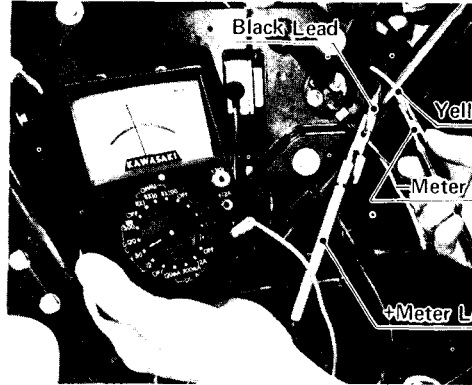


was disconnected from the relay, and connect the + meter lead to the black lead. When the starter button is pushed, the meter should read battery voltage. If it does not there is wiring trouble. If the meter does not read battery voltage but the relay does not click, the relay is defective.

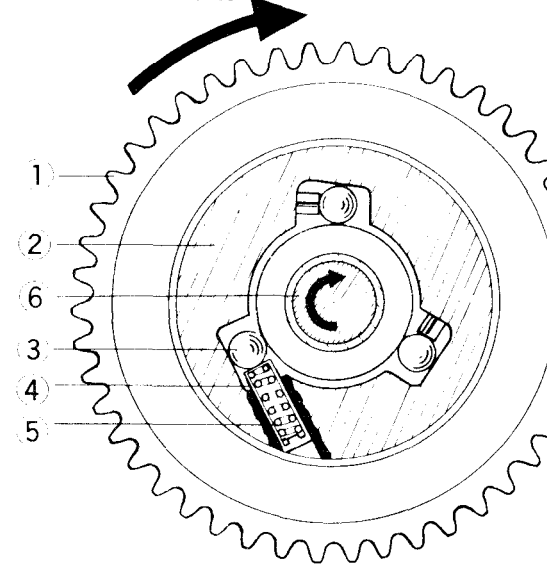


**STARTER MOTOR CLUTCH, CHAIN**

Fig. 592 shows starter motor clutch construction. The clutch body 2 is fixed to the crankshaft 6 through the dynamo rotor. Springs 5 are incorporated, to assist in the functioning of the unit as a clutch. When the starter clutch sprocket 1 rotates in the direction of the arrow, each of the three rollers 3 is wedged into the more narrow space between the clutch body and the starter clutch sprocket hub (the portion jutting out from the sprocket), thereby locking the clutch body and starter clutch sprocket together. With these two locked, starter motor rotation is transmitted to the crankshaft through the starter chain, starter clutch sprocket, rollers, clutch body, and rotor.

When the engine starts, friction with the starter clutch sprocket (and at higher speeds, inertia) moves the rollers back against the tension of their springs so that

**Starter Motor Circuit**



- 1. Sprocket
- 2. Clutch Body
- 3. Roller
- 4. Spring Cap
- 5. Spring
- 6. Crankshaft

they no longer serve as wedges locking the clutch body and starter clutch sprocket together. In this manner, the engine rotates freely without forcing the starter motor to turn with it.

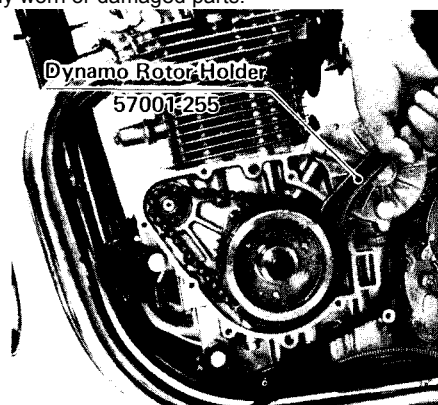
If the rollers or the starter clutch sprocket hub becomes damaged or worn, the rollers may lock in place so that the starter motor will not disengage when the engine starts. On the other hand, roller or sprocket hub damage could prevent the clutch from engaging properly, causing the starter motor to run freely without transmitting rotation.

### **Clutch inspection**

Turn off the ignition switch and disconnect the battery negative lead from the battery. Remove the dynamo cover.

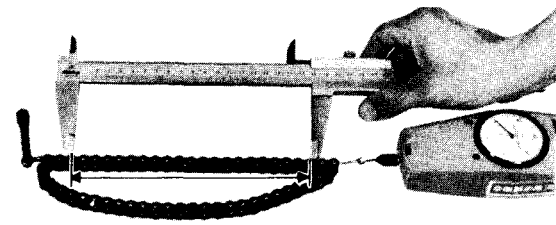
**NOTE:** Some engine oil will be spilled by dynamo cover removal. After installing the cover, check the engine oil level and add engine oil as necessary.

Turn the dynamo rotor using the dynamo rotor holder (special tool), and check the starter motor clutch operation. When turning the rotor counterclockwise, the starter clutch sprocket should turn with the rotor, but, when turning the rotor clockwise, the sprocket should not turn. If the clutch does not operate as it should or if it makes noise, disassemble the starter clutch (Pg. 48 ), examine each part visually, and replace any worn or damaged parts.



### **Starter chain inspection**

Remove the starter chain (Pg. 49 ), hold the chain taut with a force of about 5 kg in some manner such as the one shown in Fig. 594, and measure a 20-link length. If the chain has lengthened beyond the service limit, replace it with a new one.



**Measure a 20-link length.**