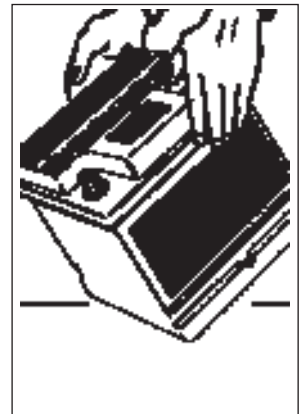


Battery testing procedures batteries with removable vent plugs

A VISUAL CHECK

- Does the battery leak? — Continue with A 3
- Is external damage visible in vicinity of leak? — Claim Justified*
- Are the cells evenly covered with acid? — Rejected Claim. Ascertain cause of damage
Reject Claim. Not manufacturing defect. Possible causes: over-charging or extreme ambient temperature.
- Is the battery 12.5 or over? — Battery will require recharging. Then proceed to B to confirm cell conditions.
Proceed to B to confirm cell conditions.



Recharging - A battery should be capable of accepting a recharge at a minimum of 1/20th of its capacity. ie:
50 Amp Hours = 2.5 Amp charge. The battery should be charged until all cells are gassing freely (maximum 20 hours).
If the battery will not accept a charge at the above rate or if 3 or more cells fail to respond in a prolonged

B SPECIFIC GRAVITY TEST

Functioning batteries should have same specific gravity (S.G.) in all cells. Maximum permitted tolerance in all 6 cells is 0.030kg/dm³ between lowest and highest S.G.

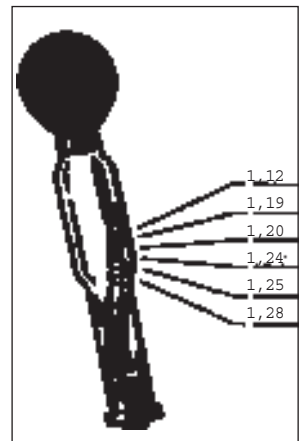
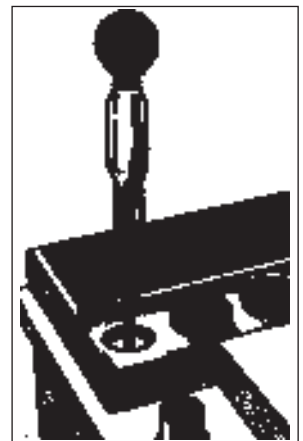
Important
If the specific gravity of the acid is less than 1.240kg/dm³ at 27°C, the battery

Specific Gravity at 27°C in kg/dm ³	Condition	Procedure
1,250 - 1,280	Fully charged	Proceed with test
1,200 - 1,240	Half charged	Charge required
LESS THAN 1,200	MINIMAL CHARGE	CHARGE IMMEDIATELY

- One/Two adjoining cells with exceptionally low specific gravity, remaining cells 1,250 or above.

1,260	1,260	1,150	1,260	1,260
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 — Continue with B2
Replace battery, claim justified*
- Is the electrolyte discoloured (dark brown) and /or is there evidence of excessive water con- — Continue with B4
Rejected Claim - damage caused by overcharging - test voltage regulator on vehicle.
- Is the S.G. in all cells equal or above 1,240 kg/dm³ in all cells after charging. — Continue with B4
Reject Claim - damage caused by deep discharge or undercharging. Check vehicle electrics i.e. voltage regulator, alternator or fan belt.
- If the S.G. in all cells is equal or above 1'250kg/dm³ after charging. > — proceed to Test C



C HIGH RATE DISCHARGE TEST

This test can only be carried out if the voltage is equal to or greater than 12.5, otherwise charge the flat battery first.

Important: read the instruction notes on the battery tester.

Is the result 'defective' or

- Battery good
Replace bat -

For battery testers with switchable resistances (Variable Load), discharge the battery at about 3 x the 20hr rate for 10 seconds. (e.g. battery capacity 45 ampere hour (A.H.) = 3 x 45 = 135 amp(s). The voltage during discharge should be stable at 9.6 volts or over.

*Subject to our current sale and warranty conditions and to preceding test and recharge procedures.





Battery testing procedures Sealed lead acid starter batteries

The lead-calcium-silver technology used in some batteries means that the conventional filler plugs have been replaced by a sealed labyrinth lid, for technical reasons, and due to consumer demand.

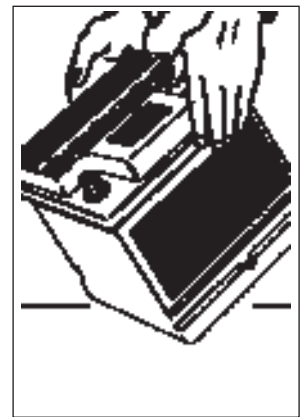
The only fully accurate method of evaluating the condition and serviceability of 'sealed' starter batteries is through the use of recognised digital electronic test equipment which, together with a visual inspection will provide an extremely high level of accurate diagnosis.

For details of approved testers please contact the Manbat sales office.

In the absence of specialised test equipment many of the basic steps involved in testing

A VISUAL CHECK

- Does the battery leak?
 - Continue with A2
 - Rejected Claim; damaged bat-
- Is the battery voltage 12.5 or over?
 - Battery will require recharging. Then proceed to B to confirm cell conditions.
 - Proceed to B to confirm cell conditions.



B HIGH RATE DISCHARGE TEST

This test can only be carried out if the voltage is equal to or greater than 12.5, otherwise charge the battery first.

Important: read the instructions notes on the battery tester.

- Is the result 'defective' or 'replace'?
- Battery good.
 - Replace Battery.*

For battery testers with switchable resistances (Variable Load), discharge the battery at about 3 x the 20hr rate for 10 seconds. (e.g. battery capacity 45 ampere hour (A.H.) = 3 x 45 = 135 amp(s). The voltage during discharge should be stable at 9.6 volts or over.

