

SERVICE BULLETIN

M-907

October 29, 1985



BATTERIES

General

This Service Bulletin contains the latest recommendations for battery activation, charging, installation, maintenance, storage and testing.

DRY CHARGED BATTERIES

All original equipment and replacement batteries supplied by Harley-Davidson are dry charged batteries that must be filled with electrolyte and given a slow charge before installation.

Safety in Handling Batteries and Electrolyte

To avoid injury observe the following warnings.

WARNING

Figure 1 illustrates the warning label located on the top or back panel of all batteries.

POISON/DANGER - CAUSES SEVERE BURNS

Contains sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: EXTERNAL - flush with water. INTERNAL - Drink large quantities water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately. Eyes: Flush with water for 15 minutes and get prompt medical attention.

Batteries produce explosive gases. Keep sparks, flame, cigarettes away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN

Figure 1. Battery Warning Label

- Never remove the above label from the battery.
- Always "unplug" or turn battery charger "OFF" before disconnecting charger clamps from battery.

- Disconnecting clamps with charger "ON" could cause a spark and a possible battery explosion. A battery explosion may rupture the battery case and spray sulfuric acid onto the surrounding area and personnel resulting in serious injury.

Activating and Charging Battery

1. Remove battery from motorcycle and place battery on a level surface.

CAUTION

Never activate a battery mounted on motorcycle. If electrolyte is accidentally spilled, it will severely damage the motorcycle.

2. See Figure 2. Remove reminder tag. Pull off short sealed tube on vent elbow. Check that vent elbow is dry and clean and install long vent tube provided.

WARNING

A sealed tube left in place, could cause a build-up in internal gas pressure. Internal gas pressure can cause a battery to explode.

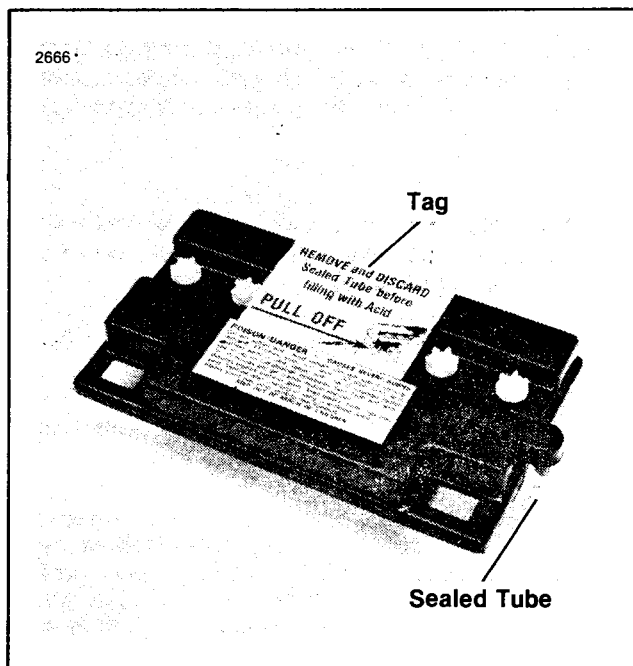


Figure 2. Reminder Tag and Sealed Tube

ROUTING:	SERVICE MANAGER	SALES MANAGER	PARTS MANAGER	CHIEF MECHANIC	MECHANIC NO. 1	MECHANIC NO. 2	MECHANIC NO. 3	MECHANIC NO. 4	RETURN THIS TO:
INITIAL HERE									

- See Figure 3. Install the clamp on the long tube, sliding it up against the battery surface. Rotate the clamp tangs as far as possible toward the battery so the tangs cannot catch on clothing.

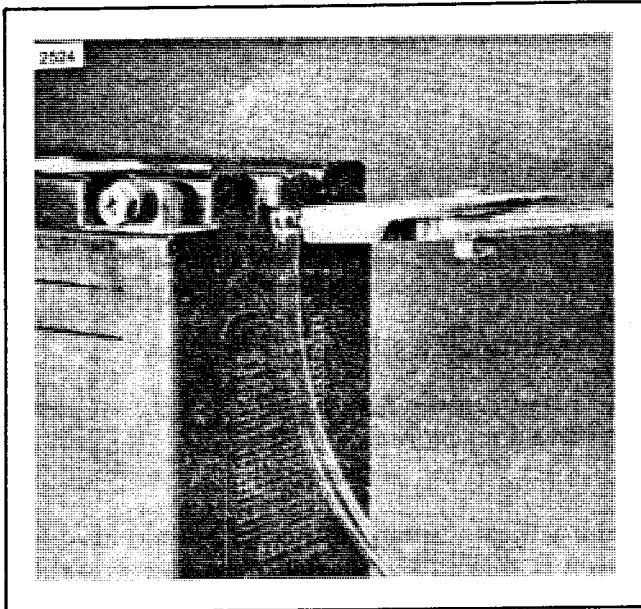


Figure 3. Tube Clamp Installation

- Remove caps or vent plugs just before filling with electrolyte.
- Fill battery carefully with electrolyte (diluted sulfuric acid) of a specific gravity of 1.265-1.280. Fill to UPPER LEVEL as indicated on battery or to proper level. Electrolyte should be at room temperature before filling. DO NOT USE WATER OR ANY OTHER LIQUID TO ACTIVATE. During cold weather, if electrolyte (acid) is stored in cold area, warm electrolyte to room temperature before filling.

WARNING

Electrolyte is sulfuric acid solution. Avoid spillage and contact with skin, eyes and clothing. See warning on back panel or top of battery.

- Leave battery standing for ½ hour after filling. Move or gently jar battery so that the air between the plates will come out. Electrolyte level may have fallen during standing. Refill with electrolyte to UPPER LEVEL or proper level.
- Before installation, battery must be charged until the specific gravity of electrolyte comes up to 1.255-1.265 (using 1.265 specific gravity electrolyte), or 1.270-1.280 (using 1.280 specific gravity electrolyte) at 80°F. Cell variance must not exceed 0.050 specific gravity. Charging the battery at recommended rate will take 12-18 hours.

Specific gravity of electrolyte must be checked with a syringe hydrometer.

WARNING

Charging should be done in a well ventilated area. Ex-M-907

plosive hydrogen gas escapes from battery during charging. Avoid open flames or electrical spark near battery at all times, especially during charging.

The recommended charging rate is 1/10 the ampere/hour (amp/hr) rating of the battery; e.g. a 22 amp/hr should be charged at a maximum rate of 2.2 amp.

If battery gets hot, over 110°F. (44°C.), discontinue charging and let battery cool. If battery gases excessively, lower the charging rate below 1/10 of amp/hr rating and continue charging until required specific gravity reading is obtained.

NOTE

See Figures 4, 5. The specific gravity of the electrolyte is the most accurate indication of charging condition of battery. When using a syringe hydrometer, read the electrolyte level at the bottom of the meniscus (curved surface of the fluid). Since specific gravity varies with temperature, and since the temperature of the electrolyte being checked is likely to be other than 80°F., the formula given below should be used to compute the specific gravity for any temperature. When the temperature is above 80°F., the reading of specific gravity goes down and vice versa.

- For each 10° F. above 80°F., add four gravity points (0.004) to the actual reading.
- For each 10°F. below 80°F., subtract four gravity points (0.004) from the actual reading.

Example:

Hydrometer Reading	1.272
Electrolyte temperature	100°F.
adjustment for temperature	+ 0.008
Accurate specific gravity	1.280

- After initial charge, battery must be jarred in order to release any gas. Check the electrolyte level. Refill with DISTILLED WATER (not electrolyte) to UPPER LEVEL or proper level if necessary.
- Replace vent plugs firmly, wash off any acid spillage with water and dry the battery.

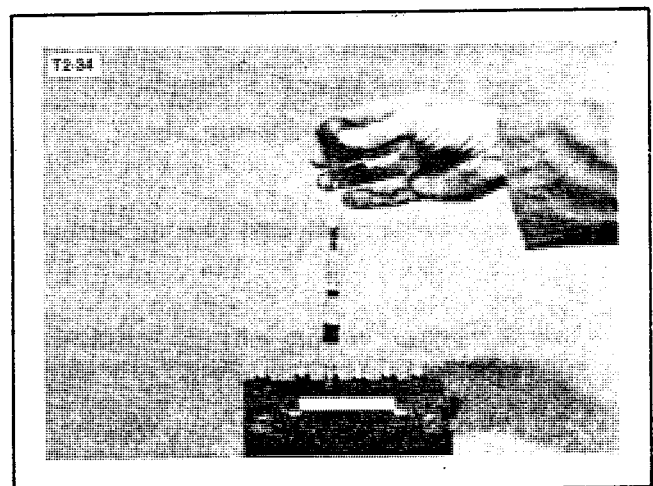


Figure 4. Checking Specific Gravity of Electrolyte with Hydrometer

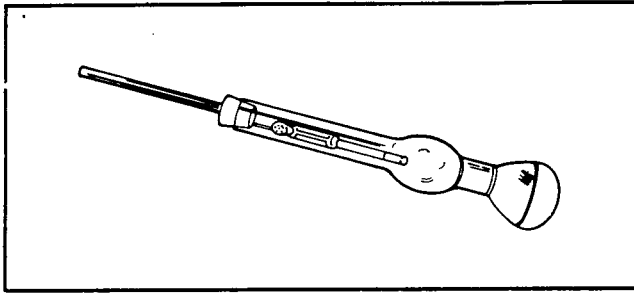


Figure 5. Hydrometer

BATTERY INSTALLATION

1. Clean cable connectors with wire brush or sandpaper to remove oxidation.
2. After filling with electrolyte and charging (see instructions) install new battery. Connect cables to the proper terminals. First, positive cable to positive terminal (+), and then negative cable to negative terminal (-). **CONNECT POSITIVE CABLE FIRST, NEGATIVE CABLE LAST.**

CAUTION

Connecting in reverse, positive to negative and negative to positive, can cause serious damage to motorcycle electrical system.

3. Check vent tube to avoid any crimping or obstruction to the tube.
4. Securely fasten battery to the motorcycle using its battery hold-down arrangement. This will minimize destructive vibration.

BATTERY MAINTENANCE

Recommend the following battery maintenance to your customers.

1. ELECTROLYTE

Check electrolyte level once a month.

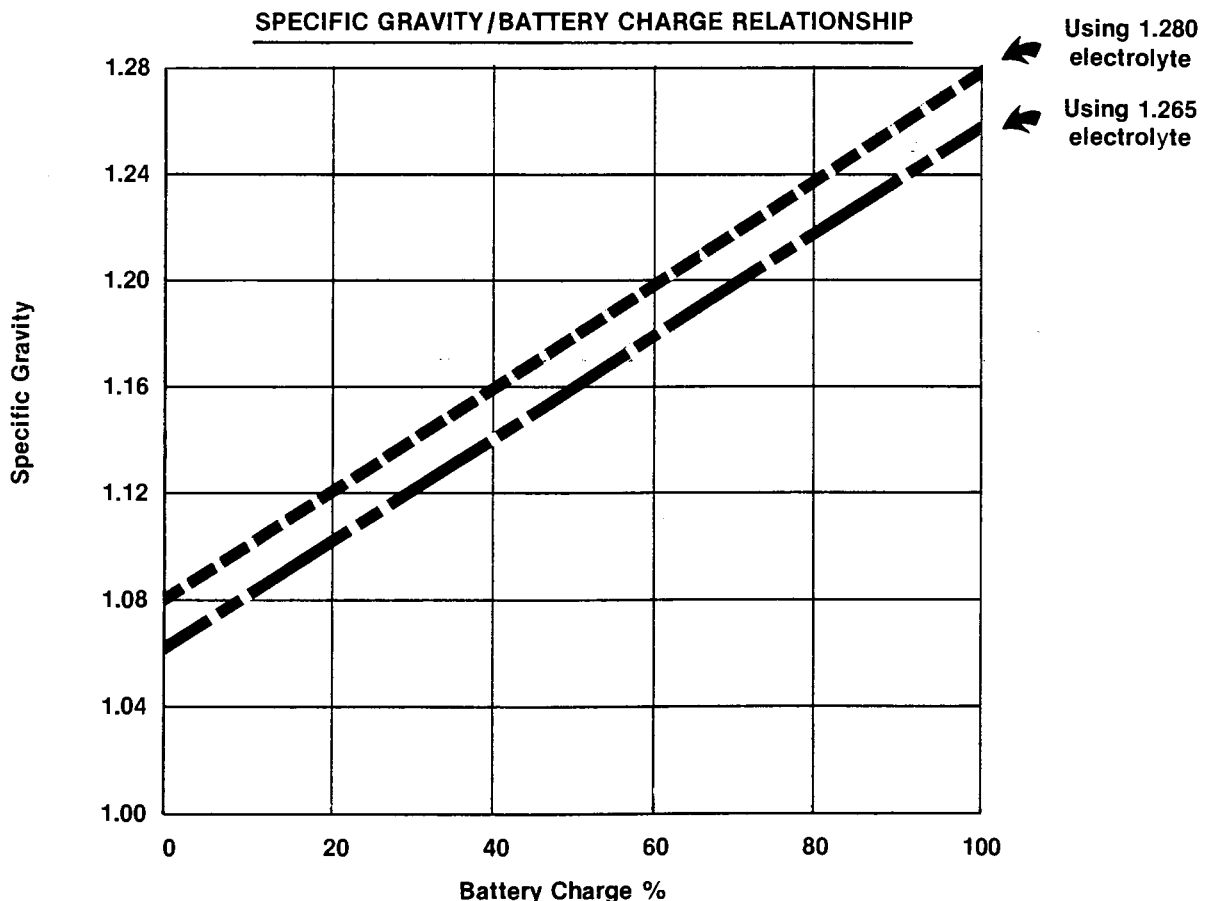
If found below UPPER LEVEL or proper level, add distilled water to UPPER LEVEL or proper level. **NEVER USE** electrolyte to refill the battery. If electrolyte is added, the solution will become too strong for proper chemical action and will damage plates.

2. RECHARGING

Recharging is necessary when you find lights get dim, horn weak and/or when battery is not used for longer than one month. Charge the battery until the specific gravity comes up to 1.265-1.280 at 80° F. (using 1.280 specific gravity electrolyte when activated).

The graph below shows the relationship between the specific gravity of the electrolyte at 80° F. and the percentage of battery charge.

Check the specific gravity and temperature of electrolyte, and find battery charge condition after correcting the specific gravity of electrolyte by temperature adjustment (see formula under BATTERY ACTIVATING).



BATTERY STORAGE

If the motorcycle will not be operated for several months, such as during the winter season, remove battery from motorcycle and charge until the correct specific gravity is obtained.

Charge the battery every other month if it is stored at temperatures below 60° F. (16° C.). Charge battery once a month if stored in a warm area, above 60° F. (16° C.).

WARNING

Store batteries where they cannot be reached by children.

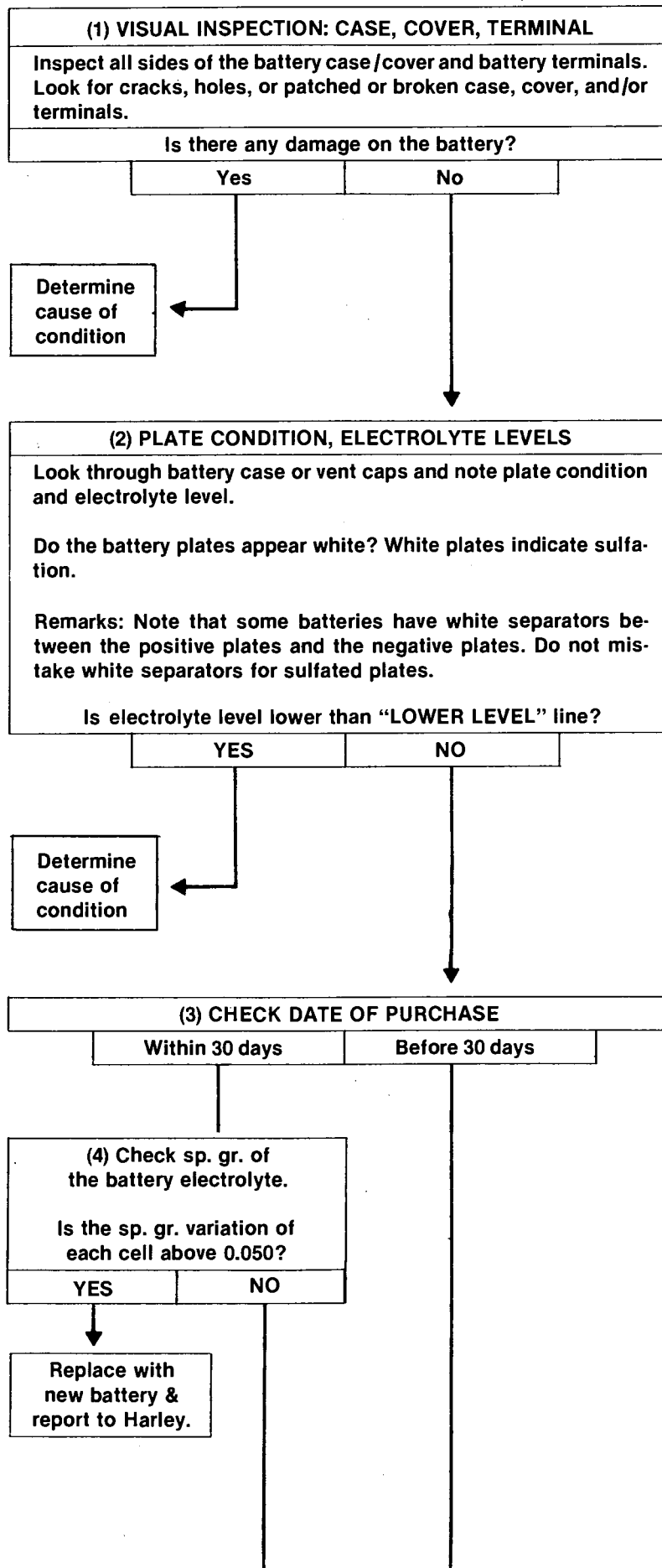
CAUTION

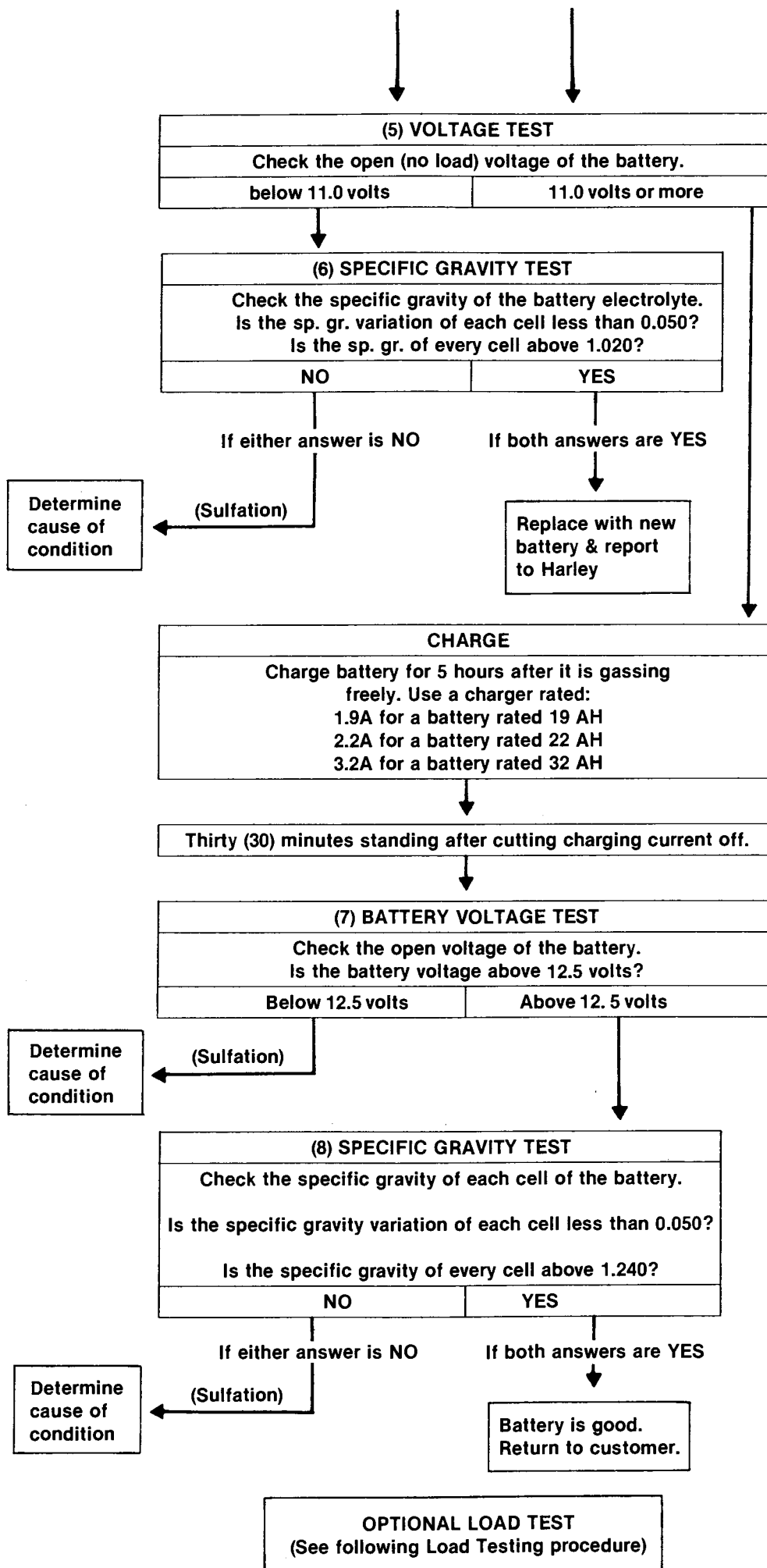
The electrolyte in a discharged battery will freeze if exposed to freezing temperatures. Freezing may crack battery case and buckle battery plates rendering battery inoperative.

BATTERY TESTING

Use the following procedure for testing battery conditions and fill in the BATTERY TEST SHEET.

MOTORCYCLE BATTERY TEST PROCEDURE





LOAD TESTING (Figure 6)

Fully charge the battery before testing. Attach load tester as shown, load battery to 3 times ampere/hour rating, using a suitable tester. Voltage reading after 15 seconds should be 9.6 volts or more. Record voltage on battery test sheet.

WARNING

Shut load tester "OFF" before removing test leads from battery. Removing leads with tester "ON" could cause spark and possible explosion.

CAUTION

Do not leave any load switch turned on for more than 20 seconds or overheating and tester damage are possible.

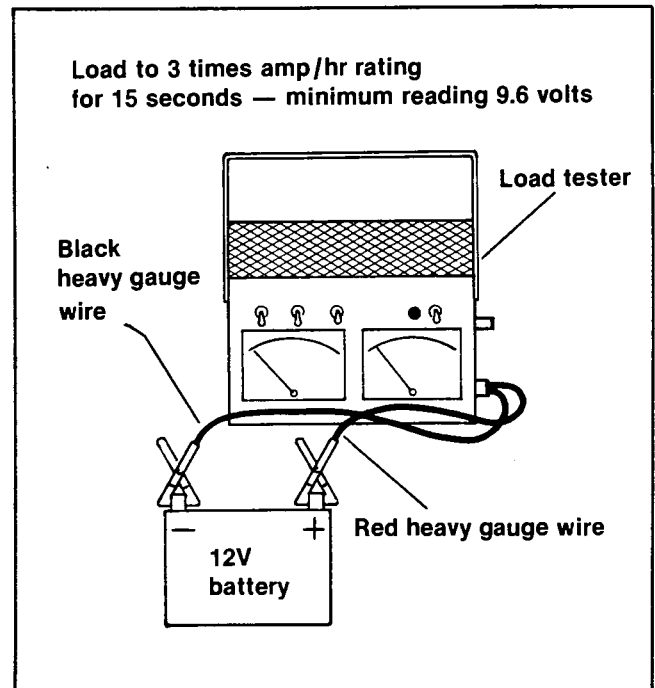
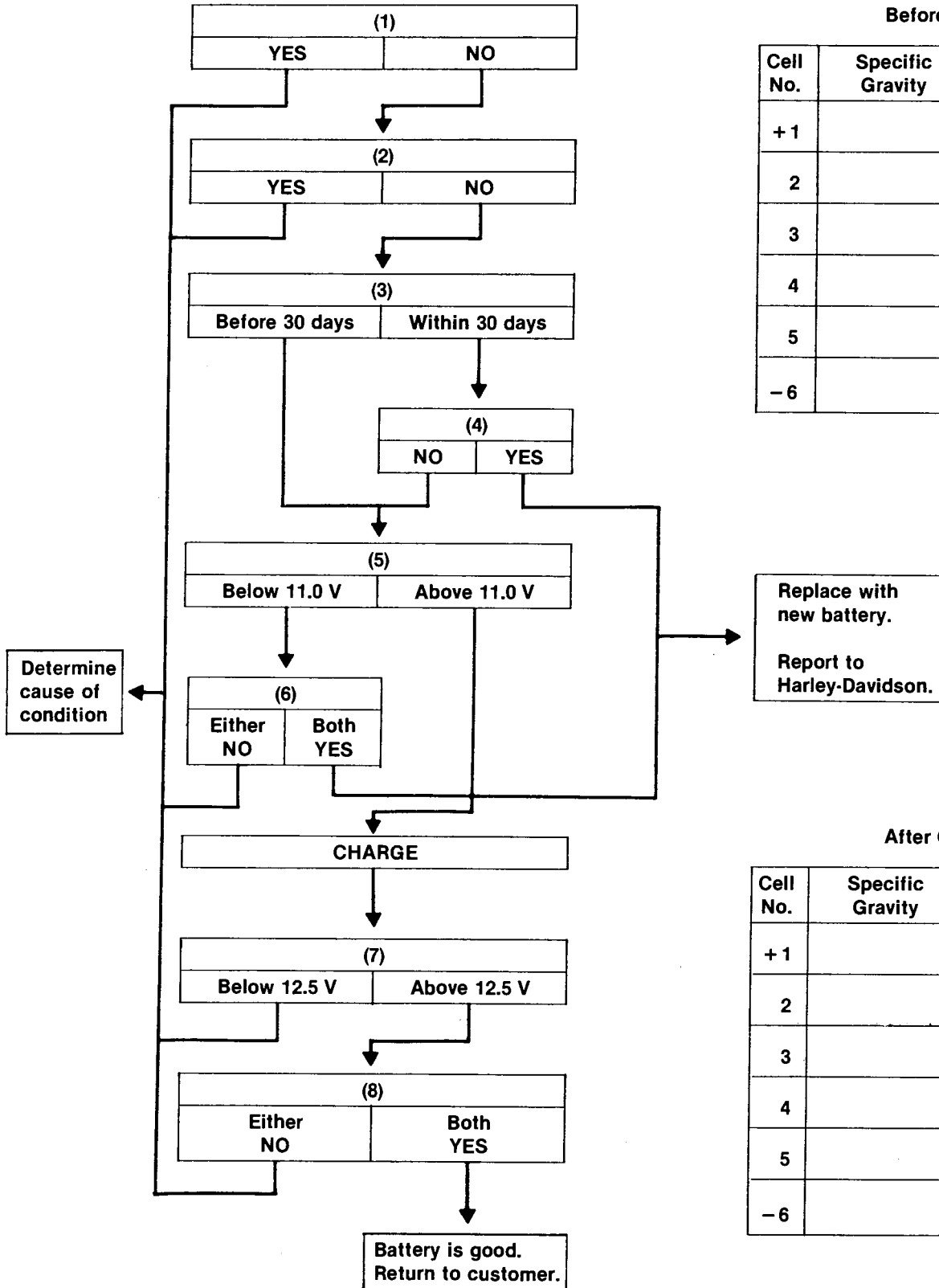


Figure 6. Load Test

BATTERY TEST SHEET



Before Charge

Cell No.	Specific Gravity	Temperature of acid
+ 1		° F.
2		
3		Battery voltage
4		
5		volt
- 6		

After Charge

Cell No.	Specific Gravity	Temperature of acid
+ 1		° F.
2		
3		Battery voltage
4		
5		volt
- 6		

LOAD TEST: TEST LOAD AMPERAGE = (3 x BATTERY A.H. RATING) _____ (AMP)

VOLTAGE AFTER 15 SECONDS WITH ABOVE LOAD APPLIED _____ (VOLTS)

(9.6 volts minimum)