

International Standard



6430

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Pneumatic fluid power — Single rod cylinders with integral mountings — 10 bar (1 000 kPa) series — Bores from 32 to 250 mm — Mounting dimensions

Transmissions pneumatiques — Vérins à simple tige à fixations intégrées — Série 10 bar (1 000 kPa) — Diamètres de 32 à 250 mm — Dimensions de montage

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6430 was developed by Technical Committee ISO/TC 131, *Fluid power systems*, and was circulated to the member bodies in January 1982.

It has been approved by the member bodies of the following countries:

Austria	Hungary	Romania
Belgium	India	Spain
Brazil	Italy	Sweden
China	Japan	United Kingdom
Egypt, Arab Rep. of	Mexico	USA
Finland	Netherlands	USSR
France	Norway	
Germany, F. R.	Poland	

The member body of the following country expressed disapproval of the document on technical grounds:

Australia

Pneumatic fluid power — Single rod cylinders with integral mountings — 10 bar (1 000 kPa¹⁾) series — Bores from 32 to 250 mm — Mounting dimensions

0 Introduction

In pneumatic fluid power systems, power is transmitted and controlled through a gas under pressure in a closed circuit. One component of such systems is the pneumatic cylinder. This is a device which converts the power, brought by the gas, into mechanical energy or force applied in a direction defined by the motion of an element, the piston, following the axis of a bore.

This piston is fastened to another element, the rod, which is the point where the main cylinder force is applied. To enable them to be fastened to user mechanisms, pneumatic cylinders have devices called "mountings". This International Standard deals with pneumatic cylinders for which these mountings cannot be detached from the main body of the device. These integral mountings make it possible to reach compact mounting dimensions.

Another International Standard of a similar conception, ISO 6431, deals with cylinders for which these mountings can be detached from the main body of the device without dismantling it.

1 Scope and field of application

This International Standard establishes a metric series of mounting dimensions required for interchangeability of commonly used pneumatic cylinders for a maximum working pressure of 10 bar (1 000 kPa).

NOTE — This International Standard allows manufacturers of pneumatic equipment freedom of design in metric cylinders and does not restrict technical development but provides basic guidelines.

2 References

ISO 228/1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Designation, dimensions and tolerances.*

ISO 4393, *Fluid power systems and components — Cylinders — Basic series of piston strokes.*

ISO 4395, *Fluid power systems and components — Cylinders — Piston rod thread dimensions and types.*

ISO 5598, *Fluid power systems and components — Vocabulary.*²⁾

ISO 6099, *Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types.*

ISO 6431, *Pneumatic fluid power — Single rod cylinders with detachable mountings — 10 bar (1 000 kPa) series — Bores from 32 to 320 mm — Mounting dimensions.*

3 Definitions

For definitions of terms used, see ISO 5598.

4 Dimensions

Select mounting dimensions for cylinders manufactured in accordance with this International Standard from tables 2 to 14 inclusive.

NOTE — The tolerances of dimensions dependent on stroke included in the tables apply for strokes up to and including 1 250 mm. If strokes are longer than 1 250 mm, select tolerances from national standards or by agreement between manufacturer and user.

5 Nominal stroke

5.1 Select the nominal strokes from the recommended values shown in ISO 4393.

1) 1 bar = 100 kPa = 10⁵ Pa; 1 Pa = 1 N/m²

2) At present at the stage of draft.

5.2 See table 1 for the nominal stroke tolerances.

Table 1 — Nominal stroke tolerances
Dimensions in millimetres

Cylinder bore	Nominal stroke, <i>S</i>	Nominal stroke tolerance ¹⁾
32 40 50	<i>S</i> < 500	+ 2 0
	500 < <i>S</i> < 1 250	+ 3,2 0
63 80 100	<i>S</i> < 500	+ 2,5 0
	500 < <i>S</i> < 1 250	+ 4 0
125 160 200 250	<i>S</i> < 500	+ 4 0
	500 < <i>S</i> < 1 250	+ 5 0

1) See note in clause 4.

6 Bore sizes

Included in this series are the following bore sizes :

32 — 40 — 50 — 63 — 80 — 100 — 125 — 160 — 200 — 250 mm

7 Mounting styles

This International Standard includes the following mounting styles as described in ISO 6099 :

- MF 1 — Head rectangular flange mounting (see figure 3 and table 4)
- MF 2 — Cap rectangular flange mounting (see figure 4 and table 5)
- MP 1 — Cap clevis mounting (see figure 5 and table 6)
- MP 3 — Cap fixed eye mounting (see figure 6 and table 7)

MS 2 — Side lugs mounting (see figure 7 and table 8)

MT 1 — Head integral trunnion, (male) mounting (see figure 8 and table 9)

MT 2 — Cap integral trunnion, (male) mounting (see figure 9 and table 10)

MT 4 — Intermediate fixed or movable trunnion (male) mounting (see figure 10 and table 11)

MX 1 — Both ends studs or tie rods extended mounting (see figure 11 and table 12)

MX 2 — Cap studs or tie rods extended mounting (see figure 12 and table 13)

MX 3 — Head studs or tie rods extended mounting (see figure 13 and table 14)

8 Piston rod characteristics

This International Standard includes the following piston rod characteristics :

Shouldered male threads (see figure 1, table 2)

The dimensions of the piston rod threads are chosen in accordance with ISO 4395.

9 Identification statement (Reference to this International Standard)

Use the following statement in test reports, catalogues, and sales literature when electing to comply with this International Standard :

“Mounting dimensions for interchangeable cylinders are selected in accordance with ISO 6430, *Pneumatic fluid power — Single rod cylinders with integral mountings — 10 bar (1 000 kPa) series — Bores from 32 to 250 mm — Mounting dimensions.*”

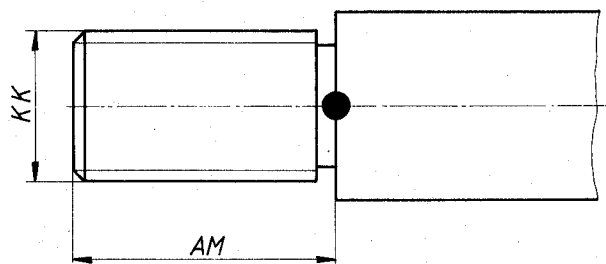


Figure 1 — Piston rod end threads

Table 2 — Dimensions of piston rod end threads

Dimensions in millimetres

Bore	KK	AM	
		nom.	tol.
32	M 10 × 1,25	22	
40	M 12 × 1,25	24	
50	M 16 × 1,5	32	
63	M 16 × 1,5	32	0
80	M 20 × 1,5	40	- 2
100	M 20 × 1,5	40	
125	M 27 × 2	54	
160	M 36 × 2	72	
200	M 36 × 2	72	
250	M 42 × 2	84	

NOTE — Dimensions KK and AM given for piston rod end threads correspond to the "long" type as in ISO 4395.

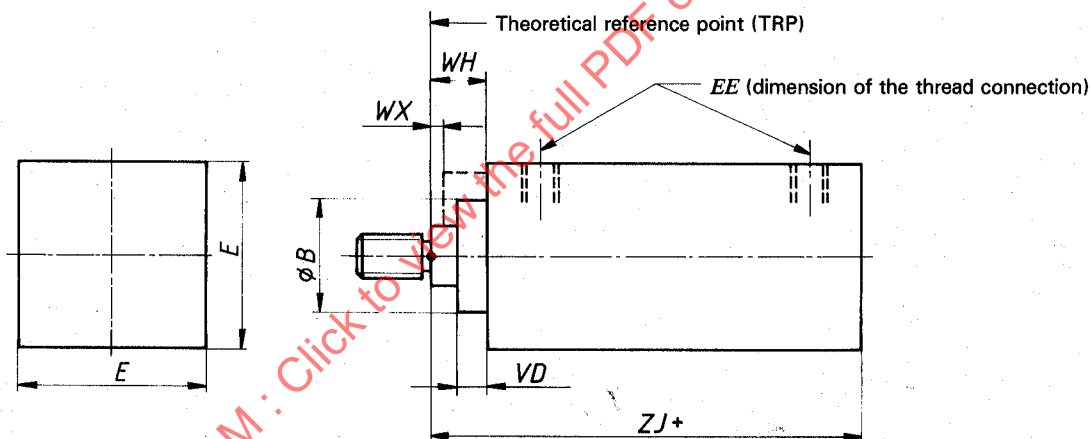


Figure 2 — Basic dimensions

Table 3 — Basic dimensions¹⁾

Dimensions in millimetres

Bore	E	B	WX ²⁾	VD	WH		ZJ ³⁾		EE ⁴⁾	
	max.	f9	min.	min.	nom.	tol.	nom.	tol.	metric	inch
32	45	24	9	5	15	± 1,6	118	± 1,6	M10 × 1	G1/8
40	51	30	8	5	15	± 1,6	118	± 1,6	M14 × 1,5	G1/4
50	64	34	8	5	15	± 1,6	118	± 1,6	M14 × 1,5	G1/4
63	77	34	6	5	15	± 2	121	± 2	M18 × 1,5	G3/8
80	96	39	9	5	19	± 2	143	± 2	M18 × 1,5	G3/8
100	115	39	9	5	19	± 2	143	± 2	M22 × 1,5	G1/2
125	140	46	7	5	19	± 2,5	149	± 2,5	M22 × 1,5	G1/2
160	179	55	6	5	21	± 2,5	172	± 2,5	M27 × 2	G3/4
200	217	55	6	5	21	± 2,5	172	± 2,5	M27 × 2	G3/4
250	271	60	5	4	23	± 3	210	± 3	M33 × 2	G1

1) The dimensions indicated here relate to every type of mounting shown in all other figures.

2) WX includes consideration of tie rod nut height where it applies. Extension of the tie rods past nuts is not included.

3) See note in clause 4.

4) The inch series is chosen in accordance with ISO 228/1. A definitive choice of port thread sized EE will be made in accordance with future decisions of ISO/TC 131/SC 4.

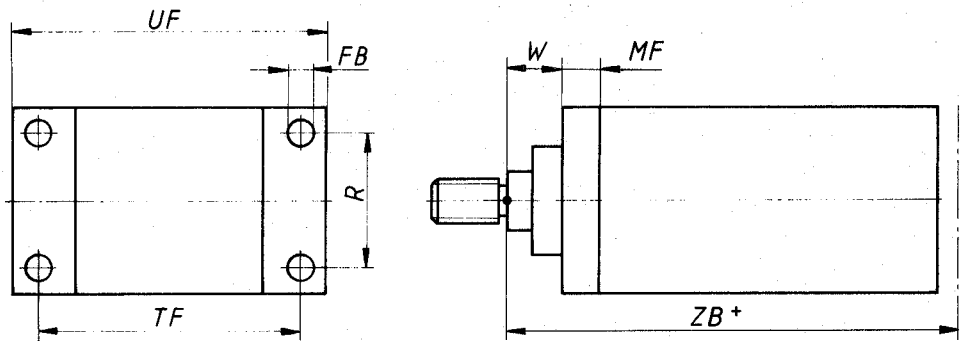


Figure 3 — Head rectangular flange mounting (MF 1)

Table 4 — Dimensions of head rectangular flange mounting (MF 1)

Dimensions in millimetres

Bore	UF max.	FB H13	TF Js14	R Js14	W		MF	tol.	ZB ¹⁾ max.
					nom.	tol.		tol.	
32	72	7	58	33	15	± 1,6	10	± 0,3	125
40	84	7	70	36	15	± 1,6	10	± 0,3	125
50	104	9	86	47	15	± 1,6	10	± 0,3	125
63	116	9	98	56	15	± 2	10	± 0,3	130
80	143	12	119	70	19	± 2	16	± 0,3	153
100	162	12	138	84	19	± 2	16	± 0,3	153
125	196	14	168	104	19	± 2,5	16	± 0,3	162
160	248	18	212	134	21	± 2,5	20	± 0,5	188
200	286	18	250	163	21	± 2,5	20	± 0,5	188
250	356	22	312	201	23	± 3	25	± 0,5	229

1) ZB includes consideration of tie rods nut height where it applies. Extension of the tie rods past nuts is not included.

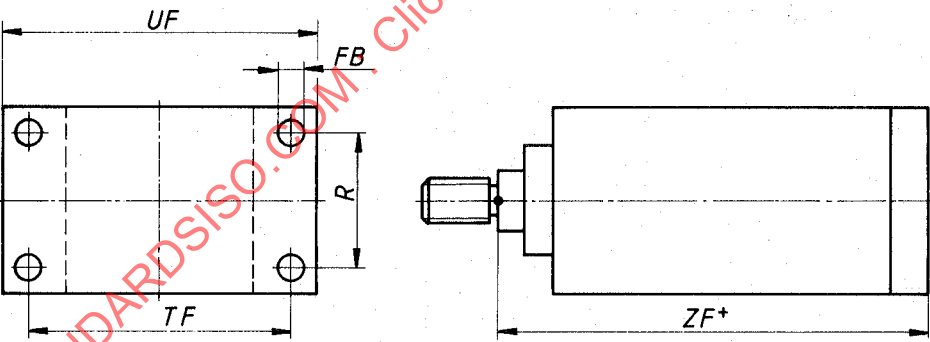


Figure 4 — Cap rectangular flange mounting (MF 2)

Table 5 — Dimensions of cap rectangular flange mounting (MF 2)

Dimensions in millimetres

Bore	UF max.	FB H13	TF Js14	R Js14	ZF ¹⁾	
					nom.	tol.
32	72	7	58	33	128	± 1,2
40	84	7	70	36	128	± 1,2
50	104	9	86	47	128	± 1,2
63	116	9	98	56	131	± 1,6
80	143	12	119	70	159	± 1,6
100	162	12	138	84	159	± 1,6
125	194	14	168	104	165	± 2
160	248	18	212	134	192	± 2
200	286	18	250	163	192	± 2
250	356	22	312	201	235	± 2,5

1) See note in clause 4.

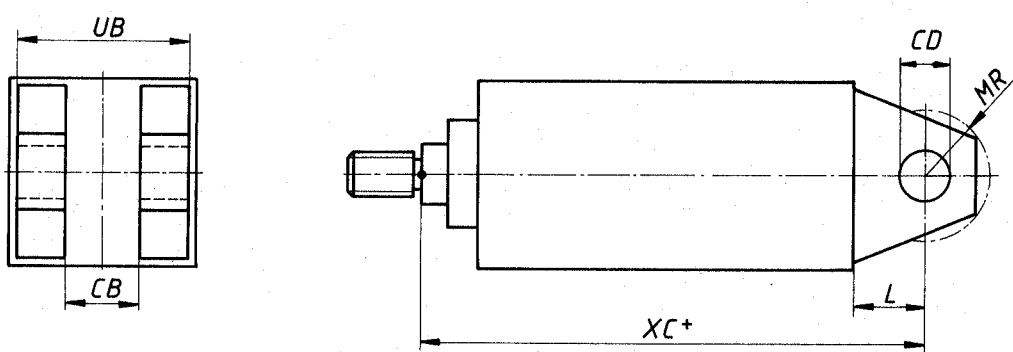


Figure 5 — Cap fixed clevis mounting (MP 1)

Table 6 — Dimensions of cap fixed clevis mounting (MP 1)

Bore	UB max.	CB A16	XC ¹⁾		CD H9	MR max.	L min.
			nom.	tol.			
32	38	16	137	± 1,2	12	17	19
40	46	20	137	± 1,2	14	17	19
50	52	20	137	± 1,2	14	17	19
63	52	20	140	± 1,6	14	17	19
80	65	32	175	± 1,6	20	29	32
100	65	32	175	± 1,6	20	29	32
125	65	32	181	± 2	20	29	32
160	83	40	210	± 2	28	34	38
200	83	40	210	± 2	28	34	38
250	115	50	264	± 2,5	36	50	54

1) See note in clause 4.

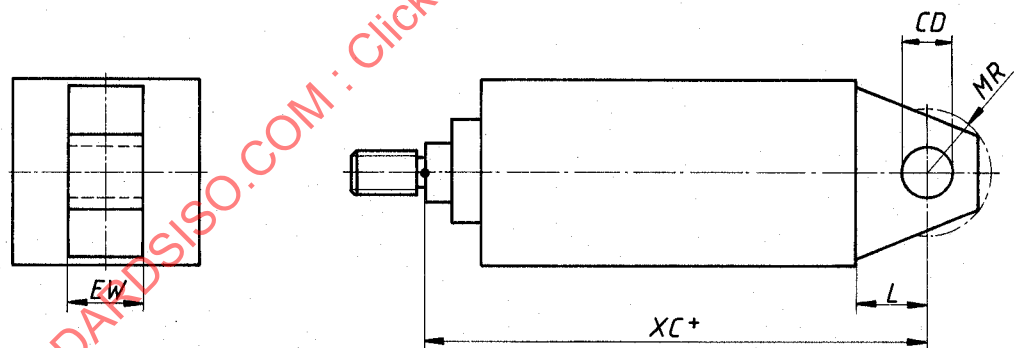


Figure 6 — Cap fixed eye mounting (MP 3)

Table 7 — Dimensions of cap fixed eye mounting (MP 3)

Bore	EW h10	XC ¹⁾		CD H9	MR max.	L min.
		nom.	tol.			
32	16	137	± 1,2	12	17	19
40	20	137	± 1,2	14	17	19
50	20	137	± 1,2	14	17	19
63	20	140	± 1,6	14	17	19
80	32	175	± 1,6	20	29	32
100	32	175	± 1,6	20	29	32
125	32	181	± 2	20	29	32
160	40	210	± 2	28	34	38
200	40	210	± 2	28	34	38
250	50	264	± 2,5	36	50	54

1) See note in clause 4.

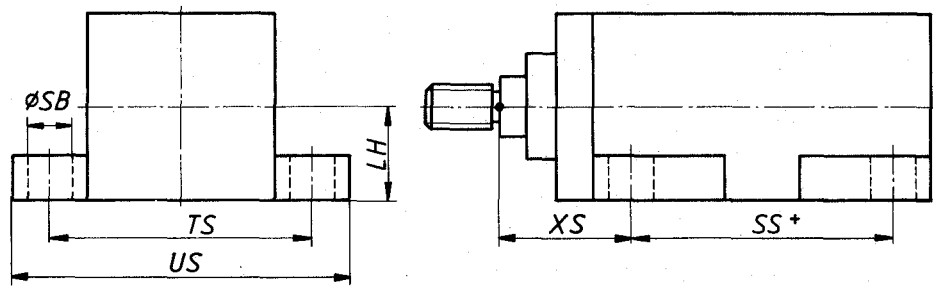


Figure 7 – Side lugs mounting (MS 2)

Table 8 – Dimensions of side lugs mounting (MS 2)

Dimensions in millimetres

Bore	SB H13	TS Js14	LH a10	XS		SS ¹⁾		US max.
				nom.	tol.	nom.	tol.	
32	9	63	22	35	$\pm 1,2$	73	$\pm 1,2$	81
40	12	70	25	35	$\pm 1,2$	73	$\pm 1,2$	94
50	12	83	31	35	$\pm 1,2$	73	$\pm 1,2$	107
63	12	95	38	35	$\pm 1,6$	76	$\pm 1,6$	119
80	14	121	47	48	$\pm 1,6$	82	$\pm 1,6$	149
100	14	140	57	48	$\pm 1,6$	82	$\pm 1,6$	168
125	18	175	69	52	± 2	80	± 2	211
160	22	213	89	59	± 2	95	± 2	257
200	22	251	108	59	± 2	95	± 2	295
250	26	314	135	70	$\pm 2,5$	118	$\pm 2,5$	366

1) See note in clause 4.

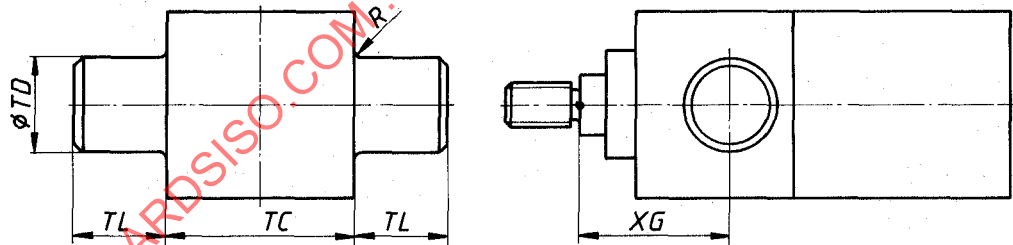


Figure 8 – Head integral trunnion (male) mounting (MT 1)

Table 9 – Dimensions of head integral trunnion (male) mounting (MT 1)

Dimensions in millimetres

Bore	TD e9	R max.	TL h14	TC h14	XG	
					nom.	tol.
32	16	1	16	44	44	$\pm 1,6$
40	25	1,6	25	50	44	$\pm 1,6$
50	25	1,6	25	63	44	$\pm 1,6$
63	25	1,6	25	76	44	± 2
80	25	1,6	25	95	57	± 2
100	25	2	25	114	57	± 2
125	25	2	25	139	57	$\pm 2,5$
160	36	2,5	36	178	66	$\pm 2,5$
200	36	2,5	36	216	66	$\pm 2,5$
250	45	3,2	45	270	76	$\pm 2,5$

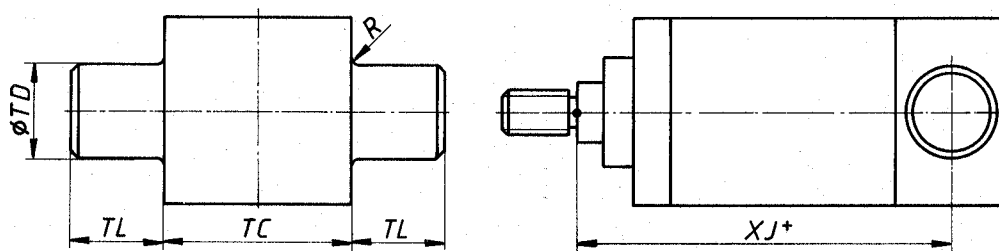


Figure 9 — Cap integral trunnion (male) mounting (MT 2)

Table 10 — Dimensions of cap integral trunnion (male) mounting (MT 2)

Dimensions in millimetres

Bore	TD e9	R max.	TL h14	TC h14	XJ ¹⁾	
					nom.	tol.
32	16	1	16	44	105	± 1,2
40	25	1,6	25	50	105	± 1,2
50	25	1,6	25	63	105	± 1,2
63	25	1,6	25	76	108	± 1,6
80	25	1,6	25	95	127	± 1,6
100	25	2	25	114	127	± 1,6
125	25	2	25	139	133	± 2
160	36	2,5	36	178	153	± 2
200	36	2,5	36	216	153	± 2
250	45	3,2	45	270	185	± 2,5

1) See note in clause 4.

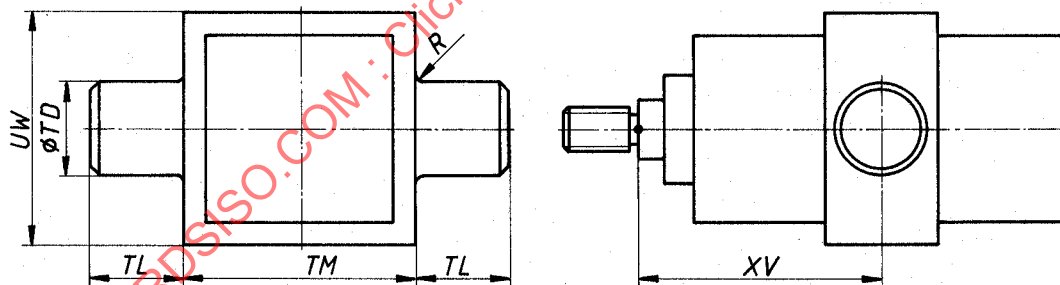


Figure 10 — Intermediate fixed or movable trunnion (male) mounting (MT 4)

Table 11 — Dimensions of intermediate fixed or movable trunnion (male) mounting (MT 4)

Dimensions in millimetres

Bore	UW max.	TD e9	R max.	TL h14	TM h14	XV ¹⁾	
						nom.	tol.
32	55	16	1	16	55	V A R I A B L E	± 2
40	63	25	1,6	25	63		± 2
50	76	25	1,6	25	76		± 2
63	88	25	1,6	25	88		± 2
80	114	25	1,6	25	114		± 2
100	132	25	2	25	132		± 2
125	158	25	2	25	158		± 2,5
160	200	36	2,5	36	200		± 2,5
200	246	36	2,5	36	246		± 2,5
250	304	45	3,2	45	304		± 2,5

1) See note in clause 4.