

INTERNATIONAL STANDARD

ISO 14281

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Aerospace — Gauges, for internal cruciform ribbed or unribbed drives — Metric series

*Aéronautique et espace — Calibres de contrôle, pour empreintes
cruciformes avec ou sans saillies antidérapantes — Série métrique*



Reference number
ISO 14281:2002(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. 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.

ISO 14281 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 4, *Aerospace fastener systems*.

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Introduction

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this International Standard may involve the use of a patent concerning gauges specified in this International Standard.

Patent rights are held by the Phillips Screw Company worldwide.

ISO takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured the ISO that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with the ISO. Information may be obtained from:

Phillips Screw Company
508 Edgewater Drive
Wakefield, MA 01880
USA

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights other than those identified above. ISO shall not be held responsible for identifying any or all such patent rights.

Aerospace — Gauges, for internal cruciform ribbed or unribbed drives — Metric series

1 Scope

This International Standard specifies the dimensions of metric gauges which check internal cruciform drives, ribbed or unribbed, used in metric screws in the nominal thread diameter range of 1,6 mm to 20 mm.

The internal cruciform drives, ribbed and unribbed, are defined respectively in ISO 12256 and ISO 14279.

2 Configuration and dimensions

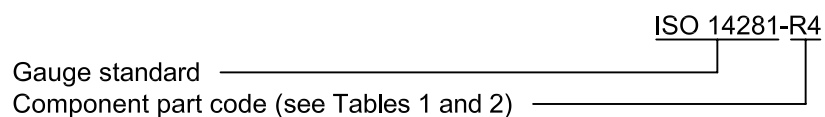
See Figures 1, 2 and 3 and Tables 1 and 2.

Dimensions and tolerances are expressed in millimetres.

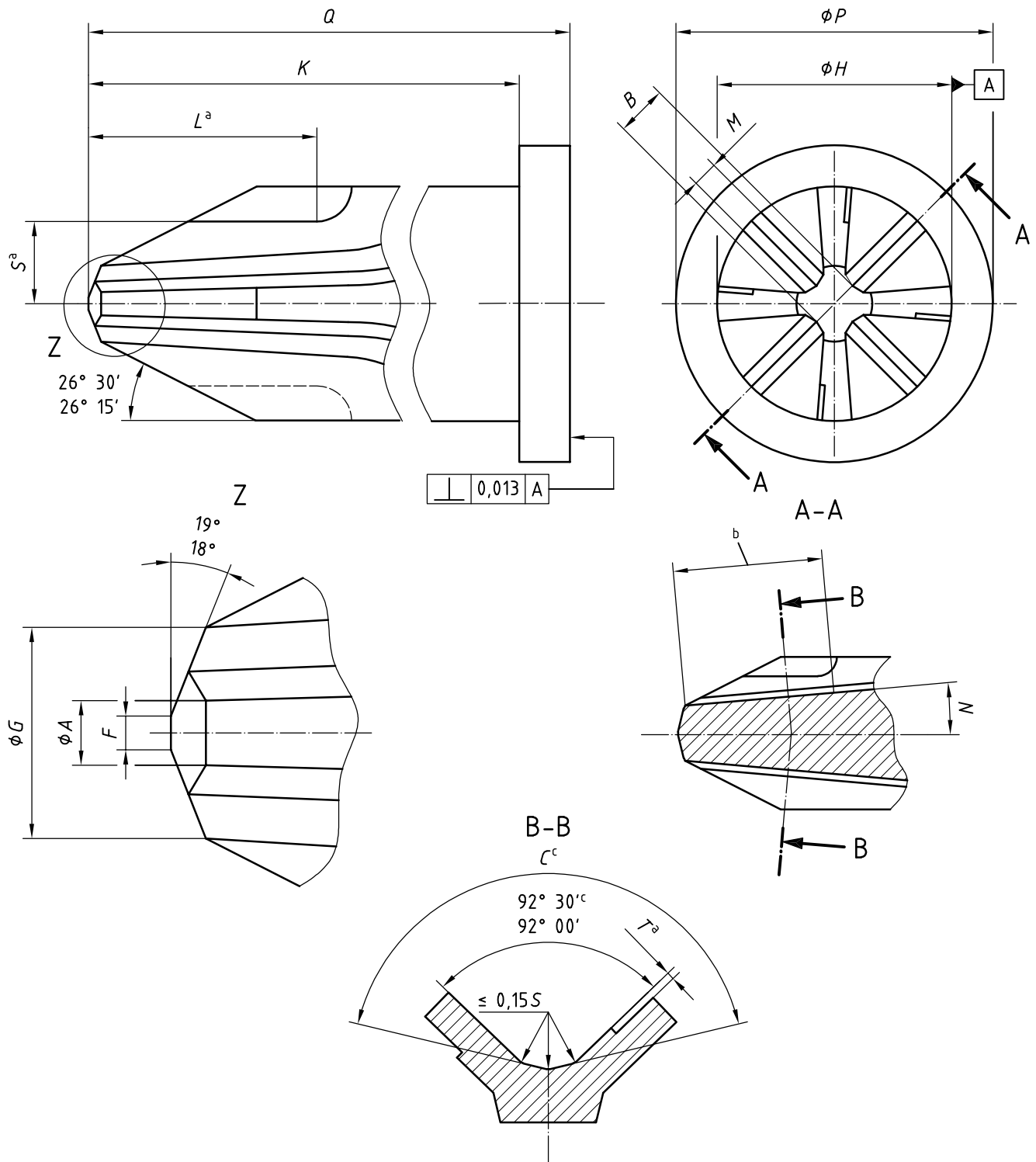
The presentation of perpendicularity, location and run-out tolerances conforms to ISO 1101.

3 Designation

Component part designation shall be as follows:



The drive penetration gauge assembly (Figure 3) shall be identified by the gauge body designation.



Gauge points shall be made from heat-treatable corrosion-resisting steel and heat-treated to hardness 58 HRC to 62 HRC.

- a Rib clearance defined by dimensions L , S and T .
- b Minimum length of straight surface at angle N . Thereafter, the form of run-out is optional.
- c Angle measured normal to the surface established by angle N .

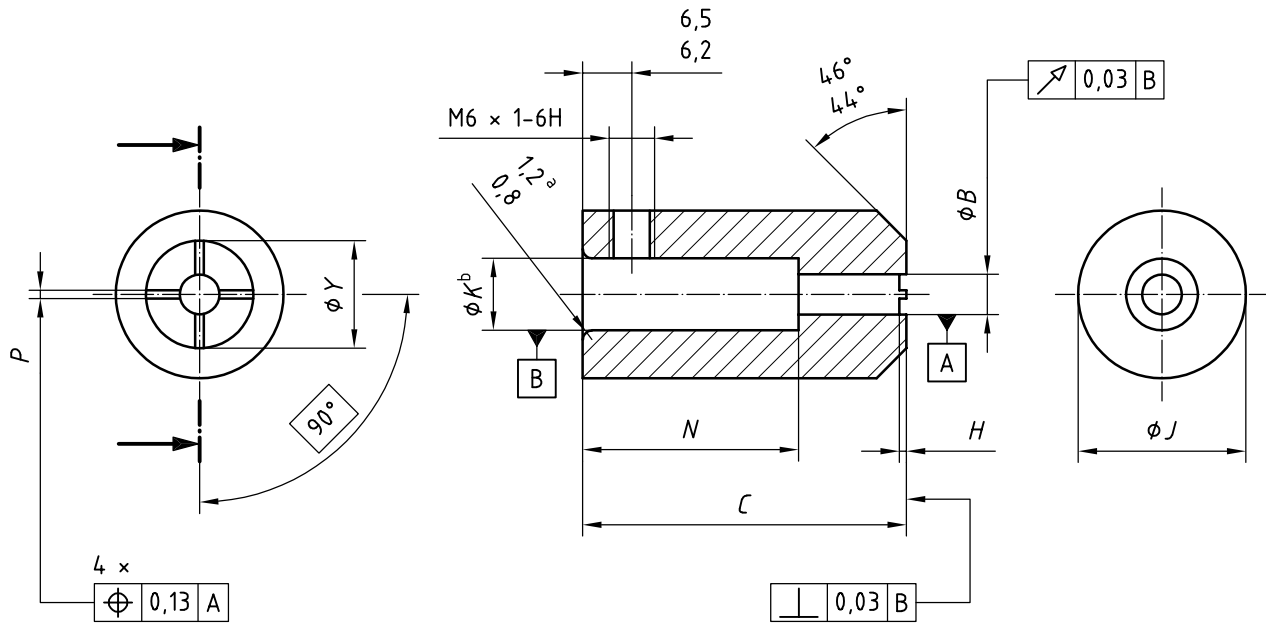
Figure 1 — Configuration — Gauge point

Table 1 — Dimensions — Gauge point

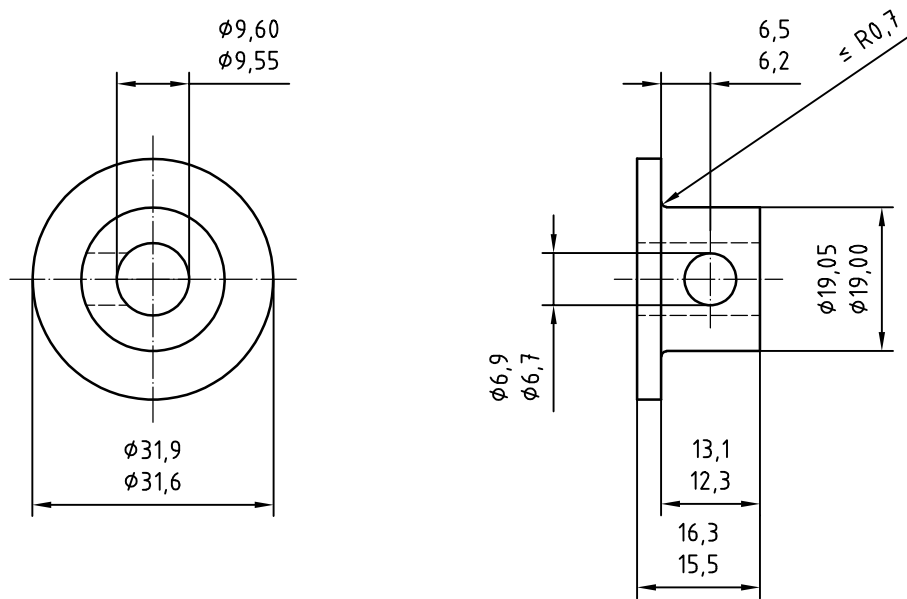
Gauge point code	<i>A</i>	<i>B</i>	<i>C</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>K</i>	<i>L</i>	<i>M</i>		<i>N</i>	<i>P</i>	<i>Q</i>	<i>S</i>	<i>T</i>	Gauge point code inches ^b
	± 0,03	⁰ / _{-0,025}	^{+0°15'} / _{0°}	⁰ / _{-0,13}	^{+0,03} / ₀	± 0,005	± 0,13	min.	nom.	tol.	^{0°} / _{-0°15'}	± 0,13	± 0,13	⁰ / _{-0,05}	^{+0,03} / ₀	
R0	0,28	0,61	a	0,38	0,81	1,143	16,66	3,2	0,384	⁰ / _{-0,066}	7°	2,39	19,84	—	—	0
R1	0,48	1,001	138°	0,51	1,27	2,21	17,48		0,513	⁰ / _{-0,025}		5° 45'	3,96	20,62	0,64	0,13
R2	0,61	1,539	140°		2,29	3,581	19,05	4,8	1,102		5,56		22,22	1,27	2	
R3	0,76	2,497	146°		3,81	5,309	19,84	7,2	2,098		6,35		23,01	1,98	3	
R4	1,09	3,574	153°		5,08	7,925	21,44	8,8	2,738		9,12		24,61	2,74	4	
R5	1,57	5,867	162° 46'		0,64	7,9	12,7	26,19	13,5		4,394		7°	13,49	29,36	

^a Radius: 0,28 max.; 0,23 min.

^b For information and comparison purposes only.



a) Body



b) Collar^c

Body and collar shall be made from corrosion-resisting steel 440C and heat-treated to hardness 30 HRC to 35 HRC.

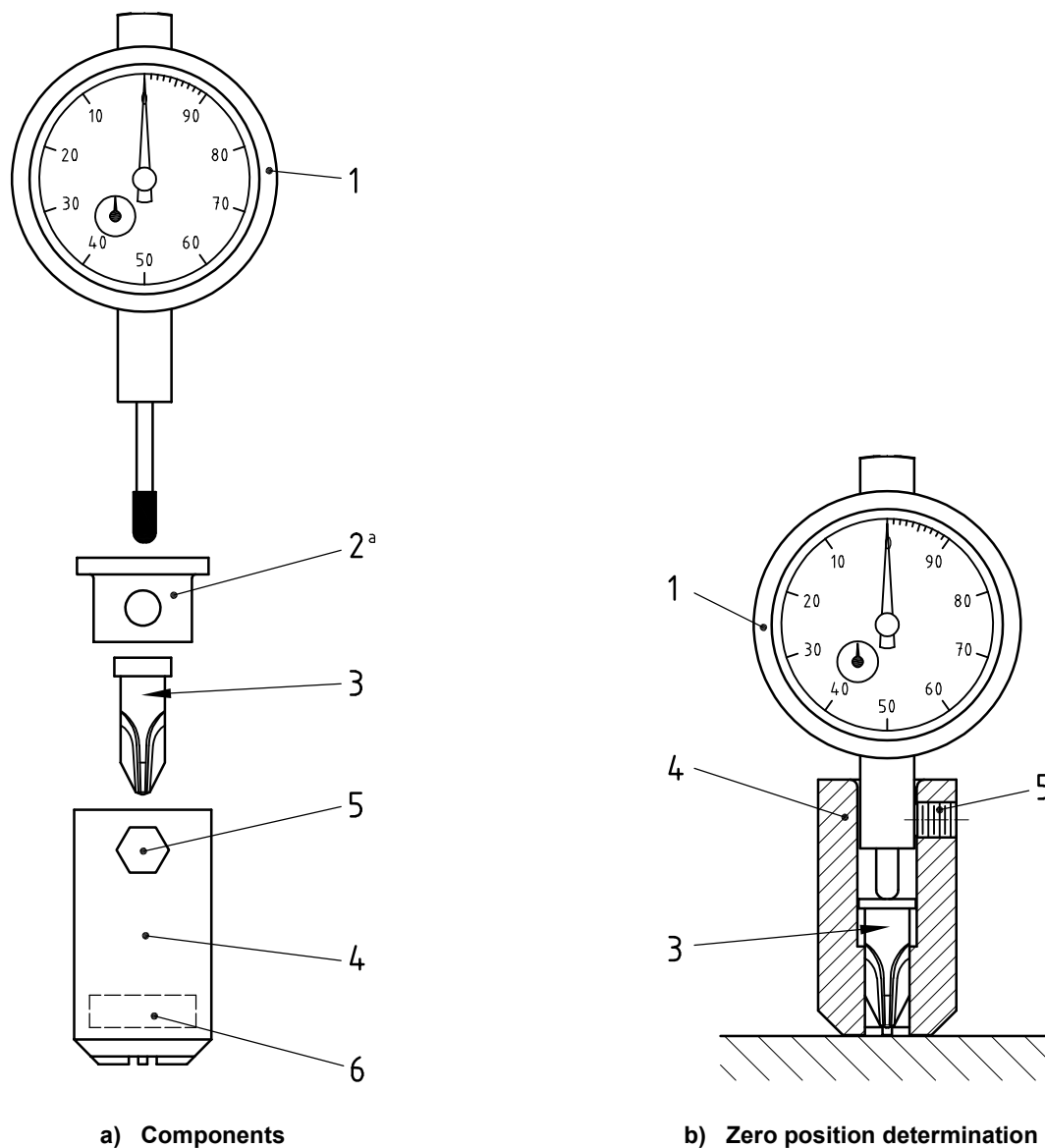
- a) Radius or chamfer.
- b) Ream to minimum depth of 14.
- c) Collar used with R5 body only. Mark collar ISO 14281-R5.

Figure 2 — Configuration — Drive penetration gauge body and collar

Table 2 — Dimensions — Drive penetration gauge body

Drive penetration gauge body code	<i>B</i> ± 0,005	<i>C</i> ± 0,41	<i>H</i> ± 0,08	<i>J</i> ± 0,41	<i>K</i> $\begin{matrix} +0,05 \\ 0 \end{matrix}$	<i>N</i> ± 0,41	<i>P</i> ± 0,05	<i>Y</i> ± 0,13	Drive penetration gauge body code inches ^a
R0	1,168	42,88	0,38	22,22	9,55	28,6	0,2	14,27	B0
R1	2,235		0,51				0,3		B1
R2	3,607		0,79				0,46		B2
R3	5,334		0,94				0,56		B3
R4	7,95		1,57				0,79		B4
R5	12,725	48,16	2,39	31,75	19,08	28,8	1,04	19,05	B5

^a For information and comparison purposes only.



- 1 Dial indicator
AMES Model 214-25J or equivalent
Graduations: 0,01
Range: 25
Continuous dial reading counter-clockwise
with revolution counter
- 2 Gauge collar
- a Used only with gauge body R5

- 3 Gauge point
- 4 Gauge body
- 5 Setscrew
– M6-4g6g × 8 long, hexagon socket,
plain cup point
- 6 Gauge body identification marking

Figure 3 — Configuration — Drive penetration gauge assembly

Bibliography

- [1] ISO 1101:—¹, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*
- [2] ISO 12256:—², *Aerospace — Drives, internal, cruciform, ribbed — Metric series*
- [3] ISO 14279:2002, *Aerospace — Drives, internal, cruciform — Metric series*

1) To be published. (Revision of ISO 1101:1983)
2) To be published.

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