

TELEDYNE CONTINENTAL ® AIRCRAFT ENGINE

Category 3

SERVICE BULLETIN

SB05-9

Compliance Will Enhance Safety

Technical Portions FAA

Approved

Supersedes M88-14

SUBJECT: SLICK SERVICE BULLETIN SB1-88B

PURPOSE: To announce the issuance of revision B to Slick Bulletin SB1-88

COMPLIANCE: See Slick Bulletin

MODELS


AFFECTED: TCM engines utilizing Slick Magneto model numbers 6320 and 6324.

Teledyne Continental Motors recommends compliance with the Slick Service Bulletin SB1-88B.

Teledyne Continental Motors does not supply internal magneto parts for Slick magnetos. Required parts may be purchased from any Slick magneto distributor.

For a copy of Slick Service Bulletin SB1-88B, or further information about this bulletin, interested parties may contact:

Unison Industries®
7575 Bay Meadow Dr.
Jacksonville, FL 32256
Piston Help Desk at 1-904-739-4081.
E-mail: pistonhelp@unison.ae.ge.com

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SLICK SB1-88B

Service Bulletin

TO: Aircraft manufacturers, distributors, dealers, engine overhaul facilities, owners and operators of Slick Aircraft Products aircraft magnetos.

SUBJECT: Periodic Inspection of Slick Models 6320, 6324, 6360, 6361, 6363, and 6365 Pressurized Magnetos

MODELS AFFECTED: These magnetos, when installed on Piper Dakota PA-28, Seneca PA-34, Saratoga PA-32, Cherokee 6 PA-32, Seminole PA-44, Navajo PA-31, and Malibu PA-46 aircraft.

BACKGROUND INFORMATION: Slick pressurized magnetos are used on turbocharged engines that require very high altitude mission capability.

These magnetos are pressurized with air from the engine turbocharger. The pressurization system connecting the magnetos to the turbocharger, including all fittings, lines, and filtration devices, is part of the aircraft engine and/or airframe. It is therefore important that in conjunction with the instructions contained in this bulletin, the engine and aircraft manufacturer's service literature be consulted to insure the pressurization system is function properly and is in the proper condition.

The operation of the Slick pressurized ignition systems is similar to conventional magnetos with the exception that as the aircraft climbs, the air density inside the pressurized magneto decreases at a slower rate. The resulting increased air density at altitude improves the insulation properties of the air inside the magneto to reduce the likelihood of high altitude misfire.

Field service reports of these installations indicate that the magneto pressurization systems installed on the aircraft listed in MODELS AFFECTED may be capable of depositing moisture inside the magnetos. Similar to the ignition distributor of an automobile, an aircraft magneto will not operate properly when contaminated with water or other corrosives.

In particular, the models of the aircraft noted in MODELS AFFECTED will have a higher probability of developing moisture in the magnetos when they are flown in rain, fog, or clouds. High altitude flying in such wet weather will increase the probability of moisture contamination and magneto malfunction even further.

WARNING: MOISTURE IN MAGNETOS CAN LEAD TO SEVERE ARCING INSIDE THE MAGNETOS AND TOTAL MAGNETO FAILURE.

This bulletin describes increased inspection intervals as well as post-flight magneto checks for magnetos installed on the specified aircraft. Pilots and mechanics should be aware, however, that the problems of moisture developing in magnetos are most likely for aircraft flown into rain, fog, or clouds.

This Service Bulletin, in conjunction with Maintenance and Overhaul Manual L-1037, outlines the step-by-step procedures required to maintain and overhaul Slick pressurized magnetos.

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This bulletin supersedes and obsoletes Service Letter SL1-84A and Service Bulletin SB1-88A. This bulletin and its procedures DO NOT replace Slick Maintenance and Overhaul Manual L-1037 and/or required 500 hour inspections.

COMPLIANCE: Within next 50 hours of flight time and every 100 hours thereafter or annual inspection, whichever occurs first. (Also, pre-flight and post-flight magneto checks.)

PROOF OF COMPLIANCE: Appropriate logbook entries.

PARTS REQUIRED PER BULLETIN: As required for proper overhaul and maintenance.

TOOLS REQUIRED PER BULLETIN: Slick T-100 Timing and Assembly Tool Kit, flowmeter, regulated air supply, Slick Master Service Manual F-1100, and standard shop tools.

WEIGHT CHANGE: None.

DETAILED INSTRUCTIONS: THIS SERVICE BULLETIN IS A SUPPLEMENT TO SLICK MAINTENANCE AND OVERHAUL MANUAL L-1037. CHECK WITH SLICK TO BE SURE YOU HAVE THE MOST CURRENT REVISION OF THE F-1100 MASTER SERVICE MANUAL AND PERTINENT SERVICE BULLETINS AND LETTERS BEFORE PERFORMING MAINTENANCE OR OVERHAUL.

NOTE: The numbers in parentheses () following the name of each part refer to the assembly drawing in Table 1 and Exploded View.

1. Pre-Flight Check

Mag Check - Perform mag check as described in the airframe operating manual. If the mag check is not within acceptable limits, the magnetos must be disassembled and checked according to the 100 hour inspection procedures stated in this bulletin and in Slick Maintenance and Overhaul Manual L-1037. Also reference the engine and/or airframe manufacturer's literature for pressurization system corrective action.

NOTE: Many non-ignition system factors influence engine performance during a magneto check, and the replacement or repair of ignition components may not remedy problems in all cases. After verifying that all non-ignition system related causes for problems have been explored, proceed with inspection procedures as stated in this bulletin.

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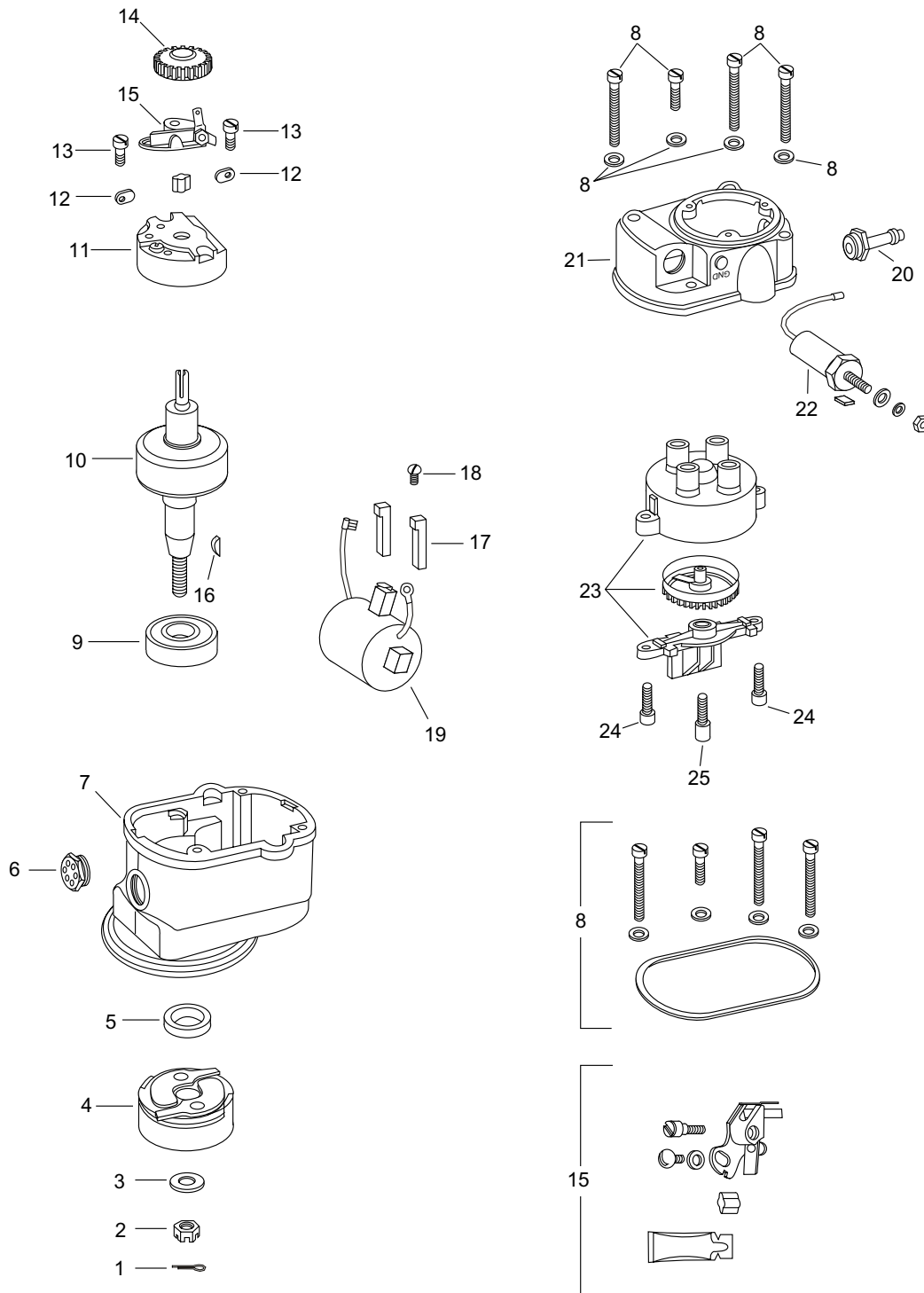
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Table 1
Service Parts List

Ref No.	Description	6320	6324	6360	6361	6363	6365	Qty. Used
1	Cotter Pin	M2556	M2556	M2556	M2556	M2556	M2556	1
2	Nut	M3019	M3019	M3019	M3019	M3019	M3019	1
3	Washer	M3172	M3172	M3172	M3172	M3172	M3172	1
4	Impulse Coupling Assy.	M3172	M3172	N/A	N/A	N/A	N/A	1
5	Oil Seal	M3062	M3062	M3331	M3331	M3331	M3331	1
6	Pressure Vent	M3179	M3179	M3179	M3179	M3179	M3179	1
7	Frame	M3837	M3847	M3900	M3859	M3900	M3900	1
8	Gasket Kit	K3307	K3307	K3307	K3307	K3307	K3307	1
9	Ball Bearing	M3006	M3006	M3006	M3006	M3006	M3006	1
10	Rotor	M3047	M3093	M3117	M3327	M3117	M3117	1
11	Bearing Cap Assy.	M3485	M3485	M3485	M3485	M3630	M3630	1
12	Bearing Cap Clamp	M3018	M3018	M3018	M3018	M3018	M3018	2
13	Screw	M3221	M3221	M3221	M3221	M3221	M3221	2
14	Rotor Gear	M3828	M3828	M3828	M3828	M3828	M3828	1
15	Contact Point Kit	M3081	M3081	M3081	M3081	M3637*	M3637*	1
16	Woodruff Key	M2536	M2536	M2536	M2536	M2536	M2536	1
17	Coil Wedge	M3040	M3040	M3040	M3040	M3040	M3040	2
18	Screw	M3020	M3020	M3020	M3020	M3020	M3020	1
19	Coil	M3975	M3975	M3975	M3975	M3975	M3975	1
20	Pressure Tube Fitting	M3180	M3180	M1280	M1280	M1280	M1280	1
21	Housing, Distributor	M3902	M3902	M3902	M3902	M3832	M3832	1
22	Capacitor	K3984	K3984	K3984	K3984	K3984	K3984	1
23	Dist. Block & Gear Assy.	K3823	K3823	K3823	K3823	K3823	K3823	1
24	Screw	M3021	M3021	M3021	M3021	M3021	M3021	2
25	Carbon Brush	M3215	M3215	M3215	M3215	M3215	M3215	1

* Requires M3637 secondary points also.

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Exploded View

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2. Post-Flight Check

Mag Check - After landing, perform mag check as described in the airframe operating manual. If the mag check is not within acceptable limits, the magnetos must be disassembled and checked according to the 100 hour inspection procedures stated in this bulletin and in Slick Maintenance and Overhaul Manual L-1037. Also reference the engine and/or airframe manufacturer's literature for pressurization system corrective action.

NOTE: Many non-ignition system factors influence engine performance during a magneto check, and the replacement or repair of ignition components may not remedy problems in all cases. After verifying that all non-ignition system related causes for problems have been explored, proceed with inspection procedures as stated in this bulletin.

3. 100 Hour Inspection

The purpose of these instructions is to check the magneto for moisture contamination following procedures in paragraph 3.A below. If moisture contamination is found, (1) clean affected parts following procedures in paragraph 3.B, and (2) check operation of engine pressurization system following instructions in paragraph 3.C.

A. Check Magneto for Moisture Contamination

- (1) Check for rust and corrosion on screws (8, 13, 18, 24), bearing cap hold down clamps (12), rotor shaft (10), breaker point assembly (15), frame and coil laminations (19), etc. See Figure 1. Rust and corrosion are signs of contamination and require component cleaning or replacement (reference paragraphs 3.B and C of this bulletin and Slick Maintenance and Overhaul Manual L-1037).

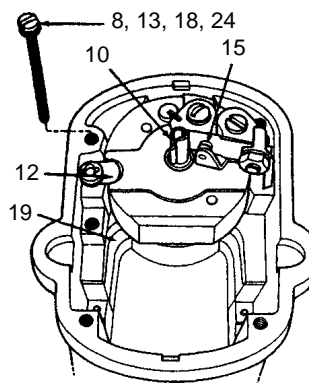


Figure 1

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- (2) Soft or sticky distributor and rotor gears (14, 23) indicate moisture contamination and require component replacement (reference Slick Maintenance and Overhaul Manual L-1037). See Figure 2.

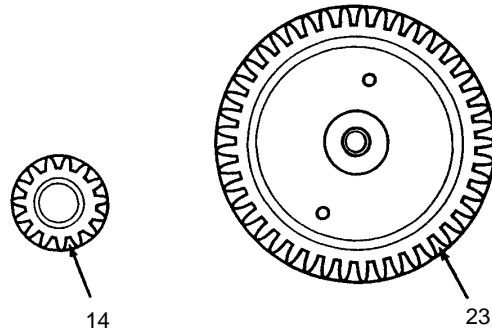


Figure 2

- (3) Gummy or sticky distributor gear oilite bearing (23) indicates contamination. Check distributor block assembly according to instructions in Slick Maintenance and Overhaul Manual L-1037. See Figure 3.

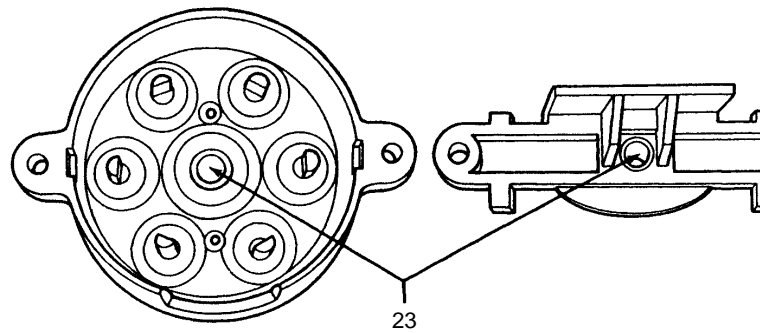


Figure 3

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- (4) Traces of pooling water on the distributor bearing bar (23) in the vicinity of the carbon brush or other internal surfaces of the magneto indicates the presence of moisture. See Figure 4. Check distributor block assembly according to instructions in Slick Maintenance and Overhaul Manual L-1037.

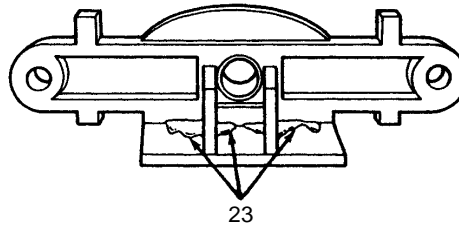


Figure 4

- (5) A yellow powder, yellow particles, oxides, or white chalky powder on the condenser housing (22) indicate moisture contamination. See Figure 5. Refer to paragraphs 3.B and C of this bulletin and Slick Maintenance and Overhaul Manual L-1037.

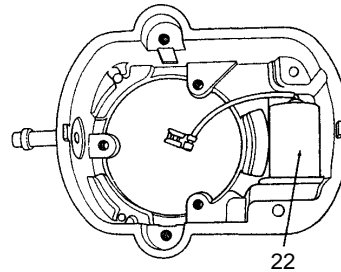


Figure 5

- (6) A yellow powder, yellow particles, oxides, or white chalky powder on the magneto frame (7) and housing (21) indicates moisture or corrosive contamination. See Figure 6. Clean or replace as necessary following procedures in paragraphs 3.B and C of this bulletin and Slick Maintenance and Overhaul Manual L-1037.

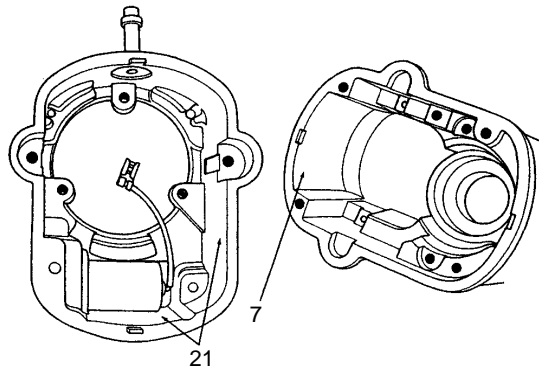


Figure 6

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- (7) White or gray chalky deposits around the electrodes inside the distributor block (23) indicates lack of pressurization. See Figure 7. Refer to paragraphs 3.B and C of this bulletin for cleaning and pressurization system check. Check distributor block assembly according to instructions in Slick Maintenance and Overhaul Manual L-1037.

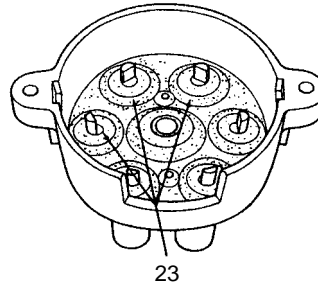


Figure 7

- (8) Electrical tracking or arcing in the distributor block and bearing bar (23) indicates contamination or lack of pressurization. See Figure 8. Check distributor block assembly according to instructions in paragraphs 3.B and C of this bulletin and Slick Maintenance and Overhaul Manual L-1037.

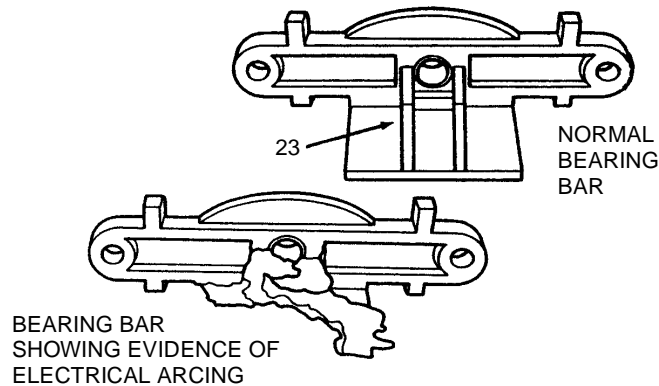


Figure 8

- (9) Check inside of magneto for corrosion, oil, and other turbocharger contaminants. Clean if necessary following instructions in paragraph 3.B of this bulletin. Check air lines accordingly.
- (10) Frame Gasket (8) - Check frame gasket for wear and replace as necessary. Gasket contains a metal mesh foundation to insure proper ground between the magneto frame and the magneto housing. If replacement is required, use only Slick replacement K3303 Gasket Kit.
- (11) Screw Gasket (8) - Check screw gasket for wear and replace as necessary. For replacement, use only Slick K3303 Gasket Kit.

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- (12) Harness Cap "O" Ring (not shown in Figure 2) - Check "O" ring M3184 for wear and replace as necessary.
- (13) Orifice Vent (6) - Check and clean orifice vent M3179 to insure it is clean and free of obstruction. Reference paragraph 3.B of this bulletin. Maximum orifice diameter is .025 inch. See Figure 9.

NOTE: Moisture contamination is more likely to occur on magnetos that have Piper PN 84652-002, Teledyne Controls PN 0402-102 tachometer sensor installed on the magneto in place of the factory orifice vent. Tachometer sensors identified as Mod 1 do not have this problem.

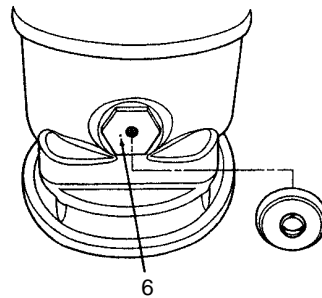


Figure 9

- (14) Turbo Filter - Check for yellow or red color, condensation or free standing water or foreign matter in the filter element. See Figure 10. If the filter is contaminated, reference the engine and/or airframe manufacturer's literature for pressurization system corrective action. Replace turbo filter.

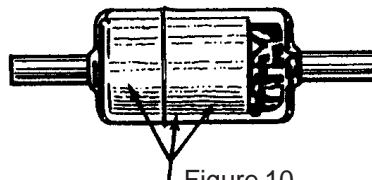


Figure 10

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- (15) Inlet Nozzle (20) - Check and clean inlet nozzle M3180 to insure it is clean and free of obstruction. See Figure 11. Reference paragraphs 3.B and C of this bulletin. Yellow or white particles or an oily film in the inlet nozzle indicates moisture contamination and possible lack of pressurization. Reference the engine and/or airframe manufacturer's literature for pressurization system corrective action.

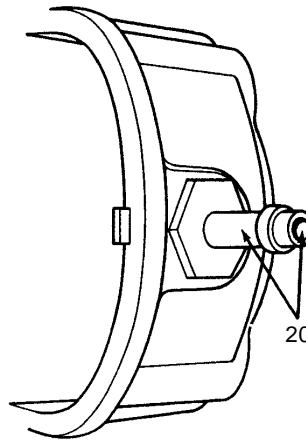


Figure 11

B. General Cleaning Procedures

- (1) Metal parts - use Stoddard Solvent, Varsol, or any standard evaporative non-filming solvent.
- (2) Plastic or nylon parts - use soapy water, rinse with clear water, and dry with lint-free cloth.

C. Check Pressurization System

1. To check for correct operation of the engine pressurization system, reference engine and/or airframe manufacturer's literature.

4. Reassembly

After any necessary maintenance has been performed, reassemble magneto using procedures in Slick Maintenance and Overhaul Manual L-1037.

5. Post-Assembly Testing

- A. Perform testing procedures in accordance with Slick Maintenance and Overhaul Manual L-1037, in addition to pressure testing in paragraph 5.B.

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- B. Pressure Testing - After magneto reassembly, install a pressurized harness cap and apply 15 PSI filtered air to the inlet nozzle of the magneto. Air flow at 15 PSI should be 11 to 40 standard cubic feet per hour (SCFH). If flow is excessive, reposition gaskets and re-torque housing and harness cap screws. Screws should be torqued to 18-20 in.-lbs. See Figure 12 for Test Apparatus details. Testing should be conducted with magneto at room temperature.

NOTE: Airflow limits apply only to the magneto, and do not include any other engine accessories or plumbing. If the airflow is less than 11 SCFH, replace the tachometer sensor with either Piper PN 84652-002 Mod 1 or Teledyne Controls PN 0402-102 Mod 1.

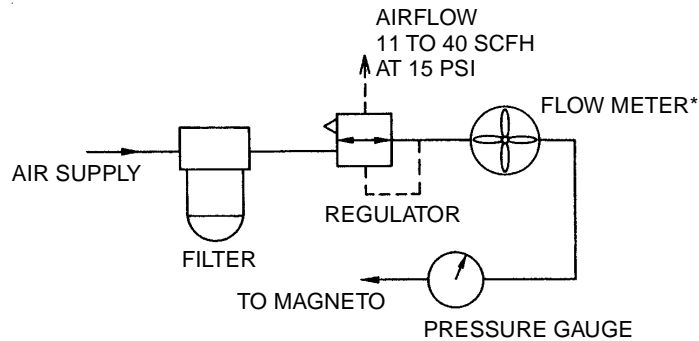


Figure 12

- C. Perform mag check on engines as described in the airframe operating manual to ensure proper mag operation.

NOTE: Flowmeter may be obtained from:

Dwyer Instrument, Inc.
P.O. Box 373
Michigan City IN 46360

Order Model MMA-7

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