



652 Oliver Street  
Williamsport, PA. 17701 U.S.A.

Telephone +1 (877) 839-7878 (U.S. and Canada)  
Telephone +1 (570) 327-7222 (International)  
Fax +1 (570) 327-7101  
Email [Technicalsupport@lycoming.com](mailto:Technicalsupport@lycoming.com)  
[www.lycoming.com](http://www.lycoming.com)

# SERVICE INSTRUCTION

DATE: January 28, 2026

Service Instruction No. 1042AI

(Supersedes Service Instruction No. 1042AH)

Engineering design data in this service document is FAA approved.

SUBJECT: Approved Spark Plugs

MODELS AFFECTED: All Lycoming piston aircraft engines

TIME OF COMPLIANCE: As required for replacement

REASON FOR REVISION: Added Lubricating Spark Plug Ignition Leads section. Added an "A" to some engine models for Champion REM 40E in Tables 2 and 3. Added an "A" for several engine models for Tempest spark plugs in Tables 2, 4, and 5. Added an "A" to 390 and 580 engine models for Champion REM 32E in Tables 4 and 5.

**NOTICE:** Incomplete review of all the information in this document can cause errors. Read the entire Service Instruction to make sure you have a complete understanding of the requirements.

This Service Instruction identifies the various short reach (Figure 1) and long reach (Figure 2) spark plugs (Tables 2 through 5) approved for installation on Lycoming engine models as well as guidelines for correct spark plug installation.

Cylinders that use short reach spark plugs have gray paint or no other special identifying color on the cylinder fins between the spark plug hole and the rocker covers (Figure 1). Engines with long reach spark plugs are identified by yellow paint on the cylinder fins between the spark plug hole and the rocker covers where shown in Figure 2.



**Figure 2**  
**Long Reach Spark Plug Thread Dimensions and Spark Plug Hole (Yellow Cylinder Fins)**

**Figure 1**  
**Short Reach Spark Plug Thread Dimensions and Spark Plug Hole (Gray or No Color Cylinder Fins)**



General Aviation  
Manufacturers Association

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To identify the approved spark plug for your engine in Tables 2 through 5, you must know:

- Lycoming engine model number
- Whether it is a long reach or short reach spark plug
- Spark plug thread pitch (Figures 1 and 2)

**NOTICE:** Figure 3 shows spark plug electrode end types, structure, and part number designations. The term UNEF indicates that the diameter-pitch combination is from the extra fine series of Unified Thread Standard (UTS) thread. The standard designation for a UTS thread is a number indicating the diameter of the thread in inches (e.g. 5/8) followed by the pitch measured in threads per inch (e.g. 24).

Since the same engine models can use either short or long reach spark, do not use the engine model as the only basis to identify the spark plugs to be installed on the engine per Tables 2 through 5.

If an approved spark plug is not available, Lycoming can supply an equivalent substitute spark plug.

Tempest has acquired the Unison AutoLite spark plug line. This Service Instruction identifies the new Tempest spark plug part numbers in Tables 2 through 5.

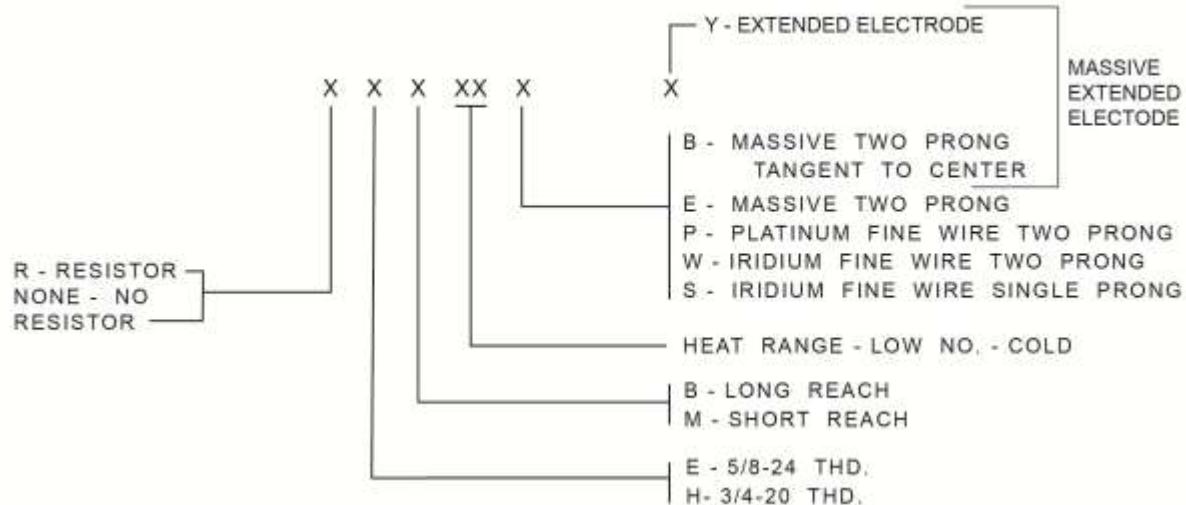
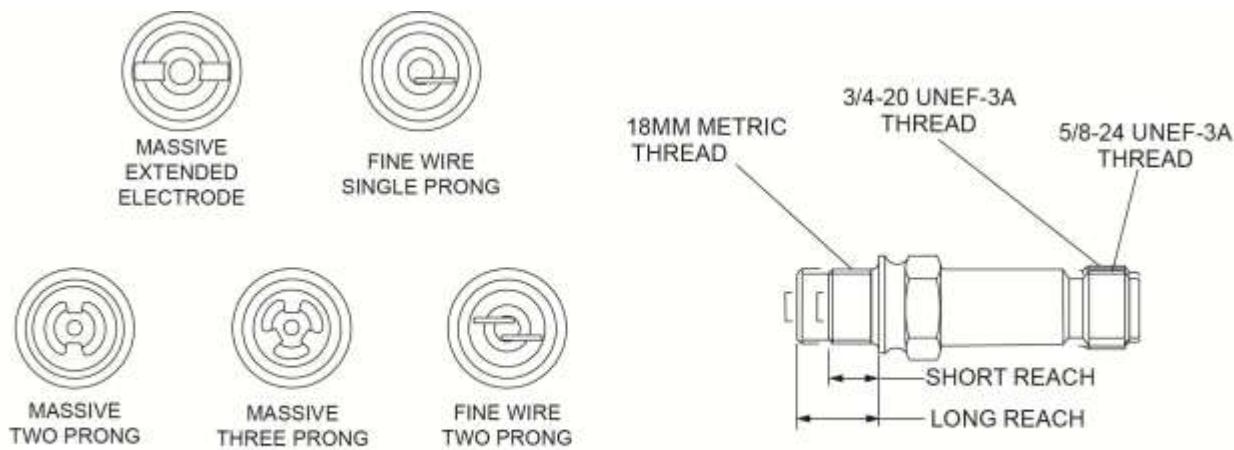
### **Spark Plug Installation Guidelines**

1. Spark plug gap must be set at 0.016 to 0.022 in. (0.40 to 0.60 mm).
2. Always install a spark plug with a new gasket (P/N STD-295).
3. Use a copper-based anti-seize compound or engine oil on spark plug threads starting two full threads from the electrode, but DO NOT use a graphite-based compound.
4. Use installation torque values shown in Table 1.

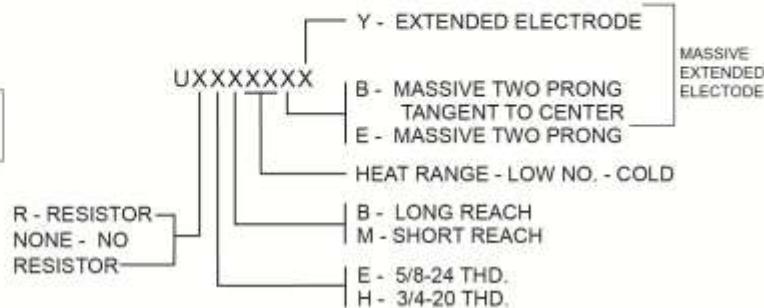
**Table 1**  
**Installation Torque Values**

		<b>Torque Value</b>
All spark plugs		420 in.-lbs. (or 35 ft.-lbs.) (47.5 Nm)
5/8-24 (16 mm-24) lead nuts		80 to 90 in.-lbs. (9 to 10 Nm)
3/4-20 (19 mm-20) lead nuts		110 to 120 in.-lbs. (12 to 13.6 Nm)

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TEMPEST (FORMERLY UNISON)  
PART NO. DESIGNATION



**Figure 3**  
**Spark Plug Characteristics**

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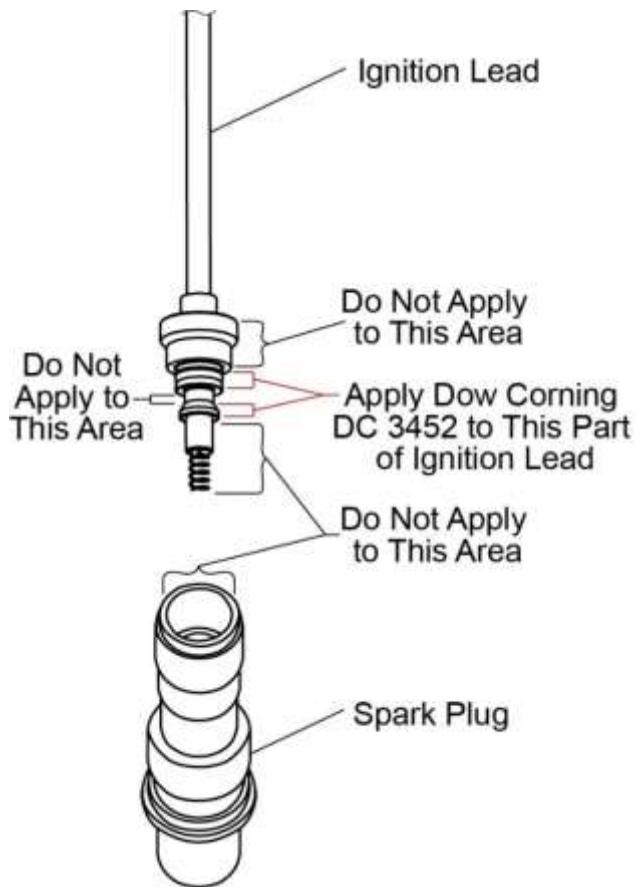
## Lubricating Spark Plug Ignition Leads

A clean/dry connection of the ignition lead to each spark plug is the best practice however, if problems with difficult to remove ignition leads are encountered, a technician may choose to use a lubricant before ignition lead installation to make removal of the ignition lead from the spark plug easier.

**NOTICE:** Although Dow Corning® DC-4 is popular among aviation technicians, **do not** use DC-4 to lubricate ignition lead insulators. In some cases, DC-4 is not chemically compatible with the silicone rubber insulators.

Dow Corning® DC-3452 is a high temperature lubricant compatible with silicone rubber and is recommended by Lycoming for this application.

Apply a thin coating of DC-3452 using a clean brush or lint-free cloth to the clean insulator (Figure 4). Do not apply any lubricant inside the spark plug barrel. Remove any lubricant that has come into contact with the threads of the spark plug barrel or lead nut to ensure adequate electrical bond between the spark plug and shielded ignition lead.



**Figure 4**  
**Spark Plug and Ignition Lead Lubrication**

**NOTICE:** If Dow Corning® DC-3452 is not available, CRC® General Purpose Mold Release No. 03300 or equivalent mold release agent may be applied in the same manner. It is the responsibility of the user to ensure the lubricant used is fully compatible with silicone rubber.

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**Table 2**  
**Short Reach Spark Plugs, 5/8-24 Lead Nut Threads**

ENGINE MODEL	MASSIVE						FINE WIRE	
	CHAMPION			TEMPEST**			CHAMPION	TEMPEST**
	REM 40E	REM 38E	REM 37BY	UREM 40E	UREM 38E	UREM 37BY	REM 38S	UREM 38S
O-235-C,-E,-H	A	A	A	A	A	A	A	A
O-235-N,-P	A	A	A	A	A	A	A	A
O-235-K,-L,-M	A	A	A	A	A	A	A	A
O-235-F,-G,-J	-	A	-	-	A	-	A	A
O-290	A	A	A	A	A	A	A	A
O-320-A,-E	A	A	A	A	A	A	A	A
O-320-C	A	A	A	A	A	A	A	A
O-320-B,-D	A	A	A	A	A	A	A	A
O-320-H*	A	A	A	A	A	A	A	A
IO-320-A	A	A	A	A	A	A	A	A
IO-320-E	A	A	A	A	A	A	A	A
IO-320-B,-C,-D,-F	A	A	A	A	A	A	A	A
LIO-320-B	A	A	A	A	A	A	A	A
AEIO-320-A,-D	A	A	A	A	A	A	A	A
AEIO-320-E	A	A	A	A	A	A	A	A
*O-360-A,-C,-F,-J	A	A	A	A	A	A	A	A
O-360-B,-D	A	A	A	A	A	A	A	A
*IO-360-A,-C,-D,-J	A	A	A	A	A	A	A	A
*IO-360-B,-E,-F,-L,-M,-N,-P	A	A	A	A	A	A	A	A
HO-360-A,-B,-C	A	A	A	A	A	A	A	A
*LO-360-A	A	A	A	A	A	A	A	A
HIO-360-A,-B,-G	A	A	A	A	A	A	A	A
HIO-360-C,-D	-	A	-	-	A	-	A	A
*LIO-360-B	A	A	A	A	A	A	A	A
LIO-360-C	-	A	A	A	A	A	A	A
LIO-360-M	A	A	A	A	A	A	A	A
LHIO-360-C	-	A	-	-	A	-	A	A
AIO-360-A,-B	A	A	A	A	A	A	A	A
*AEIO-360-A	A	A	A	A	A	A	A	A
AEIO-360-B,-H	A	A	A	A	A	A	A	A
VO-360-A,-B	A	A	A	A	A	A	A	A
*GO-435-C	A	A	-	A	A	-	A	A
VO-435-A	A	A	-	A	A	-	A	A
*GO-480-B,-D,-F	A	A	-	A	A	-	A	A
GSO-480-A,-B	A	A	-	A	A	-	A	A
IGSO-480	A	A	-	A	A	-	A	A
*O-540-A	A	A	A	A	A	A	A	A
*O-540-B	A	A	A	A	A	A	A	A
*O-540-E,-F,-G,-H	A	A	A	A	A	A	A	A
O-540-J	A	A	A	A	A	A	A	A
*IO-540-A,-B,-E,-G,-K,-L,-AB,-AE	A	A	A	A	A	A	A	A
*IO-540-C	A	A	A	A	A	A	A	A

“A” identifies approved spark plugs; the hyphen (-) identifies spark plugs that are neither recommended nor approved.

\* May also have 3/4-20 wire end.

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**Table 2 (Cont.)**  
**Short Reach Spark Plugs, 5/8-24 Lead Nut Threads**

ENGINE MODEL	MASSIVE						FINE WIRE	
	CHAMPION			TEMPEST**			CHAMPION	TEMPEST**
	REM 40E	REM 38E	REM 37BY	UREM 40E	UREM 38E	UREM 37BY	REM 38S	UREM 38S
*IO-540-J	A	A	A	A	A	A	A	A
*IO-540-D,-N, -T	A	A	A	A	A	A	A	A
IO-540-R	-	A	A	-	A	A	-	-
*IO-540-V	A	A	A	A	A	A	A	A
IO-540-W	A	A	A	A	A	A	-	-
AEIO-540-D	A	A	A	A	A	A	A	A
*AEIO-540-L	A	A	A	A	A	A	A	A
VO-540-C2A	-	A	A	-	A	A	A	A

“A” identifies approved spark plugs; the hyphen (-) identifies spark plugs that are neither recommended nor approved.

\* May also have 3/4-20 wire end.

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**Table 3**  
**Short Reach Spark Plugs, 3/4-20 Lead Nut Threads**

ENGINE MODEL	MASSIVE				FINE WIRE	
	CHAMPION		TEMPEST**		CHAMPION	TEMPEST**
	RHM 40E	RHM 38E	URHM 40E	URHM 38E	RHM 38S	URHM 38S
O-320-H	A	A	A	A	A	A
*O-360-A,-F	A	A	A	A	A	A
O-360-E	A	A	A	A	A	A
*IO-360-A,-J	-	A	-	A	A	A
*IO-360-B	A	A	A	A	A	A
*LO-360-A	A	A	A	A	A	A
LO-360-E	A	A	A	A	A	A
LIO-360-A	-	A	-	A	A	A
*LIO-360-B	A	A	A	A	A	A
*AEIO-360-A	-	A	-	A	A	A
*GO-435-C	A	A	A	A	A	A
*GO-480-B,-D,-F	A	A	A	A	A	A
*O-540-B	A	-	A	-	A	A
*O-540-E,-G,-H,-J	A	A	A	A	A	A
*IO-540-A,B,-G-K,-L,-AE	A	A	A	A	A	A
IO-540-AF	-	A	-	A	-	-
*IO-540-C,-N,-T,-V, -W	A	A	A	A	A	A
*AEIO-540-L	A	A	A	A	A	A
IO-720-A,-B,-C,-D	-	A	-	A	A	A

“A” identifies approved spark plugs; the hyphen (-) identifies spark plugs that are neither recommended nor approved.

\* May also have 5/8-24 wire end.

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**Table 4**  
**Long Reach Spark Plugs, 5/8-24 Lead Nut Threads**

ENGINE MODEL	MASSIVE			FINE WIRE
	CHAMPION		TEMPEST**	CHAMPION
	REB37E	REB32E	UREB37E	REB36S
O-360-C4P	A	-	A	
IO-320-C1A,-C1B,-F1A	A	-	A	
LIO-320-C1A	A	-	A	
*IO-360-A1B6,-C1A,-C1F	A	-	A	
IO-360-F1A	A	-	A	
*IO-390-A,-C, -D	A	A	A	A
*HIO-390-A	A	A	A	A
*AEIO-390-A	A	A	A	A
O-540-E4A5	A	-	A	
*IO-540-E,-J,-K,-P,-R,-AE	A	A	A	
IO-540-M	A	-	A	
*IO-540-R	A	A	A	
*AEIO-540-L	A	A	A	
*TIO-540-C1A,-E,-H	A	A	A	
*IO-580; AEIO-580	A	A	A	A

“A” identifies approved spark plugs; the hyphen (-) identifies spark plugs that are neither recommended nor approved.

\* May also have 3/4-20 wire end.

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**Table 5**  
**Long Reach Spark Plugs, 3/4-20 Lead Nut Threads**

ENGINE MODEL	MASSIVE				FINE WIRE			
	CHAMPION		TEMPEST**		CHAMPION		TEMPEST**	
	RHB 37E	RHB 32E	URHB 37E	URHB 32E	RHB 36S	RHB 32S	URHB 36S	URHB 32S
*IO-360-A,-C	A	A	A	A	A	A	A	A
IVO-360	A	-	A	-	A	A	A	A
HIO-360-E,-F	A	A	A	A	A	A	A	A
LHIO-360-F	A	A	A	A	A	A	A	A
TO-360-C,-F	A	A	A	A	A	A	A	A
TO-360-E	A	A	A	A	A	A	A	A
LTO-360-E	A	A	A	A	A	A	A	A
*TIO-360-A	A	A	A	A	A	A	A	A
TIO-360-C	A	A	A	A	A	A	A	A
*IO-390-A,-C, -D	A	A	A	-	A	-	A	-
*HIO-390-A	A	A	A	-	A	-	A	-
*AEIO-390-A	A	A	A	-	A	-	A	-
TVO-435-A,-B,-C,-D,-E,-G	A	A	A	A	A	A	A	A
TVO-435-F	A	A	A	A	A	A	A	A
VO-435-A,-B	A	A	A	A	A	A	A	A
GO-480-G1,-G2	A	A	A	A	A	A	A	A
IGO-480-A	A	A	A	A	A	A	A	A
GSO-480	A	A	A	A	A	A	A	A
IGSO-480	A	A	A	A	A	A	A	A

“A” identifies approved spark plugs; the hyphen (-) identifies spark plugs that are neither recommended nor approved.

\* - May also have 5/8-24 wire end.

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**Table 5 (Cont.)**  
**Long Reach Spark Plugs, 3/4-20 Lead Nut Threads**

ENGINE MODEL	MASSIVE				FINE WIRE			
	CHAMPION		TEMPEST**		CHAMPION		TEMPEST**	
	RHB 37E	RHB 32E	URHB 37E	URHB 32E	RHB 36S	RHB 32S	URHB 36S	URHB 32S
O-540-9	A	-	A	-	A	A	A	A
O-540-L	A	A	A	A	A	A	A	A
*IO-540-E,-G, K,-M,-P,-S	A	A	A	A	A	A	A	A
*IO-540-J,-R	A	A	A	A	A	A	A	A
*IO-540-AA,-AC	A	A	A	A	A	A	A	A
IGO-540-A,-B	A	A	A	A	A	A	A	A
IGSO-540-A,-B	A	A	A	A	A	A	A	A
IVO-540-A	A	-	A	-	A	A	A	A
AEIO-540-L	A	A	A	A	A	A	A	A
TIO-540-A	A	A	A	A	A	A	A	A
*TIO-540-C,-K,-W,-AA,-AB,-AF,-AG,-AH,-AJ,-AK	A	A	A	A	A	A	A	A
*TIO-540-E	A	A	A	A	A	A	A	A
TIO,LTIO-540-F	A	A	A	A	A	A	A	A
TIO-540-G,-AE	A	A	A	A	A	A	A	A
*TIO-540-H	A	A	A	A	A	A	A	A
TIO,LTIO-540-J,-N,-R	A	A	A	A	A	A	A	A
TIO-540-S	A	A	A	A	A	A	A	A
TIO-540-T	A	A	A	A	A	A	A	A
TIO,LTIO-540-U,-V	A	A	A	A	A	A	A	A
TIVO-540-A	A	A	A	A	A	A	A	A
VO-540-A,-B,-C	A	-	A	-	A	A	A	A
TIO-541-A,-E	A	A	A	A	A	A	A	A
TIGO-541-E	A	A	A	A	A	A	A	A
*IO-580; AEIO-580	A	A	A	-	A	-	A	-
IO-720-A,-B,-D	A	A	A	A	A	A	A	A
TEO-540-A1A	A	A	A	A	A	A	A	A
TEO-540-C1A	A	A	A	A	A	A	A	A

"A" identifies approved spark plugs; the hyphen (-) identifies spark plugs that are neither recommended nor approved.

\* May also have 5/8-24 wire end.

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