DTC	P0A78/306	DRIVE MOTOR ”A” INVERTER PERFORMANCE

CIRCUIT DESCRIPTION

See the description of the inverter on page 05–562.

The HV control ECU controls MG2 torque in accordance with the driving condition.

DTC No.	INF Code	DTC Detection Condition	Trouble Area
P0A78	306	Failure in monitoring MG2 torque performance	• Hybrid vehicle motor • w/ converter inverter assembly

MONITOR DESCRIPTION

If the difference between the requested MG2 torque and the actual MG2 torque exceeds a predetermined value, the HV control ECU determines that there is malfunction in the execution or monitoring of the MG2 torque. Then, the HV control ECU illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P0A78 (INF 306): Motor inverter/Discrepancy between motor monitored torque and commanded torque
Required sensor/components	Motor inverter
Frequency of operation	Continuous
Duration	TOYOTA's intellectual property
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not present	TOYOTA's intellectual property
No other condition	–

TYPICAL MALFUNCTION THRESHOLDS

Difference between demanded and actual MG2 torque	Exceeds the standard level

COMPONENT OPERATING RANGE

Motor inverter	DTC P0A78 (INF 306) is not detected

INSPECTION PROCEDURE

CAUTION:

- **Before inspecting the high–voltage system, take safety precautions to prevent electrical shocks, such as wearing insulated gloves and removing the service plug grip. After removing the service plug grip, put it in your pocket to prevent other technicians from reconnecting it while you are servicing the high–voltage system.**
- **After disconnecting the service plug grip, wait at least for 5 minutes before touching any of the high–voltage connectors or terminals.**

HINT:

At least 5 minutes is required to discharge the high–voltage condenser inside the inverter.

1	READ OUTPUT DTC(HV ECU)

(a) Connect the hand–held tester to the DLC3.
(b) Turn the power switch ON (IG).
(c) Turn the hand–held tester ON.
(d) On the hand–held tester, enter the following menus: DIAGNOSIS / ENHANCED OBD II / HV ECU / DTC INFO / TROUBLE CODES.
(e) Read DTCs.
Result: DTC P0A78 (INF 306) and other DTCs are output

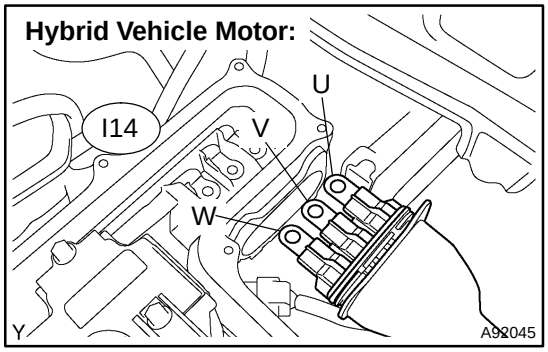
HINT:
If any other codes besides P0A78 (INF 306) are output, perform troubleshooting for those DTCs first.

YES → **GO TO RELEVANT DTC CHART (See page 05–440)**

NO

2	INSPECT HYBRID VEHICLE MOTOR ASSY

Hybrid Vehicle Motor:



CAUTION:
Wear insulated gloves before performing the following operation.
(a) Turn the power switch OFF.
(b) Remove the service plug grip (see page 21–116).
NOTICE:
Turning the power switch ON (READY) with the service plug grip removed could cause malfunction. Therefore, never turn the power switch ON (READY) in this state.
(c) Remove the inverter cover (see page 21–23).
(d) Disconnect the three–phase alternating current cable for the hybrid vehicle motor from the inverter.
(e) Using a milliohm meter, measure the resistance between the three–phase alternating current cable terminals of the hybrid vehicle motor.
NOTICE:
If the motor temperature is too high, the resistance varies considerably, which hinders determining malfunction. Therefore, measure the resistance at a minimum 8 hours after the vehicle has been stopped.
Standard:

Tester Connection	Specified Condition*
U (I14–1) – V (I14–2)	Below 135 mΩ at 20°C
V (I14–2) – W (I14–3)	Below 135 mΩ at 20°C
W (I14–3) – U (I14–1)	Below 135 mΩ at 20°C

*: Apply the formula given below to correct the resistance.
$R20 = Rt \div (1 + 0.00393 \times (T - 20))$
R20: Resistance converted to 20 °C (mΩ)
Rt: Resistance between measured lines (mΩ)
T: Ambient air temperature during measurement (°C)

(f) Calculate the difference between the maximum and minimum resistance between terminals U – V, V – W, and W – U.
Standard: Below 2 mΩ

(g) Using a megohmmeter, check the insulation resistance between the three–phase alternating current cable terminals of the hybrid vehicle motor and the body ground.
Standard:

Tester Connection	Specified Condition
U (I14–1) – Body ground	10 MΩ or higher
V (I14–2) – Body ground	10 MΩ or higher
W (I14–3) – Body ground	10 MΩ or higher

(h) Reconnect the three–phase alternating current cable for the hybrid vehicle motor.

(i) Reinstall the inverter cover (see page 21–23).

(j) Reinstall the service plug grip (see page 21–116).

NG → **REPLACE HYBRID VEHICLE MOTOR ASSY**

OK

REPLACE W/CONVERTER INVERTER ASSY (See page 21–23)