AMF | HARLEY-DAVIDSON **SERVICE BULLETIN**

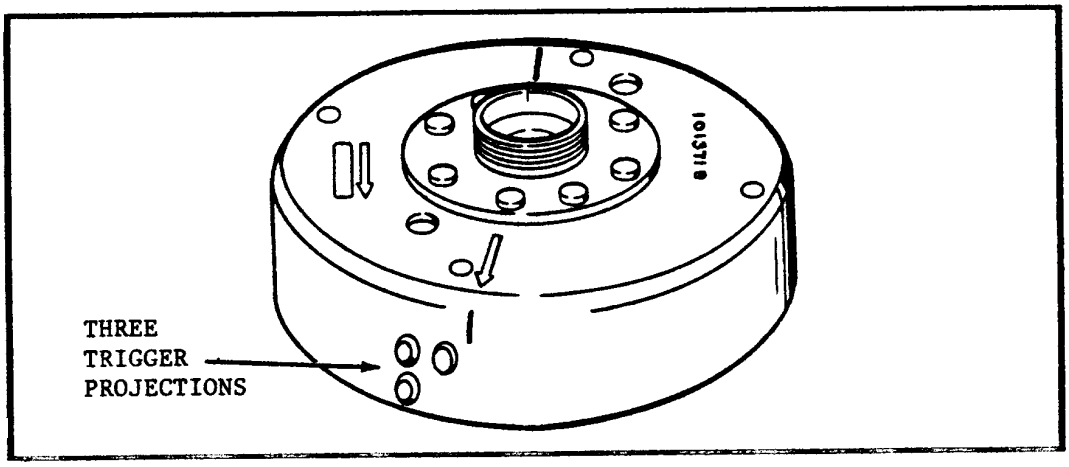
No. M-722 November 4, 1977

ALTERNATOR WITH AUTOMATIC ADVANCE RETARD / SS, SX-175, 250

1976 and later SS/SX-175, 250 motorcycles built in Italy, starting with the following vehicle identification numbers, are equipped with automatic ignition advance/retard feature to improve starting and to eliminate kickstarter lever kickback.

1976	SX-175	VIN 5D 10097 H6
1976	SS-175	VIN 4F 11298 H6
1976	SX-250	VIN 6D 10097 H6
1976	SS-250	VIN 9E 10915 H6

Also, some York produced 1976 motorcycles incorporate this feature. To aid in identifying these motorcycles, the flywheel rotor has three trigger projections on the outer diameter instead of two as on previous models. See illustration A.



ALTERNATOR FLYWHEEL ROTOR - ILLUSTRATION A

With this device the engine starts and idles with retarded timing of 11 degrees crankshaft rotation before piston top dead center (BTDC). When accelerating from low rpm, the ignition should advance to 21 degrees BTDC between 1500 and 2500 rpm and remain in the advance position up to maximum rpm.

It is very important to check the engine rpm at which the advance goes from 11 degrees to 21 degrees. This inspection can be made observing the tachometer and using a strobe timing light according to the following procedure.

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→									

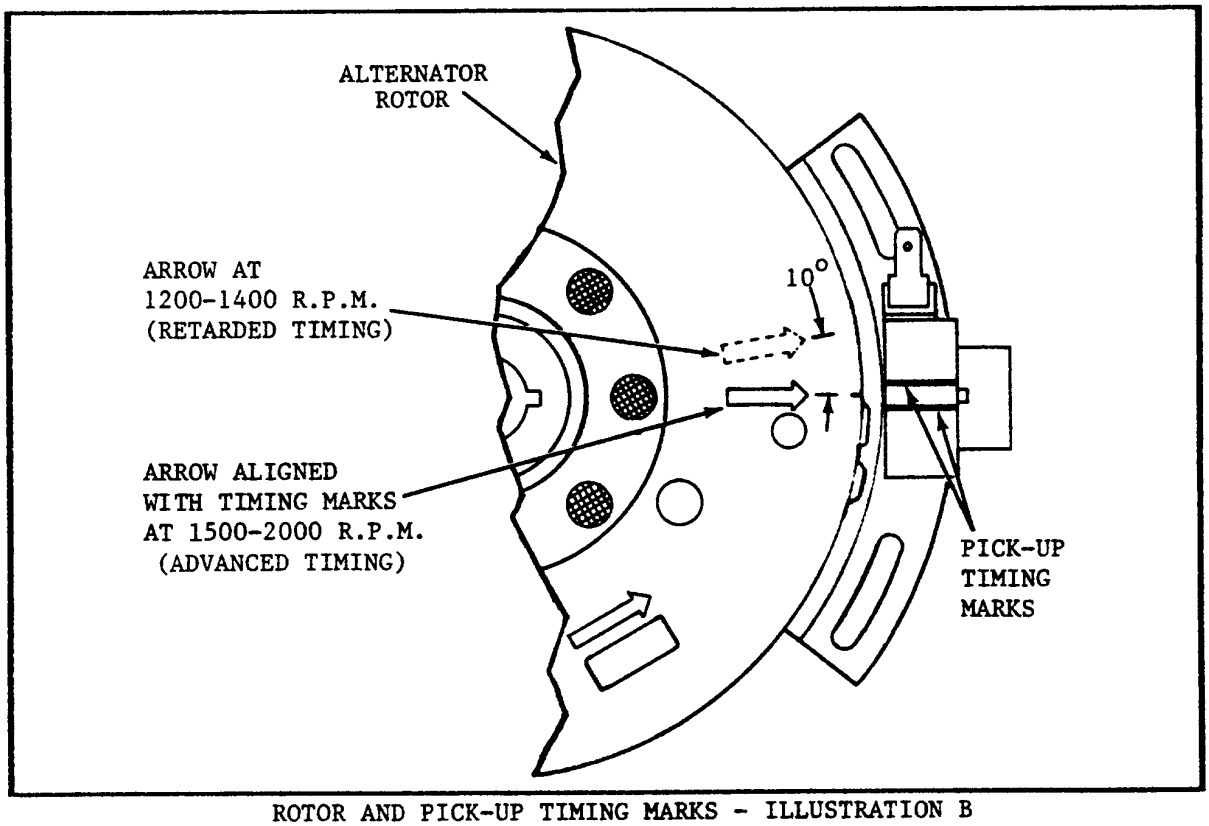
CHECKING IGNITION TIMING AND AUTOMATIC ADVANCE/RETARD

Instruments required are a strobe timing light and wire feeler gauges.

1. With engine off, check ignition timing following instructions given in the service or owner's manuals. If adjustment is required, make sure that the air gap between the double trigger projections and the pick-up is 0.3mm to 0.4mm (0.012-0.016 in.)

The single projection is shorter and a clearance check is not required.

2. Connect timing light and start engine. With engine running at a slow idle (1200-1400 rpm), timing arrow on rotor should not be aligned with timing marks on pick-up, but rotated about 10 degrees in a counterclockwise direction. With gradual acceleration to 1500-2500 rpm, arrow on rotor should instantly align between pick-up timing marks. See illustration B. If speed is increased to 7500 rpm, the arrow should remain in position without any variation.



ROTOR AND PICK-UP TIMING MARKS - ILLUSTRATION B

OPERATING PROBLEMS AND SOLUTIONS

If timing is not within the above limits, the following problems may occur.

1. Timing advances below 1000 rpm.

With engine running at idle or maximum rpm no change in advance is observed with strobe timing light (rotor arrow is always aligned between pick up marks). Engine will run satisfactorily, but engine kickback may occur during starting.

2. Timing advances between 1000 and 1500 rpm.

With engine at idle, operation is erratic and with strobe timing light, the rotor arrow oscillates between advance position and retard position.

3. Timing advances above 2500 rpm.

Engine tends to run hot, has loss of power, and detonates when accelerating or running at part throttle under heavy loads. The higher the speed at which the timing advances, the more serious these problems become. Under certain conditions the engine may never reach 21 degrees advanced timing.

Proper functioning of the automatic ignition advance depends primarily on a matched ignition module and alternator rotor. The ignition module has been improved and the rotor has been modified at various times during production by changing the shape and/or location of the trigger projections.

When the advance point is found abnormal per previous items 1, 2 and 3, we suggest that you first substitute a new module. The latest type module is available under part No. 29970-74PA and is identified with the code number 27999 or a red paint dot on the outside, and has been tested for advance/retard operation

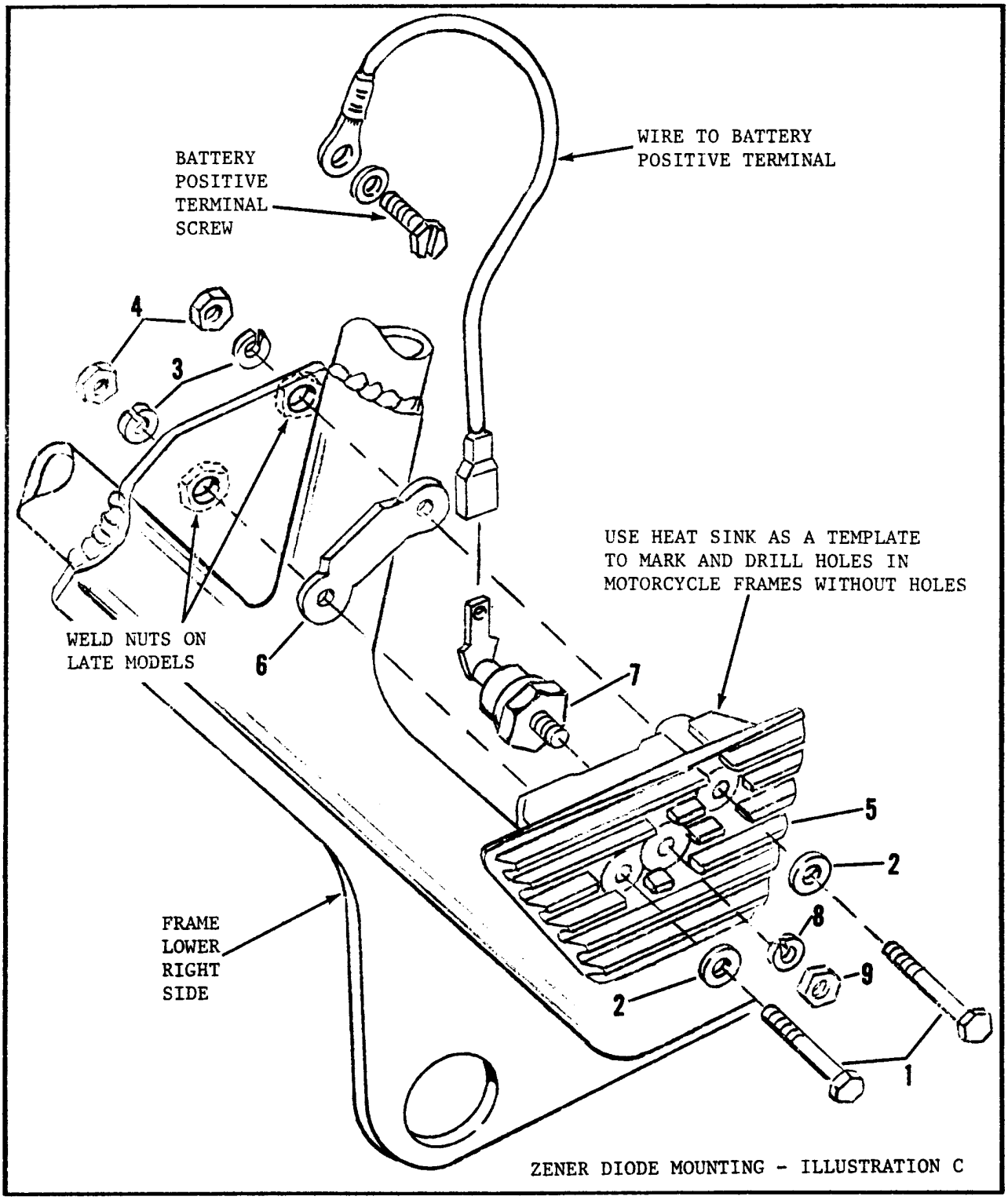
Note: If module substitution corrects the condition, the old module may still be good and can be used on other motorcycles.

If after testing with several new modules, the trip rate remains abnormal, install the latest rotor identified with suppliers stamped number 101371B. The new rotor only is available under Harley-Davidson part No. 24009-78P.

Note: This rotor has a higher output than the earlier type rotors and if installed on an earlier model it requires a zener diode with heat sink in the electrical system to limit voltage.

The 1976 and later models involved may or may not have a zener diode already installed in one of the two locations. One location is underneath the front fork tube lower bracket below the head lamp. The other location is on the frame bracket just outside the battery on the right side of the motorcycle. If the new rotor is used and there is no zener diode, one should be installed on the frame using the following parts: (See illustration C)

INDEX NO.	PART NUMBER	NAME AND (QUANTITY)
1	2879P	BOLT, heat sink (2)
2	6245P	WASHER, heat sink (2)
3	7028P	LOCKWASHER, heat sink (2)
4	7053P	NUT, heat sink (2) (for models without weldnuts)
5	29545-76P	HEAT SINK, diode
6	29544-76P	RUBBER SPACER
7	29972-74P	ZENER DIODE
8	29973-74P	LOCKWASHER, diode
9	29974-74P	NUT, diode



The heat sink and diode assembly should be mounted on the frame using the bolt holes provided in the bracket located just outside the battery on the right side of the motorcycle. Connect the wire to the diode terminal and the battery positive (+) terminal.