INTERNATIONAL STANDARD

ISO 14278

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2002-06-15

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

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

Reference number
ISO 14278:2002(E)

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Foreword

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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 14278 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 4, *Aerospace fastener systems*.

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 offset cruciform ribbed or unribbed drives — Metric series

1 Scope

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

The internal offset cruciform drives, ribbed drives and unribbed, respectively are defined in ISO 14275 and ISO 14276.

2 Configuration and dimensions

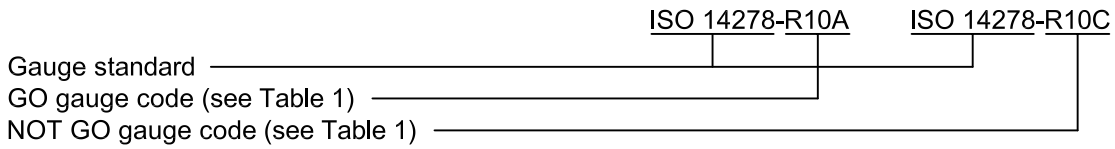
See Figures 1, 2 and 3 and Tables 1 and 2.

Dimensions and tolerances are expressed in millimetres.

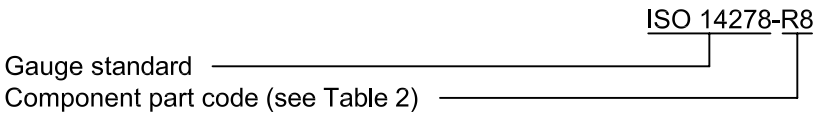
The presentation of surface-profile, perpendicularity, location and run-out tolerances conforms to ISO 1101.

3 Designation

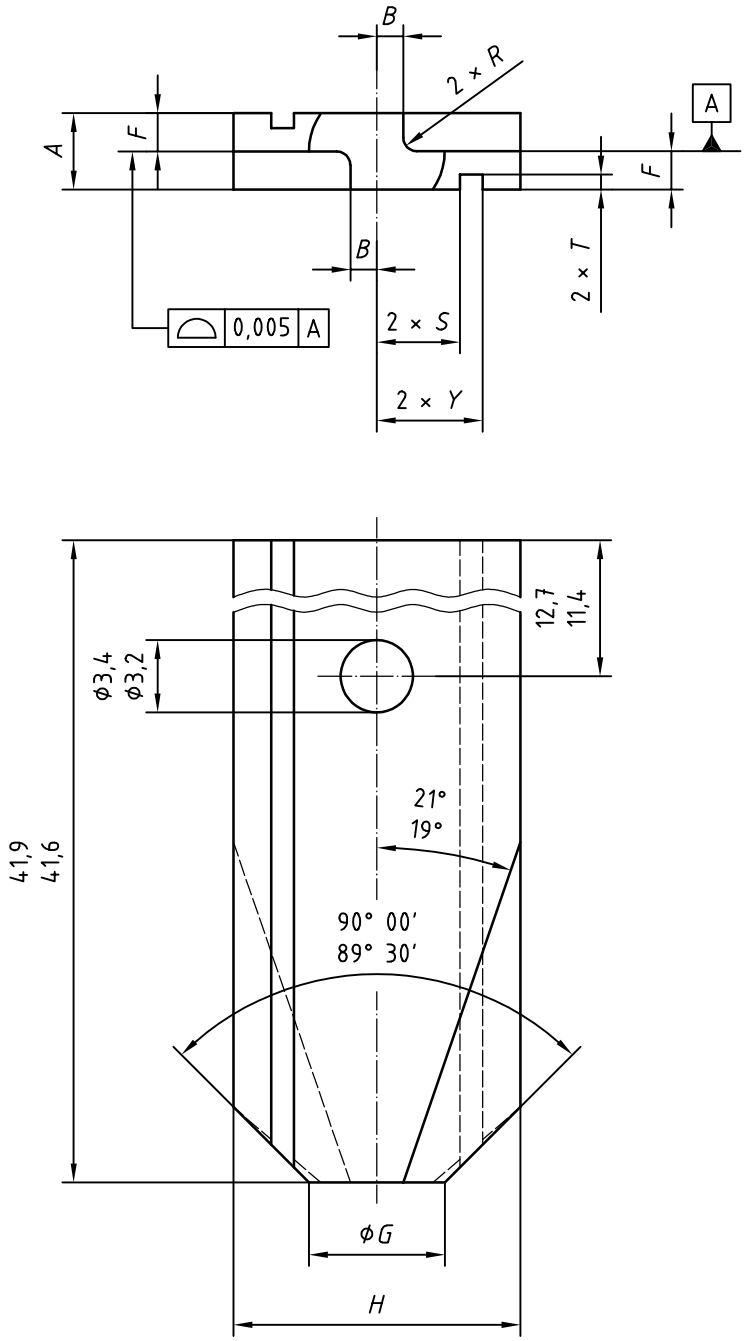
The GO and NOT GO gauge designation shall be as follows:



The component part designation shall be as follows:



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



Gauges made from heat-treatable corrosion-resisting steel and heat-treated to a hardness of 58 HRC to 62 HRC.

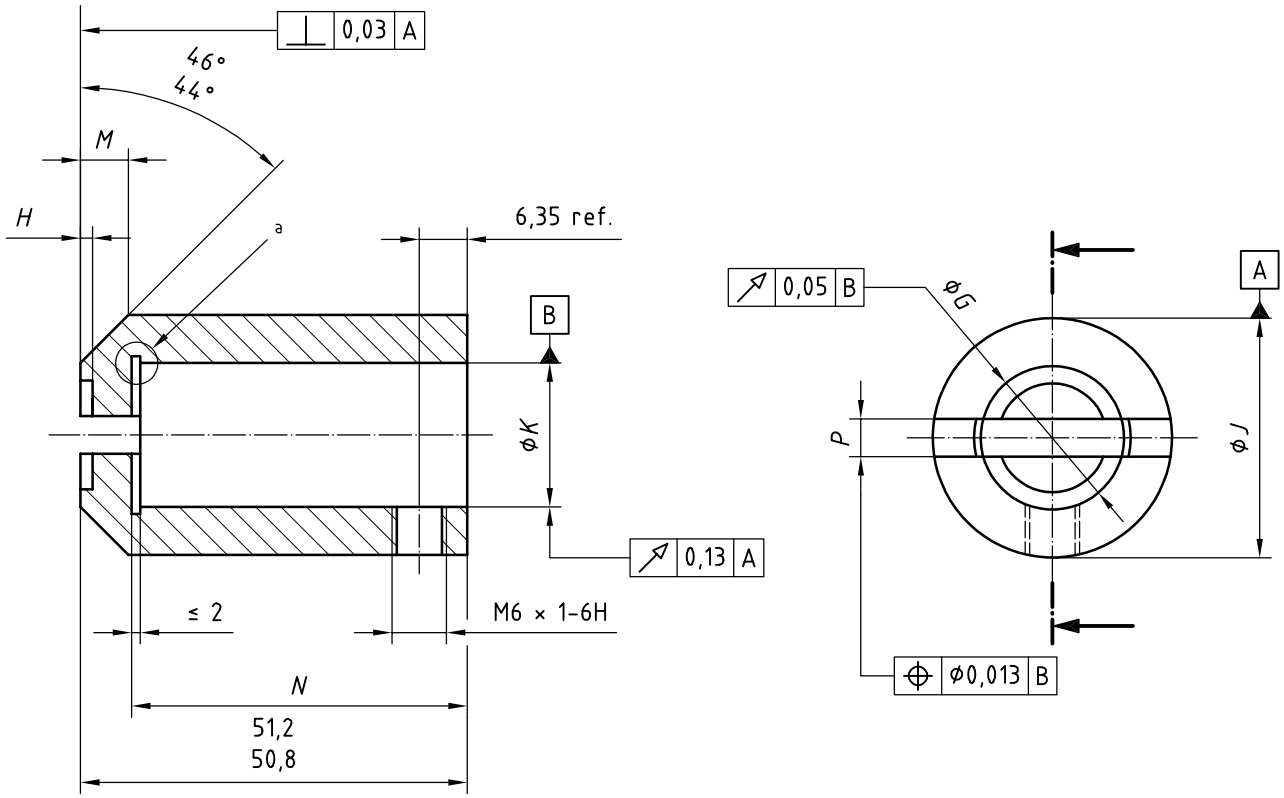
Figure 1 — Configuration — Drive GO (A) and NOT GO (C) gauges

Table 1 — Dimensions — Drive GO and NOT GO gauges

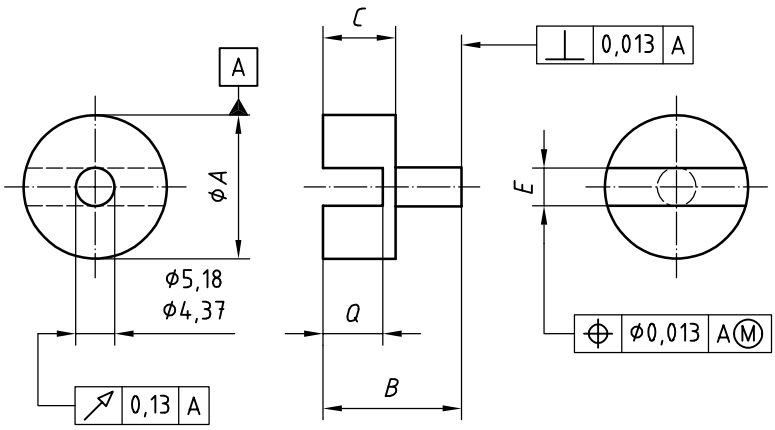
Drive GO and NOT GO gauge code	Gauge type	*A* ref.	*B* max.	*F* $^{0}_{-0,003}$	*G* ± 0,03	*H* ± 0,25	*R* max.	*S* $^{0}_{-0,05}$	*T* $^{+0,03}_{0}$	*Y* $^{+0,05}_{0}$	Drive GO and NOT GO gauge code inches [a]
R1,6A	GO	0,81	0,1	0,406	0,96	6,35	0,13	—	—	—	0A
R1,6C	NOT GO	0,917		0,46	1,65	7,92		—	—	—	0C
R2A	GO	0,81		0,406	1,14	6,35		—	—	—	1A
R2C	NOT GO	0,917		0,46	1,96	7,92		—	—	—	1C
R2,5A	GO	0,912		0,457	1,52	6,35		—	—	—	3A
R2,5C	NOT GO	1,069		0,536	2,64	9,52		—	—	—	3C
R3A	GO	1,013	0,15	0,508	1,73	6,35	0,18	0,74	0,1	1,12	4A
R3C	NOT GO	1,171		0,587	3,05	9,52					4C
R3,5A	GO	1,318		0,66	2,11	6,35	0,38	0,86		1,37	6A
R3,5C	NOT GO	1,476		0,739	3,4	11,12					6C
R4A	GO	1,572	0,23	0,787	2,46	6,35		1,07		1,57	8A
R4C	NOT GO	1,73		0,866	4,04	11,12					8C
R5A	GO	1,826		0,914	2,84	6,35	0,56	1,27		1,78	10A
R5C	NOT GO	1,984		0,993	4,34	11,12					10C
R6A	GO	2,436	0,36	1,219	3,76			1,75		2,26	1/4A
R6C	NOT GO	2,593		1,298	5,72	15,88					1/4C
R8A	GO	3,096		1,549	4,72	11,12	0,76	2,31		2,95	5/16A
R8C	NOT GO	3,254		1,628	7,16	15,88					5/16C
R10A	GO	3,706		1,854	5,64	11,12		2,84		3,48	3/8A
R10C	NOT GO	3,863		1,933	8,58	15,88					3/8C
R12A	GO	4,976	0,51	2,489	7,47		1,02	3,89	0,11	4,52	1/2A
R12C	NOT GO	5,184		2,593	11,43	19,05					1/2C
R14A	GO	5,636		2,819	8,38	17,48		4,34	0,14	5,1	9/16A
R14C	NOT GO	5,844		2,924	12,85	19,05					9/16C
R16A	GO	6,246		3,124	9,32	17,48		4,85		5,61	5/8A
R16C	NOT GO	6,454		3,228	14,27	19,05					5/8C
R18A	GO	7,516		3,759	11,12	25,4		5,92	0,18	6,68	3/4A
R18C	NOT GO	7,724		3,863	17,14	31,75					3/4C

[a] For information and comparison purposes only.

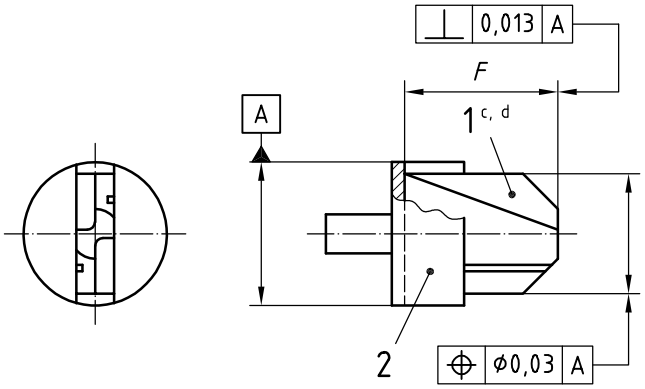
Break sharp edges 0,1 to 0,4.



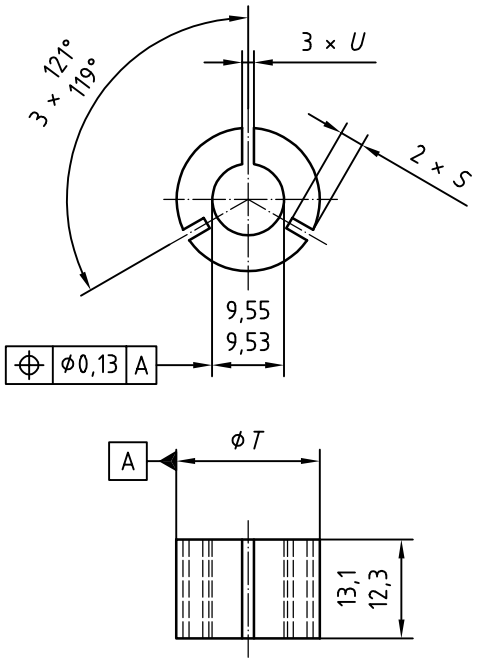
a) Gauge body [b]



b) Gauge holder [b]



c) Gauge point assembly [b]



d) Gauge collar [b]

Key

1 Gauge point
2 Gauge holder

a Shape at manufacturer's option.

b The body, holder and collar, but not gauge point, shall be made from corrosion-resistant steel 440C and heat-treated to a hardness of 30 HRC to 35 HRC.

c Configuration of gauge point in conformity with Figure 1, drive gauge type GO (A) machined to dimension F.

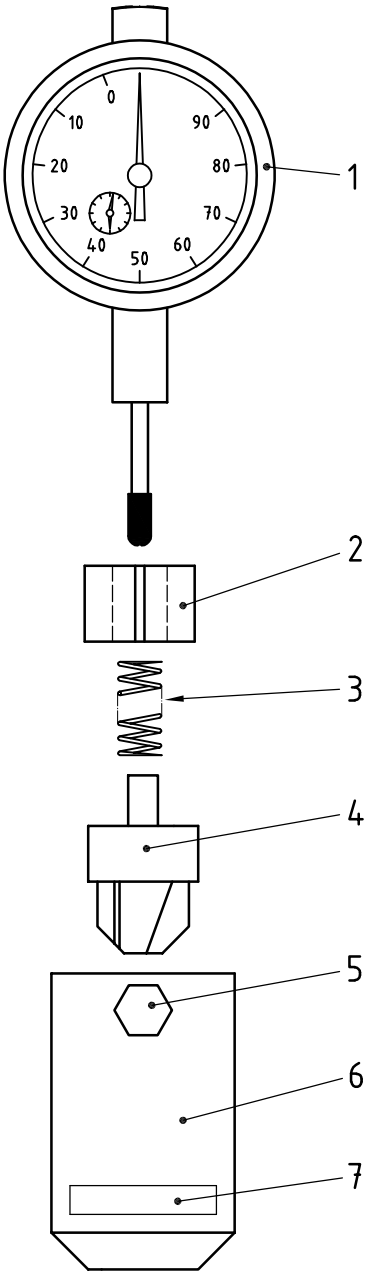
d Secure the gauge point to the holder using adhesive Eastman 910 or equivalent. (Eastman 910 is the trade name of a suitable product available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product.)

Figure 2 — Configuration — Drive penetration gauge component parts

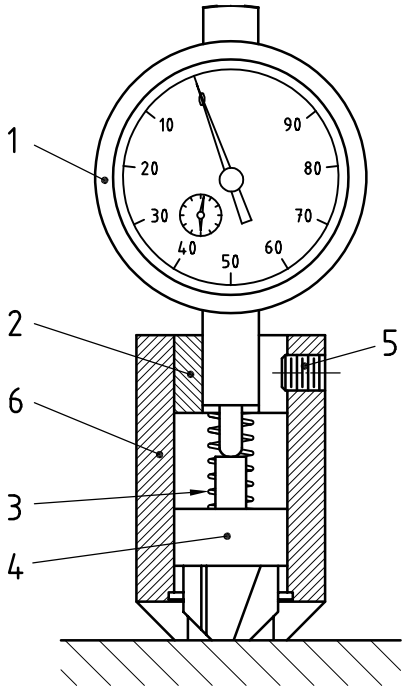
Table 2 — Dimensions — Drive penetration gauge component parts

Component part code	*A* $^{0}_{-0,013}$	*B* ± 0,41	*C* ± 0,41	*E* ± 0,03	*F* ± 0,13	*G* $^{+0,05}_{0}$	*H* $^{+0,41}_{0}$	*J* ± 0,41	*K* $^{+0,03}_{0}$	*M* ± 0,41	*N* $^{+0,13}_{0}$	*P* $^{+0,05}_{0}$	*Q* ± 0,41	*S* ± 0,41	*T* $^{0}_{-0,013}$	*U* ± 0,41	Component part code inches [a]
R1,6	9,512	21,44	12,70	0,86	12,95	1,85	0,79	22,22	9,52	3,18	47,02	0,84	4,78	—	—	—	0
R2						2,21											1
R2,5				0,96		2,95						0,94					3
R3				1,07		3,33						1,04					4
R3,5				1,37		4,06						1,35					6
R4				1,62		4,83						1,60					8
R5				1,88		5,56						1,85					10
R6	19,037	18,26	9,52	2,49	20,32	7,26	1,57	31,75	19,05	6,35	44,45	2,46	7,92	3,18	19,037	1,57	1/4
R8				3,15		9,07						3,12					5/16
R10				3,76		10,85						3,73					3/8
R12				5,03		14,43				3,18		5,00					1/2
R14				5,69		16,21						5,66					9/16
R16				6,30		17,98						6,27					5/8
R18	28,562	15,88		7,57	21,59	21,56	2,77	50,80	28,58			7,54		6,35	28,562	3,18	3/4

[a] For information and comparison purposes only.



a) **Components**



b) **Zero position determination**

Key

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

3 Spring
Material: corrosion-resisting steel
Size: diameter 7,62 × 25,4 long
Wire diameter: 0,66
Ends: squared and ground

4 Gauge point assembly

5 Setscrew
M6-4g6g × 8 long, hexagon socket, plain cup point

6 Gauge body

7 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 14275:2002, *Aerospace — Drives, internal, offset cruciform, ribbed — Metric series*

[3] ISO 14276:2002, *Aerospace — Drives, internal, offset cruciform — Metric series*

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

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