



# SERVICE BULLETIN

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURPOSE : CORRECTION	ISSUE NO. : MSB-15EX54-501	DATE : 2015-05-19	
SUBJECT : Errors in writing of the specific gravity level of the battery for the vehicles with AS&G		<DESTINATION/MODEL> (As per attached sheet 1)	<M/Y> 11-16
GROUP : Gr:54(Chassis & Electrical)			

**1. Description :**

Please refer to the attached document for the correction of the error in writing existing in the applicable service manual.

**2. Affected service manuals :**

Please refer to the attached document (Attached sheet 1)

**3. About the details :**

Please refer to the attached document (Attached sheets 15-27)

## EU/RUSSIA

## LANCER/LANCER SPORTBACK

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2011 LANCER/ LANCER SPORTBACK Workshop Manual	CGXE07E1-CD (ENGLISH), CGXS07E1-CD (SPANISH), CGXF07E1-CD (FRENCH), CGXG07E1-CD (GERMAN) RUSSIA:N/A	SERVICE SPECIFICATIONS (M541-00-030-91900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	Attached sheet 16
		CHARGING (M541-00-111-95500-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-08500-01)	Attached sheet 18
2012 LANCER/ LANCER SPORTBACK Workshop Manual	CGXE08E2-CD (ENGLISH), CGXS08E2-CD (SPANISH), CGXF08E2-CD (FRENCH), CGXG08E2-CD (GERMAN) <RUSSIA> N/A	SERVICE SPECIFICATIONS (M541-00-030-91900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	Attached sheet 16
		CHARGING (M541-00-112-13000-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-25600-01)	Attached sheet 18
2013 LANCER/ LANCER SPORTBACK Workshop Manual	CGXE09E1-CD (ENGLISH) CGXS09E1-CD (SPANISH) CGXF09E1-CD (FRENCH) CGXG09E1-CD (GERMAN) CGXI09E1-CD (ITALIAN) <RUSSIA> N/A	SERVICE SPECIFICATIONS (M541-00-030-91900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	Attached sheet 16
		CHARGING (M541-00-112-13000-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-25600-01)	Attached sheet 18
2014 LANCER/ LANCER SPORTBACK Workshop Manual	CGXE09E2-CD (ENGLISH) CGXS09E2-CD (SPANISH) CGXF09E2-CD (FRENCH) CGXG09E2-CD (GERMAN) CGXI09E2-CD (ITALIAN) <RUSSIA> N/A	SERVICE SPECIFICATIONS (M541-00-030-91900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	Attached sheet 16
		CHARGING (M541-00-112-13000-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-25600-01)	Attached sheet 18
2015 LANCER/ LANCER SPORTBACK Workshop Manual	CGXE10E1-CD (ENGLISH) CGXS10E1-CD (SPANISH) CGXF10E1-CD (FRENCH) CGXG10E1-CD (GERMAN) CGXI10E1-CD (ITALIAN) <RUSSIA> N/A	SERVICE SPECIFICATIONS (M541-00-030-91900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	Attached sheet 16
		CHARGING (M541-00-112-13000-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-25600-01)	Attached sheet 18

**MIRAGE/SPACE STAR**

<b>Applicable manual</b>	<b>Pub. No.</b>	<b>Applicable title (INFO ID)</b>	<b>Content</b>
2013 MIRAGE/SPACE STAR Workshop Manual	CA0E13E1-CD (ENG) CA0F13E1-CD (FRE) CA0G13E1-CD (GER) CA0S13E1-CD (SPA) CA0I13E1-CD (ITA) RUSSIA:N/A	SERVICE SPECIFICATIONS (M541-00-030-96400-01)	Attached sheet 25
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	
		CHAGING (M541-00-112-23700-01)	
		BATTERY TEST (M541-00-122-34200-01)	
2014 MIRAGE/SPACE STAR Workshop Manual	CA0E14E1-CD (ENG) CA0F14E1-CD (FRE) CA0G14E1-CD (GER) CA0S14E1-CD (SPA) CA0I14E1-CD (ITA) RUSSIA:N/A	SERVICE SPECIFICATIONS (M541-00-030-96400-01)	Attached sheet 25
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	
		CHAGING (M541-00-112-23700-01)	
		BATTERY TEST (M541-00-122-34200-01)	
2015 MIRAGE/SPACE STAR Workshop Manual	CA0E15E1-CD (ENG) CA0F15E1-CD (FRE) CA0G15E1-CD (GER) CA0S15E1-CD (SPA) CA0I15E1-CD (ITA) RUSSIA:N/A	SERVICE SPECIFICATIONS (M541-00-030-96400-01)	Attached sheet 25
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	
		CHAGING (M541-00-112-23700-01)	
		BATTERY TEST (M541-00-122-34200-01)	
2015.5 MIRAGE/SPACE STAR Workshop Manual	CA0E15E2-CD (ENG) CA0F15E2-CD (FRE) CA0G15E2-CD (GER) CA0S15E2-CD (SPA) CA0I15E2-CD (ITA) RUSSIA:N/A	SERVICE SPECIFICATIONS (M541-00-030-96400-01)	Attached sheet 25
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	
		CHAGING (M541-00-112-23700-01)	
		BATTERY TEST (M541-00-122-34200-01)	

**L200**

<b>Applicable manual</b>	<b>Pub. No.</b>	<b>Applicable title (INFO ID)</b>	<b>Content</b>
2016 L200 Workshop Manual	CKTE16E1-CD (ENG) CKTF16E1-CD (FRE) CKTG16E1-CD (GER) CKTS16E1-CD (SPA) CKTI16E1-CD (ITA) RUSSIA:N/A	SERVICE SPECIFICATIONS (M541-00-030-96400-01)	Attached sheet 26
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-42700-01)	
		CHAGING (M541-00-112-43100-01)	
		BATTERY TEST (M541-00-122-53500-01)	

## EU/RUSSIA/SOUTH AFRICA

### ASX

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2011 ASX Workshop Manual	CGWE11E2-CD (ENGLISH) CGWS11E2-CD (SPANISH) CGWF11E2-CD (FRENCH) CGWG11E2-CD (GERMAN) CGWI11E2-CD (ITALIAN) <RUSSIA> N/A <SOUTH AFRICA> DRAFT	SERVICE SPECIFICATIONS (M541-00-030-88900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-111-93300-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-06300-01)	Attached sheet 18
2012 ASX Workshop Manual	CGWE12E1-CD (ENGLISH) CGWS12E1-CD (SPANISH) CGWF12E1-CD (FRENCH) CGWG12E1-CD (GERMAN) CGWI12E1-CD (ITALIAN) <RUSSIA> N/A <SOUTH AFRICA> DRAFT	SERVICE SPECIFICATIONS (M541-00-030-88900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-111-98800-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-10400-01)	Attached sheet 18
2013 ASX Workshop Manual	CGAE13E2-CD (ENGLISH) CGAS13E2-CD (SPANISH) CGAF13E2-CD (FRENCH) CGAG13E2-CD (GERMAN) CGAI13E2-CD (ITALIAN) <RUSSIA> N/A <SOUTH AFRICA> DRAFT	SERVICE SPECIFICATIONS (M541-00-030-88900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-112-21500-01)	Attached sheet 19
		BATTERY TEST (M541-00-122-32000-01)	Attached sheet 18
2014 ASX Workshop Manual	CGAE14E1-CD (ENGLISH) CGAS14E1-CD (SPANISH) CGAF14E1-CD (FRENCH) CGAG14E1-CD (GERMAN) CGAI14E1-CD (ITALIAN) <RUSSIA> N/A <SOUTH AFRICA> DRAFT	SERVICE SPECIFICATIONS (M541-00-030-88900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-112-21500-01)	Attached sheet 19
		BATTERY TEST (M541-00-122-32000-01)	Attached sheet 18
2015 ASX Workshop Manual	CGAE15E1-CD (ENGLISH) CGAS15E1-CD (SPANISH) CGAF15E1-CD (FRENCH) CGAG15E1-CD (GERMAN) CGAI15E1-CD (ITALIAN) <RUSSIA> N/A <SOUTH AFRICA> DRAFT	SERVICE SPECIFICATIONS (M541-00-030-88900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-112-21500-01)	Attached sheet 19
		BATTERY TEST (M541-00-122-32000-01)	Attached sheet 18

## EU/RUSSIA/SOUTH AFRICA/ARGENTINA

### OUTLANDER

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2013 OUTLANDER Workshop Manual	CGFE13E1-CD (ENGLISH) CGFF13E1-CD (FRENCH) CGFG13E1-CD (GERMAN) CGFS13E1-CD (SPANISH) CGFI13E1-CD (ITALIAN) <RUSSIA> N/A <ARGENTINA, SOUTH AFRICA> DRAFT	GENERAL INFORMATION (M544-20-020-85500-01)	Attached sheet 20
		SERVICE SPECIFICATIONS (M541-00-031-03100-01)	Attached sheet 21
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-112-20400-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-31900-01)	Attached sheet 18
2014 OUTLANDER/ OUTLANDER PHEV Workshop Manual	CGFE14E2-CD (ENGLISH) CGFF14E2-CD (FRENCH) CGFG14E2-CD (GERMAN) CGFS14E2-CD (SPANISH) CGFI14E2-CD (ITALIAN) <RUSSIA> N/A <ARGENTINA, SOUTH AFRICA> DRAFT	SERVICE SPECIFICATIONS (M541-00-031-03100-01)	Attached sheet 21
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-112-37800-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-47200-01)	Attached sheet 18
2014.5 OUTLANDER/ OUTLANDER PHEV Workshop Manual	CGFE14E3-CD (ENGLISH) CGFF14E3-CD (FRENCH) CGFG14E3-CD (GERMAN) CGFS14E3-CD (SPANISH) CGFI14E3-CD (ITALIAN) <ARGENTINA, SOUTH AFRICA> DRAF	SERVICE SPECIFICATIONS (M541-00-031-03100-01)	Attached sheet 21
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-112-37800-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-47200-01)	Attached sheet 18

### PEUGEOT/CITROEN

#### 4008/C4 AIRCROSS

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2012 PEUGEOT 4008/ CITROEN C4 AIRCROSS (PZC) Workshop manual	N/A	SERVICE SPECIFICATIONS (M541-00-030-88900-01)	Attached sheet 15
		FLUID LEVEL AND SPECIFIC GRAVITY CHECK (M541-00-090-36400-01)	Attached sheet 16
		CHARGING (M541-00-111-98800-01)	Attached sheet 17
		BATTERY TEST (M541-00-122-10400-01)	Attached sheet 18

## G.EXP/GCC/ARGENTINA/SOUTH AFRICA

### LANCER/LANCER EX

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2012 LANCER/LANCER EX Workshop Manual	<G.EXP, GCC> PWME1111R (ENGLISH) PWMS1112R (SPANISH) <ARGENTINA, SOUTH AFRICA> DRAFT	Added below "GENERAL INFORMATION" (M541-00-010-68100-01)	Attached sheet 22
		Added above "CHARGING" (M541-00-112-10700-01)	Attached sheet 27
		CHARGING (M541-00-112-10700-01)	Attached sheet 23
		BATTERY TEST (M541-00-122-22300-01)	Attached sheet 18

### DELICA D:5

Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
2015 DELICA D:5 Workshop Manual	PWRE1407R <ARGENTINA, SOUTH AFRICA> DRAFT	Added below "GENERAL INFORMATION" (M541-00-010-68100-01)	Attached sheet 22
		Added above "CHARGING" (M541-00-112-10700-01)	Attached sheet 27
		CHARGING (M541-00-112-40800-01)	Attached sheet 23
		BATTERY TEST (M541-00-122-49400-01)	Attached sheet 24

## SERVICE SPECIFICATIONS

Item	Standard value	
Battery electrolyte specific gravity	1.220 – 1.290 (electrolyte temperature 20°C)	
Battery current sensor resistance	Current sensor resistance value	between terminal No.1 – 3: 3 – 10 kΩ
		between terminal No.1 – 4: less than 0.5 kΩ
		between terminal No.3 – 4: 3 – 10 kΩ
	Temperature sensor resistance value	4.5 – 7.2 kΩ (when 0 °C)
		1.6 – 2.5 kΩ (when 25 °C)
0.96 – 1.40 kΩ (when 40 °C)		

&lt;Correct&gt;

Battery electrolyte specific gravity (electrolyte temperature 20 °C)	Vehicles without Auto Stop & Go (AS&G) System	1.220 - 1.290
	Vehicles with Auto Stop & Go (AS&G) System	1.250 - 1.290

## FLUID LEVEL AND SPECIFIC GRAVITY CHECK

### ⚠ CAUTION

- If the battery is used with the electrolyte level below the LOWER LEVEL indicator, there is the danger that explosions may occur, so add water to the battery until the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.
- If too much water is added to make the level rise above the UPPER LEVEL indication, the electrolyte may leak out, so adjust so that the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.

1. Check that the battery electrolyte level is between the UPPER LEVEL and LOWER LEVEL indications.
2. Use a specific gravity meter and a thermometer to measure the specific gravity. <Incorrect>

~~Standard value: 1.220 – 1.290 (electrolyte temperature 20°C)~~

The specific gravity of the battery electrolyte changes according to the temperature, so the specific gravity when the electrolyte is at a temperature of 20°C can be calculated using the following formula. Use the converted value to judge whether the electrolyte is okay or not.

$$D_{20} = (t - 20) \times 0.0007 + Dt$$

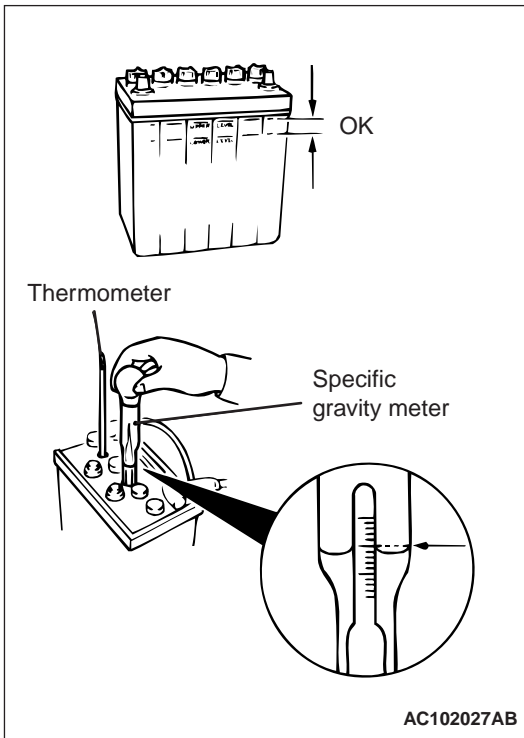
**D<sub>20</sub>**: Specific gravity converted to a value for electrolyte temperature of 20°C

**t**: Electrolyte temperature at the time of measurement

**Dt**: Actual specific gravity

<Correct>

Standard value: 1.220 - 1.290 (electrolyte temperature 20 )  
 <Vehicles without Auto Stop & Go (AS&G) System>  
 Standard value: 1.250 - 1.290 (electrolyte temperature 20 )  
 <Vehicles with Auto Stop & Go (AS&G) System>



## CHARGING

### ⚠ CAUTION

- The battery plugs should be removed during charging.
- The battery electrolyte level may rise and overflow from the battery during charging.
- Explosions may occur if the battery is brought close to naked flames during charging.
- Be careful to avoid tasks that might produce sparks or other danger while the battery is charging.
- After charging is complete, replace the battery plugs, pour water over the battery to rinse away any sulphuric acid, and let the battery stand to dry.
- Charge the battery in a well-ventilated location.
- Do not let the battery electrolyte temperature rise above approximately 45°C (approximately 55°C during rapid charging).

1. Remove the battery from the vehicle.
2. The normal charging current is a value in amperes which is 1/10th of the battery capacity. If the battery needs to be charged rapidly because of reasons such as time limitations, the maximum charging current for rapid charging is the battery capacity expressed as an ampere value.

Battery type	Capacity (5-hour rate)	Normal charging current	Rapid charging current
95D31L	64 Ah	6.4 A	64 A
75D23L	52 Ah	5.2 A	52 A
55D23L	48 Ah	4.8 A	48 A
Q-85	52 Ah	5.2 A	52 A
T-105	64 Ah	6.4 A	64 A

### Determine when charging is finished.

When the specific gravity of the battery electrolyte is constantly within ~~1.220 - 1.290~~ for a continuous period of one hour or more. ↑ <Incorrect>

<Correct>

1.220 - 1.290 <Vehicles without Auto Stop & Go (AS&G) System> or  
1.250 - 1.290 <Vehicles with Auto Stop & Go (AS&G) System>

## BATTERY TEST

### TEST STEPS

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#### STEP 1. Battery no-load voltage check

- (1) Illuminate the headlamp for 15 seconds.
- (2) Turn off the headlamp and then leave it for about 2 minutes to stabilise the battery voltage.
- (3) Remove the battery cable.
- (4) Measure the battery no-load voltage. <Deleted>

**OK: 12.4 V or more** (~~Specific gravity~~)

~~1.240~~

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 3.

**NO :** Go to Step 2.

---

#### STEP 2. Battery charging

Recharge the battery at 5A (constant-current charging). (Refer to Table 1.)

**Q: Is the battery no-load voltage normal value (12.4 V or more)?**

**YES :** Go to Step 3.

**NO :** Replace the battery.

---

#### STEP 3. Load test check

- (1) Connect the battery tester to battery.
- (2) Feed a load current through the battery. (Refer to Table 1).
- (3) Measure the battery voltage after 15 seconds and then eliminate a load current.
- (4) Compare the measured voltage to the specified lowest voltage. (Refer to Table 2).

**Q: Is the measured voltage higher than the lowest voltage?**

**YES :** The battery is normal.

**NO :** Replace the battery.

## CHARGING

### ⚠ CAUTION

- The battery plugs should be removed during charging.
- The battery electrolyte level may rise and overflow from the battery during charging.
- Explosions may occur if the battery is brought close to naked flames during charging.
- Be careful to avoid tasks that might produce sparks or other danger while the battery is charging.
- After charging is complete, replace the battery plugs, pour water over the battery to rinse away any sulphuric acid, and let the battery stand to dry.
- Charge the battery in a well-ventilated location.
- Do not let the battery electrolyte temperature rise above approximately 45°C (approximately 55°C during rapid charging).

<EXCEPT VEHICLES FOR RUSSIA>

### CHARGE RATE

Recommended rate and time for charging completely flat battery fully is shown in the charge rate chart. When the specific gravity of electrolyte keeps 1.220

### Charge Rate Chart

Battery	Normal charging
BCI Group size 35	4 A, 21 Ah

1. Remove the battery from the vehicle.
2. The normal charging current is a value in amperes which is 1/10th of the battery capacity. If the battery needs to be charged rapidly because of reasons such as time limitations, the maximum charging current for rapid charging is the battery capacity expressed as an ampere value.

Battery type	Capacity (5-hour rate)	Normal charging current	Rapid charging current
55D23L	48 Ah	4.8 A	48 A
75D23L	52 Ah	5.2 A	52 A
95D31L	64 Ah	6.4 A	64 A
Q-85	55 Ah	5.5 A	55 A
T-105	64 Ah	6.4 A	64 A

### Determine when charging is finished.

When the specific gravity of the battery electrolyte is constantly within ~~1.220 - 1.290~~ for a continuous period of one hour or more. ↑ <Incorrect>

<VEHICLES FOR RUSSIA>

– 1.290 for more than one hour, charging should be stopped.

1.220 - 1.290 <Vehicles without Auto Stop & Go (AS&G) System> or  
1.250 - 1.290 <Vehicles with Auto Stop & Go (AS&G) System>

<Correct>

## GENERAL INFORMATION

### <Except vehicles for Russia>

- The 75D23L battery has been adopted. <4J11 (vehicles without AS&G system)>
- The 95D31L battery has been adopted. <4N14 (vehicles without AS&G system)>
- The Q-85 battery has been adopted. <4J11

(vehicles with AS&G system)>

- The T-105 battery has been adopted. <4N14 (vehicles with AS&G system)>

### <Vehicles for Russia>

- The 75D23L battery has been adopted.

Item	75D23L	95D31L	Q-85	T-105
Voltage V	12	12	12	12
Capacity (5-hour rate) Ah	52	64	52	64
Electrolytic fluid specific gravity (fully charged state at 20°C)	1.220 - 1.290			

<Incorrect>



1.220 - 1.290	1.250 - 1.290
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<Correct>

# SERVICE SPECIFICATION

Item	Standard value
Battery electrolyte specific gravity	<del>1.220 - 1.290 (electrolyte temperature 20°C)</del>

<Incorrect> ↑  
 <Correct>

Battery electrolyte specific gravity (electrolyte temperature 20 )	Vehicles without Auto Stop & Go (AS&G) System	1.220 - 1.290
	Vehicles with Auto Stop & Go (AS&G) System	1.250 - 1.290

## SERVICE SPECIFICATION

Item	Standard value
Battery electrolyte specific gravity	1.250 – 1.290 (electrolyte temperature 20°C)

## CHARGING

### ⚠ CAUTION

- The battery plugs should be removed during charging.
- The battery electrolyte level may rise and overflow from the battery during charging.
- Explosions may occur if the battery is brought close to naked flames during charging.
- Be careful to avoid tasks that might produce sparks or other danger while the battery is charging.
- After charging is complete, reinstall the battery plugs, pour water over the battery to rinse away any sulphuric acid, and let the battery stand to dry.
- Charge the battery in a well-ventilated location.
- Do not let the battery electrolyte temperature rise above approximately 45°C (approximately 55°C during rapid charging).

1. Remove the battery from the vehicle.
2. The normal charging current is a value in amperes which is 1/10th of the battery capacity. If the battery needs to be charged rapidly because of reasons such as time limitations, the maximum charging current for rapid charging is the battery capacity expressed as an ampere value.

Battery type	Capacity (5-hour rate)	Normal charging current	Rapid charging current
Q-85	55 Ah	5.5 A	55 A

### Determine when charging is finished.

When the specific gravity of the battery electrolyte is constantly within ~~1.220~~ – 1.290 for a continuous period of one hour or more.

<Incorrect>

1.250 <Correct>

## BATTERY TEST

### TEST STEPS

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#### STEP 1. Battery no-load voltage check

- (1) Illuminate the headlamp for 15 seconds.
- (2) Turn off the headlamps and then leave them for about 2 minutes to stabilise the system voltage.
- (3) Remove the battery cable.
- (4) Measure the battery no-load voltage. ~~(Specific gravity 1.240)~~ <sup><Deleted></sup>
  - The normal value is 12.4 V or more

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 3.

**NO :** Go to Step 2.

---

#### STEP 2. Battery charging

Recharge the battery at 5A (constant-current charging). (Refer to Table 1).

**Q: Is the battery no-load voltage normal value (12.4V or more)?**

**YES :** Go to Step 3.

**NO :** Replace the battery.

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#### STEP 3. Load test check

- (1) Connect the battery tester to battery.
- (2) Feed a load current through the battery. (Refer to Table 1).
- (3) Measure the system voltage after 15 seconds and then eliminate a load current.
- (4) Compare the measured voltage to the specified lowest voltage. (Refer to Table 2) .

**Q: Is the measured voltage higher than the lowest voltage?**

**YES :** The battery is normal.

**NO :** Replace the battery.

# BATTERY

1.220 - 1.290 ( electrolyte temperature 20 )  
<Vehicles without Auto Stop & Go (AS&G) System>  
<Correct> 1.250 - 1.290 ( electrolyte temperature 20 )  
<Vehicles with Auto Stop & Go (AS&G) System>

## SERVICE SPECIFICATIONS

M1541000300964

Item	Standard value
Battery electrolyte specific gravity	1.220 - 1.290 (electrolyte temperature 20°C)

<Incorrect>

## ON-VEHICLE SERVICE

### FLUID LEVEL AND SPECIFIC GRAVITY CHECK

M1541000900427

#### ⚠ CAUTION

- If the battery is used with the electrolyte level below the LOWER LEVEL indicator, there is the danger that explosions may occur, so add water to the battery until the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.
- If too much water is added to make the level rise above the UPPER LEVEL indication, the electrolyte may leak out, so adjust so that the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.

Standard value: 1.220 - 1.290 (electrolyte temperature 20°C)  
<Incorrect>

The specific gravity of the battery electrolyte changes according to the temperature, so the specific gravity when the electrolyte is at a temperature of 20°C can be calculated using the following formula. Use the converted value to judge whether the electrolyte is okay or not.

$$D_{20} = (t - 20) \times 0.0007 + Dt$$

$D_{20}$ : Specific gravity converted to a value for electrolyte temperature of 20°C

$t$ : Electrolyte temperature at the time of measurement

$Dt$ : Actual specific gravity

## CHARGING

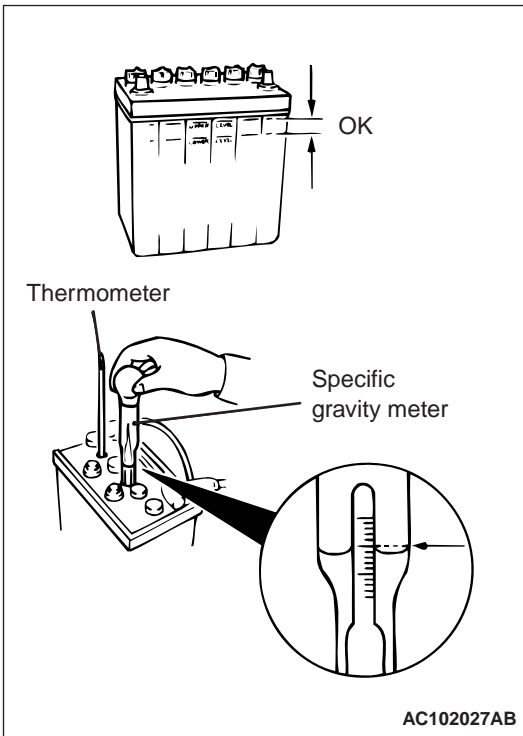
M1541001102237

#### ⚠ CAUTION

- The battery plugs should be removed during charging.
- The battery electrolyte level may rise and overflow from the battery during charging.
- Explosions may occur if the battery is brought close to naked flames during charging.
- Be careful to avoid tasks that might produce sparks or other danger while the battery is charging.
- After charging is complete, reinstall the battery plugs, pour water over the battery to rinse away any sulphuric acid, and let the battery stand to dry.
- Charge the battery in a well-ventilated location.
- Do not let the battery electrolyte temperature rise above approximately 45°C (approximately 55°C during rapid charging).

Remove the battery from the vehicle.

1. The normal charging current is a value in amperes which is 1/10th of the battery capacity. If the battery needs to be charged rapidly because of reasons such as time limitations, the maximum charging current for rapid charging is the battery capacity expressed as an ampere value.



1. Check that the battery electrolyte level is between the UPPER LEVEL and LOWER LEVEL indications.
2. Use a specific gravity meter and a thermometer to measure the specific gravity.

Battery type	Capacity (5-hour rate)	Normal charging current	Rapid charging current
Q-85	55 Ah	5.5 A	55 A
80D23L	59 Ah	5.9 A	59 A

YES : Go to Step 3.  
NO : Go to Step 2.

**STEP 2. Battery charging**

Recharge the battery at 5A (constant-current charging). (Refer to Table 1.)

**Q: Is the battery no-load voltage normal value (12.4 V or more)?**

YES : Go to Step 3.  
NO : Replace the battery.

**DETERMINE WHEN CHARGING IS FINISHED.**  
When the specific gravity of the battery electrolyte is constantly within ~~1.220 - 1.290~~ for a continuous period of one hour or more. <Incorrect>

**BATTERY TEST**

M1541001202342

**TEST STEPS**

**STEP 1. Battery no-load voltage check**

- (1) Illuminate the headlamp for 15 seconds.
- (2) Turn off the headlamp and then leave it for about 2 minutes to stabilise the battery voltage.
- (3) Remove the battery cable.
- (4) Measure the battery no-load voltage.

OK: 12.4 V or more ~~(Specific gravity~~

~~1.240~~ <Deleted>

**STEP 3. Load test check**

- (1) Connect the battery tester to battery.
- (2) Feed a load current through the battery. (Refer to Table 1).
- (3) Measure the battery voltage after 15 seconds and then eliminate a load current.
- (4) Compare the measured voltage to the specified lowest voltage. (Refer to Table 2).

**Q: Is the measured voltage higher than the lowest voltage?**

YES : The battery is normal.  
NO : Replace the battery.

**Q: Does the measured voltage correspond with this range?**

(TABLE 1)

Battery type	Charging time when fully discharged [5A constant current charging] (H)	Load current (A)
Q-85	11	310
80D23L	12	290

(TABLE 2)

Outside air temperature (°C)	21 or more	16 to 20	10 to 15	4 to 9	-1 to 3	-7 to -2	-12 to -8	-18 to -13
Minimum voltage (V)	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

1.220 - 1.290 <Vehicles without Auto Stop & Go (AS&G) System>  
1.250 - 1.290 <Vehicles with Auto Stop & Go (AS&G) System>

<Correct>

# BATTERY

1.220 - 1.290 ( electrolyte temperature 20 )  
<Vehicles without Auto Stop & Go (AS&G) System>  
<Correct>  
1.250 - 1.290 ( electrolyte temperature 20 )  
<Vehicles with Auto Stop & Go (AS&G) System>

## SERVICE SPECIFICATIONS

M1541000300964

Item	Standard value
Battery electrolyte specific gravity	1.220 - 1.290 (electrolyte temperature 20°C)

<Incorrect>

## ON-VEHICLE SERVICE

### FLUID LEVEL AND SPECIFIC GRAVITY CHECK

M1541000900427

#### ⚠ CAUTION

- If the battery is used with the electrolyte level below the LOWER LEVEL indicator, there is the danger that explosions may occur, so add water to the battery until the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.
- If too much water is added to make the level rise above the UPPER LEVEL indication, the electrolyte may leak out, so adjust so that the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.

Standard value: 1.220 - 1.290 (electrolyte temperature 20°C)  
<Incorrect>

The specific gravity of the battery electrolyte changes according to the temperature, so the specific gravity when the electrolyte is at a temperature of 20°C can be calculated using the following formula. Use the converted value to judge whether the electrolyte is okay or not.

$$D_{20} = (t - 20) \times 0.0007 + Dt$$

$D_{20}$ : Specific gravity converted to a value for electrolyte temperature of 20°C

t: Electrolyte temperature at the time of measurement

Dt: Actual specific gravity

## CHARGING

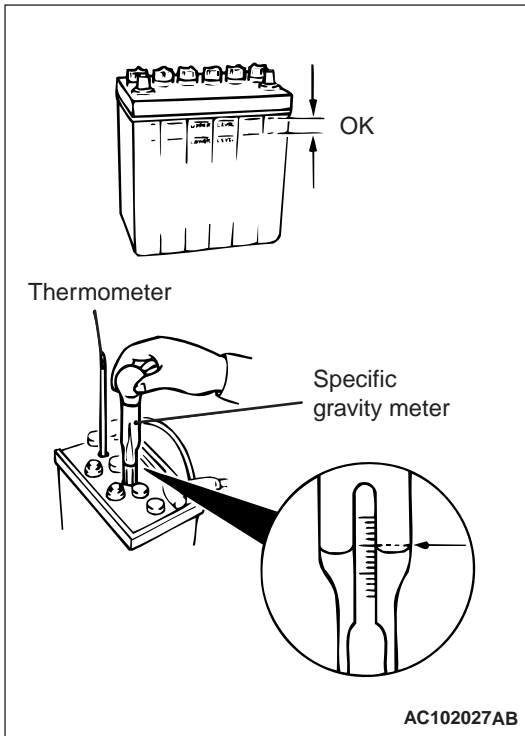
M1541001102431

#### ⚠ CAUTION

- The battery plugs should be removed during charging.
- The battery electrolyte level may rise and overflow from the battery during charging.
- Explosions may occur if the battery is brought close to naked flames during charging.
- Be careful to avoid tasks that might produce sparks or other danger while the battery is charging.
- After charging is complete, reinstall the battery plugs, pour water over the battery to rinse away any sulphuric acid, and let the battery stand to dry.
- Charge the battery in a well-ventilated location.
- Do not let the battery electrolyte temperature rise above approximately 45°C (approximately 55°C during rapid charging).

Remove the battery from the vehicle.

1. The normal charging current is a value in amperes which is 1/10th of the battery capacity. If the battery needs to be charged rapidly because of reasons such as time limitations, the maximum charging current for rapid charging is the battery capacity expressed as an ampere value.



AC102027AB

1. Check that the battery electrolyte level is between the UPPER LEVEL and LOWER LEVEL indications.
2. Use a specific gravity meter and a thermometer to measure the specific gravity.

Battery type	Capacity (5-hour rate)	Normal charging current	Rapid charging current
95D31L	64 Ah	6.4 A	64 A
115D31L	73 Ah	7.3 A	72 A
T-105(D31)	74 Ah	7.4 A	73 A

YES : Go to Step 3.

NO : Go to Step 2.

**STEP 2. Battery charging**

Recharge the battery at 5A (constant-current charging). (Refer to Table 1.)

**Q: Is the battery no-load voltage normal value (12.4 V or more)?**

YES : Go to Step 3.

NO : Replace the battery.

**STEP 3. Load test check**

(1) Connect the battery tester to battery.

(2) Feed a load current through the battery. (Refer to Table 1).

(3) Measure the battery voltage after 15 seconds and then eliminate a load current.

(4) Compare the measured voltage to the specified lowest voltage. (Refer to Table 2).

**Q: Is the measured voltage higher than the lowest voltage?**

YES : The battery is normal.

NO : Replace the battery.

**DETERMINE WHEN CHARGING IS FINISHED.**

When the specific gravity of the battery electrolyte is constantly within ~~1.220 - 1.290~~ for a continuous period of one hour or more. <Incorrect>

**BATTERY TEST**

M1541001202535

**TEST STEPS**

**STEP 1. Battery no-load voltage check**

- (1) Illuminate the headlamp for 15 seconds.
- (2) Turn off the headlamp and then leave it for about 2 minutes to stabilise the battery voltage.
- (3) Remove the battery cable.
- (4) Measure the battery no-load voltage.

**OK: 12.4 V or more** ~~(Specific gravity~~

~~1.240)~~ <Deleted>

**Q: Does the measured voltage correspond with this range?**

**(TABLE 1)**

Battery type	Charging time when fully discharged [5A constant current charging] (H)	Load current (A)
95D31L	13	310
115D31L	15	370
T-105(D31)	15	400

**(TABLE 2)**

Outside air temperature (°C)	21 or more	16 to 20	10 to 15	4 to 9	-1 to 3	-7 to -2	-12 to -8	-18 to -13
Minimum voltage (V)	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

1.220 - 1.290 <Vehicles without Auto Stop & Go (AS&G) System>  
1.250 - 1.290 <Vehicles with Auto Stop & Go (AS&G) System>

<Correct>

## FLUID LEVEL AND SPECIFIC GRAVITY CHECK

The specific gravity of battery electrolyte has been changed. The service procedure is the same as before.

**Standard value: 1.250 – 1.290 (electrolyte temperature 20°C)**