

# Service Information Letter - Fuel Systems

SMALL RECIPROCATING ENGINES  
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**SUBJECT: Service Information for RSA-10AD1 Fuel Injection Servo  
Parts List Number 2576630-4.**

**PURPOSE:** To provide repair shops with flow bench limits and service information for RSA-10AD1 fuel injection servo parts list number 2576630-4.

Revision 4 corrects drafting error in 15-433D, IPL, Figure 1 table, Item Number 75

A. **EFFECTIVITY:** This Service Information Letter is applicable to all RSA-10AD1 fuel injection servos, parts list number 2576630-4. These servos are installed on Lycoming IO-540-AE1A5 engines on Robinson R44 II helicopters.

B. **DESCRIPTION:** The service information found in manual 15-433D, for parts list 2524030-11 is applicable to parts list 2576630-4 except as follows:

1. Reference manual 15-433D, IPL, Figure 1:

Item Number	2576630-4 Part Number	Description
1	2576630-4	Fuel Injection Servo
20	2522710	Outlet Fitting
25	951789	Packing, Preformed
30	2577202	Adapter, Fuel Inlet
40	392522	Plug, Pipe
55	2538890	Plug
75	2540174	Bolt, Idle Speed
85	2522004	Lever, Throttle
100	2577188	Lever, Mixture Control
110	2576629-D	Fuel Injector Assembly (Basic)

2. Reference manual 15-433D, IPL, Figure 3:

Item Number	2576630-4 Part Number	Description
20	2538755	Lever Assembly, Idle Valve
25	2538321	Stem, Idle Valve
160	2577206-895	Valve, Idle

## 3. Reference manual 15-433D, IPL, Figure 4:

Item Number	2576630-4 Part Number	Description
None	D732-11	Bracket (Robinson Supplied) See Figure 1
None	D732-12	Bracket (Robinson Supplied) See Figure 1
25	2523502, 2577195, or 2577225	Cover, Regulator

## 4. Reference manual 15-433D, IPL, Figure 5:

Item Number	2576630-4 Part Number	Description
10	2523910	Valve, Throttle
30	2523911	Stop, Throttle
50	2526429 (5 per assy*)	Packing, Preformed * 5 ea with 2577236 Venturi 3 ea with 2523429 & 2577228 Venturi
55	2523429, 2577228, or 2577236*	Venturi Assembly

## 5. Reference manual 15-433D, Calibration and Service Limits:

Specification Type	2576630-4 Test Specification	Applicable Figure
Calibration Limits	30111-01	New
Service Limits	30112-01	New

## 6. Reference manual 15-433D, History of Changes:

<u>Date</u>	<u>IC Number</u>	<u>Description</u>
<u>Issue 1</u>		
11-1-02	1	Released to Production
<u>Issue 2</u>		
7-19-04	2	Regulator Cover 2577225 was 2577195 or 2523502 Venturi Assembly 2577228 was 2523429
<u>Issue 3</u>		
3-9-05	3	Basic Assembly 2576629-C was 2576629-B. Venturi Assembly 2577236 was 2577228. Added (2) additional 2526429 Preformed Packings. Added optional Regulator Covers 2523502 and 2577195
<u>Issue 4</u>		
6-8-05	4	Basic Assembly 2576629-D was 2576629-C. Added optional Venturi's 2523429 or 2577228. Added * 5 ea with 2577236 Venturi, 3 ea with 2523429 or 2577228 Venturi. Robinson Bracket D732-11 was D732-9, added Robinson Bracket D732-12. Inlet and Alternate Inlet locations and part numbers swapped. Outlet and Alternate Outlet locations swapped; Outlet 2522710 was 366082, Alternate Outlet 392522 was 133176.



**FIGURE 1**

**30111-01**  
07/14/03

**TEST SPECIFICATION  
CALIBRATION LIMITS**  
PRECISION AIRMOTIVE CORPORATION - FUEL CONTROLS - MARYSVILLE, WASHINGTON

INSTALLATION PARTS LIST: \_\_\_\_\_ MODEL: RSA-10AD1 SERIAL NUMBER: \_\_\_\_\_

OPERATOR: \_\_\_\_\_ DATE: \_\_\_\_\_

BASIC PARTS LISTS: 2576629 FUEL PRESSURE: 25-27 PSI FUEL SP. GRAV. \_\_\_\_\_ @ \_\_\_\_\_ OF

TEST POINT NUMBER	1	2	3	4	5
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**METERING SUCTION (INCHES OF WATER)**  
0 0 4.9 10.5 20.3

**CORRESPONDING AIRFLOW (LBS/HR)**  
0 0 1000 1450 2000

**MIXTURE CONTROL POSITION**  
RICH W/O W/O RICH W/O RICH W/O RICH W/O

**THROTTLE POSITION**  
RICH W/O W/O RICH W/O RICH W/O RICH W/O

**FLOWMETER LIMITS**

**MINIMUM OBSERVED (LBS/HR)** 36.0 [ ] 0 [ ] 66.8 [ ] 102 [ ] 142.5 [ ]

**MAXIMUM OBSERVED (LBS/HR)** 42.0 [ ] 5 cc/min [ ] 70.2 [ ] 106 [ ] 150.4 [ ]

**BURETTE TIME LIMITS (Using MIL-C-7024 Type II STODDARD)**

**BURETTE VOLUME (cc)**  
MINIMUM 200  
OBSERVED (SECONDS) 29 [ ] 43 [ ] 500 [ ] 850 [ ] 850 [ ]

**MAXIMUM OBSERVED (SECONDS)**  
34 [ ] 46 [ ] 51 [ ] 26.5 [ ] 37 [ ]

**METERING HEAD AVG OBSERVED (" STODDARD)**  
4.2 [ ] 12.1 [ ] 26.5 [ ] 52.7 [ ]

**PROCEDURE FOR SPLIT HEAD CHECK**

1. Close throttle to .026" shim in bore.
2. Adjust idle fuel flow to 18-19 lbs/hr with wheel centered. Observe metering head. Energize boost pump to provide 35 - 40 psi. After stabilizing, fuel flow must be within  $\pm .5$  lbs/hr of value observed at specified fuel inlet pressure. Turn boost pump off.
3. Remove .026" shim.
4. Close throttle so that fuel is less than 4 lbs/hr. Observe metering head. Metering head shall be no more than 5" above value observed in step 2.

30112-01  
01/06/03  
JTB

TEST SPECIFICATION  
SERVICE LIMITS  
PRECISION AIRMOTIVE CORPORATION - FUEL CONTROLS - MARYSVILLE, WASHINGTON

INSTALLATION PARTS LIST: \_\_\_\_\_ MODEL: RSA-10AD1 SERIAL NUMBER: \_\_\_\_\_

OPERATOR: \_\_\_\_\_ DATE: \_\_\_\_\_

BASIC PARTS LISTS: 2576629 FUEL PRESSURE: 25-27 PSI FUEL SP. GRAV. @ \_\_\_\_\_ °F

	1	2	3	4	5
METERING SUCTION (INCHES OF WATER)	0	0	4.9	10.5	20.3
CORRESPONDING AIRFLOW (LBS/HR)	0	0	1000	1450	2000
MIXTURE CONTROL POSITION	RICH	ICO	RICH	RICH	RICH
THROTTLE POSITION	W/O	W/O	W/O	W/O	W/O
FLOWMETER LIMITS					
MINIMUM OBSERVED (LBS/HR)	34.0	0	64.8	100.0	140.5
MAXIMUM OBSERVED (LBS/HR)	44.0	5 cc/min	72.2	108.0	152.4
BURETTE TIME LIMITS (Using MIL-C-7024 Type II STODDARD)					
BURETTE VOLUME (cc)	200		500	850	850
MINIMUM OBSERVED (SECONDS)	28		42	48	34
MAXIMUM OBSERVED (SECONDS)	36		47	52	37
METERING HEAD AVG OBSERVED (" STODDARD)	4.2		12.1	26.5	52.7