Tractor service hints - Some points on battery maintenance

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When it is found necessary to add distilled water frequently in order to maintain the electrolyte levels, and yet there are no visible signs of leakage or spillage from the casing, this is a definite sign of overcharging, and the condition should be investigated immediately by your local service agency.

EFFECTS OF LOW ELECTROLYTE LEVELS

Allowing the electrolyte to fall below the upper edges of the plates will, with continued charging, rapidly accelerate the rate of falling levels, resulting in still further areas of the separators and also the plates becoming exposed. Those areas of the negative plates exposed will commence to sulphate (see centre plate, Fig. 1), and have an immediate effect upon battery capacity.

As low levels develop the electrolyte becomes stronger, and will soon reach a dangerously high concentration, which will char and disintegrate the separators. In addition, the negative plates may be permanently damaged, due to the paste in the plates being changed to a "mushy" condition. The material will then loosen and fall from the lead grids.

The effects of overcharging on the positive plates are equally serious. Overheating, due to the rapid chemical action, will bring about buckling and distortion similar to that illustrated in Fig. 4.
The plates will tend to increase their size or “grow” (Fig. 2), and the lead grids will begin to shed their active material.

An advanced form of these effects is illustrated (left-hand plate, Fig. 4.) In this case, the grid has corroded to such an extent that it has become completely broken up.

The electrolyte level must be maintained at a ¼ in. to ⅜ in. above the separators, and the fully charged working gravity is 1.270 to 1.285 when corrected to 70° F.

C.V.C. CHARGING

It must be understood that a C.V.C. system only tends to eliminate overcharging under normal conditions.

Under the following conditions overcharging can still occur even when a C.V.C. charging system is in use—

(1) Very low electrolyte levels.

(2) A battery which is reduced in capacity as a result of sulphation.

(3) Incorrect regulator adjustment.

EFFECTS OF OVER-DISCHARGE AND/OR INSUFFICIENT CHARGE

It is well known that a battery should never stand in a “run-down” condition. Similarly, a battery operated with insufficient charge over a long period of time may develop a type of sulphate in the plates which is dense, hard and crystalline and which cannot be converted back to normal active material again.

The condition will cause a considerable drop in battery capacity, also internal stresses in the positive plates, which will give rise to distortion or bowing of the type illustrated in Fig. 3.

The tendency for “bowing” will be increased if the battery when in this condition, is subjected to sudden prolonged overcharging as might be experienced on a long journey or by a C.V.C. regulator, which is not functioning correctly.

A severely buckled plate will pinch the separator on one side, at the plate corners and also chafe the centre of the separator, on the opposite side.

Separators subjected to this pressure are likely to become perforated, when short circuits between the plates in each cell will develop and result in complete failure.

THE EFFECTS OF INCORRECT CLAMPING

(a) Loose Clamping.

If the battery is allowed to move in its carrier under operating conditions, then it is probable that the grids on which the plate groups stand in the casing will be

Fig. 2.—A positive plate which has “grown” due to overcharging

Fig. 3.—The effect of insufficient charge on a positive plate
notched and cause severe disarrangement of the plate and separator groups.

Vibration of the battery in its carrier may also crack or wear the casing, causing the sealing compound to open up and allow acid to leak. This will cause corrosion and damage to wiring installation and metal surfaces, apart from early failure of the battery.

(b) Too Tight Clamping.
If the battery mounting bolts are tightened excessively, it is probable that the battery casing will either crack, distort and/or loosen the sealing compound around each cell group, again allowing loss of electrolyte. It is probable that under these conditions the end cells will be those most affected.

Fig. 4.—Positive plates affected by constant overcharging

PIG FORECAST

The 1955 pig crop forecasts are waiting on a full return of pig raisers’ question cards to the Commonwealth Bureau of Agricultural Economics.

All interested in the future of the pig industry realise the importance of an early accurate forecast, which is the main purpose of this new service introduced by the bureau. Farmers still holding cards are asked to complete them without delay.

Mr. G. K. Baron Hay advises that more contributing farmers are wanted to increase the sample, and farmers raising pigs are invited to send their name and address to the Bureau of Agricultural Economics, Canberra, A.C.T., or the Department of Agriculture, Perth, so that a card can be sent to them at the next pig crop report.

The eight questions on the report card are not complicated and the answers are completely confidential and only recorded under code number. In addition to the forecast the answers provide valuable statistics of pig production, including average litter sizes farrowed and weaned, and losses after weaning.

The pig crop report is published twice a year and is immediately forwarded to contributing farmers and to other farmers requesting copies.
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