Magneto Tester

Operation Manual

S-22

Magneto Tester

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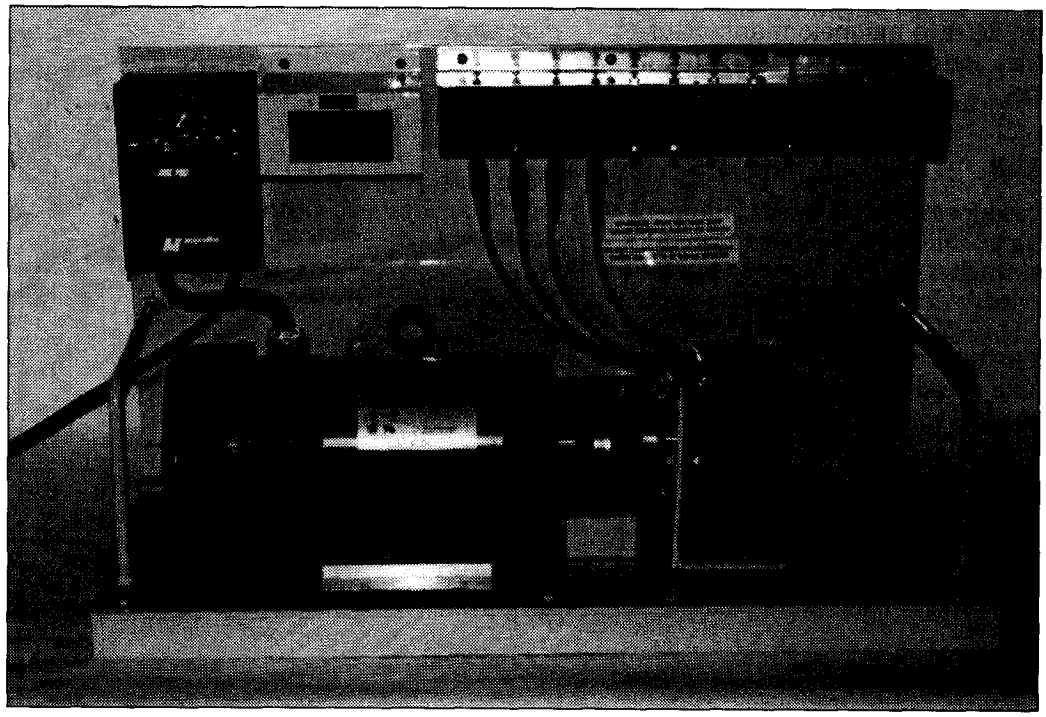

Figure 1. S-22 Magneto Tester

Magneto Tester
S-22

INTRODUCTION

This manual contains operating instructions for the S-22 magneto tester. It does not include specific test procedures for magnetos. Refer to magneto manufacturer's specifications for specific magneto test procedures.

DESCRIPTION

The S-22 magneto tester is a self contained unit designed for bench top operation. All controls, switches and tachometer indication are clearly labeled for quick identification. The S-22 magneto tester is designed to test a variety of magnetos over a selectable speed range from 0 to 2500 RPM in a clockwise or counter clockwise rotation.

TOOLS

Common hand tools are required to install and remove a magneto from the magneto tester.

IMPORTANT SAFETY NOTICE!

Magnetos generate high voltage electricity. Serious injury or death can occur from mishandling magnetos or using this magneto tester.

Never operate magneto tester with drive shaft guard removed.

Make sure power switch is off while installing magneto to magneto tester.

Never operate magneto tester if the clear lexan spark bar cover is not in place.

Never touch or attempt to relocate ignition leads if magneto is being rotated by the magneto tester.

Magnetos produce high voltage that can cause serious injury or death.

INSTALLING MAGNETO TO TESTER

1. Before installing a magneto, verify that the power switch is off and the motor is not rotating.
2. Loosen the two nuts holding the mounting flange to the magneto tester base just enough so the mounting flange can slide easily.
3. Slide the mounting flange away from the motor.

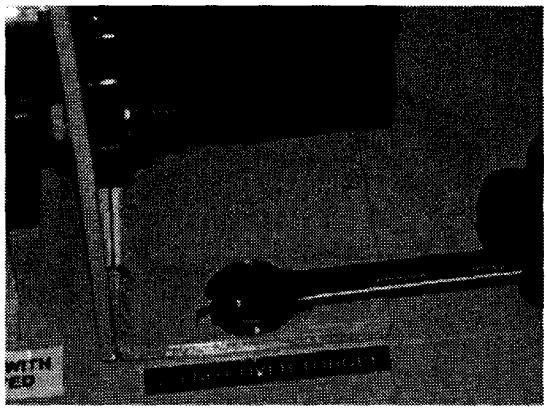

Figure 2. Mounting Flange

4. Identify the proper magneto to drive motor coupling needed.

   a. Magnetos with drive gears:

   Remove the drive gear.

   If the magneto has an impulse coupler, engage the impulse couplers lugs with the motor drive.

   If the mageto does not have an impulse coupler, attach the supplied drive adapter (see section on included accessories, page 6) to engage the mag to the motor drive.

   b. Magnetos without drive gears:

   Engage the magneto's drive coupler directly to the motor drive.

5. Identify the proper magneto mounting hardware.

   a. Magnetos with slotted hole mounting flanges need only washers and nuts to secure the magneto to the mounting flange.

   b. Magnetos with smooth round flanges will require angle clips along with nuts & washer to secure the magneto to the mounting flange.

6. Secure magneto to mounting flange using the proper hardware.

DO NOT OVER TORQUE.

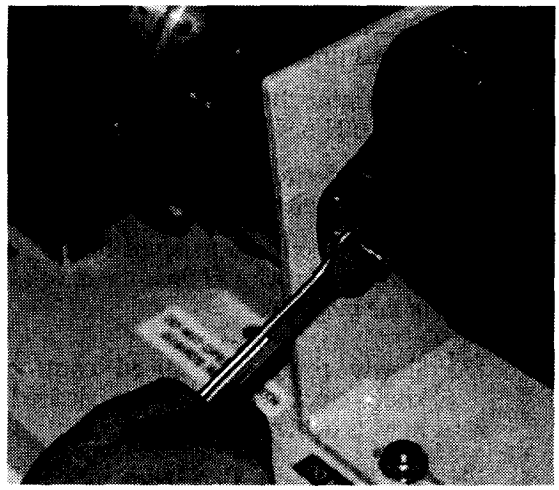

Figure 3. Installing Magneto to Tester

7. Align the magneto coupler with the coupler on the motor shaft.
8. Slide the mounting flange toward the motor until couplers are engaged.
9. Tighten the two nuts attaching the mounting flange to the magneto tester base.

DO NOT OVER TORQUE.

10. Determine the proper quantity and sytle of lead for the magneto to be tested. (Use leads with black clips for Bendix magnetos and leads with red clips for Slick magnetos).
11. Clip lead to spark bar and press other end of lead into magneto. Install one lead per receptable on rear of magneto.

OPERATING TESTER

1. Move the rotation direction switch to the middle position and the speed control knob to the 0% (full counter-clockwise) position.
2. Turn power switch ON.
3. Observe amber light indicating power is on.
4. Observe tachometer illumination at this time.
5. Determine the rotation of the magneto (RH or LH Rotation).
6. Select desired rotation with the rotation selector switch.

Magneto rotation is determined by the data plate and is viewed from the drive end of the magneto.

7. Slowly rotate the speed control knob clockwise until the desired RPM is achieved.
8. Proceed with magneto test per manufacturers recommendations.

STOPPING THE MAGNETO TESTER

1. Rotate the speed control knob counter-clockwise to 0%.
2. Select the center position for the rotation selector switch.
3. Turn power switch off.

REMOVING MAGNETO

After testing is complete, remove magneto from tester. Return adapters, leads and hardware back to accessory box for storage.

DESCRIPTION OF KEY COMPONENTS

SPARK BAR

The spark bar consists of 12 spark gap assemblies. The top terminal point being connected to the magneto case ground through the magneto tester frame. The bottom terminal point is to be attached to the high tension distributor block on the magneto using the supplied leads. There is no connection to the static terminal point which is horizontal to the top and bottom terminal points. Its purpose is to dissipate the ionization which occurs in the vicinity of the spark points as a result of the electrical discharge. Ionization lowers the voltage required in bridging the spark gap thus causing an erratic spark. Care should be taken to keep the spark gap assembly free of oil, moisture and dust to avoid high voltage leakage across the insulating base. The spark points have been adjusted at the factory to a standard setting of 5 mm. In the event the point gaps need to be adjusted, it is recommended the gap be adjusted by screwing the top terminal point up or down to achieve the proper gap.

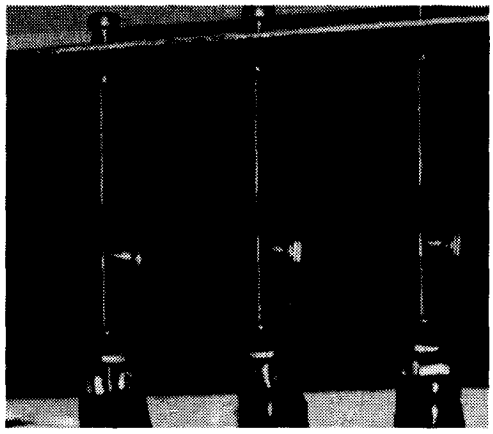

Figure 4. Spark Bar

If the points become eroded, they should be removed and ground to a fine point on a fine grit grinder. Reinstall points and set gaps as shown in figure 5.

The clear lexan cover on the front of the spark bar assy. gives the insulating channel rigidity, protects the points from being damaged and protects the operator from high voltage. This cover should be in place at all times except when maintenance or adjustments are being performed to the assy.

NOTE:

Magnetos produce extremely high voltages that can be harmful or fatal. Never touch the spark point assembly, including the ignition leads, or pass any object through the point gap at any time the magneto is being tested.

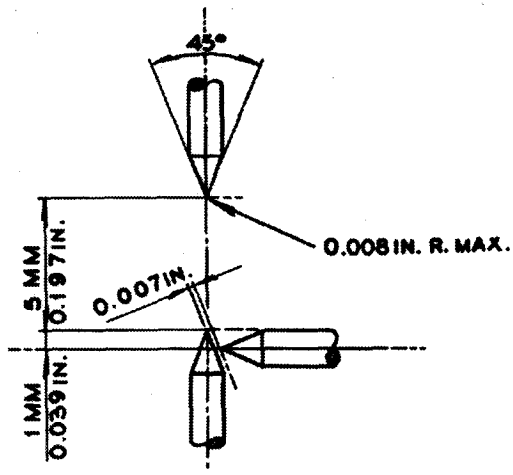

Figure 5. Test Point Gap Settings

TACHOMETER

The tachometer is a 4 digit LED readout that operates on 115 VAC and is hard-wired into the motor controller. It receives a pulse signal from a proximity sensor located on the rear of the motor within the fan guard housing. The motor speed control knob should be rotated slowly as the tachometer updates its indication from the proximity sensor approximately every 3 seconds. RPM indication is not updated instantaneously.

MOTOR

The magneto tester drive motor is a one (1) hp. variable speed (0-2500 RPM) reversible DC motor. The speed and direction of the motor is determined by the operator's chosen settings on the motor controller.

MOTOR CONTROLLER

This unit controls the speed and direction of rotation of the motor. It also supplies power to the tachometer when the unit is turned on.

There are two switches and a speed control knob located on the front of the controller. The switch located to the left selects direction of rotation. When changing direction, this switch must be stopped in the middle position momentarily before selecting the opposite direction. The center position is also a brake position for the motor. The speed control knob is located in the middle and is incremented in % of total motor speed. The speed control knob should always be rotated CCW to the 0% (off) position after testing has been performed.

Located to the right is the power switch. When this switch is on, an amber light under the speed control knob will be illuminated indicating power is on.

Figure 6. Motor Controller

ADJUSTABLE MOUNTING FLANGE

The mounting flange can be adjusted in or out from the motor drive to accommodate different lengths of magneto coupler configurations.

INCLUDED ACCESSORIES

DRIVE COUPLER ADAPTER

The drive coupler adapter is used on magnetos equipped with drive gears. This coupler is painted yellow for easy identification. To install the adapter, first remove the gear from the magneto and then install the coupler to drive the magneto. The magneto coupler adapter is to be used for testing magnetos on this test bench only. Once the magneto has been tested, the coupler adapter is removed and the drive gear should be reinstalled and safetied back on the magneto.

Figure 7. Drive Coupler Adapter

LEADS

The magneto tester includes test leads for both Bendix and Slick Magnetos. The Bendix lead set consists of 12 leads with black insulated clips. The Slick lead set consists of 6 leads with red insulated clips.

The clip end is to be attached to the electrodes located at the bottom of the spark bar. The other end is inserted into the magneto distributor block on the rear of the magneto.

ACCESSORY BOX

An accessory box is supplied with the magneto tester to store leads and drive coupler adapter.

STORAGE

Make sure all items are returned to accessory box. Tester should be wiped clean and stored in a clean dry area.

Magneto Tester
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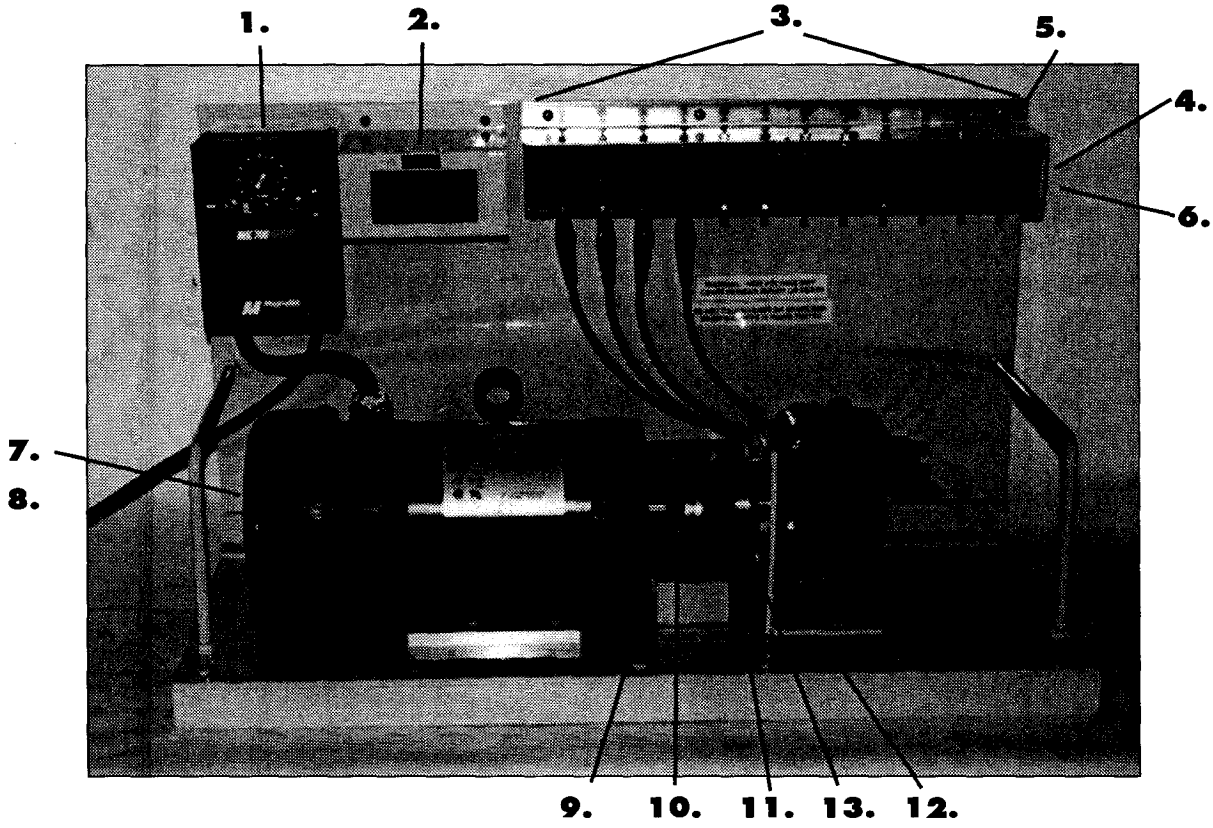

Figure 8. Magneto Tester Replacement Parts

	Description	Part Number	Qua.
1.	Motor Controller w/ Switch Kit	W770/W730	1
2.	Tachometer	14215T22	1
3.	Spark Bar Assy. (w/ Spark Points)	S22-SB12	1
4.	Lexan, Spark Bar Cover	S22-SBC	1
5.	Spark Point, Short, w/ nut	S22-SPS	24
6.	Spark Point, Long, w/ nut	S22-SPL	12
7.	Drive Motor	D074	1
8.	Proximity Sensor, Tachometer (internal to drive motor)	14215T22	1
9.	Bracket, Magneto Drive Guard	S22-MDB	1
10.	Outer Magneto Drive Guard	S22-MDO	1
11.	Inner Magneto Drive Guard	S22-MDI	1
12.	Magneto Mounting Flange	S22-MMF	1
13.	Motor Drive Coupler	S22-MDC	1
	Not Shown		
14.	Drive Adapter, taper hole	S22-ADAPT	1
15.	Magneto Mounting Clips	S22-MCLP	2
16.	Bendix Lead assy.	S22-BENLD	12
17.	Slick Lead assy.	S22-SLKLD	6