



## Technical Information

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### PLEASE PASS THIS IMPORTANT NOTE TO ALL OPERATORS OF YOUR CG-3 GRAVIMETERS

#### TECHNICAL NOTE #2 TO ALL CG-3 OWNERS

#### Re: Rechargeable Batteries

The internal rechargeable (sealed, lead-acid) battery, as supplied with the Autograv is the Sonnenschein Dryfit A-200 12V/6Ah. When new and fully charged, this battery will provide 11-12 hours of service, at 25°C ambient, in your CG-3, reducing to about 5 hours of service at -10°C.

Figure 1 shows a typical plot of CG-3 service hours against ambient temperature for the Sonnenschein battery. At low temperatures the service hours decrease rapidly for two reasons, the first being a reduction in the inherent electrochemical capacity of the battery. The second is the fact that the load on the battery increases as the temperature drops, in order to maintain the CG-3 sensor at its constant operating temperature (typically 55°C).

The first effect may be circumvented, in cold weather, by using an auxiliary battery pack, on a belt underneath the operator's jacket. The batteries will, thus, be kept at a temperature well above ambient, thus prolonging the service hours available from each battery.

When the battery voltage drops below 10.5V a low-battery-alarm sounds. After this warning, your battery still has approximately 1 hour of useful operating time left before it must be replaced with a fully charged battery, or be connected to the charger.

Your attention is drawn to the remarks about life expectancy of these batteries, on page 5-2 of your Operator Manual. Their life expectancy is rated at about 200 cycles of complete discharge and recharge. The significance of this is that once a CG-3 battery has been in use in the field for 150-200 days, its capacity to hold a charge may be significantly less than when it was new. It is, then, more economical to replace it with a new battery rather than to suffer with the operational inconvenience of a reduced battery life and frequent changes of battery in the field. Figure 2 illustrates the typical deterioration of battery capacity with the number of discharge/charge cycles.

In practice, therefore, you should replace both your batteries with new ones, approximately once a year, if your CG-3 has been in relatively steady use. You should replace an individual battery even earlier, if should find that its capacity has been reduced, even after it has been fully charged.

When replacing a CG-3 battery, we suggest that you do so only with one of a type which has been tested and approved by Scintrex. To date this includes only the Sonnenschein battery mentioned above. Please note that the Sonnenschein battery is now being manufactured by Mallory/Duracell, with the same designation (Dryfit A-200 12V-Ah). The reason why a general approval cannot be given for all 12V lead acid batteries is that each brand may have different charging requirements, so that some may be incompatible with the CG-3 charger.

Please note also that for best charge acceptance by the A-200 battery you should charge it at an ambient temperature of 20-30°C, wherever possible.



#### Head Office

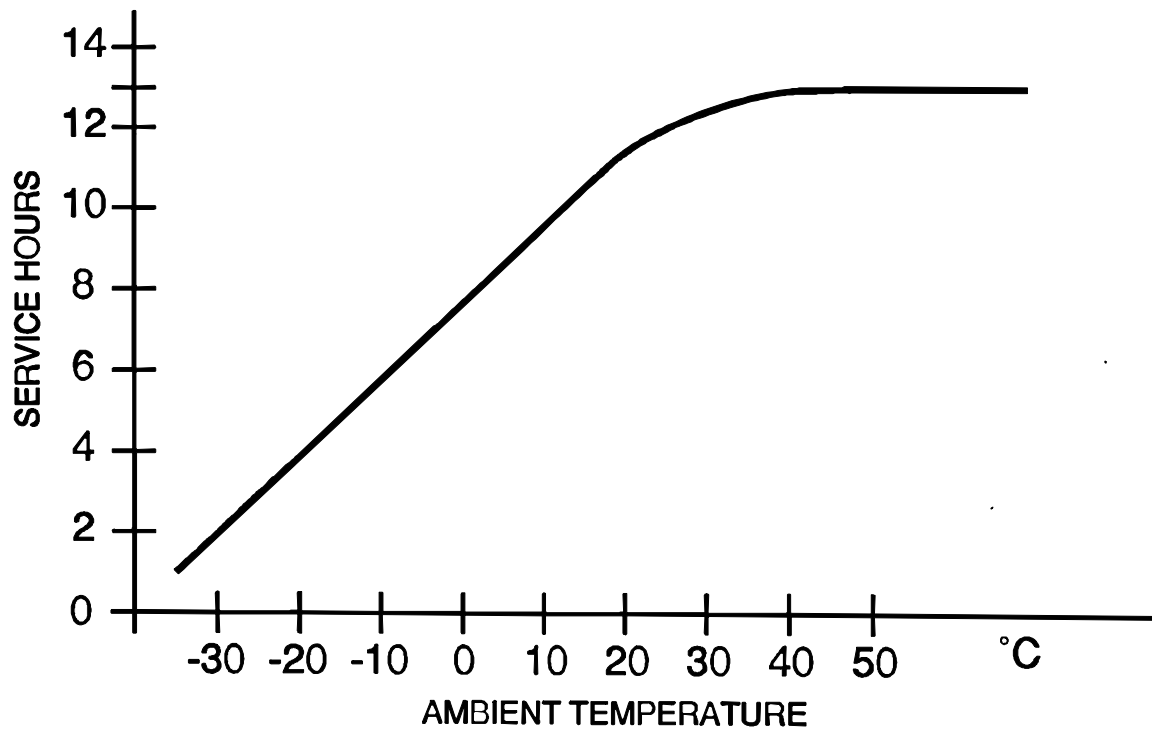
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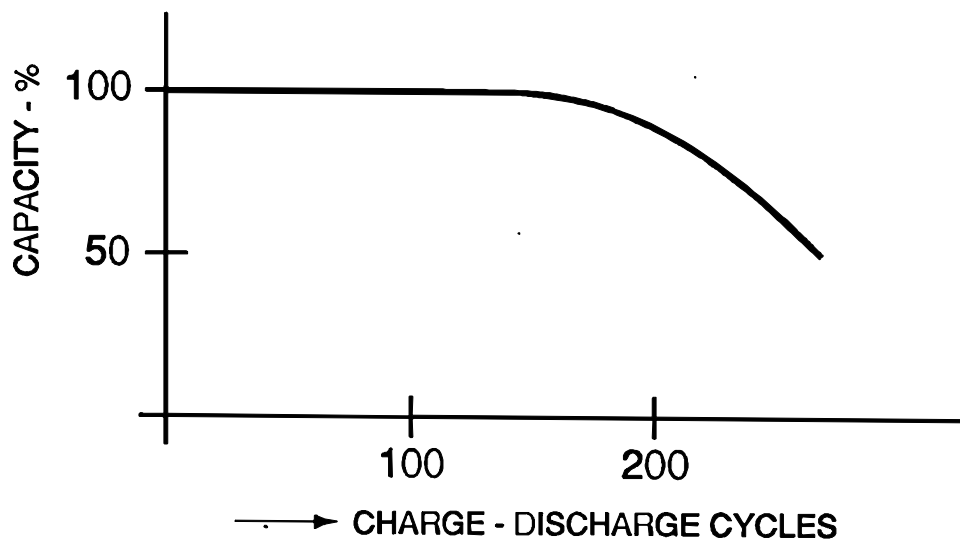
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TYPICAL CG-3 SERVICE HOURS VS TEMPERATURE  
(SONNENSCHNEIN-MALLORY DRYFIT A-200 BATTERY)

FIG. 1



TYPICAL BATTERY CAPACITY VS CHARGE - DISCHARGE CYCLES  
(SONNENSCHNEIN-MALLORY DRYFIT A-200 BATTERY)

FIG. 2