

# AUTOMATIC TRANSMISSION

## SECTION AT

### CONTENTS

<b>PRECAUTIONS</b> .....	2	Wiring Diagram - AT - OVRCSV.....	27
Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" .....	2	<b>TROUBLE DIAGNOSIS FOR T/C CLUTCH SOL/V</b> .....	29
<b>OVERALL SYSTEM</b> .....	3	Wiring Diagram - AT - TCV.....	29
A/T Electrical Parts Location .....	3	<b>TROUBLE DIAGNOSIS FOR BATT/FLUID TEMP SEN</b> .....	31
Circuit Diagram .....	4	Wiring Diagram - AT - BA/FTS .....	31
Control System .....	6	<b>TROUBLE DIAGNOSIS FOR ENGINE SPEED SIG</b> .....	33
<b>ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION</b> .....	7	Wiring Diagram - AT - ENGSS .....	33
Diagnostic Procedure Without CONSULT-II .....	7	<b>TROUBLE DIAGNOSIS FOR LINE PRESSURE S/V</b> .....	35
<b>TROUBLE DIAGNOSIS - GENERAL DESCRIPTION</b> .....	10	Wiring Diagram - AT - LPSV.....	35
TCM Terminals and Reference Value.....	10	<b>TROUBLE DIAGNOSES FOR SYMPTOMS</b> .....	37
<b>TROUBLE DIAGNOSIS FOR POWER SUPPLY</b> .....	14	Wiring Diagram - AT - NONDTC .....	37
Wiring Diagram - AT - MAIN.....	14	<b>A/T SHIFT LOCK SYSTEM</b> .....	43
<b>TROUBLE DIAGNOSIS FOR VHCL SPEED SEN.A/T (REVOLUTION SENSOR)</b> .....	16	Description .....	43
Wiring Diagram - AT - VSSA/T .....	16	Wiring Diagram - SHIFT - .....	44
<b>TROUBLE DIAGNOSIS FOR VHCL SPEED SEN.MTR</b> .....	18	<b>REMOVAL AND INSTALLATION</b> .....	45
Wiring Diagram - AT - VSSMTR.....	18	Removal.....	45
<b>TROUBLE DIAGNOSIS FOR THROTTLE POSI SEN</b> .....	20	Installation.....	46
Wiring Diagram - AT - TPS.....	20	<b>SERVICE DATA AND SPECIFICATIONS (SDS)</b> .....	48
<b>TROUBLE DIAGNOSIS FOR SHIFT SOLENOID/V A</b> .....	23	General Specifications.....	48
Wiring Diagram - AT - SSV/A .....	23	Shift Schedule.....	48
<b>TROUBLE DIAGNOSIS FOR SHIFT SOLENOID/V B</b> .....	25	Stall Revolution.....	48
Wiring Diagram - AT - SSV/B .....	25	Line Pressure.....	48
<b>TROUBLE DIAGNOSIS FOR OVERRUN CLUTCH S/V</b> .....	27	Return Springs.....	49
		Accumulator O-ring.....	50
		Clutches and Brakes .....	50
		Oil Pump and Low One-way Clutch .....	52
		Total End Play.....	52
		Reverse Clutch Drum End Play .....	53
		Removal and Installation .....	53

## PRECAUTIONS

*Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"*

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### Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

NEAT0001

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER" used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The SRS system composition which is available to NISSAN MODEL D22 is as follows (The composition varies according to the destination and optional equipment.):

Driver air bag module (located in the center of the steering wheel), front passenger air bag module (located on the instrument panel on passenger side), seat belt pre-tensioner, a diagnosis sensor unit, warning lamp, wiring harness and spiral cable.

Information necessary to service the system safely is included in the **RS section** of this Service Manual.

#### **WARNING:**

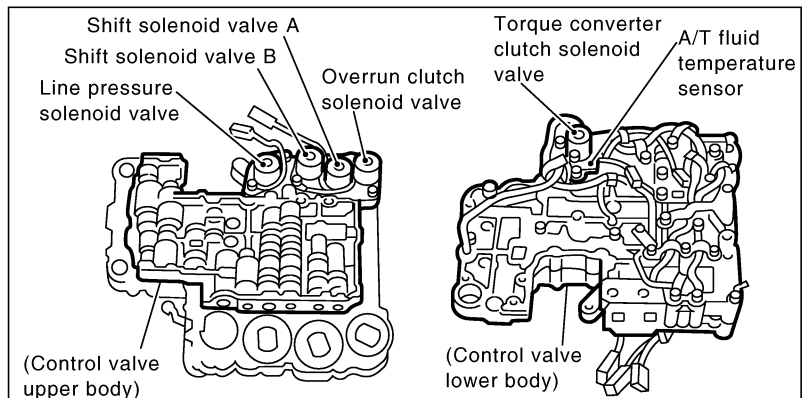
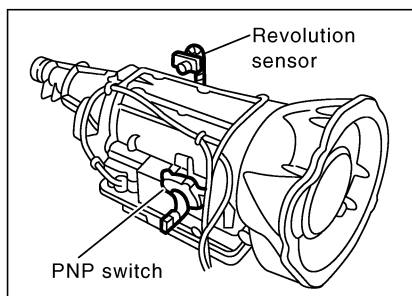
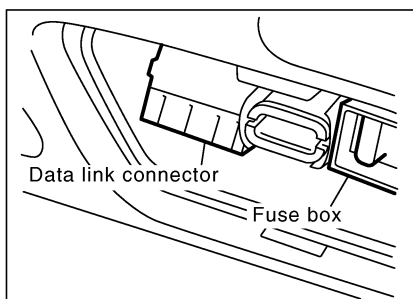
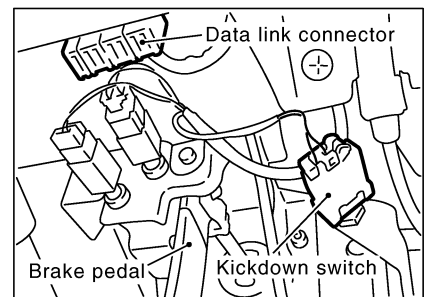
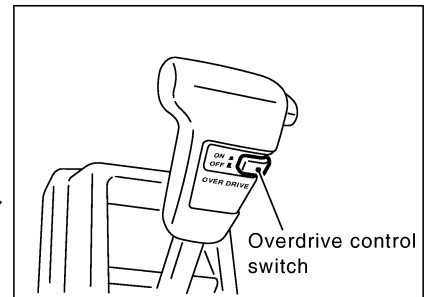
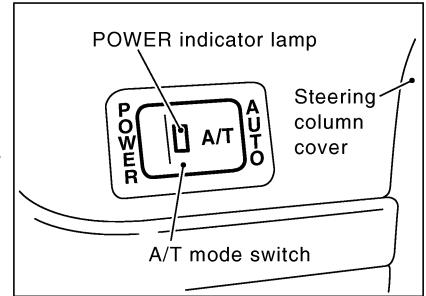
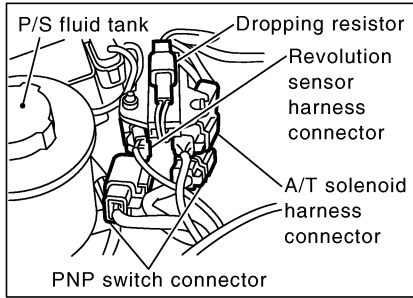
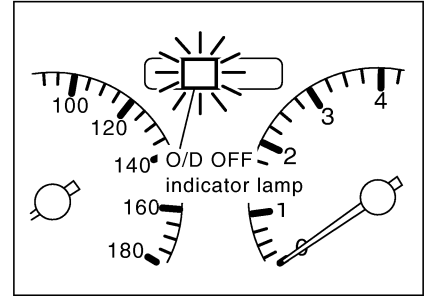
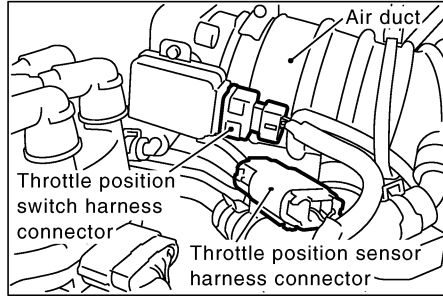
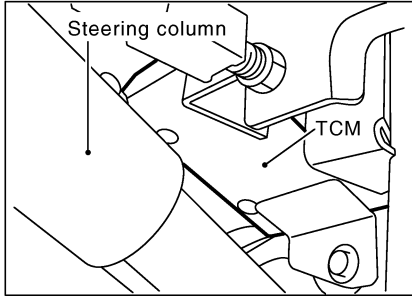
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the RS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. Spiral Cable and wiring harnesses (except "SEAT BELT PRE-TENSIONER") covered with yellow insulation either just before the harness connectors or for the complete harness are related to the SRS.

# OVERALL SYSTEM

A/T Electrical Parts Location

## A/T Electrical Parts Location

NEAT0007



SAT216K

GI  
MA  
EM  
LC  
EC  
FE  
CL  
MT  
**AT**  
TF  
PD  
FA  
RA  
BR  
ST  
RS  
BT  
HA  
EL  
IDX

# OVERALL SYSTEM

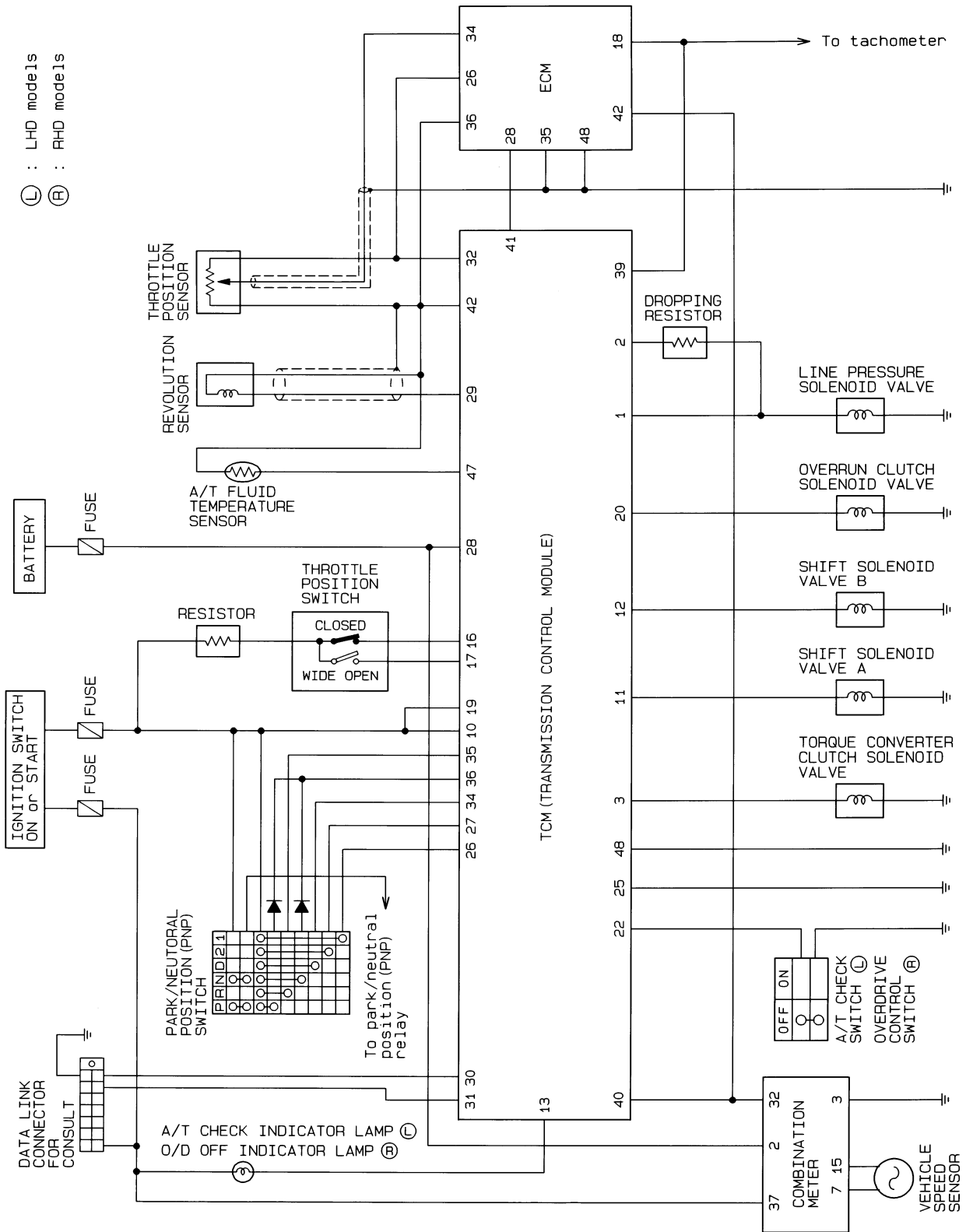
Circuit Diagram

## Circuit Diagram

### KA24DE ENGINE MODEL

NEAT0008

NEAT0008S01



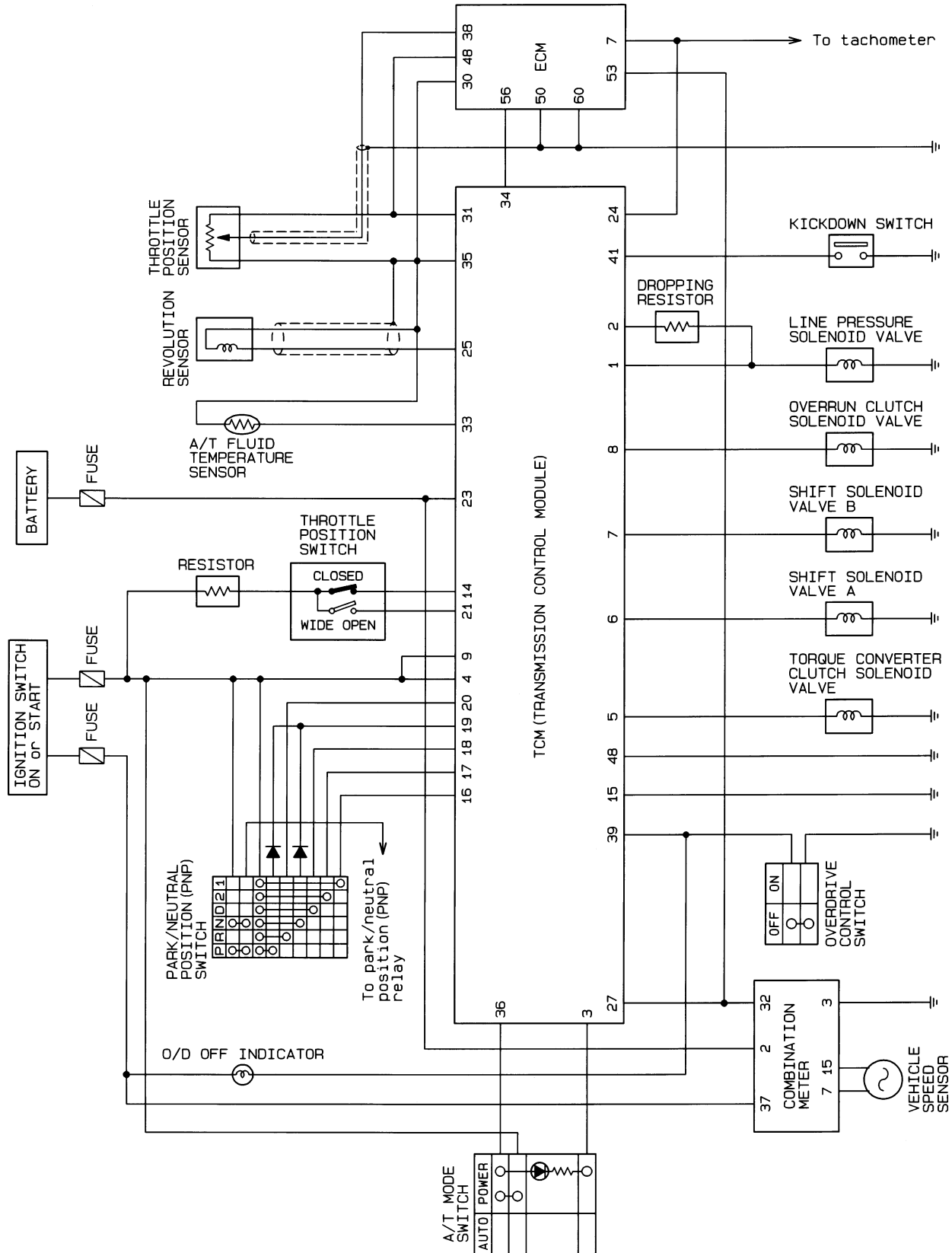
HAT053

# OVERALL SYSTEM

Circuit Diagram (Cont'd)

## VG30E ENGINE MODEL

NEAT0008S02



GI  
MA  
EM  
LC  
EC  
FE  
CL  
MT  
**AT**  
TF  
PD  
FA  
RA  
BR  
ST  
RS  
BT  
HA  
EL  
IDX

HAT107

# OVERALL SYSTEM

Control System

## Control System

=NEAT0013

### OUTLINE

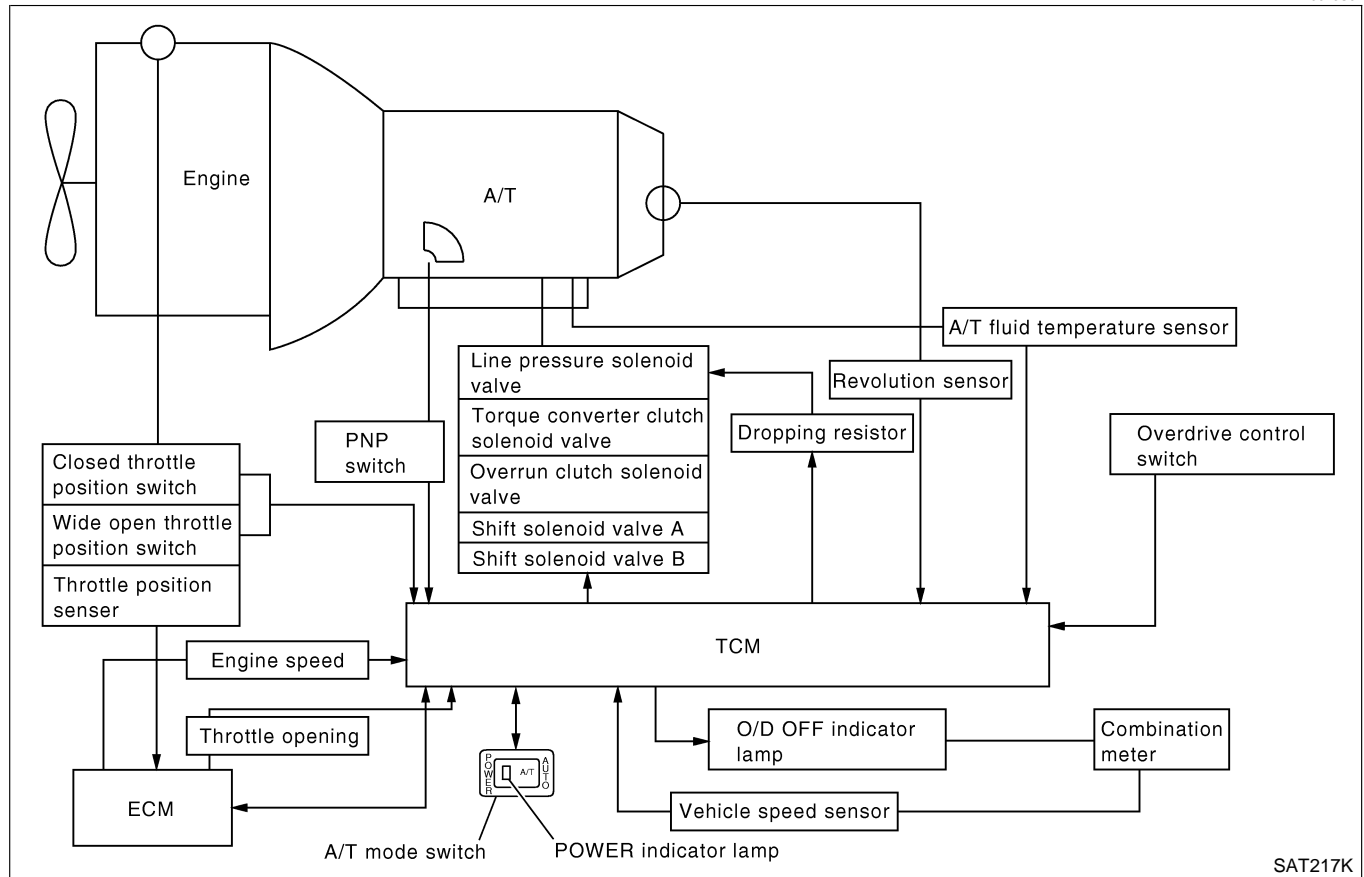
NEAT0013S01

The automatic transmission senses vehicle operating conditions through various sensors. It always controls the optimum shift position and reduces shifting and lock-up shocks.

SENSORS		TCM		ACTUATORS
PNP switch Throttle position sensor Closed throttle position switch Wide open throttle position switch Engine speed signal A/T fluid temperature sensor Revolution sensor Vehicle speed sensor Overdrive control switch A/T mode switch	▶	Shift control Line pressure control Lock-up control Overrun clutch control Timing control Fail-safe control Self-diagnosis	▶	Shift solenoid valve A Shift solenoid valve B Overrun clutch solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve O/D OFF indicator lamp POWER indicator lamp

### CONTROL SYSTEM

NEAT0013S02



SAT217K

ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION

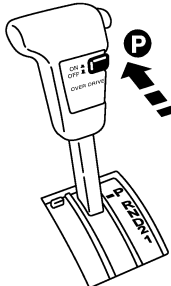
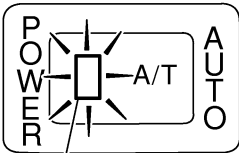
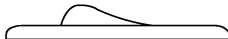
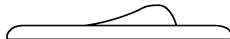
Diagnostic Procedure Without CONSULT-II

Diagnostic Procedure Without CONSULT-II

SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II)


NEAT0206

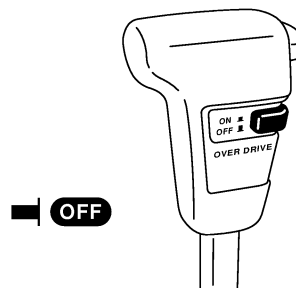
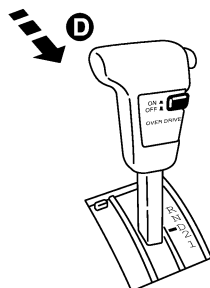
NEAT0206S03

1	CHECK POWER INDICATOR LAMP	
<div>1. Move selector lever to P position. Start engine and warm it up to normal engine operating temperature.</div> <div>2. Turn ignition switch to OFF position.</div> <div>3. Wait 5 seconds.</div> <div>4. Turn ignition switch to ON position. (Do not start engine.)</div>		
<div></div>		
5. Does POWER indicator lamp come on for about 2 seconds?		
<div><div><div><div>POWER indicator lamp</div></div><div><div>AUTO position</div></div><div><div>POWER position</div></div></div></div>		
SAT218K		
SAT219K		
Yes or No		
Yes	▶	GO TO 2.
No	▶	Stop procedure. Perform “1. O/D OFF, A/T CHECK or POWER Indicator Lamp Does Not Come On”, AT-145 (SM9E-D22BG0) before proceeding.

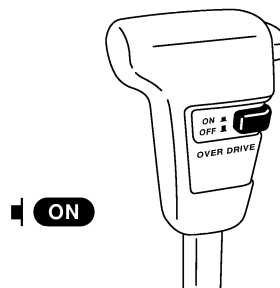
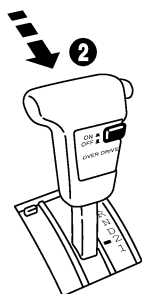
# ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION

Diagnostic Procedure Without CONSULT-II (Cont'd)

2	JUDGEMENT PROCEDURE STEP 1
<div data-bbox="152 197 665 396"><ol style="list-style-type: none"><li>1. Turn ignition switch to OFF position.</li><li>2. Set A/T mode switch to AUTO position.</li><li>3. Push and hold shift lock release button.</li><li>4. Move selector lever from P to D position.</li><li>5. Set overdrive control switch in OFF position.</li><li>6. Turn ignition switch to ON position. (Do not start engine.)</li></ol><p data-bbox="188 401 1243 428">[If O/D OFF indicator lamp does not come on, refer to "Step 3 and 4" on AT-183 (SM9E-D22BG0)].</p></div>	
<div data-bbox="152 785 652 844"><ol style="list-style-type: none"><li>7. Move selector lever to 2 position.</li><li>8. Set overdrive control switch in ON position.</li></ol></div>	
<div data-bbox="444 1247 620 1272"></div> <div data-bbox="509 1247 620 1272">GO TO 3.</div>	



SAT220K



SAT221K



ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION


Diagnostic Procedure Without CONSULT-II (Cont'd)

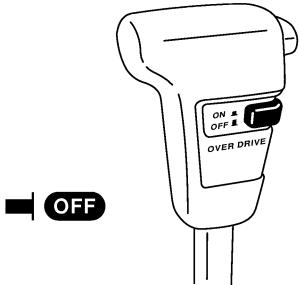
3

JUDGEMENT PROCEDURE STEP 2

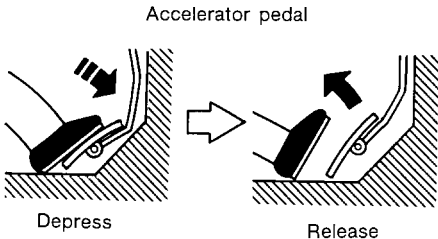
1. Move selector lever to 1 position.

2. Set overdrive control switch in OFF position.





3. Depress accelerator pedal fully and release it.



SAT222K

SAT981F

▶

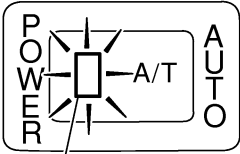
GO TO 4.

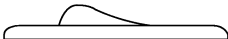
4

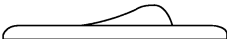
CHECK SELF-DIAGNOSIS CODE

Check POWER indicator lamp.

Refer to JUDGEMENT OF SELF-DIAGNOSIS CODE, AT-40 (SM9E-D22BG0).







POWER indicator lamp

AUTO position

POWER position

SAT219K

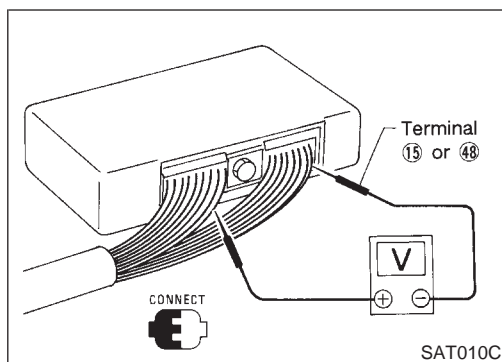
▶

DIAGNOSIS END

GI  
MA  
EM  
LC  
EC  
FE  
CL  
MT  
AT  
TF  
PD  
FA  
RA  
BR  
ST  
RS  
BT  
HA  
EL  
IDX

# TROUBLE DIAGNOSIS — GENERAL DESCRIPTION

TCM Terminals and Reference Value



## TCM Terminals and Reference Value

NEAT0253

### PREPARATION

NEAT0253S01

- Measure voltage between each terminal and terminal 15 or 48 by following "TCM INSPECTION TABLE".

## TCM HARNESS CONNECTOR TERMINAL LAYOUT

NEAT0253S02

1	2	3	4	9	10	11	12	13	14	15		23	24	25	26	27	28	29	30	31	32	33	34	35
5	6	7	8	16	17	18	19	20	21	22		36	37	38	39	40	41	42	43	44	45	46	47	48

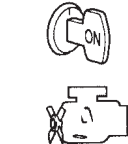


SAT2071

## TCM INSPECTION TABLE

NEAT0253S03

(Data are reference values.)

Terminal No.	Wire color	Item	Condition		Judgement standard	
1	G/Y	Line pressure solenoid valve		When releasing accelerator pedal after warming up engine.	1.5 - 2.5V	
				When depressing accelerator pedal fully after warming up engine.	0.5V or less	
2	BR/Y	Line pressure solenoid valve (with dropping resistor)		When releasing accelerator pedal after warming up engine.	5 - 14V	
				When depressing accelerator pedal fully after warming up engine.	0.5V or less	
3	L/G	POWER indicator lamp		When setting A/T mode switch in other position.		1V or less
				When setting A/T mode switch in POWER position.		Battery voltage
4	OR	Power source		When turning ignition switch to "ON".		Battery voltage
				When turning ignition switch to "OFF".		1V or less

# TROUBLE DIAGNOSIS — GENERAL DESCRIPTION


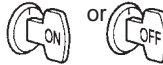




TCM Terminals and Reference Value (Cont'd)

Terminal No.	Wire color	Item	Condition	Judgement standard	
5	G/OR	Torque converter clutch solenoid valve	When A/T performs lock-up.	8 - 15V	GI
			When A/T does not perform lock-up.	1V or less	MA
6	L/W	Shift solenoid valve A	When shift solenoid valve A operates. (When driving in "D <sub>1</sub> " or "D <sub>4</sub> ".)	Battery voltage	EM
			When shift solenoid valve A does not operate. (When driving in "D <sub>2</sub> " or "D <sub>3</sub> ".)	1V or less	LC
7	L/R	Shift solenoid valve B	When shift solenoid valve B operates. (When driving in "D <sub>1</sub> " or "D <sub>2</sub> ".)	Battery voltage	EC
			When shift solenoid valve B does not operate. (When driving in "D <sub>3</sub> " or "D <sub>4</sub> ".)	1V or less	FE
8	L/B	Overrun clutch solenoid valve	When overrun clutch solenoid valve operates.	Battery voltage	CL
			When overrun clutch solenoid valve does not operate.	1V or less	MT
9	OR	Power source	Same as No. 4		AT
10	—	—	—	—	TF
11	—	—	—	—	
12	—	—	—	—	PD
13	—	—	—	—	FA
			—	—	RA
14	OR	Closed throttle position switch (in throttle position switch)	When releasing accelerator pedal after warming up engine.	Battery voltage	BR
			When depressing accelerator pedal after warming up engine.	1V or less	ST
15	B	Ground	—	—	RS
16	G/W	PNP switch "1" position	When setting selector lever to "1" position.	Battery voltage	BT
			When setting selector lever to other positions.	1V or less	HA
17	L	PNP switch "2" position	When setting selector lever to "2" position.	Battery voltage	EL
			When setting selector lever to other positions.	1V or less	
18	G/R	PNP switch "D" position	When setting selector lever to "D" position.	Battery voltage	
			When setting selector lever to other positions.	1V or less	









# TROUBLE DIAGNOSIS — GENERAL DESCRIPTION

TCM Terminals and Reference Value (Cont'd)

Terminal No.	Wire color	Item	Condition		Judgement standard
19	Y	PNP switch “N” or “P” position		When setting selector lever to “N” or “P” position.	Battery voltage
				When setting selector lever to other positions.	1V or less
20	R/B	PNP switch “R” position		When setting selector lever to “R” position.	Battery voltage
				When setting selector lever to other positions.	1V or less
21	L/Y	Wide open throttle position switch (in throttle position switch)		When depressing accelerator pedal more than half-way after warming up engine.	Battery voltage
				When releasing accelerator pedal after warming up engine.	1V or less
22	—	—	—	—	
23	R/G	Power source (Memory back-up)		When turning ignition switch to “OFF”.	Battery voltage
				When turning ignition switch to “ON”.	Battery voltage
24	W	Engine speed signal		When engine runs at idle speed.	Approximately 0.9V
				When engine runs at 2,500 rpm.	Approximately 2.0V
25	W	Revolution sensor (Measure in AC range)		When vehicle cruises at 30 km/h (19 MPH).	1V or more Voltage rises gradually in response to vehicle speed.
				When vehicle parks.	0V
26	—	—	—	—	
27	W/L	Vehicle speed sensor		When moving vehicle at 2 to 3 km/h (1 to 2 MPH) for 1 m (3 ft) or more.	Voltage varies between less than 1V and more than 4.5V
28	—	—		—	—
29	—	—		—	—
30	—	—		—	—
31	G/B	Throttle position sensor (Power source)		—	4.5 - 5.5V
32	—	—	—	—	

# TROUBLE DIAGNOSIS — GENERAL DESCRIPTION

TCM Terminals and Reference Value (Cont'd)

Terminal No.	Wire color	Item	Condition		Judgement standard	
33	R	A/T fluid temperature sensor	 	When ATF temperature is 20°C (68°F).	Approximately 1.5V	GI
				When ATF temperature is 80°C (176°F).	Approximately 0.5V	MA
34	W	Throttle position sensor		When depressing accelerator pedal slowly after warming up engine. (Voltage rises gradually in response to throttle position.)	Fully-closed throttle: Approximately 0.5V Fully-open throttle: Approximately 4V	EM
						LC
35	B	Throttle position sensor (Ground)			—	EC
36	L/OR	A/T mode switch ("POWER")		When setting A/T mode switch in "POWER" position.	Battery voltage	FE
			When setting A/T mode switch in other positions.	1V or less	CL	
37	—	—	—	—	—	MT
				—	—	
38	—	—	 	—	—	AT
39	G/Y	Overdrive control switch		When setting overdrive control switch in "ON" position.	Battery voltage	TF
				When setting overdrive control switch in "OFF" position.	1V or less	
40	—	—	—	—	—	PD
				—	—	
41	BR/W	Kickdown switch	 	When releasing accelerator pedal after warming up engine.	3 - 8V	FA
				When depressing accelerator pedal fully after warming up engine.	1V or less	RA
42	—	—		—	—	BR
43	—	—		—	—	
44	—	—		—	—	ST
45	—	—		—	—	
46	—	—		—	—	RS
47	—	—		—	—	
48	B	Ground		—	—	BT

HA

EL

IDX

# TROUBLE DIAGNOSIS FOR POWER SUPPLY

Wiring Diagram — AT — MAIN

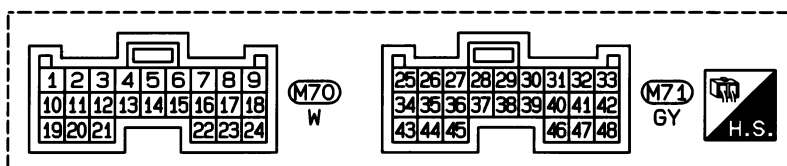
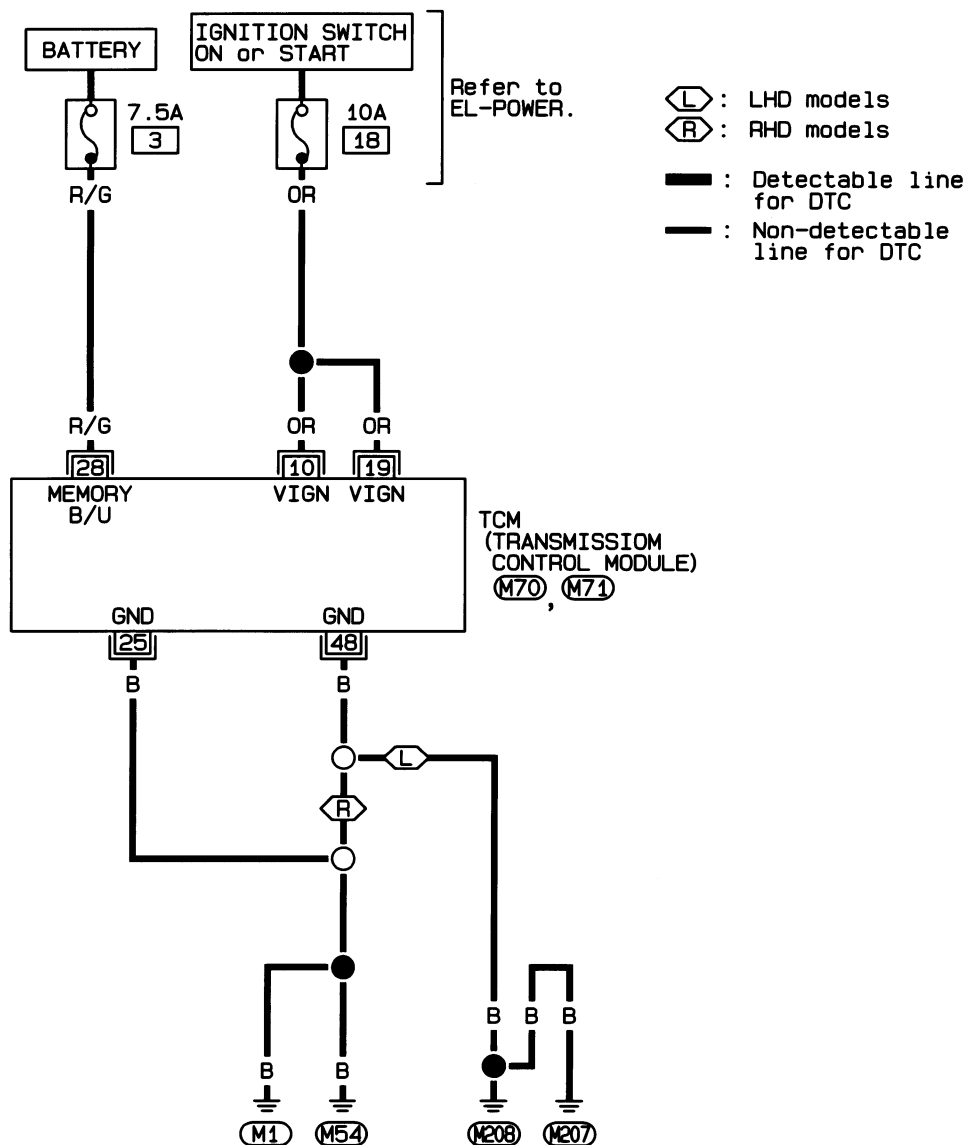
## Wiring Diagram — AT — MAIN

KA24DE ENGINE MODEL

NEAT0185

NEAT0185S02

AT-MAIN-01



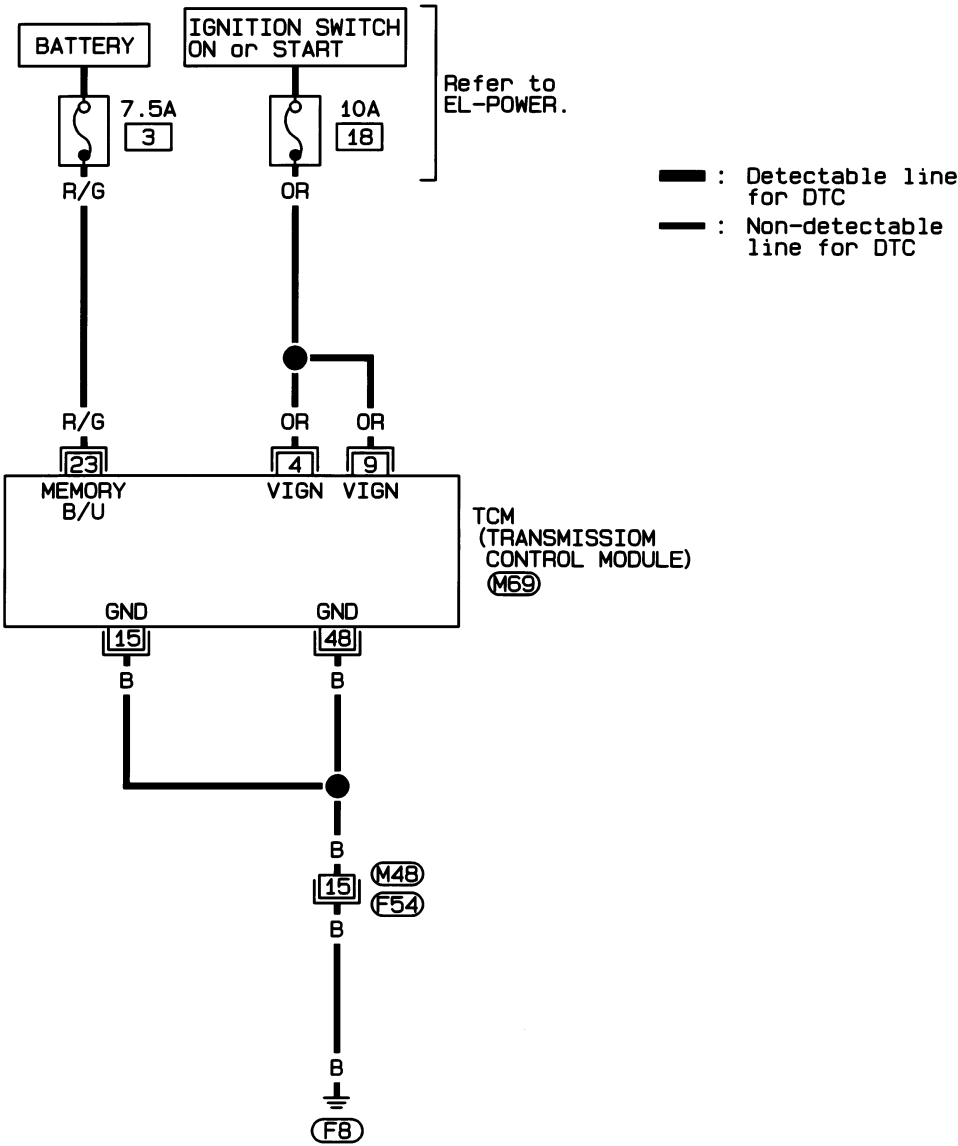
TROUBLE DIAGNOSIS FOR POWER SUPPLY


Wiring Diagram — AT — MAIN (Cont'd)

VG30E ENGINE MODEL

NEAT0185S03

AT-MAIN-02



1	2	3	4	5					6	7	8	9	10	(F54)
11	12	13	14	15	16	17	18	19	20	21	22	23	24	W

1	2	3	4	9	10	11	12	13	14	15	23	24	25	26	27	28	29	30	31	32	33	34	35	(M69)	W	H.S.
5	6	7	8	16	17	18	19	20	21	22	36	37	38	39	40	41	42	43	44	45	46	47	48			

# TROUBLE DIAGNOSIS FOR VHCL SPEED SEN-A/T (REVOLUTION SENSOR)

Wiring Diagram — AT — VSSA/T

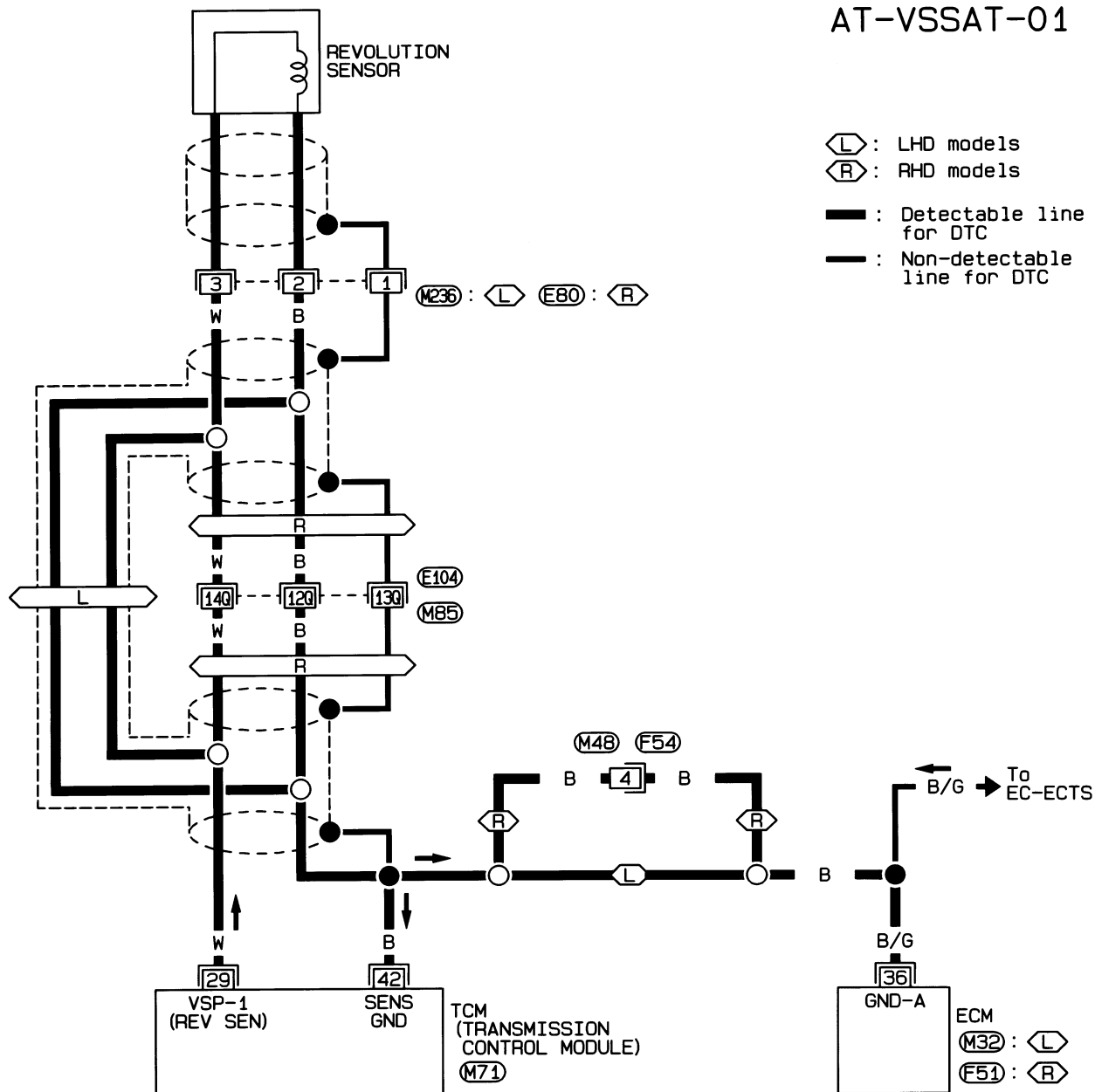
## Wiring Diagram — AT — VSSA/T

KA24DE ENGINE MODEL

NEAT0188

NEAT0188S01

### AT-VSSAT-01



1 2 3 M236 E80  
GY GY

1 2 3 4 5 6 7 8 9 10 F54  
11 12 13 14 15 16 17 18 19 20 21 22 23 24 W

25 26 27 28 29 30 31 32 33 M71  
34 35 36 37 38 39 40 41 42 GY  
43 44 45 46 47 48 H.S.

1 2 3 4 9 10 11 12 13 14 15 M32 F51  
5 6 7 8 16 17 18 19 20 21 22 W W  
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 H.S.

Refer to last page (Foldout page).

M85 E104

HAT055



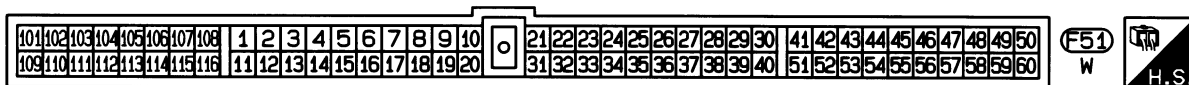
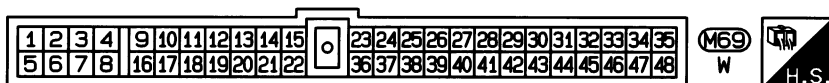
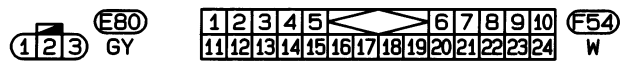
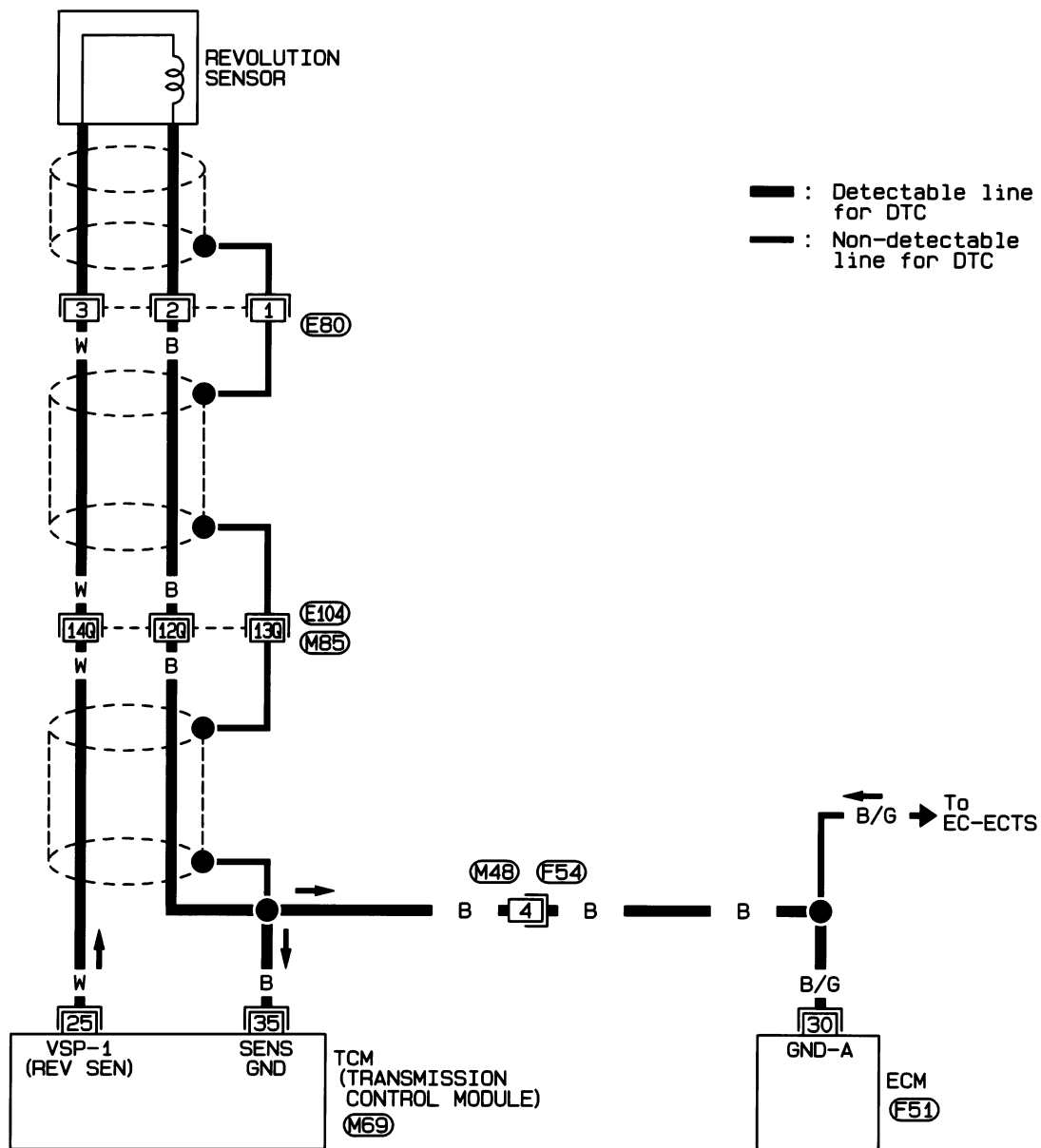
# TROUBLE DIAGNOSIS FOR VHCL SPEED SEN-A/T (REVOLUTION SENSOR)

Wiring Diagram — AT — VSSA/T (Cont'd)

## VG30E ENGINE MODEL

NEAT0188S02

### AT-VSSAT-02



Refer to last page (Foldout page).

(M85), (E104)



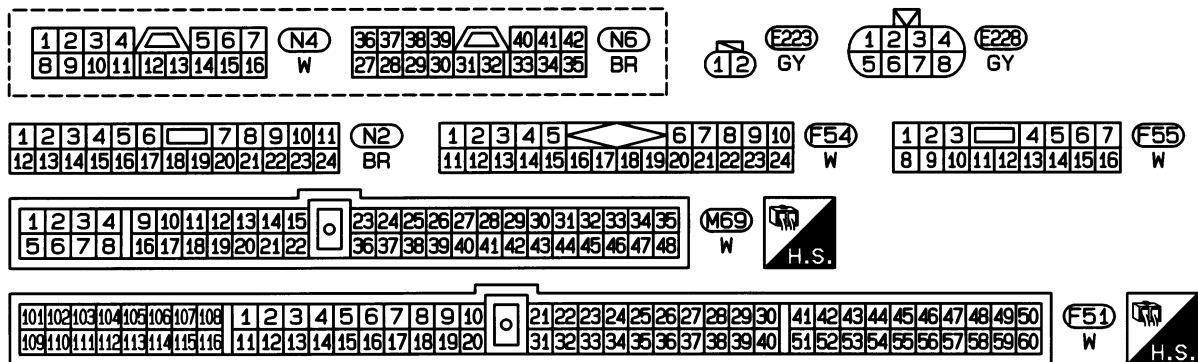
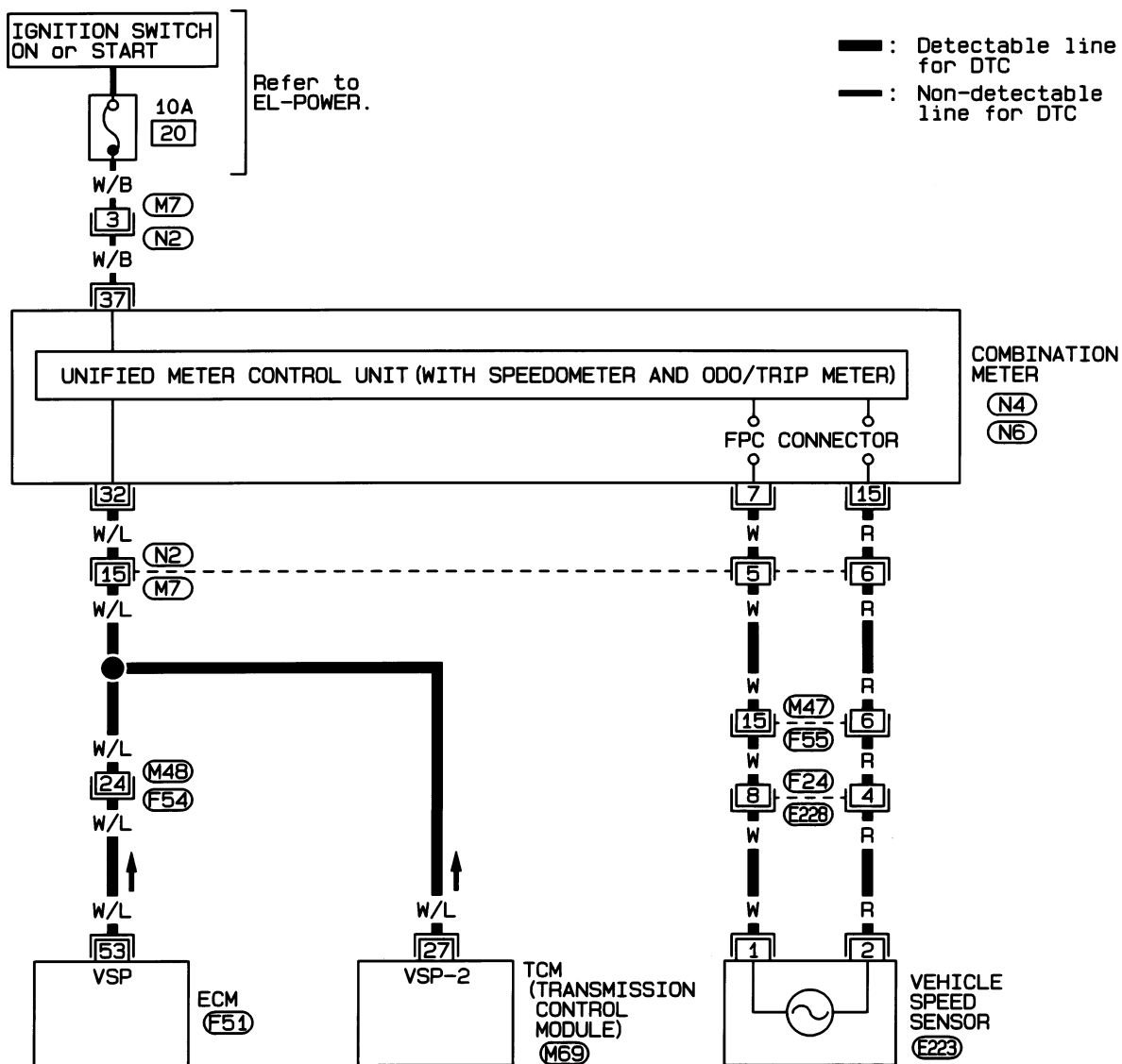
# TROUBLE DIAGNOSIS FOR VHCL SPEED SEN-MTR

Wiring Diagram — AT — VSSMTR (Cont'd)

VG30E ENGINE MODEL

NEAT0218S02

AT-VSSMTR-02



# TROUBLE DIAGNOSIS FOR THROTTLE POSI SEN

Wiring Diagram — AT — TPS

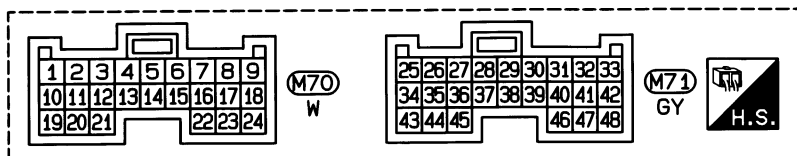
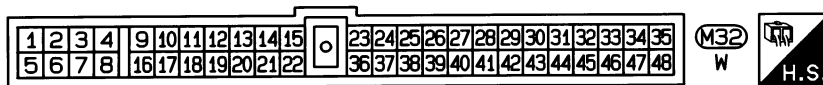
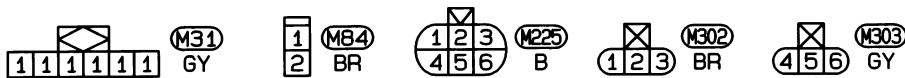
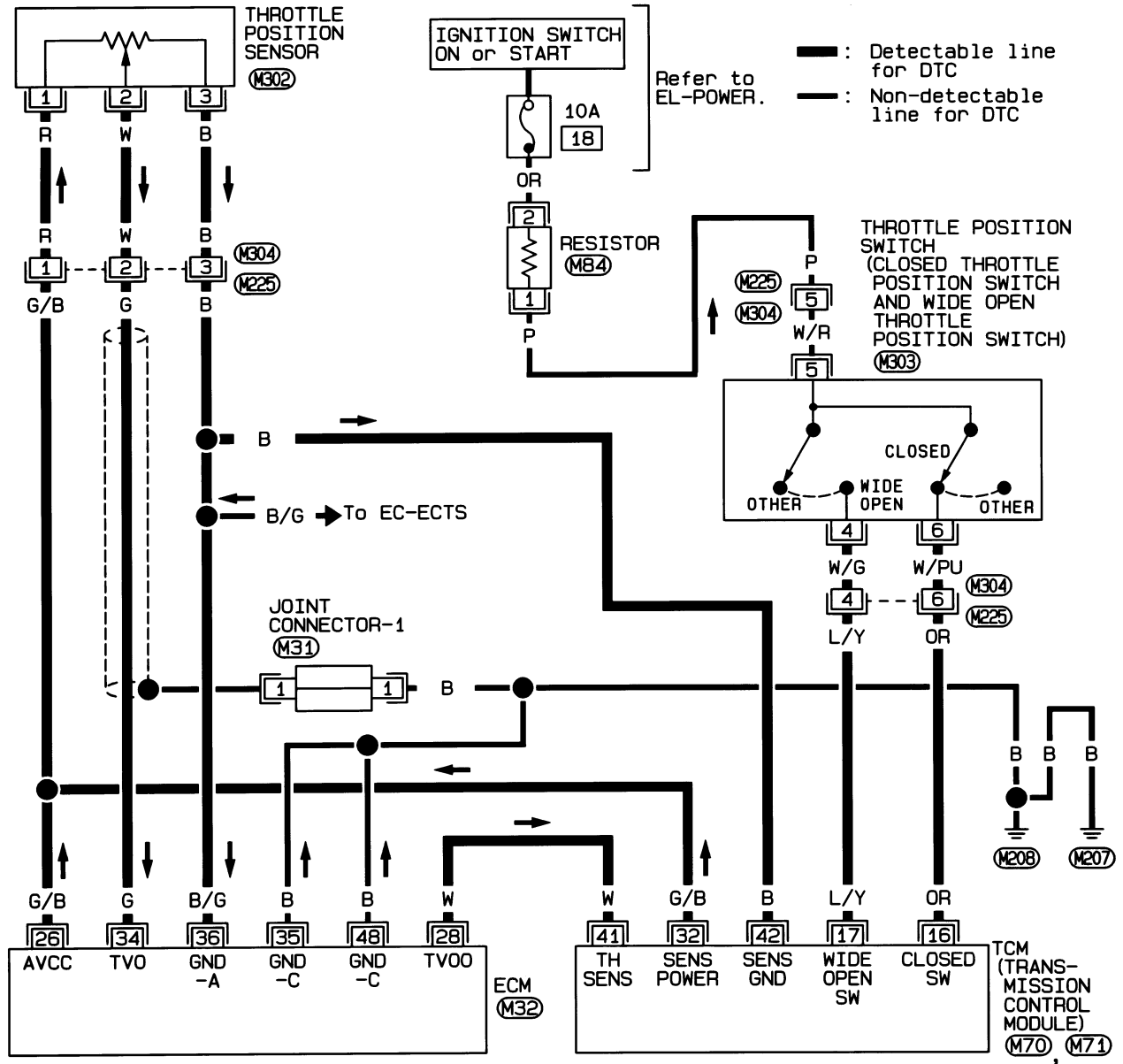
## Wiring Diagram — AT — TPS

LHD MODEL WITH KA24DE ENGINE

NEAT0221

NEAT0221S03

AT-TPS-01



HAT057

Wiring Diagram — AT — TPS (Cont'd)

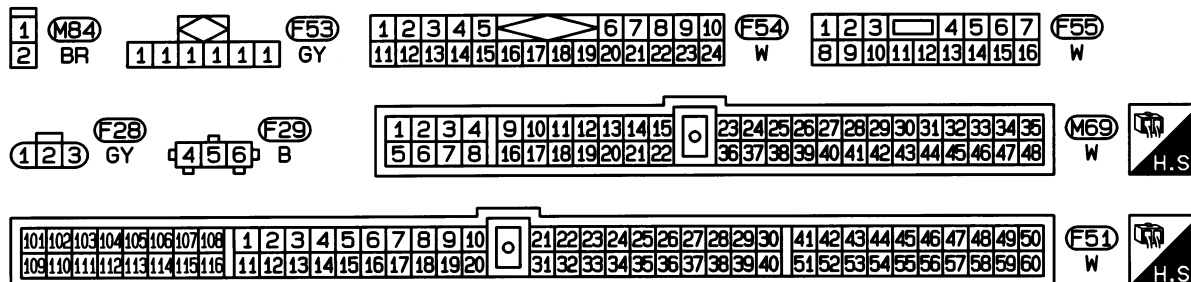
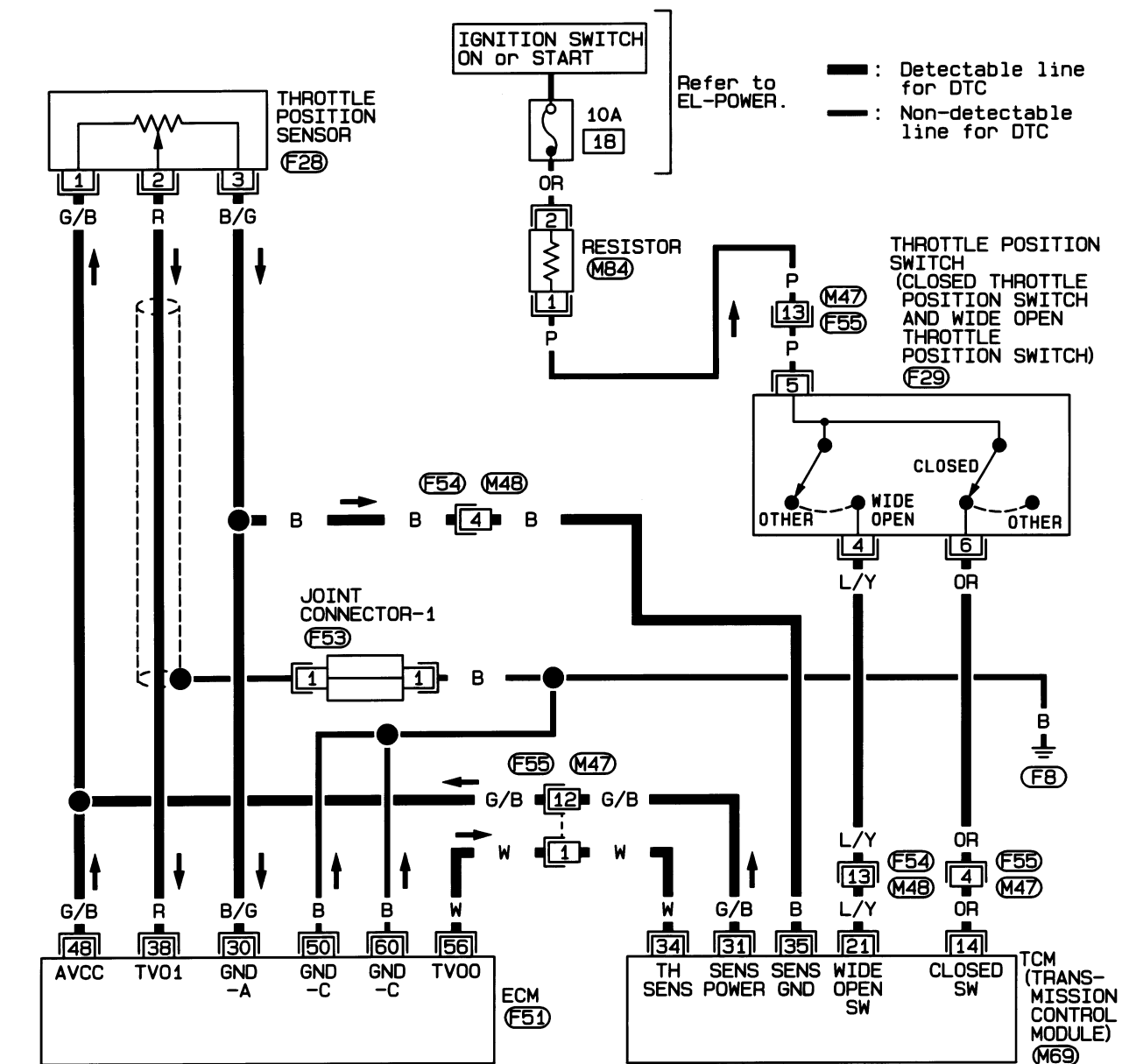
NEAT0221.S04

## AT-TPS-02



NEAT0221S05

AT-TPS-03



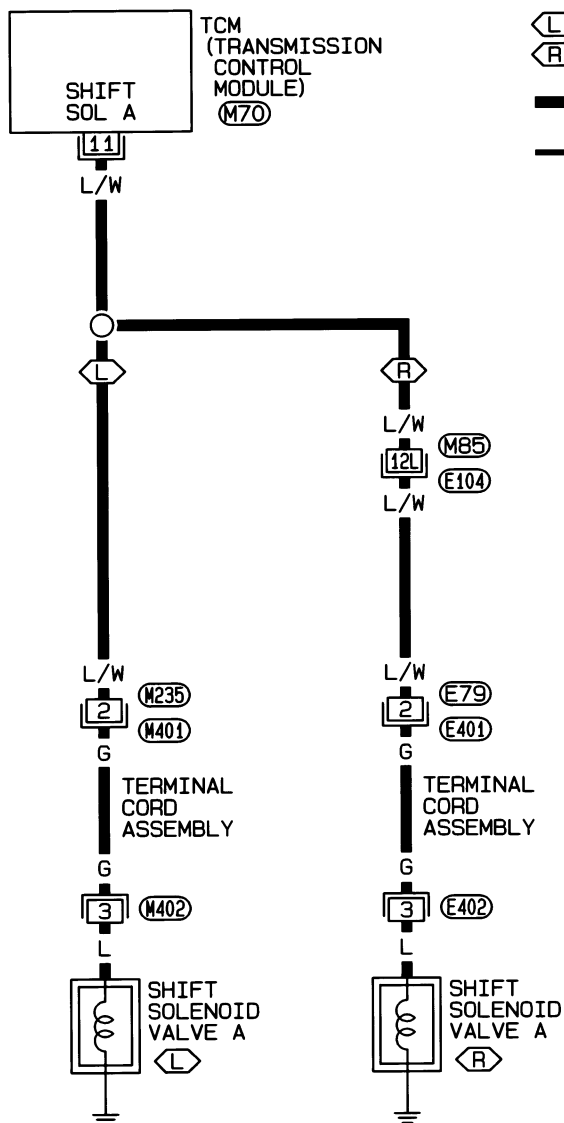
# TROUBLE DIAGNOSIS FOR SHIFT SOLENOID/V A

Wiring Diagram — AT — SSV/A

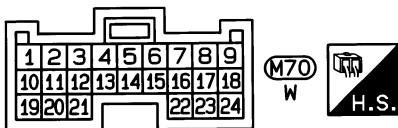
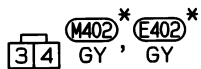
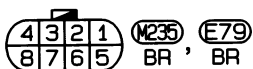
KA24DE ENGINE MODEL

NEAT0225  
NEAT0225S01

AT-SSV/A-01



(L) : LHD models  
(R) : RHD models  
— : Detectable line  
for DTC  
— : Non-detectable  
line for DTC



Refer to last page  
(Foldout page) .

(M85) , (E104)

\*: This connector is not shown in "HARNESS LAYOUT", EL section.

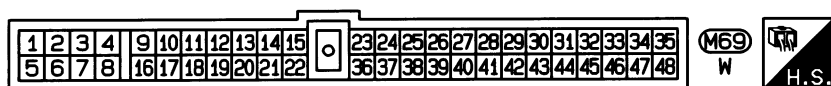
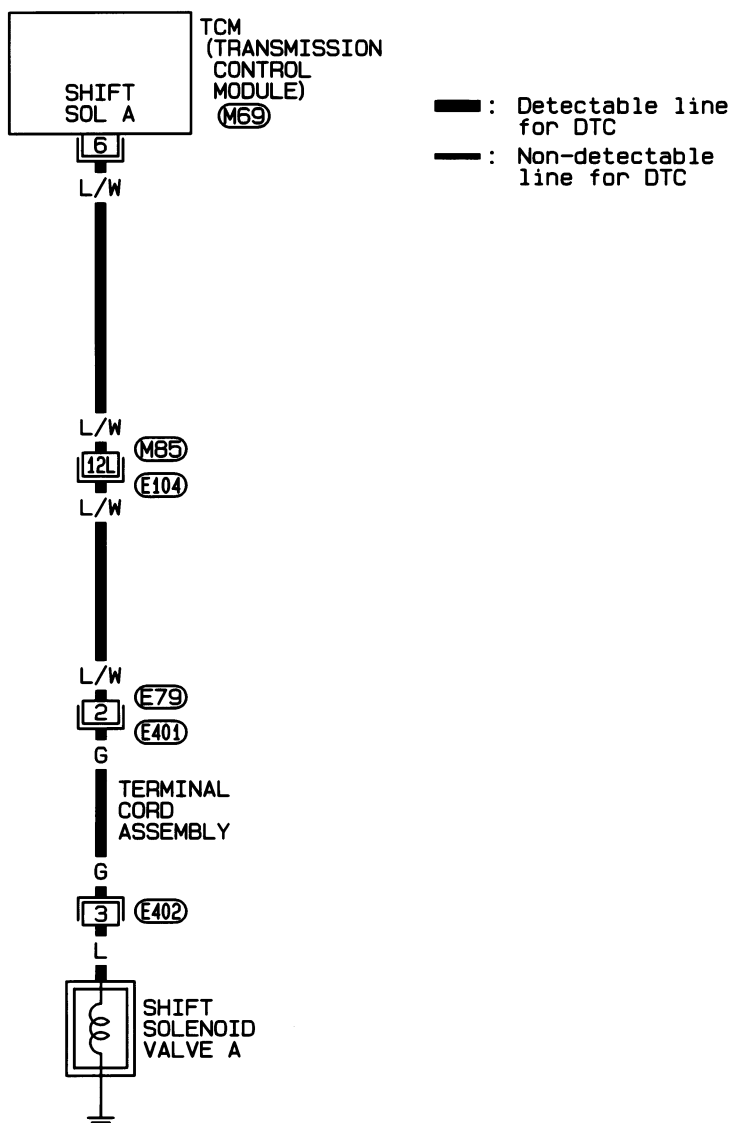
# TROUBLE DIAGNOSIS FOR SHIFT SOLENOID/V A

Wiring Diagram — AT — SSV/A (Cont'd)

## VG30E ENGINE MODEL

NEAT0225S02

AT-SSV/A-02



Refer to last page (Foldout page) .

(M85) , (E104)

\* : This connector is not shown in "HARNESS LAYOUT", EL section.

HAT112



# TROUBLE DIAGNOSIS FOR SHIFT SOLENOID/V B

Wiring Diagram — AT — SSV/B

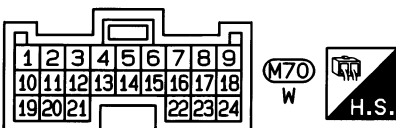
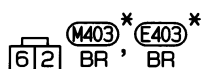
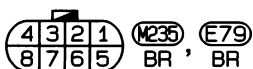
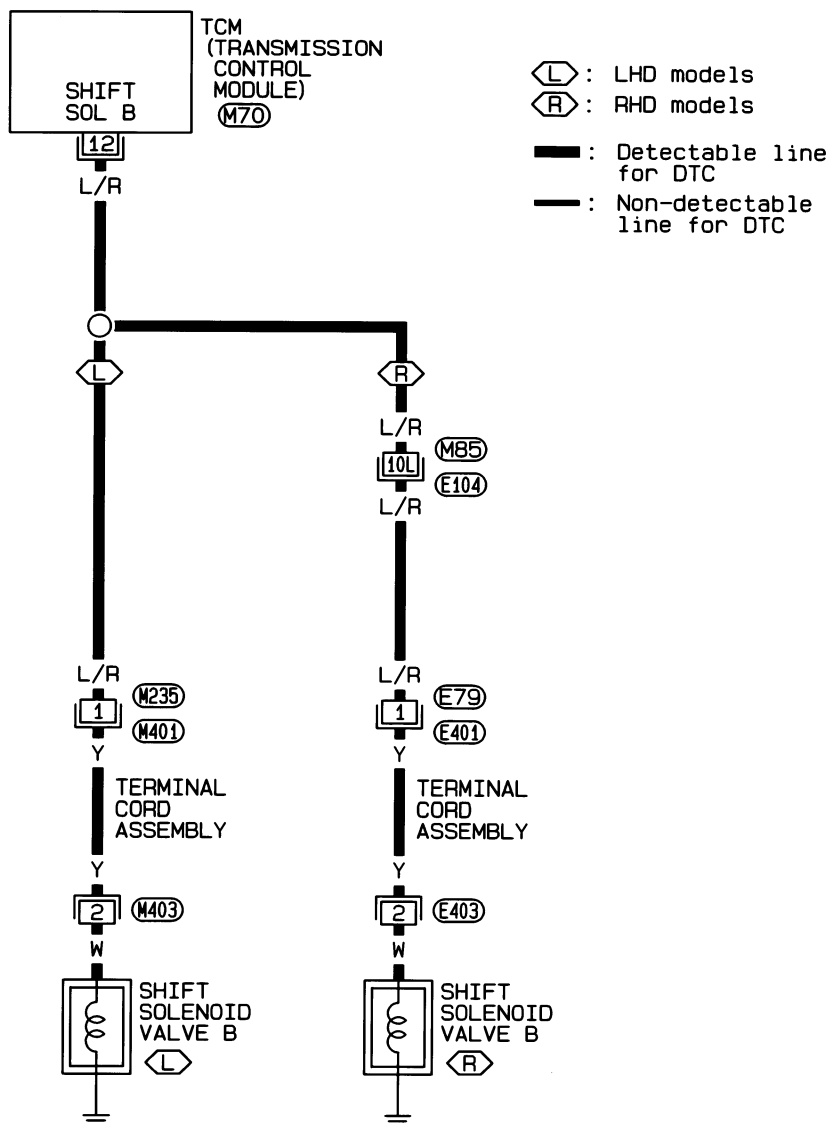
KA24DE ENGINE MODEL

## Wiring Diagram — AT — SSV/B

NEAT0229

NEAT0229S01

AT-SSV/B-01



\*: This connector is not shown in "HARNESS LAYOUT", EL section.

Refer to last page (Foldout page).

(M85) , (E104)

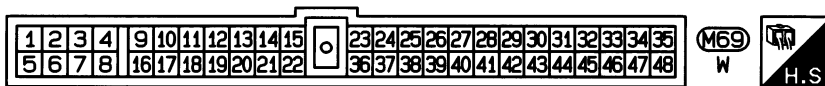
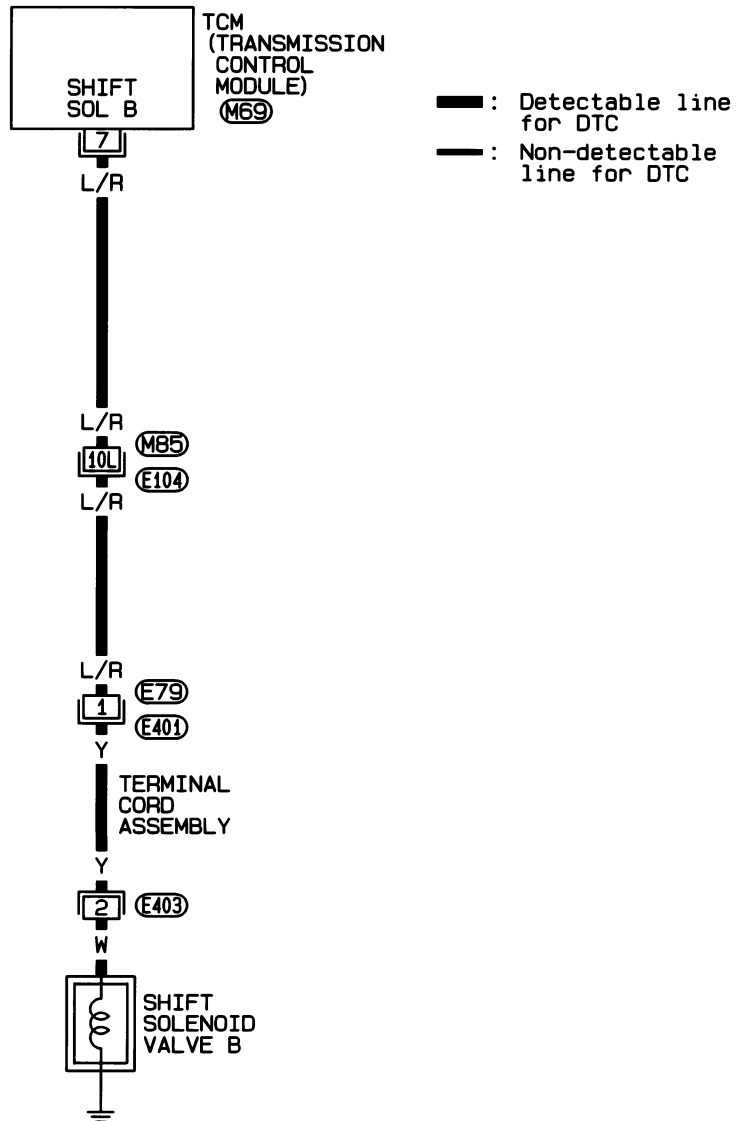
# TROUBLE DIAGNOSIS FOR SHIFT SOLENOID/V B

Wiring Diagram — AT — SSV/B (Cont'd)

## VG30E ENGINE MODEL

NEAT0229S02

### AT-SSV/B-02



Refer to last page  
(Foldout page).

(M85), (E104)

\* : This connector is not shown in "HARNESS LAYOUT", EL section.

HAT113

# TROUBLE DIAGNOSIS FOR OVERRUN CLUTCH S/V

Wiring Diagram — AT — OVRCSV

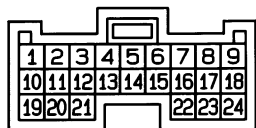
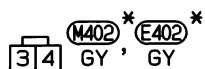
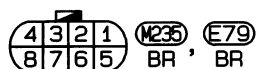
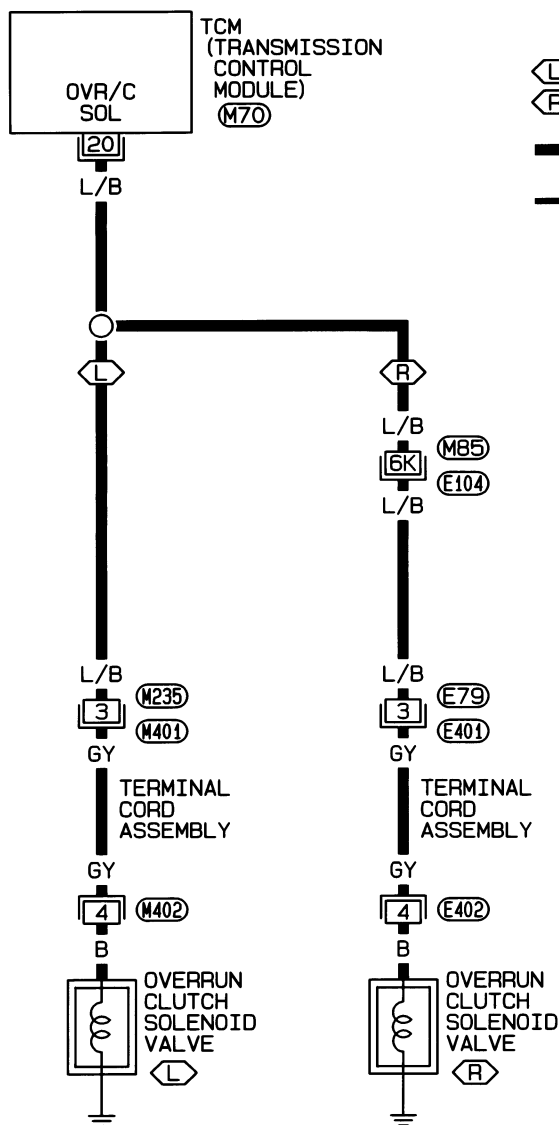
KA24DE ENGINE MODEL

## Wiring Diagram — AT — OVRCSV

NEAT0233

NEAT0233S01

AT-OVRCSV-01



Refer to last page (Foldout page).

(M85), (E104)

\*: This connector is not shown in "HARNESS LAYOUT", EL section.

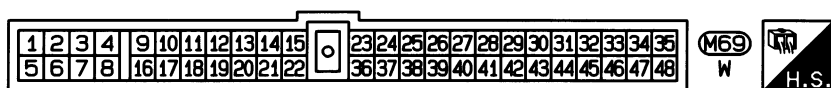
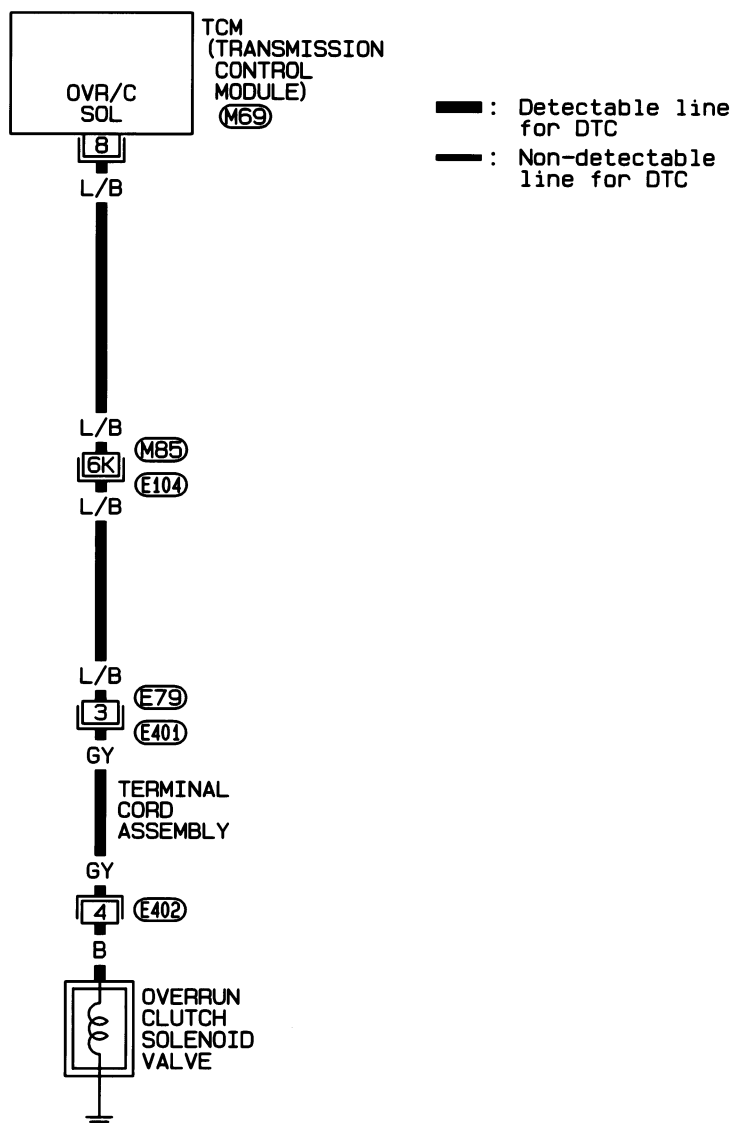
# TROUBLE DIAGNOSIS FOR OVERRUN CLUTCH S/V

Wiring Diagram — AT — OVRCSV (Cont'd)

## VG30E ENGINE MODEL

NEAT0233S02

### AT-OVRCSV-02



Refer to last page (Foldout page).

(M85), (E104)

\* : This connector is not shown in "HARNESS LAYOUT", EL section.

HAT114

# TROUBLE DIAGNOSIS FOR T/C CLUTCH SOL/V

Wiring Diagram — AT — TCV

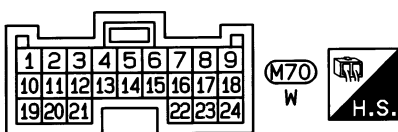
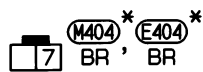
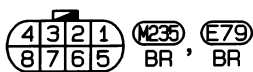
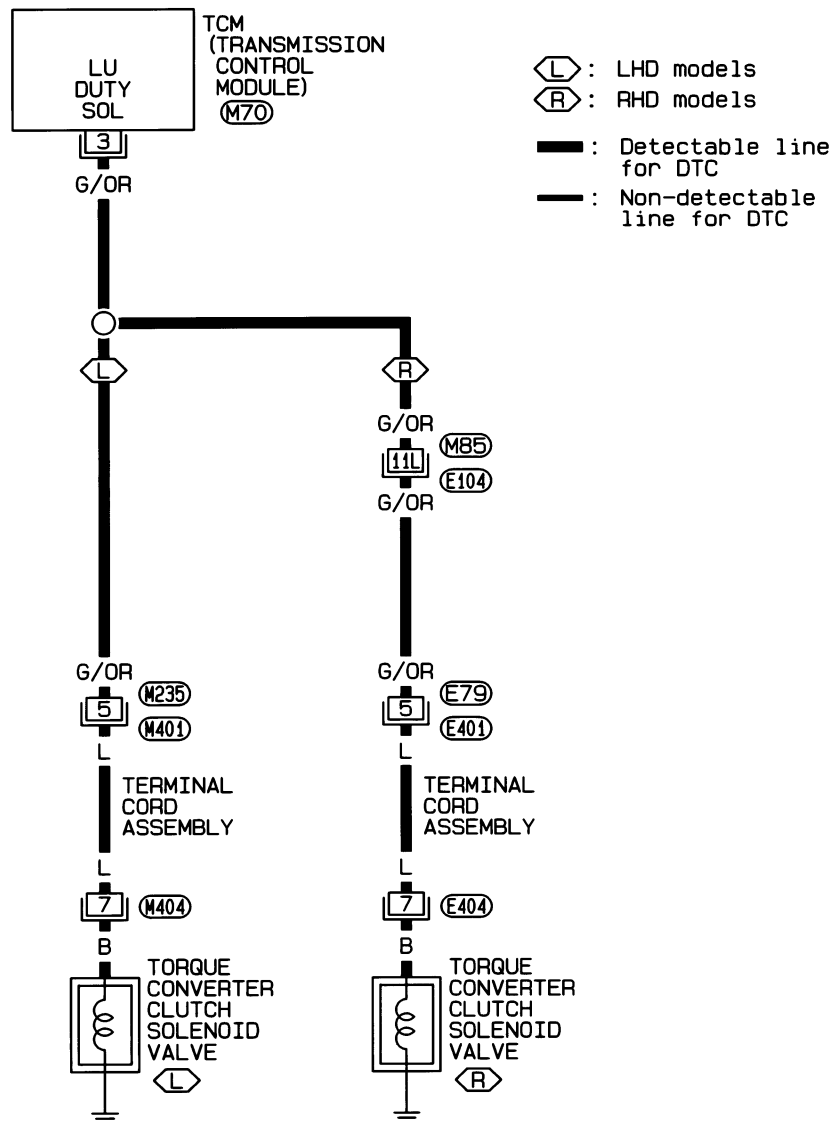
KA24DE ENGINE MODEL

## Wiring Diagram — AT — TCV

NEAT0237

NEAT0237S01

AT-TCV-01



\*: This connector is not shown in "HARNESS LAYOUT", EL section.

Refer to last page (Foldout page).

(M85), (E104)

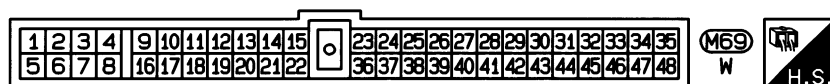
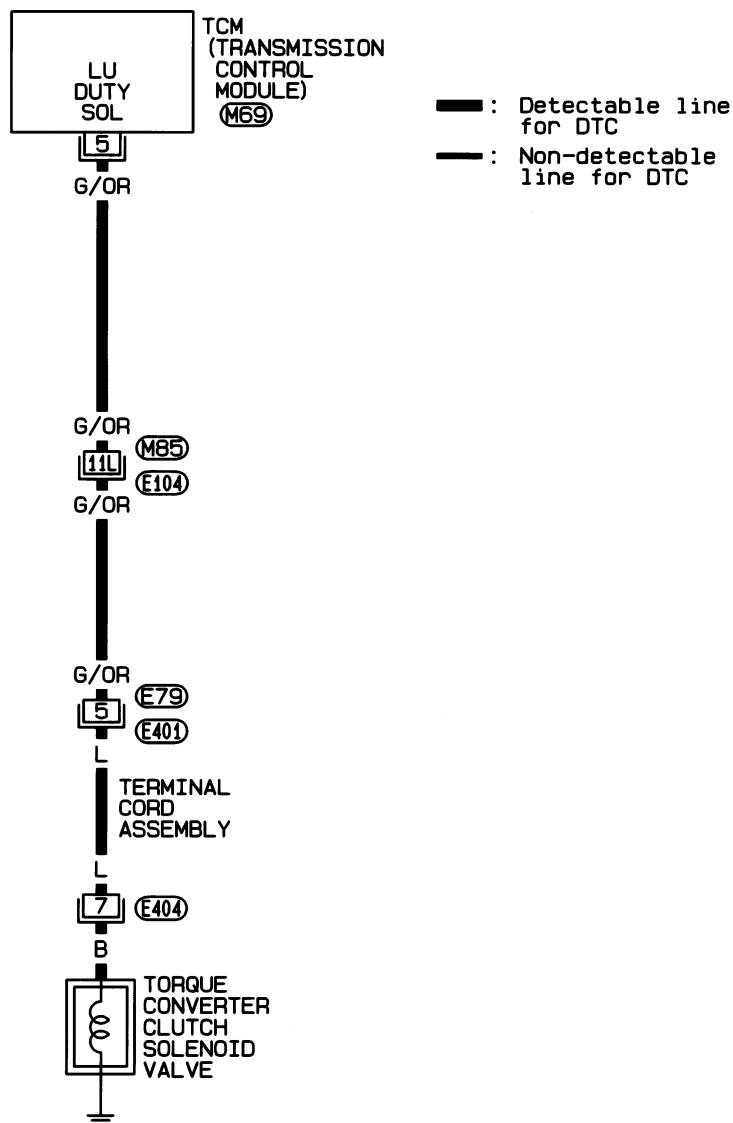
# TROUBLE DIAGNOSIS FOR T/C CLUTCH SOL/V

Wiring Diagram — AT — TCV (Cont'd)

VG30E ENGINE MODEL

NEAT0237S02

AT-TCV-02



Refer to last page (Foldout page).

(M85), (E104)

\* : This connector is not shown in "HARNESS LAYOUT", EL section.

HAT115

# TROUBLE DIAGNOSIS FOR BATT/FLUID TEMP SEN

Wiring Diagram — AT — BA/FTS

## Wiring Diagram — AT — BA/FTS

KA24DE ENGINE MODEL

NEAT0241  
NEAT0241S01

AT-BA/FTS-01

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

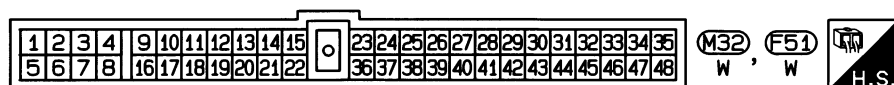
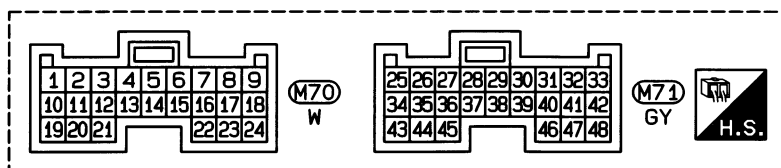
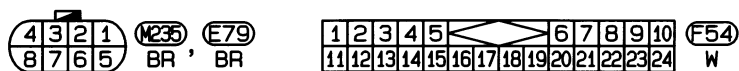
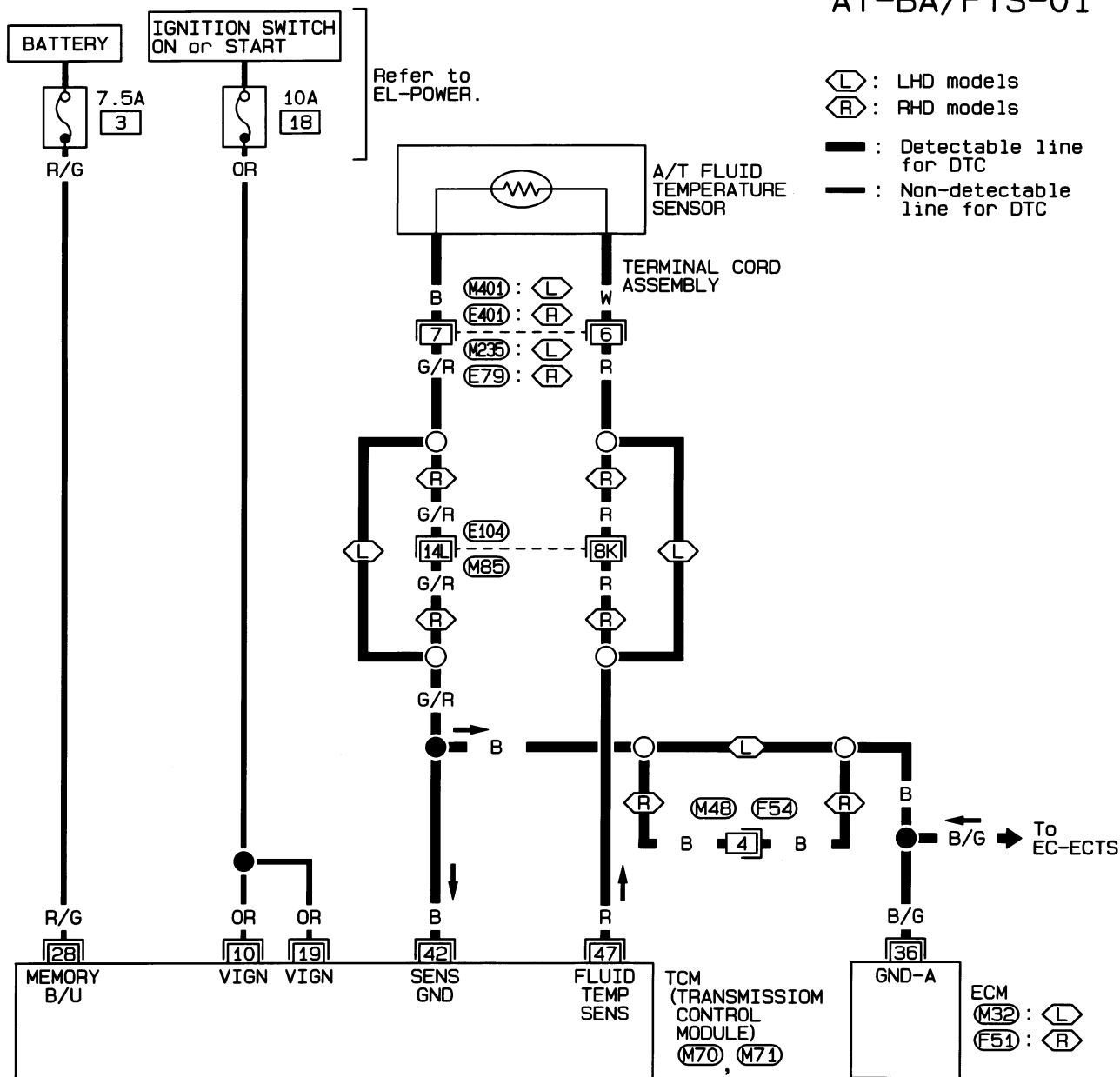
RS

BT

HA

EL

IDX



Refer to last page (Foldout page).

(M85, E104)

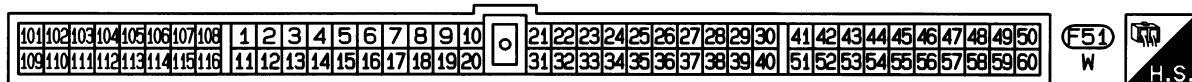
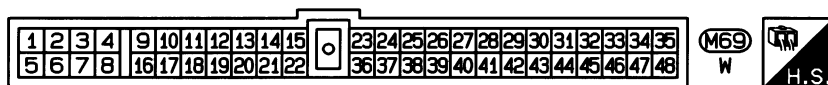
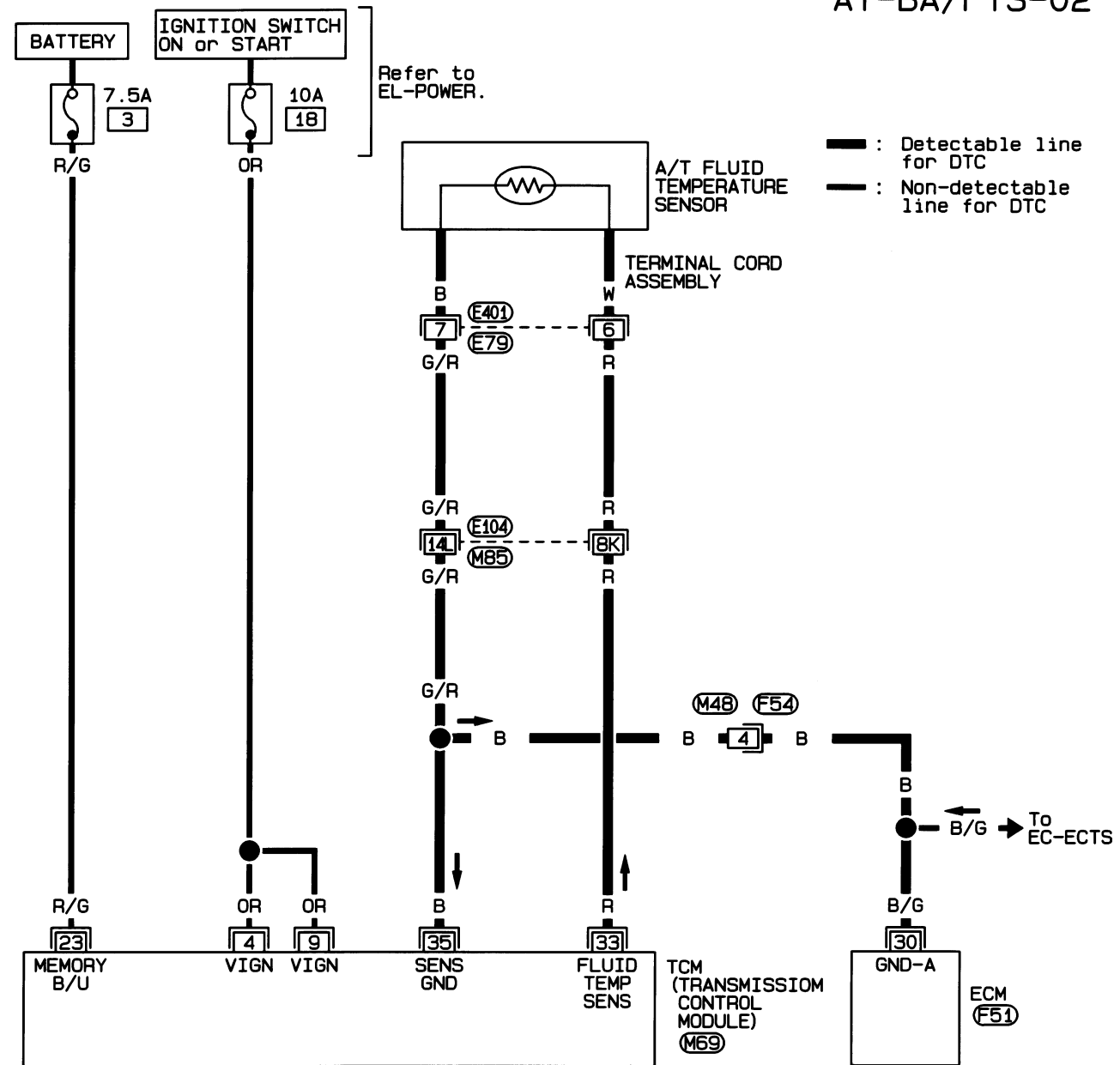
# TROUBLE DIAGNOSIS FOR BATT/FLUID TEMP SEN

Wiring Diagram — AT — BA/FTS (Cont'd)

## VG30E ENGINE MODEL

NEAT0241S02

### AT-BA/FTS-02



Refer to last page (Foldout page).

(M69), (E104)



TROUBLE DIAGNOSIS FOR ENGINE SPEED SIG

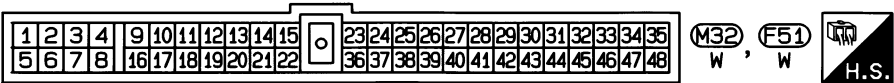
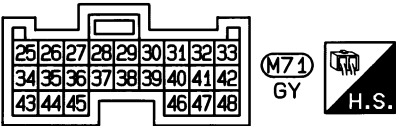
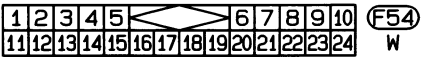
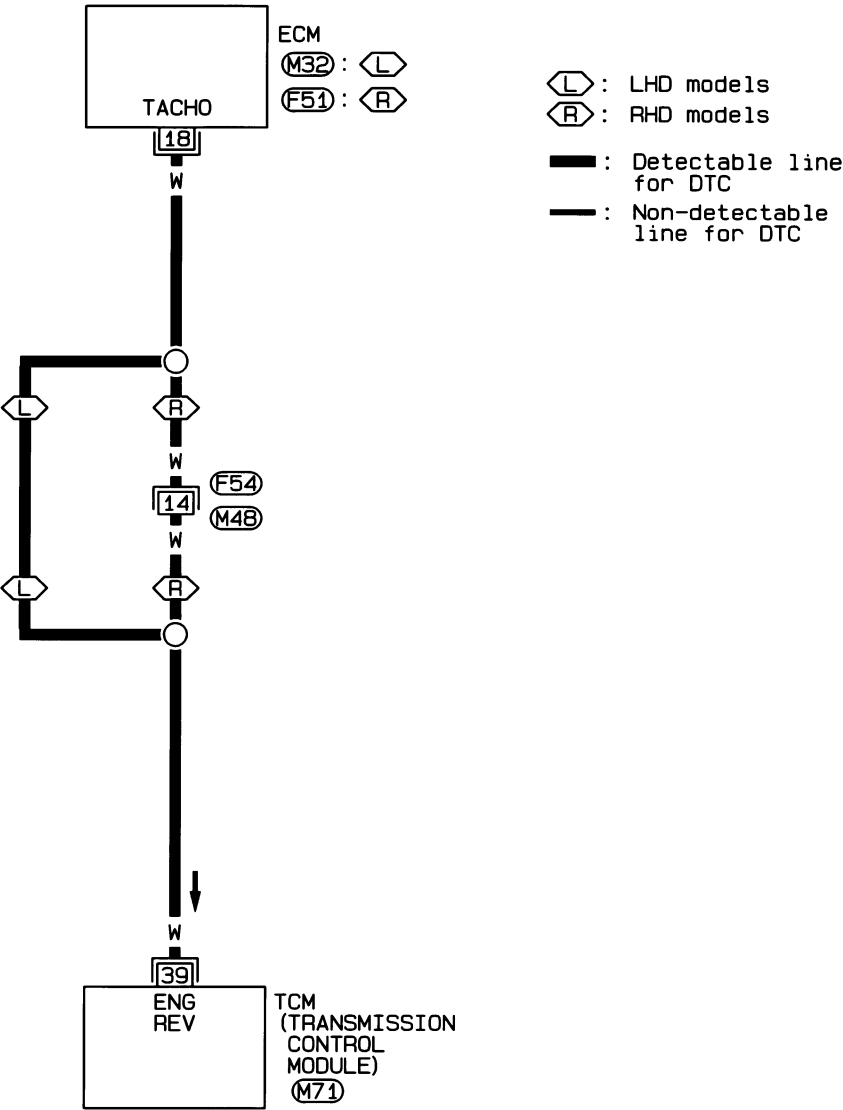
Wiring Diagram — AT — ENGSS

KA24DE ENGINE MODEL

Wiring Diagram — AT — ENGSS

NEAT0245  
NEAT0245S01

AT-ENGSS-01



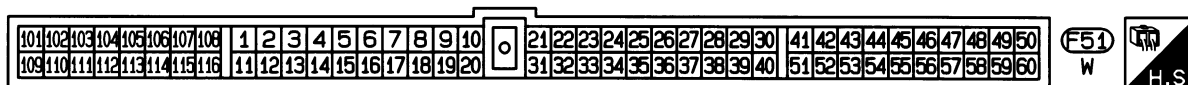
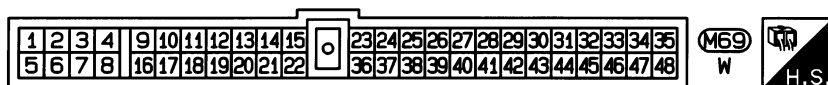
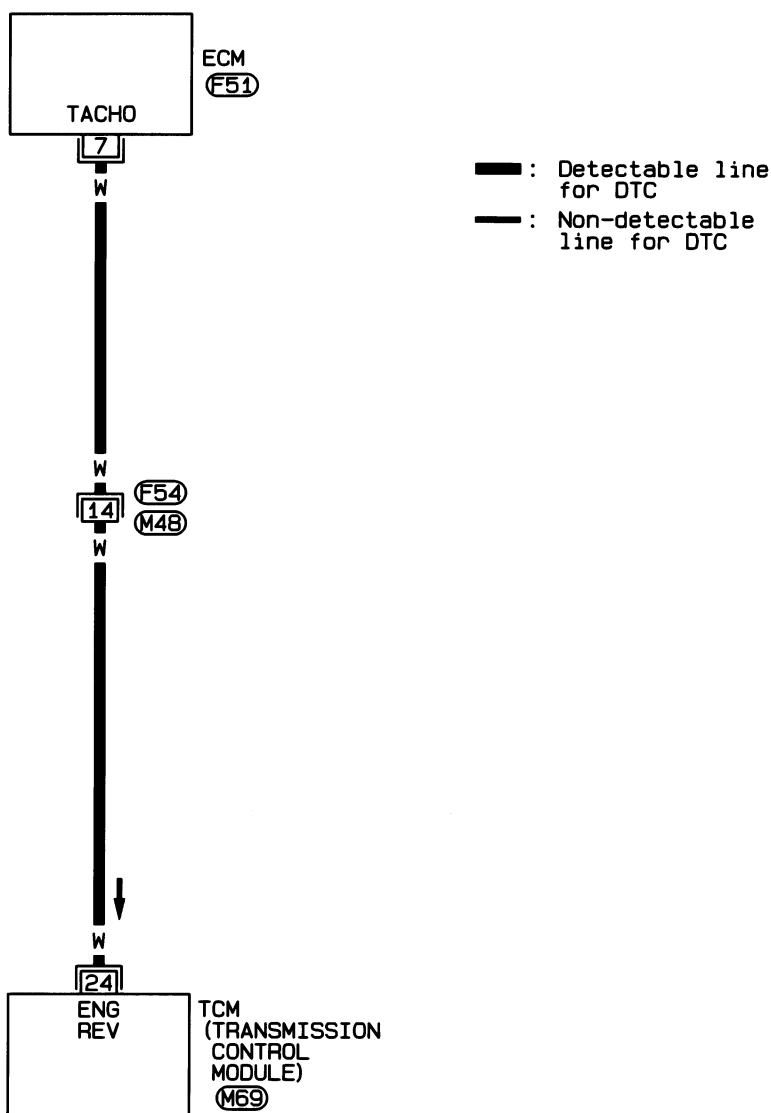
# TROUBLE DIAGNOSIS FOR ENGINE SPEED SIG

Wiring Diagram — AT — ENGSS (Cont'd)

## VG30E ENGINE MODEL

NEAT0245S02

## AT-ENGSS-02



HAT117

# TROUBLE DIAGNOSIS FOR LINE PRESSURE S/V

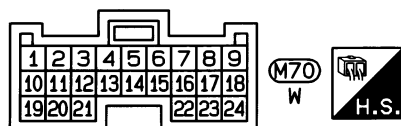
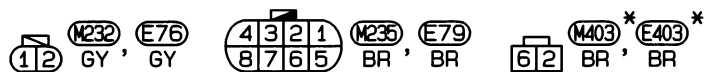
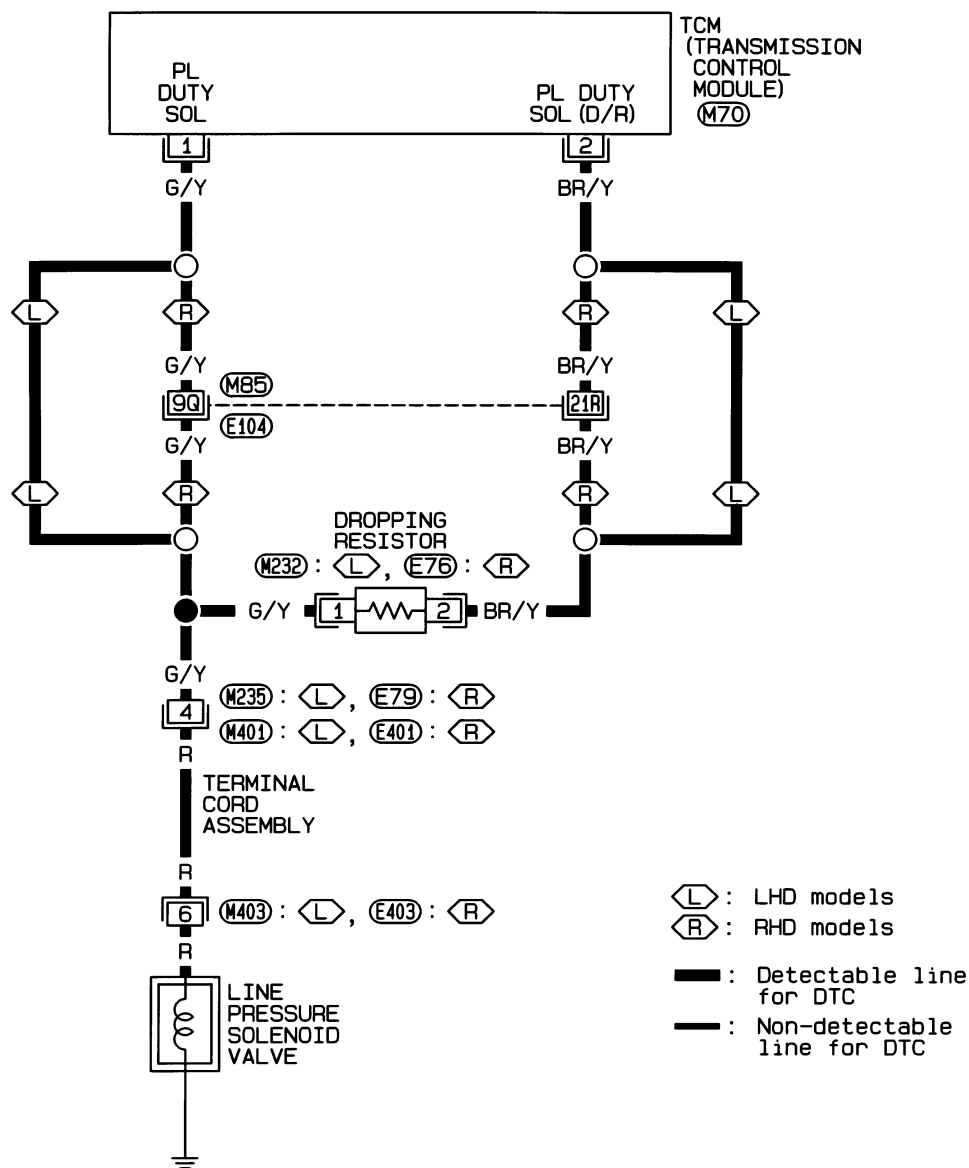
Wiring Diagram — AT — LPSV

## Wiring Diagram — AT — LPSV

KA24DE ENGINE MODEL

NEAT0248  
NEAT0248S01

AT-LPSV-01



\*: This connector is not shown in "HARNESS LAYOUT", EL section.

Refer to last page (Foldout page).

M85, E104

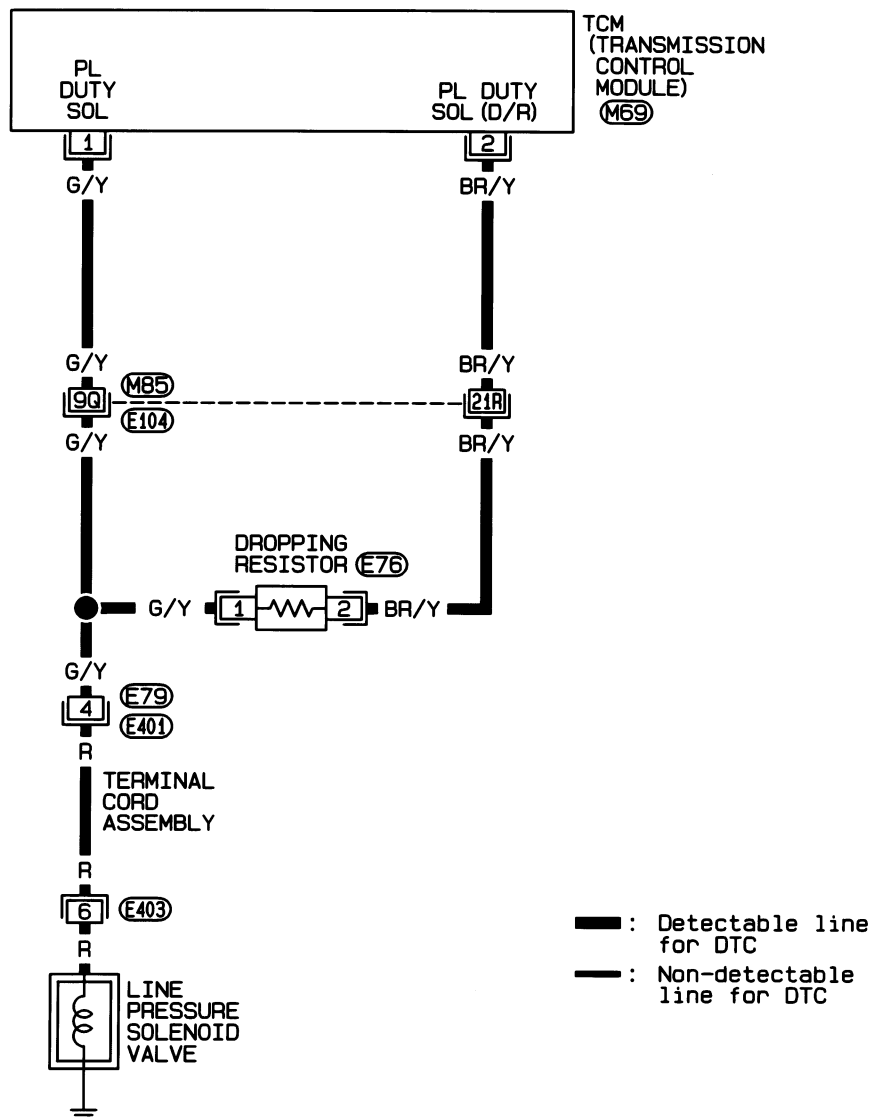
# TROUBLE DIAGNOSIS FOR LINE PRESSURE S/V

Wiring Diagram — AT — LPSV (Cont'd)

VG30E ENGINE MODEL

NEAT0248S02

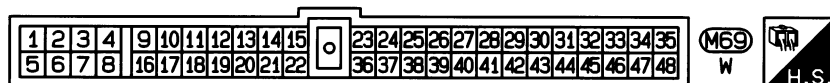
AT-LPSV-02



(E76) GY

(E79) BR

(E403)\* BR



Refer to last page (Foldout page).

(M85), (E104)

\* : This connector is not shown in "HARNESS LAYOUT", EL section.

HAT118

Wiring Diagram — AT — NONDTC

NEAT0203

NEAT0203S03

GI

MA



LC

EC

FE

CL

MT

**AT**

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX



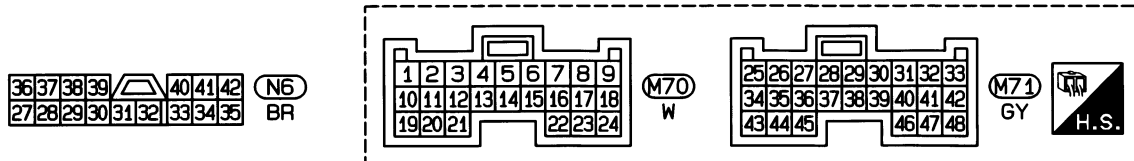
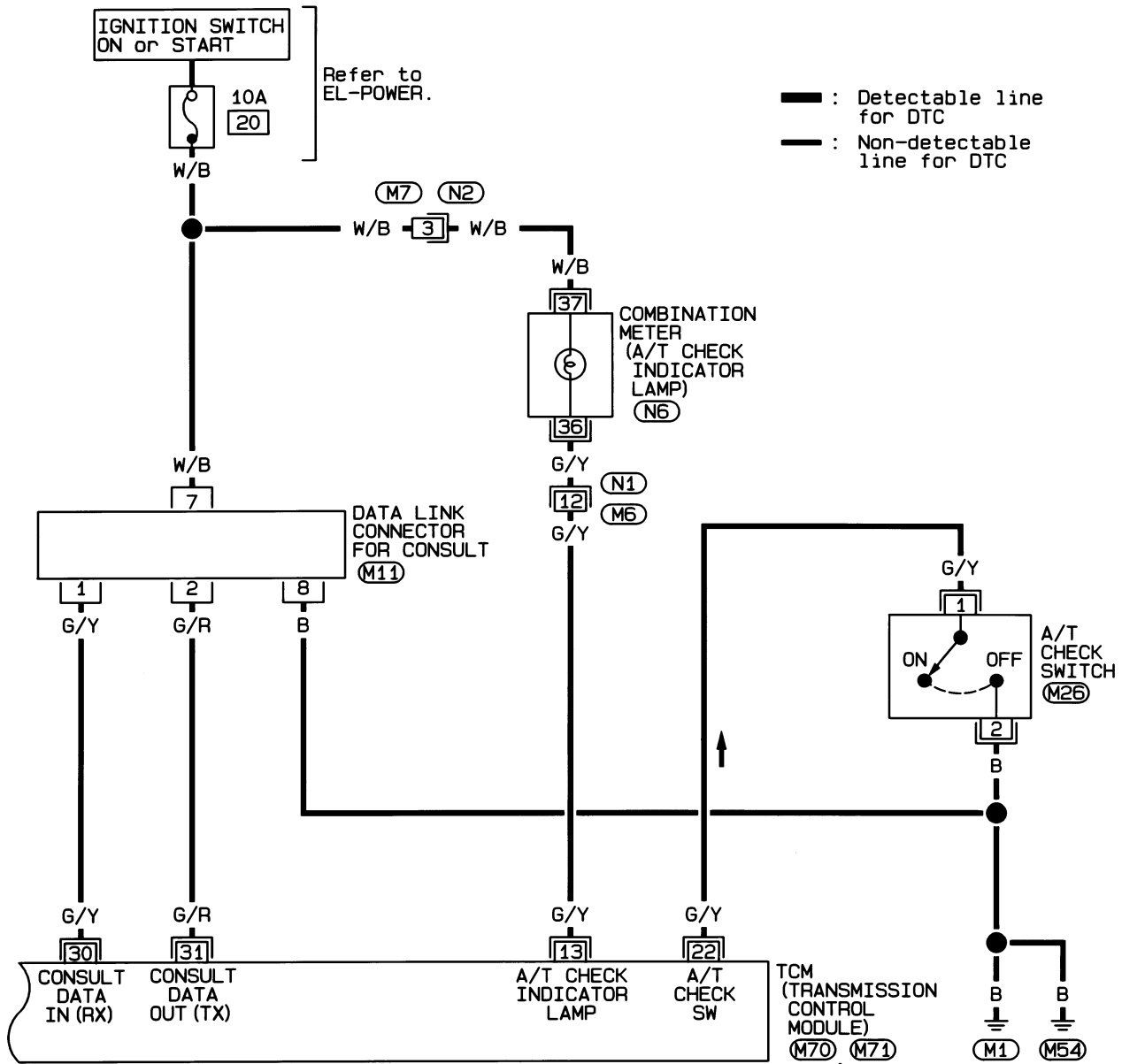
# TROUBLE DIAGNOSES FOR SYMPTOMS

Wiring Diagram — AT — NONDTC (Cont'd)

## KA24DE ENGINE MODEL

NEAT0203S04

### AT-NONDTC-02

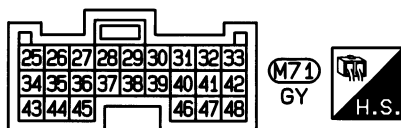
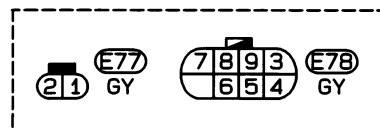
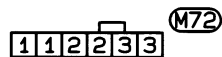
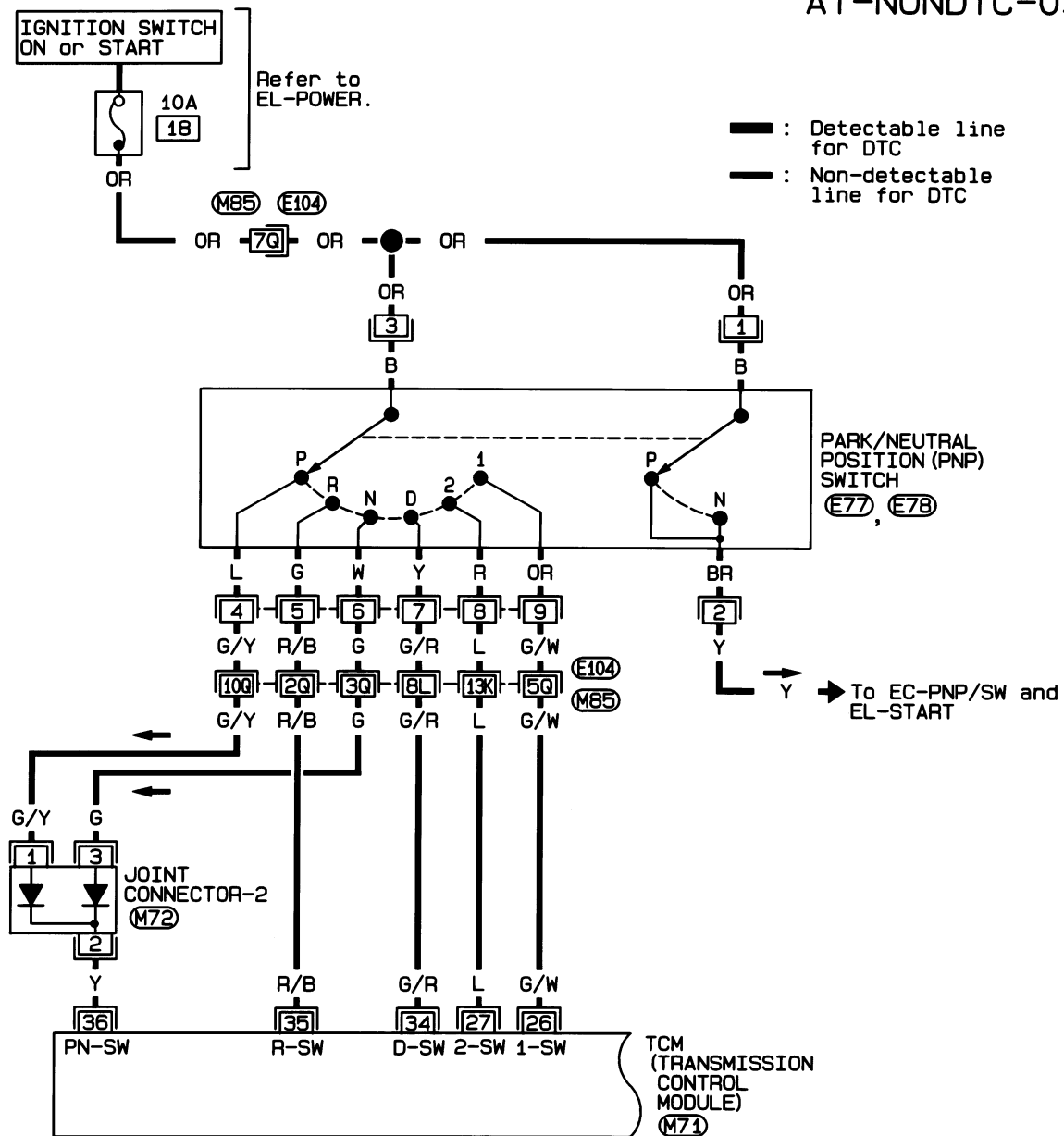


HAT066

NEAT0203S05

## RHD MODEL WITH KA24DE ENGINE

## AT-NONDTC-03



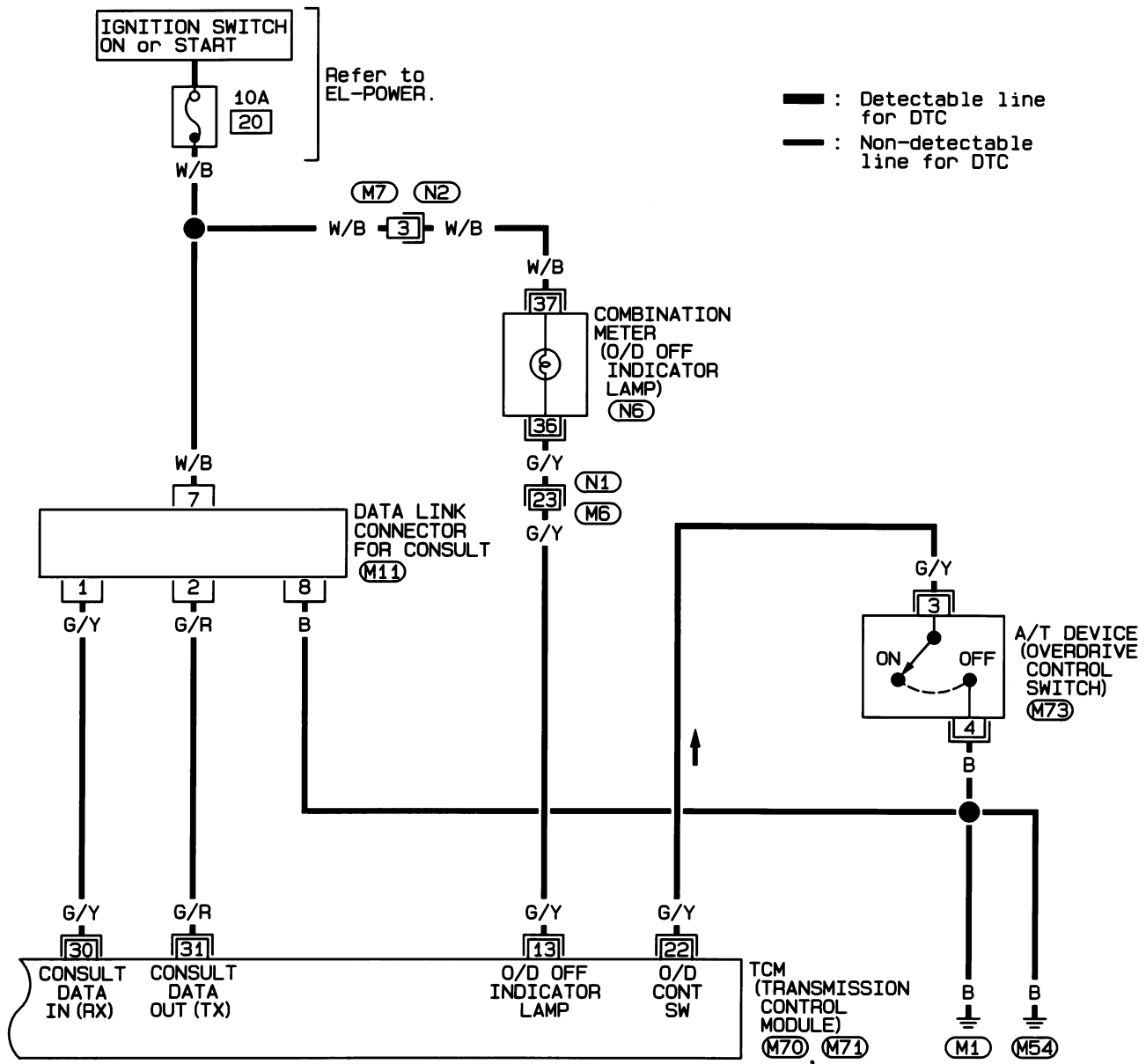
Refer to last page  
(Foldout page) .

(M85), (E104)

# TROUBLE DIAGNOSES FOR SYMPTOMS

Wiring Diagram — AT — NONDTC (Cont'd)

## AT-NONDTC-04



1	2	3	4	5	6	7	M11
8	9	10	11	12	13	14	GY

1	2	3	4	M73
1	2	3	4	W

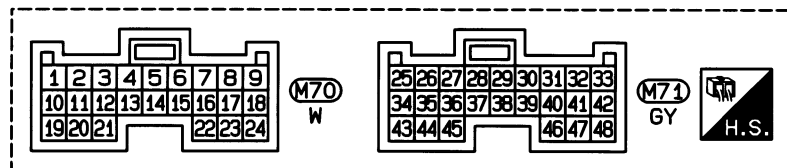
1	2	3	4	5					6	7	8	9	10	N1
11	12	13	14	15	16	17	18	19	20	21	22	23	24	W

1	2	3	4	5	6		7	8	9	10	11	
12	13	14	15	16	17	18	19	20	21	22	23	24

N2

BR

36	37	38	39		40	41	42	N6	
27	28	29	30	31	32	33	34	35	BR



HAT127



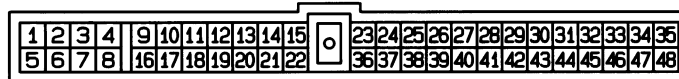
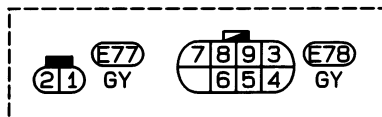
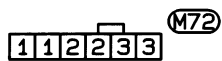
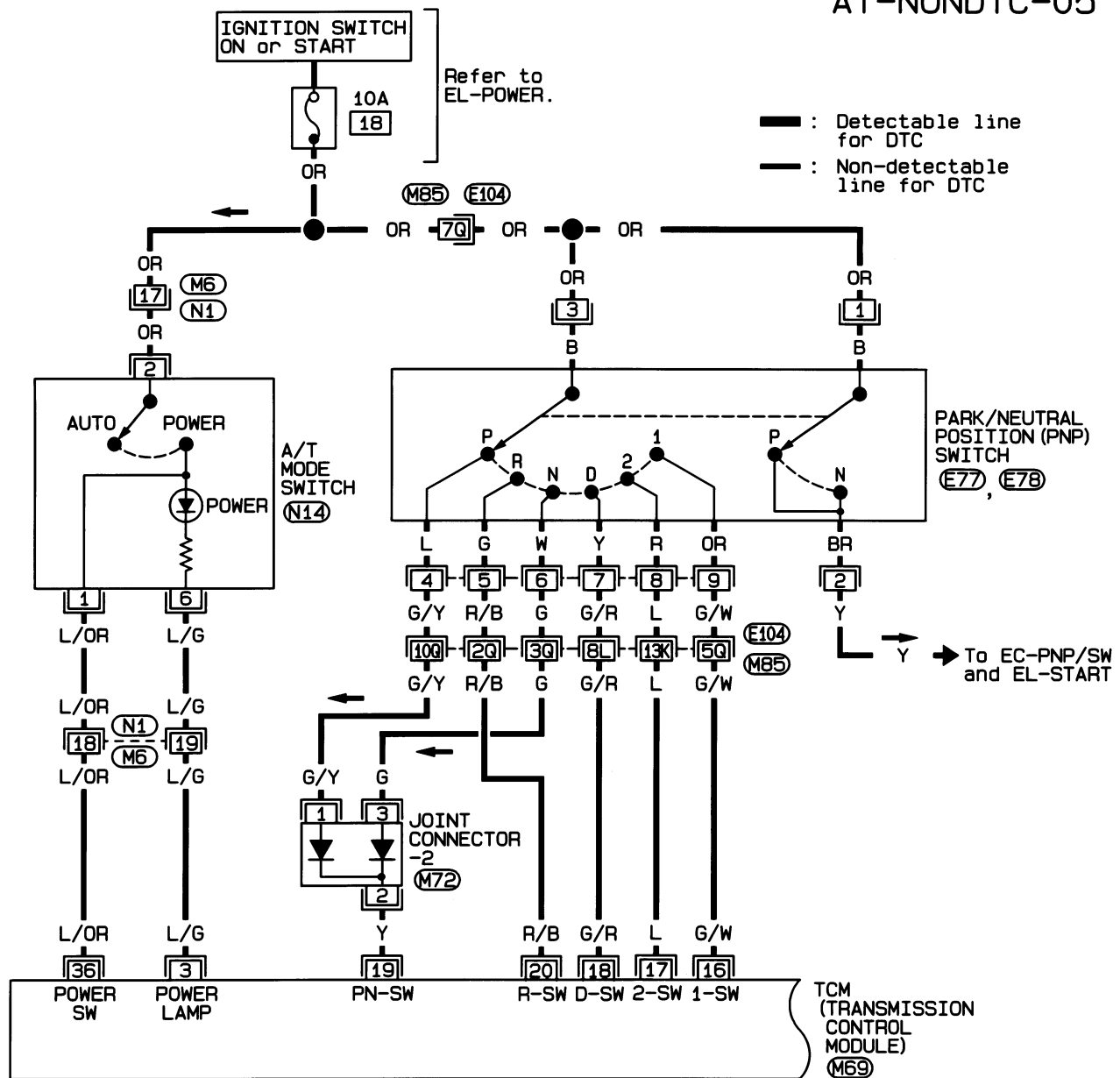
# TROUBLE DIAGNOSES FOR SYMPTOMS

Wiring Diagram — AT — NONDTC (Cont'd)

VG30E ENGINE MODEL

NEAT0203S06

AT-NONDTC-05



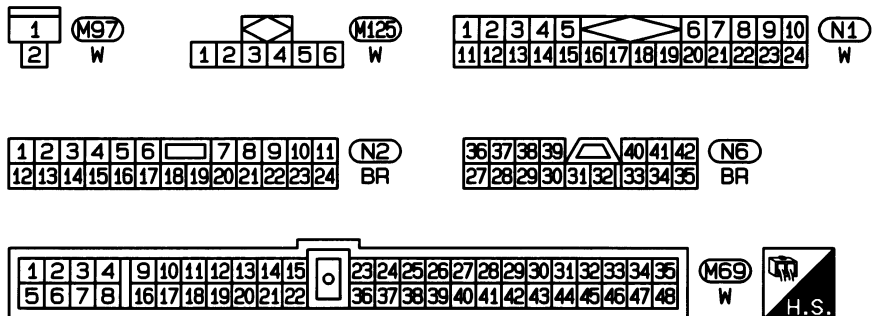
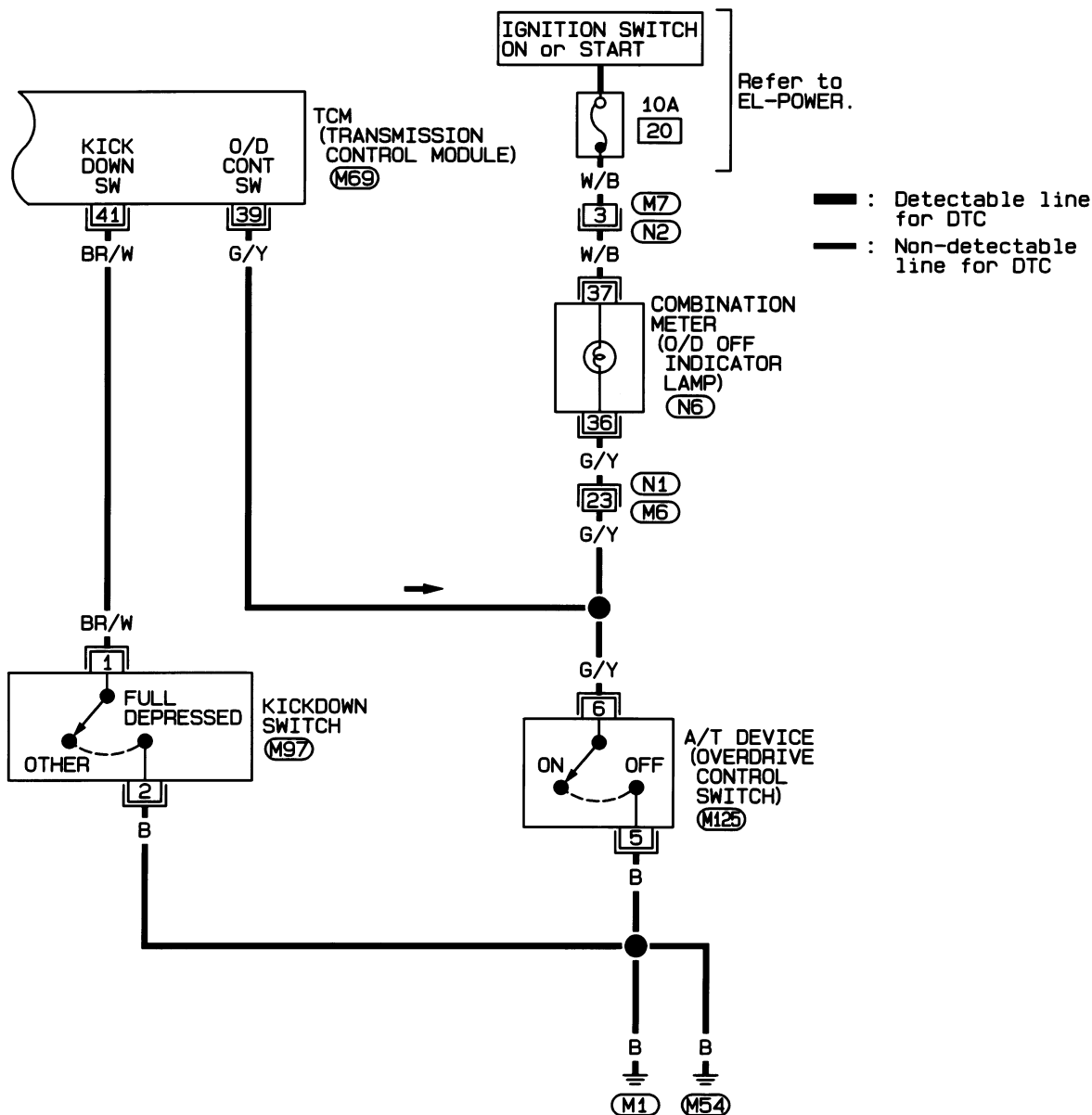
Refer to last page (Foldout page).

M85, E104

# TROUBLE DIAGNOSES FOR SYMPTOMS

Wiring Diagram — AT — NONDTC (Cont'd)

AT-NONDTC-06

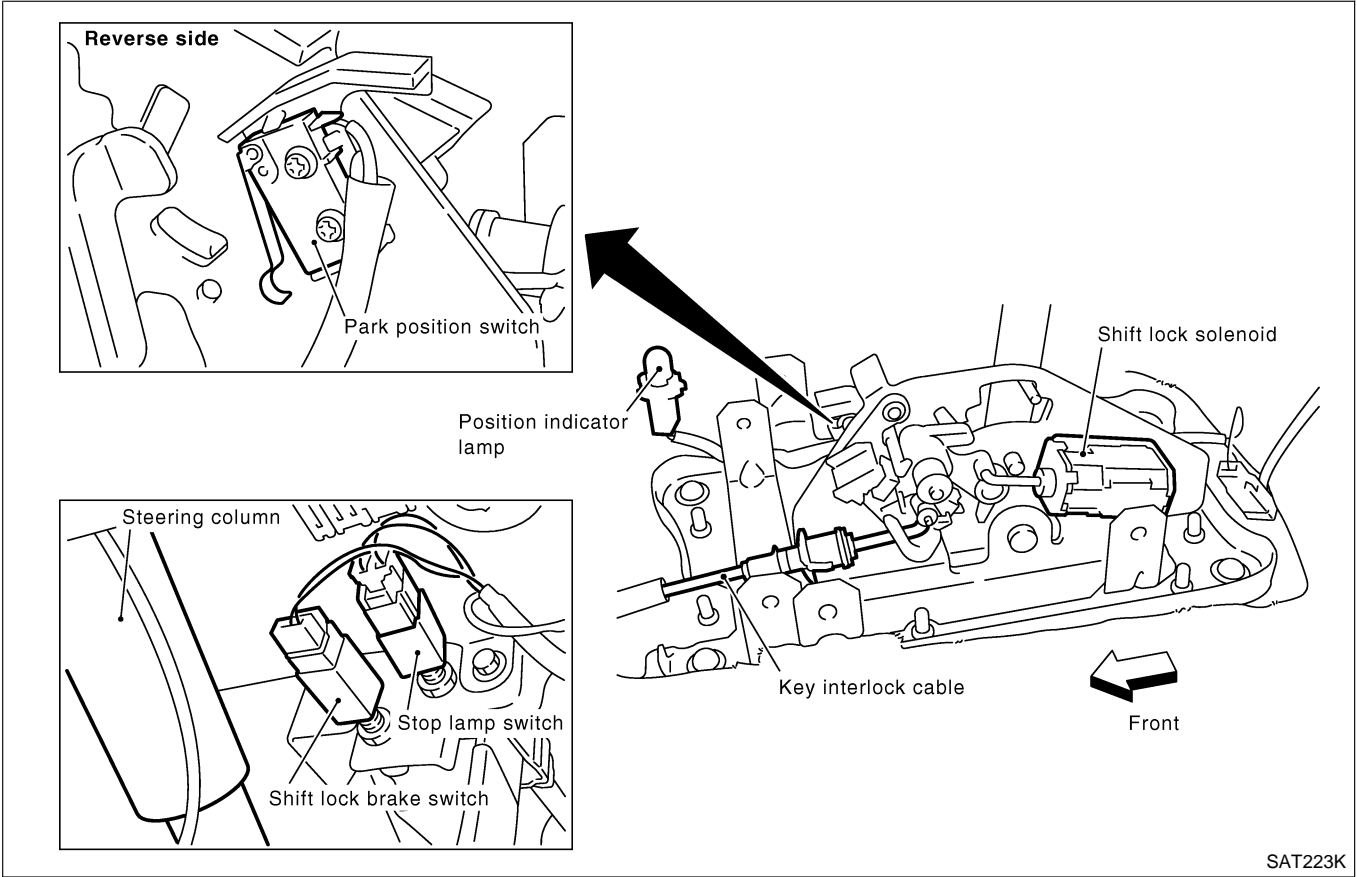


HAT120

Description

NEAT0093

- The mechanical key interlock mechanism also operates as a shift lock:  
With the key switch turned to "ON", the selector lever cannot be shifted from "P" (parking) to any other position unless the brake pedal is depressed.  
With the key removed, the selector lever cannot be shifted from "P" to any other position.  
The key cannot be removed unless the selector lever is placed in "P".
- The shift lock and key interlock mechanisms are controlled by the ON-OFF operation of the shift lock solenoid and by the operation of the rotator and slider located inside the key cylinder, respectively.



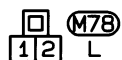
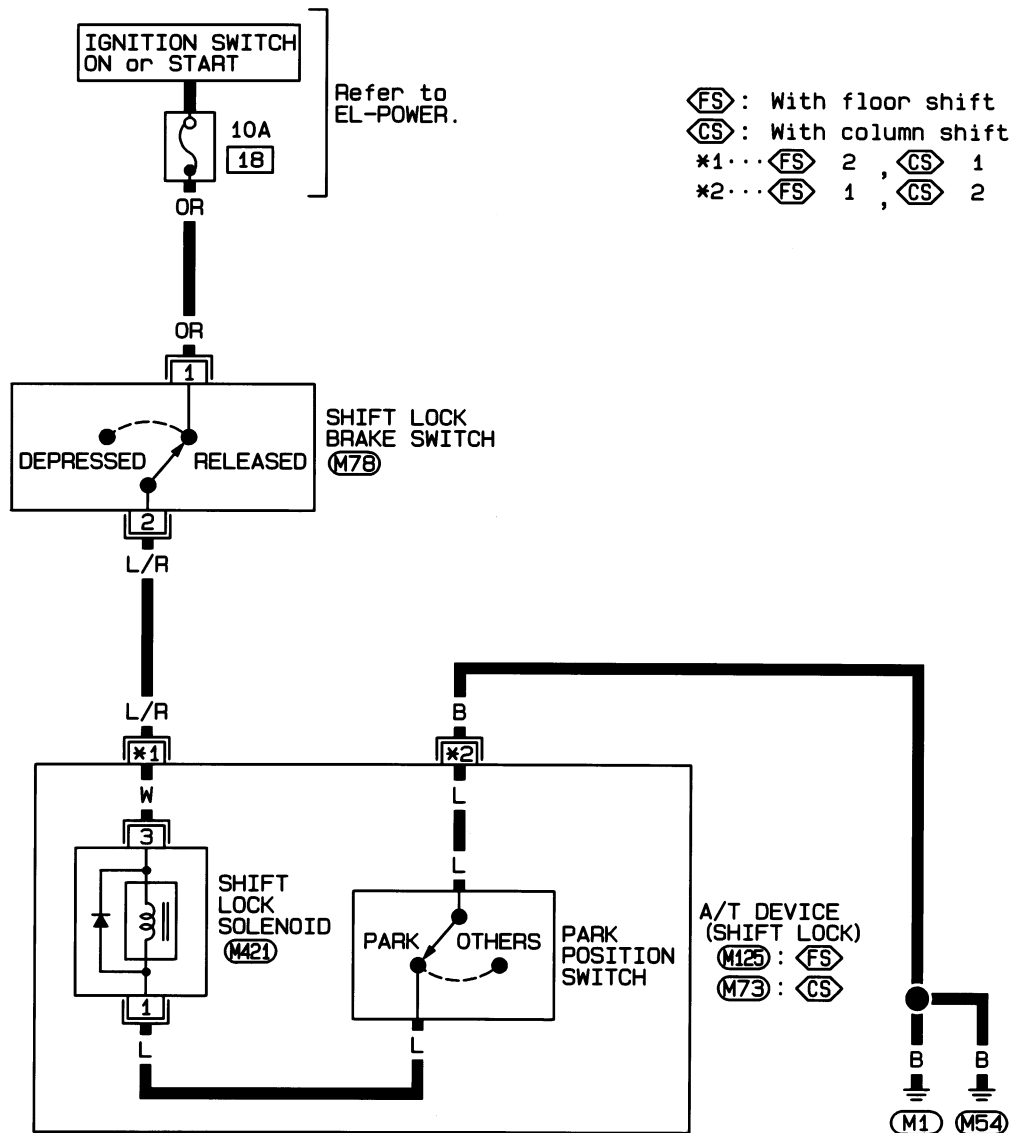
# A/T SHIFT LOCK SYSTEM

Wiring Diagram — SHIFT —

## Wiring Diagram — SHIFT —

NEAT0094

### AT-SHIFT-01

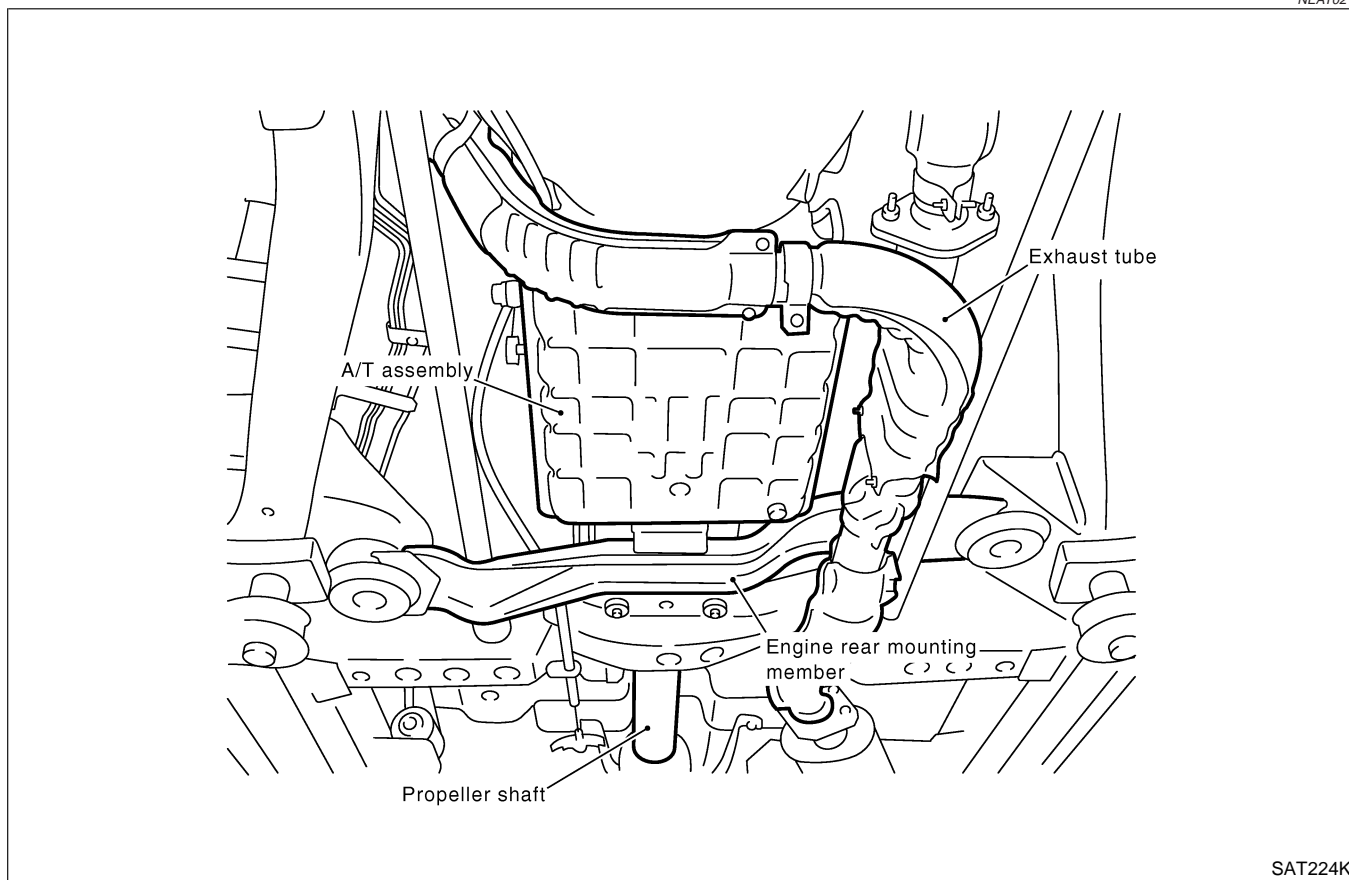


\* : This connector is not shown in "HARNESS LAYOUT", EL section.

HAT123

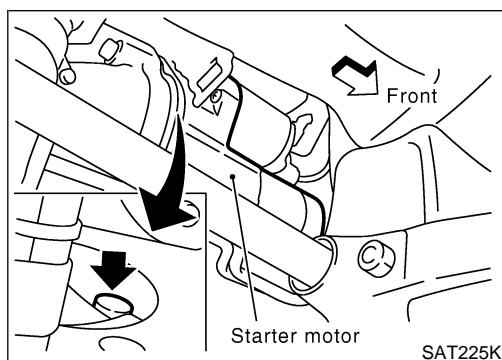
## Removal

NEAT0214



SAT224K

1. Remove battery negative terminal.
2. Remove exhaust tube.
3. Remove fluid charging pipe from A/T assembly.
4. Remove oil cooler pipe from A/T assembly.
5. Plug up openings such as the fluid charging pipe hole, etc.
6. Remove propeller shaft. Refer to PD section ("Removal", "PROPELLER SHAFT").
- **Insert plug into rear oil seal after removing rear propeller shaft.**
- **Be careful not to damage spline, sleeve yoke and rear oil seal.**
7. Remove A/T control cable from A/T assembly.
8. Disconnect PNP switch, solenoid, revolution sensor and speedometer sensor harness connectors.

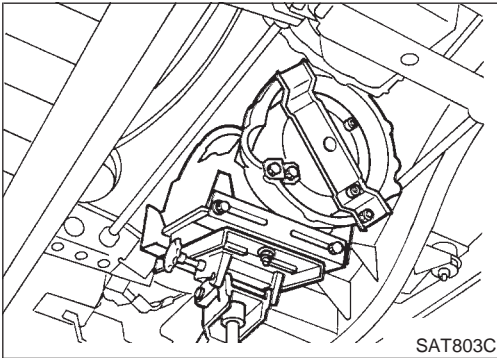
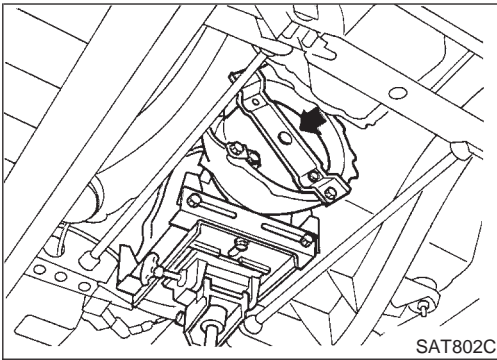


SAT225K

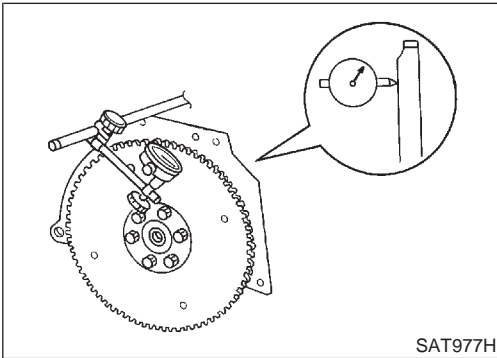
9. Remove starter motor.
10. Remove gusset.
11. Remove dust cover from A/T assembly.
12. Remove bolts securing torque converter to drive plate.
- **Remove the bolts by turning crankshaft.**

# REMOVAL AND INSTALLATION

## Removal (Cont'd)



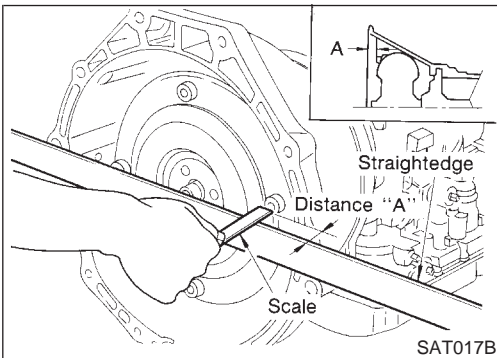
13. Support A/T with a jack.
14. Remove rear engine mounting member from body and A/T assembly. Tighten rear engine mounting member to the specified torque. Refer to EM section ("ENGINE REMOVAL").
15. Remove bolts securing A/T assembly to engine.
  - **Secure torque converter to prevent it from dropping.**
  - **Secure A/T assembly to a jack.**
16. Lower A/T assembly.



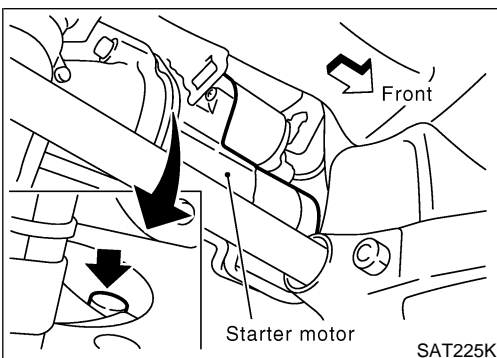
## Installation

NEAT0107

1. Drive plate runout
  - Maximum allowable runout:**  
**Refer to EM section ("Inspection", "CYLINDER BLOCK").**
  - If this runout is out of specification, replace drive plate with ring gear.



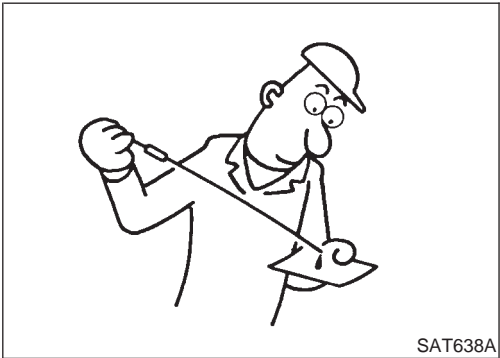
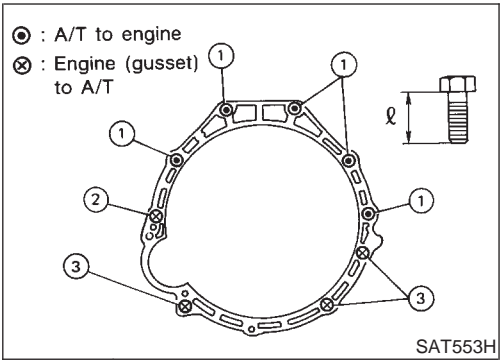
2. When connecting torque converter to transmission, measure distance "A" to be certain that they are correctly assembled.
  - Distance "A":**  
**26.0 mm (1.024 in) or more**



3. Install converter to drive plate.
  - **After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that transmission rotates freely without binding.**

REMOVAL AND INSTALLATION

Installation (Cont'd)



4. Tighten bolts securing transmission.

Bolt No.	Tightening torque N·m (kg·m, ft·lb)	Bolt length "ℓ" mm (in)
1	39 - 49 (4.0 - 5.0, 29 - 36)	47.5 (1.870)
2	39 - 49 (4.0 - 5.0, 29 - 36)	58.0 (2.283)
3	29 - 39 (3.0 - 4.0, 22 - 29)	25.0 (0.984)
Gusset to engine	29 - 39 (3.0 - 4.0, 22 - 29)	20.0 (0.787)

5. Reinstall any part removed.

6. Check fluid level in transmission.

7. Move selector lever through all positions to be sure that transmission operates correctly.

With parking brake applied, rotate engine at idling. Move selector lever through "N" to "D", to "2", to "1" and to "R" positions. A slight shock should be felt by hand gripping selector each time transmission is shifted.

8. Perform road test. Refer to "ROAD TEST", AT-53 in the original Service Manual (SM9E-D22BG0).

GI

MA

EM

LC

EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX

# SERVICE DATA AND SPECIFICATIONS (SDS)

## General Specifications

General Specifications			NEAT0160
Applied model		VG30E	
		2WD	
Automatic transmission model		RE4R01A	
Transmission model code number		4EX64	
Stall torque ratio		2.0 : 1	
Transmission gear ratio	1st	2.785	
	2nd	1.545	
	Top	1.000	
	OD	0.694	
	Reverse	2.272	
Recommended fluid		Genuine Nissan ATF or equivalent*1	
Fluid capacity		8.1ℓ (7-1/8 Imp qt)	

\*1: Refer to MA section ("Fluids and Lubricants", "RECOMMENDED FLUIDS AND LUBRICANTS").

## Shift Schedule

### VEHICLE SPEED WHEN SHIFTING GEARS THROTTLE POSITION

Throttle position	Vehicle speed km/h (MPH)							NEAT0178
	D <sub>1</sub> → D <sub>2</sub>	D <sub>2</sub> → D <sub>3</sub>	D <sub>3</sub> → D <sub>4</sub>	D <sub>4</sub> → D <sub>3</sub>	D <sub>3</sub> → D <sub>2</sub>	D <sub>2</sub> → D <sub>1</sub>	1 <sub>2</sub> → 1 <sub>1</sub>	NEAT0178S01
Full throttle	52 - 56 (32 - 35)	99 - 107 (62 - 66)	159 - 169 (99 - 105)	154 - 164 (96 - 102)	91 - 99 (57 - 62)	44 - 48 (27 - 30)	44 - 48 (27 - 30)	
Half throttle	33 - 37 (21 - 23)	67 - 73 (42 - 45)	105 - 113 (65 - 70)	63 - 71 (39 - 44)	30 - 36 (19 - 22)	10 - 14 (6 - 9)	10 - 14 (6 - 9)	

### VEHICLE SPEED WHEN PERFORMING AND RELEASING LOCK-UP

Throttle position	Overdrive control switch [Shift position]	Vehicle speed km/h (MPH)		NEAT0178S02
		Lock-up "ON"	Lock-up "OFF"	
Full throttle	ON [D <sub>4</sub> ]	101 - 109 (63 - 68)	96 - 104 (60 - 65)	
	OFF [D <sub>3</sub> ]	76 - 84 (47 - 52)	71 - 79 (44 - 49)	
Half throttle	ON [D <sub>4</sub> ]	101 - 109 (63 - 68)	83 - 91 (52 - 57)	
	OFF [D <sub>3</sub> ]	76 - 84 (47 - 52)	71 - 79 (44 - 49)	

## Stall Revolution

Stall revolution rpm	NEAT0163
2,350 - 2,550	

## Line Pressure

Engine speed rpm	Line pressure kPa (bar, kg/cm <sup>2</sup> , psi)		NEAT0164
	D, 2 and 1 positions	R position	
Idle	422 - 461 (4.22 - 4.61, 4.3 - 4.7, 61 - 67)	667 - 706 (6.67 - 7.06, 6.8 - 7.2, 97 - 102)	
Stall	1,020 - 1,098 (10.20 - 10.98, 10.4 - 11.2, 148 - 159)	1,422 - 1,500 (14.22 - 15.00, 14.5 - 15.3, 206 - 218)	



# SERVICE DATA AND SPECIFICATIONS (SDS)

Return Springs

## Return Springs

Unit: mm (in) <sup>NEAT0165</sup>

Parts			Item		
			Part No.*	Free length	Outer diameter
Control valve	Upper body	Torque converter relief valve spring	31742-41X23	38.0 (1.496)	9.0 (0.354)
		Pressure regulator valve spring	31742-41X24	44.02 (1.7331)	14.0 (0.551)
		Pressure modifier valve spring	31742-41X19	31.95 (1.2579)	6.8 (0.268)
		Accumulator control valve spring	—	—	—
		Shuttle shift valve D spring	31762-41X01	25.0 (0.984)	7.0 (0.276)
		4-2 sequence valve spring	31756-41X00	29.1 (1.146)	6.95 (0.2736)
		Shift valve B spring	31762-41X01	25.0 (0.984)	7.0 (0.276)
		4-2 relay valve spring	31756-41X00	29.1 (1.146)	6.95 (0.2736)
		Shift valve A spring	31762-41X01	25.0 (0.984)	7.0 (0.276)
		Overrun clutch control valve spring	31762-41X03	23.6 (0.929)	7.0 (0.276)
		Overrun clutch reducing valve spring	31742-41X20	32.5 (1.280)	7.0 (0.276)
		Shuttle shift valve S spring	31762-41X04	51.0 (2.008)	5.65 (0.2224)
		Pilot valve spring	31742-41X13	25.7 (1.012)	9.0 (0.354)
		Torque converter clutch control valve spring	31742-41X22	18.5 (0.728)	13.0 (0.512)
	Lower body	Modifier accumulator valve spring	31742-27X70	31.4 (1.236)	9.8 (0.386)
		1st reducing valve spring	31756-41X05	25.4 (1.000)	6.75 (0.2657)
		3-2 timing valve spring	31742-41X06	23.0 (0.906)	6.7 (0.264)
		Servo charger valve spring	31742-41X06	23.0 (0.906)	6.7 (0.264)
Reverse clutch		16 pcs	31521-41X02 (Assembly)	19.7 (0.766)	11.6 (0.457)
High clutch		10 pcs	31521-41X03 (Assembly)	24.2 (0.953)	11.6 (0.457)
Forward clutch (Overrun clutch)		20 pcs	31521-41X04 (Assembly)	35.77 (1.4083)	9.7 (0.382)
Low & reverse brake		18 pcs	31655-41X00 (Assembly)	22.3 (0.878)	11.2 (0.441)
Band servo		Spring A	31605-41X05	45.6 (1.795)	34.3 (1.350)
		Spring B	31605-41X00	53.8 (2.118)	40.3 (1.587)
		Spring C	31605-41X01	29.7 (1.169)	27.6 (1.087)
Accumulator		Accumulator A	31605-41X02	43.0 (1.693)	18.0 (0.709)
		Accumulator B	31605-41X10	66.0 (2.598)	20.0 (0.787)
		Accumulator C	31605-41X09	45.0 (1.772)	29.3 (1.154)
		Accumulator D	31605-41X06	58.4 (2.299)	17.3 (0.681)

\*: Always check with the Parts Department for the latest parts information.

# SERVICE DATA AND SPECIFICATIONS (SDS)

Accumulator O-ring

## Accumulator O-ring

NEAT0166

Accumulator	Diameter mm (in)			
	A	B	C	D
Small diameter end	29 (1.14)	32 (1.26)	45 (1.77)	29 (1.14)
Large diameter end	45 (1.77)	50 (1.97)	50 (1.97)	45 (1.77)

## Clutches and Brakes

NEAT0167

### REVERSE CLUTCH

NEAT0167S01

Code number		4EX64	
Number of drive plates		2	
Number of driven plates		2	
Thickness of drive plate mm (in)	Standard	1.90 - 2.05 (0.0748 - 0.0807)	
	Wear limit	1.80 (0.0709)	
Clearance mm (in)	Standard	0.5 - 0.8 (0.020 - 0.031)	
	Allowable limit	1.2 (0.047)	
Thickness of retaining plate		Thickness mm (in)	Part number*
		4.8 (0.189)	31537-42X02
		5.0 (0.197)	31537-42X03
		5.2 (0.205)	31537-42X04
		5.4 (0.213)	31537-42X05
		5.6 (0.220)	31537-42X06

\*: Always check with the Parts Department for the latest parts information.

### HIGH CLUTCH

NEAT0167S02

Code number		4EX64	
Number of drive plates		5	
Number of driven plates		5	
Thickness of drive plate mm (in)	Standard	1.52 - 1.67 (0.0598 - 0.0657)	
	Wear limit	1.40 (0.0551)	
Clearance mm (in)	Standard	1.8 - 2.2 (0.071 - 0.087)	
	Allowable limit	3.2 (0.126)	
Thickness of retaining plate		Thickness mm (in)	Part number*
		3.4 (0.134)	31537-41X71
		3.6 (0.142)	31537-41X61
		3.8 (0.150)	31537-41X62
		4.0 (0.157)	31537-41X63
		4.2 (0.165)	31537-41X64
		4.4 (0.173)	31537-41X65
		4.6 (0.181)	31537-41X66
		4.8 (0.189)	31537-41X67

\*: Always check with the Parts Department for the latest parts information.

# SERVICE DATA AND SPECIFICATIONS (SDS)

Clutches and Brakes (Cont'd)

## FORWARD CLUTCH

NEAT0167S03

Code number		4EX64	
Number of drive plates		5	
Number of driven plates		5	
Thickness of drive plate mm (in)	Standard	1.52 - 1.67 (0.0598 - 0.0657)	
	Wear limit	1.40 (0.0551)	
Clearance mm (in)	Standard	0.35 - 0.75 (0.0138 - 0.0295)	
	Allowable limit	1.95 (0.0768)	
Thickness of retaining plate		Thickness mm (in)	Part number*
		8.0 (0.315)	31537-41X00
		8.1 (0.319)	31537-42X60
		8.2 (0.323)	31537-41X01
		8.3 (0.327)	31537-42X61
		8.4 (0.331)	31537-41X02
		8.5 (0.335)	31537-42X62
		8.6 (0.339)	31537-41X03
		8.7 (0.343)	31537-42X63
		8.8 (0.346)	31537-41X04
		8.9 (0.350)	31537-42X64
		9.0 (0.354)	31537-41X05
		9.1 (0.358)	31537-42X65
		9.2 (0.362)	31537-41X06

\*: Always check with the Parts Department for the latest parts information.

## OVERRUN CLUTCH

NEAT0167S04

Code number		4EX64	
Number of drive plates		3	
Number of driven plates		5	
Thickness of drive plate mm (in)	Standard	1.90 - 2.05 (0.0748 - 0.0807)	
	Wear limit	1.80 (0.0709)	
Clearance mm (in)	Standard	1.0 - 1.4 (0.039 - 0.055)	
	Allowable limit	2.0 (0.079)	
Thickness of retaining plate		Thickness mm (in)	Part number*
		4.2 (0.165)	31537-41X80
		4.4 (0.173)	31537-41X81
		4.6 (0.181)	31537-41X82
		4.8 (0.189)	31537-41X83
		5.0 (0.197)	31537-41X84

\*: Always check with the Parts Department for the latest parts information.

# SERVICE DATA AND SPECIFICATIONS (SDS)

Clutches and Brakes (Cont'd)

## LOW & REVERSE BRAKE

NEAT0167S05

Code number		4EX64	
Number of drive plates		6	
Number of driven plates		6	
Thickness of drive plate mm (in)	Standard	1.52 - 1.67 (0.0598 - 0.0657)	
	Wear limit	1.40 (0.0551)	
Clearance mm (in)	Standard	0.8 - 1.1 (0.031 - 0.043)	
	Allowable limit	2.3 (0.091)	
Thickness of retaining plate		Thickness mm (in)	Part number*
		7.0 (0.276)	31667-41X12
		7.2 (0.283)	31667-41X13
		7.4 (0.291)	31667-41X14
		7.6 (0.299)	31667-41X07
		7.8 (0.307)	31667-41X08
		8.0 (0.315)	31667-41X00
		8.2 (0.323)	31667-41X01
		8.4 (0.331)	31667-41X02
		8.6 (0.339)	31667-41X03
		8.8 (0.346)	31667-41X04
		9.0 (0.354)	31667-41X05
		9.2 (0.362)	31667-41X06

\*: Always check with the Parts Department for the latest parts information.

## BRAKE BAND

NEAT0167S06

Anchor end bolt nut tightening torque	40 - 51 N·m (4.1 - 5.2 kg-m, 30 - 38 ft-lb)
Anchor end bolt tightening torque	4 - 6 N·m (0.4 - 0.6 kg-m, 35 - 52 in-lb)
Number of returning revolution for anchor end bolt	2.5

## Oil Pump and Low One-way Clutch

NEAT0168  
Unit: mm (in)

Oil pump clearance	Cam ring — oil pump housing	Standard	0.01 - 0.024 (0.0004 - 0.0009)
	Rotor, vanes and control piston — oil pump housing	Standard	0.03 - 0.044 (0.0012 - 0.0017)
Seal ring clearance	Standard		0.10 - 0.25 (0.0039 - 0.0098)
	Allowable limit		0.25 (0.0098)

## Total End Play

NEAT0169

Total end play "T <sub>1</sub> "	0.25 - 0.55 mm (0.0098 - 0.0217 in)	
Thickness of oil pump cover bearing race	Thickness mm (in)	Part number*
	0.8 (0.031)	31435-41X01
	1.0 (0.039)	31435-41X02
	1.2 (0.047)	31435-41X03
	1.4 (0.055)	31435-41X04
	1.6 (0.063)	31435-41X05
	1.8 (0.071)	31435-41X06
	2.0 (0.079)	31435-41X07

\*: Always check with the Parts Department for the latest parts information.

# SERVICE DATA AND SPECIFICATIONS (SDS)

Reverse Clutch Drum End Play

## Reverse Clutch Drum End Play

NEAT0170

Reverse clutch drum end play "T <sub>2</sub> "	0.55 - 0.90 mm (0.0217 - 0.0354 in)	
Thickness of oil pump thrust washer	Thickness mm (in)	Part number*
	0.9 (0.035)	31528-21X01
	1.1 (0.043)	31528-21X02
	1.3 (0.051)	31528-21X03
	1.5 (0.059)	31528-21X04
	1.7 (0.067)	31528-21X05
	1.9 (0.075)	31528-21X06

\*: Always check with the Parts Department for the latest parts information.

## Removal and Installation

NEAT0171

Manual control linkage	Number of returning revolutions for lock nut	RHD	LHD
		1	2
	Lock nut tightening torque	11 - 14 N·m (1.1 - 1.5 kg-m, 8 - 10 ft-lb)	
Distance between end of converter housing and torque converter		26.0 mm (1.024 in) or more	