

# SYSTEM DESCRIPTION

## TRANSMISSION SYSTEM

### Operation Status and Control (NHPC)

INFOID:000000004651017

Range	Mode	Current gear position	Operational condition										
			Clutch		Pre-shift gear	Synchronizer				Parking	Adaptive shift control	Blipping control	Predictive pre-shift control
			B	A		Sleeve B1	Sleeve A2	Sleeve B2	Sleeve A1				
P	-	-	●	●	-	N	N	N	N	○	●	●	●
R	-	R	○	●	-	R	N	N	N	●	●	●	●
N	-	-	●	●	-	N	N	N	N	●	●	●	●
A	Normal R SNOW	1st	○	●	2nd	1st	(2nd) *	N	N	●	○	●	●
		2nd	●	○	3rd	N	2nd	(3rd) *					
		3rd	○	●	4th		(4th) *	3rd					
		4th	●	○	5th		4th	(5th) *					
		5th	○	●	6th		N	5th	(6th) *				
		6th	●	○	5th			(5th) *	6th				
M	Normal	1st	○	●	2nd	1st	(2nd) *	N	N	●	○	●	●
		2nd	●	○	3rd	2nd	(3rd) *						
		3rd	○	●	4th	(4th) *	3rd						
		4th	●	○	5th	4th	(5th) *						
		5th	○	●	6th	N	5th	(6th) *					
		6th	●	○	5th		(5th) *	6th					
	R	1st	○	●	2nd	1st	(2nd) *	N	N	●	○	○	○
		2nd	●	○	3rd/1st	N	(1st) *	2nd	(3rd) *				
		3rd	○	●	4th/2nd		(2nd/4th) *	3rd					
		4th	●	○	5th/3rd		4th	(3rd/5th) *					
		5th	○	●	6th/4th		(4th) *	5th	(6th) *				
		6th	●	○	5th		N	(5th) *	6th				

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\*: Pre-shift (pre-shift means that the gear on the clutch release side shifts to the next speed before a gear shift occurs.)

### Main Device (NHPC)

INFOID:000000004651018

#### DUAL CLUTCH

- It is equipped with 2 wet clutches, clutch A and clutch B, and each clutch is engaged or released by the hydraulic piston.
- If there is no oil pressure, the return spring forces the piston to return, releasing the clutch.

#### SHIFT DEVICE

- Each synchronizer is activated by its own shift actuator (hydraulic cylinder).
- Borg Warner type triple cone synchronizer is used for all the gear speeds.
- A friction material is affixed to the cone surface of the synchronizer to allow higher capacity than a normal cone made of copper alloy.
- The actuator control module is a unit integrated with the shift actuator and hydraulic control valve.

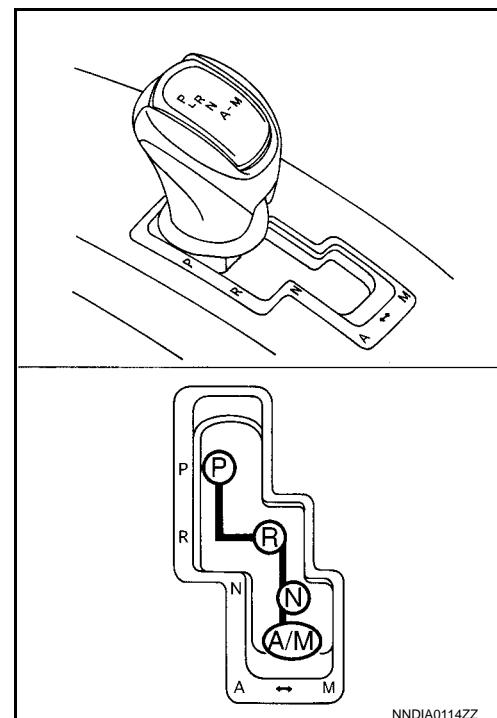
#### SHIFT LEVER

# TRANSMISSION SYSTEM

## < SYSTEM DESCRIPTION >

## [TRANSMISSION: GR6Z30A]

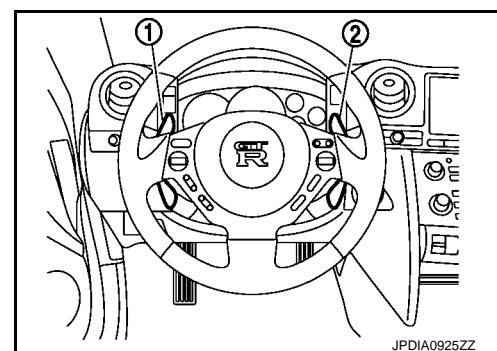
- It inputs the range position (P, R, N, A ⇄ M) and Auto/Manual range change switch signal to the TCM.
- It is connected to the parking device of the transmission with the control cable, and it locks the parking device only when the shift lever is shifted into the P position.



## PADDLE SHIFTER

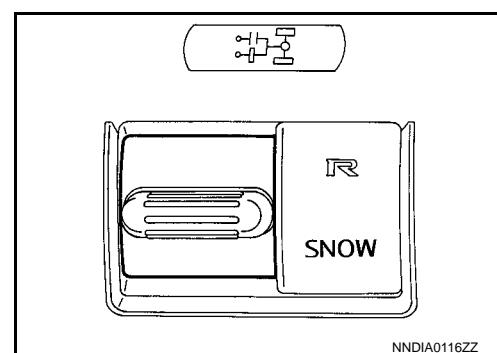
It inputs the switch signal of upshift or downshift to TCM.

1 : Paddle shifter (shift-down switch)  
2 : Paddle shifter (shift-up switch)



## SET-UP SWITCH (TRANSMISSION)

It inputs the switch signal of R mode or SNOW mode to TCM.



## DISPLAY DEVICE

Information display

# TRANSMISSION SYSTEM

## < SYSTEM DESCRIPTION >

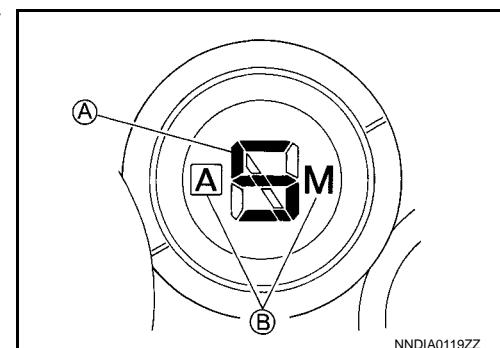
## [TRANSMISSION: GR6Z30A]

Message content	Display timing	Erasure procedure	Remarks
T/M SYSTEM MALFUNCTION VISIT DEALER	When a DTC is detected by self-diagnosis and an inspection is necessary at GT-R certified NISSAN dealer	<ul style="list-style-type: none"> <li>Turn the ignition switch ON again after turning OFF</li> <li>Erase the DTC using CONSULT-III</li> </ul>	Always blink the transmission warning light when this message is displayed
SHIFT TO THE P RANGE	<ul style="list-style-type: none"> <li>When the engine start operation is performed in any range other than P or N</li> <li>When the engine starts while the shift lever is in N range and the gear is engaged</li> </ul>	Shift the shift lever to the P range	—
CHECK POSITION OF SHIFT LEVER	When the shift lever position cannot be detected	Shift the shift lever into either range of P, R, N, A ⇔ M	—
T/M SYSTEM CHECK IN PROCESS	When the diagnosis is performed just after the engine starts while the shift lever is in the P range	Wait for a short period of time until the diagnosis is completed	While this message is displayed, the shift lock solenoid prevents the shift lever from moving out of the P range
T/M OIL TEMP HIGH DECREASE SPEED	When the high oil temperature control is active because of high transmission fluid temperature	When the high oil temperature control is deactivated	<ul style="list-style-type: none"> <li>Always illuminate the transmission warning light when this message is displayed</li> <li>To see if there is a history of this message, check history of phenomena in "High oil temperature Protection History" on <a href="#">TM-36, "CONSULT-III Function (NHPC)".</a></li> </ul>
T/M CLUTCH TEMP HIGH STOP VEHICLE UNTIL WARNING TURNS OFF	When the clutch protection control is active because of high transmission clutch temperature or stall driving	When the clutch protection control is deactivated	<ul style="list-style-type: none"> <li>Always illuminate the transmission warning light when this message is displayed</li> <li>To see if there is a history of this message, check history of phenomena in "Clutch overheat protection history" on <a href="#">TM-36, "CONSULT-III Function (NHPC)".</a></li> </ul>

### Shift position indicator

Upon receiving the CAN output signal from TCM, the drive gear position appears and blinks, and the range is displayed.

- A : Range position and drive gear position (A/M range)
- B : A range or M range



### Transmission warning light

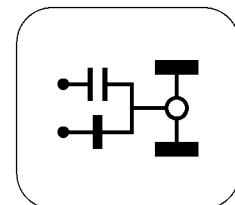
# TRANSMISSION SYSTEM

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## [TRANSMISSION: GR6Z30A]

It illuminates and blinks with the CAN output signal from TCM.

ON	<p>It shows an intermittent malfunction such as high transmission fluid temperature</p> <ul style="list-style-type: none"> <li>When the transmission warning lamp turns ON, the following possibilities may be included:           <ul style="list-style-type: none"> <li>Transmission oil temperature is high (History of phenomena can be checked in "High oil temperature protection history" on <a href="#">TM-36, "CONSULT-III Function (NHPC)"</a>)</li> <li>Transmission clutch temperature is high (History of phenomena can be checked in "Clutch overheat protection history" on <a href="#">TM-36, "CONSULT-III Function (NHPC)"</a>.)</li> <li>Line pressure is low (History of phenomena can be checked in "Line pressure loss history" on <a href="#">TM-36, "CONSULT-III Function (NHPC)"</a>.)</li> <li>When clutch gear learning value is not recorded in TCM ("WORK SUPPORT" on <a href="#">TM-36, "CONSULT-III Function (NHPC)"</a>.)</li> </ul> </li> </ul>
	<p>It shows that a malfunction requiring a check occurs</p> <ul style="list-style-type: none"> <li>When the transmission warning lamp blinks, the following possibilities may be included:           <ul style="list-style-type: none"> <li>When DTC of transmission is detected by self-diagnosis (Check "Self Diagnostic Result" of "TRANSMISSION".)</li> <li>When IP characteristics value is not recorded in TCM ("CONFIGURATION" on <a href="#">TM-36, "CONSULT-III Function (NHPC)"</a>.)</li> <li>When learning is not completed without recording clutch gear learning value in TCM ("WORK SUPPORT" on <a href="#">TM-36, "CONSULT-III Function (NHPC)"</a>.)</li> </ul> </li> </ul>

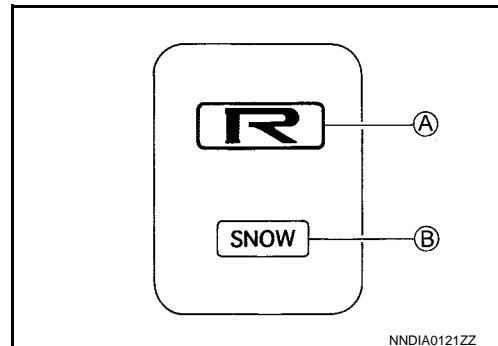


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## Mode indicator

R mode lamp and SNOW mode lamp illuminate by the analog output signal from TCM.

- A : R mode lamp
- B : SNOW mode lamp



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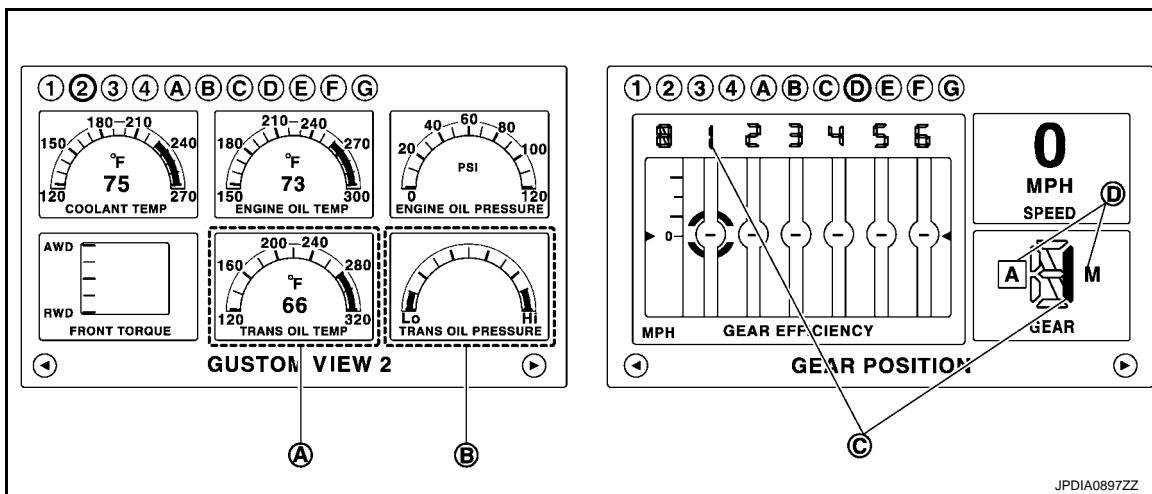
## Multi-function display

The drive gear position, range position, transmission oil pressure and transmission oil temperature are displayed by the CAN output signal from TCM.

# TRANSMISSION SYSTEM

< SYSTEM DESCRIPTION >

[TRANSMISSION: GR6Z30A]



A. Transmission oil temperature      B. Transmission oil pressure      C. Range position and drive gear position (A/M range)  
 D. A range or M range

## Oil Pressure System (NHPC)

INFOID:0000000004651019

### COMPONENT DESCRIPTION

Component	Function	
Suction filter	Removes foreign matter contained in fluid and prevents them from entering the hydraulic circuit	
Inline filter		
Heat exchanger	<ul style="list-style-type: none"> <li>Cools down fluid with the water-cooled cooler</li> <li>When the engine starts at low temperature, warms fluid quickly with heated coolant</li> </ul>	
Front control module	Oil pump	
	Valve	Line pressure valve
		• Controls the line pressure
		• The line pressure is adjusted by the line pressure solenoid
		Clutch A solenoid valve
	Pressure sensor	Clutch B solenoid valve
		Controls the clutch pressure of clutch A/B
Actuator control module	Valve	Lubricating flow valve
		• Controls the lubricating flow
		• The lubricating flow is adjusted by the lubricating flow solenoid
		Clutch lubricating switching valve
		Switches the lubricating distribution of the clutch.
	Pressure sensor	Clutch A pressure sensor
		Clutch B pressure sensor
	Valve	Axis A feed pressure valve
		• Controls the feed pressure of axis A/B
		• Each feed pressure is adjusted by the axis A/B feed pressure solenoid
		Shift solenoid valve 1
		Shift solenoid valve 2
		Shift solenoid valve 3
	Pressure sensor	Shift solenoid valve 4
		Sequence valve
		Controls 4 shift actuator pistons by combining ON and OFF of each shift solenoid valve and switching the sequence valve circuit
		Line pressure sensor
		Detects the line pressure

# TRANSMISSION SYSTEM

< SYSTEM DESCRIPTION >

TCM System (NHPC)

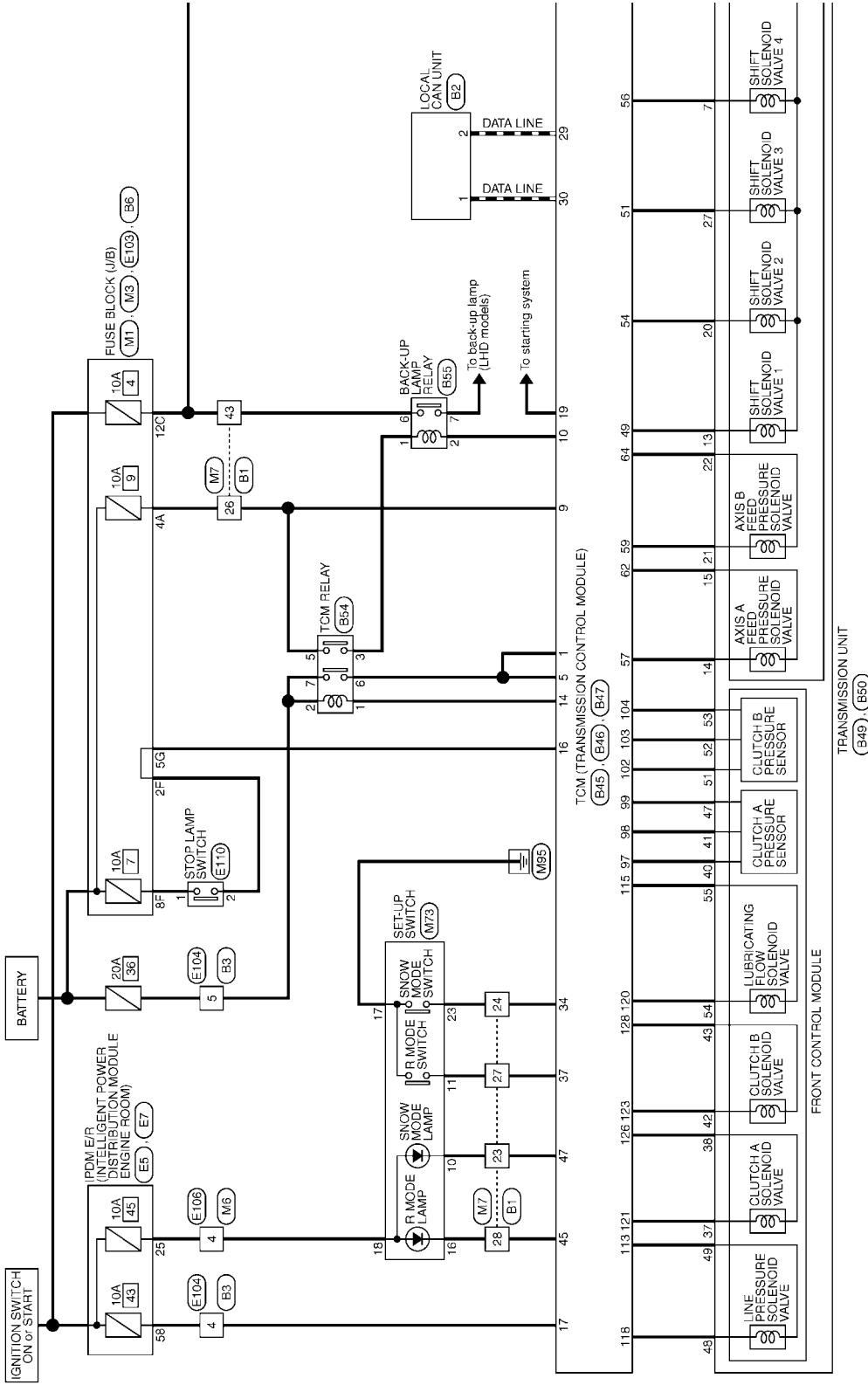
[TRANSMISSION: GR6Z30A]

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## WIRING DIAGRAM

LHD Models (For Europe)

### TRANSMISSION CONTROL SYSTEM (LHD MODELS)



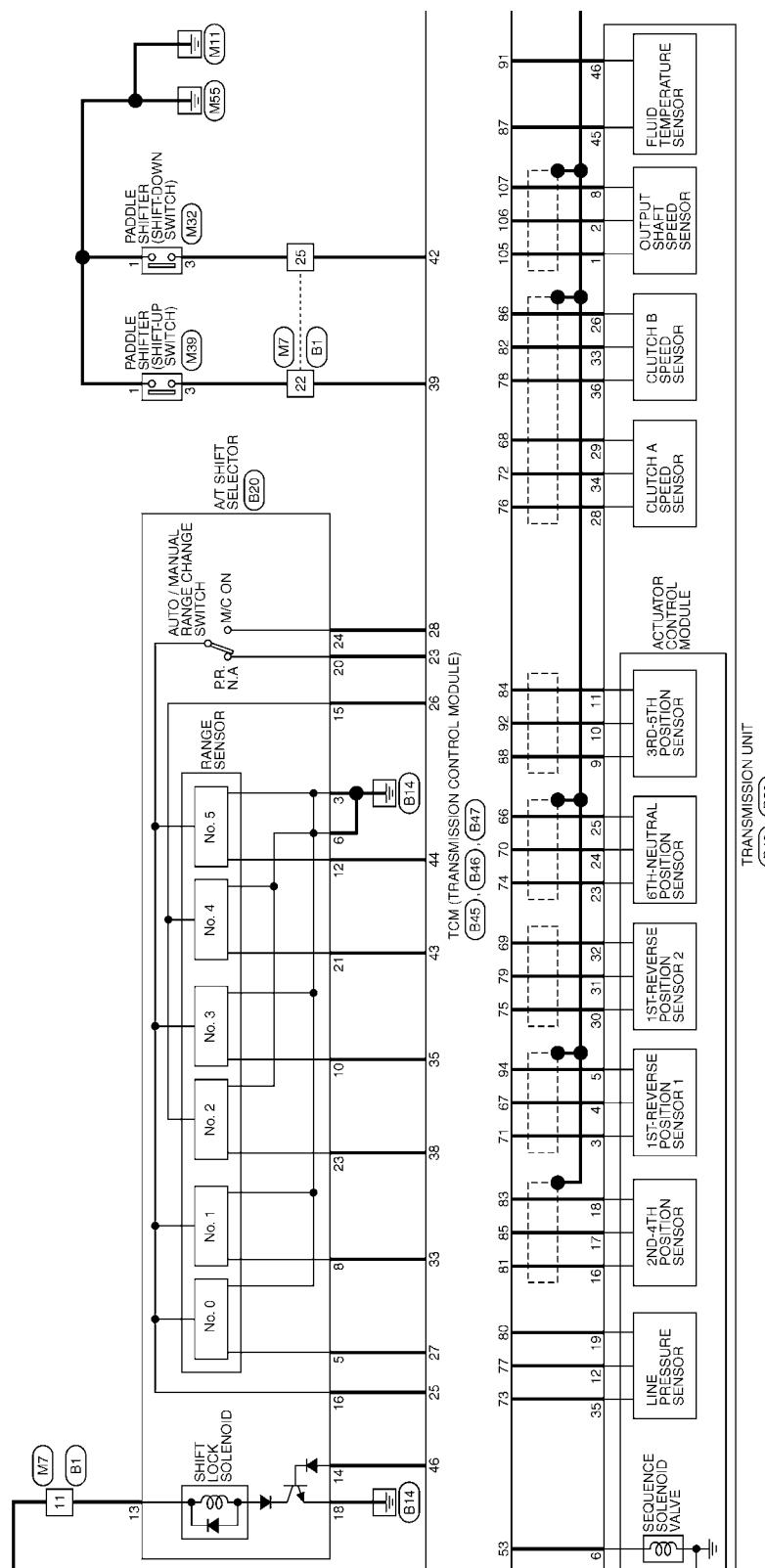
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# TRANSMISSION SYSTEM

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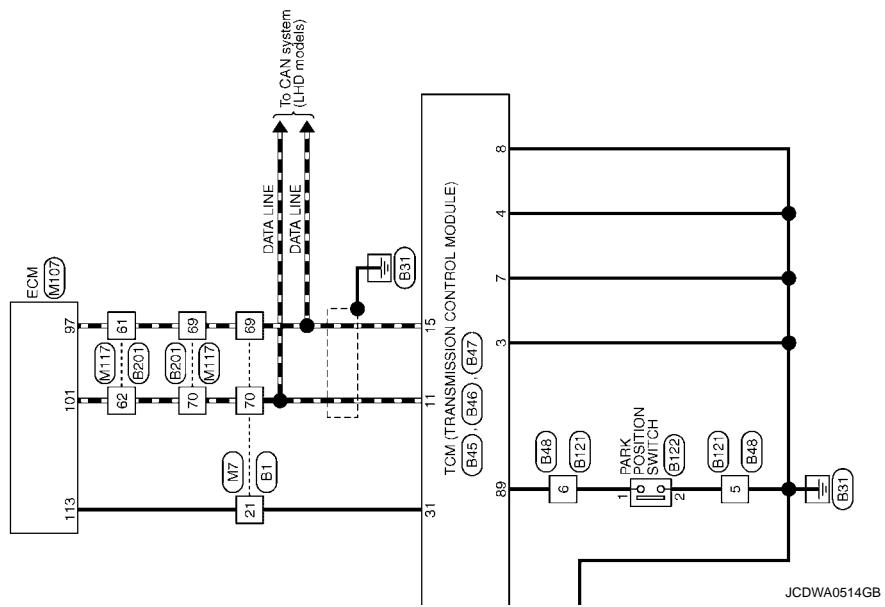
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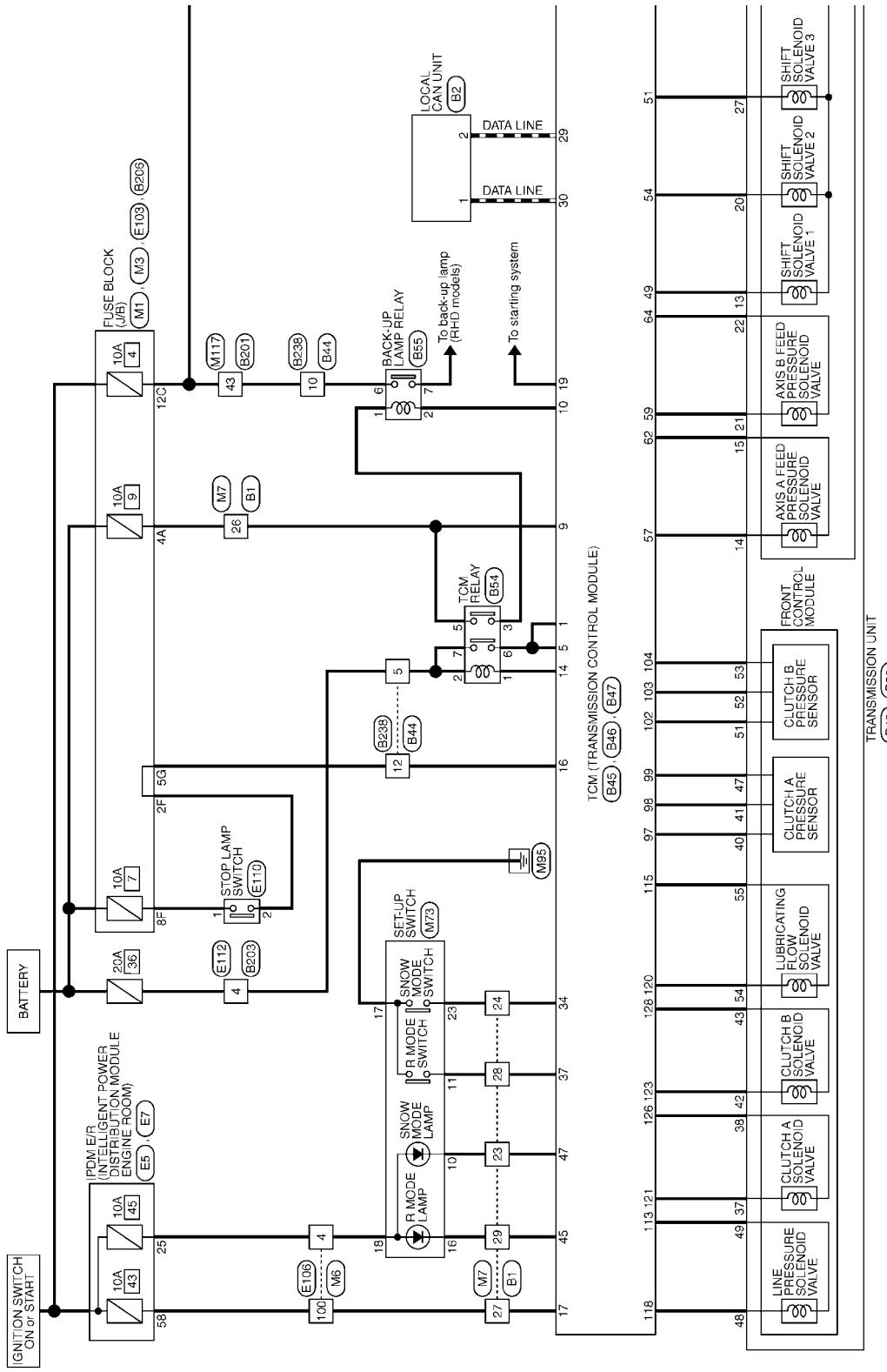
## RHD Models (For Europe)

# TRANSMISSION SYSTEM

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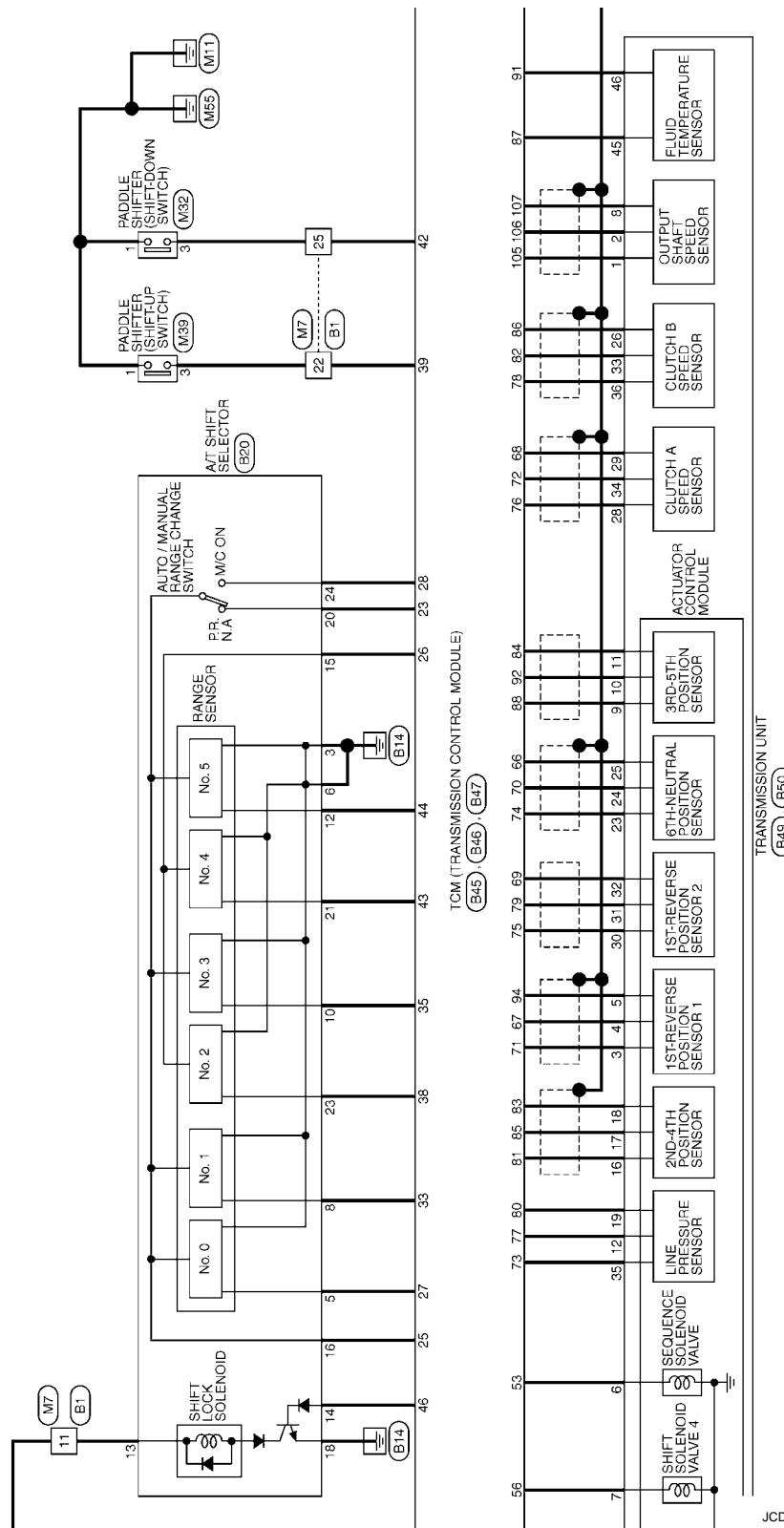
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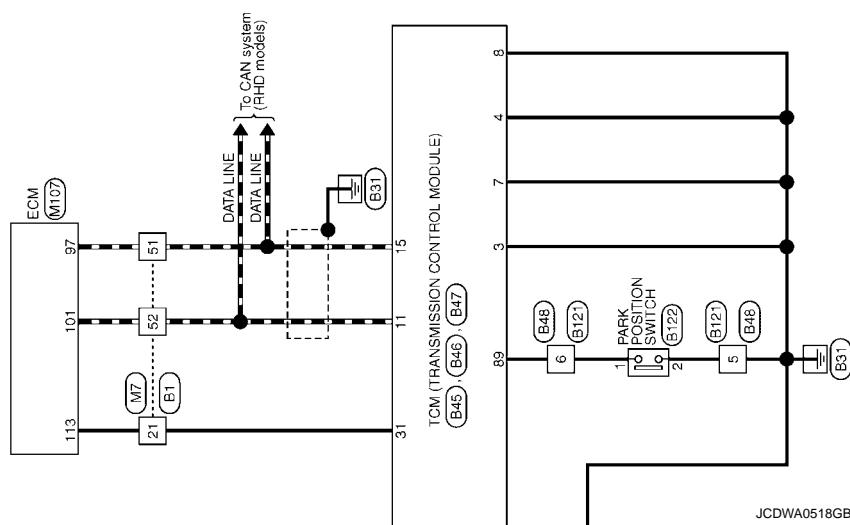
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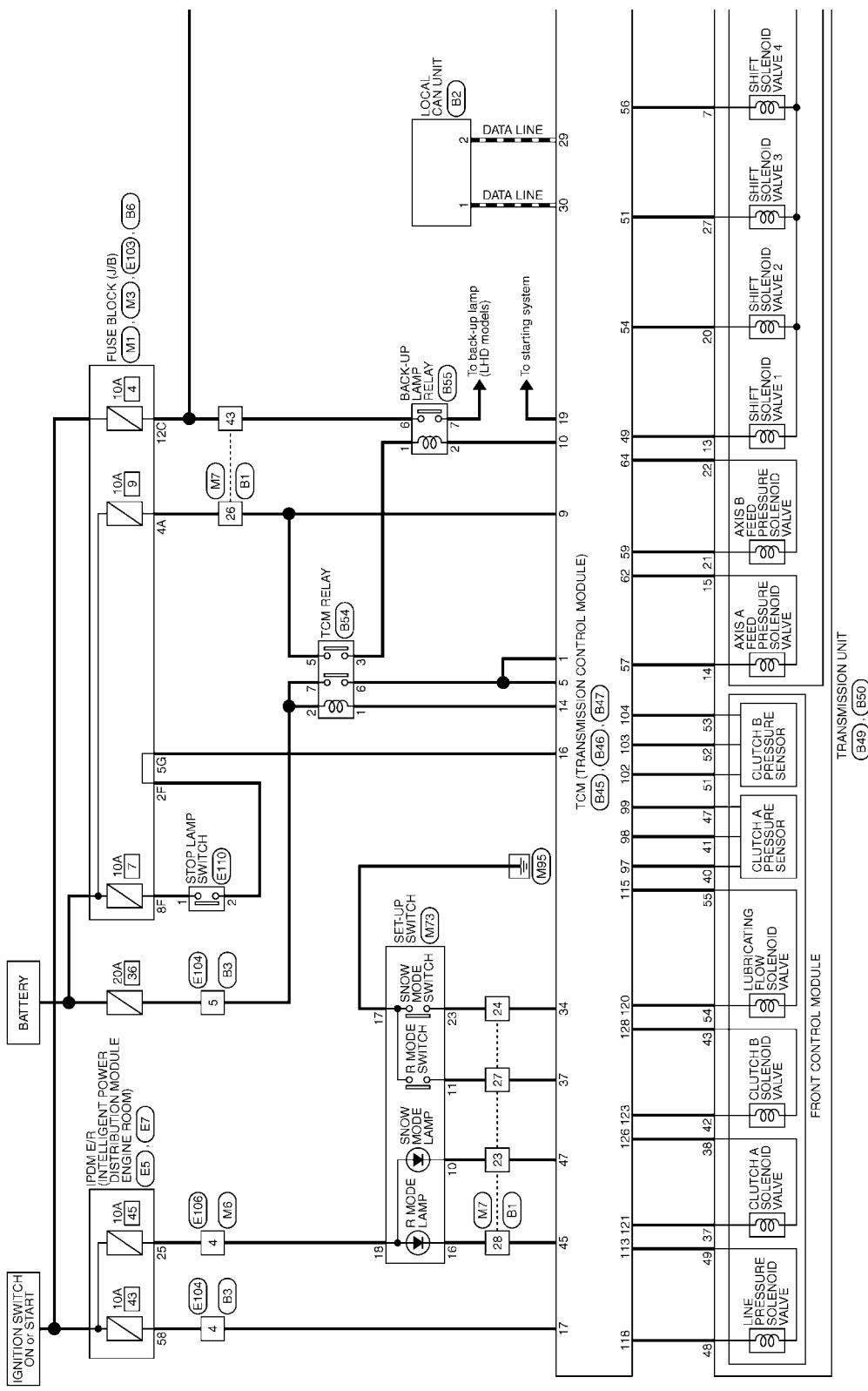
LHD Models (Except For Europe)

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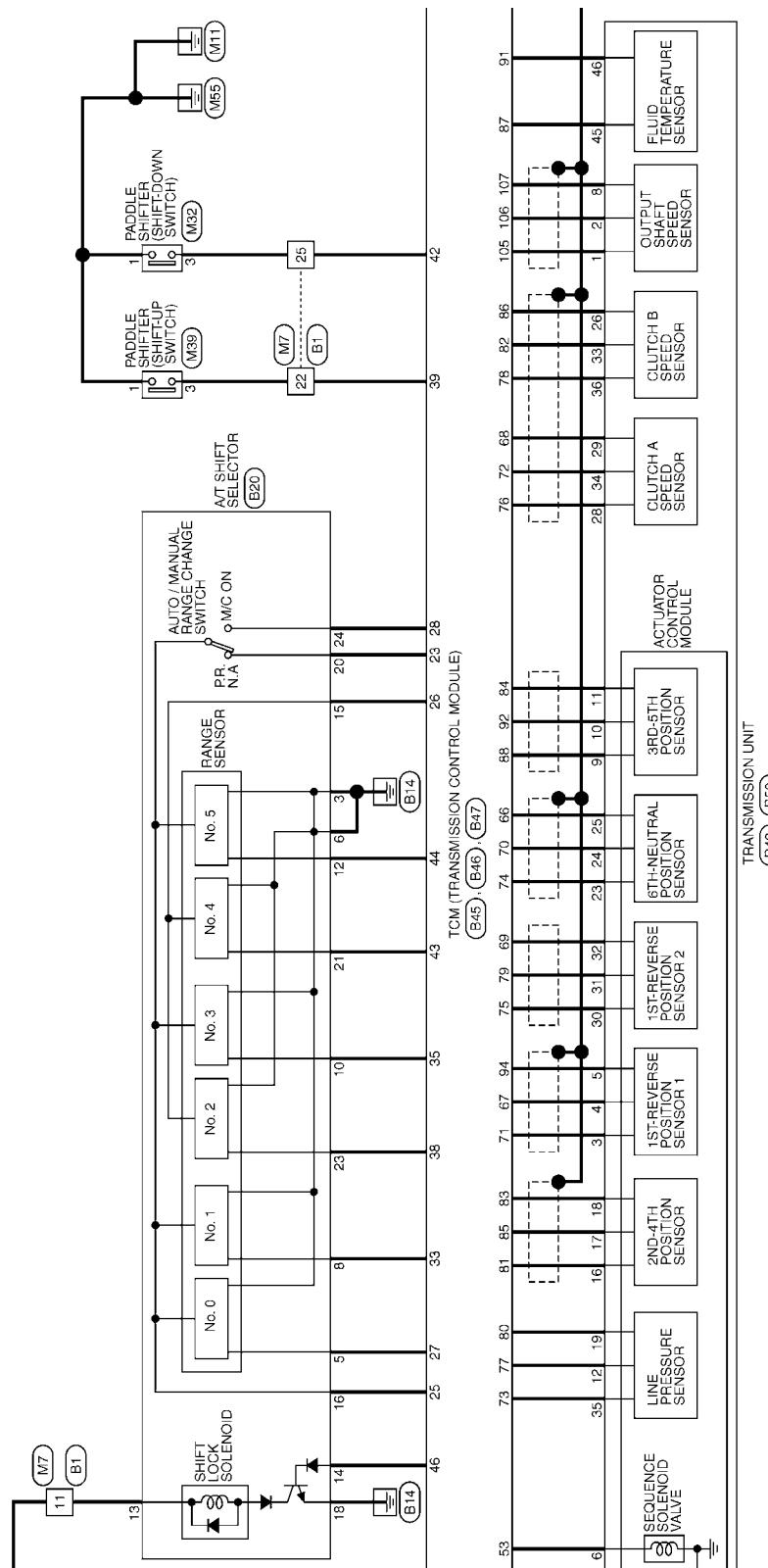
## TRANSMISSION CONTROL SYSTEM (LHD MODELS)



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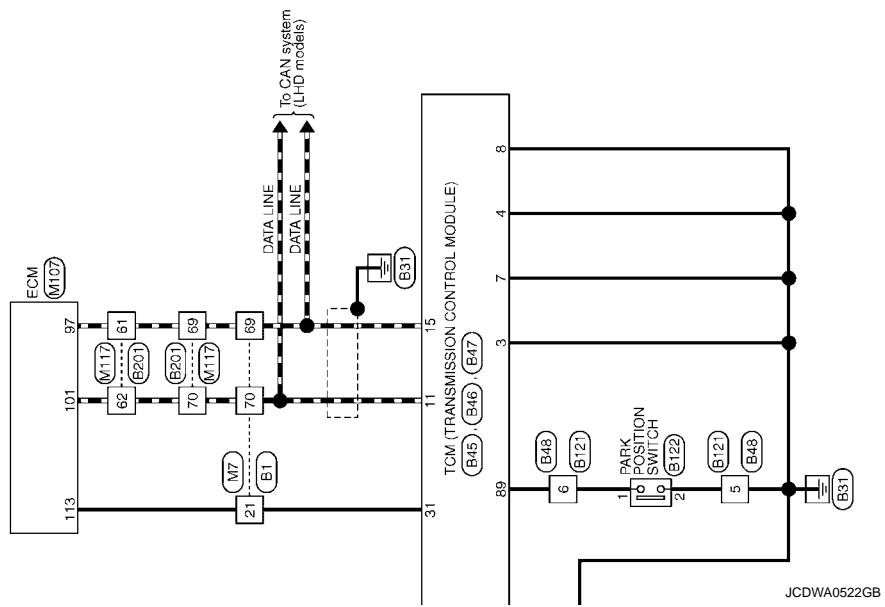
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## TRANSMISSION SYSTEM

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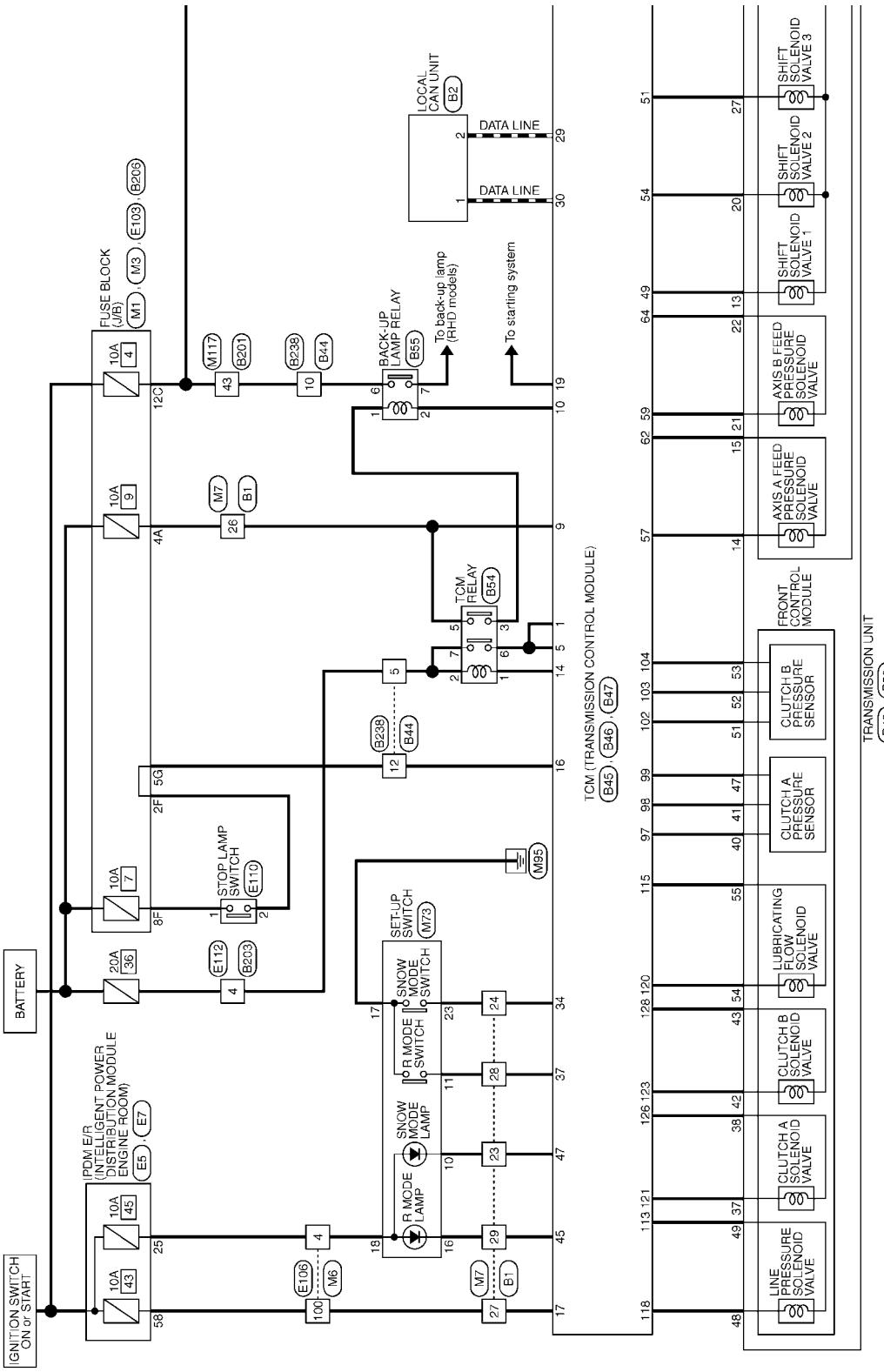
## RHD Models (Except For Europe)

## TRANSMISSION SYSTEM

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[TRANSMISSION: GR6Z30A]

## TRANSMISSION CONTROL SYSTEM (RHD MODELS)

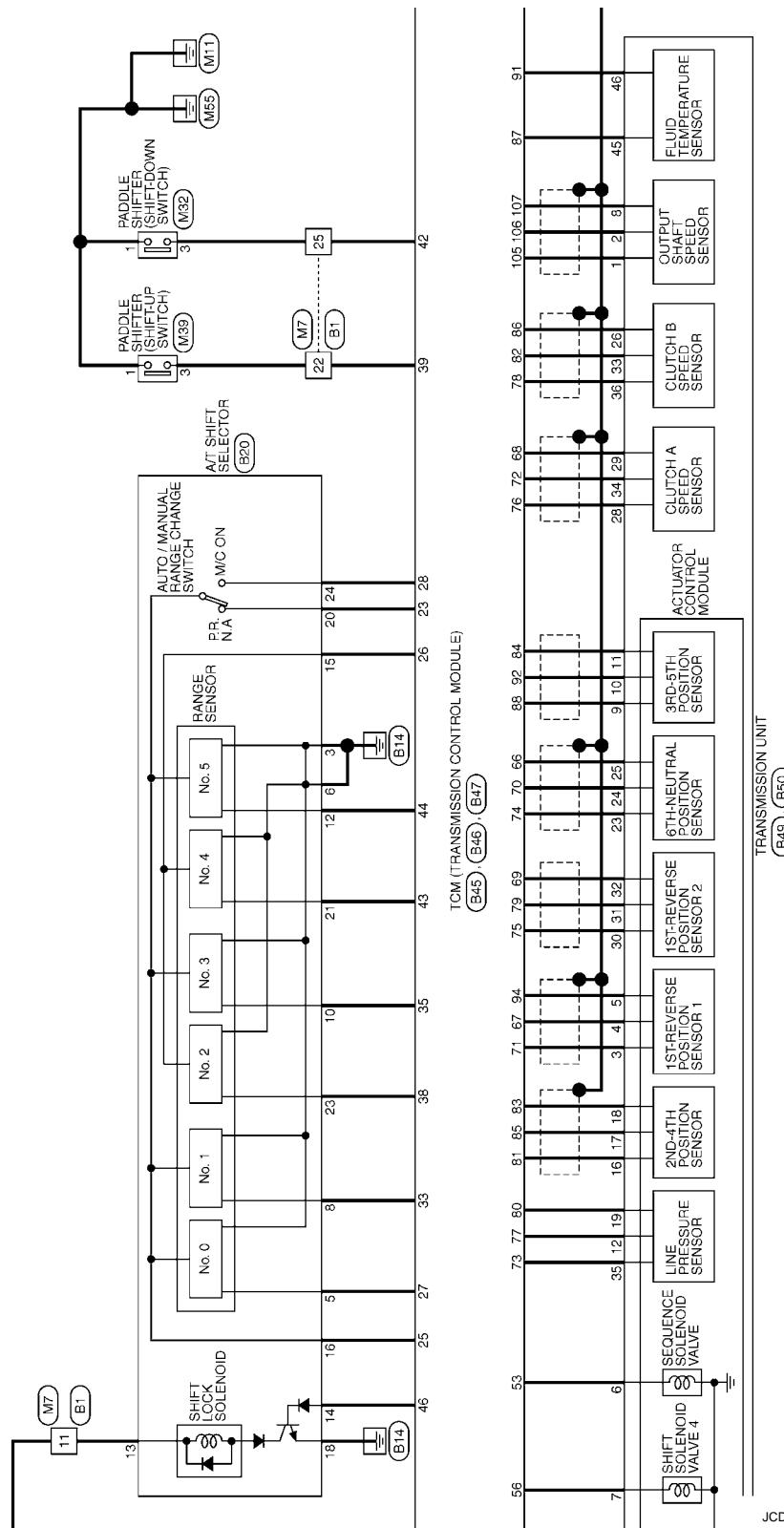


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# TRANSMISSION SYSTEM

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[TRANSMISSION: GR6Z30A]



JCDWA0525GB

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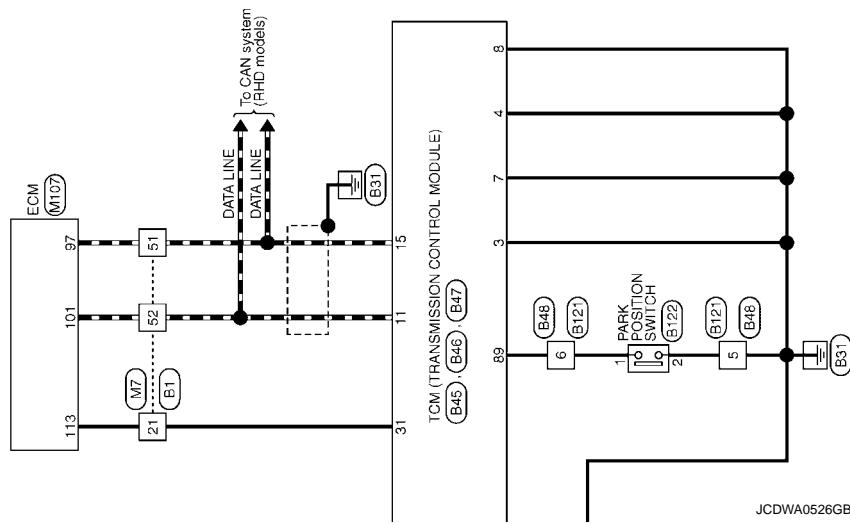
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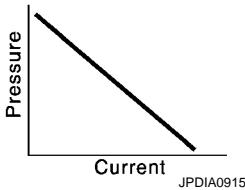
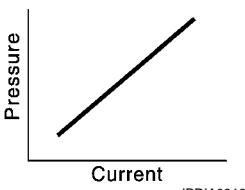
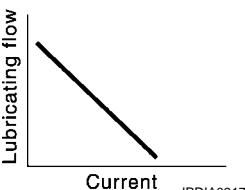
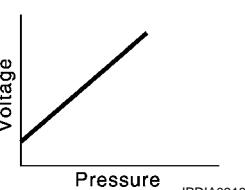


COMPONENT DESCRIPTION

# TRANSMISSION SYSTEM

## < SYSTEM DESCRIPTION >

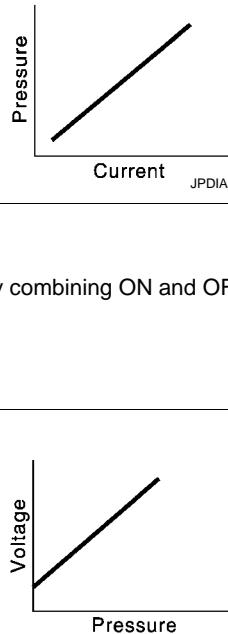
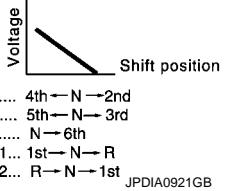
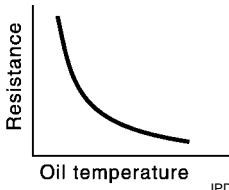
## [TRANSMISSION: GR6Z30A]

Component			Function
Front control module	Valve	Line pressure solenoid valve	Controls the line pressure by the line pressure solenoid current  JPDIA0915GB
		Clutch A solenoid valve	Controls the clutch pressure of clutches A/B by the clutch A/B solenoid current  JPDIA0916GB
		Clutch B solenoid valve	
	Pressure sensor	Lubricating flow solenoid valve	Controls the lubricating flow by the lubricating flow solenoid current  JPDIA0917GB
		Clutch A pressure sensor	Converts the clutch pressure of clutches A/B into voltage  JPDIA0918GB
		Clutch B pressure sensor	

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## [TRANSMISSION: GR6Z30A]

Component		Function
Actuator control module	Valve	<p>Axis A feed pressure solenoid valve</p> <p>Axis B feed pressure solenoid valve</p> <p>Shift solenoid valve 1</p> <p>Shift solenoid valve 2</p> <p>Shift solenoid valve 3</p> <p>Shift solenoid valve 4</p> <p>Sequence solenoid valve</p>
		Controls the feed pressure of axes A/B by the axes A/B feed pressure solenoid
		Controls 4 shift actuator pistons by combining ON and OFF of each shift solenoid valve <sup>*1</sup>
	Pressure sensor	<p>Line pressure sensor</p> <p>Converts the line pressure into voltage</p> 
	Position sensor	<p>1st-Reverse position sensor 1</p> <p>1st-Reverse position sensor 1</p> <p>2nd-4th position sensor</p> <p>6th-Neutral position sensor</p> <p>3rd-5th position sensor</p>
		<ul style="list-style-type: none"> <li>Converts each shift actuator position into voltage</li> <li>Two 1st-reverse position sensors with the same output (but the output characteristics are inverse) are installed for fail-safe</li> </ul>
		 <p>2nd-4th..... 4th → N → 2nd      5th-3rd..... 5th → N → 3rd      6th ..... N → 6th      1st-Reverse 1... 1st → N → R      1st-Reverse 2... R → N → 1st</p>
Wheel sensor	Clutch A speed sensor	Converts the clutches A/B speed into pulse
	Clutch B speed sensor	
	Output shaft speed sensor	Converts the output shaft speed into pulse
Park position switch		When the parking position is locked, it is energized, and when unlocked, it is not energized
Fluid temperature sensor		<p>Converts the oil pan oil temperature into electrical resistance</p> 
TCM		Controls the transmission system
Shift device	Range sensor	<p>Range sensor No. 0</p> <p>Range sensor No. 1</p> <p>Range sensor No. 2</p> <p>Range sensor No. 3</p> <p>Range sensor No. 4</p> <p>Range sensor No. 5</p>
		With 6 range sensors, the shift lever position is recognized <sup>*2</sup>
	Auto/Manual range change switch	Inputs the Auto/Manual range change switch signal to TCM
	Shift lock solenoid	Lock or unlock is attained with 3 systems, the ignition switch signal, stop lamp switch signal and lock or unlock signal (TCM)

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## [TRANSMISSION: GR6Z30A]

Component		Function
Set-up switch	R mode switch	Normally not energized, and energized by turning the set-up switch to R
	SNOW mode switch	Normally not energized, and energized by turning the set-up switch to SNOW
TCM relay		Perform the power supply to TCM

\*1: For the combination of the solenoids, refer to the "Shift actuator operation list".

\*2: For the combination of the range sensors, refer to the "Shift lever position and range sensor output".

### Shift actuator operation list

–: No effect on operation

Shift actuator	Operation	Solenoid valve				
		Sequence	Shift 1	Shift 2	Shift 3	Shift 4
6th-Neutral shift actuator	6GR → N	ON	ON	OFF	–	–
	6GR ← N		OFF	ON	–	–
2nd-4th shift actuator	2GR → N → 4GR	OFF	ON	OFF	–	–
	2GR ← N ← 4GR		OFF	ON	–	–
3rd-5th shift actuator	5GR → N → 3GR	ON	–	–	OFF	ON
	5GR ← N ← 3GR		–	–	ON	OFF
1st-Reverse shift actuator	1GR → N → Reverse	OFF	–	–	ON	OFF
	1GR ← N ← Reverse		–	–	OFF	ON

### Shift lever position and range sensor output

Shift lever position	Range sensor					
	No. 0	No. 1	No. 2	No. 3	No. 4	No. 5
P	ON	OFF	OFF	OFF	OFF	OFF
R	OFF	ON	ON	OFF	OFF	OFF
N	OFF	OFF	ON	ON	ON	OFF
A↔M	OFF	OFF	OFF	OFF	ON	ON

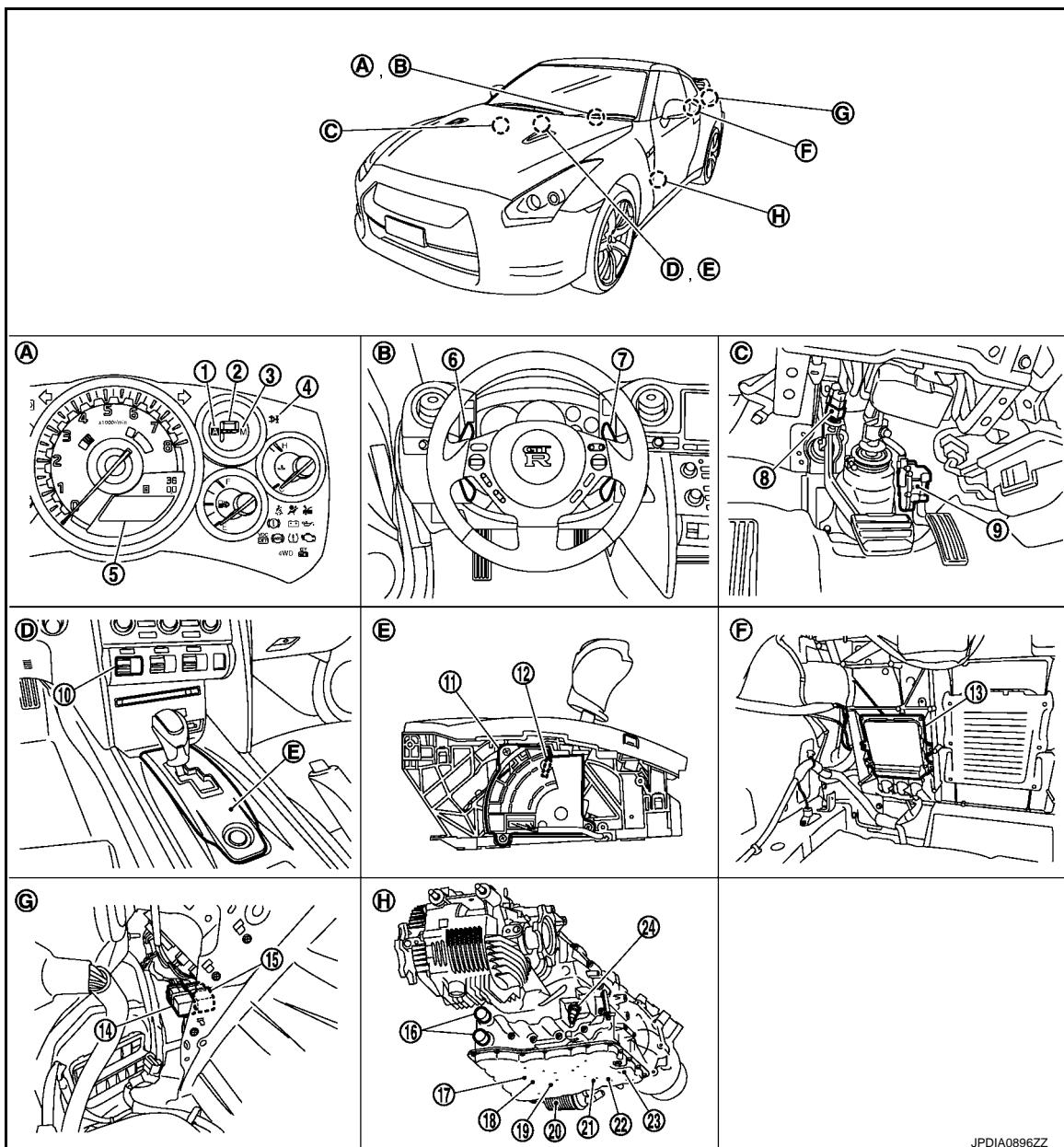
# TRANSMISSION SYSTEM

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[TRANSMISSION: GR6Z30A]

Component Parts Location (NHPC)

INFOID:000000004651021



1. A range indicator	2. Shift position indicator	3. M range indicator
4. Transmission warning light	5. Information display	6. Paddle shifter (shift-down switch)
7. Paddle shifter (shift-up switch)	8. Stop lamp switch	9. Accelerator pedal position sensor
10. Set-up switch	11. Range sensor	12. Auto/Manual range change switch
13. TCM	14. TCM relay	15. Back-up lamp relay
16. Transmission connector	17. Output shaft speed sensor	18. Clutch A speed sensor
19. Clutch B speed sensor	20. Heat exchanger	21. Actuator control module
22. Fluid temperature sensor	23. Front control module	24. Park position switch
A. Combination meter	B. Steering assembly	C. Rear of LH instrument lower panel
D. Center console	E. Control device assembly	F. Trunk room
G. Left side of trunk room	H. Transmission assembly	

The following parts are integrated into the actuator control module (21).

Axis A feed pressure solenoid valve  
Shift solenoid valve 2

Axis B feed pressure solenoid valve  
Shift solenoid valve 3

Shift solenoid valve 1  
Shift solenoid valve 4

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## TRANSMISSION SYSTEM

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### [TRANSMISSION: GR6Z30A]

Sequence solenoid valve	Line pressure sensor	1st-Reverse position sensor 1
1st-Reverse position sensor 1	2nd-4th position sensor	6th-Neutral position sensor
3rd-5th position sensor		
The following parts are integrated into the front control module (23).		
Line pressure solenoid valve	Clutch A solenoid valve	Clutch B solenoid valve
Lubricating flow solenoid valve	Clutch A pressure sensor	Clutch B pressure sensor

## ON BOARD DIAGNOSTIC (OBD) SYSTEM

### Diagnosis Description (NHPC)

INFOID:0000000004651022

Refer to [EC-142, "Diagnosis Description \(NHPC\)"](#) (TYPE 1\*), [EC-722, "Diagnosis Description \(NHPC\)"](#) (TYPE 2\*), [EC-1255, "Diagnosis Description \(NHPC\)"](#) (TYPE 3\*).

\*: Refer to [EC-20, "How to Check Vehicle Type"](#).

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# DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[TRANSMISSION: GR6Z30A]

## DIAGNOSIS SYSTEM (TCM)

### CONSULT-III Function (NHPC)

INFOID:0000000004651023

#### FUNCTION

Items	Function
Work Support	This mode enables a technician to adjust some devices faster and more accurately.
Self Diagnostic Results	Retrieve DTC from ECU and display diagnostic items.
Data Monitor	Monitor the input/output signal of the control unit in real time.
CAN Diagnosis Support Monitor	It monitors the status of CAN communication.
Active Test	Send the drive signal from CONSULT-III to the actuator. The operation check can be performed.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.
Configuration	Function to READ/WRITE vehicle configuration.

#### SELF DIAGNOSTIC RESULT

Refer to [TM-249, "DTC Index"](#).

#### DATA MONITOR

##### Display Item List

X: Standard, -: Not applicable, ▼: Option

Item name (Unit)	Monitor menu			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELEC- TION FROM ITEM	
SLEEVE B1 POSI 1 (mm or in.)	-	X	▼	Displays the sleeve B1 position calculated from the signal voltage of the 1st-Reverse position sensor 1.
SLEEVE B1 POSI 2 (mm or in.)	-	X	▼	Displays the sleeve B1 position calculated from the signal voltage of the 1st-Reverse position sensor 2.
1-R POSITION SEN 1 (mV)	X	-	▼	Displays the signal voltage of the 1st-Reverse position sensor 1.
1-R POSITION SEN 2 (mV)	X	-	▼	Displays the signal voltage of the 1st-Reverse position sensor 2.
SLEEVE A2 POSI (mm or in.)	-	X	▼	Displays the sleeve A2 position calculated from the signal voltage of the 2nd-4th position sensor.
2-4 POSITION SEN (mV)	X	-	▼	Displays the signal voltage of the 2nd-4th position sensor.
SLEEVE B2 POSI (mm or in.)	-	X	▼	Displays the sleeve B2 position calculated from the signal voltage of the 3rd-5th position sensor.
3-5 POSITION SEN (mV)	X	-	▼	Displays the signal voltage of the 3rd-5th position sensor.
SLEEVE A1 POSI (mm or in.)	-	X	▼	Displays the sleeve A1 position calculated from the signal voltage of the 6th-Neutral position sensor.
6-N POSITION SEN (mV)	X	-	▼	Displays the signal voltage of the 6th-Neutral position sensor.
ABS OPERATION SIG (On/Off)	X	-	▼	Displays the ABS operation signal received from ABS actuator and electric unit (control unit) via CAN communication.
ACCEL POSI SEN 1 (0.0/8)	X	-	▼	Displays the accelerator pedal position signal received from ECM via CAN communication.
MON SHIFT SOL 1 (On/Off)	X	-	▼	Monitors the command value from TCM to the shift solenoid valve 1, and displays the monitor value.

# DIAGNOSIS SYSTEM (TCM)

## < SYSTEM DESCRIPTION >

## [TRANSMISSION: GR6Z30A]

Item name	(Unit)	Monitor menu			Remarks
		ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
COMM SHIFT S/V 1	(On/Off)	–	–	▼	Displays the command value from TCM to the shift solenoid valve 1.
MON SHIFT SOL 2	(On/Off)	X	–	▼	Monitors the command value from TCM to the shift solenoid valve 2, and displays the monitor value.
COMM SHIFT S/V 2	(On/Off)	–	–	▼	Displays the command value from TCM to the shift solenoid valve 2.
MON SHIFT SOL 3	(On/Off)	X	–	▼	Monitors the command value from TCM to the shift solenoid valve 3, and displays the monitor value.
COMM SHIFT S/V 3	(On/Off)	–	–	▼	Displays the command value from TCM to the shift solenoid valve 3.
MON SHIFT SOL 4	(On/Off)	X	–	▼	Monitors the command value from TCM to the shift solenoid valve 4, and displays the monitor value.
COMM SHIFT S/V 4	(On/Off)	–	–	▼	Displays the command value from TCM to the shift solenoid valve 4.
FLUID TEMP	(°C)	–	–	▼	Displays the transmission fluid temperature calculated from the signal voltage of the oil temperature sensor.
FLUID TEMP SEN	(mV)	X	–	▼	Displays the signal voltage of the oil temperature sensor.
TRGT AXIS A PRESS	(MPa)	–	–	▼	Displays the axis A feed pressure target value of TCM.
MON AXIS A S/V	(A)	X	–	▼	Monitors the command current from TCM to the axis A feed pressure solenoid valve, and displays the monitor value. (It does not always correspond to the axis A feed pressure solenoid valve value)
COMM AXIS A S/V	(A)	–	–	▼	Displays the command current from TCM to the axis A feed pressure solenoid valve.
TRGT AXIS B PRESS	(MPa)	–	–	▼	Displays the axis B feed pressure target value of TCM.
MON AXIS B S/V	(A)	X	–	▼	Monitors the command current from TCM to the axis B feed pressure solenoid valve, and displays the monitor value. (It does not always correspond to the axis B feed pressure solenoid valve value)
COMM AXIS B S/V	(A)	–	–	▼	Displays the command current from TCM to the axis B feed pressure solenoid valve.
STOP LAMP SW	(On/Off)	X	–	▼	Displays the operation status of the stop lamp switch.
CLUTCH A PRESS	(MPa)	–	–	▼	Displays the clutch A pressure calculated from the signal voltage of the clutch A pressure sensor.
CLUTCH A PRS SEN	(mV)	X	–	▼	Displays the signal voltage of the clutch A pressure sensor.
TGT CLUTCH A PRS	(MPa)	–	–	▼	Displays the clutch A pressure target value of TCM.
CLUTCH A SPEED	(rpm)	–	–	▼	Displays the clutch A speed calculated from the pulse signal of the clutch A speed sensor.
MON CLUTCH A S/V	(A)	X	–	▼	Monitors the command current from TCM to the clutch A solenoid valve, and displays the monitor value. (It does not always correspond to the clutch A solenoid valve value)
COM CLUTCH A S/V	(A)	–	–	▼	Displays the command current from TCM to the clutch A solenoid valve.

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# DIAGNOSIS SYSTEM (TCM)

## < SYSTEM DESCRIPTION >

## [TRANSMISSION: GR6Z30A]

Item name	(Unit)	Monitor menu			Remarks
		ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
CLUTCH A TEMP	(°C)	—	—	▼	Displays the estimated clutch A temperature calculated by TCM.
CLUTCH B PRESS	(MPa)	—	—	▼	Displays the clutch B pressure calculated from the signal voltage of the clutch B pressure sensor.
CLUTCH B PRS SEN	(mV)	X	—	▼	Displays the signal voltage of the clutch B pressure sensor.
TGT CUTCH B PRES	(MPa)	—	—	▼	Displays the clutch B pressure target value of TCM.
CLUTCH B SPEED	(rpm)	—	—	▼	Displays the clutch B speed calculated from the pulse signal of the clutch B speed sensor.
MON CLUTCH B S/V	(A)	X	—	▼	Monitors the command current from TCM to the clutch B solenoid valve, and displays the monitor value. (It does not always correspond to the clutch B solenoid valve value)
COM CLUTCH B S/V	(A)	—	—	▼	Displays the command current from TCM to the clutch B solenoid valve.
CLUTCH B TEMP	(°C)	—	—	▼	Displays the estimated clutch B temperature calculated by TCM.
GR POSITION		—	—	▼	Displays the transmission gear positions recognized by TCM.
ENGINE SPEED	(rpm)	X	X	▼	Displays the engine speed signal received from ECM via CAN communication.
GR POSI INDICATION		—	X	▼	Displays the transmission gear positions recognized by TCM.
IGN SW	(On/Off)	X	—	▼	Displays the operation status of the ignition switch.
LINE PRESSURE	(MPa)	—	—	▼	Displays the line pressure value calculated from the signal voltage of the line pressure sensor.
LINE PRESS SENSOR	(mV)	X	—	▼	Displays the signal voltage of the line pressure sensor.
TRGT LINE PRESS	(MPa)	—	—	▼	Displays the line pressure target value of TCM.
MON LINE PRES S/V	(A)	X	—	▼	Monitors the command current from TCM to the line pressure solenoid valve, and displays the monitor value. (It does not always correspond to the line pressure solenoid valve value)
COM LINE PRES S/V	(A)	—	—	▼	Displays the command current from TCM to the line pressure solenoid valve.
TRGT LUBE PRESS	(MPa)	—	—	▼	Displays the lubricating flow target value of TCM.
MON LUBE S/V	(A)	X	—	▼	Monitors the command current from TCM to the lubricating flow solenoid valve, and displays the monitor value. (It does not always correspond to the lubricating flow solenoid valve value)
COMM LUBE S/V	(A)	—	—	▼	Displays the command current from TCM to the lubricating flow solenoid valve.
VDC off stall start	(Times)	—	—	▼	Displays the stall start frequency with VDC off.
AM RANGE CHG SW 1	(On/Off)	X	—	▼	Displays the operation status of the Auto/Manual range change switch 1.
AM RANGE CHG SW 2	(On/Off)	X	—	▼	Displays the operation status of the Auto/Manual range change switch 2.

# DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[TRANSMISSION: GR6Z30A]

Item name (Unit)	Monitor menu			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELEC- TION FROM ITEM	
MODE	—	X	▼	Displays the set-up switch (transmission) and driving range statuses.
COM R MODE LAMP (On/Off)	—	—	▼	Displays the operation status of the R mode lamp on the set-up switch (transmission).
COM S MODE LMP (On/Off)	—	—	▼	Displays the operation status of the SNOW mode lamp on the set-up switch (transmission).
COM NEUTRAL SIG (On/Off)	—	—	▼	Displays the neutral status judged by TCM from the range sensor and park position switch in the A/T shift selector.
OUTPUT SHAFT SPD (rpm)	—	—	▼	Displays the output shaft speed calculated from the pulse signal of the output shaft speed sensor.
PARK POSITION SW (On/Off)	X	—	▼	Displays the operation status of the park position switch.
RANGE	—	X	▼	Displays the shift lever positions recognized by TCM.
COM BACK LMP RLY (On/Off)	—	—	▼	Displays the command value from TCM to the back-up lamp relay.
MON BACK LMP RLY (On/Off)	X	—	▼	Monitors the command value from TCM to the back-up lamp relay, and displays the monitor value.
MON SEQ S/V (On/Off)	X	—	▼	Monitors the command value from TCM to the sequence solenoid valve, and displays the monitor value.
COMM SEQ S/V (On/Off)	—	—	▼	Displays the command value from TCM to the sequence solenoid valve.
R MODE SW (On/Off)	X	—	▼	Displays the operation status of the R mode switch on the set-up switch (transmission).
SNOW MODE SW (On/Off)	X	—	▼	Displays the operation status of the SNOW mode switch on the set-up switch (transmission).
TR SENSOR No.0 (On/Off)	X	—	▼	Displays the operation status of the range sensor No.0 in the A/T shift selector.
TR SENSOR No.1 (On/Off)	X	—	▼	Displays the operation status of the range sensor No.1 in the A/T shift selector.
TR SENSOR No.2 (On/Off)	X	—	▼	Displays the operation status of the range sensor No.2 in the A/T shift selector.
TR SENSOR No.3 (On/Off)	X	—	▼	Displays the operation status of the range sensor No.3 in the A/T shift selector.
TR SENSOR No.4 (On/Off)	X	—	▼	Displays the operation status of the range sensor No.4 in the A/T shift selector.
TR SENSOR No.5 (On/Off)	X	—	▼	Displays the operation status of the range sensor No.5 in the A/T shift selector.
VEHICLE SPEED (km/h or mph)	X	X	▼	Displays the vehicle speed signal (meter) received via CAN communication from the combination meter.
COM STARTER RLY (On/Off)	—	—	▼	Displays the command value from TCM to the starter relay.
MON STARTER RLY (On/Off)	X	—	▼	Monitors the command value from TCM to the starter relay, and displays the monitor value.
PADDLE SFT (DOWN) (On/Off)	X	—	▼	Displays the operation status of the paddle shifter (shift-down switch).
PADDLE SFT (UP) (On/Off)	X	—	▼	Displays the operation status of the paddle shifter (shift-up switch).

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# DIAGNOSIS SYSTEM (TCM)

## < SYSTEM DESCRIPTION >

[TRANSMISSION: GR6Z30A]

Item name	(Unit)	Monitor menu			Remarks
		ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
ACCEL POSI SEN 2	(0.0/8)	X	—	▼	Displays the accelerator pedal position signal received from ECM via CAN communication.
BATTERY VOLTAGE	(V)	X	X	▼	Displays the power supply voltage of TCM.
VDC OPERATION SIG	(On/Off)	X	—	▼	Displays the VDC operation signal received from ABS actuator and electric unit (control unit) via CAN communication.
TCM RELAY	(On/Off)	—	—	▼	Displays the operation status of the TCM relay.
SHIFT LOCK SOL	(On/Off)	—	—	▼	Displays the operation status of the shift lock solenoid.

## ACTIVE TEST

### Procedure

1. Apply parking brake.
2. Shift the shift lever to the P position.
3. Start the engine.
4. Select the operation item.

#### NOTE:

- Operable only in the P position, and inoperable in other positions.

- Only one item is operable, and multiple items cannot be operated at the same time.

### Test item list

Items	Function check
SHIFT S/V 1	
SHIFT S/V 2	In response to the ON/OFF command from CONSULT-III, TCM supplies the current to the solenoid valve to enable an operation check of the solenoid valve.
SHIFT S/V 3	
SHIFT S/V 4	
SEQUENCE S/V	<b>CAUTION:</b> If the solenoid valve has a malfunction such as sticking, it does not operate. Check for operation noise or vibrations.
LINE PRESS S/V	
C/L B PRESS S/V	In response to the pressure indication value from CONSULT-III, TCM supplies the current to the solenoid valve to enable an operation check of the solenoid valve.
C/L A PRESS S/V	
LUBRICATION FLOW-RATE S/V	<b>CAUTION:</b> If the solenoid valve has a malfunction such as sticking, it does not operate. Check using Data Monitor.
A-AXIS SUPPLY PRESSURE S/V	<b>NOTE:</b> Controls so that the oil pressure is built up in each solenoid valve.
B-AXIS SUPPLY PRESSURE S/V	
STARTER RELAY	In response to the ON/OFF command from CONSULT-III, TCM supplies the current to the relay to enable an operation check of the relay.
REVERSE LAMP RELAY	
TCM RELAY	<b>CAUTION:</b> If the relay has a malfunction such as sticking, it does not operate. Check for an operation noise or vibrations.
SHIFT LOCK SOLENOID	In response to the ON/OFF command from CONSULT-III, TCM supplies the current to the shift lock solenoid to enable an operation check of the shift lock solenoid.
	<b>CAUTION:</b> If the solenoid has a malfunction such as sticking, it does not operate. Check for an operation noise or vibrations.
	<b>NOTE:</b> With the engine running and the brake pedal depressed, check that the shift lever can be moved from the P position in accordance with the ON/OFF operation.

## WORK SUPPORT

## Procedure

1. Apply parking brake.
2. Shift the shift lever to the P position.

**CAUTION:****Check that the park lock operates.**

3. Start the engine.

**NOTE:**

The operation is available only after the ignition switch is turned ON, except for the "CLUTCH GEAR LEARNING", "GEAR POSITION TEST", and "DISENGAGING THE GEAR".

4. Select the operation item.

**NOTE:**

- Operable only in the P position, and inoperable in other positions.
- Only one item is operable, and multiple items cannot be operated at the same time.

## Display Item List

Items	Function or item		Application
CLUTCH GEAR LEARNING	<p>Perform the learning of the clutch touch point and the engaged gear position and neutral position for each gear.</p> <p><b>CAUTION:</b></p> <ul style="list-style-type: none"> <li>• Clutch gear learning can only be performed once in one driving cycle (the ignition switch OFF→ON→OFF).</li> <li>• If no clutch gear learning can be performed, it is necessary to turn the ignition switch OFF→ON, and perform the clutch gear learning again.</li> </ul>		Always perform this procedure during maintenance and when TCM or transmission is replaced.
READ CLUTCH GEAR LEARNING DATA	<p>Check the clutch gear learning status.</p> <p><b>CAUTION:</b></p> <p>Except for learning experience check, after the learning, when the ignition switch is turned OFF, no more checks can be performed.</p>		After the clutch gear learning, a check that the learning is completed normally can be performed.
GEAR POSITION TEST	Allows engagement of each gear individually.		The operation of each gear can be checked.
DISENGAGING THE GEAR	Allows making all the gears neutral.		Use when returning the gear to neutral.
ADJUST CLUTCH B CAPACITY	Allows adjustment of the clutch capacity in 15 stages.	<ul style="list-style-type: none"> <li>• 0: Initial</li> <li>• 1 – 7: Clutch capacity up</li> <li>• –1 – –7: Clutch capacity down</li> </ul>	If a shock or slip is large during gear shift and start-up, adjust the clutch capacity.
ADJUST CLUTCH A CAPACITY			
CLUTCH A TOUCH POINT	Allows adjustment of the clutch touch point in 15 stages.	<ul style="list-style-type: none"> <li>• 0: Initial</li> <li>• 1 – 7: Move the clutch touch point closer.</li> <li>• –1 – –7: Moves the clutch touch point farther.</li> </ul>	In the event of a strong creep power, poor start-up response, or excess start-up shock, adjusts the clutch touch point.
CLUTCH B TOUCH POINT			
WRITE PREVIOUS CLUTCH LEARNING VALUE	The clutch touch point learning value can be returned to the previous learning value.		Used when the clutch learning value is returned to the previous learning value upon the request from a customer (when the customer prefers the previous setting than the current learned driving feeling, for example).

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# DIAGNOSIS SYSTEM (TCM)

## < SYSTEM DESCRIPTION >

[TRANSMISSION: GR6Z30A]

Items	Function or item	Application
DELETE GEAR POSITION LEARNING VALUE	The gear position learning value can be erased and returned to the initial value.	
DELETE CLUTCH A LEARNING VALUE	<p>The clutch A learning value can be erased and returned to the initial value.</p> <p><b>CAUTION:</b> <b>If the clutch learning values is erased at a time other than a transmission replacement, the previous learning values can no longer be resumed.</b></p>	
DELETE CLUTCH B LEARNING VALUE	<p>The clutch B learning value can be erased and returned to the initial value.</p> <p><b>CAUTION:</b> <b>If the clutch learning values is erased at a time other than a transmission replacement, the previous learning values can no longer be resumed.</b></p>	Always erase the previous transmission learning value, when the transmission is replaced.*1
ERASE CLTCH ENGGMT PRSSR CRRCTN	<p>The clutch engagement pressure correction value can be erased and returned to the initial value.</p> <p><b>CAUTION:</b> <b>If only TCM is replaced, since a new TCM has no memory of the clutch engagement pressure correction value, it may require the clutch A/B capacity adjustment.</b></p>	
SHOW OIL TEMP HISTORY	The transmission fluid temperature frequency can be confirmed in 5 stages, providing the information of the temperature range used.	By checking the proportion of the count in each range, it can be used as information to judge whether hard driving occurs.
HIGH OIL TEMP WARNING HISTORY	<ul style="list-style-type: none"> <li>• Clutch A Protection 1, 2, 3, 4*2</li> <li>• Clutch B Protection 1, 2, 3, 4*2</li> <li>• Clutch Overheat Protection History 1*3</li> <li>• Line Pressure Loss History*4</li> <li>• High Oil Temp Protection History 1, 2, 3*5</li> </ul>	

- \*1: If the learning value is erased, the transmission warning light blinks.

- \*2: Refer to the "Clutch protection history".

- \*3: Refer to the "Clutch overheat protection history".

- \*4: Refer to the "Line pressure loss history".

- \*5: Refer to the "High oil temperature protection History".

### Clutch protection history

- If the clutch temperature increases abnormally, the activation of protection control can be checked. In addition, because the protection control consists of a few stages, the history is displayed in each stage.

Items	Clutch protection 1	Clutch protection 2	Clutch protection 3	Clutch protection 4			
Description	The transmission warning lamp is illuminated and the message "T/M CLUTCH TEMP HIGH STOP VEHICLE UNTIL WARNING TURNS OFF" appears in the information display.	Performs the engine torque restriction.	Lowers the upper limit of the engine torque restriction.	Release the clutch.			
Operation conditions (if either of them is met)	Clutch temperature conditions	Depending on the clutch temperature increase, the clutch protection control shifts from clutch protection 1 to 4.					
	Stall driving conditions*1	Depending on the time from the start of stall driving, the clutch protection control shifts from clutch protection 1 to 4.					
Cancel conditions	When the clutch temperature is lowered and the wide open throttle status continues for a certain period.						
Warning light on	Exists						
Engine torque restriction	Does not exist	Exists					

\*1: It is judged as the "stall driving conditions", if the following conditions are met. Acceleration pedal position: Approx. 0.6/8 or more, vehicle speed: Approx. 3 km/h (1 MPH) or less

Clutch overheat protection history

- Shows the operation history of the clutch overheating protection control due to stall driving. Refer to the "Clutch protection".

Line pressure loss history

- Shows the history of abnormal drop of the line pressure. [The line pressure sensor value is 0.2 MPa (2.04 kg/cm<sup>2</sup>, 29 psi) or less]

**NOTE:**

The possible causes for line pressure drop are as follows.

- Fluid level drop due to oil leakage
- Poor fluid suction due to deformation of the oil pan or others

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High oil temperature protection history

- If the transmission fluid temperature increases abnormally, the activation of protection control can be checked. In addition, because the protection control consists of a few stages, the history is displayed in each stage.

Items	High oil temperature protection history 1	High oil temperature protection history 2	High oil temperature protection history 3
Description	The transmission warning lamp is on and the message "T/M OIL TEMP HIGH DECREASE SPEED" appears in the information display.	Performs the engine torque restriction and engine speed restriction.	Lowers the upper limit of the engine torque restriction and engine speed restriction.
Operation contents	As the oil temperature increases, the high oil protection control shifts from the high oil temperature protection history 1 to 3.		
Cancel conditions	When the oil temperature is lowered and the wide open throttle status continues for a certain period of time.		
Warning light on	Exists		
Engine torque restriction, engine speed restriction	Does not exist	Exists	

**CAUTION:**

- During one driving cycle (ignition switch OFF → ON → OFF), if the "High Oil Temp Protection History 2" status is reached 3 times, after that the high oil temperature protection remains active.
- When the ignition switch is turned OFF, the high oil temperature protection is deactivated.

## CONFIGURATION

### Procedure

- Apply parking brake.
- Shift the shift lever to the P position.
- Turn the ignition switch ON.
- Select the operation item.

### Display Item List

# DIAGNOSIS SYSTEM (TCM)

## < SYSTEM DESCRIPTION >

[TRANSMISSION: GR6Z30A]

Items	Function	Application
Write IP Chara	<p>Writes the acquired IP characteristics data to TCM.</p> <ul style="list-style-type: none"> <li>• If the transmission is replaced: Write the IP characteristics of replaced transmission to TCM that is not replaced.</li> <li>• If TCM is replaced: Write the IP characteristics of transmission that is not replaced to replaced TCM.</li> <li>• If both of them are replaced: Write the IP characteristics of replaced transmission to replaced TCM.</li> </ul> <p><b>CAUTION:</b></p> <ul style="list-style-type: none"> <li>• The “write IP characteristics” can only be performed once in one driving cycle (the ignition switch OFF→ON→OFF).</li> <li>• If the write IP characteristics cannot be performed, turn the ignition switch OFF→ON and perform the write IP characteristics again.</li> </ul>	The individual variations of the transmission hydraulic parts are read into TCM to stabilize the control.
Read IP Chara Written Data	<p>Check the write IP characteristics status.</p> <p><b>CAUTION:</b></p> <p>Except for the write experience, nothing can be checked after the IP writing, if the ignition switch is turned OFF.</p>	The write IP characteristics status can be checked when the write IP characteristics is completed or the writing is not successful.