

# INSTRUCTIONS FOR LUCAS DRY-CHARGED BATTERIES

**Batteries for Export.**

It is standard Lucas practice to seal the vent plugs of exported batteries by means of red viscose caps. The red caps are intended to seal the holes of the vent plugs in order to keep the plates in perfect condition during transportation and storage, but these red caps must only be removed immediately before the battery is brought into service.

By assembling batteries with dry-charged plates the manufacturers have removed from battery owners the responsibility of the important first charge, and instead it is now given at their works under ideal conditions.

**To bring into Service.**

To bring a Lucas Dry-charged Battery into service, it is merely necessary to remove the vent plugs, detach the red seals therefrom, fill up with best brimstone sulphuric acid of the correct specific gravity (see table), allow to stand two hours, and then give a freshening charge of 6-8 hours at the normal re-charge rate (see table). This will bring the battery to a fully charged condition, and it will be found that the plates are gassing freely and the specific gravity of the electrolyte is constant.

Exceptional circumstances may arise where a battery is required for immediate use on a car prior to giving it the freshening charge. Under these conditions it is quite permissible to fill the battery with electrolyte in the usual way, fix it to the car, and allow at least two hours before either charging it from the car dynamo or discharging it through the starter, lamps or horn. It is desirable under these circumstances, too, to avoid excessive use of the starter and headlights until the battery has had two or three hours charge on the car.

**Acid Solution.**

The best brimstone sulphuric acid must be used diluted with distilled water to the correct specific gravity.

It is important in mixing to pour the water into the vessel first, adding the acid slowly and stirring thoroughly to assist diffusion. A mixing vessel made of glass, glazed earthenware or lead should be employed, and a glass rod used for stirring the solution.

**Acid Density and Temperature.**

The specific gravity is affected by the rise or fall in the temperature of the solution, and in checking density with a hydrometer the temperature must be noted and the appropriate correction made before the acid solution is put aside for use.

It is always advisable to cool the solution to atmospheric temperature before filling up the cells. The following table gives the corrections for various temperatures:—

Acid at 50° F., deduct .004 from reading to obtain S.G. at 60° F.

55° F. ..	.002	80° F. add	.008
60° F. —	—	85° F. ..	.010
65° F. add	.002	90° F. ..	.012
70° F. ...	.004	95° F. ..	.014
75° F. ..	.006	100° F. ..	.015

An important point to which attention must be given is the level of the electrolyte in the cells; it must not be too low or the acid concentration will fall too quickly, thus limiting the capacity of the cells. The correct height is level with top edge of separators, for ST, SLT and SY types; for all other types it should be about ¼ in. above separators.

**Discharge and Re-charge.**

The discharge of the battery should not be carried beyond the lower limit of the voltage, which is fixed for electro-chemical reasons at 1.8 volts per cell.

When this state is reached, the battery should be re-charged immediately at the normal re-charge rate until the specific gravity remains constant. Should the battery be dismantled at any time for inspection or repair and the plates removed from the container, it is advisable to immerse the negative element in distilled water until ready for re-assembling; then if this negative element is put back, or if new negative plates (Lucas dry-charged) are used, the ordinary freshening charge is all that will be required to bring the battery into the fully charged state.

Should, however, the negative element be allowed to dry in the air before re-assembling, then the battery will require a charge of about 30 hours at half the normal re-charge rate.

TYPE.	Climates ordinarily below 90° F. (32° C.)		Climates frequently above 90° F. (32° C.)		Normal Re-charge Rate in Amperes.	TYPE.	Climates ordinarily below 90° F. (32° C.)		Climates frequently above 90° F. (32° C.)		Normal Re-charge Rate in Amperes.
	Filling Acid.	Sp. Gr. at Completion of Charge.	Filling Acid.	Sp. Gr. at Completion of Charge.			Filling Acid.	Sp. Gr. at Completion of Charge.	Filling Acid.	Sp. Gr. at Completion of Charge.	
PUPSE	1.275	1.280-1.300	1.215	1.220-1.240	1½	STP11A OR E	1.275	1.280-1.300	1.215	1.220-1.240	7
POP5G	1.275	1.280-1.300	1.215	1.220-1.240	1½	STP13A OR E	1.275	1.280-1.300	1.215	1.220-1.240	8½
PUP7E	1.275	1.280-1.300	1.215	1.220-1.240	1½	STP15E	1.275	1.280-1.300	1.215	1.220-1.240	10
LK7E	1.225	1.240-1.260	1.210	1.225-1.245	2½	STR9A OR E	1.275	1.280-1.300	1.215	1.220-1.240	5
LP8E	1.225	1.240-1.260	1.210	1.225-1.245	3	STR11A OR E	1.275	1.280-1.300	1.215	1.220-1.240	7
LP7E	1.225	1.240-1.260	1.210	1.225-1.245	4	STR13A OR E	1.275	1.280-1.300	1.215	1.220-1.240	8½
SM5NA, SX5NA	1.225	1.240-1.260	1.210	1.225-1.245	5	STR15E	1.275	1.280-1.300	1.215	1.220-1.240	10
LMSNE						1.275	1.280-1.300	1.215	1.220-1.240	7	
SM7NA, SX7NA	1.225	1.240-1.260	1.210	1.225-1.245	7	STPF13E	1.275	1.280-1.300	1.215	1.220-1.240	8½
SM9NE, SM9B	1.225	1.240-1.260	1.210	1.225-1.245	7½	SYFF13E	1.275	1.280-1.300	1.215	1.220-1.240	8½
SX9NE						1.275	1.280-1.300	1.215	1.220-1.240	11	
SM11B OR E	1.225	1.240-1.260	1.210	1.225-1.245	10	STPD17E	1.275	1.280-1.300	1.215	1.220-1.240	11
						STPD19E	1.275	1.280-1.300	1.215	1.220-1.240	12

either charging it from the car dynamo or discharging it through the starter, lamps or horn. It is desirable under these circumstances, too, to avoid excessive use of the starter and headlights until the battery has had two or three hours charge on the car.

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POPSE	1.275	1.280-1.300	1.215	1.220-1.240	1½	STP11A OR E	1.275	1.280-1.300	1.215	1.220-1.240	7
POP5G	1.275	1.280-1.300	1.215	1.220-1.240	1½	STP13A OR E	1.275	1.280-1.300	1.215	1.220-1.240	8½
POP7E	1.275	1.280-1.300	1.215	1.220-1.240	1½	STP15E	1.275	1.280-1.300	1.215	1.220-1.240	10
LK7E	1.225	1.240-1.260	1.210	1.225-1.245	2½	STR9A OR E	1.275	1.280-1.300	1.215	1.220-1.240	5
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LMSNE	1.225	1.240-1.260	1.210	1.225-1.245	7	SNR15A	1.275	1.280-1.300	1.215	1.220-1.240	7
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SM13B OR E	1.225	1.240-1.260	1.210	1.225-1.245	12	STRF13E	1.275	1.280-1.300	1.215	1.220-1.240	8½
STEA	1.225	1.240-1.260	1.210	1.225-1.245	5	STRD17E	1.275	1.280-1.300	1.215	1.220-1.240	11
STEA	1.225	1.240-1.260	1.210	1.225-1.245	5	STRD19E	1.275	1.280-1.300	1.215	1.220-1.240	12
STE11E	1.225	1.240-1.260	1.210	1.225-1.245	7	SLTP11A OR E	1.275	1.280-1.300	1.215	1.220-1.240	5
STP7A	1.275	1.280-1.300	1.215	1.220-1.240	4	SLTP13A OR E	1.275	1.280-1.300	1.215	1.220-1.240	7
STP9A OR E	1.275	1.280-1.300	1.215	1.220-1.240	5	SLTP15E	1.275	1.280-1.300	1.215	1.220-1.240	8

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