

SERVICE INSTRUCTION

DATE: February 17, 2015

Service Instruction No. 1042AA
(Supersedes Service Instruction No. 1042Z)
Engineering Aspects are
FAA (DER)-Approved

SUBJECT: Approved Spark Plugs

MODELS AFFECTED: All Lycoming piston aircraft engines

TIME OF COMPLIANCE: As required for replacement

REASON FOR REVISION Engine model and part number updates; guidelines for spark plug inspection and replacement; added spark plug selection criteria

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.

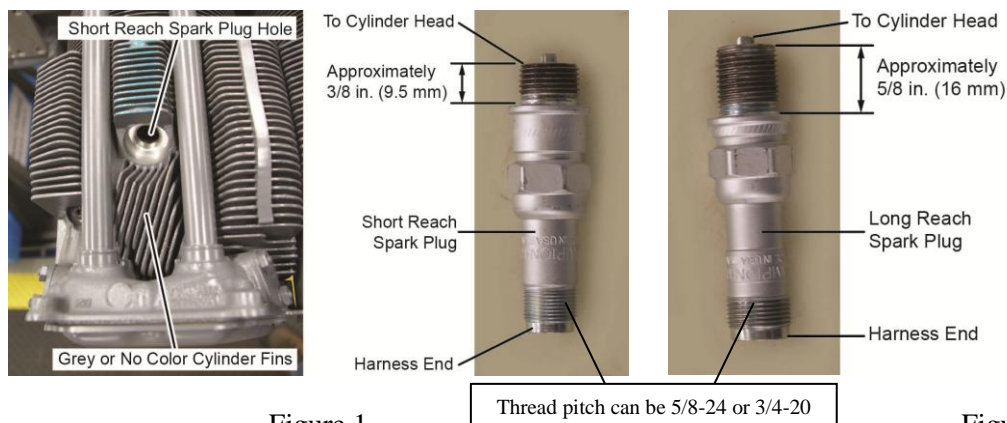


Figure 1
Short Reach Spark Plug Thread Dimensions and
Spark Plug Hole (Gray or No Color Cylinder Fins)

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

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)



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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.

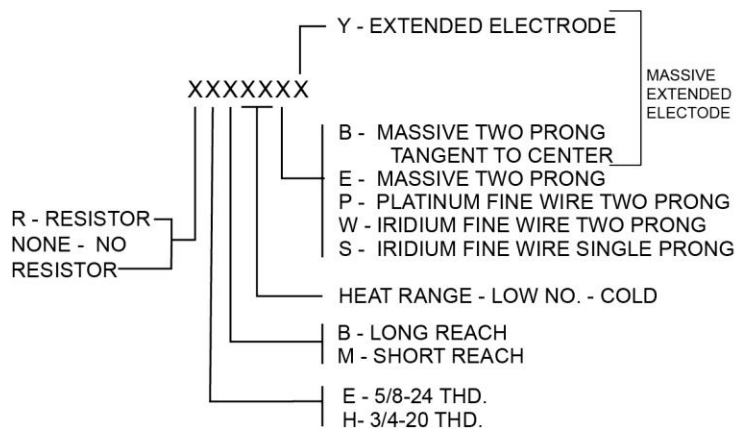
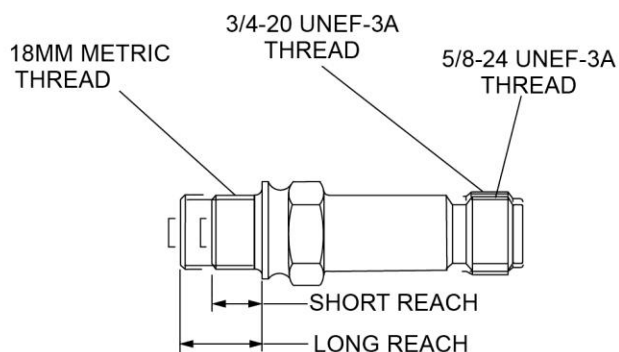
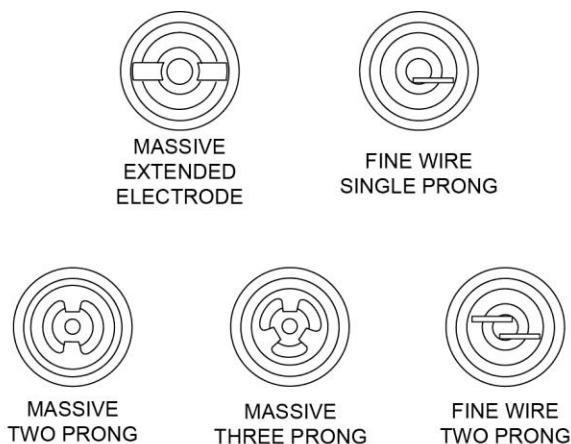
Spark Plug Installation Guidelines

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.

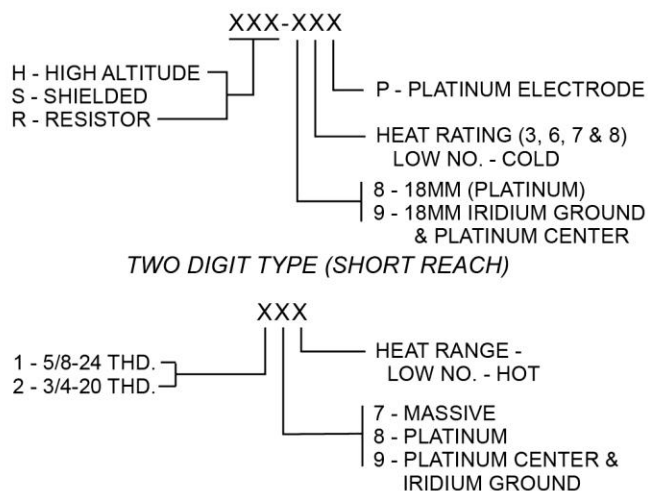
Table 1
Installation Torque Values

	Torque Value
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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CHAMPION PART NO. DESIGNATION



SL AUBURN PART NO. DESIGNATION

NOTE: SL AUBURN "SPITFIRE" DESIGNATES MASSIVE DUAL ELECTRODE AND "CLASSIC" DESIGNATES MASSIVE TRIPLE ELECTRODE

TEMPEST (FORMERLY UNISON) PART NO. DESIGNATION

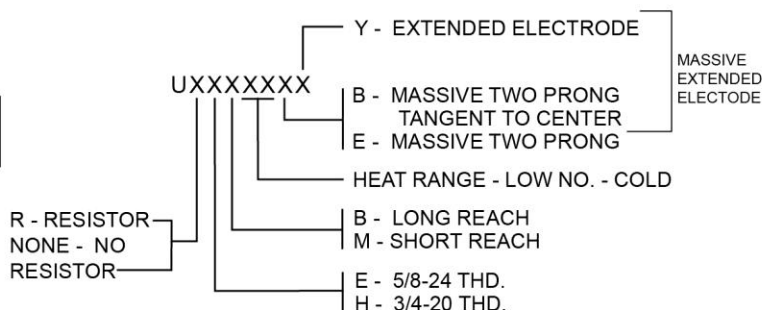


Figure 3. Spark Plug Characteristics

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

ENGINE MODEL	MASSIVE									FINE WIRE			
	CHAMPION			SL AUBURN			TEMPEST**			CHAM -PION	SL AUBURN		TEMPEST **
	REM 40E	REM 38E	REM 37BY	SR88	SR87	SR86	URE M 40E	UREM 38E	UREM 37BY	REM38S	SR93	SR83P	UREM 38S
O-235-C,-E,-H	A	A	A	A	A	-	A	A	A	A	A	A	A
O-235-N,-P	A	A	A	-	A	-	A	A	A	A	A	A	A
O-235-K,-L,-M	A	A	A	-	A	-	A	A	A	A	A	A	A
O-235-F,-G,-J	-	-	-	-	-	A	-	A	-	A	A	A	A
O-290	A	A	A	A	A	-	A	-	A	A	A	A	A
O-320-A,-E	A	A	A	A	A	-	A	A	A	A	A	A	A
O-320-C	A	A	A	A	A	-	A	-	A	A	A	A	A
O-320-B,-D	A	A	A	-	A	A	A	A	A	A	A	A	A
O-320-H*	A	A	A	A	A	-	A	A	-	A	-	A	A
IO-320-A	A	A	A	A	A	-	A	-	A	A	A	A	A
IO-320-E	A	A	A	A	A	-	A	A	A	A	A	A	A
IO-320-B,-C,-D,-F	A	A	A	-	A	A	A	A	A	A	A	A	A
LIO-320-B	A	A	A	-	A	A	A	A	A	A	A	A	A
AEIO-320-A,-D	A	A	A	-	A	A	A	A	A	A	A	A	A
AEIO-320-E	A	A	A	A	A	-	A	A	A	A	A	A	A
*O-360-A,-C,-F,-J	A	A	A	-	A	A	A	A	A	A	A	A	A
O-360-B,-D	A	A	A	A	A	-	A	-	A	A	A	A	A
*IO-360-A,-C,-D,-J	-	A	A	-	A	A	A	A	A	A	A	A	A
*IO-360-B,-E,-F,-L,-M	A	A	A	-	A	A	A	A	A	A	A	A	A
HO-360-A,-B,-C	A	A	A	-	A	A	A	A	A	A	A	A	A
*LO-360-A	A	A	A	-	A	A	A	A	A	A	A	A	A
HIO-360-A,-B,-G	A	A	A	-	A	A	A	A	A	A	A	A	A
HIO-360-C,-D	-	A	-	-	A	A	-	A	-	A	A	A	A
LIO-360-C	-	A	A	-	A	A	A	A	A	A	A	A	A
LIO-360-M	A	A	A	-	A	A	A	A	A	A	A	A	A
LHIO-360-C	-	A	-	-	A	A	-	A	-	A	A	A	A
AIO-360-A,-B	-	A	A	-	A	A	A	A	A	A	A	A	A
*AEIO-360-A	-	A	A	-	A	A	A	A	A	A	A	A	A
AEIO-360-B,-H	A	A	A	-	A	A	A	A	A	A	A	A	A
VO-360-A,-B	A	A	A	-	A	A	A	A	A	A	A	A	A
*GO-435-C	A	A	-	-	A	A	A	A	-	A	A	A	A
VO-435-A	A	A	-	-	A	A	A	A	-	A	A	A	A
*GO-480-B,-D,-F	A	A	-	-	A	A	A	A	-	A	A	A	A
GSO-480-A,-B	A	A	-	-	A	A	A	A	-	A	A	A	A
IGSO-480	A	A	-	-	A	A	A	A	-	A	A	A	A
*O-540-A	A	A	-	A	A	A	A	A	-	A	A	A	A
*O-540-B	A	A	-	A	A	-	A	A	-	A	A	A	A
*O-540-E,-F,-G,-H	A	A	-	-	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	A
*IO-540-C	A	A	-	A	A	A	A	A	-	A	A	A	A
*IO-540-J	A	A	-	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			SL AUBURN			TEMPEST**			CHAM-PION	SL AUBURN		TEMPEST**
	REM 40E	REM 38E	REM 37BY	SR88	SR87	SR86	UREM 40E	UREM 38E	UREM 37BY	REM38S	SR93	SR83P	UREM 38S
*IO-540-D,-N,-T	A	A	-	-	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	A
IO-540-W	-	A	-	-	A	A	A	A	-	-	-	-	-
AEIO-540-D	A	A	-	-	A	A	A	A	-	A	A	A	A
*AEIO-540-L	-	A	-	-	A	A	A	A	-	A	A	A	A
VO-540-C2A	-	A	-	-	A	-	-	A	-	-	-	-	A

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* 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		SL AUBURN			TEMPEST**		CHAM-PION	SL AUBURN		TEMPEST**	
	RHM 40E	RHM 38E	HSR88	HSR87	HSR86	URHM 40E	URHM 38E	RHM38S	HSR93	HSR83P	URHM 38S	
O-320-H	A	A	-	A	A	A	A	A	A	A	A	A
*O-360-A,-F	A	A	-	A	A	A	A	A	A	A	A	A
O-360-E	A	A	-	A	A	A	A	A	A	A	A	A
*IO-360-A,-J	-	A	-	-	A	-	A	A	A	A	A	A
*IO-360-B	A	A	-	A	A	A	A	A	A	A	A	A
*LO-360-A	A	A	-	A	A	A	A	A	A	A	A	A
LO-360-E	A	A	-	A	A	A	A	A	A	A	A	A
LIO-360-A	-	A	-	-	A	-	A	A	A	A	A	A
*AEIO-360-A	-	A	-	-	A	-	A	A	A	A	A	A
*GO-435-C	A	A	-	A	A	A	A	A	A	A	A	A
*GO-480-B,-D,-F	A	A	-	A	A	A	A	A	A	A	A	A
*O-540-B	A	-	A	A	-	A	-	A	A	A	A	A
*O-540-E,-G,-H,-J	A	A	-	A	A	A	A	A	A	A	A	A
*IO-540-A,-B,-G-K,-L,-AE	-	A	-	A	A	A	A	A		A	A	A
IO-540-AF	-	A	-	-	-	-	A	-	-	-	-	-
*IO-540-C,-N,-T,-V,-W	A	A	-	A	A	A	A	A	A	A	A	A
*AEIO-540-L	-	A	-	A	A	A	A	A	A	A	A	A
IO-720-A,-B,-C,-D	-	A	-	-	A	-	A	A	A	A	A	A

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* 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		SL AUBURN	TEMPEST**	CHAMPION	SL AUBURN
	REB37E	REB32E	171	UREB37E	REB36S	181
IO-320-C1A,-C1B,-F1A	A	-	A	A		A
LIO-320-C1A	A	-	A	A		A
*IO-360-A1B6,-C1A,-C1F	A	-	A	A		A
IO-360-F1A	A	-	A	A		A
*IO-390, AEIO-390	A	-	A	A	A	A
*IO-540-E,-J,-K,-P,-R,-AE	A	A	A	A		A
IO-540-M	A	-	A	A		-
*IO-540-R	A	A	A	A		A
*AEIO-540-L	A	A	A	A		A
*TIO-540-C1A,-E,-H	A	A	A	A		A
*IO-580; AEIO-580	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 5
Long Reach Spark Plugs, 3/4-20 Lead Nut Threads

ENGINE MODEL	MASSIVE						FINE WIRE						
	CHAMPION		SL AUBURN		TEMPEST**		CHAMPION		SL AUBURN			TEMPEST**	
	RHB 37E	RHB 32E	273	271	URHB 37E	URHB 32E	RHB 36S	RHB 32S	291	283	281	URHB 36S	URHB 32S
*IO-360-A,-C	A	A	A	A	A	A	A	A	A	A	A	A	-
IVO-360	A	-	A	A	A	-	A	-	A	-	A	A	A
HIO-360-E,-F	A	A	A	-	A	A	-	A	-	A	-	A	A
LHIO-360-F	A	A	A	-	A	A	-	A	-	A	-	A	A
TO-360-C,-F	A	A	A	-	A	A	A	A	A	A	A	A	A
TO-360-E	A	A	A	A	A	-	A	-	A	-	A	A	A
LTO-360-E	A	A	A	A	A	-	A	-	A	-	A	A	A
*TIO-360-A	A	A	A	-	A	A	A	A	A	A	A	A	-
TIO-360-C	A	A	A	-	A	A	A	A	A	A	A	A	A
*IO-390, AEIO-390	A	-	-	A	A	-	A	-	A	-	A	A	-
TVO-435-A,-B,-C,-D,-E,-G	A	A	A	A	A	-	A	A	A	A	A	A	A
TVO-435-F	A	A	A	A	A	-	A	A	A	A	A	A	A
VO-435-A,-B	A	A	A	A	A	-	A	A	A	A	A	A	A
GO-480-G1,-G2	A	A	A	-	A	-	A	A	A	A	A	A	A
IGO-480-A	A	A	A	-	A	-	A	A	A	A	A	A	A
GSO-480	A	A	A	-	A	-	A	A	A	A	A	A	-
IGSO-480	A	A	A	-	A	-	A	A	A	A	A	A	-
O-540-9	A	-	A	A	A	-	A	A	A	A	A	A	-
O-540-L	A	A	A	A	A	-	A	A	A	A	A	A	-

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* - 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		SL AUBURN		TEMPEST**		CHAMPION		SL AUBURN			TEMPEST**	
	RHB 37E	RHB 32E	273	271	URHB 37E	URHB 32E	RHB 36S	RHB 32S	291	283	281	URHB 36S	URHB 32S
*IO-540-E,-G, K,-M,-P,-S	A	A	A	A	A	A	A	A	A	A	A	A	A
*IO-540-J,-R	A	A	A	A	A	-	A	A	A	A	A	A	A
*IO-540-AA,-AC	A	A	A	-	A	A	A	A	A	A	A	A	A
IGO-540-A,-B	A	A	A	A	A	A	A	A	A	A	A	A	A
IGSO-540-A,-B	A	A	A	-	A	A	A	A	A	A	A	A	A
IVO-540-A	A	-	A	A	A	-	A	A	A	A	A	A	-
AEIO-540-L	A	A	A	A	A	A	A	A	A	A	A	A	A
TIO-540-A	A	A	A	-	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	A	A	A	A
*TIO-540-E	A	A	A	A	A	A	A	A	A	A	A	A	A
TIO,LTIO-540-F	A	A	A	-	A	A	A	A	A	A	A	A	A
TIO-540-G,-AE	A	A	A	-	A	-	A	A	A	A	A	A	A
*TIO-540-H	A	A	A	A	A	A	A	A	A	A	A	A	A
TIO,LTIO-540-J,-N,-R	A	A	A	-	A	A	A	A	A	A	A	A	A
TIO-540-S	A	A	A	A	A	A	A	A	A	A	A	A	A
TIO-540-T	A	A	A	-	A	A	A	A	A	A	A	A	A
TIO,LTIO-540-U,-V	A	A	A	-	A	A	A	A	A	A	A	A	A
TIVO-540-A	A	A	A	A	A	A	A	A	A	A	A	A	A
VO-540-A,-B,-C	A	-	A	A	A	-	A	A	A	A	A	A	-
TIO-541-A,-E	A	A	A	-	A	A	A	A	A	A	A	A	-
TIGO-541-E	A	A	A	-	A	A	A	A	A	A	A	A	-
*IO-580; AEIO-580	A	-	A	A	A	-	A	-	-	-	A	A	-
IO-720-A,-B,-D	A	A	A	-	A	A	A	A	A	A	A	A	A

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

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