SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE STANDARD

SAE J548/2

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Submitted for recognition as an American National Standard

SPARK PLUG INSTALLATION SOCKETS

1. ***Scope***—This SAE Standard applies to spark plug installation sockets of the long length type which are to be used for installing spark plugs of the most commonly used sizes for the North American market.

2. ***References***

2.1 Applicable Documents—The following publications form a part of this specification to the extent specified herein.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J105—Hex Bolts

2.1.2 ANSI PUBLICATIONS—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI B 107.1—Socket Wrenches, Hand (in series)

ANSI/ASME B 107.5M—Socket Wrenches, Hand (metric series)

3. The spark plug installation socket shall be of the long length type and the conventional single hexagon design. A replaceable oil and heat resisting retaining bushing or other equally suitable device shall be installed inside the socket to prevent damage to the spark plug insulator and for aligning and retaining the spark plug for easy installation and removal. This bushing should be pliable and compressible to minimize side loading to the spark plug insulator. The socket shall be similar to Figure 1 except for the following:

   a. The retaining bushing is not shown.

   b. The drive end may be reduced in diameter for marking purposes and, at the option of the manufacturer, a male hexagon drive may be provided on the drive end, in addition to the female drive specified herein. It is recommended the socket be provided with a 3/8 in female square drive. Unless otherwise specified, the socket should comply with the standards set forth in ANSI Standards B 107.1 and B 107.5M. The sockets shall conform to Table 1.

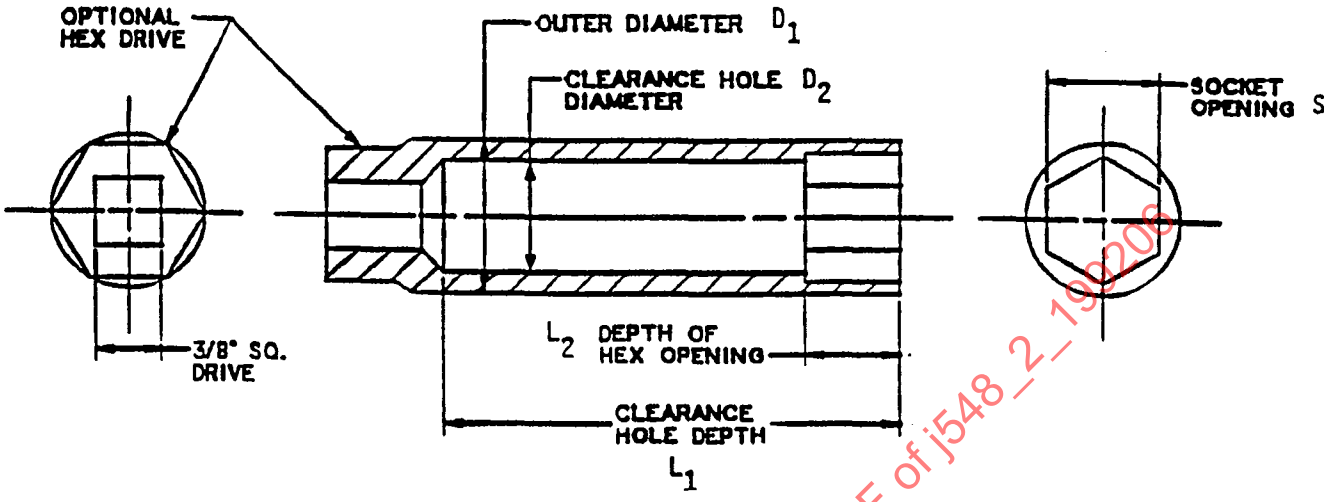

FIGURE 1—SPARK PLUG INSTALLATION DESIGN

TABLE 1—SOCKET DIMENSIONS

Spark Plug Hex Size Across Flats	S Minimum Socket Opening[1]	S Maximum Socket Opening[1]	L_2 Depth of Hex Opening	D_2 Minimum Clearance Hole Diameter[2]	L_1 Minimum Clearance Hole Depth[2]	D_1 Maximum Outer Diameter
15.73 - 15.95 (0.619 - 0.628)	16.05 (0.632)	16.18 (0.637)	9.50 - 13.00 (0.374 - 0.512)	15.90 (0.626)	63.00[3] (2.480)	22.00 (0.866)
18.80 - 19.00 (0.740 - 0.748)	19.06 (0.750)	19.36 (0.762)	9.50 - 13.00 (0.374 - 0.512)	18.00 (0.744)	56.00 (2.205)	25.50 (1.004)
20.40 - 20.80 (0.803 - 0.819)	20.86 (0.821)	21.16 (0.833)	9.50 - 13.00 (0.374 - 0.512)	20.00 (0.811)	67.00 (2.638)	27.50 (1.083)

[1] These openings vary from SAE J105 wrench openings to (a) accommodate both ISO and SAE spark plug maximum hex sizes and to (b) improve the socket hex interface with the spark plug hex to reduce the probability of the socket being tipped and contacting the insulator, causing damage.

[2] The proposed minimum clearance hole diameters and depths are based upon clearance to existing spark plug designs. This provides optimum fit conditions to prevent damage to the spark plug without subjecting socket manufacturers to undue restrictions.

[3] A minimum clearance hold depth of 63.00 mm was obtained using maximum permissible spark plug standard dimensions. A survey of major North American spark plug suppliers revealed that a minimum clearance hold depth of 57.4 mm would provide sufficient clearance to accommodate all of the spark plug designs. To maximize clearance between the socket end and other components, it is acceptable that the minimum clearance hole depth be 57.4 mm.

4. ***Recommended Optional Design for 15.73/15.95 Hex Size Spark Plugs***—The following option is recommended to maximize clearance between the side wall of the socket and the spark plug insulator. This is to reduce the probability of damaging the spark plug insulator by side loading. A suitable material and wall thickness must be used to provide sufficient wall strength for service requirements. As stated in the standard socket description previously, a bushing or other suitable device should be used to retain and centralize the spark plug in the socket. However, the device should be designed to allow the insulator to move off center without receiving a significant side loading. See Figure 2 and Table 2.

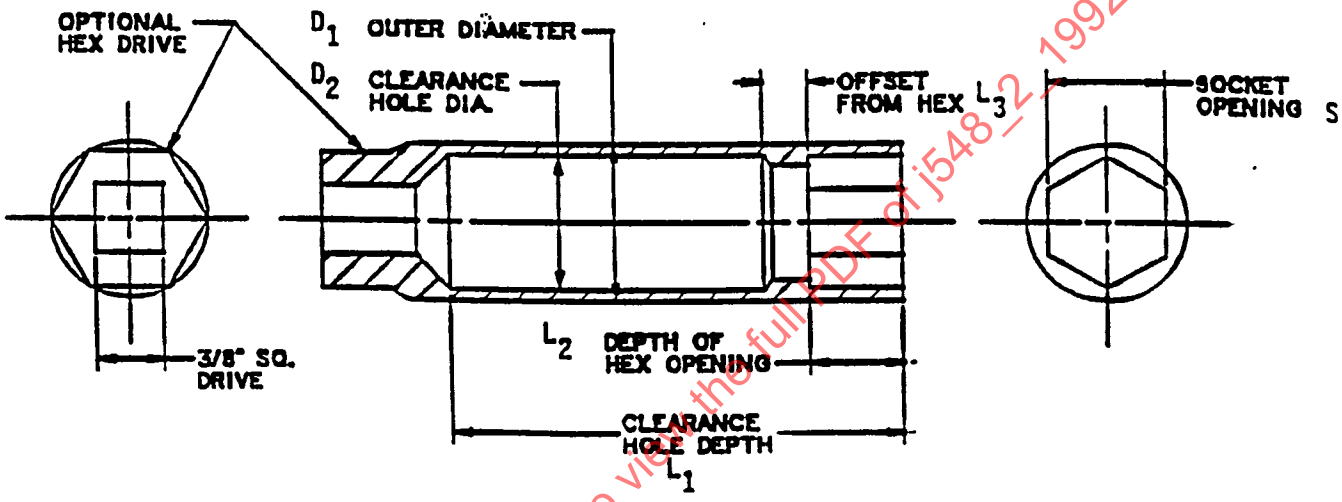

FIGURE 2—OPTIONAL SPARK PLUG INSTALLATION DESIGN

TABLE 2—OPTIONAL SOCKET DIMENSIONS[1]

D_2 Recommended Minimum Clearance Hole Diameter	L_3 Off Set From Hex
18.80[2] (0.740)	5.00 - 8.00 (0.197 - 0.315)

[1] Dimensions in Table 1 apply unless otherwise stated.
[2] A smaller clearance diameter may be required depending on the material selected and service requirements. This diameter should be maximized to provide the most clearance possible.

PREPARED BY THE SAE SPARK PLUG TASK FORCE