INTERNATIONAL STANDARD

ISO 3551-2

First edition
1992-07-01

Rotary core diamond drilling equipment — System A —

Part 2: Inch units

Matériel de forage rotatif au diamant avec carottage — Système A —
Partie 2: Unités en inches

Reference number
ISO 3551-2 : 1992 (E)

Contents

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
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.

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 3551-2 was prepared by Technical Committee ISO/TC 82, *Mining*, Sub-Committee SC 6, *Diamond core drilling equipment.*

ISO 3551 consists of the following parts, under the general title *Rotary core diamond drilling equipment — System A*:

— *Part 1: Metric units*

— *Part 2: Inch units*

Introduction

This part of ISO 3551 is published in parallel with ISO 3552-2 : 1992, *Rotary core diamond drilling equipment — System B — Part 2: Inch units*. The two International Standards cover rotary core diamond drilling equipment.

The two systems are referred to as System A and System B but this is not of any significance since the two systems are not intended as replacements for each other. The system to be adopted by the user will depend on his drilling requirements. The two sets of equipment are not interchangeable. System A is characterized by a series of hole sizes oriented to standard pipe sizes, with relatively wide "nesting", relatively greater reduction in hole diameters as the depth of hole increases, and employing relatively heavy casings between hole sizes. System B is characterized by a series of hole sizes specifically designed to "nest" closely, permitting relatively small reductions in hole diameters as the depth of the hole increases, and employing relatively thin casings between hole sizes. It should not be assumed that, for comparable hole sizes, the physical properties of similar elements of the two systems are equal.

NOTE — Another system (System C) is described in ISO 8866 : 1991, *Rotary core diamond drilling equipment — System C*. It is characterized by a series of nesting holes providing small clearances between the hole wall and the equipment, making it possible to use thin-walled casing tubes. System C is considered to be a separate system to be applied in parallel with systems A and B; it is not interchangeable with these systems.

System A was originally drawn up and standardized in inches, and the conversion was subsequently made into metric units; therefore, in the event of a dispute, the values expressed in this part of ISO 3551 shall be taken as the authentic values.

Rotary core diamond drilling equipment — System A —

Part 2: Inch units

1 Scope

This part of ISO 3551 establishes the nomenclature and lays down the leading dimensions to ensure interchangeability within the limits of System A of the following equipment:

a) drill rods and couplings;

b) casings, casing couplings, casing bits, casing shoes, drive shoes and casing reaming shells;

c) core barrels, core bits, core lifters and reaming shells.

It specifies the characteristics of a range of equipment for drilling holes having diameters from 1.18 in to 7.88 in and yielding cores having diameters from 0.73 in to 6.5 in.

NOTE — The title of this part of ISO 3551 specifies diamond core drilling, but it is also possible to use other cutting materials.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3551. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3551 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 263 : 1973, *ISO inch screw threads — General plan and selection for screws, bolts and nuts — Diameter range* 0.06 *to* 6 in.

ISO 5864 : 1978, *ISO inch screw threads — Allowances and tolerances.*

BS 1580 : 1962, *Specification for Unified screw threads — Parts 1 and 2: Diameters* 1/4 in *and larger.*

API 7, *Rotary shouldered connection, internal flush type (IF).*

3 Designation

Items manufactured in accordance with this part of ISO 3551 shall be designated by its number followed by the symbols as listed in table 1.

4 Materials

Materials used in the manufacture of the equipment specified in this part of ISO 3551 shall have the mechanical properties specified in table 2, though for special purposes other materials may be used by agreement between manufacturer and purchaser.

The method by which the mechanical properties of tubes are obtained is left to the manufacturer.

5 Dimensions and tolerances

5.1 Dimensions

All dimensions and tolerances shall be in accordance with tables 4 to 57. All dimensions given in this part of ISO 3551, unless otherwise stated, are in inches (see Introduction).

NOTES

1 In System A, maximum and minimum values are included for all dimensions.

2 All these items have a right-hand thread. Where a left-hand thread is necessary, it is stipulated for each individual case in the footnotes to the figure or to the corresponding table.

3 The radius (or chamfer) of the thread crest and the radius in thread root corners are left to the manufacturers (determined by national standards of manufacturers' countries).

5.2 Conformity

When drilling in conformity with American Diamond Core Drill Manufacturers Association (DCDMA) and Canadian Diamond Drilling Association (CDDA) standards, the lengths of rods and casings shall be 120 in, 60 in or 30 in, but in those industries where drilling depths are measured in metres, the rod and casing lengths may be 3 m, 1,5 m or 0,75 m.

5.3 Eccentricity

The eccentricity is defined as the distance between the centres of the outside and inside diameters and shall not exceed 10 % of the nominal wall thickness Q. The eccentricity is calculated according to the formula

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

where Q_{max} and Q_{min} are values of the wall thickness measured in the same 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 1 in 1 200.

Table 1 — Identification symbols

Drill rods (see tables 4, 6, 7 and 8)	RW	EW	AW	BW	NW	HW	—	—	—	—
Casing — flush coupled (see tables 4, 9 and 15 to 19)	RX	EX	AX	BX	NX	HX	PX	SX	UX	ZX
Casing — flush jointed (see tables 4 and 9 to 14)	RW	EW	AW	BW	NW	HW	PW	SW	UW	ZW
"WF" design, face discharge core barrel (see figure 6)	—	—	—	—	—	HWF	PWF	SWF	UWF	ZWF
"WG" design, internal discharge core barrel (see figures 7 and 8)	—	EWG	AWG	BWG	NWG	HWG	—	—	—	—
"WM" design, internal discharge core barrel*) (see figure 9)	—	EWM	AWM	BWM	NWM	—	—	—	—	—
"WT" design, thin wall, internal discharge core barrel (see figures 10, 11 and 12)	RWT	EWT	AWT	BWT	NWT	HWT	—	—	—	—

*) These may be used with face discharge bits.

Table 2 — Mechanical properties

Component	Tensile strength, R_m, min. lbf/in²	Yield stress, R_e, min. lbf/in²	Percent elongation after fracture $A_{2\,in}$, min. %
Parallel wall rods	90 000	76 000	15
Upset or forged end of rod	72 000	45 000	18
Casing and casing coupling sizes R to H	90 000	76 000	15
Casing and casing coupling sizes P to Z	72 000	45 000	18
Drill-rod coupling and adaptors	101 500	72 000	15
All other components	Not specified		

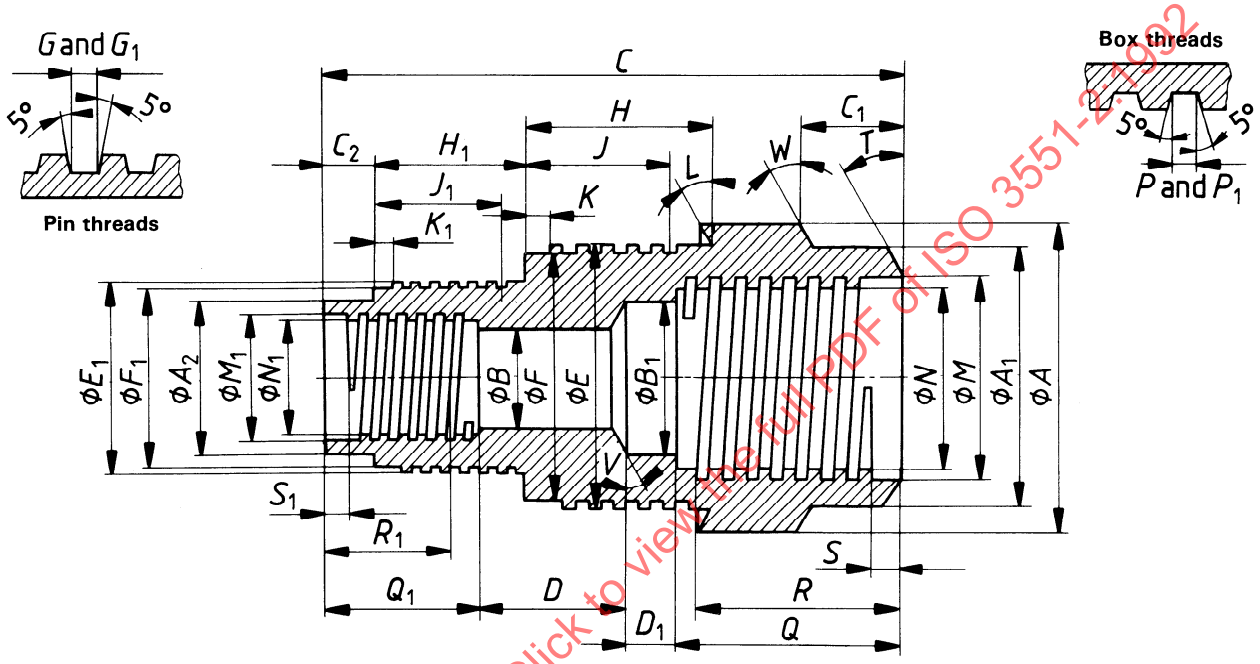


Figure 1 — System of dimensional identification letters

Table 3 — 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 outside diameter 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 threads — 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 inside diameter machined for internal threading
R, R_1, etc.	Minimum length for full depth of box threads
S, S_1, etc.	Length of counterbore at the starting-point of box threads
T, T_1, etc.	Angle of bevel for box 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 diameter
Y	Diamond set dimensions — internal diameter

NOTE — The following common abbreviations are sometimes used in tables in the English version for the sake of simplicity:

O.D. = outside diameter

I.D. = inside diameter.

Table 4 — Nomenclature and basic dimensions for drill rods and casings and their related diamond set items

Drill rod	Rod tube	Rod coupling	Casing flush coupling	Casing tube	Casing coupling	Casing flush jointed	Casing		Casing reaming shell	Casing bit		Casing shoe	
	O.D.	I.D.		O.D.	I.D.		O.D.	I.D.	Set O.D.	Set O.D.	Set I.D.	Set O.D.	Set I.D.
RW	1.098 1.093	0.416 0.401	**RX**	1.442 1.437	1.20 1.19	**RW**	1.442 1.437	1.20 1.19	not required	1.49 1.48	1.005 0.995	1.49 1.48	1.188 1.183
EW	1.380 1.375	0.447 0.432	**EX**	1.822 1.812	1.51 1.50	**EW**	1.822 1.812	1.51 1.50	1.895 1.885	1.88 1.87	1.41 1.40	1.88 1.87	1.497 1.492
AW	1.728 1.718	0.635 0.620	**AX**	2.26 2.25	1.916 1.906	**AW**	2.26 2.25	1.916 1.906	2.365 2.355	2.35 2.34	1.785 1.775	2.35 2.34	1.902 1.897
BW	2.135 2.125	0.760 0.745	**BX**	2.885 2.875	2.385 2.375	**BW**	2.885 2.875	2.385 2.375	2.985 2.975	2.97 2.96	2.22 2.21	2.97 2.96	2.372 2.367
NW	2.635 2.625	1.385 1.370	**NX**	3.515 3.500	3.015 3.000	**NW**	3.515 3.500	3.015 3.000	3.635 3.625	3.62 3.61	2.845 2.835	3.62 3.61	2.997 2.987
HW	3.515 3.500	2.390 2.375	**HX**	4.515 4.500	3.952 3.937	**HW**	4.515 4.500	4.000 3.985	not required	4.632 4.617	3.782 3.772	4.632 4.617	3.93 3.92
			PX	5.541 5.459	5.015 4.865	**PW**	5.541 5.459	5.015 4.865	not required	5.66 5.64	4.640 4.625	5.66 5.64	4.860 4.845
			SX	6.675 6.575	6.002 5.815	**SW**	6.675 6.575	6.124 5.953	not required	6.80 6.78	5.640 5.625	6.80 6.78	5.785 5.770
			UX	7.682 7.568	7.055 6.937	**UW**	7.682 7.568	7.108 6.921	not required	7.815 7.785	6.765 6.745	7.815 7.785	6.915 6.895
			ZX	8.69 8.56	8.108 7.937	**ZW**	8.69 8.56	8.207 7.992	not required	8.825 8.795	7.765 7.745	8.825 8.795	7.915 7.895

Table 5 — Nomenclature and basic dimensions for core barrels and their related diamond set items

Core barrel designs				Coring bits		Reaming shells	Kerf width	Kerf area	Core area	Hole area	Core-to-hole ratio	Nominal core size[1]	Nominal hole size[1]
WF	WG	WM	WT	Set I.D.	Set O.D.	Set O.D.	in	in^2	in^2	in^2	%		
			RWT	0.74 0.73	1.165 1.155	1.18 1.17	0.22	0.658	0.424	1.083	39.1	0.73	1.18
	EWG	EWM		0.85 0.84	1.475 1.465	1.49 1.48	0.32	1.17	0.561	1.732	32.4	0.84	1.5
			EWT	0.91 0.90	1.475 1.465	1.49 1.48	0.29	1.089	0.643	1.732	37.1	0.9	1.5
	AWG	AWM		1.19 1.18	1.88 1.87	1.895 1.885	0.352	1.703	1.103	2.805	39.3	1.18	1.9
			AWT	1.286 1.276	1.88 1.87	1.895 1.885	0.304	1.517	1.289	2.805	45.9	1.27	1.9
	BWG	BWM		1.66 1.65	2.35 2.34	2.365 2.355	0.352	2.222	2.151	4.374	49.1	1.65	2.37
			BWT	1.755 1.745	2.35 2.34	2.365 2.355	0.305	1.968	2.405	4.374	55	1.75	2.37
	NWG	NWM		2.16 2.15	2.97 2.96	2.985 2.975	0.412	3.326	3.647	6.973	52.2	2.15	3
			NWT	2.318 2.308	2.97 2.96	2.985 2.975	0.333	2.771	4.202	6.973	60	2.3	3
HWF	HWG			3.005 2.995	3.897 3.882	3.912 3.902	0.453	4.919	7.069	11.987	59	3	3.92
			HWT	3.192 3.182	3.897 3.882	3.912 3.902	0.36	4.011	7.976	11.987	66.5	3.18	3.92
PWF				3.635 3.620	4.735 4.715	4.755 4.740	0.56	7.367	10.335	17.702	58.4	3.62	4.75
SWF				4.447 4.432	5.735 5.715	5.755 5.740	0.654	10.465	15.478	25.945	59.7	4.43	5.75
UWF				5.515 5.495	6.855 6.825	6.88 6.86	0.682	13.266	23.801	37.068	64.2	5.5	6.88
ZWF				6.515 6.495	7.855 7.825	7.88 7.86	0.682	15.411	33.233	48.645	68.3	6.5	7.88

1) Nominal core and hole sizes are rounded inch units and are not directly convertible into the metric values.

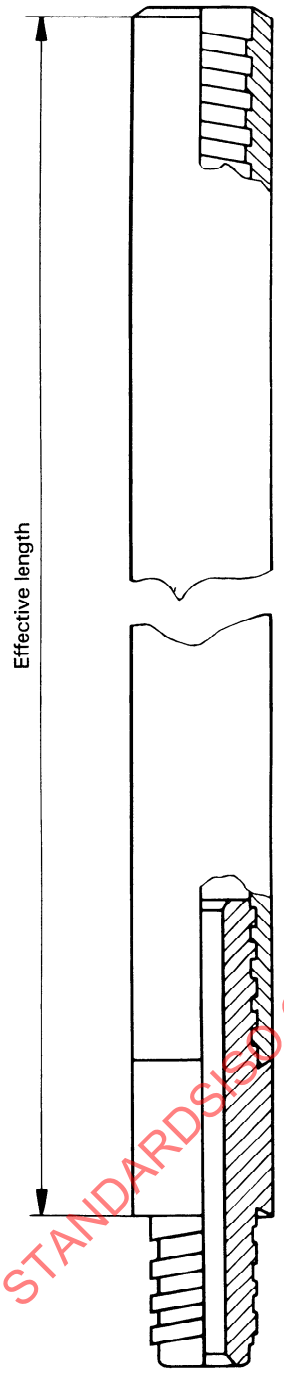


Figure 2 — Drill rod and coupling

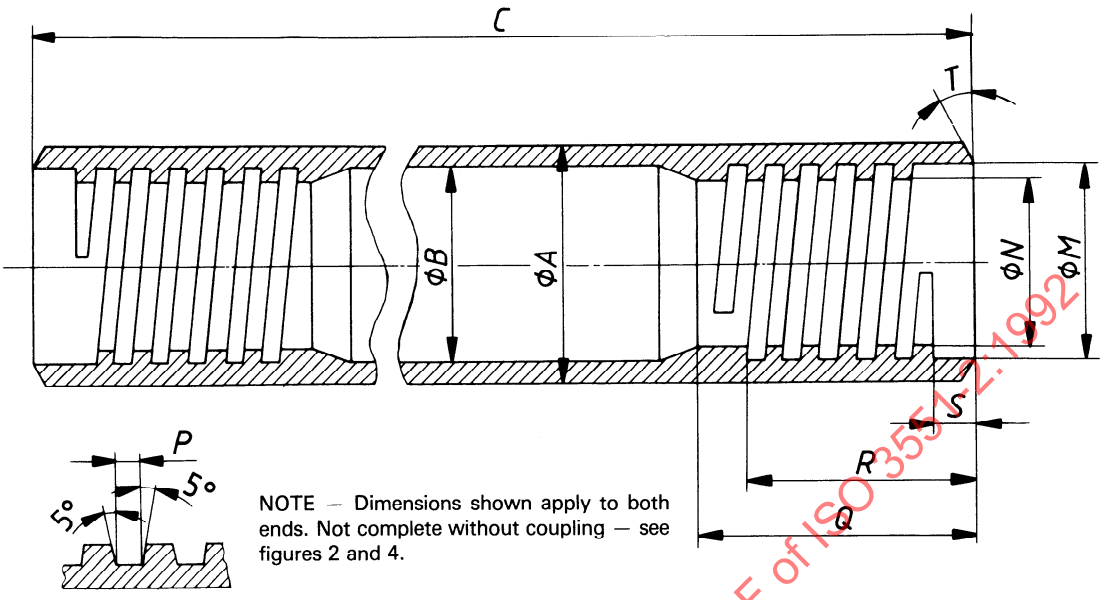
Table 6 — Drill rod and coupling — Main dimensions

Identification symbol	Rod O.D.	Coupling I.D.	Effective lengths (see figure 2)
RW	1.093	0.406	120, 60 or 30
EW	1.375	0.437	
AW	1.718	0.625	
BW	2.125	0.75	
NW	2.625	1.375	
HW	3.5	2.375	

NOTES

1 Thread may be left-hand if required.

2 For detailed dimensions, see tables 7 and 8.



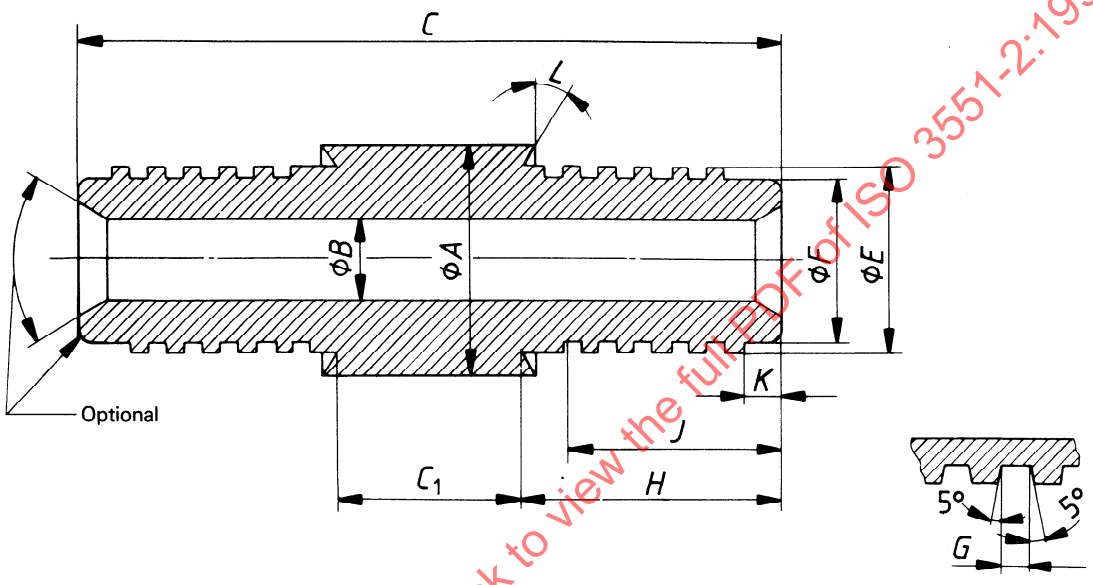
NOTE — Dimensions shown apply to both ends. Not complete without coupling — see figures 2 and 4.

Figure 3 — "W" design drill rod — Drill rod tube (see table 7)

Table 7 — "W" design drill rod — Drill rod tube

Dimension		RW	EW	AW	BW	NW	HW
A	max.	1.098	1.380	1.728	2.135	2.635	3.515
	min.	1.093	1.375	1.718	2.125	2.625	3.500
B [1]	max.	0.719	1	1.344	1.75	2.25	3.062
C	max.	118.92	118.71	118.745	118.285	118.265	117.78
	min.	118.86	118.65	118.685	118.225	118.205	117.72
M	max.	0.853	1.068	1.380	1.690	2.224	3.034
	min.	0.851	1.066	1.378	1.688	2.222	3.032
N	max.	0.746	0.943	1.255	1.533	2.036	2.844
	min.	0.744	0.941	1.253	1.531	2.034	2.842
Thread pitch (Threads per inch)		0.25 (4)	0.333 (3)	0.333 (3)	0.333 (3)	0.333 (3)	0.333 (3)
P	max.	0.125	0.166	0.166	0.166	0.166	0.166
	min.	0.122	0.162	0.162	0.162	0.162	0.162
Q	min.	1.562	1.75	2.125	2.50	3	3.562
R	min.	1.437	1.562	1.875	2.25	2.75	3.25
S	max.	0.26	0.322	0.385	0.385	0.385	0.385
	min.	0.24	0.302	0.365	0.365	0.365	0.365
T		30°	30°	30°	30°	30°	30°

1) The dimension *B* is a maximum and can apply either to upset end rods or parallel wall rods for the RW size only. For all other sizes, this dimension refers to upset end rods only.



NOTE — Dimensions shown apply to both ends.

Figure 4 — "W" design drill rod — Drill-rod coupling (see table 8)

Table 8 — "W" design drill rod — Drill-rod coupling

Dimension		RW	EW	AW	BW	NW	HW
A	max.	1.098	1.380	1.728	2.135	2.635	3.515
	min.	1.090	1.372	1.714	2.121	2.620	3.495
B	max.	0.416	0.447	0.635	0.760	1.385	2.390
	min.	0.401	0.432	0.620	0.745	1.370	2.375
C	ref.	3.75	4.625	5.25	6.5	7.5	9
C_1	max.	1.12	1.33	1.295	1.755	1.775	2.26
	min.	1.10	1.31	1.275	1.735	1.755	2.24
E	max.	0.849	1.062	1.374	1.684	2.218	3.028
	min.	0.847	1.060	1.372	1.682	2.216	3.026
F	max.	0.742	0.937	1.249	1.527	2.030	2.838
	min.	0.737	0.932	1.244	1.522	2.025	2.833
Thread pitch (Threads per inch)		0.25 (4)	0.333 (3)	0.333 (3)	0.333 (3)	0.333 (3)	0.333 (3)
G	max.	0.125	0.166	0.166	0.166	0.166	0.166
	min.	0.122	0.162	0.162	0.162	0.162	0.162
H	max.	1.33	1.662	1.994	2.387	2.877	3.324
	min.	1.31	1.642	1.974	2.367	2.857	3.304
J	min.	1.125	1.437	1.75	2.125	2.625	3.125
K	max.	0.072	0.197	0.26	0.322	0.385	0.385
	min.	0.052	0.177	0.24	0.302	0.365	0.365
L		30°	30°	30°	30°	30°	30°

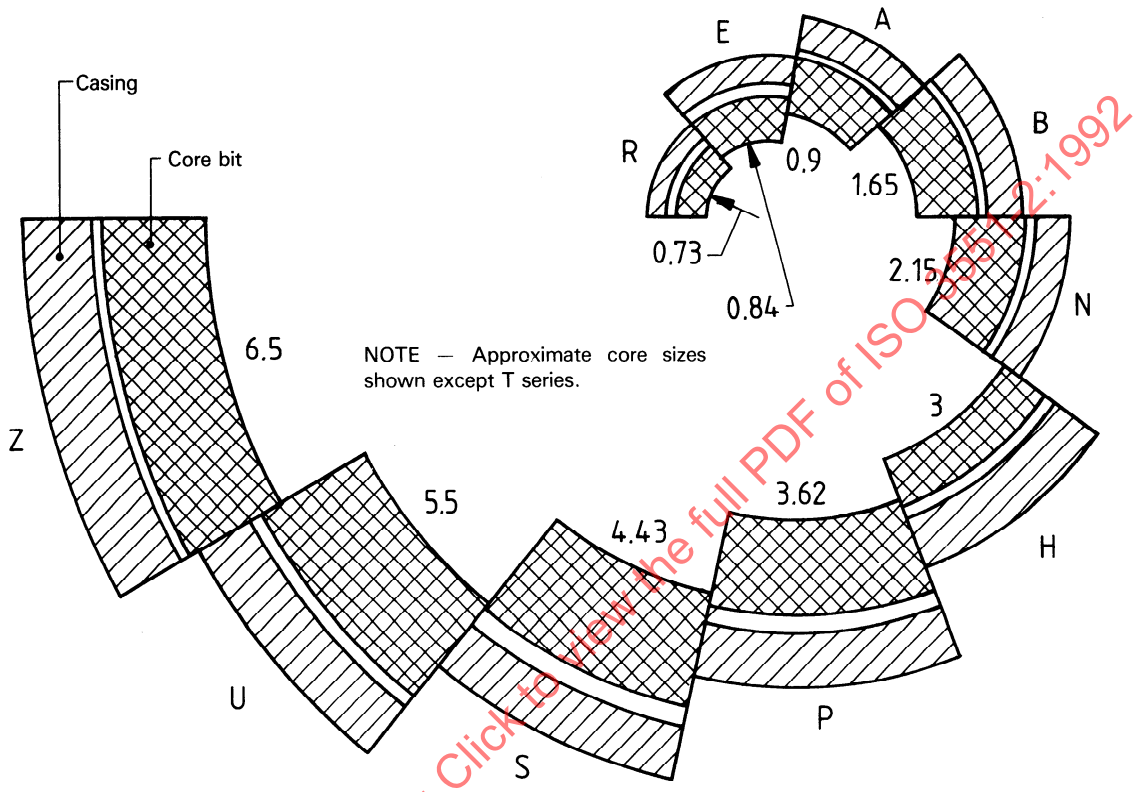


Figure 5 — General relation of casing to core bit

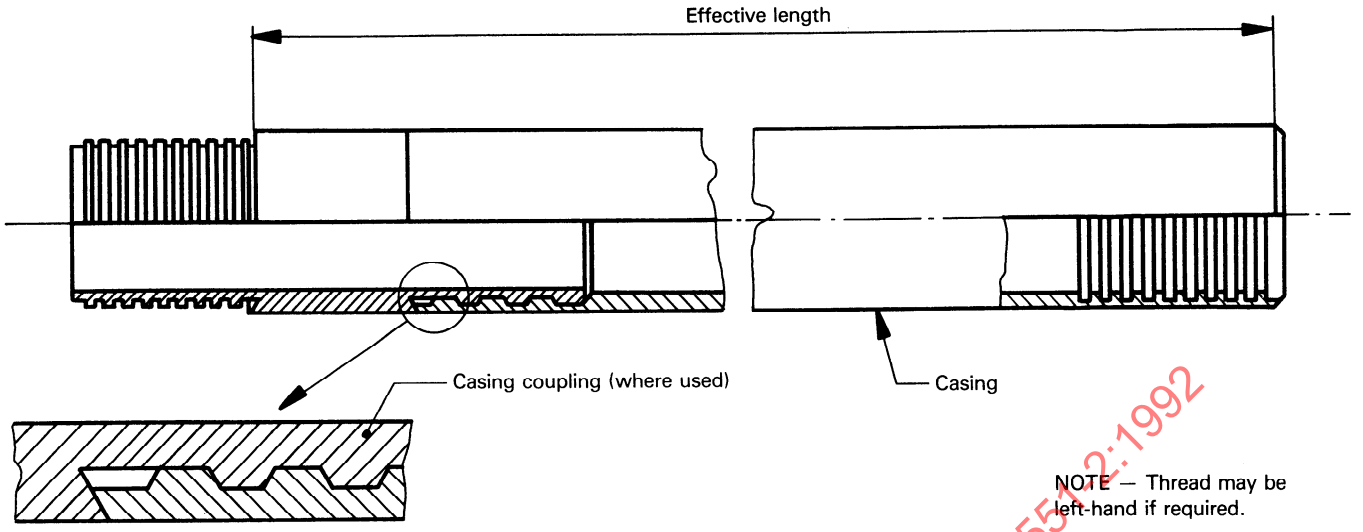


Figure 6 — Casing (see table 9)

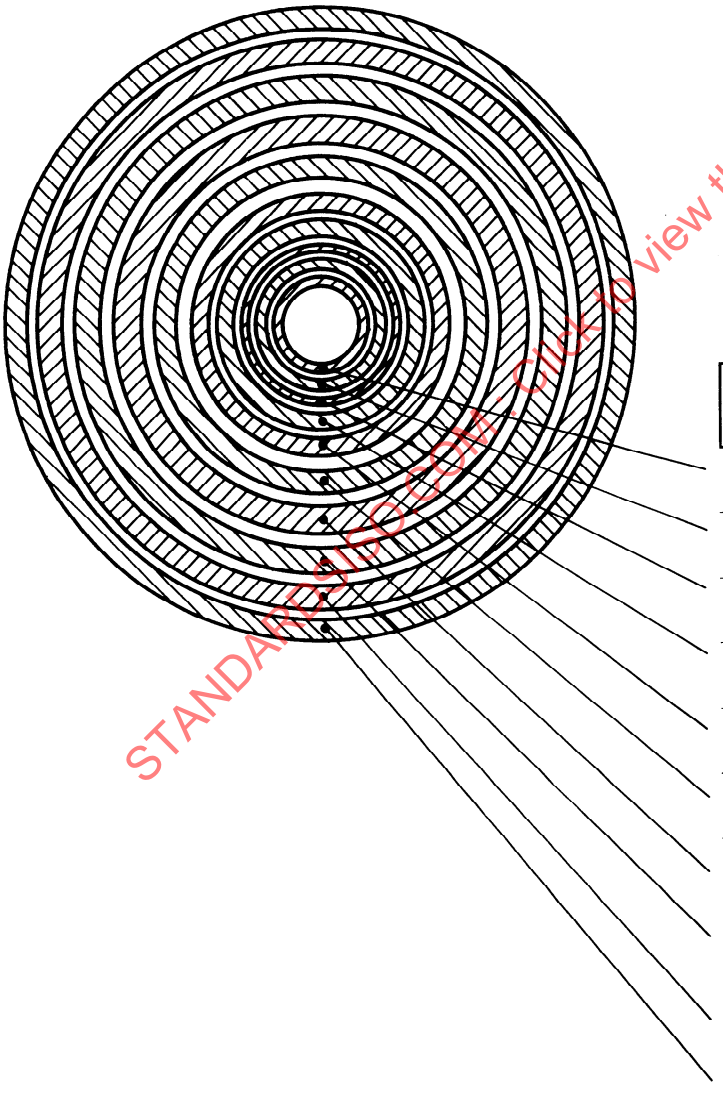
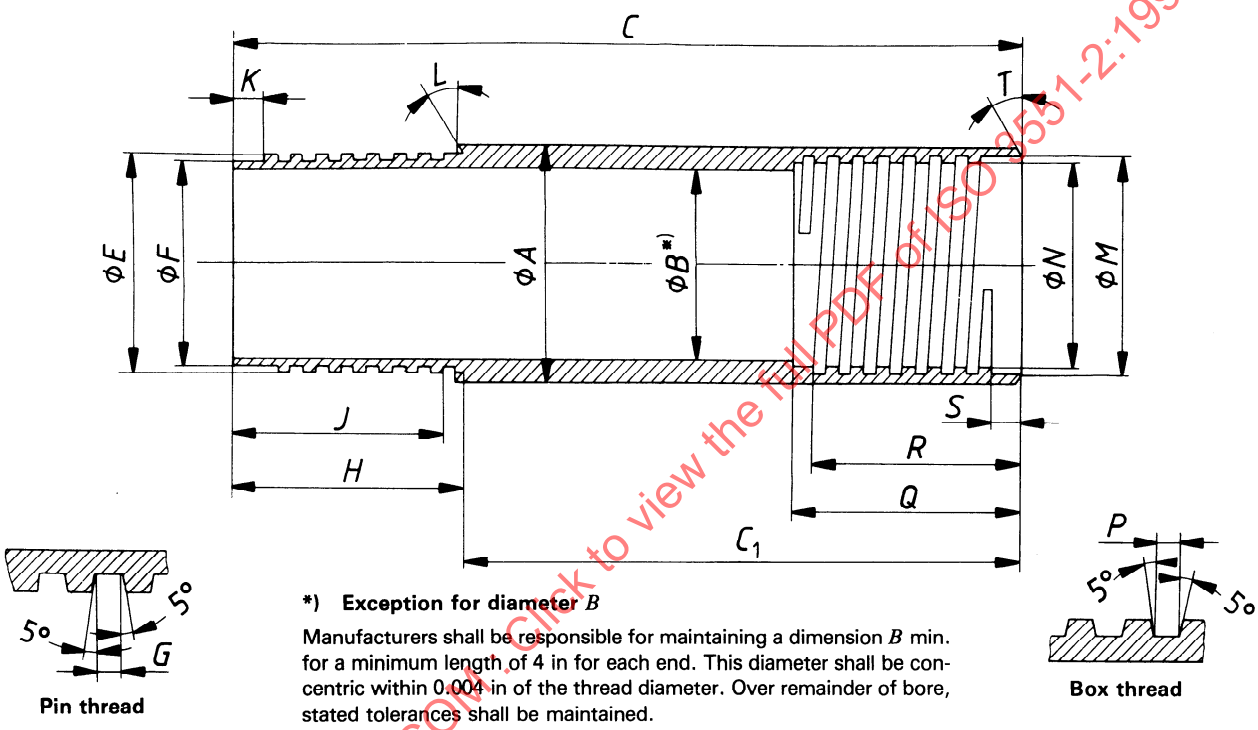


Table 9 — Casing and casing coupling (where used) — Main dimensions

Identification symbol	Outside diameter max.	Inside diameter min.	Effective lengths (see figure 6)
RX RW	1.442	1.19	120, 60 or 30
EX EW	1.822	1.5	
AX AW	2.26	1.906	
BX BW	2.885	2.375	
NX NW	3.515	3	
HX HW	4.515	3.937	
PX PW	5.541	4.865	
SX SW	6.675	5.815	
UX UW	7.682	6.937	
ZX ZW	8.69	7.937	

Figure 7 — Nesting of casing (see table 9)



*) **Exception for diameter** B

Manufacturers shall be responsible for maintaining a dimension B min. for a minimum length of 4 in for each end. This diameter shall be concentric within 0.004 in of the thread diameter. Over remainder of bore, stated tolerances shall be maintained.

Figure 8 — "W" design flush-jointed casing — Casing (see table 10)

Table 10 — "W" design flush-jointed casing — Casing

Dimension		RW	EW	AW	BW	NW	HW	PW	SW	UW	ZW
A	max.	1.442	1.822	2.26	2.885	3.515	4.515	5.541	6.675	7.682	8.69
	min.	1.437	1.812	2.25	2.875	3.500	4.500	5.459	6.575	7.568	8.56
B[1]	max.	1.20	1.51	1.916	2.385	3.015	4.000	5.015	6.124	7.108	8.207
	min.	1.19	1.50	1.906	2.375	3.000	3.985	4.865	5.953	6.921	7.992
C	max. (ref.)	121.792	122.042	122.292	122.542	122.792	123.042	123.292	123.542	123.792	124.042
	min. (ref.)	121.702	121.952	122.202	122.452	122.702	122.952	123.202	123.452	123.702	123.952
C_1	max.	120.047	120.047	120.047	120.047	120.047	120.047	120.047	120.047	120.047	120.047
	min.	119.952	119.952	119.952	119.952	119.952	119.952	119.952	119.952	119.952	119.952
E	max.	1.346	1.708	2.130	2.677	3.307	4.297	5.299	6.411	7.412	8.457
	min.	1.343	1.705	2.126	2.673	3.303	4.292	5.294	6.406	7.406	8.451
F	max.	1.284	1.617	2.039	2.586	3.216	4.207	5.179	6.291	7.261	8.306
	min.	1.282	1.615	2.036	2.583	3.213	4.203	5.175	6.287	7.256	8.301
Thread pitch (Threads per inch)		0.2 (5)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.333 (3)	0.333 (3)	0.5 (2)	0.5 (2)
G	max.	0.104	0.128	0.128	0.128	0.128	0.128	0.169	0.169	0.252	0.252
	min.	0.100	0.124	0.124	0.124	0.124	0.124	0.165	0.165	0.248	0.248
H	max.	1.750	2.000	2.250	2.500	2.750	3.000	3.250	3.500	3.750	4.000
	min.	1.745	1.995	2.245	2.495	2.745	2.995	3.245	3.495	3.745	3.995
J	min.	1.625	1.875	2.125	2.375	2.625	2.875	3.125	3.375	3.625	3.875
K	max.	0.26	0.30	0.30	0.30	0.30	0.30	0.36	0.36	0.44	0.44
	min.	0.24	0.28	0.28	0.28	0.28	0.28	0.34	0.34	0.42	0.42
L		15°	15°	15°	15°	15°	15°	15°	15°	15°	15°
M	max.	1.352	1.714	2.138	2.685	3.315	4.308	5.310	6.422	7.426	8.471
	min.	1.349	1.711	2.134	2.681	3.311	4.303	5.305	6.417	7.420	8.465
N	max.	1.288	1.621	2.045	2.592	3.222	4.215	5.187	6.299	7.271	8.316
	min.	1.286	1.619	2.042	2.589	3.219	4.211	5.183	6.295	7.266	8.311
Thread pitch (Threads per inch)		0.2 (5)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.333 (3)	0.333 (3)	0.5 (2)	0.5 (2)
P	max.	0.104	0.128	0.128	0.128	0.128	0.128	0.169	0.169	0.252	0.252
	min.	0.100	0.124	0.124	0.124	0.124	0.124	0.165	0.165	0.248	0.248
Q	max.	1.755	2.005	2.255	2.505	2.755	3.005	3.255	3.505	3.755	4.005
	min.	1.750	2.000	2.250	2.500	2.750	3.000	3.250	3.500	3.750	4.000
R	min.	1.625	1.875	2.125	2.375	2.625	2.875	3.125	3.375	3.625	3.875
S	max.	0.26	0.30	0.30	0.30	0.30	0.30	0.36	0.36	0.44	0.44
	min.	0.24	0.28	0.28	0.28	0.28	0.28	0.34	0.34	0.42	0.42
T		15°	15°	15°	15°	15°	15°	15°	15°	15°	15°

1) See note in figure 8.

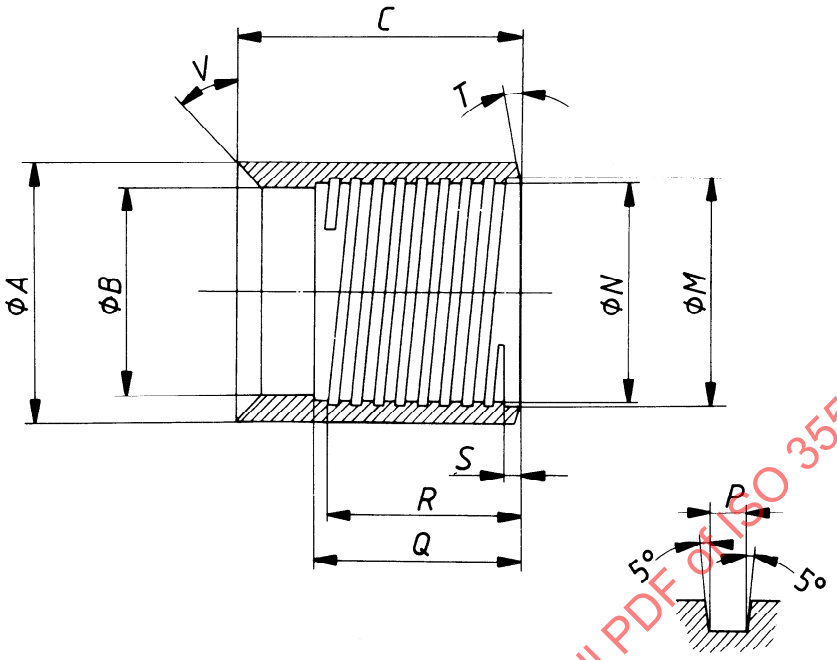


Figure 9 — "W" design flush-jointed casing — Casing drive shoe (see table 11)

Table 11 — "W" design flush-jointed casing — Casing drive shoe

Dimension		RW	EW	AW	BW	NW	HW	PW	SW	UW	ZW
A	max.	1.475	1.88	2.345	2.965	3.648	4.648	5.67	6.795	7.795	8.785
	min.	1.465	1.87	2.312	2.938	3.618	4.618	5.61	6.735	7.735	8.715
B	max.	1.190	1.500	1.905	2.375	3.00	3.985	4.865	5.953	6.921	7.992
	min.	1.185	1.495	1.900	2.370	2.99	3.970	4.845	5.923	6.891	7.962
C	min.	3.75	4	4.25	4.5	4.75	6.5	6.75	7	7.25	7.5
M	max.	1.352	1.714	2.138	2.685	3.315	4.308	5.310	6.422	7.426	8.471
	min.	1.349	1.711	2.134	2.681	3.311	4.303	5.305	6.417	7.420	8.465
N	max.	1.288	1.621	2.045	2.592	3.222	4.215	5.187	6.299	7.271	8.316
	min.	1.286	1.619	2.042	2.589	3.219	4.211	5.183	6.295	7.266	8.311
Thread pitch (Threads per inch)		0.2 (5)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.333 (3)	0.333 (3)	0.5 (2)	0.5 (2)
P	max.	0.104	0.128	0.128	0.128	0.128	0.128	0.169	0.169	0.252	0.252
	min.	0.100	0.124	0.124	0.124	0.124	0.124	0.165	0.165	0.248	0.248
Q	max.	1.755	2.005	2.255	2.505	2.755	3.005	3.255	3.505	3.755	4.005
	min.	1.750	2.000	2.250	2.500	2.750	3.000	3.250	3.500	3.750	4.000
R	min.	1.625	1.875	2.125	2.375	2.625	2.875	3.125	3.375	3.625	3.875
S	max.	0.26	0.30	0.30	0.30	0.30	0.32	0.36	0.36	0.44	0.44
	min.	0.24	0.28	0.28	0.28	0.28	0.30	0.34	0.34	0.42	0.42
T		15°	15°	15°	15°	15°	15°	15°	15°	15°	15°
V		Optional									

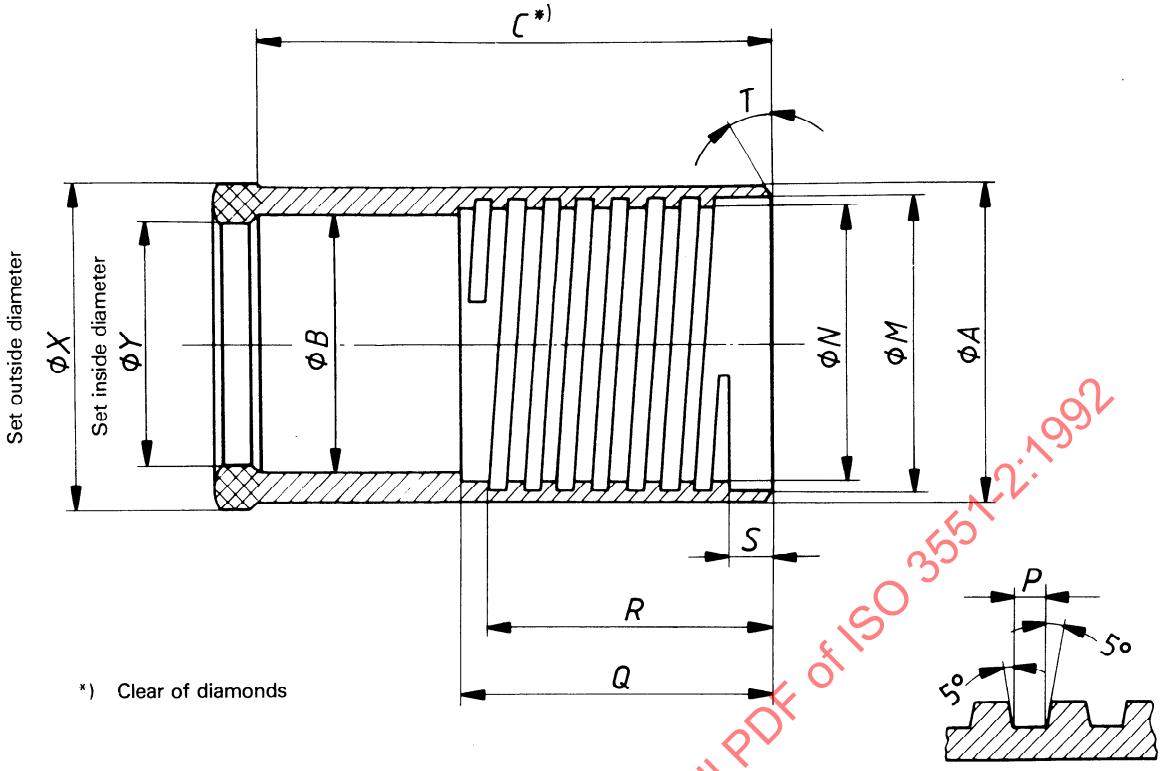


Figure 10 — "W" design flush-jointed casing — Casing shoe (see table 12)

Table 12 — "W" design flush-jointed casing — Casing shoe

Dimension		RW	EW	AW	BW	NW	HW	PW	SW	UW	ZW
A	max.	1.456	1.832	2.297	2.912	3.562	4.564	5.564	6.689	7.689	8.689
	min.	1.452	1.828	2.293	2.908	3.558	4.560	5.558	6.683	7.680	8.680
B	max.	1.21	1.52	1.926	2.395	3.03	3.97	4.885	5.837	6.977	7.977
	min.	1.19	1.50	1.906	2.375	3.00	3.94	4.865	5.807	6.937	7.937
C	min.	3.25	3.5	3.75	4.25	4.5	5	5.25	5.75	6	6.25
M	max.	1.352	1.714	2.138	2.685	3.315	4.308	5.310	6.422	7.426	8.471
	min.	1.349	1.711	2.134	2.681	3.311	4.303	5.305	6.417	7.420	8.465
N	max.	1.288	1.621	2.045	2.592	3.222	4.215	5.187	6.299	7.271	8.316
	min.	1.286	1.619	2.042	2.589	3.219	4.211	5.183	6.295	7.266	8.311
Thread pitch (Threads per inch)		0.2 (5)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.333 (3)	0.333 (3)	0.5 (2)	0.5 (2)
P	max.	1.104	0.128	0.128	0.128	0.128	0.128	0.169	0.169	0.252	0.252
	min.	0.100	0.124	0.124	0.124	0.124	0.124	0.165	0.165	0.248	0.248
Q	max.	1.755	2.005	2.255	2.505	2.755	3.005	3.255	3.505	3.755	4.005
	min.	1.750	2.000	2.250	2.500	2.750	3.000	3.250	3.500	3.750	4.000
R	min.	1.625	1.875	2.125	2.375	2.625	2.875	3.125	3.375	3.625	3.875
S	max.	0.26	0.30	0.30	0.30	0.30	0.30	0.36	0.36	0.44	0.44
	min.	0.24	0.28	0.28	0.28	0.28	0.28	0.34	0.34	0.42	0.42
T		15°	15°	15°	15°	15°	15°	15°	15°	15°	15°
X	max.	1.49	1.88	2.35	2.97	3.62	4.632	5.66	6.80	7.815	8.825
	min.	1.48	1.87	2.34	2.96	3.61	4.617	5.64	6.78	7.785	8.795
Y	max.	1.188	1.497	1.902	2.372	2.997	3.93	4.860	5.785	6.915	7.915
	min.	1.183	1.492	1.897	2.367	2.987	3.92	4.845	5.770	6.895	7.895

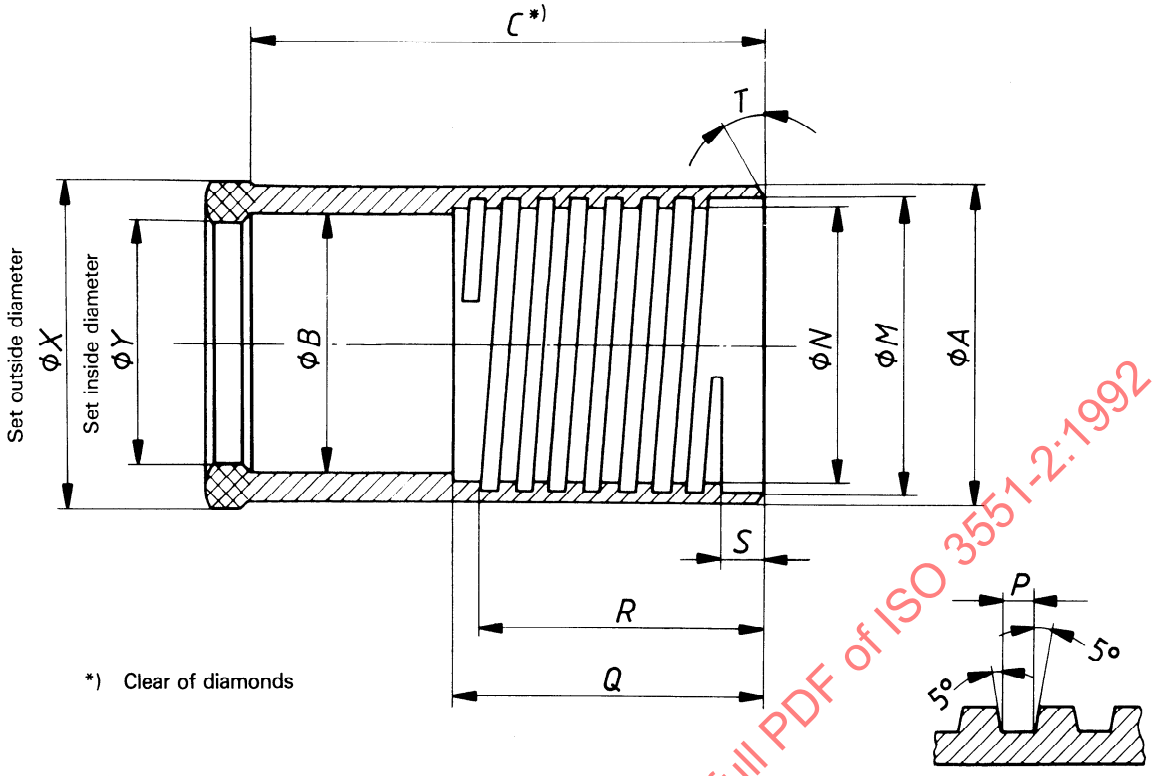


Figure 11 — "W" design flush-jointed casing — Casing bit (see table 13)

Table 13 — "W" design flush-jointed casing — Casing bit

Dimension		RW	EW	AW	BW	NW	HW	PW	SW	UW	ZW
A	max.	1.456	1.832	2.297	2.912	3.562	4.564	5.564	6.689	7.689	8.689
	min.	1.452	1.828	2.293	2.908	3.558	4.560	5.558	6.683	7.680	8.680
B	max.	1.045	1.465	1.84	2.278	2.903	3.872	4.75	5.75	6.895	7.895
	min.	1.025	1.435	1.81	2.248	2.873	3.832	4.70	5.70	6.835	7.835
C	min.	3.25	3.5	3.75	4.25	4.5	5	5.25	5.75	6	6.25
M	max.	1.352	1.714	2.138	2.685	3.315	4.308	5.310	6.422	7.426	8.471
	min.	1.349	1.711	2.134	2.681	3.311	4.303	5.305	6.417	7.420	8.465
N	max.	1.288	1.621	2.045	2.592	3.222	4.215	5.187	6.299	7.271	8.316
	min.	1.286	1.619	2.042	2.589	3.219	4.211	5.183	6.295	7.266	8.311
Thread pitch (Threads per inch)		0.2 (5)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)	0.333 (3)	0.333 (3)	0.5 (2)	0.5 (2)
P	max.	0.104	0.128	0.128	0.128	0.128	0.128	0.169	0.169	0.252	0.252
	min.	0.100	0.124	0.124	0.124	0.124	0.124	0.165	0.165	0.248	0.248
Q	max.	1.755	2.005	2.255	2.505	2.755	3.005	3.255	3.505	3.755	4.005
	min.	1.750	2.000	2.250	2.500	2.750	3.000	3.250	3.500	3.750	4.000
R	min.	1.625	1.875	2.125	2.375	2.625	2.875	3.125	3.375	3.625	3.875
S	max.	0.26	0.30	0.30	0.30	0.30	0.30	0.36	0.36	0.44	0.44
	min.	0.24	0.28	0.28	0.28	0.28	0.28	0.34	0.34	0.42	0.42
T		15°	15°	15°	15°	15°	15°	15°	15°	15°	15°
X	max.	1.49	1.88	2.35	2.97	3.62	4.632	5.66	6.80	7.815	8.825
	min.	1.48	1.87	2.34	2.96	3.61	4.617	5.64	6.78	7.785	8.795
Y	max.	1.005	1.41	1.785	2.22	2.845	3.782	4.640	5.640	6.765	7.765
	min.	0.995	1.40	1.775	2.21	2.835	3.772	4.625	5.625	6.745	7.745

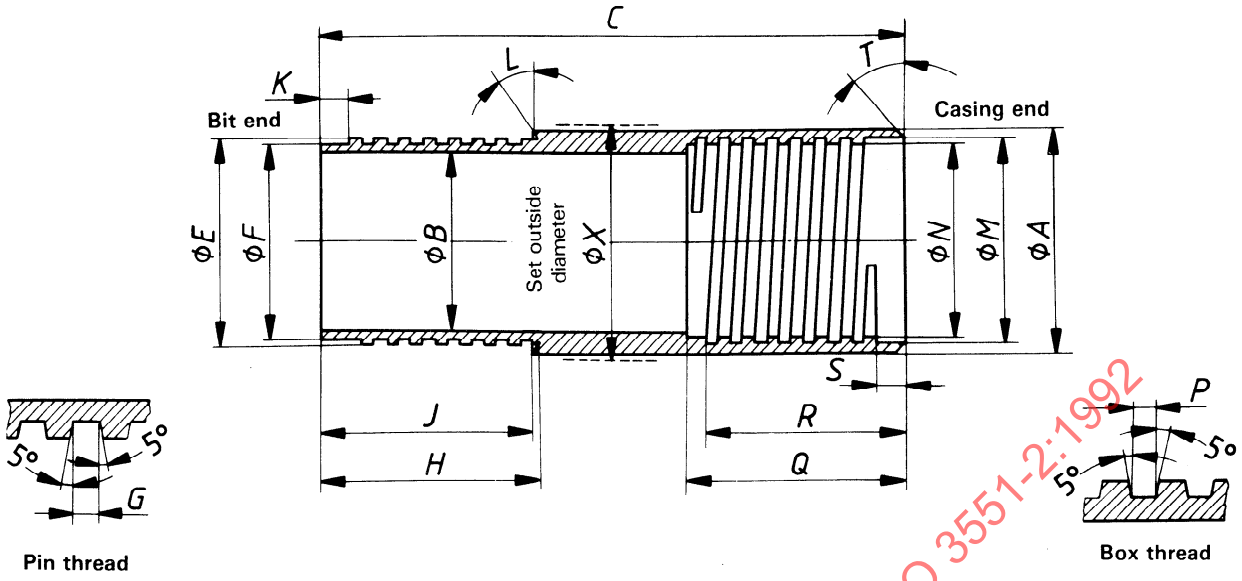
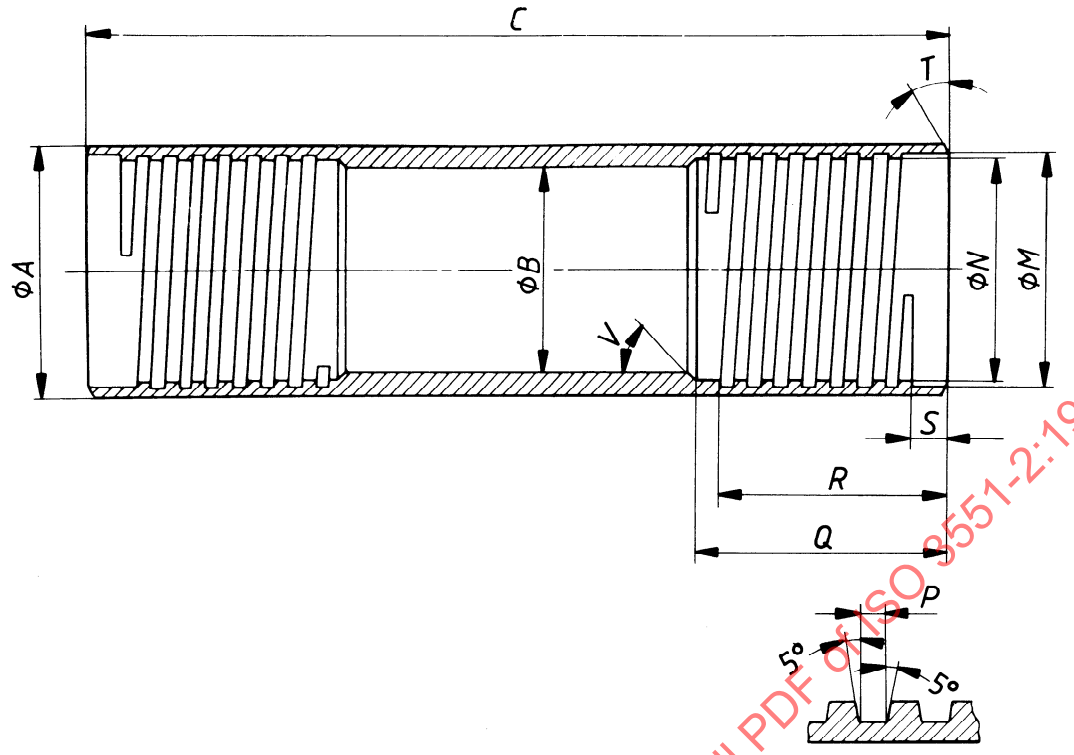


Figure 12 — "W" design flush-jointed casing — Casing reaming shell (see table 14)

Table 14 — "W" design flush-jointed casing — Casing reaming shell

Dimension		EW	AW	BW	NW
A	max.	1.832	2.297	2.912	3.562
	min.	1.828	2.293	2.908	3.558
B	max.	1.51	1.916	2.385	3.015
	min.	1.50	1.906	2.375	3.000
C	min.	5.5	6	6.75	7.25
E	max.	1.708	2.130	2.677	3.307
	min.	1.706	2.126	2.673	3.303
F	max.	1.617	2.039	2.586	3.216
	min.	1.615	2.036	2.583	3.213
Thread pitch (Threads per inch)		0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)
G	max.	0.128	0.128	0.128	0.128
	min.	0.124	0.124	0.124	0.124
H	max.	2.000	2.250	2.500	2.750
	min.	1.995	2.245	2.495	2.745
J	min.	1.875	2.125	2.375	2.625
K	max.	0.30	0.30	0.30	0.30
	min.	0.28	0.28	0.28	0.28
L		15°	15°	15°	15°
M	max.	1.714	2.138	2.685	3.315
	min.	1.711	2.134	2.681	3.311
N	max.	1.621	2.045	2.592	3.222
	min.	1.619	2.042	2.589	3.219
Thread pitch (Threads per inch)		0.25 (4)	0.25 (4)	0.25 (4)	0.25 (4)
P	max.	0.128	0.128	0.128	0.128
	min.	0.124	0.124	0.124	0.124
Q	max.	2.005	2.255	2.505	2.755
	min.	2.000	2.250	2.500	2.750
R	min.	1.875	2.125	2.375	2.625
S	max.	0.30	0.30	0.30	0.30
	min.	0.28	0.28	0.28	0.28
T		15°	15°	15°	15°
X	max.	1.895	2.365	2.985	3.635
	min.	1.885	2.355	2.975	3.625



NOTE — Dimensions shown apply to both ends.

Figure 13 — "X" design flush-coupled casing — Casing tube (see table 15)

Table 15 — "X" design flush-coupled casing — Casing tube

Dimension		RX	EX	AX	BX	NX	HX	PX	SX	UX	ZX
A	max.	1.442	1.822	2.26	2.885	3.515	4.515	5.541	6.675	7.682	8.69
	min.	1.437	1.812	2.25	2.875	3.500	4.500	5.459	6.575	7.568	8.56
B	max.	1.20	1.625	2.00	2.562	3.187	4.125	5.138	6.252	7.244	8.228
	min.	1.19	1.615	1.99	2.552	3.172	4.110	4.933	5.953	6.921	7.992
C	max.	117.904	118.59	117.108	116.646	116.646	116.17	116.10	115.598	115.10	114.586
	min.	117.844	118.53	117.048	116.586	116.586	116.11	116.04	115.538	115.04	114.526
M	max.	1.351	1.721	2.128	2.690	3.315	4.271	5.262	6.379	7.392	8.376
	min.	1.349	1.719	2.126	2.688	3.313	4.267	5.257	6.372	7.385	8.369
N	max.	1.291	1.659	2.065	2.596	3.221	4.175	5.167	6.282	7.276	8.260
	min.	1.289	1.657	2.063	2.594	3.219	4.172	5.163	6.278	7.271	8.255
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)	0.2 (5)	0.2 (5)	0.25 (4)	0.25 (4)
P	max.	0.064	0.064	0.064	0.063	0.063	0.102	0.101	0.101	0.125	0.125
	min.	0.061	0.061	0.061	0.060	0.060	0.099	0.097	0.097	0.121	0.121
Q	min.	1	2	2.25	2.375	2.625	2.5	2.75	3	3.25	3.5
R	min.	0.937	1.875	2.125	2.25	2.5	2.25	2.625	2.875	3.125	3.375
S	max.	0.135	0.26	0.26	0.26	0.26	0.32	0.385	0.385	0.385	0.385
	min.	0.116	0.24	0.24	0.24	0.24	0.30	0.365	0.365	0.365	0.365
T		0°	30°	30°	30°	30°	30°	15°	15°	15°	15°
V		—	—	does not apply		—	—	30°	30°	30°	30°

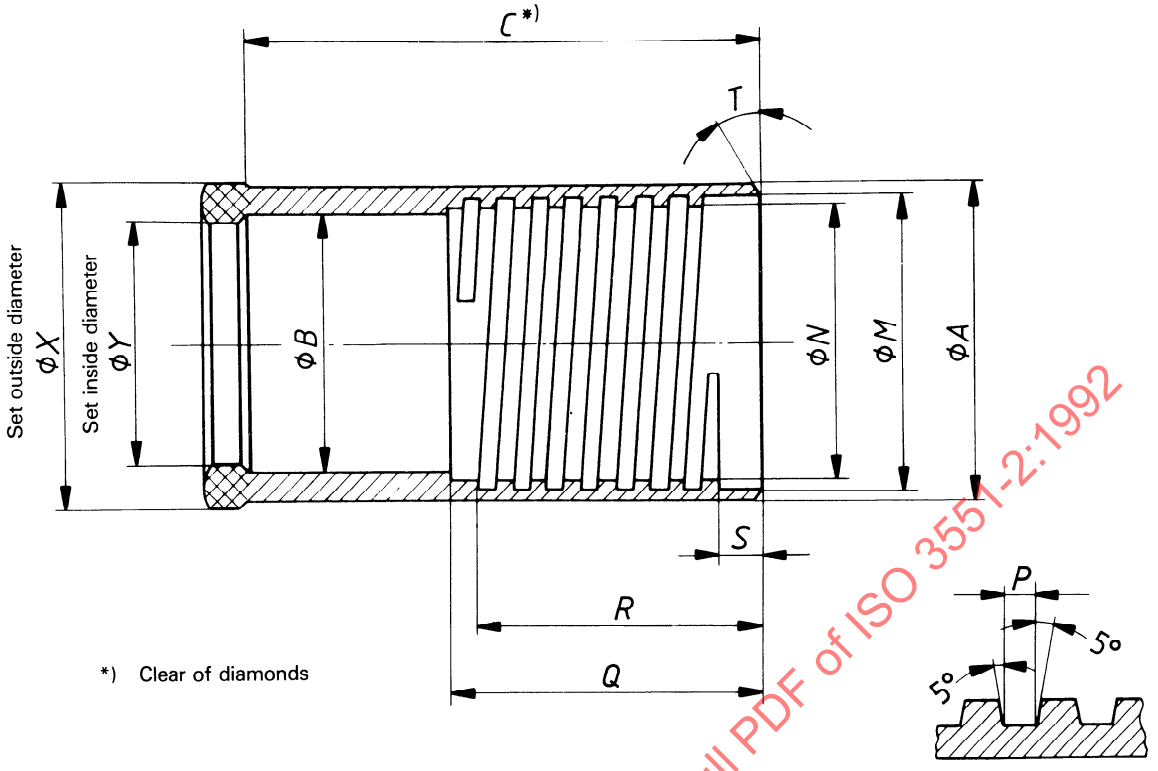


Figure 14 — "X" design flush-coupled casing — Casing shoe (see table 16)

Table 16 — "X" design flush-coupled casing — Casing shoe

Dimension		RX	EX	AX	BX	NX	HX	PX	SX	UX	ZX
A	max.	1.456	1.832	2.297	2.912	3.562	4.564	5.564	6.689	7.689	8.689
	min.	1.452	1.828	2.293	2.908	3.558	4.560	5.558	6.683	7.680	8.680
B	max.	1.21	1.52	1.926	2.395	3.03	3.97	4.885	5.837	6.977	7.977
	min.	1.19	1.50	1.906	2.375	3.00	3.94	4.865	5.807	6.937	7.937
C	min.	2.5	3.5	3.75	4.125	4.375	4.5	5.25	5.75	6	6.25
M	max.	1.351	1.721	2.128	2.690	3.315	4.271	5.262	6.379	7.392	8.376
	min.	1.349	1.719	2.126	2.688	3.313	4.267	5.257	6.372	7.385	8.369
N	max.	1.291	1.659	2.065	2.596	3.221	4.175	5.167	6.282	7.276	8.260
	min.	1.289	1.657	2.063	2.594	3.219	4.172	5.163	6.278	7.271	8.255
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)	0.2 (5)	0.2 (5)	0.25 (4)	0.25 (4)
P	max.	0.064	0.064	0.064	0.063	0.063	0.102	0.101	0.101	0.125	0.125
	min.	0.061	0.061	0.061	0.060	0.060	0.099	0.097	0.097	0.121	0.121
Q	min.	1	2	2.25	2.375	2.625	2.5	2.75	3	3.25	3.5
R	min.	0.937	1.875	2.125	2.25	2.5	2.25	2.625	2.875	3.125	3.375
S	max.	0.135	0.26	0.26	0.26	0.26	0.32	0.385	0.385	0.385	0.385
	min.	0.116	0.24	0.24	0.24	0.24	0.30	0.365	0.365	0.365	0.365
T		0°	30°	30°	30°	30°	30°	15°	15°	15°	15°
X	max.	1.49	1.88	2.35	2.97	3.62	4.632	5.66	6.80	7.815	8.825
	min.	1.48	1.87	2.34	2.96	3.61	4.617	5.64	6.78	7.785	8.795
Y	max.	1.188	1.497	1.902	2.372	2.997	3.93	4.860	5.785	6.915	7.915
	min.	1.183	1.492	1.897	2.367	2.987	3.92	4.845	5.770	6.895	7.895

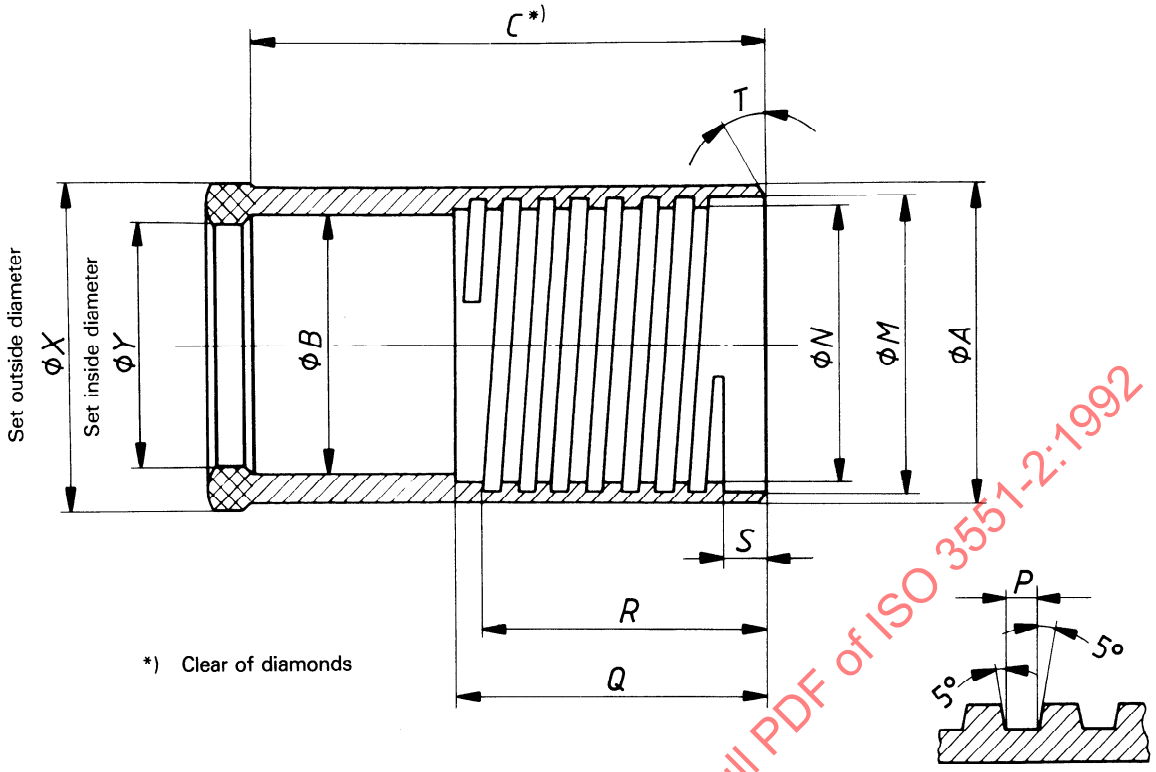


Figure 15 — "X" design flush-coupled casing — Casing bit (see table 17)

Table 17 — "X" design flush-coupled casing — Casing bit

Dimension		RX	EX	AX	BX	NX	HX	PX	SX	UX	ZX
A	max.	1.456	1.832	2.297	2.912	3.562	4.564	5.564	6.689	7.689	8.689
	min.	1.452	1.828	2.293	2.908	3.558	4.560	5.558	6.683	7.680	8.680
B	max.	1.045	1.465	1.84	2.278	2.903	3.872	4.75	5.75	6.895	7.895
	min.	1.025	1.435	1.81	2.248	2.873	3.832	4.70	5.70	6.835	7.835
C	min.	2.5	3.5	3.75	4.125	4.375	4.5	5.25	5.75	6	6.25
M	max.	1.351	1.721	2.128	2.690	3.315	4.271	5.262	6.379	7.392	8.376
	min.	1.349	1.719	2.126	2.688	3.313	4.267	5.257	6.372	7.385	8.369
N	max.	1.291	1.659	2.065	2.596	3.221	4.175	5.167	6.282	7.276	8.260
	min.	1.289	1.657	2.063	2.594	3.219	4.172	5.163	6.278	7.271	8.255
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)	0.2 (5)	0.2 (5)	0.25 (4)	0.25 (4)
P	max.	0.064	0.064	0.064	0.063	0.063	0.102	0.101	0.101	0.125	0.125
	min.	0.061	0.061	0.061	0.060	0.060	0.099	0.097	0.097	0.121	0.121
Q	min.	1	2	2.25	2.375	2.625	2.5	2.75	3	3.25	3.5
R	min.	0.937	1.875	2.125	2.25	2.5	2.25	2.625	2.875	3.125	3.375
S	max.	0.135	0.26	0.26	0.26	0.26	0.32	0.385	0.385	0.385	0.385
	min.	0.116	0.24	0.24	0.24	0.24	0.30	0.365	0.365	0.365	0.365
T		0°	30°	30°	30°	30°	30°	15°	15°	15°	15°
X	max.	1.49	1.88	2.35	2.97	3.62	4.632	5.66	6.80	7.815	8.825
	min.	1.48	1.87	2.34	2.96	3.61	4.617	5.64	6.78	7.785	8.795
Y	max.	1.005	1.41	1.785	2.22	2.845	3.782	4.640	5.640	6.765	7.765
	min.	0.995	1.40	1.775	2.21	2.835	3.772	4.625	5.625	6.745	7.745

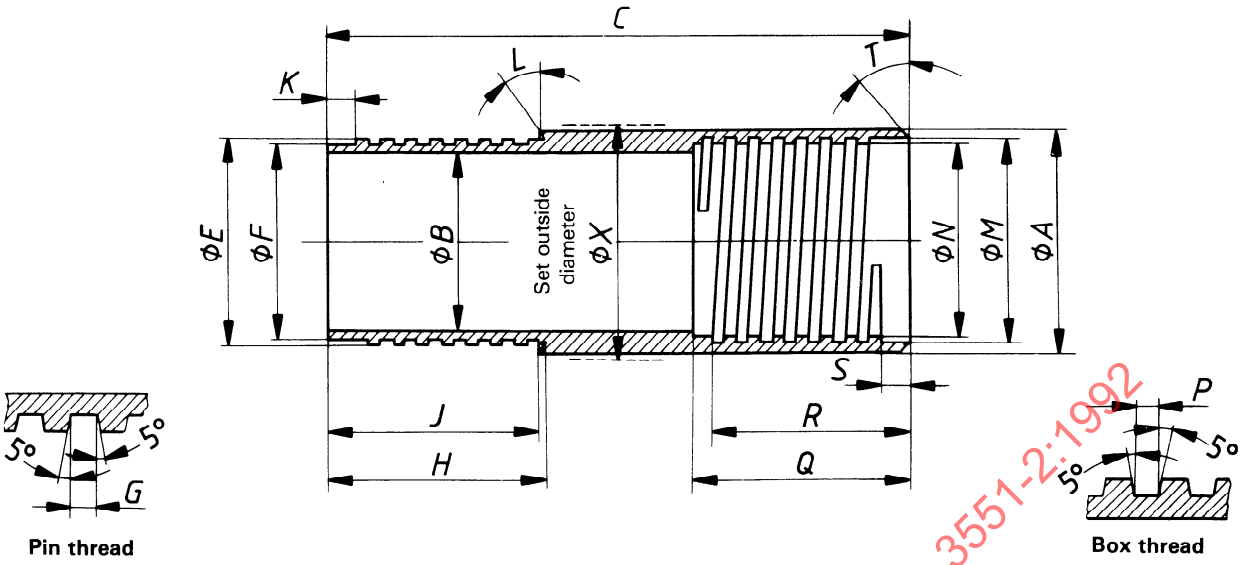
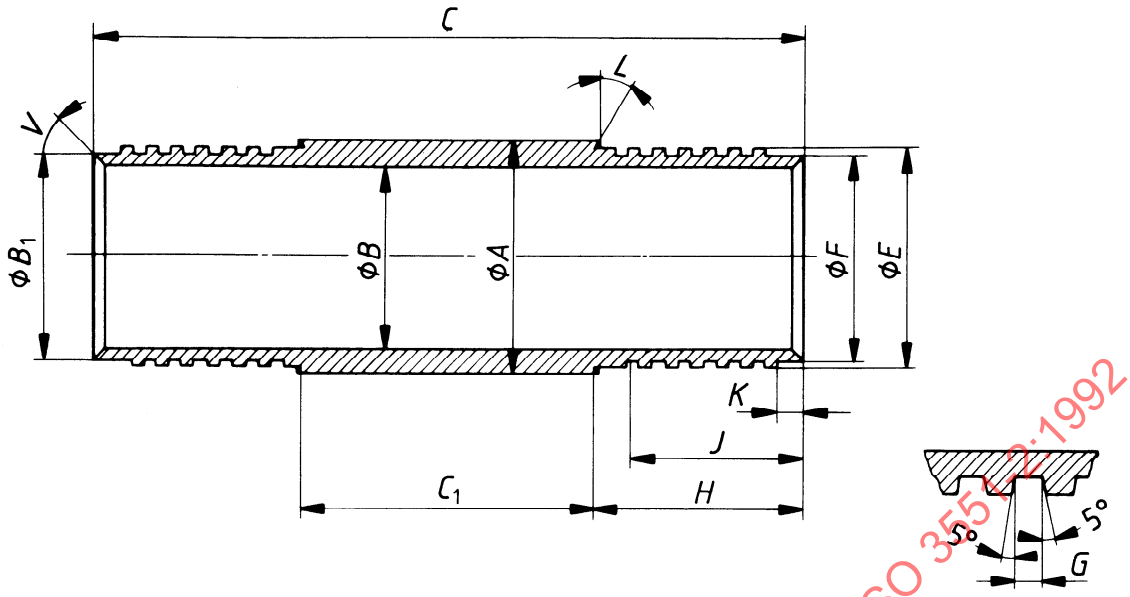


Figure 16 — "X" design flush-coupled casing — Reaming shell (see table 18)

Table 18 — "X" design flush-coupled casing — Reaming shell

Dimension		EX	AX	BX	NX
A	max. min.	1.832 1.828	2.297 2.293	2.912 2.908	3.562 3.558
B	max. min.	1.51 1.50	1.916 1.906	2.385 2.375	3.015 3.000
C	min.	5.25	5.75	6.25	6.75
E	max. min.	1.717 1.715	2.124 2.122	2.686 2.684	3.311 3.309
F	max. min.	1.655 1.650	2.061 2.056	2.592 2.587	3.217 3.212
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
G	max. min.	0.064 0.061	0.064 0.061	0.063 0.060	0.063 0.060
H	max. min.	1.79 1.77	2.05 2.03	2.195 2.175	2.44 2.42
J	min.	1.625	1.875	2	2.25
K	max. min.	0.198 0.178	0.198 0.178	0.198 0.178	0.198 0.178
L		30°	30°	30°	30°
M	max. min.	1.721 1.719	2.128 2.126	2.690 2.688	3.315 3.313
N	max. min.	1.659 1.657	2.065 2.063	2.596 2.594	3.221 3.219
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
P	max. min.	0.064 0.061	0.064 0.061	0.063 0.060	0.063 0.060
Q	max. min.	2.03 2.00	2.28 2.25	2.405 2.375	2.655 2.625
R	min.	1.875	2.125	2.25	2.5
S	max. min.	0.26 0.24	0.26 0.24	0.26 0.24	0.26 0.24
T		30°	30°	30°	30°
X	max. min.	1.895 1.885	2.365 2.355	2.985 2.975	3.635 3.625

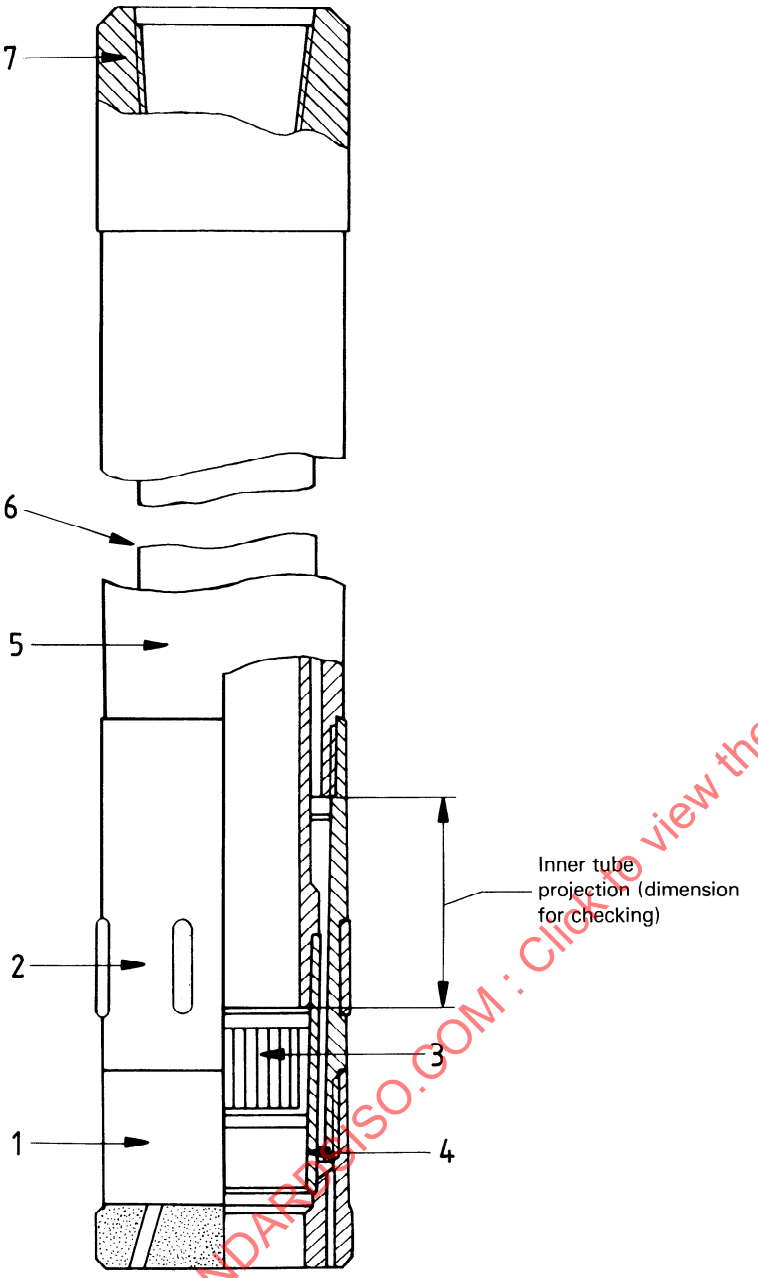


NOTE — Dimensions shown apply to both ends.

Figure 17 — "X" design flush-coupled casing — Casing coupling (see table 19)

Table 19 — "X" design flush-coupled casing — Casing coupling

Dimension		RX	EX	AX	BX	NX	HX	PX	SX	UX	ZX
A	max.	1.442	1.822	2.26	2.885	3.515	4.515	5.541	6.675	7.682	8.69
	min.	1.437	1.812	2.25	2.875	3.500	4.500	5.459	6.575	7.568	8.56
B	max.	1.20	1.51	1.916	2.385	3.015	3.952	5.015	6.002	7.055	8.108
	min.	1.19	1.50	1.906	2.375	3.000	3.937	4.865	5.815	6.937	7.937
B_1	max.	1.20	1.590	1.995	2.525	3.150	4.105	5.095	6.210	7.200	8.185
	min.	1.19	1.565	1.970	2.500	3.125	4.080	5.070	6.185	7.175	8.160
C	ref.	4	5	7	7.75	8.25	8.5	9	10	11	12
C_1	max.	2.136	1.45	2.932	3.394	3.394	3.87	3.94	4.442	4.94	5.454
	min.	2.116	1.43	2.912	3.374	3.374	3.85	3.92	4.422	4.92	5.434
E	max.	1.347	1.717	2.124	2.686	3.311	4.264	5.254	6.368	7.380	8.364
	min.	1.345	1.715	2.122	2.684	3.309	4.261	5.251	6.363	7.375	8.359
F	max.	1.287	1.655	2.061	2.592	3.217	4.169	5.160	6.274	7.266	8.250
	min.	1.282	1.650	2.056	2.587	3.212	4.164	5.156	6.270	7.261	8.245
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)	0.2 (5)	0.2 (5)	0.25 (4)	0.25 (4)
G	max.	0.064	0.064	0.064	0.063	0.063	0.102	0.101	0.101	0.125	0.125
	min.	0.061	0.061	0.061	0.060	0.060	0.099	0.097	0.097	0.121	0.121
H	max.	0.947	1.79	2.05	2.195	2.44	2.33	2.545	2.794	3.044	3.288
	min.	0.927	1.77	2.03	2.175	2.42	2.31	2.525	2.774	3.024	3.268
J	min.	0.875	1.625	1.875	2	2.25	2.125	2.375	2.625	2.875	3.125
K	max.	0.135	0.198	0.198	0.198	0.198	0.198	0.198	0.198	0.198	0.198
	min.	0.116	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178
L		0°	30°	30°	30°	30°	30°	15°	15°	15°	15°
V		0°	30°	30°	30°	30°	30°	30°	30°	30°	30°



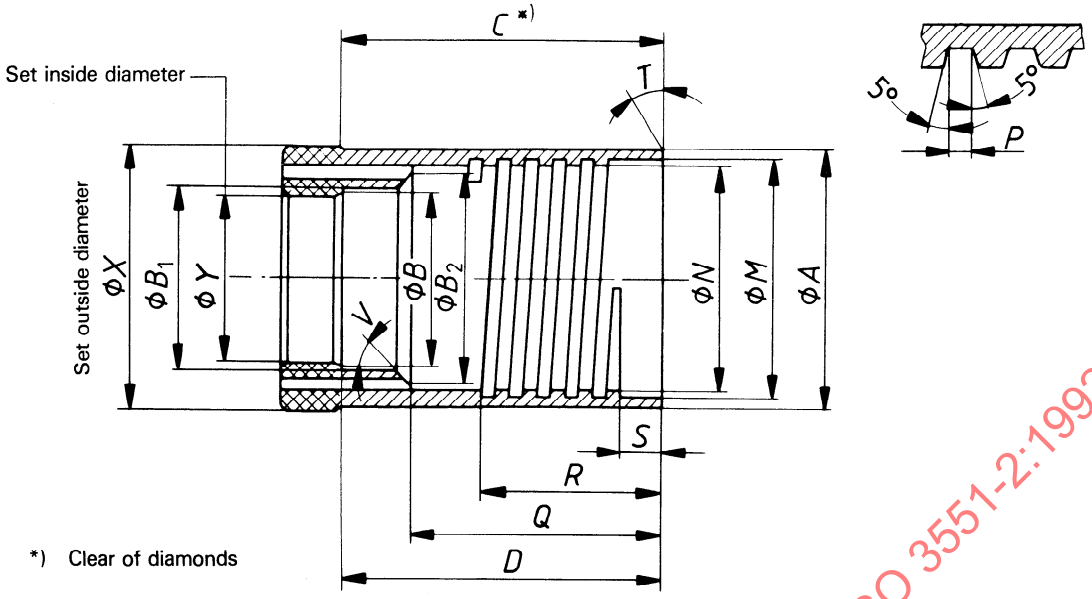
Key

Ref. No.	Description
1	Core bit for use with shell, or core bit without shell
2	Reaming shell
3	Core lifter
4	Core-lifter case
5	Outer tube
6	Inner tube
7	Head (thread only)

NOTE — Standard "WF" design core barrel lengths are 60 in and 120 in (lengths refer to core capacity).

		HWF	PWF	SWF	UWF	ZWF
Dimensions for checking	max.	2.405	3.280	3.397	3.400	3.400
	min.	2.328	3.188	3.301	3.293	3.293

Figure 18 — "WF" design double-tube core barrel — Swivel type — Assembly for sizes HWF, PWF, SWF, UWF and ZWF



NOTES

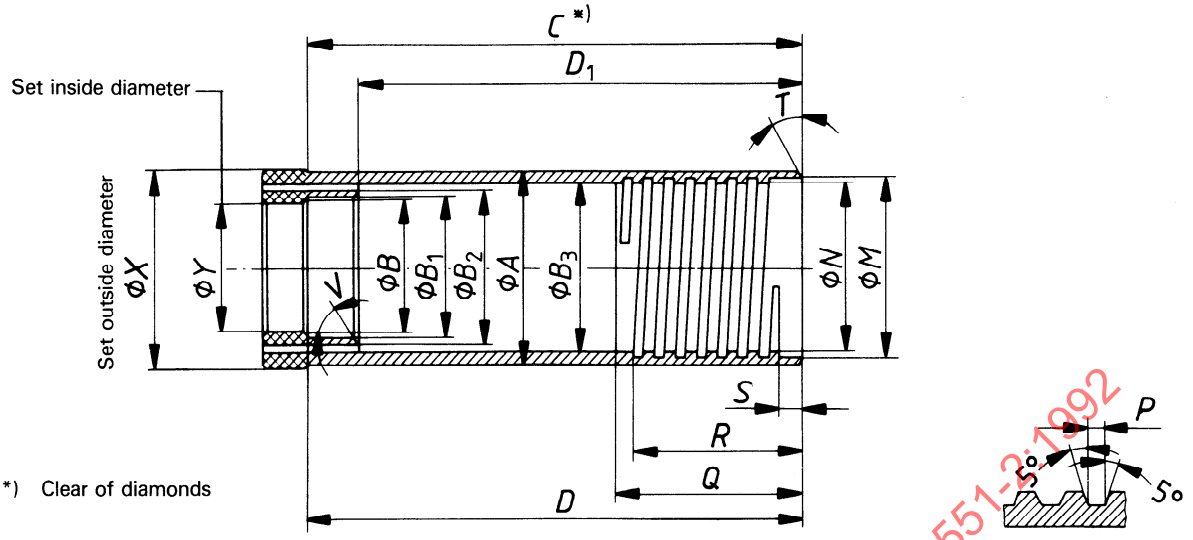
1 Number and size of face discharge holes to be subject to agreement between manufacturer and customer.

2 Bit design may incorporate provision for the use of a bit breaker.

Figure 19 — "WF" design double-tube core barrel — Short core bit (see table 20)

Table 20 — "WF" design double-tube core barrel — Short core bit

Dimension		HWF	PWF	SWF	UWF	ZWF
A	max.	3.842	4.626	5.620	6.745	7.745
	min.	3.838	4.621	5.615	6.740	7.740
B	max.	3.068	3.730	4.535	5.600	6.600
	min.	3.064	3.725	4.530	5.595	6.595
B_1	max.	3.255	3.930	4.742	5.900	6.900
	min.	3.250	3.925	4.737	5.894	6.894
B_2	max.	3.35	4.05	4.88	6.10	7.10
	min.	3.33	4.03	4.86	6.08	7.08
C	min.	1.75	2.125	2.125	2.125	2.125
D	max.	1.79	2.155	2.155	2.155	2.155
	min.	1.76	2.125	2.125	2.125	2.125
M	max.	3.644	4.467	5.421	6.525	7.525
	min.	3.641	4.463	5.417	6.520	7.520
N	max.	3.581	4.372	5.326	6.430	7.430
	min.	3.578	4.369	5.323	6.426	7.426
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
P	max.	0.102	0.101	0.101	0.101	0.101
	min.	0.099	0.097	0.097	0.097	0.097
Q	max.	1.13	1.63	1.63	1.63	1.63
	min.	1.12	1.62	1.62	1.62	1.62
R	min.	0.937	1.5	1.5	1.5	1.5
S	max.	0.197	0.197	0.197	0.197	0.197
	min.	0.177	0.177	0.177	0.177	0.177
T		0°	0°	0°	0°	0°
V		30°	30°	30°	30°	30°
X	max.	3.897	4.735	5.735	6.855	7.855
	min.	3.882	4.715	5.715	6.825	7.825
Y	max.	3.005	3.635	4.447	5.515	6.515
	min.	2.995	3.620	4.432	5.495	6.495



*) Clear of diamonds

NOTES

1 Number and size of face discharge holes to be subject to agreement between manufacturer and customer.

2 Bit design may incorporate provision for the use of a bit breaker.

Figure 20 — "WF" design double-tube core barrel — Long core bit (see table 21)

Table 21 — "WF" design double-tube core barrel — Long core bit

Dimension		HWF	PWF	SWF	UWF	ZWF
A	max.	3.842	4.626	5.620	6.745	7.745
	min.	3.838	4.621	5.615	6.740	7.740
B	max.	3.068	3.730	4.535	5.600	6.600
	min.	3.064	3.725	4.530	5.595	6.595
B_1	max.	3.255	3.930	4.742	5.900	6.900
	min.	3.250	3.925	4.737	5.894	6.894
B_2	max.	3.35	4.05	4.88	6.10	7.10
	min.	3.33	4.03	4.86	6.08	7.08
B_3	max.	3.54	4.266	5.23	6.389	7.389
	min.	3.53	4.256	5.22	6.379	7.379
C	min.	6.88	8.78	9.28	9.78	9.78
D	max.	6.905	8.795	9.295	9.795	9.795
	min.	6.875	8.765	9.265	9.765	9.765
D_1	max.	6.255	8.291	8.791	9.291	9.291
	min.	6.250	8.281	8.781	9.281	9.281
M	max.	3.644	4.407	5.362	6.509	7.509
	min.	3.641	4.403	5.358	6.504	7.504
N	max.	3.581	4.312	5.267	6.414	7.414
	min.	3.578	4.309	5.264	6.410	7.410
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
P	max.	0.102	0.101	0.101	0.101	0.101
	min.	0.099	0.097	0.097	0.097	0.097
Q	max.	1.269	2.26	2.26	2.51	2.51
	min.	1.264	2.25	2.25	2.50	2.50
R	min.	1.093	2	2	2.25	2.25
S	max.	0.197	0.197	0.197	0.197	0.197
	min.	0.177	0.177	0.177	0.177	0.177
T		15°	15°	15°	15°	15°
V		30°	30°	30°	30°	30°
X	max.	3.912	4.755	5.755	6.88	7.88
	min.	3.897	4.740	5.740	6.86	7.86
Y	max.	3.005	3.635	4.447	5.515	6.515
	min.	2.995	3.620	4.432	5.495	6.495

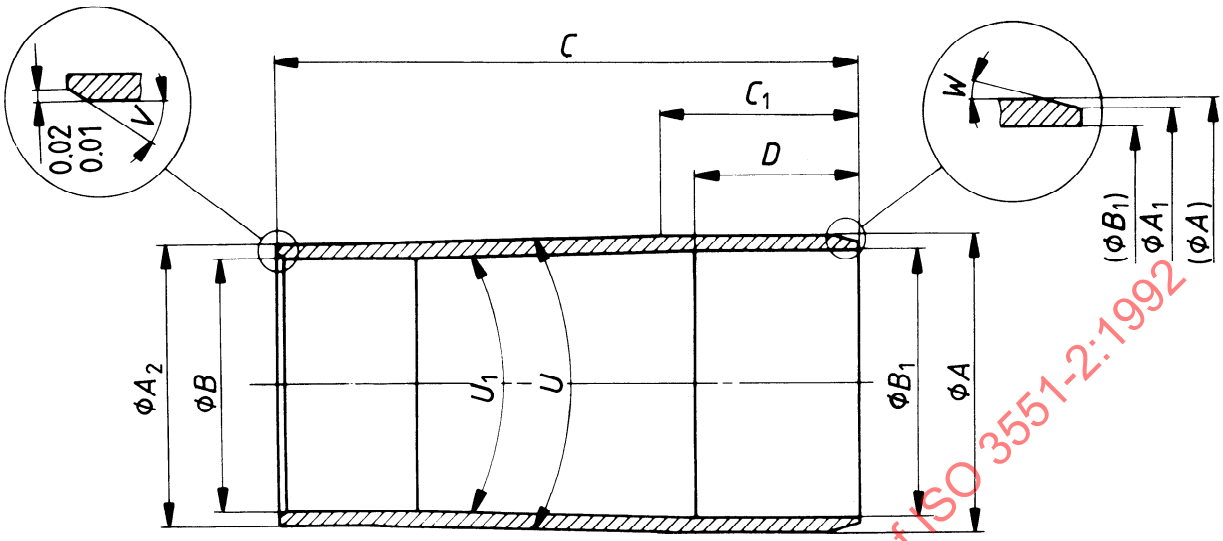
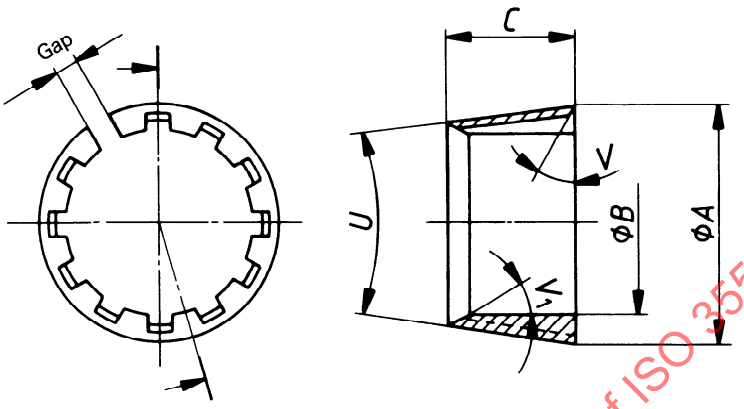


Figure 21 — "WF" design double-tube core barrel — Core-lifter case (see table 22)

Table 22 — "WF" design double-tube core barrel — Core-lifter case

Dimension		HWF	PWF	SWF	UWF	ZWF
A	max.	3.455	4.159	5.107	6.201	7.201
	min.	3.451	4.155	5.103	6.196	7.196
A_1	max.	—	4.10	4.975	6.10	7.10
	min.	—	4.09	4.965	6.09	7.09
A_2	max.	3.237	3.915	4.727	5.884	6.884
	min.	3.233	3.910	4.722	5.879	6.879
B	max.	3.068	3.733	4.538	5.604	6.604
	min.	3.064	3.728	4.533	5.598	6.598
B_1	max.	3.365	3.956	4.829	5.947	6.947
	min.	3.363	3.952	4.825	5.942	6.942
C	max.	4.187	4.687	5.187	5.437	5.437
	min.	4.180	4.680	5.180	5.430	5.430
C_1	max.	1.76	1.385	1.51	1.51	1.51
	min.	1.74	1.365	1.49	1.49	1.49
D	max.	1.135	1.385	1.51	1.51	1.51
	min.	1.115	1.365	1.49	1.49	1.49
U	max.	7° 15′	7° 15′	7° 15′	7° 15′	7° 15′
	min.	6° 45′	6° 45′	6° 45′	6° 45′	6° 45′
U_1	max.	7° 15′	7° 15′	7° 15′	7° 15′	7° 15′
	min.	6° 45′	6° 45′	6° 45′	6° 45′	6° 45′
V		30°	30°	30°	30°	30°
W		—	15°	15°	15°	15°



NOTE — Width of gap, entry angle and number of flutes are left to the manufacturer.

Figure 22 — "WF" design double-tube core barrel — Core lifter (see table 23)

Table 23 — "WF" design double-tube core barrel — Core lifter

Dimension		HWF	PWF	SWF	UWF	ZWF
A	max. min.	3.306 3.302	3.910 3.904	4.760 4.754	5.878 5.870	6.878 6.870
B	max. min.	2.980 2.975	3.608 3.603	4.420 4.415	5.483 5.478	6.483 6.478
C	max. min.	1.64 1.61	1.64 1.61	1.89 1.86	2.14 2.11	2.14 2.11
U	max. min.	7° 15′ 6° 45′	7° 15′ 6° 45′	7° 15′ 6° 45′	7° 15′ 6° 45′	7° 15′ 6° 45′
V		0°	0°	0°	0°	0°
V_1		Optional				

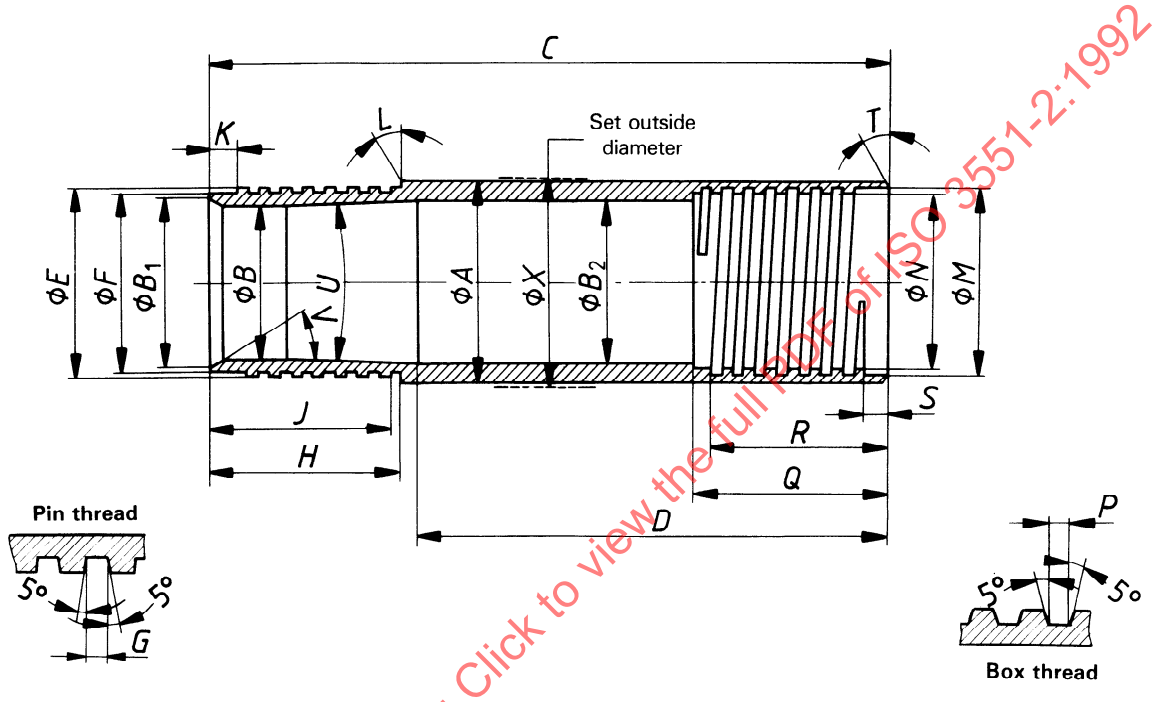


Figure 23 — "WF" design double-tube core barrel — Reaming shell (see table 24)

Table 24 — "WF" design double-tube core barrel — Reaming shell

Dimension		HWF	PWF	SWF	UWF	ZWF
A	max. min.	3.842 3.838	4.626 4.621	5.620 5.615	6.745 6.740	7.745 7.740
B	max. min.	3.411 3.406	4.130 4.125	5.005 5.000	6.130 6.125	7.130 7.125
B_1	max. min.	3.515 3.485	4.295 4.265	5.265 5.235	6.355 6.325	7.355 7.325
B_2	max. min.	3.54 3.53	4.266 4.256	5.23 5.22	6.389 6.379	7.389 7.379
C	max. min.	6.187 6.180	8.150 8.145	8.650 8.645	9.150 9.145	9.150 9.145
D	max. min.	4.442 4.437	5.63 5.62	5.665 5.655	5.785 5.775	5.785 5.775
E	max. min.	3.638 3.635	4.460 4.457	5.414 5.411	6.516 6.512	7.516 7.512
F	max. min.	3.575 3.571	4.366 4.362	5.320 5.316	6.422 6.417	7.422 7.417
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
G	max. min.	0.102 0.099	0.101 0.097	0.101 0.097	0.101 0.097	0.101 0.097
H	max. min.	1.062 1.057	1.505 1.500	1.505 1.500	1.505 1.500	1.505 1.500
J	min.	0.937	1.375	1.375	1.375	1.375
K	max. min.	0.135 0.115	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177
L		0°	0°	0°	0°	0°
M	max. min.	3.645 3.641	4.407 4.403	5.362 5.358	6.509 6.504	7.509 7.504
N	max. min.	3.581 3.578	4.312 4.309	5.267 5.264	6.414 6.410	7.414 7.410
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
P	max. min.	0.102 0.099	0.101 0.097	0.101 0.097	0.101 0.097	0.101 0.097
Q	max. min.	1.269 1.265	2.26 2.25	2.26 2.25	2.51 2.50	2.51 2.50
R	min.	1.093	2	2	2.25	2.25
S	max. min.	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177
T		15°	15°	15°	15°	15°
U	max. min.	7° 15′ 6° 45′	7° 15′ 6° 45′	7° 15′ 6° 45′	7° 15′ 6° 45′	7° 15′ 6° 45′
V		30°	30°	30°	30°	30°
X	max. min.	3.912 3.902	4.755 4.740	5.755 5.740	6.88 6.86	7.88 7.86

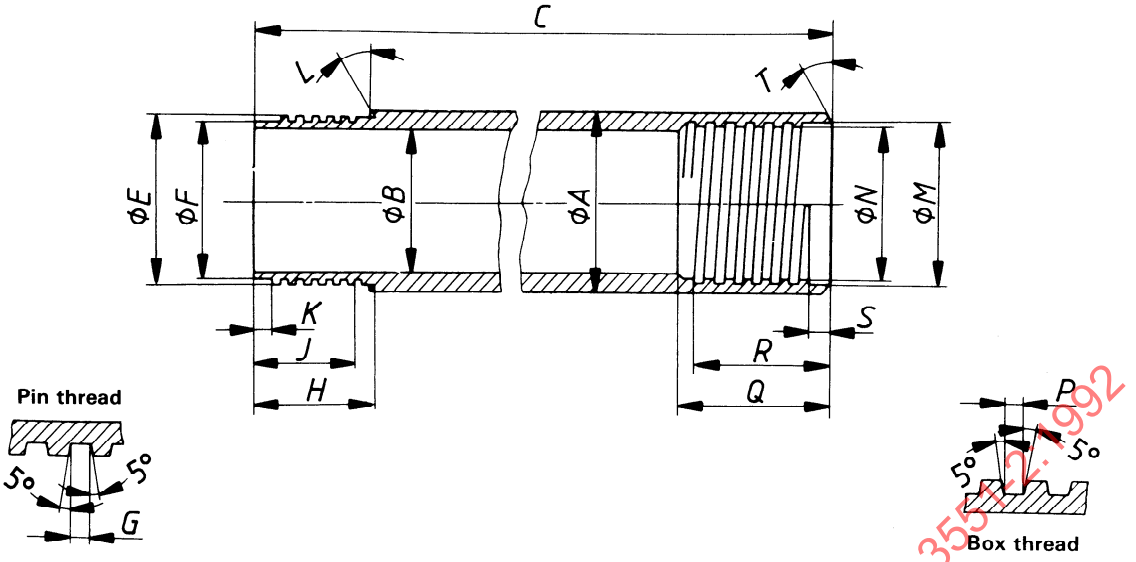


Figure 24 — "WF" design double-tube core barrel — Outer tube (see table 25)

Table 25 — 'WF" design double-tube core barrel — Outer tube

Dimension		HWF	PWF	SWF	UWF	ZWF
A	max. min.	3.765 3.750	4.515 4.500	5.541 5.459	6.675 6.575	7.682 7.568
B	max. min.	3.38 3.36	4.135 4.115	5.014 4.986	6.14 6.11	7.14 7.11
C	max. min.	123.759 123.728	124.593 124.562	124.093 124.062	124.875 124.844	124.875 124.844
E	max. min.	3.638 3.635	4.400 4.397	5.355 5.352	6.500 6.496	7.500 7.496
F	max. min.	3.575 3.571	4.306 4.302	5.261 5.257	6.406 6.401	7.406 7.401
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
G	max. min.	0.102 0.099	0.101 0.097	0.101 0.097	0.101 0.097	0.101 0.097
H	max. min.	1.266 1.261	2.030 2.015	2.036 2.021	2.283 2.268	2.283 2.268
J	min.	1.125	1.875	1.875	2.125	2.125
K	max. min.	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177
L		15°	15°	15°	15°	15°
M	max. min.	3.506 3.502	4.246 4.242	5.121 5.117	6.250 6.245	7.250 7.245
N	max. min.	3.411 3.408	4.151 4.148	5.026 5.023	6.155 6.151	7.155 7.151
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
P	max. min.	0.102 0.099	0.101 0.097	0.101 0.097	0.101 0.097	0.101 0.097
Q	min.	1.375	2.25	2.25	2.5	2.5
R	min.	1.25	2	2	2.25	2.25
S	max. min.	0.238 0.218	0.26 0.24	0.26 0.24	0.26 0.24	0.26 0.24
T		15°	15°	15°	15°	15°

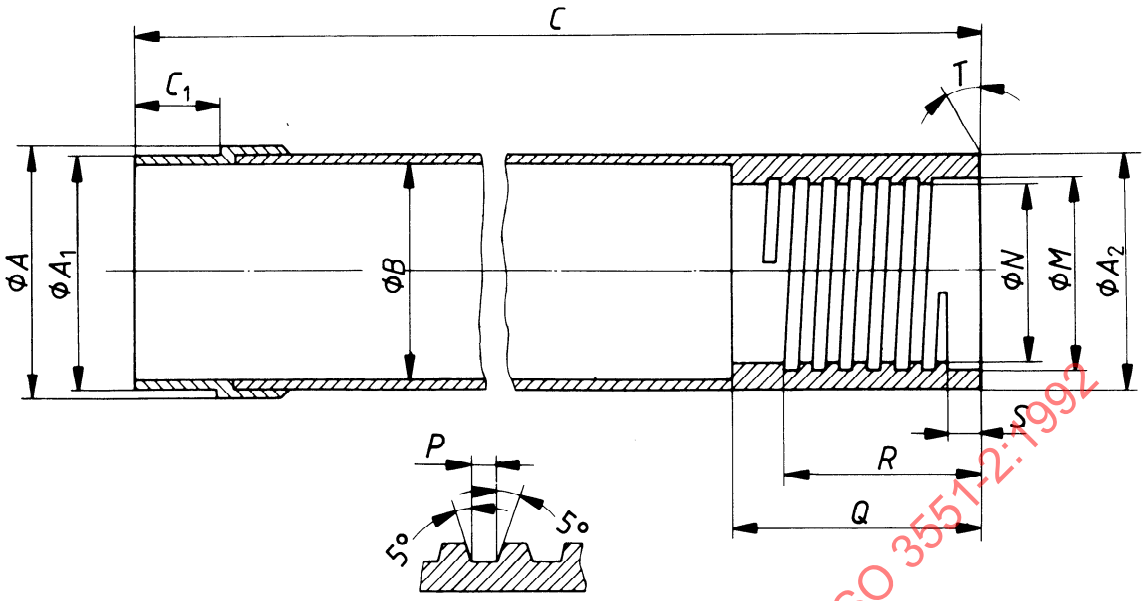


Figure 25 — "WF" design double-tube core barrel — Inner tube (see table 26)

Table 26 — "WF" design double-tube core barrel — Inner tube

Dimension		HWF	PWF	SWF	UWF	ZWF
A	max.	3.455	4.100	4.975	6.100	7.100
	min.	3.451	4.095	4.970	6.095	7.095
A_1	max.	3.360	3.950	4.823	5.940	6.940
	min.	3.357	3.947	4.820	5.936	6.936
A_2	max.	3.265	3.883	4.762	5.891	6.891
	min.	3.250	3.867	4.738	5.859	6.859
B	max.	3.067	3.695	4.512	5.641	6.641
	min.	3.047	3.679	4.488	5.609	6.609
C	max.	120.838	120.906	120.406	120.406	120.406
	min.	120.807	120.875	120.375	120.375	120.375
C_1	max.	1.000	1.250	1.375	1.375	1.375
	min.	0.995	1.245	1.370	1.370	1.370
M	max.	2.506	3.006	3.006	4.758	5.758
	min.	2.502	3.002	3.002	4.753	5.753
N	max.	2.422	2.910	2.910	4.663	5.663
	min.	2.419	2.908	2.908	4.659	5.659
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
P	max.	0.102	0.101	0.101	0.101	0.101
	min.	0.099	0.097	0.097	0.097	0.097
Q	max.	1.255	1.885	1.885	2.135	2.135
	min.	1.250	1.865	1.865	2.115	2.115
R	min.	1.25	1.865	1.865	2.115	2.115
S	max.	0.228	0.228	0.228	0.228	0.228
	min.	0.208	0.208	0.208	0.208	0.208
T		0°	0°	0°	0°	0°

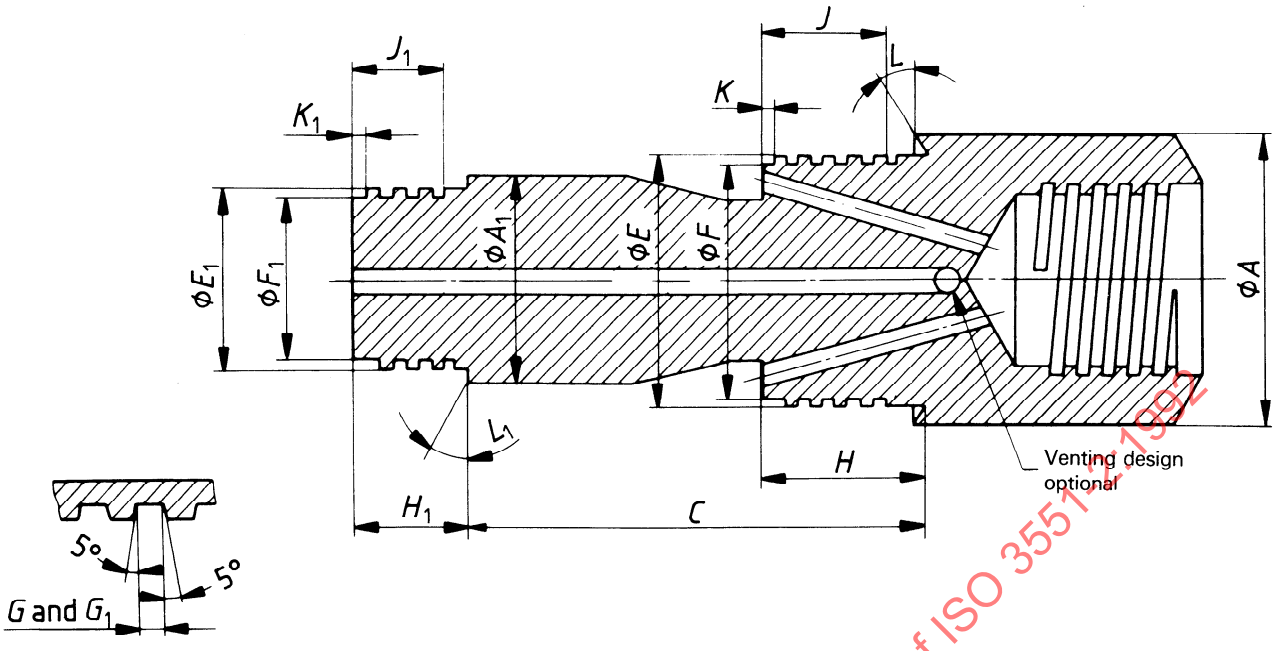
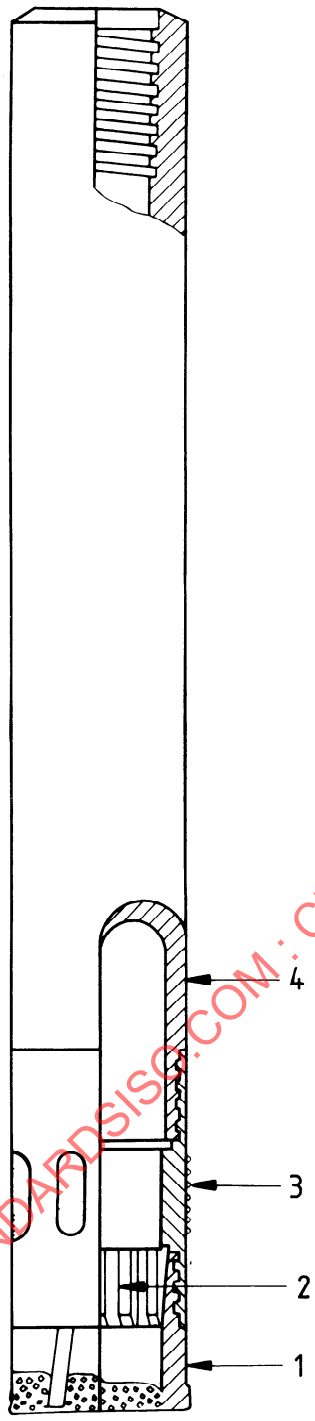


Figure 26 — "WF" design double-tube core barrel — Head (see table 27)

Table 27 — "WF" design double-tube core barrel — Head

Dimension		HWF	PWF	SWF	UWF	ZWF
A	max. min.	3.758 3.743	4.515 4.500	5.515 5.500	6.640 6.625	7.640 7.625
A_1	max.	3.25	3.883	4.762	5.891	6.891
C	max. min.	5.296 5.281	6.936 6.906	7.053 7.023	7.838 7.793	7.838 7.793
E	max. min.	3.500 3.497	4.239 4.236	5.114 5.111	6.241 6.237	7.241 7.237
F	max. min.	3.406 3.402	4.145 4.141	5.020 5.016	6.147 6.142	7.147 7.142
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
G	max. min.	0.102 0.099	0.101 0.097	0.101 0.097	0.101 0.097	0.101 0.097
H	max. min.	1.284 1.269	2.036 2.021	2.036 2.021	2.302 2.287	2.302 2.287
J	min.	1.125	1.875	1.875	2.125	2.125
K	max. min.	0.135 0.115	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177
L		15°	15°	15°	15°	15°
E_1	max. min.	2.500 2.498	3.000 2.998	3.000 2.998	4.750 4.747	5.750 5.747
F_1	max. min.	2.417 2.413	2.906 2.902	2.906 2.902	4.656 4.652	5.656 5.652
Thread pitch (Threads per inch)		0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)	0.2 (5)
G_1	max. min.	0.102 0.099	0.101 0.097	0.101 0.097	0.101 0.097	0.101 0.097
H_1	max. min.	1.250 1.235	1.875 1.860	1.875 1.860	2.125 2.110	2.125 2.110
J_1	min.	1.125	1.75	1.75	2	2
K_1	max. min.	0.135 0.115	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177
L_1		0°	0°	0°	0°	0°
Drill rod connection		HW	2 7/8 API IF *)	2 7/8 API IF *)	4 1/2 API IF *)	4 1/2 API IF *)

*) See API 7.



Key

Ref. No.	Description
1	Core bit
2	Core lifter
3	Reaming shell
4	Tube

NOTES

1 Bits and core springs are interchangeable with double-tube barrels.

2 Standard "WG" design core barrel lengths are 60 in and 120 in (lengths refer to core capacity).

Figure 27 — 'WG" design single-tube core barrel — Assembly

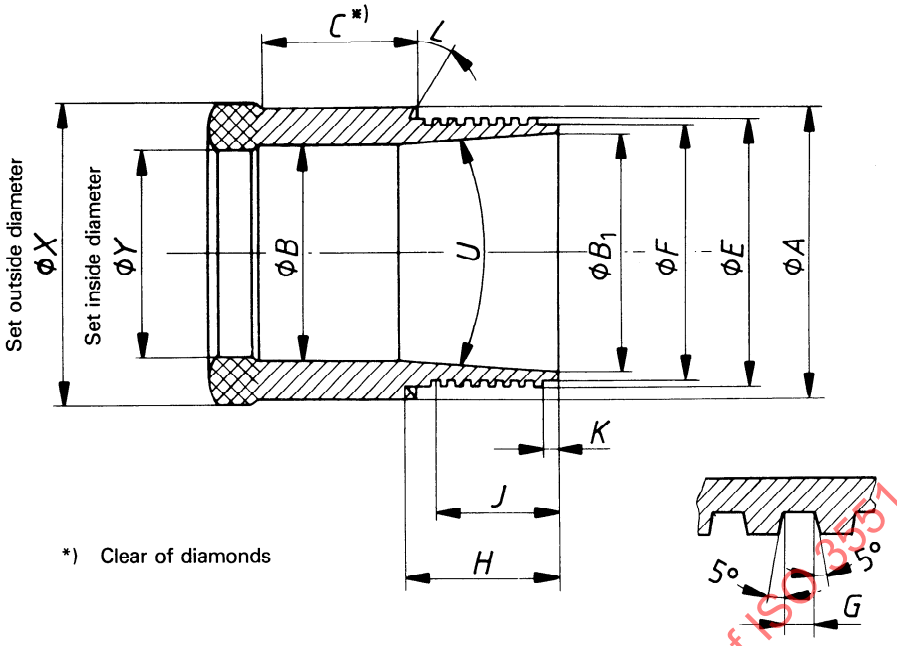
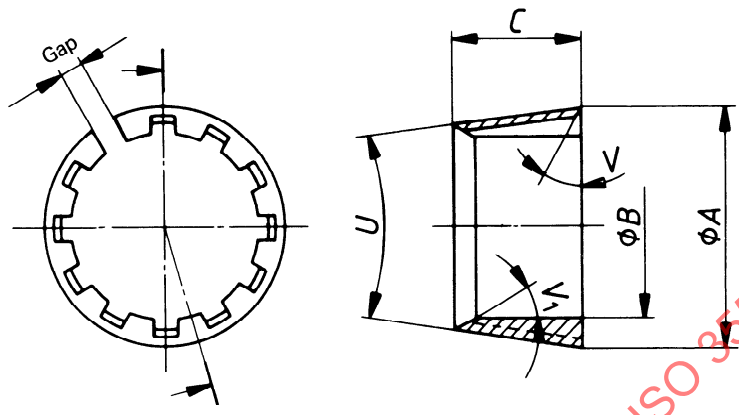


Figure 28 — "WG" design core barrel — Single- and double-tube type — Bevel wall core bit (see table 28)

Table 28 — "WG" design core barrel — Single- and double-tube type — Bevel wall core bit

Dimension		EWG	AWG	BWG	NWG	HWG
A	max.	1.442	1.837	2.302	2.917	3.842
	min.	1.438	1.833	2.298	2.913	3.838
B	max.	0.904	1.254	1.734	2.244	3.124
	min.	0.900	1.250	1.730	2.240	3.120
B_1	max.	1.080	1.455	1.908	2.533	3.500
	min.	1.076	1.451	1.904	2.529	3.495
C	min.	1.25	1.25	1.25	1.375	1.5
E	max.	1.186	1.561	2.030	2.655	3.638
	min.	1.184	1.559	2.028	2.653	3.636
F	max.	1.124	1.499	1.967	2.592	3.575
	min.	1.119	1.494	1.962	2.587	3.570
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
G	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
H	max.	0.885	0.01	1.135	1.26	1.385
	min.	0.865	0.99	1.115	1.24	1.365
J	min.	0.75	0.875	1	1.125	1.25
K	max.	0.072	0.072	0.072	0.072	0.072
	min.	0.052	0.052	0.052	0.052	0.052
L		0°	0°	0°	0°	15°
U	max.	10° 15′	10° 15′	10° 15′	10° 15′	7° 15′
	min.	9° 45′	9° 45′	9° 45′	9° 45′	6° 45′
X	max.	1.475	1.88	2.35	2.97	3.897
	min.	1.465	1.87	2.34	2.96	3.882
Y	max.	0.850	1.19	1.66	2.16	3.005
	min.	0.840	1.18	1.65	2.15	2.995



NOTE — Width of gap, entry angle and number of flutes are left to the manufacturer.

Figure 29 — "WG" design core barrel — Single- and double-tube type — Core lifter (see table 29)

Table 29 — "WG" design core barrel — Single- and double-tube type — Core lifter

Dimension		EWG	AWG	BWG	NWG	HWG
A	max.	1.036	1.411	1.864	2.489	3.439
	min.	1.032	1.407	1.860	2.485	3.435
B	max.	0.830	1.170	1.635	2.135	2.980
	min.	0.826	1.166	1.631	2.131	2.976
C	max.	0.765	0.89	0.952	1.265	2.015
	min.	0.735	0.86	0.922	1.235	1.985
U	max.	10° 15′	10° 15′	10° 15′	10° 15′	7° 15′
	min.	9° 45′	9° 45′	9° 45′	9° 45′	6° 45′
V		0°	0°	0°	0°	0°
V_1		Optional				

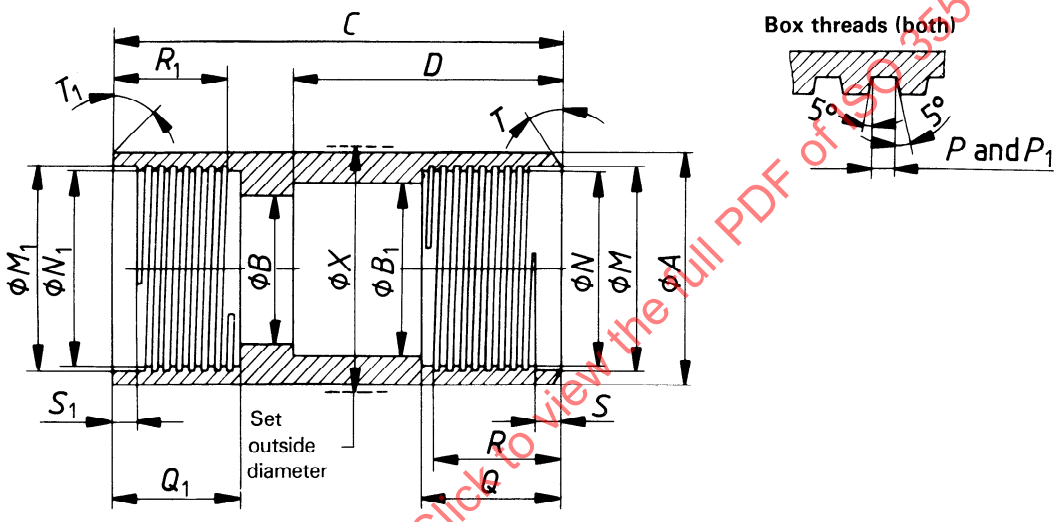
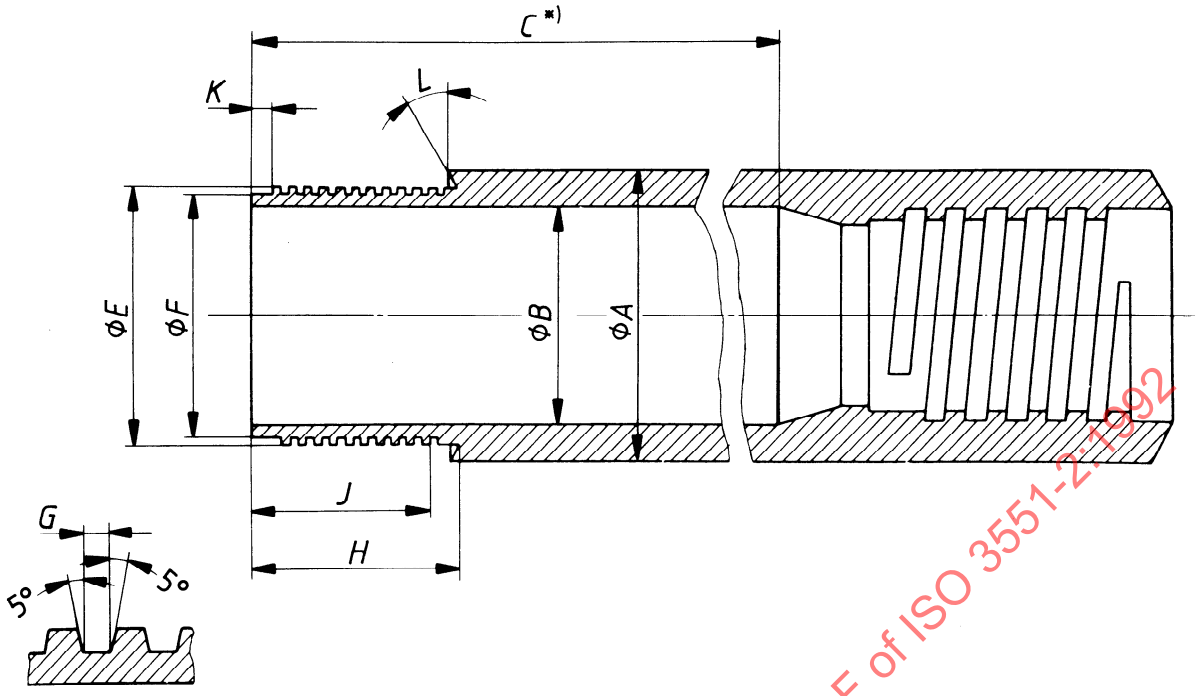


Figure 30 — "WG" design single-tube core barrel — Reaming shell (see table 30)

Table 30 — "WG" design single-tube core barrel — Reaming shell

Dimension		EWG	AWG	BWG	NWG	HWG
A	max.	1.442	1.837	2.302	2.917	3.842
	min.	1.438	1.833	2.298	2.913	3.838
B	max.	0.897	1.239	1.708	2.208	3.066
	min.	0.893	1.235	1.704	2.204	3.062
B_1	max.	0.937	1.281	1.75	2.25	3.13
	min.	0.932	1.271	1.74	2.24	3.11
C	max.	5.01	5.135	5.447	5.76	6.01
	min.	4.99	5.115	5.427	5.74	5.99
D	max.	3.385	3.510	3.697	3.885	4.010
	min.	3.360	3.485	3.672	3.860	3.985
M	max.	1.190	1.565	2.034	2.659	3.505
	min.	1.188	1.563	2.032	2.657	3.502
N	max.	1.128	1.503	1.971	2.596	3.442
	min.	1.126	1.501	1.969	2.594	3.439
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
P	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
Q	max.	1.255	1.255	1.380	1.505	1.630
	min.	1.250	1.250	1.375	1.500	1.625
R	min.	1.125	1.125	1.25	1.375	1.5
S	max.	0.197	0.197	0.197	0.197	0.238
	min.	0.177	0.177	0.177	0.177	0.218
T		15°	15°	15°	15°	15°
M_1	max.	1.190	1.565	2.034	2.659	3.643
	min.	1.188	1.563	2.032	2.657	3.641
N_1	max.	1.128	1.503	1.971	2.596	3.580
	min.	1.126	1.501	1.969	2.594	3.578
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
P_1	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
Q_1	max.	0.942	1.067	1.255	1.442	1.545
	min.	0.937	1.062	1.250	1.437	1.530
R_1	min.	0.874	1	1.125	1.312	1.375
S_1	max.	0.197	0.197	0.197	0.197	0.238
	min.	0.177	0.177	0.177	0.177	0.218
T_1		0°	0°	0°	0°	15°
X	max.	1.49	1.895	2.365	2.985	3.912
	min.	1.48	1.885	2.355	2.975	3.902



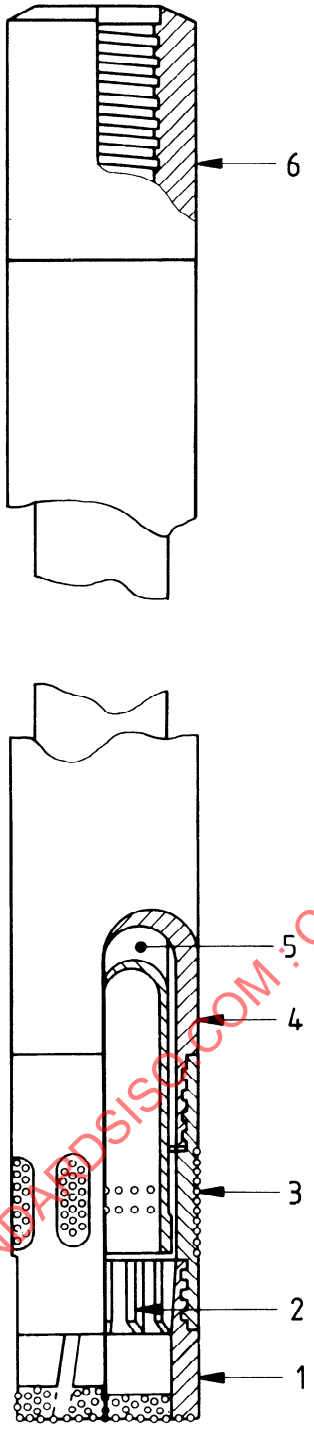
*) Length C equals 120 in core capacity.

Figure 31 — "WG" design single-tube core barrel — Tube (see table 31)

Table 31 — "WG" design single-tube core barrel — Tube

Dimension		EWG	AWG	BWG	NWG	HWG
A	max.	1.442	1.822	2.291	2.916	3.765
	min.	1.437	1.812	2.281	2.906	3.750
B	max.	0.937	1.281	1.75	2.25	3.13
	min.	0.932	1.271	1.74	2.24	3.11
C [1)]	min.	118.25	118.25	118.25	118.25	118.125
E	max.	1.186	1.561	2.030	2.655	3.499
	min.	1.184	1.559	2.028	2.653	3.497
F	max.	1.124	1.499	1.967	2.592	3.436
	min.	1.119	1.494	1.962	2.587	3.431
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
G	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
H	max.	1.250	1.250	1.375	1.500	1.625
	min.	1.245	1.245	1.370	1.495	1.620
J	min.	1.125	1.125	1.25	1.375	1.468
K	max.	0.197	0.197	0.197	0.197	0.26
	min.	0.177	0.177	0.177	0.177	0.24
L		15°	15°	15°	15°	15°
Rod thread connection		EW	AW	BW	NW	HW

1) See note in figure 31.



Key

Ref. No.	Description
1	Core bit
2	Core lifter
3	Reaming shell
4	Outer tube
5	Inner tube
6	Head: rigid or swivel

NOTES

1 Bits and core springs are interchangeable with single-tube barrels.

2 Standard "WG" design core barrel lengths are 60 in and 120 in (lengths refer to core capacity).

Figure 32 — "WG" design double-tube core barrel — Assembly — Rigid and swivel types

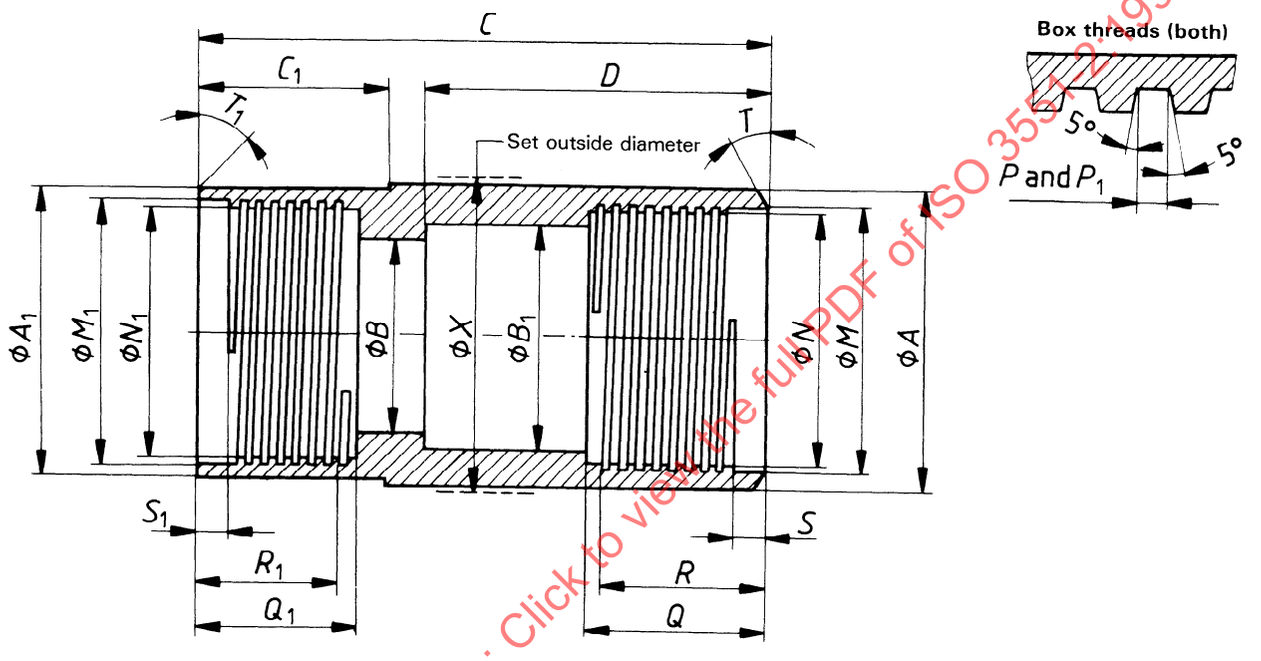


Figure 33 — "WG" design double-tube core barrel — Reaming shell (see table 32)

Table 32 — "WG" design double-tube core barrel — Reaming shell

Dimension		EWG	AWG	BWG	NWG	HWG
A	max.	1.457	1.852	2.317	2.932	3.857
	min.	1.453	1.848	2.313	2.928	3.853
A_1	max.	1.442	1.837	2.302	2.917	3.842
	min.	1.438	1.833	2.298	2.913	3.838
B	max.	1.128	1.503	1.971	2.596	3.370
	min.	1.126	1.501	1.969	2.594	3.365
B_1	max.	1.187	1.531	2.000	2.625	3.440
	min.	1.182	1.526	1.995	2.620	3.435
C	max.	4.01	4.135	4.447	4.76	5.50
	min.	3.99	4.115	4.427	4.74	5.48
C_1	max.	1.317	1.442	1.630	1.817	1.880
	min.	1.312	1.437	1.625	1.812	1.875
D	max.	2.442	2.442	2.442	2.442	3.005
	min.	2.437	2.437	2.437	2.437	3.000
M	max.	1.362	1.731	2.198	2.823	3.643
	min.	1.360	1.729	2.196	2.821	3.641
N	max.	1.300	1.669	2.136	2.761	3.580
	min.	1.298	1.667	2.134	2.759	3.578
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
P	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
Q	max.	1.255	1.255	1.380	1.505	1.269
	min.	1.250	1.250	1.375	1.500	1.265
R	min.	1.125	1.125	1.25	1.375	1.187
S	max.	0.197	0.197	0.197	0.197	0.238
	min.	0.177	0.177	0.177	0.177	0.218
T		15°	15°	15°	15°	15°
M_1	max.	1.190	1.565	2.034	2.659	3.643
	min.	1.188	1.563	2.032	2.657	3.641
N_1	max.	1.128	1.503	1.971	2.596	3.580
	min.	1.126	1.501	1.969	2.594	3.578
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
P_1	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
Q_1	max.	This length does not exist owing to bores B and N_1 being identical				1.545
	min.					1.530
R_1	min.	0.875	1	1.125	1.312	1.375
S_1	max.	0.197	0.197	0.197	0.197	0.238
	min.	0.177	0.177	0.177	0.177	0.218
T_1		0°	0°	0°	0°	15°
X	max.	1.49	1.895	2.365	2.985	3.912
	min.	1.48	1.885	2.355	2.975	3.902

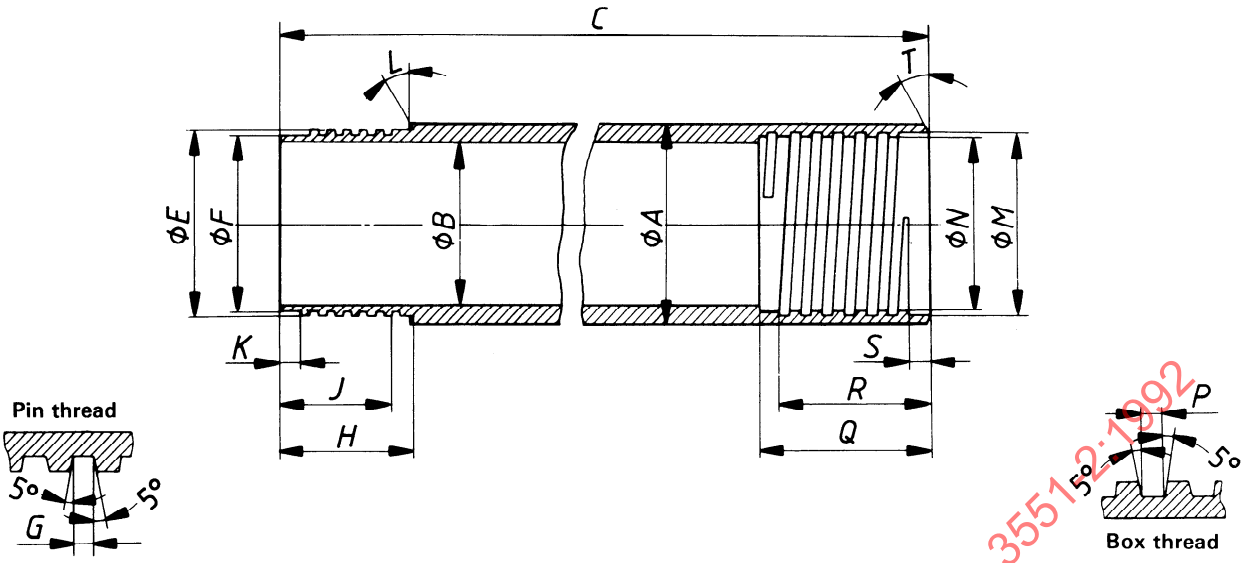


Figure 34 — "WG" design double-tube core barrel — Outer tube (see table 33)

Table 33 — "WG" design double-tube core barrel — Outer tube

Dimension		EWG	AWG	BWG	NWG	HWG
A	max.	1.442	1.822	2.291	2.916	3.765
	min.	1.437	1.812	2.281	2.906	3.750
B	max.	1.187	1.531	2.00	2.625	3.38
	min.	1.182	1.521	1.99	2.615	3.36
C	max.	123.899	127.607	127.795	128.170	125.165
	min.	123.867	127.576	127.764	128.139	125.134
E	max.	1.358	1.727	2.194	2.819	3.638
	min.	1.356	1.725	2.192	2.817	3.635
F	max.	1.296	1.665	2.132	2.757	3.575
	min.	1.292	1.661	2.128	2.753	3.571
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
G	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
H	max.	1.250	1.250	1.375	1.500	1.265
	min.	1.245	1.245	1.370	1.495	1.261
J	min.	1.125	1.125	1.25	1.375	1.125
K	max.	0.197	0.197	0.197	0.197	0.197
	min.	0.177	0.177	0.177	0.177	0.177
L		15°	15°	15°	15°	15°
M	max.	1.253	1.659	2.128	2.753	3.506
	min.	1.251	1.657	2.126	2.751	3.502
N	max.	1.190	1.596	2.065	2.690	3.411
	min.	1.188	1.594	2.063	2.688	3.408
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
P	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
Q	min.	1.187	1.437	1.687	1.937	1.375
R	min.	1.062	1.312	1.562	1.812	1.25
S	max.	0.197	0.197	0.197	0.197	0.238
	min.	0.177	0.177	0.177	0.177	0.218
T		30°	30°	30°	30°	15°

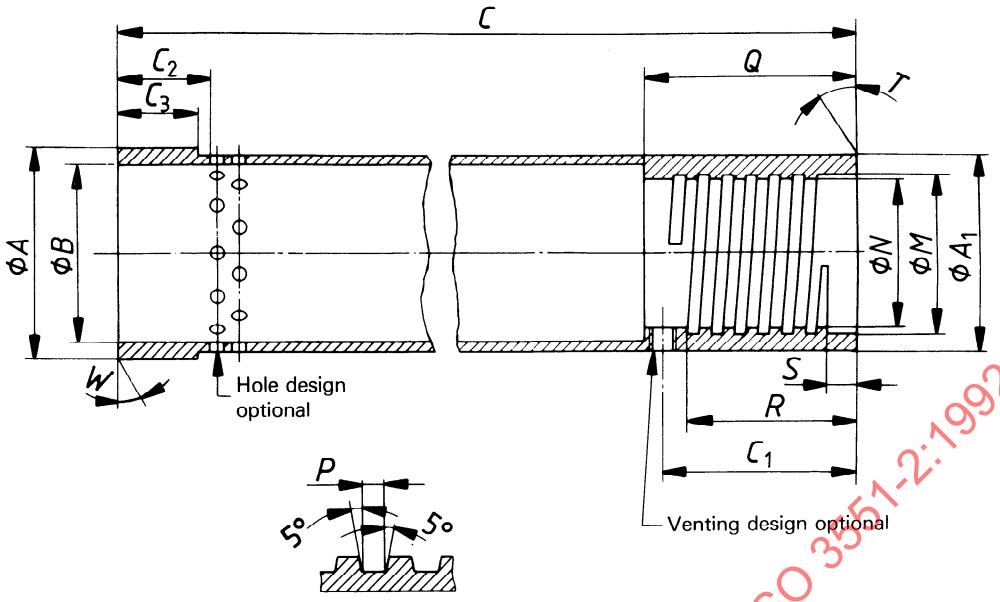


Figure 35 — "WG" design double-tube core barrel — Inner tube (see table 34)

Table 34 — "WG" design double-tube core barrel — Inner tube

Dimension		EWG	AWG	BWG	NWG	HWG
A	max.	1.120	1.495	1.960	2.585	3.360
	min.	1.115	1.490	1.955	2.580	3.355
A_1	max.	1.067	1.416	1.885	2.51	3.265
	min.	1.062	1.406	1.875	2.50	3.250
B	max.	0.937	1.25	1.718	2.25	3.067
	min.	0.932	1.24	1.708	2.24	3.047
C	max.	122.406	122.718	122.906	123.281	122.625
	min.	122.375	122.687	122.875	123.250	122.594
C_1	max.	1.155	1.467	1.655	2.03	1.405
	min.	1.095	1.407	1.595	1.97	1.345
C_2	min.	0.75	0.75	0.875	1	1.062
C_3	max.	0.640	0.640	0.765	0.890	1.015
	min.	0.625	0.625	0.750	0.875	1.000
M	max.	0.815	1.159	1.628	2.253	2.505
	min.	0.813	1.157	1.626	2.251	2.502
N	max.	0.753	1.065	1.534	2.159	2.421
	min.	0.751	1.063	1.532	2.157	2.419
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
P	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
Q	max.	1.38	1.692	1.88	2.255	1.63
	min.	1.37	1.682	1.87	2.245	1.62
R	min.	0.875	1.25	1.25	1.25	1.25
S	max.	0.197	0.197	0.197	0.197	0.238
	min.	0.177	0.177	0.177	0.177	0.218
T		0°	0°	0°	0°	0°
Holes (minimum total area), in^2		0.221	0.288	0.37	0.504	0.65
W		0°	0°	0°	0°	0°

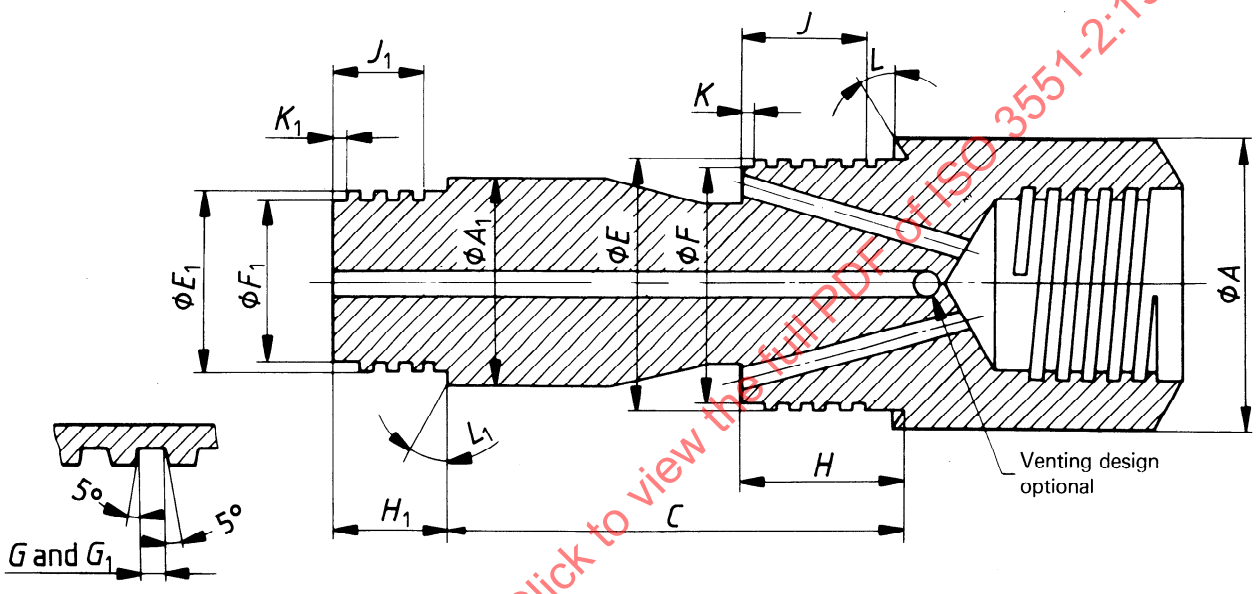


Figure 36 — "WG" design double-tube core barrel — Head (see table 35)

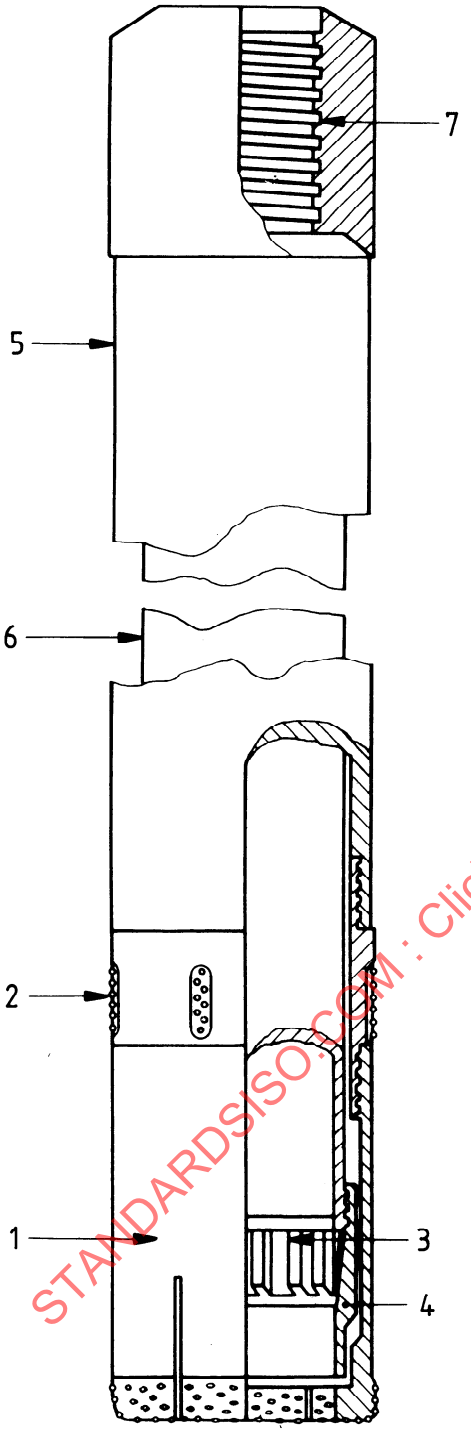
Table 35 — "WG" design double-tube core barrel — Head

Dimension		EWG[1]	AWG[1]	BWG[1] [2]	NWG[1] [2]	HWG[3]
A	max.	1.442	1.817	2.286	2.911	3.758
	min.	1.432	1.807	2.276	2.901	3.743
A_1	max.	1.067	1.416	1.885	2.51	3.250
	min.	1.062	1.406	1.875	2.50	3.235
C	max.	3.316	6.714	6.714	6.714	5.296
	min.	3.291	6.689	6.689	6.689	5.281
E	max.	1.249	1.655	2.124	2.749	3.500
	min.	1.247	1.653	2.122	2.747	3.497
F	max.	1.186	1.592	2.061	2.686	3.406
	min.	1.181	1.587	2.056	2.681	3.402
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
G	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
H	max.	1.054	1.296	1.546	1.796	1.284
	min.	1.039	1.281	1.531	1.781	1.269
J	min.	0.875	1.125	1.375	1.625	1.125
K	max.	0.135	0.135	0.135	0.135	0.135
	min.	0.115	0.115	0.115	0.115	0.115
L		30°	30°	30°	30°	15°
E_1	max.	0.811	1.155	1.624	2.249	2.500
	min.	0.809	1.153	1.622	2.247	2.498
F_1	max.	0.749	1.061	1.530	2.155	2.417
	min.	0.744	1.056	1.525	2.150	2.413
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)	0.2 (5)
G_1	max.	0.064	0.064	0.064	0.064	0.102
	min.	0.061	0.061	0.061	0.061	0.099
H_1	max.	0.750	0.875	1.000	1.125	1.250
	min.	0.735	0.860	0.985	1.110	1.235
J_1	min.	0.625	0.75	0.875	1	1.125
K_1	max.	0.135	0.135	0.135	0.135	0.135
	min.	0.115	0.115	0.115	0.115	0.115
L_1		0°	0°	0°	0°	0°
Rod thread connection		EW	AW	BW	NW	HW

1) These items are interchangeable with the "WM" design core barrels.

2) These items are interchangeable with the "WM" and "WT" design core barrels.

3) This item is interchangeable with the "WF" design core barrel.

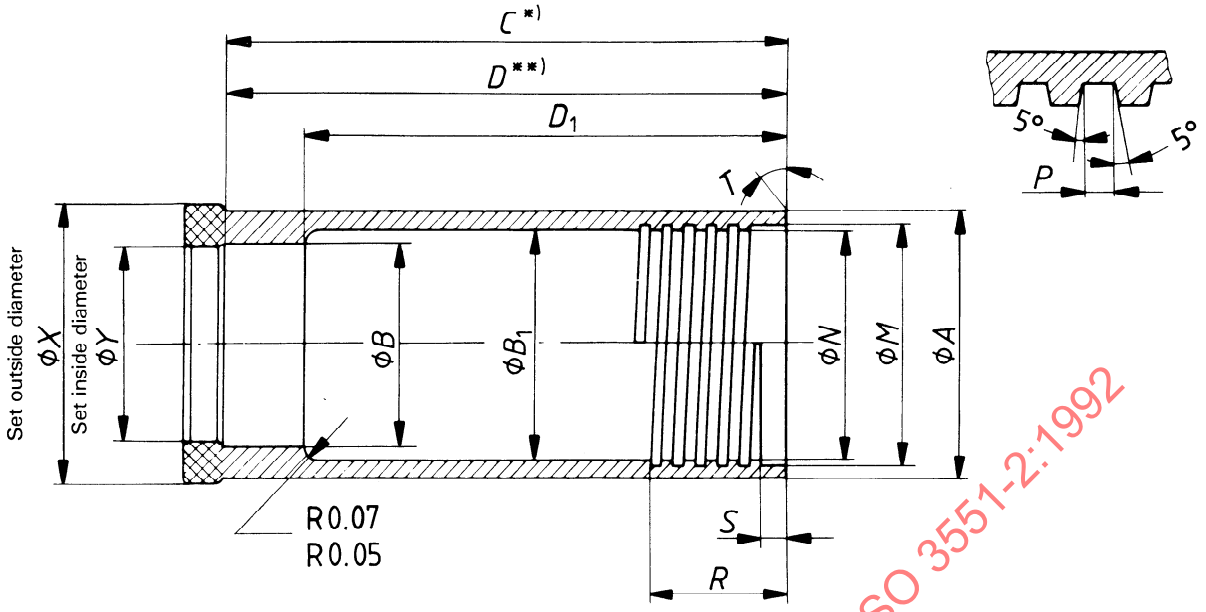


Key

Ref. No.	Description
1	Core bit
2	Reaming shell
3	Core lifter
4	Lifter case
5	Outer tube
6	Inner tube
7	Head thread only

NOTE — Standard "WM" design core barrel lengths are 60 in and 120 in (lengths refer to core capacity).

Figure 37 — "WM" design double-tube core barrel — Assembly — Swivel type



*) Clear of diamonds

**) Dimension from right-hand end to bottom of counterbore (ϕB).

Figure 38 — "WM" design double-tube core barrel — Core bit (see table 36)

Table 36 — "WM" design double-tube core barrel — Core bit

Dimension		EWM	AWM	BWM	NWM
A	max.	1.421	1.817	2.281	2.908
	min.	1.416	1.812	2.276	2.903
B	max.	1.067	1.390	1.843	2.411
	min.	1.062	1.385	1.838	2.406
B_1	max.	1.252	1.594	2.063	2.692
	min.	1.247	1.589	2.058	2.687
C and D [1]	max.	4.90	4.90	4.84	6.03
	min.	4.87	4.87	4.81	6.00
D_1	max.	4.098	4.098	4.098	5.223
	min.	4.088	4.088	4.088	5.213
M	max.	1.315	1.659	2.128	2.784
	min.	1.313	1.657	2.126	2.782
N	max.	1.253	1.596	2.065	2.721
	min.	1.251	1.594	2.063	2.719
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
P	max.	0.064	0.064	0.064	0.064
	min.	0.061	0.061	0.061	0.061
R	min.	1.25	1.25	1.25	1.375
S	max.	0.135	0.135	0.135	0.135
	min.	0.115	0.115	0.115	0.115
T		0°	0°	0°	0°
X	max.	1.475	1.88	2.35	2.97
	min.	1.465	1.87	2.34	2.96
Y	max.	0.85	1.19	1.66	2.16
	min.	0.84	1.18	1.65	2.15

1) See relevant note in figure 38.

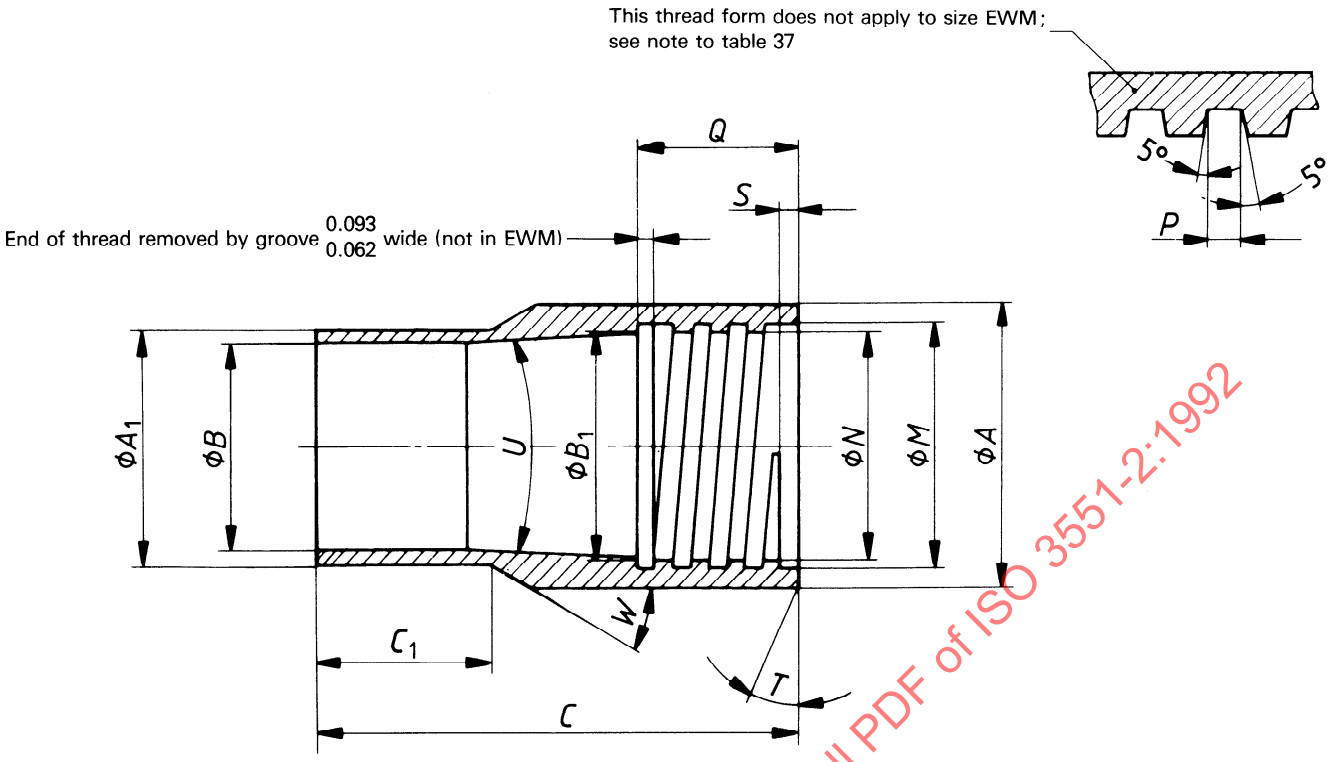
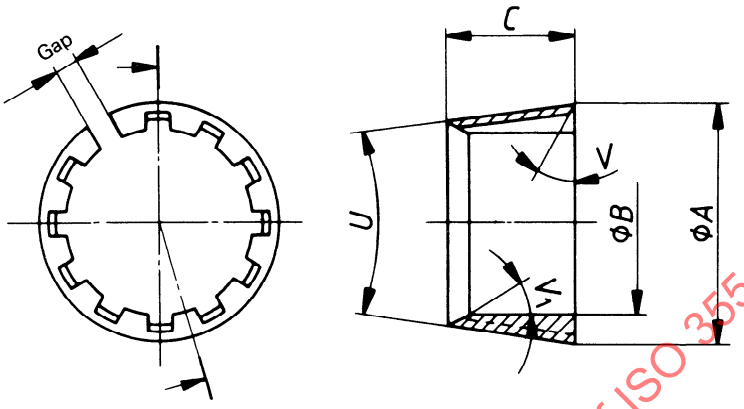


Figure 39 — "WM" design double-tube core barrel — Core-lifter case (see table 37)

Table 37 — "WM" design double-tube core barrel — Core-lifter case

Dimension		EWM	AWM	BWM	NWM
A	max.	1.187	1.531	2.000	2.625
	min.	1.182	1.526	1.995	2.620
A_1	max.	1.002	1.321	1.783	2.345
	min.	0.997	1.316	1.778	2.340
B	max.	0.909	1.228	1.689	2.252
	min.	0.904	1.223	1.684	2.247
B_1	max.	1.033	1.345	1.814	2.439
	min.	1.031	1.343	1.812	2.437
C	max.	2.690	2.565	2.503	3.440
	min.	2.685	2.560	2.498	3.435
C_1	max.	0.818	0.818	0.755	0.818
	min.	0.808	0.808	0.745	0.808
M	max.	1.038	1.409	1.878	2.503
	min.	1.032	1.407	1.876	2.501
N	max.	0.975	1.346	1.815	2.440
	min.	0.973	1.344	1.813	2.438
Thread pitch (Threads per inch)		*)	0.125 (8)	0.125 (8)	0.125 (8)
P	max.	*)	0.064	0.064	0.064
	min.		0.061	0.061	0.061
Q	max. thread	0.442	0.505	0.505	0.63
	min. thread	0.432	0.495	0.495	0.62
S	max.	0.067	0.067	0.067	0.067
	min.	0.057	0.057	0.057	0.057
T		0°	0°	0°	0°
U	max.	5° 15′	5° 15′	5° 15′	5° 15′
	min.	4° 45′	4° 45′	4° 45′	4° 45′
W		30°	30°	30°	30°

*) The thread for EWM is 1 1/32-20 UNS-2B (see BS 1580 : Parts 1 and 2).

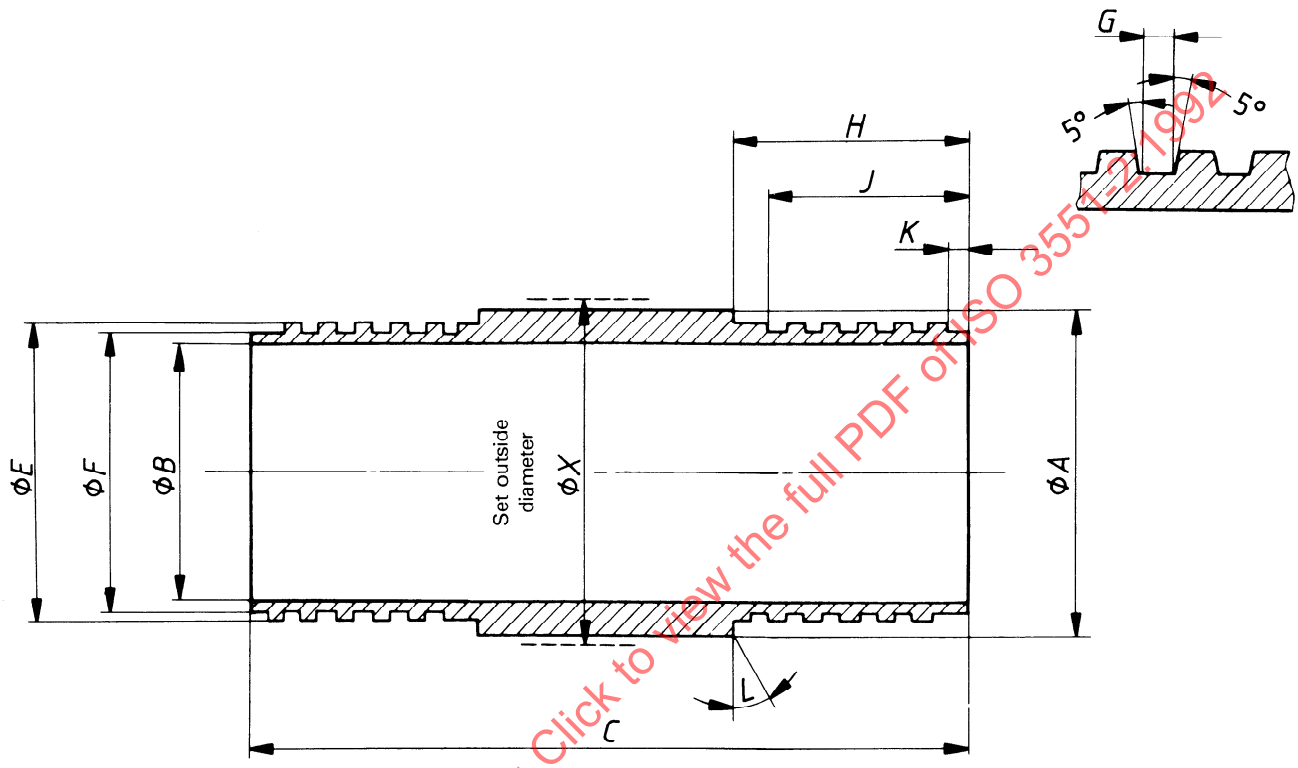


NOTE — Width of gap and number of flutes are left to the manufacturer.

Figure 40 — "WM" design double-tube core barrel — Core lifter (see table 38)

Table 38 — "WM" design double-tube core barrel — Core lifter

Dimension		EWM	AWM	BWM	NWM
A	max.	0.997	1.309	1.773	2.398
	min.	0.993	1.305	1.769	2.394
B	max.	0.830	1.170	1.635	2.135
	min.	0.826	1.166	1.631	2.131
C	max.	0.765	0.89	0.89	1.39
	min.	0.735	0.86	0.86	1.36
U	max.	5° 15′	5° 15′	5° 15′	5° 15′
	min.	4° 45′	4° 45′	4° 45′	4° 45′
V		0°	0°	0°	0°
V_1		10°	10°	10°	15°



NOTE — Dimensions shown apply to both ends.

Figure 41 — "WM" design double-tube core barrel — Reaming shell (see table 39)

Table 39 — "WM" design double-tube core barrel — Reaming shell

Dimension		EWM	AWM	BWM	NWM
A	max. min.	1.432 1.428	1.837 1.833	2.302 2.298	2.917 2.913
B	max. min.	1.159 1.154	1.503 1.498	1.970 1.965	2.598 2.593
C	max. min.	4.26 4.24	4.26 4.24	4.26 4.24	4.51 4.49
E	max. min.	1.311 1.309	1.655 1.653	2.124 2.122	2.780 2.778
F	max. min.	1.249 1.244	1.592 1.587	2.061 2.056	2.717 2.712
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
G	max. min.	0.064 0.061	0.064 0.061	0.064 0.061	0.064 0.061
H	max. min.	1.135 1.115	1.135 1.115	1.135 1.115	1.26 1.24
J	min.	1.062	1.062	1.062	1.187
K	max. min.	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177
L		0°	0°	0°	0°
X	max. min.	1.49 1.48	1.895 1.885	2.365 2.355	2.985 2.975

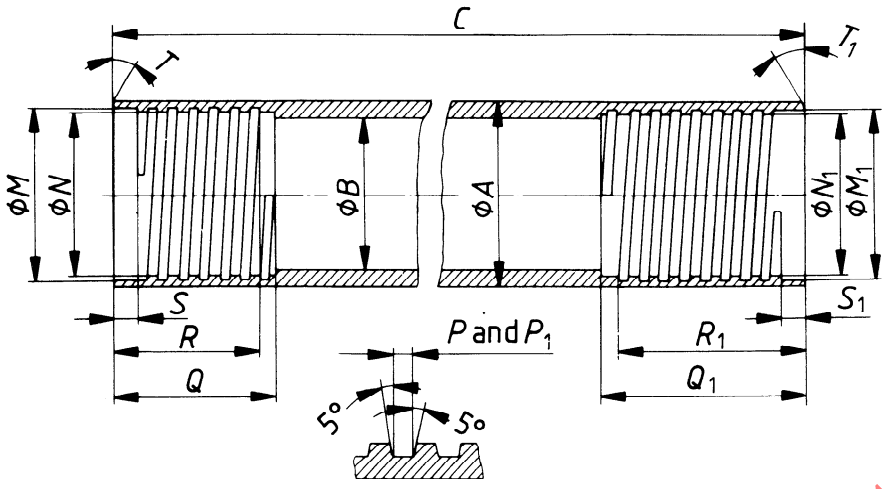


Figure 42 — "WM" design double-tube core barrel — Outer tube (see table 40)

Table 40 — "WM" design double-tube core barrel — Outer tube

Dimension		EWM	AWM	BWM	NWM
A	max. min.	1.442 1.437	1.822 1.812	2.291 2.281	2.916 2.906
B	max. min.	1.187 1.183	1.531 1.521	2.00 1.99	2.625 2.615
C	max. min.	120.204 120.171	123.734 123.703	123.921 123.890	123.937 123.906
M	max. min.	1.315 1.313	1.659 1.657	2.128 2.126	2.784 2.782
N	max. min.	1.253 1.251	1.596 1.594	2.065 2.063	2.721 2.719
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
P	max. min.	0.064 0.061	0.064 0.061	0.064 0.061	0.064 0.061
Q	min.	1.375	1.375	1.375	1.5
R	min.	1.25	1.25	1.25	1.375
S	max. min.	0.197 0.177	0.197 0.177	0.197 0.177	0.197 0.177
T		0°	0°	0°	0°
M_1	max. min.	1.253 1.251	1.659 1.657	2.128 2.126	2.753 2.751
N_1	max. min.	1.190 1.188	1.596 1.594	2.065 2.063	2.690 2.688
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
P_1	max. min.	0.064 0.061	0.064 0.061	0.064 0.061	0.064 0.061
Q_1	min.	1.187	1.437	1.687	1.937
R_1	min.	1.062	1.312	1.562	1.812
S_1	max. min.	0.26 0.24	0.26 0.24	0.26 0.24	0.26 0.24
T_1		30°	30°	30°	30°

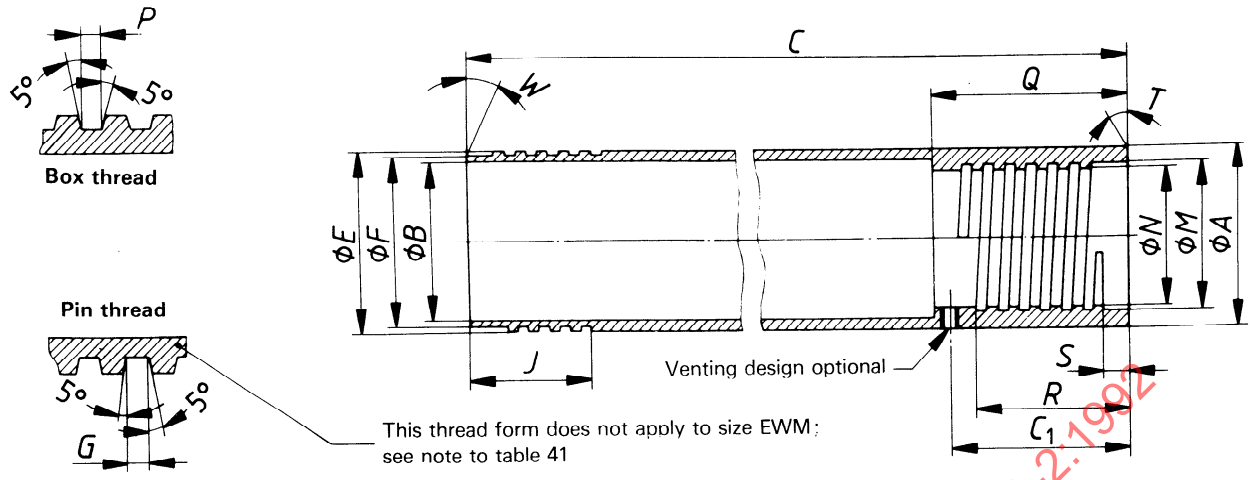


Figure 43 — "WM" design double-tube core barrel — Inner tube (see table 41)

Table 41 — "WM" design double-tube core barrel — Inner tube

Dimension		EWM	AWM	BWM	NWM
A	max.	1.067	1.416	1.885	2.51
	min.	1.062	1.406	1.875	2.50
B	max.	0.937	1.25	1.718	2.25
	min.	0.932	1.24	1.708	2.24
C	max.	121.390	121.703	121.890	122.265
	min.	121.359	121.671	121.859	122.234
C_1	max.	1.155	1.467	1.655	2.03
	min.	1.095	1.407	1.595	1.97
E	max.	1.030	1.405	1.874	2.499
	min.	1.024	1.403	1.872	2.497
F	max.	*)	1.342	1.811	2.436
	min.		1.337	1.806	2.431
Thread pitch (Threads per inch)		*)	0.125 (8)	0.125 (8)	0.125 (8)
G	max.	*)	0.064	0.064	0.064
	min.		0.061	0.061	0.061
J	max.	0.442	0.442	0.442	0.63
	min.	0.432	0.432	0.432	0.62
M	max.	0.815	1.159	1.628	2.253
	min.	0.813	1.157	1.626	2.251
N	max.	0.753	1.065	1.534	2.159
	min.	0.751	1.063	1.532	2.157
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
P	max.	0.064	0.064	0.064	0.064
	min.	0.061	0.061	0.061	0.061
Q	max.	1.39	1.702	1.89	2.265
	min.	1.36	1.672	1.86	2.235
R	min.	0.875	1.25	1.25	1.25
S	max.	0.197	0.197	0.197	0.197
	min.	0.177	0.177	0.177	0.177
T		0°	0°	0°	0°
W		0°	0°	0°	0°

*) The thread for EWM is 1 1/32-20 UNS-2A (see BS 1580 : Parts 1 and 2).

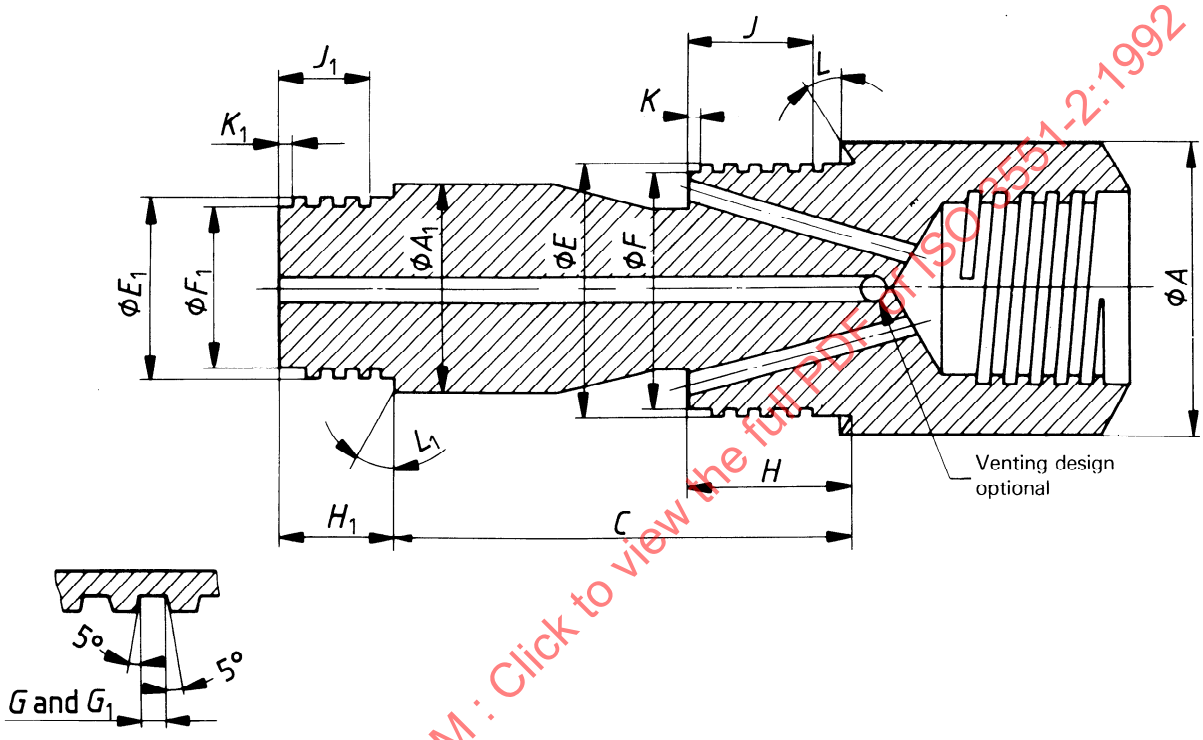


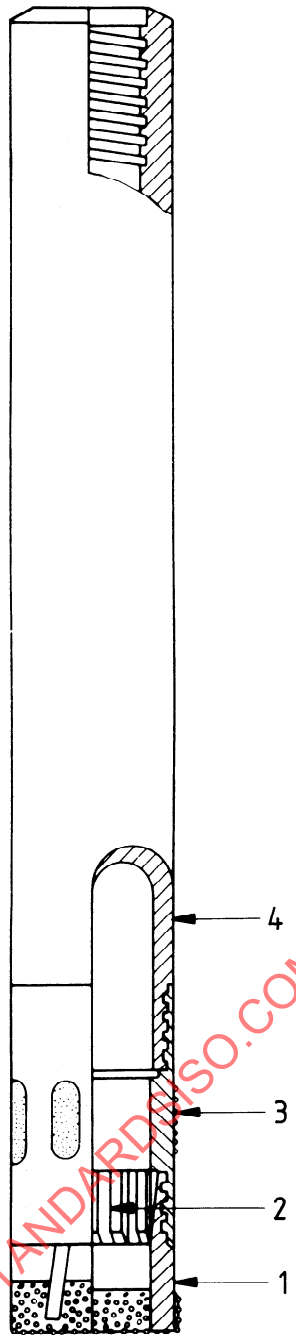
Figure 44 — "WM" design double-tube core barrel — Head (see table 42)

Table 42 — "WM" design double-tube core barrel — Head

Dimension		EWM[1]	AWM[1]	BWM[1] [2]	NWM[1] [2]
A	max.	1.442	1.817	2.286	2.911
	min.	1.432	1.807	2.276	2.901
A_1	max.	1.067	1.416	1.885	2.51
	min.	1.062	1.406	1.875	2.50
C	max.	3.316	6.714	6.714	6.714
	min.	3.291	6.689	6.689	6.689
E	max.	1.249	1.655	2.124	2.749
	min.	1.247	1.653	2.122	2.747
F	max.	1.186	1.592	2.061	2.686
	min.	1.181	1.587	2.056	2.681
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
G	max.	0.064	0.064	0.064	0.064
	min.	0.061	0.061	0.061	0.061
H	max.	1.054	1.296	1.546	1.796
	min.	1.039	1.281	1.531	1.781
J	min.	0.875	1.125	1.375	1.625
K	max.	0.135	0.135	0.135	0.135
	min.	0.115	0.115	0.115	0.115
L		30°	30°	30°	30°
E_1	max.	0.811	1.155	1.624	2.249
	min.	0.809	1.153	1.622	2.247
F_1	max.	0.749	1.061	1.530	2.155
	min.	0.744	1.056	1.525	2.150
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.125 (8)	0.125 (8)
G_1	max.	0.064	0.064	0.064	0.064
	min.	0.061	0.061	0.061	0.061
H_1	max.	0.750	0.875	1.000	1.125
	min.	0.735	0.860	0.985	1.110
J_1	min.	0.625	0.75	0.875	1
K_1	max.	0.135	0.135	0.135	0.135
	min.	0.115	0.115	0.115	0.115
L_1		0°	0°	0°	0°
Rod thread connection		EW	AW	BW	NW

1) These items are interchangeable with the "WG" design core barrels.

2) These items are interchangeable with the "WT" design core barrels.



Key

Ref. No.	Description
1	Core bit bevel wall
2	Core lifter
3	Reaming shell
4	Tube

NOTES

1 Bits and core springs are interchangeable between double-tube and single-tube barrels.

2 Standard "WT" design core barrel lengths are 60 in and 120 in (lengths refer to core capacity).

Figure 45 — "WT" design single-tube core barrel — Assembly — Sizes BWT, NWT and HWT

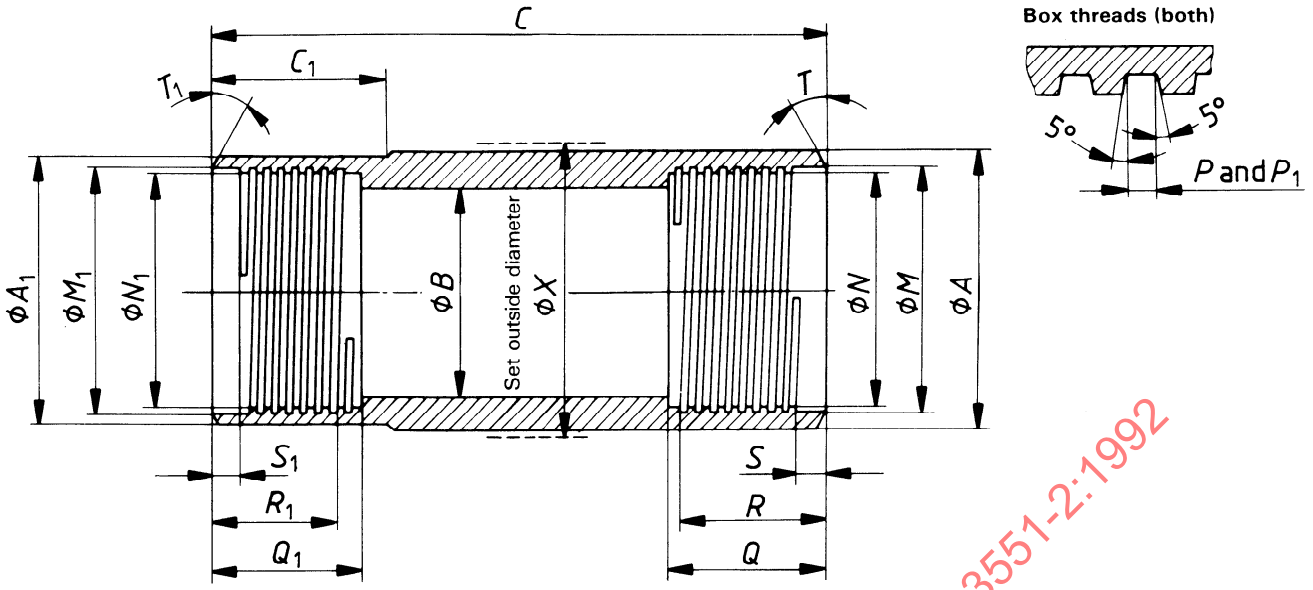
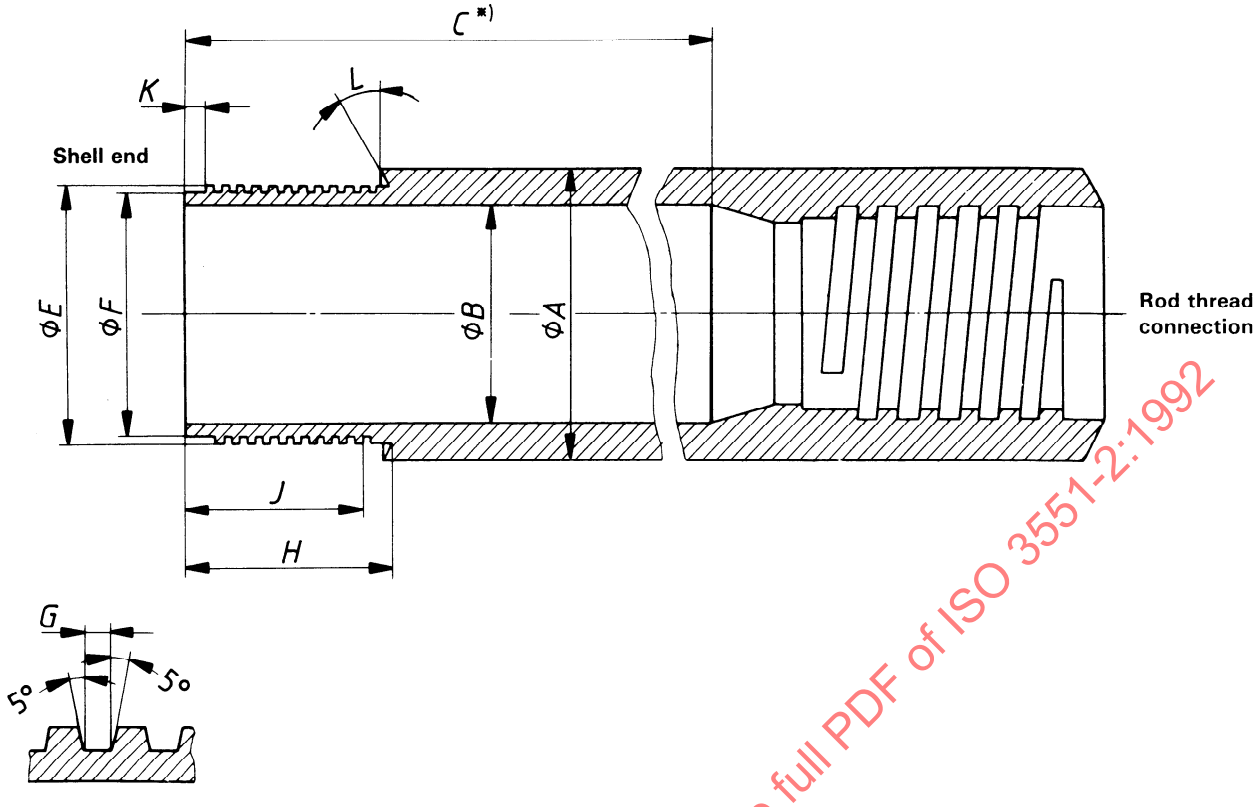


Figure 46 — "WT" design single-tube core barrel — Reaming shell (see table 43)

Table 43 — "WT" design single-tube core barrel — Reaming shell

Dimension		BWT	NWT	HWT
A	max. min.	2.320 2.316	2.935 2.931	3.856 3.852
A_1	max. min.	2.307 2.303	2.924 2.920	3.847 3.843
B	max. min.	1.814 1.810	2.377 2.373	3.252 3.248
C	max. min.	6.650 6.625	6.900 6.875	7.525 7.500
C_1	max. min.	2.015 1.985	2.14 2.11	2.515 2.485
M	max. min.	2.218 2.216	2.823 2.821	3.724 3.722
N	max. min.	2.156 2.154	2.761 2.759	3.662 3.660
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.2 (5)
P	max. min.	0.064 0.061	0.064 0.061	0.102 0.099
Q	max. min.	1.394 1.389	1.518 1.513	1.769 1.764
R	min.	1.25	1.375	1.625
S	max. min.	0.197 0.177	0.197 0.177	0.228 0.208
T		15°	15°	15°
M_1	max. min.	2.125 2.123	2.726 2.724	3.640 3.638
N_1	max. min.	2.065 2.063	2.666 2.664	3.580 3.578
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.2 (5)
P_1	max. min.	0.064 0.061	0.064 0.061	0.102 0.099
Q_1	max. min.	1.687 1.667	1.812 1.792	2.136 2.116
R_1	min.	1.125	1.25	1.5
S_1	max. min.	0.197 0.177	0.197 0.177	0.228 0.208
T_1		15°	15°	15°
X	max. min.	2.365 2.355	2.985 2.975	3.912 3.902

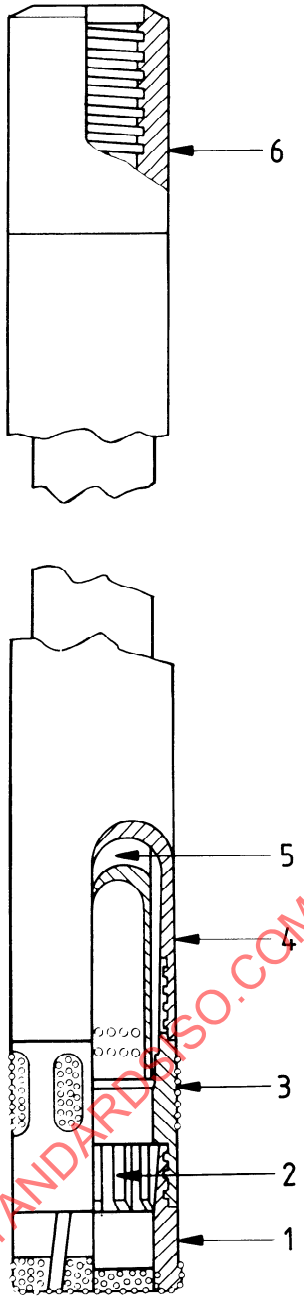


*) Length C equals 120 in core capacity.

Figure 47 — "WT" design single-tube core barrel — Tube (see table 44)

Table 44 — "WT" design single-tube core barrel — Tube

Dimension		BWT	NWT	HWT
A	max.	2.322	2.916	3.827
	min.	2.312	2.906	3.812
B	max.	1.844	2.437	3.312
	min.	1.834	2.427	3.292
C	min.	117.375	117.375	117.375
E	max.	2.214	2.819	3.720
	min.	2.212	2.817	3.718
F	max.	2.152	2.757	3.658
	min.	2.149	2.754	3.653
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.2 (5)
G	max.	0.064	0.064	0.102
	min.	0.061	0.061	0.099
H	max.	1.389	1.513	1.764
	min.	1.384	1.508	1.759
J	min.	1.25	1.375	1.625
K	max.	0.197	0.197	0.228
	min.	0.177	0.177	0.208
L		15°	15°	15°
Rod thread connection		BW	NW	HW
NOTE — Detachable head is at the manufacturer's choice.				



Key

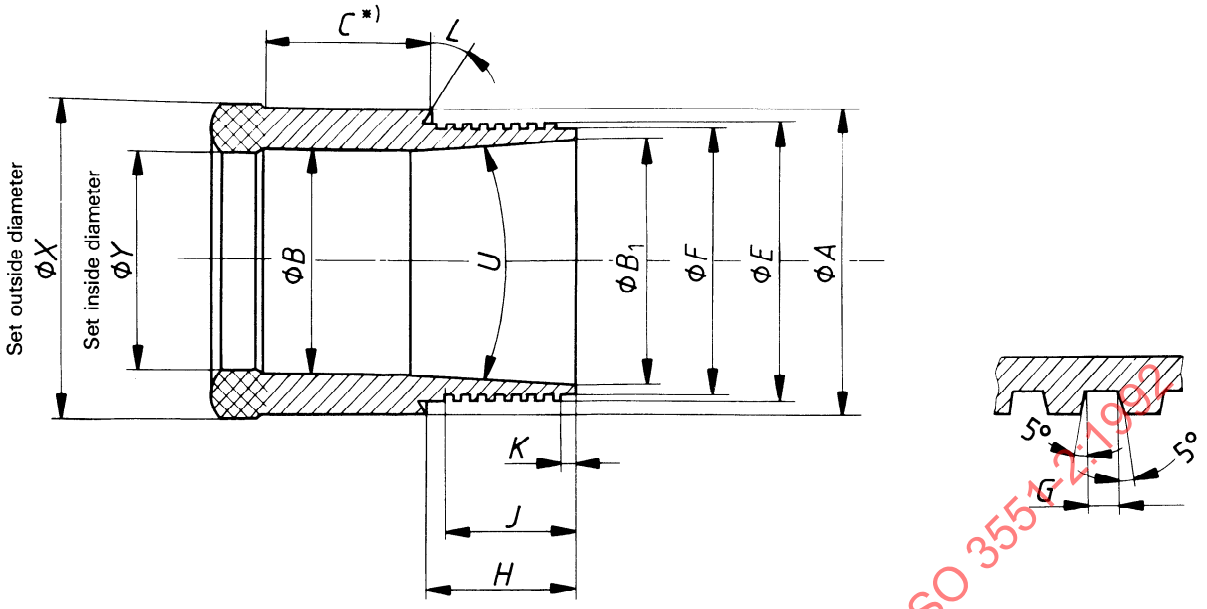
Ref. No.	Description
1	Core bit bevel wall
2	Core lifter
3	Reaming shell
4	Outer tube
5	Inner tube
6	Head: rigid or swivel

NOTES

1 Bits and core springs are interchangeable between double-tube and single-tube barrels.

2 Standard "WT" design core barrel lengths are 60 in and 120 in (lengths refer to core capacity).

Figure 48 — "WT" design double-tube core barrel — Assembly — Rigid and swivel types BWT, NWT and HWT

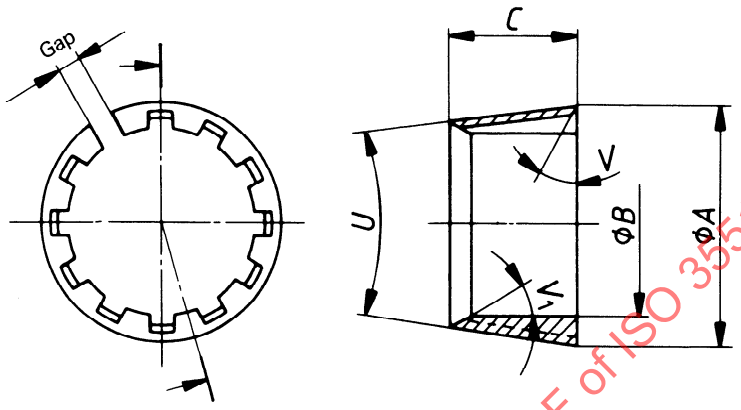


*) Clear of diamonds

Figure 49 — "WT" design core barrel — Single and double type — Bevel wall core bit (see table 45)

Table 45 — "WT" design core barrel — Single and double type — Bevel wall core bit

Dimension		BWT	NWT	HWT
A	max. min.	2.307 2.303	2.924 2.920	3.847 3.843
B	max. min.	1.82 1.81	2.383 2.373	3.257 3.247
B_1	max. min.	1.984 1.980	2.588 2.584	3.494 3.490
C	min.	1.25	1.375	1.5
E	max. min.	2.121 2.119	2.722 2.720	3.636 3.634
F	max. min.	2.061 2.058	2.662 2.659	3.576 3.573
Thread pitch (Threads per inch)		0.125 (8)	0.125 (8)	0.2 (5)
G	max. min.	0.064 0.061	0.064 0.061	0.102 0.099
H	max. min.	1.16 1.14	1.287 1.267	1.538 1.518
J	min.	1	1.125	1.375
K	max. min.	0.072 0.052	0.072 0.052	0.072 0.052
L		15°	15°	15°
U	max. min.	6° 15′ 5° 45′	6° 15′ 5° 45′	5° 15′ 4° 45′
X	max. min.	2.35 2.34	2.97 2.96	3.897 3.882
Y	max. min.	1.755 1.745	2.318 2.308	3.192 3.182



NOTE — Width of gap, entry angle and number of flutes are left to the manufacturer.

Figure 50 — "WT" design core barrel — Single and double type — Core lifter (see table 46)

Table 46 — "WT" design core barrel — Single and double type — Core lifter

Dimension		BWT	NWT	HWT
A	max. min.	1.984 1.980	2.588 2.584	3.494 3.490
B	max. min.	1.730 1.726	2.293 2.289	3.162 3.158
C	max. min.	1.202 1.172	1.515 1.485	2.015 1.985
U	max. min.	6° 15′ 5° 45′	6° 15′ 5° 45′	5° 15′ 4° 45′
V		10°	10°	10°
V_1		Optional		

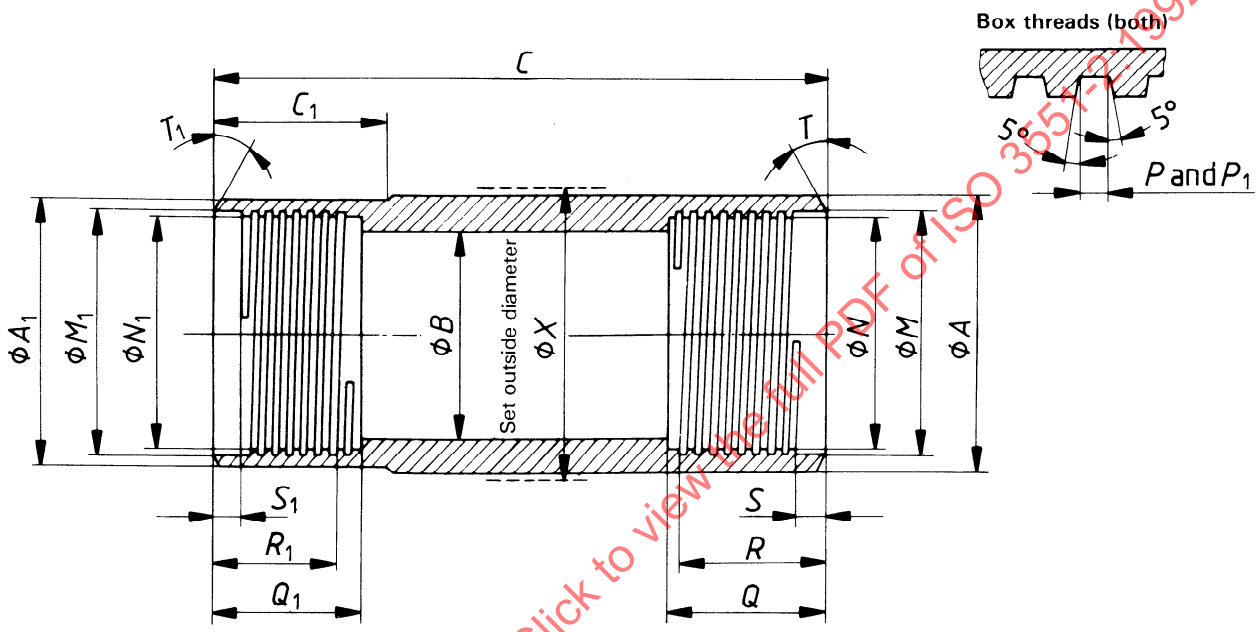


Figure 51 — "WT" design double-tube core barrel — Reaming shell (see table 47)