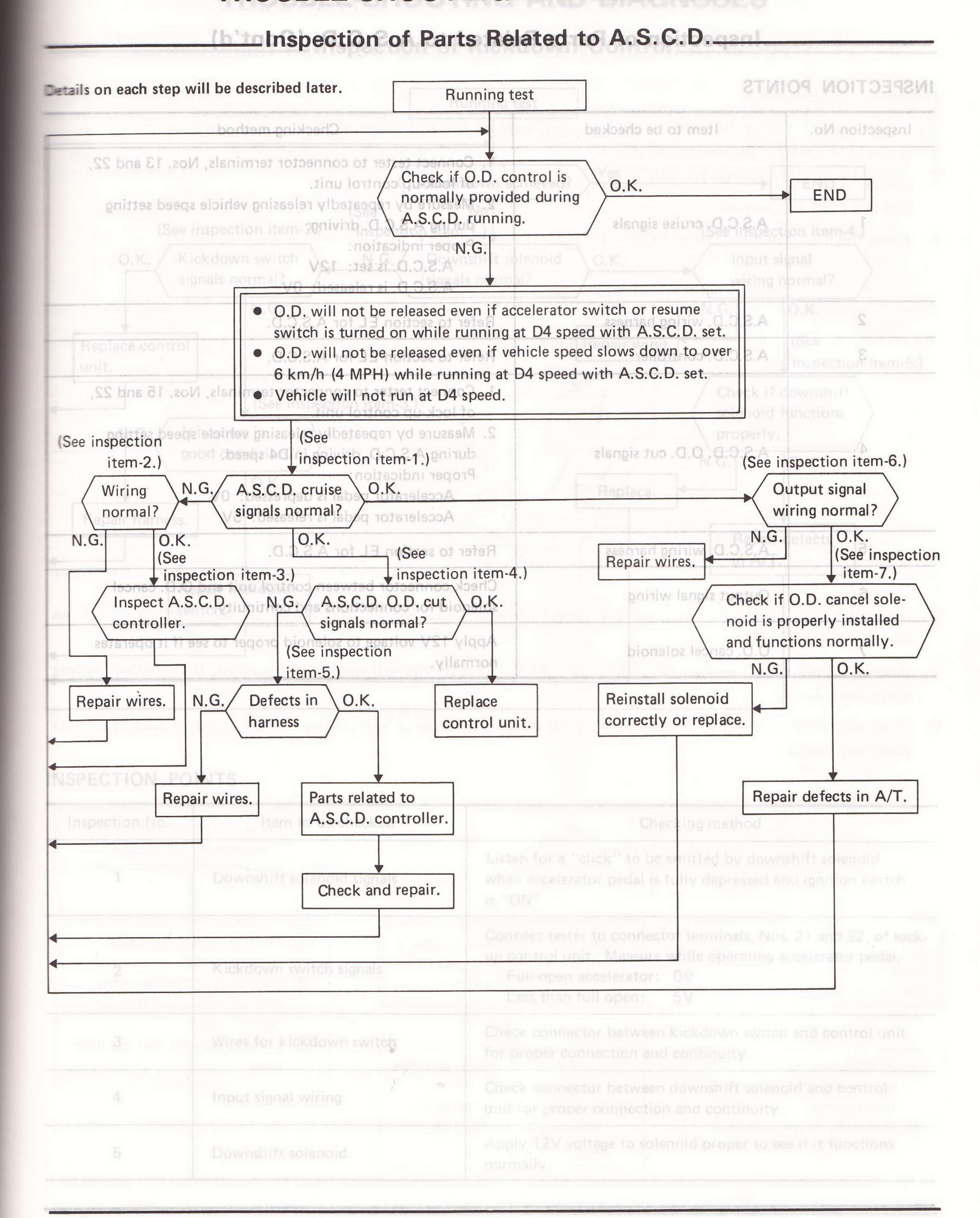


#### INSPECTION POINTS

Inspection No.	Item to be checked	Checking method
1	O.D. solenoid	Turn on key and set O.D. switch to "O.D. release" position to see if O.D. solenoid clicks.
2	Input signals	Inspect following items given in flow chart on pages AT-18 and 19.  Shift switches (1-2, 2-3 and 3-4)  Vehicle speed sensor  Full throttle contact switch  Throttle sensor:  Low-temperature sensor

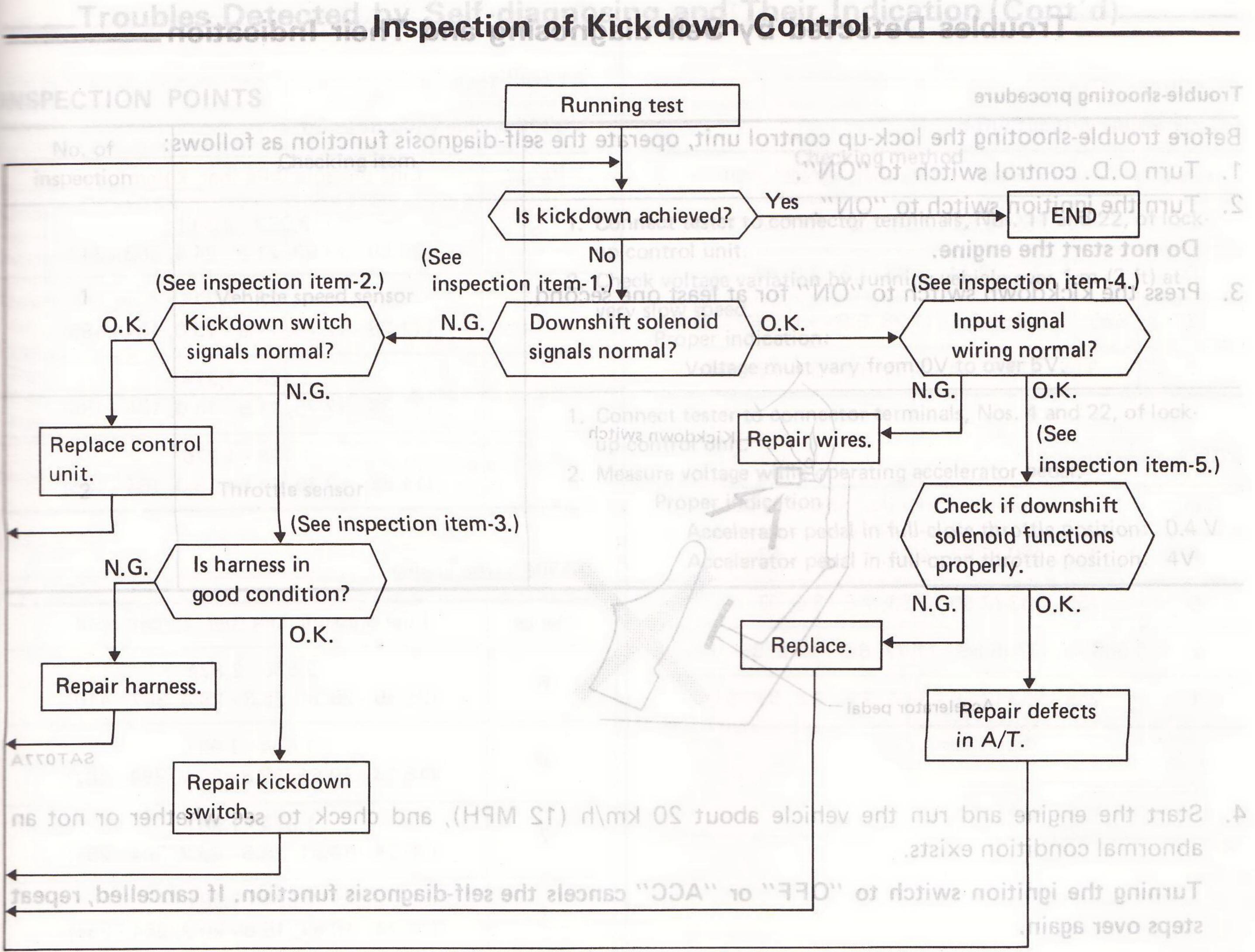
\_Inspection of Lockup Control (Cont'd)\_

Inspection	Item to be checked		Checking method	*
No.	rtem to be checked		Checking method	
1	Lock-up signals  Lock-up switch	and 22 and Prope	ster to control unit connector terming check lock-up signals while running r indication:  OV if lock-up solenoid is on.  12V if lock-up solenoid is off.	
2	Wires for output signals		ctor between control unit and lock-cected. Also, check connector for con	
3 70 9	Lock-up solenoid		ring is installed to tip of solenoid. ation of solenoid by applying 12V vo	oltage.
se inspection item-2.)  Vairing normal?	Check if control unit connector is proper slangis tuqui rosaked with water.  Check if connector is soaked with water.	<ul> <li>and following s</li> <li>Throttle ser</li> <li>Inhibitor sw</li> <li>Shift switch</li> <li>Low-temper</li> </ul>	witch ed sensor sloa leansa d.C	onduction.
5 nspect	Input signals	Check items give	ven on inspection-4 in chart on pages	AT-18 and 19.
Repair wires	N.G./ Defects in \ O.K.	Replace Senvertenant Disordi throttl	Reinstall soleholgniniw bionelos correctly or replacebionelos	. A.O. Repair so
	lapair wires Parts related to		Repair-de	feets-in-A/T
	Check and repair		OINTS	SPECTION P
	Checking method		I tem to be checked	Inspection No.
osition to see	d set O.D. switch to "O.D. release" p	Turn on key and	I tem to be checked O.D. solenoid	No.



.Inspection of Parts Related to A.S.C.D. (Cont'd)\_\_

Inspection No.	Item to be checked	Checking method			
1 dvi3	A.S.C.D. cruise signals	during A.S.C.D. driving.			
is turned on.  2) Check if O.D. is the second		A.S.C.D. is set: 12V A.S.C.D. is released: 0V			
2	A.S.C.D. wiring harness	Refer to section EL for A.S.C.D.			
3	A.S.C.D. controller	Refer to section EL for A.S.C.D.			
A cection item-6.)  Posttion item-6.)  Posttion item-6.)	THO SALES DORMAIN	<ol> <li>Connect tester to connector terminals, Nos. 15 and 22, of lock-up control unit.</li> <li>Measure by repeatedly releasing vehicle speed setting during A.S.C.D. driving in D4 speed.         Proper indication:         Accelerator pedal is depressed: 0V         Accelerator pedal is released: 5V     </li> </ol>			
5	A.S.C.D. wiring harness	Refer to section EL for A.S.C.D.			
Output signal wiring		Check connector between control unit and O.D. cancel solenoid for connections and continuity.			
green ally.	O.D. cancel solenoid	Apply 12V voltage to solenoid proper to see if it operates normally.			
	Reinstall solenoid my bibm correctly or replace, blons	Repair wires.  N.G. Defects in VO.K. Replace  Control unit.  Attends riseger			
NSPECTION P		Repair wires, Parts related to A.S.C.D. controller.			
Inspection No.	Item to be cheeked	Casaking method			
	O.D. solenoid	Turn on key and set O.D. switch to "O.D. release" position to sif O.D. scienoid clicks.			
	Input signals	Inspect following items given in flow chart on pages AT-18 and  Shift switches (1-2, 2-3 and 3-4)  Wehicle speed sensor  Full throttle contact switch  Throttle sensor			



5. If an abnormal condition is indicated, track down the cause of the problem in accordance with the chart as shown below.

#### INSPECTION POINTS

Inspection No.	Jaioni a Item to be checked	The checking method
1/4 second.	Downshift solenoid signals	Listen for a "click" to be emitted by downshift solenoid when accelerator pedal is fully depressed and ignition switch is "ON".
ken between		Connect tester to connector terminals, Nos. 21 and 22, of lock up control unit. Measure while operating accelerator pedal.  Full-open accelerator: 0V  Less than full open: 5V
rol unit mulfunc-	Wires for kickdown switch	Check connector between kickdown switch and control unit for proper connection and continuity.
4	Input signal wiring	Check connector between downshift solenoid and control unit for proper connection and continuity.
5	Downshift solenoid	Apply 12V voltage to solenoid proper to see if it functions normally.

## Troubles Detected by Self-diagnosing and Their Indication -

Running test

tinu jortnöck adskiekdown achieved?

(See inspection item-29)

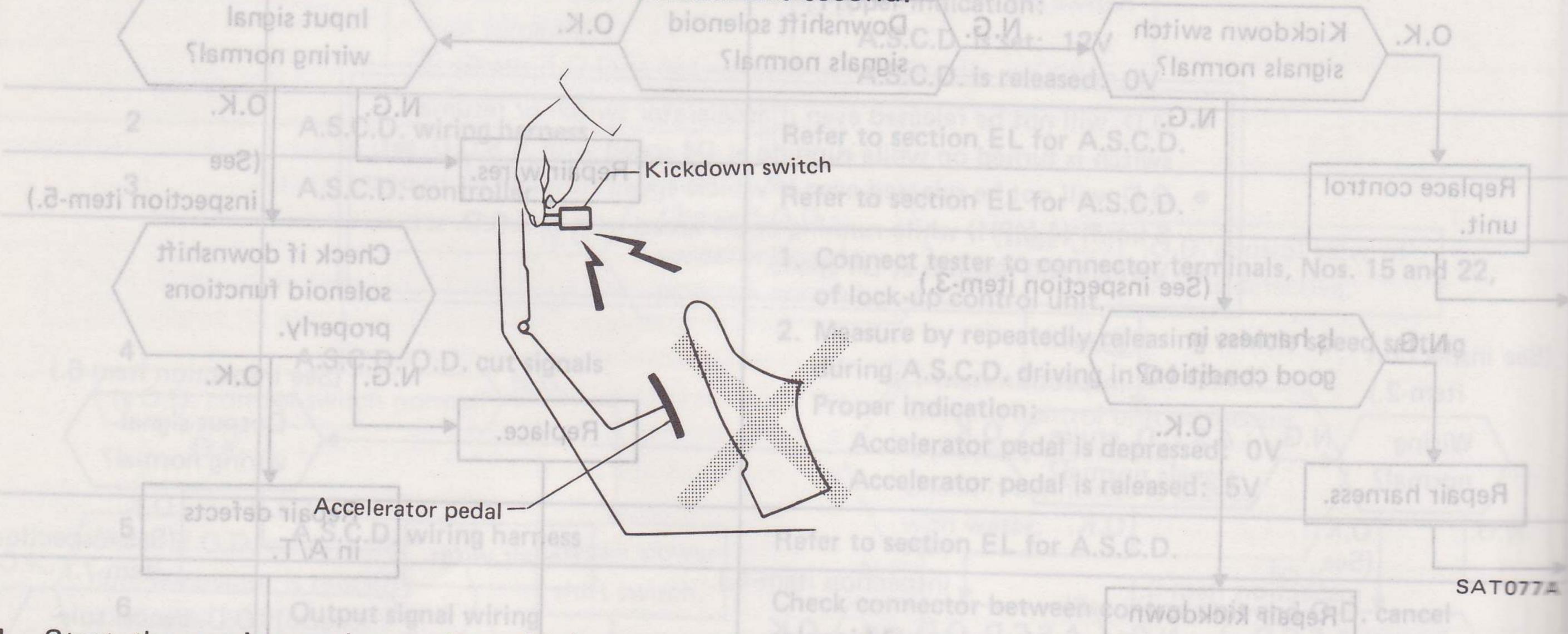
Trouble-shooting procedure

Before trouble-shooting the lock-up control unit, operate the self-diagnosis function as follows:

- 1. Turn O.D. control switch to "ON".
- 2. Turn the ignition switch to "ON".

Do not start the engine.

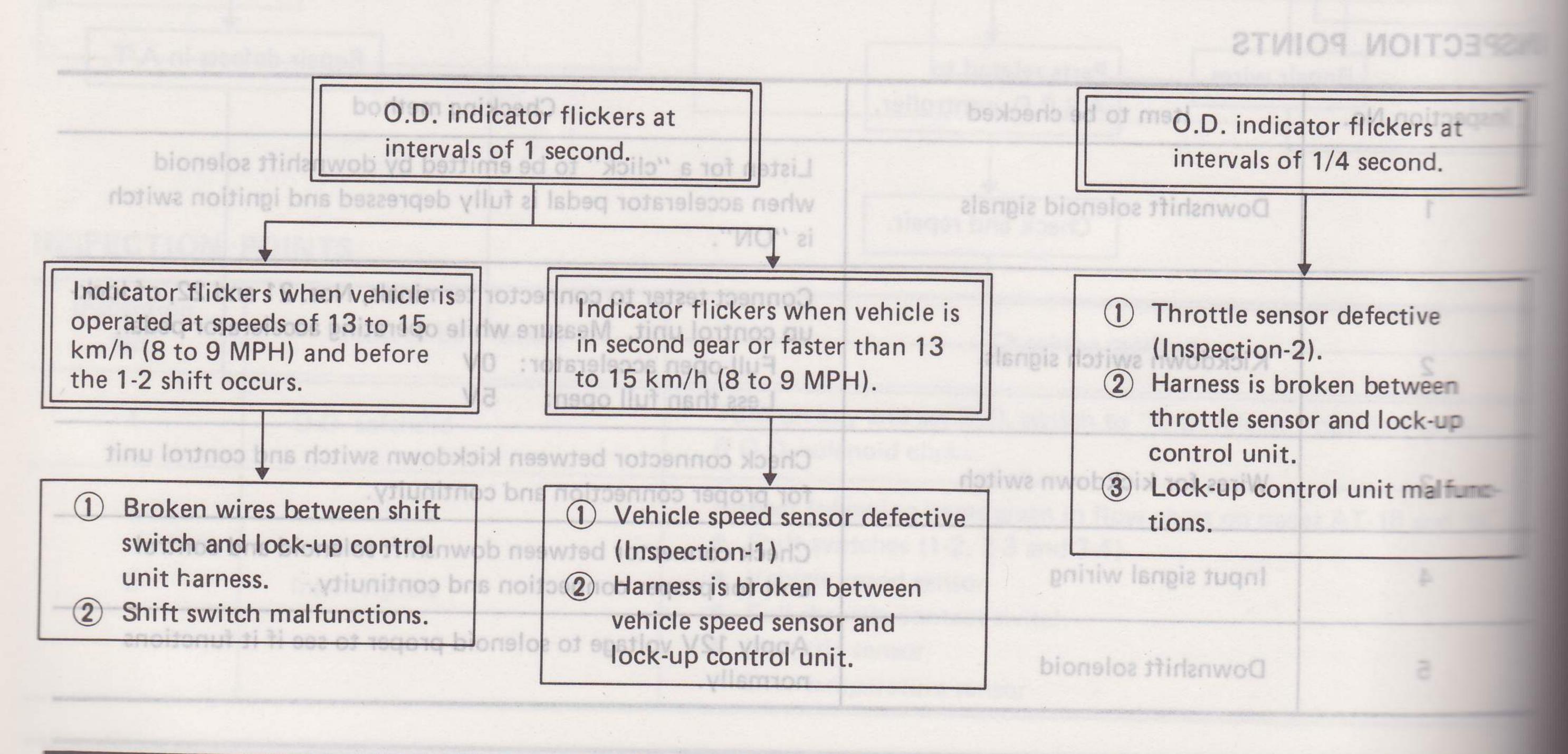
3. Press the kickdown switch to "ON" for at least one second.



4. Start the engine and run the vehicle about 20 km/h (12 MPH), and check to see whether or not abnormal condition exists.

Turning the ignition switch to "OFF" or "ACC" cancels the self-diagnosis function. If cancelled, repeat steps over again.

5. If an abnormal condition is indicated, track down the cause of the problem in accordance with the charas shown below.



\_Troubles Detected by Self-diagnosing and Their Indication (Cont'd)\_

No. of	insmission model	VG30E	WG3GE	TUCE		Transmission	model code		
inspectio	Pa (bar, kg/cmnc	Checking item		718			Charl:	odini inouim et	enger
mber	19 - 2,393	RO C WESTER	- Elvas	LIB 71		Stampad (Rd)	Checking meth	Line pressure	
STAND TO (STANDERS	21.3 - 24.4, 303	(20.89 - 23.93, 2		A	I. Con	nect tester to	connector termin	als, Nos. 11 and 22	of Lee
Transmission g	War re a Vehicl	e speed sensor		2	. Che	ontrol unit.	ation by S. S.	A see	OTTOC
185)	11.5 - 13.0, 164	31/11.28 - 12.75		a	very			vehicle over 1 m (3	
	28 - 1,275	1,1 1.00				Proper indic	ation:	569 1,128 (5.69 -	2 2
- 185 - I	11.5 - 13.0, 164	11.28 - 12.75		1	Comm	vortage n	nust vary from 0V	to over 5V.	
commended.	28 - 1,275	Automatic trans		1.	up co	ntrol unit.	onnector termina	ls, Nos. 4 and 22, o	f lock-
(2)	O.EI Throttl	e sensor	tybe		Measi	ure voltage wh	ile operating acce	Oshisasaw	
			13			. Topci muica	tion:		
			odana 31						0.4 \
(izq, sn	kPa (bar, kg/cn	Line pressure	-	Ran		(1d - VE	poddi ili idili-ope	en throttle position:	4V
	530 - 2.824	e	261	1011		/1771 ao n	0.3,60.8 - 6	255 - 353 (2.5	O
77 - 410)	,25.8 - 28.8, 36	(25.30 - 28.24	8	10000		11 11 00 ,0,	1-11.77, 6.0 - 12	588 1,177 (5.88	art c
	824 - 1,981					176-78	8 - 3.53, 2.6 - 3.6	3.51 EdE - 205 31898	
34 - 2871	, 18.6 - 20.2, 26	(18.24 - 19.81	0	+					
	824 - 1,981								
64 - 2811	1, 18.6 - 20.2, 2	(18.24 - 19.8							
	,824 - 1,981								
1107 - 20	1, 18.6 - 20.2, 2	(18.24 - 19.8	l sage						

# 

#### At idling

#### VG30E engine without turbo

Range	Line pressure kPa (bar, kg/cm², psi)
R	569 - 755 (5.69 - 7.55, 5.8 - 7.7, 82 - 109)
D)8 (1	314 - 373 (3.14 - 3.73, 3.2 - 3.8, 46 - 54)
2	569 - 1,128 (5.69 - 11.28, 5.8 - 11.5, 82 - 164)
1	314 - 373 (3.14 - 3.73, 3.2 - 3.8, 46 - 54)

G30E tu	voltage while operating accelerator pedan
Range	Line pressure kPa (bar, kg/cm², psi)
R/A	392 - 490 (3.92 - 4.90, 4.0 - 5.0, 57 - 71)
D	255 - 353 (2.55 - 3.53, 2.6 - 3.6, 37 - 51)
2	588 - 1,177 (5.88 - 11.77, 6.0 - 12.0, 85 - 171)
1	255 - 353 (2.55 - 3.53, 2.6 - 3.6, 37 - 51)

Turning the ignition switch to "OFF" or "ACC"

5. If an abnormal condition is indicated, track down the cause of the problem in accordance with the chart

#### At stall test

#### VG30E engine without turbo

D	Mo. of the state o
Range	Line pressure kPa (bar, kg/cm², psi)
R	2,089 - 2,393 (20.89 - 23.93, 21.3 - 24.4, 303 - 347)
D	(11.28 - 12.75, 11.5 - 13.0, 164 - 185)
2	1,128 - 1,275 (11.28 - 12.75, 11.5 - 13.0, 164 - 185)
s 1	1,128 - 1,275 (11.28 - 12.75, 11.5 - 13.0, 164 - 185)

NSPECTION POINTS

#### VG30E turbo engine

Range	Line pressure kPa (bar, kg/cm², psi)
R	2,530 - 2,824 (25.30 - 28.24, 25.8 - 28.8, 367 - 410)
D	1,824 - 1,981 (18.24 - 19.81, 18.6 - 20.2, 264 - 287)
2	1,824 - 1,981 (18.24 - 19.81, 18.6 - 20.2, 264 - 287)
1	1,824 - 1,981 (18.24 - 19.81, 18.6 - 20.2, 264 - 287)
	the problem in consequent and the consequent of the consequence of the

throttle sensor and lock-up

(3) Lock-up control unit malfunc

Indicator flickers when wehlele is

in second gear or fister than 13

(1) Vehicle speed sensor defective

(2) Harness is broken between

lock-up contro unit.

vehicle speed sensor and

to 15 km/h (8 to 9 MPH).

## SERVICE DATA AND SPECIFICATIONS (S.D.S.)

General	Specifi	ications.
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## Specifications and Adjustment\_\_\_

Engine model	80880Kn1	VG30E	VG30E turbo	
Automatic transmissi	on model [	E4N71B	E4N71B	
Transmission model of	ode	X8203	X8206	
Stall torque ratio	9	zersia 2.	Oi: 1 to redroul4	
Transmission gear rate  1st (2000 - 3180)  2nd (3000) A.C.  Top  O.D.  Reverse	2.0 (0.079)	2.458 1.458 1.000 2.0686 2.182		
Recommended oil	) 8.1		ansmission fluid on" type	
Oil capacity	Thickness mm (in)		liters 3 Imp qt)	
31667-X0300				
31667-X0301				
31667-X0302				
31667-X0303				
			8) 31E28-X0104	
31667-X0305				
b.D. rotal and pla			[79 Hickness of feter	
			Tall Halling	
	(385.0) 8.6			
	10.4 (0,409)			
		1.8 (0.07		
31667-X2905				
80 (3.15)		(ni) mr	2nd brake band Piston size m Big dia. Small dia.	
			O.D. brake band	
			Piston size m	
			Big dia.	
	40 (1.57)		Small dia.	
	0.5 - 0.8 (0.02	(ni) m	Front end play m	
			or dold to a produid T	
31528-X0105			Thickness of high-ra	
			Washer !	
31528-X0106				
31528-X0106 31528-X0100				
31528-X0106 31528-X0100 31528-X0101	(0.083)			
31528-X0106 31528-X0100	.1 (0.083) .3 (0.091)			

mbly	(esteva	Front clutch (High-r
the	GXA	vinb to Gdmul/
-8-	plates.	Www.pagedmuM
		Clearance
lates	2	04 10 15 15 10 2 5 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
plates	2	2
nm (in)		(0.008)
ess nm (in)		(0.0591 - 0.0650)
5.4 (0.213) n 5.6 (0.229) n	Thickness mm (in)	Part
side	0.4 (0.016) 0.6 (0.024) 0.8 (0.031) 1.0 (0.039) 1.2 (0.047)	31606-X8502 31606-X8500 31606-X8503 31606-X8504
ming lik		Number of drive pla
		Number of driven pl
		Clearance mm
		timiteldswellA
		Orive plate shickness
		Allowable limit
	ates plates mm (in) six and	Thickness mm (in) 0.4 (0.016) 0.6 (0.024) 0.8 (0.031) 1.0 (0.039) 1.2 (0.047)

## SERVICE DATA AND SPECIFICATIONS (S.D.S.)

### Specifications and Adjustment (Cont'd)

Transmission model code number	X8203	bomX8206nana1T
Front clutch (High-reverse)	re kFa (byldmes	Torque congrecters
Number of drive plates	3	straward Augret
Number of driven plates	5	5
Clearance mm (in) Standard Allowable limit	1.6 - 1.8 (0.0 2.2 (0.087)	063 - 0.071) 2.4 (0.094)
Drive plate thickness mm (in) Standard Allowable limit	1.50 - 1.65 (0.0 1.4 (0	
Range Line press	Thickness	Part number
Thickness of retaining plate  plate  10.016)  21.006	5.0 (0.197) 5.2 (0.205) 5.4 (0.213) 5.6 (0.220) 5.8 (0.228) 6.0 (0.236) 6.2 (0.244)	31567-X2900 31567-X2901 31567-X2902 31567-X2903 31567-X2904 31567-X2905 31567-X2906
Rear cltuch (Forward)	1.2	
Number of drive plates	6	6
Number of driven plates	6	6
Clearance mm (in) Standard Allowable limit	0.8 - 1.0 (0.031 - 0.039) 1.5 (0.059)	0.8 - 1.0 (0.031 - 0.039) 1.5 (0.059)
Drive plate thickness  mm (in)  Standard  Allowable limit	1.50 - 1.65 (0.0591 - 0.0650) 1.4 (0.055)	
	Thickness mm (in)	Part
Thickness of retaining plate	6.2 (0.244) 6.4 (0.252) 6.6 (0.260) 6.8 (0.268) 7.0 (0.276) 7.2 (0.283) 7.4 (0.291) 7.6 (0.295)	31567-X2906 31507-X8600 31507-X8601 31537-X2800 31537-X2801 31537-X0900 31537-X0901 31537-X0902

ransmission model code umber	X8203	X8206	
E4N718 E4N718	lebom nois	aratic transmis	
Low & reverse brake	re kPa (bar kg	ome palling	
Number of drive plates	5000	Spow uors	
1 100 00 00	4,499 46,099		
Number of driven plates	6 - 24.4	SUbits 8	
Clearance mm (in)	0.00 1.05 /0		
Standard Allowable limit	0.80 - 1.05 (0. 2.0 (0.079)	2.4 (0.094	
1.000	2.0 (0.073)	2.4 (0.05-	
Drive plate thickness	75, 11.5 - 13.0,	164 - 1851	
Standard (in)	1.90 - 2.05 (0	0748 - 0.0807	
Allowable limit	1.8 (0.071)		
adAt, , uquyagg, 135			
7.0 liters	Thickness	Part	
(6-1/8 lmp qt)	mm (in)	number	
Range Line pressi	11.8 (0.465) 12.0 (0.472)	31667-X0300	
	12.0 (0.472)	31667-X0302	
	12.2 (0.488)	31667-X0303	
(25.30 - 28	12.6 (0.496)	31667-X0304	
	12.8 (0.504)	31667-X0305	
Thickness of retaining	1,824 - 1,981		
plate	Thickness	Part	
	mm (in)	number	
2 (18.24 - 19.	0.0 (0.000)	04007 V0000	
	9.8 (0.386)	31667-X2900 31667-X290	
Mark when self-dimension for	10.0 (0.394)	31667-X2902	
(18.24 - 19)	10.2 (0.402)	31667-X2903	
	10.6 (0.417)	31667-X2904	
	10.8 (0.425)	31667-X2905	
		1	
2nd brake band			
Piston size mm (in)			
Big dia.	72 (2.83)	80 (3.15)	
Small dia.	50 (1.97)	44 (1.73)	
O.D. brake band			
Piston size mm (in)			
Big dia.	60 (2.36)	60 (2.36)	
Small dia.	40 (1.57)	40 (1.57)	
Front end play mm (in)	0.5 - 0.8 (0.020 - 0.031)		
	Thickness	Part	
	mm (in)	number	
	1.3 (0.051)	31528-X010	
Thickness of high-reverse	1.5 (0.051)	31528-X0	
clutch (Front) thrust	1.7 (0.067)	31528-X0	
washer	1.9 (0.075)	31528-X011	
	2.1 (0.083)	31528-X010	
	2.3 (0.091)	31528-X010	
	2.5 (0.098)	31528-X010	
	2.7 (0.106)	31528-X010	

## SERVICE DATA AND SPECIFICATIONS (S.D.S.)

### Specifications and Adjustment (Cont'd)-

Total end play	mm (in)	0.25 - 0.50 (0.0098 - 0.0197)	
		Thickness mm (in)	Part number
		1.2 (0.047)	31556-X0100
Thickness of oil pump cover		1.4 (0.055)	31556-X0101
bearing race	1.6 (0.063)	31556-X0102	
		1.8 (0.071)	31556-X0103
		2.0 (0.079)	31556-X0104
		2.2 (0.087)	31556-X0105
O.D. pack end play	mm (in)	0.5 - 0.8 (0.020 - 0.031)	
GONTENTS		Thickness mm (in)	Part number
		1.3 (0.051)	31528-X0107
Thickness of O.D. t	hrust	1.5 (0.059)	31528-X0105
washer		1.7 (0.067)	31528-X0106
		1.9 (0.075)	31528-X0100
		2.1 (0.083)	31528-X0101
		2.3 (0.091)	31528-X0102
	2.5 (0.098)	31528-X0103	
		2.7 (0.106)	31528-X0104
O.D. total end play	mm (in)	0.25 - 0.50 (0.0098 - 0.0197)	
	Thickness mm (in)	Part number	
Thickness of O.D. bearing race		1.2 (0.047)	31603-X8600
		1.4 (0.055)	31603-X8601
		1.6 (0.063)	31603-X8602
		1.8 (0.071)	31603-X8603
	2.0 (0.079)	31603-X8604	
		2.2 (0.087)	31603-X8605

Oil pump clearance mm (in) Outer gear-pump housing		
Standard	0.05 - 0.20 (0.0020 - 0.0079) 0.25 (0.0098)	
Allowable limit		
Outer gear-crescent		
Standard	0.14 - 0.21 (0.0055 - 0.0083)	
Allowable limit	0.25 (0.0098)	
Gears-pump cover		
Standard	0.02 - 0.04 (0.0008 - 0.0016) 0.08 (0.0031)	
Allowable limit		
Drum support		
Seal ring-ring groove		
Standard	0.05 - 0.20 (0.0020 - 0.0079)	
Allowable limit	0.20 (0.0079)	
Oil distributor		
Seal ring-ring groove		
Standard	0.04 - 0.16 (0.0016 - 0.0063)	
Allowable limit	0.16 (0.0063)	
Planetary carrier mm (in)		
Clearance between pinion		
washer and planetary carrier		
Standard	0.20 - 0.70 (0.0079 - 0.0276)	
Allowable limit	0.80 (0.0315)	
Run-out of oil pump cover to	Less than 0.07 (0.0028)	
housing mm (in)	Less than 0.07 (0.0020)	
Run-out of drum support to	Less than 0.05 (0.0020)	

#### STALL REVOLUTION

VG30E engine without turbo	2,150 - 2,450 rpm	
VG30E turbo engine	2,500 - 2,800 rpm	