INTERNATIONAL STANDARD

ISO 11168

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Socket wrenches for spark- and glow-plugs

Clés à bougies d'allumage et de préchauffage

Reference number
ISO 11168:1995(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11168 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Spanners and wrenches*.

Annex A of this International Standard is for information only.

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Socket wrenches for spark- and glow-plugs

1 Scope

This International Standard specifies the dimensions and the technical requirements for socket wrenches for spark- and glow-plugs.

The wrenches described in the present International Standard are for hand operation and are designed to drive spark and glow diesel plugs with hexagon drive.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 691:1983, *Wrench and socket openings — Metric series — Tolerances for general use.*

ISO 1174:1975, *Assembly tools for bolts and screws — Driving squares for power socket wrenches and hand socket wrenches.*

3 Dimensions

The dimensions shown in figure 1 are given in millimetres in table 1 (see also figure 2).

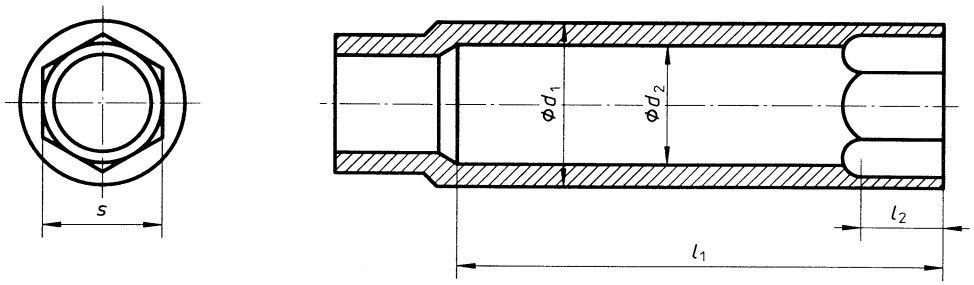

Figure 1 — Socket wrench for spark- and glow-plugs

Table 1 — Wrench dimensions

Width across flats s		d_1	d_2	l_1	l_2	
nom.	tol.	max.	min.	min.	max.	min.
12	$^{+0,24}_{+0,04}$	17,5	11	40	13,0	9,5
14	$^{+0,27}_{+0,05}$	19,5	11	40		
16	$^{+0,18}_{+0,05}$ 1)	22	See figure 2			
19	$^{+0,36}_{+0,06}$	25,5	18	56		
20,8	$^{+0,36}_{+0,06}$	27,5	20	67		
22,2	$^{+0,36}_{+0,06}$	29	21	70		
25,5	$^{+0,36}_{+0,06}$	33	24	74		

1) The maximum tolerance + 0,18 varies from that of ISO 691 to improve the socket hexagon interface with spark-plug hexagon, in order to reduce the probability of the socket being tipped and contacting the insulator causing damage.

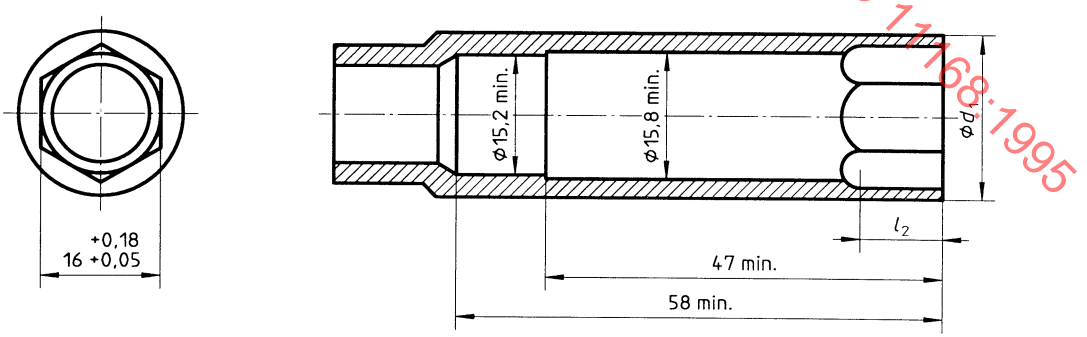

Figure 2 — Socket wrench for spark- and glow-plugs 16 mm across the flats

4 Drive

The wrenches described in the present International Standard must be provided with an adequate drive system, which can be made of one of the following shapes or their combinations:

— shape **I**: female square drive according to ISO 1174;

— shape **II**: male hexagon drive for wrench opening according to ISO 691 having a size not lower than "s";

— shape **III**: hole with insertable tommy bar;

— shape **IV**: fork for joint connection;

— shape **V**: all other shapes admitted.

The symbol of the shape must be stated in the designation; for shapes **I** and **II**, the symbol must also include the characteristics defined in ISO 1174 and ISO 691.

The size of drives for shapes **III**, **IV** and **V** are left to the manufacturer's discretion.

5 Retaining system

The wrenches described in this International Standard can be fitted with an adequate spark-plug retaining system. In such a case the spark-plug must release under a traction force of between 5 N and 30 N.

The retaining system shall avoid any damage to the spark-plug insulator.

For certain devices, the internal diameter of this device can be less than the diameter d_2 given in table 1.

6 Torque testing

Place the tool in a hexagon test mandrel and apply the corresponding minimum torque indicated in table 2. This test shall be carried out using a hexagon test mandrel with minimum hexagon size and minimum dimensions across corners given in the corresponding International Standards, covering spark and/or glow plugs (see annex A).

The hexagon test mandrel shall be hardened to not less than 55 HRC. The depth of penetration of the hexagon mandrel into the tool shall be 4 mm.

Following the application of the minimum test torque, any possible damage or deformation shall not affect usability of the socket wrench.

7 Designation

A socket wrench for spark- and glow-plugs conforming to the present International Standard shall be designated as follows:

a) "plug wrench";

b) reference to this International Standard (i.e. ISO 11168);

c) width across flats, s, in millimetres;

d) the symbol of the shape of the drive system with, for shapes **I** and **II**, the drive dimensions.

EXAMPLES

A socket wrench for spark- and glow-plugs with a width across flats s of 19 mm and a female square drive (shape **I**) = 12,5 mm is designated as follows:

Plug wrench ISO 11168 - 19 - I - 12,5

A socket wrench for glow-plugs with a width across flats s of 14 mm with fork for joint connection (shape **IV**) is designated as follows:

Plug wrench ISO 11168 - 14 - IV

8 Marking

Socket wrenches for spark- and glow-plugs shall be marked, legibly and permanently, with at least:

— the name or trademark of the manufacturer (or responsible supplier);

— the width across flats.

Table 2 — Minimum torque values

Width across flats, s	mm	12	14	16	19	20,8	22,2	25,5
Minimum test torque	N·m	42	64	100	100	128	128	128

Annex A
(informative)

Bibliography

[1] ISO 1919:1988, *Road vehicles — M14 x 1,25 spark-plugs with flat seating and their cylinder head housings.*

[2] ISO 2344:1992, *Road vehicles — M14 x 1,25 spark-plugs with conical seating and their cylinder head housing.*

[3] ISO 2345:1994, *Road vehicles — M18 x 1,5 spark-plugs with conical seating and their cylinder head housing.*

[4] ISO 2346:1991, *Road vehicles — M14 x 1,25 compact spark-plugs with flat seating and their cylinder head housing.*

[5] ISO 2347:1994, *Road vehicles — M14 x 1,25 compact spark-plugs with conical seating and their cylinder head housing.*

[6] ISO 2704:1993, *Road vehicles — M10 x 1 spark-plugs with flat seating and their cylinder head housing.*

[7] ISO 2705:1991, *Road vehicles — M12 x 1,25 spark-plugs with flat seating and their cylinder head housing.*

[8] ISO 3895:1986, *Road vehicles — Screened and waterproof spark-plug and its connection — Type 2.*

[9] ISO 3896:1986, *Road vehicles — Screened and waterproof spark-plug and its connection — Type 3.*

[10] ISO 6550:1989, *Road vehicles — M12 x 1,25 and M14 x 1,25 sheath-type glow-plugs with conical seating and their cylinder head housing.*

[11] ISO 8470:1990, *Road vehicles — M14 x 1,25 spark-plugs with flat seating and 16 mm hexagon and their cylinder head housing.*