

Gas Industry Standard

GIS/TE/D1.3:2006

Specification for

**Holesaws and holesaw taps for use on gas pipes with
operating pressures not greater than 2 bar**



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Foreword

Gas Industry Standards (GIS) are revised, when necessary, by the issue of new editions. Users should ensure that they are in possession of the latest edition. Contractors and other users external to Gas Transporters should direct their requests for copies of a GIS to the department or group responsible for the initial issue of their contract documentation.

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This standard calls for the use of procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Compliance with this engineering document does not confer immunity from prosecution for breach of statutory or other legal obligations.

Mandatory and non-mandatory requirements

For the purposes of a GIS the following auxiliary verbs have the meanings indicated:

- can** indicates a physical possibility;
- may** indicates an option that is not mandatory;
- shall** indicates a GIS requirement;
- should** indicates best practice and is the preferred option. If an alternative method is used then a suitable and sufficient risk assessment needs to be completed to show that the alternative method delivers the same, or better, level of protection.

Disclaimer

This engineering document is provided for use by Gas Transporters and such of their contractors as are obliged by the terms of their contracts to comply with this engineering document. Where this engineering document is used by any other party, it is the responsibility of that party to ensure that the engineering document is correctly applied.

Brief history

<p>Edited by BSI in accordance with BS 0-3:1997 Reviewed on behalf of the Gas Distribution Networks' Technical Standard Forum by BSI Reviewed by TSF Reviewed by TSF</p>	<p>August 2006 September 2013 June 2018 April 2023</p>
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1 Scope

This Gas Industry Standard (GIS) specifies requirements for holesaws and holesaw taps, used to cut and thread holes in gas pipes under live gas conditions using underpressure drilling systems that conform to GIS/E1, normally on iron (including cast, spun and ductile) and steel gas pipes in the size range 3 in (75 mm) to 24 in (600 mm) and for use at operating pressures no greater than 2 bar.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Formal standards

BS 21, *Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions)*.

BS 8416, *Specification for hole-saws*.

BS EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

3 Terms and definitions

For the purposes of this GIS the following definitions apply.

3.1

arbor assembly

assembly for attaching a **holesaw** to a **holesaw tap** to prevent the **holesaw** spinning when drilling, consisting of a drilled centre hole and **drive pinholes** in the **holesaw** and two raised drive pins and a thread, with nut and washer, on the end of the **holesaw tap**

NOTE 1 The arbor assembly is only used with **holesaws** and **holesaw taps** with a diameter of greater than 1 in.

NOTE The nut is tightened to fix the **holesaw** to the **holesaw tap**.

3.2

holesaw

cylindrical cup-shaped cutter made of bi-metal or high speed steel, with serrated saw-like teeth, used to drill circular holes into metallic pipes for fitting threaded or non-tap plugs

NOTE 1 The holesaw attaches to **holesaw taps** having a diameter of $\frac{3}{4}$ in or 1 in with a thread. The holesaw attaches to **holesaw taps** having a diameter of greater than 1 in with an arbor assembly.

NOTE 2 Holesaws can be used in the drilling machine with either a hand ratchet or powered air drive.

3.3

holesaw tap

steel bodied item with threads and flutes used to thread the hole drilled by a **holesaw** and used through pipe drilling and tapping equipment that conforms to GIS/E1

NOTE A hole is drilled into a pipe with a **holesaw** then the holesaw tap is lowered further to tap a thread into the hole.

NOTE Holesaw taps with a diameter of $\frac{3}{4}$ in or 1 in diameter have a male thread for the **holesaw** to screw on to. The 24 mm and 30 mm **holesaws** attach to the $\frac{3}{4}$ in and 1 in holesaw taps by female threads. Holesaw taps with a diameter of greater than 1 in are attached to the holesaw using two drive pins.

4 Holesaws

- 4.1** Holesaws shall cut to a minimum depth of 40 mm, measured from the inside of the base to the edge of the teeth.
- 4.2** Holesaws shall conform to BS 8416, apart from some exceptions given in **4.7**.
- 4.3** Holesaws shall be available in the following diameters (in mm): 24, 30, 38, 44, 56 and 73.
- 4.4** Holesaws shall be constructed from bimetal or high speed steel.
- 4.5** Holesaws shall be suitable for operation at the speeds given in Annex A.
- 4.6** 24 mm and 30 mm diameter holesaws shall have a $\frac{1}{2}$ in Unified Fine Thread (UNF) mounting thread for securing onto the holesaw tap.
- 4.7** The 38 mm, 44 mm, 56 mm and 73mm diameter holesaws shall have a mounting thread drilled to 16 mm diameter. They shall be secured to the holesaw tap by a nut and washer with the drive transferred via two drive pinholes.
- 4.8** Holesaws shall be easy to assemble and shall not have sharp edges or other protrusions that could injure the user during normal usage.
- 4.9** Where there are drive pinholes, these shall be on a 25.4 mm Pitch Circle Diameter (PCD). They shall be 6.9 mm in diameter, designed to accept their corresponding raised drive pins on the holesaw tap, and diametrically opposite each other.

5 Holesaw taps

- 5.1** Holesaw taps shall be made from a material suitable for threading iron (including cast, spun and ductile) and steel pipes.
- 5.2** Holesaw taps shall cut with parallel threads that conform to BS 21 and BS EN 10226-1.
- 5.3** Holesaw taps shall be easy to assemble and shall not have sharp edges or other protrusions that could injure the user during normal usage.
- 5.4** The fixing drive end shall be compatible with all standard underpressure drilling machines and equipment that conform to GIS/E1 and are approved by the gas transporter.
- 5.5** The $\frac{3}{4}$ in and 1 in holesaw taps shall have a $\frac{1}{2}$ in UNF thread to allow the installation of 24 mm and 30 mm diameter holesaws. All other holesaw taps shall have drive pins to allow the installation of holesaws with a $\frac{5}{8}$ in UNF threaded shaft, locknut and washer.
- 5.6** The drive thread and pins shall conform to BS 8416.
- 5.7** Where there are drive pins, these shall be on a 25.4 mm PCD. They shall be 6 mm in diameter, designed to fit into their corresponding drive pinholes on the holesaw and diametrically opposite each other. The pins shall be no longer than 5 mm.
- 5.8** The holesaw taps shall be able to cut thread to a minimum depth of 40 mm.

6 Marking

Tools conforming to GIS/TE/D1.3 shall be permanently marked with the following information:

- a) the number and date of this standard, i.e. GIS/TE/D1.3:2006 ¹⁾;
- b) the name or trademark of the manufacturer or their appointed agent;
- c) the manufacturer's contact details;
- d) the size of the tool;
- e) where authorized, the product conformity mark of a third party certification body, e.g. BSI Kitemark.

NOTE Attention is drawn to the advantages of using third party certification of conformance to a standard.

¹⁾ Marking GIS/TE/D1.3:2006 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

Annex A (normative)
Holesaw speeds**Table A.1 — Holesaw speeds**

Holesaw size mm	Material	
	Cast/ductile iron RPM	Steel RPM
24	245	370
30	235	350
38	180	275
44	150	230
56	115	170
73	80	120