INTERNATIONAL STANDARD

ISO 10097-2

First edition
1999-10-15

Wireline diamond core drilling equipment — System A —

Part 2:
Inch units

Équipement de forage au diamant à ligne à câble avec carottage — Système A —

Partie 2: Unités en inches

Reference number
ISO 10097-2:1999(E)

Contents

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Printed in Switzerland

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.

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 10097-2 was prepared by Technical Committee ISO/TC 82, *Mining*, Subcommittee SC 6, *Diamond core drilling equipment*.

ISO 10097 consists of the following parts, under the general title *Wireline diamond core drilling equipment — System A*:

— *Part 1: Metric units*

— *Part 2: Inch units*

Annex A of this part of ISO 10097 is for information only.

Introduction

ISO 10097 is intended for independent use as well as for use in combination with ISO 3551-2, which covers equipment designed for conventional diamond drilling.

This International Standard covers equipment intended for application with diamond bits, but is should be understood that bits may have other cutting materials.

Wireline diamond core drilling equipment — System A —

Part 2:
Inch units

1 Scope

This part of ISO 10097 specifies the nomenclature and the leading dimensions necessary for the interchangeability of the following wireline drilling equipment for drilling holes of diameter 1,890 in to 3,790 in, yielding cores of diameter 1,063 in to 2,500 in.

The equipment is illustrated in Figure 1 and comprises the following:

a) core bit;

b) reaming shell;

c) core lifter;

d) core lifter case;

e) outer tube;

f) inner tube;

g) drill rod (smooth pipe only).

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 10097. For dated references, subsequent amendments to, or revisions of, this publication do not apply. However, parties to agreements based on this part of ISO 10097 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3551-2:1992, *Rotary core diamond drilling equipment — System A — Part 2: Inch units.*

3 Designation

Items made in accordance with this part of ISO 10097 shall be designated by the identification letters WL and hole dimensions A, B, N, H.

EXAMPLE

Core bit for wireline drilling hole B dimensions: WLB core bit.

4 Materials

Materials used in the manufacture of the wireline drilling equipment specified in this part of ISO 10097 shall have the minimum mechanical properties as specified in Table 1.

Table 1 — Mechanical properties

Component	Minimum tensile strength, R_m lbf/in^2	Minimum yield stress, R_e lbf/in^2	Minimum elongation A_2 %
Drill rods	100 000	80 000	15
Core tubes	100 000	80 000	15
Other items	Not specified		

5 Dimensions and tolerances

5.1 General

All dimensions and tolerances are in inches unless otherwise stated and shall be in accordance with Tables 3 to 9 inclusive.

5.2 Conformity

In those industries where drilling depths are measured in metres, the rod lengths shall be 3,0 m, 1,5 m or 0,75 m. When drilling in conformity with DCDMA and CDDA standards, the lengths of rods may be 10 ft, 5 ft or 2,5 ft.

5.3 Eccentricity

The eccentricity is defined as the distance between the centres of the outer and inner diameters and may not exceed 10 % of the nominal wall thickness Q.

The eccentricity is calculated according to the formula:

$$\frac{Q_{max} - Q_{min}}{2Q_{nom}} \times 100$$

where Q_{max} and Q_{min} are measured values in the section.

5.4 Straightness

When measured over the whole length of the tube by rolling against a straightedge, the maximum deviation shall not be greater than:

— for drill rods 1 in 2 000;

— for core tubes 1 in 1 500.

5.5 Technical conditions

Tubes should be made seamless. Tube rolling technique and machining operations are optional.

Tube straightness is checked by rolling the tube on a horizontal or slightly inclined flat surface. When rolling, no clearances shall be seen between the rod ends and the surface, nor between the middle of the rod (tube) and the surface.

Hole drilling by wireline system A equipment shall be cased by system A casing as specified in ISO 3551-2.

Table 2 — System of dimensional identification letters

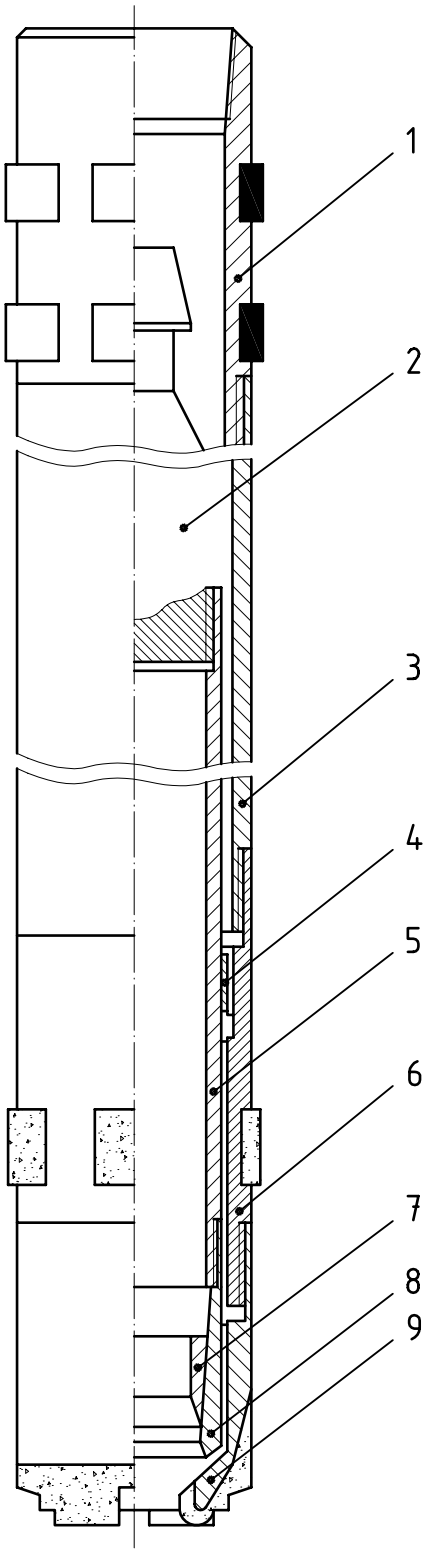
A, A_1, etc.	Outside diameters; A being largest; A_1, A_2, etc. progressively smaller
B, B_1, etc.	Inside diameters; B being smallest; B_1, B_2, etc. progressively larger
C, C_1, etc.	External lengths; C being longest; C_1, C_2, etc. progressively shorter
D, D_1, etc.	Internal lengths; D being longest; D_1, D_2, etc. progressively shorter
E, E_1, etc.	Major diameter of pin threads; E being largest; E_1, E_2, etc. smaller
F, F_1, etc.	Minor diameter of pin threads; F being largest; F_1, F_2, etc. smaller
Thread pitch (threads per inch)	Pin threads
G, G_1, etc.	Width at root of pin thread
H, H_1, etc.	Length of o.d. machined for external threading
J, J_1, etc.	Minimum length for full depth of pin threads
K, K_1, etc.	Length of relief at the starting point of pin threads
L, L_1, etc.	Angle of bevel for pin thread shoulder
M, M_1, etc.	Major diameter of box threads; M being largest; M_1, M_2, etc. smaller
N, N_1, etc.	Minor diameter of box; N being largest; N_1, N_2, etc. smaller
Thread pitch (threads per inch)	Box threads
P, P_1, etc.	Width at root of box threads
Q, Q_1, etc.	Length of i.d. machined for internal threading
R, R_1, etc.	Minimum length for full depth of box threads
S, S_1, etc.	Length of counter bore at the starting of box threads
T, T_1, etc.	Angle of bevel for thread shoulder
U, U_1, etc.	Included angles: Internal and external
V, V_1, etc.	Internal angles, not pertaining to threaded connections
W, W_1, etc.	External angles, not pertaining to threaded connections
X	Diamond set dimensions: External (o.d.)
Y	Diamond set dimensions: Internal (i.d.)

NOTE 1 All decimal dimensions indicate allowable tolerances.

NOTE 2 The following common abreviations have sometimes been used in tables in the English version for the sake of simplicity:

o.d = outside diameter

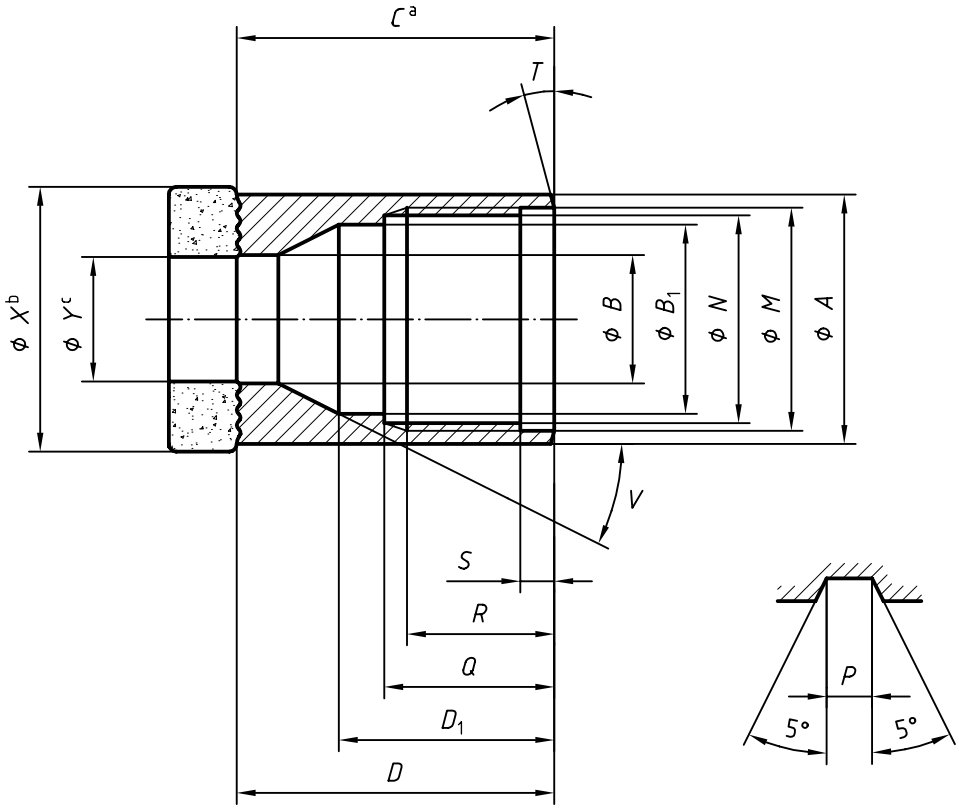
i.d. = inside diameter.



Key

1 Head (not standardized)
2 Bearing unit (not standardized)
3 Outer core barrel
4 Stabilizer (not standardized)
5 Retractable core barrel
6 Reaming shell
7 Core lifter
8 Core lifter case
9 Bit

Figure 1 — Wireline core barrel assembly

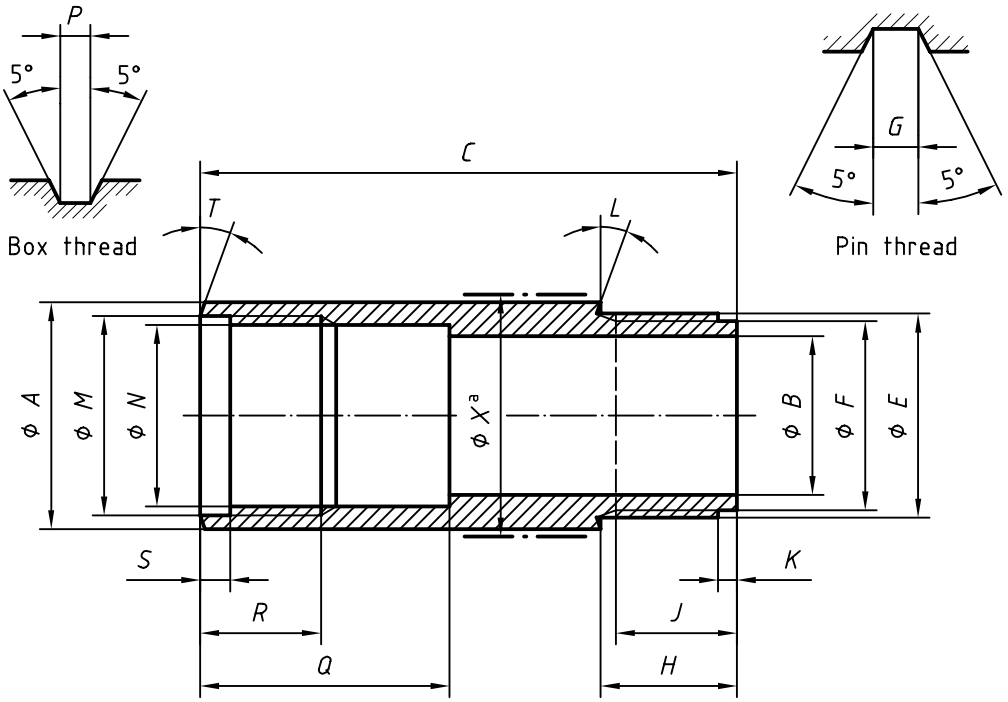


a Clear of diamonds
b Set o.d.
c Set i.d.

Figure 2 — Wireline core bit

Table 3 — Wireline core bit (see Figure 2)

Dimension		WLA	WLB	WLN	WLH
A	max.	1,837	2,282	2,910	3,713
	min.	1,833	2,278	2,906	3,709
B	max.	1,098	1,484	1,922	2,547
	min.	1,093	1,453	1,891	2,516
B_1	max.	1,453	1,828	2,391	3,078
	min.	1,422	1,797	2,359	3,047
C	min.	2,280	2,600	2,575	3,788
D	max.	2,311	2,631	2,606	3,819
	min.	2,280	2,600	2,575	3,788
D_1	max.	1,953	2,266	2,141	3,297
	min.	1,922	2,234	2,109	3,266
M	max.	1,657	2,064	2,658	3,377
	min.	1,655	2,062	2,656	3,374
N	max.	1,598	2,002	2,598	3,315
	min.	1,595	2,000	2,596	3,312
Threads per inch		4	4	4	4
P	max.	0,126	0,126	0,126	0,126
	min.	0,123	0,123	0,123	0,123
Q	max.	1,665	1,674	1,675	1,683
	min.	1,660	1,669	1,670	1,678
R	min.	1,531	1,531	1,531	1,531
S	max.	0,281	0,281	0,281	0,281
	min.	0,250	0,250	0,250	0,250
T		15°	15°	15°	15°
V		30°	30°	30°	30°
X	max.	1,880	2,350	2,970	3,770
	min.	1,870	2,340	2,960	3,755
Y	max.	1,067	1,438	1,880	2,505
	min.	1,057	1,428	1,870	2,495

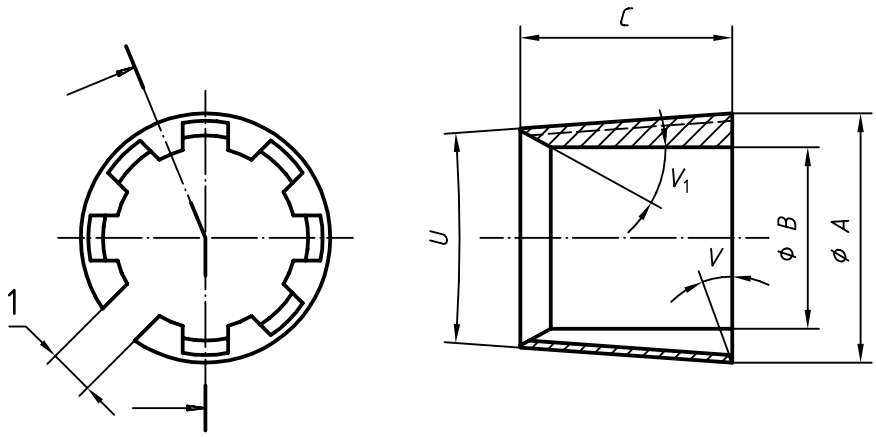


a Set o.d.

Figure 3 — Wireline reaming shell

Table 4 — Wireline reaming shell (see Figure 3)

Dimension		WLA	WLB	WLN	WLH
A	max.	1,837	2,282	2,910	3,713
	min.	1,833	2,278	2,906	3,709
B	max.	1,438	1,813	2,375	3,063
	min.	1,432	1,806	2,367	3,053
C	max.	6,391	6,266	6,766	7,203
	min.	6,359	6,234	6,734	7,172
E	max.	1,652	2,059	2,653	3,371
	min.	1,650	2,057	2,651	3,368
F	max.	1,592	1,997	2,593	3,309
	min.	1,590	1,995	2,591	3,306
Threads per inch		4	4	4	4
G	max.	0,126	0,126	0,126	0,126
	min.	0,123	0,123	0,123	0,123
H	max.	1,625	1,629	1,625	1,622
	min.	1,620	1,624	1,620	1,617
J	min.	1,531	1,531	1,531	1,531
K	max.	0,281	0,281	0,281	0,281
	min.	0,250	0,250	0,250	0,250
L		15°	15°	15°	15°
M	max.	1,657	2,064	2,658	3,377
	min.	1,655	2,062	2,656	3,374
N	max.	1,598	2,002	2,598	3,315
	min.	1,595	2,000	2,596	3,312
Threads per inch		4	4	4	4
P	max.	0,126	0,126	0,126	0,126
	min.	0,123	0,123	0,123	0,123
Q	max.	2,402	2,414	2,665	2,915
	min.	2,397	2,409	2,660	2,190
R	min.	1,531	1,531	1,531	1,531
S	max.	0,281	0,281	0,281	0,281
	min.	0,250	0,250	0,250	0,250
T		15°	15°	15°	15°
X	max.	1,895	2,365	2,985	3,790
	min.	1,885	2,355	2,975	3,775



Key

1 Gap

Figure 4 — Wireline core lifter

Table 5 — Wireline core lifter (see Figure 4)

Dimension		WLA	WLB	WLN	WLH
A	max.	1,190	1,584	2,049	2,714
	min.	1,188	1,582	2,047	2,712
B	max.	1,047	1,418	1,855	2,475
	min.	1,045	1,416	1,853	2,273
C	max.	0,891	1,016	1,141	1,516
	min.	0,859	0,984	1,109	1,484
U	max.	5° to 15′	5° to 15′	5° to 15′	5° to 15′
	min.	4° to 45′	4° to 45′	4° to 45′	4° to 45′
V		0°	0°	0°	0°
V_1		30°	30°	30°	30°

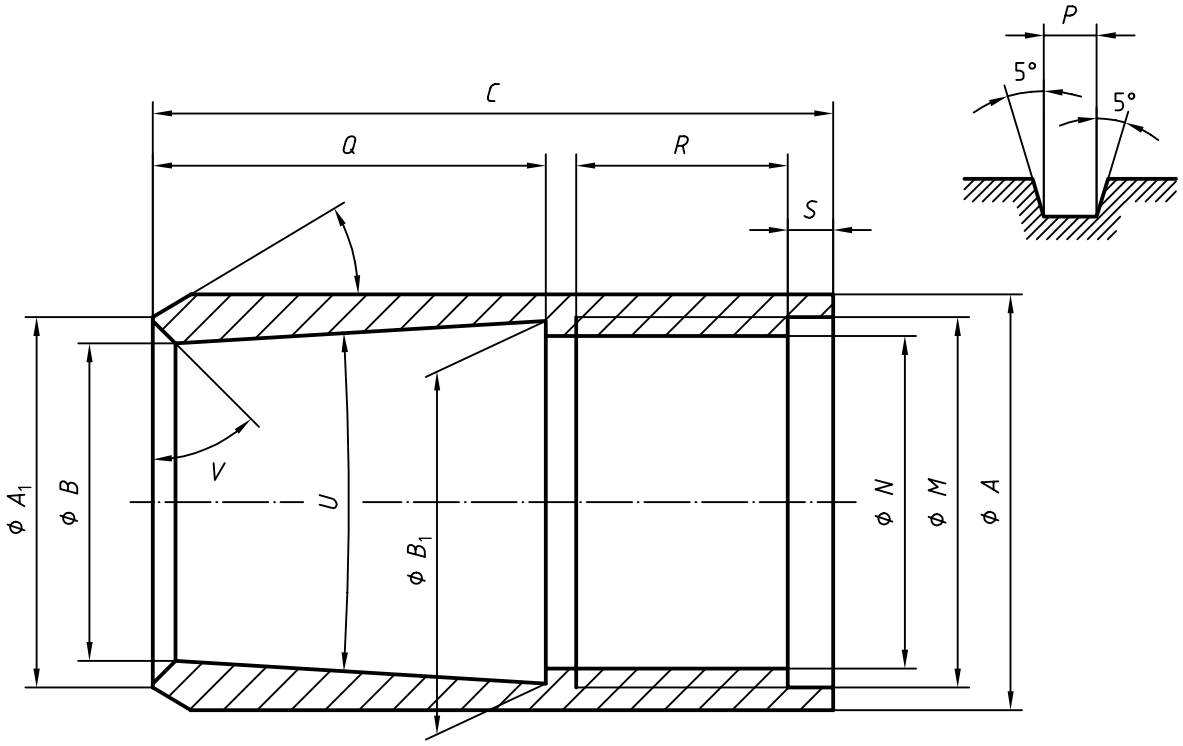


Figure 5 — Wireline core lifter case

Table 6 — Wireline core barrel core lifter case (see Figure 5)

Dimension		WLA	WLB	WLN	WLH
A	max.	1,297	1,693	2,202	2,883
	min.	1,295	1,691	2,200	2,881
A_1	max.	1,208	1,591	2,076	2,677
	min.	1,206	1,589	2,074	2,675
B	max.	1,114	1,497	1,951	2,583
	min.	1,112	1,495	1,949	2,581
B_1	max.	1,224	1,631	2,095	2,771
	min.	1,221	1,627	2,092	2,768
C	max.	2,516	2,766	2,953	3,516
	min.	2,484	2,734	2,922	3,484
M	max.	1,233	1,618	2,105	2,783
	min.	1,231	1,616	2,103	2,781
N	max.	1,188	1,572	2,055	2,728
	min.	1,186	1,570	2,053	2,726
Threads per inch		8	8	8	8
P	max.	0,064	0,064	0,064	0,064
	min.	0,061	0,061	0,061	0,061
Q	max.	1,578	1,766	2,031	2,641
	min.	1,547	1,734	2,000	2,609
R	min.	0,813	0,813	0,813	0,813
S	max.	0,156	0,156	0,156	0,156
	min.	0,125	0,125	0,125	0,125
T		30°	30°	30°	30°
U	max.	5° to 15′	5° to 15′	5° to 15′	5° to 15′
	min.	4° to 45′	4° to 45′	4° to 45′	4° to 45′
V		45°	45°	45°	45°

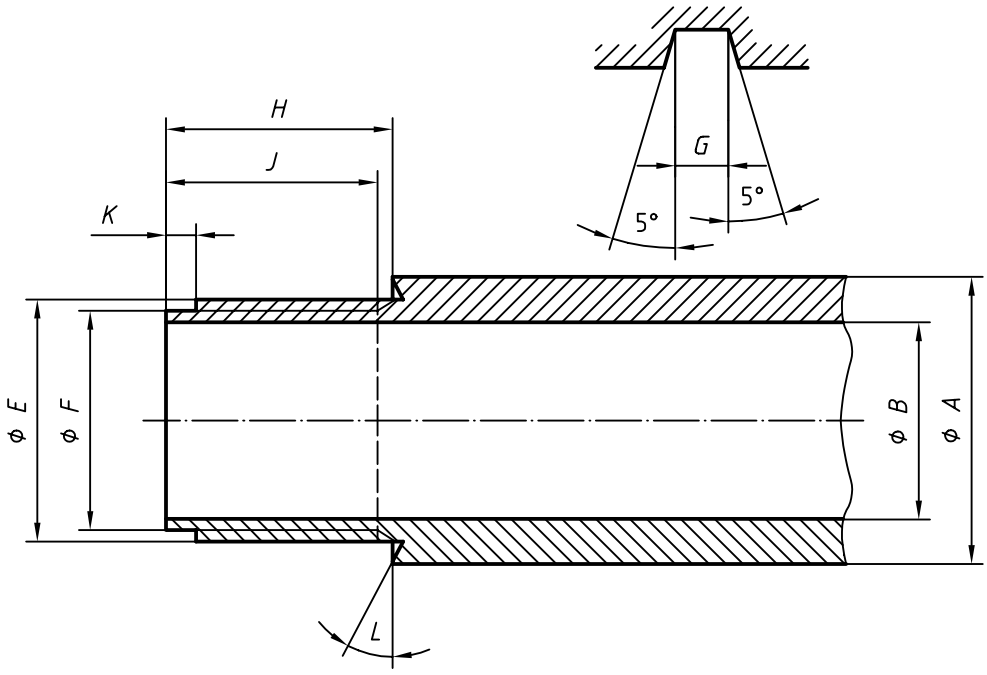


Figure 6 — Wireline core barrel outer tube (lower end)

Table 7 — Wireline core barrel outer tube, lower end (see Figure 6)

Dimension		WLA	WLB	WLN	WLH
A	max.	1,819	2,257	2,883	3,635
	min.	1,813	2,250	2,875	3,625
B	max.	1,438	1,813	2,383	3,063
	min.	1,432	1,806	2,375	3,053
E	max.	1,652	2,059	2,653	3,371
	min.	1,650	2,057	2,651	3,368
F	max.	1,592	1,997	2,593	3,309
	min.	1,590	1,995	2,591	3,306
Threads per inch		4	4	4	4
G	max.	0,126	0,126	0,126	0,126
	min.	0,123	0,123	0,123	0,123
H	max.	1,625	1,633	1,629	1,625
	min.	1,620	1,628	1,624	1,620
J	min.	1,531	1,531	1,531	1,531
K	max.	0,281	0,281	0,281	0,281
	min.	0,250	0,250	0,250	0,250
L	min.	15°	15°	15°	15°

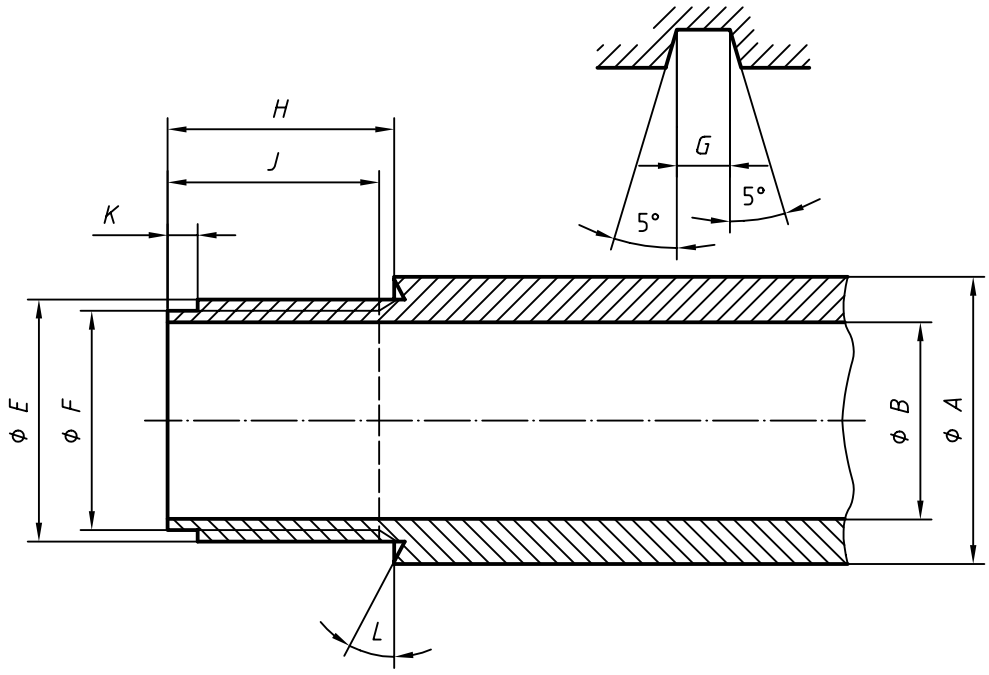


Figure 7 — Wireline core barrel inner tube (lower end)

Table 8 — Wireline core barrel inner tube (lower end)

Dimension		WLA	WLB	WLN	WLH
A	max.	1,286	1,693	2,195	2,883
	min.	1,281	1,688	2,188	2,875
B	max.	1,125	1,500	1,969	2,635
	min.	1,120	1,495	1,962	2,627
E	max.	1,230	1,613	2,100	2,778
	min.	1,228	1,611	2,098	2,776
F	max.	1,184	1,567	2,050	2,723
	min.	1,182	1,565	2,048	2,721
Threads per inch		8	8	8	8
G	max.	0,064	0,064	0,064	0,064
	min.	0,061	0,061	0,061	0,061
H	max.	0,870	0,870	0,870	0,870
	min.	0,865	0,865	0,865	0,865
J	min.	0,813	0,813	0,813	0,813
K	max.	0,156	0,156	0,156	0,156
	min.	0,125	0,125	0,125	0,125
L	mIn.	0°	0°	0°	0°

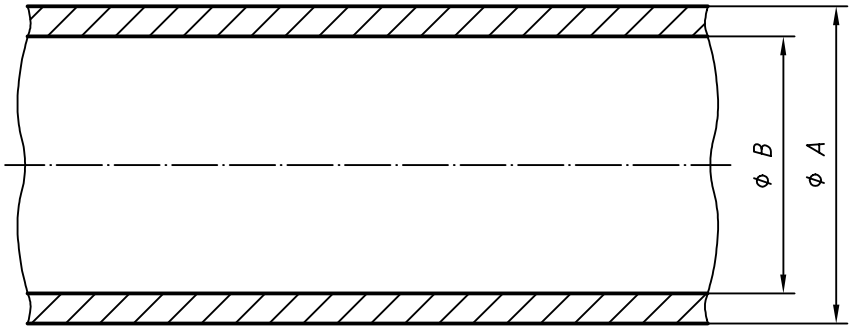


Figure 8 — Drill rod (smooth pipe)

Table 9 — Drill rod (smooth pipe) (see Figure 8)

Dimension		WLA	WLB	WLN	WLH
A	max.	1,756	2,195	2,758	3,510
	min.	1,750	2,188	2,750	3,500
B	max.	1,381	1,819	2,375	3,071
	min.	1,375	1,812	2,367	3,062

NOTE Further details are given in annex A.

Annex A
(informative)

Principal dimensions of drill rod threads

Dimensions	WLA	WLB	WLN	WLH
Thread tapering	1:28,64	1:28,64	1:28,64	2:28,64
Angle of thread arrival	1°	1°	1°	1°
Angle of thread profil	29°	29°	29°	29°
Threads per inch	4	3	3	3
Maximum outside diameter of box thread in stop batt axis	1,627	2,052	2,615	3,333
Maximum outside diameter of box thread in stop shoulder axis	1,567	1,992	2,555	3,273
Mean spire depth of box thread	0,028	0,031	0,031	0,031
Width at root of box thread	0,118	0,160	0,160	0,160
Mean length of box thread from stop batt to internal angle of stop shoulder	1,646	1,768	1,768	1,772
Minimum length for full depth of box thread	1,563	1,705	1,705	1,705
Minimum inside diameter of pin thread in stop batt axis	1,503	1,923	2,485	3,204
Minimum inside diameter of pin thread in shoulder axis	1,567	1,987	2,549	3,268
Mean spire depth of pin thread	0,029	0,032	0,032	0,032
Width at root of pin thread	0,118	0,160	0,160	0,160
Mean length of pin thread from stop batt to external angle of stop shoulder	1,626	1,748	1,748	1,748
Minimum length for full depth of pin thread	1,563	1,720	1,720	1,720
Angles of bevel for thread stop battes and stop shoulders	15°	15°	15°	15°

NOTE Many dimensions are approximate.

ICS 73.100.30

Price based on 12 pages