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AMENDMENT 1
2017-07

Hand-held portable power tools — Test methods for evaluation of vibration emission —

Part 2: Wrenches, nutrunners and screwdrivers

AMENDMENT 1: Changes in Annex C — Brake devices

Machines à moteur portatives — Méthodes d'essai pour l'évaluation de l'émission de vibrations —

Partie 2: Clés, boulonneuses et visseuses

AMENDEMENT 1: Modification de l'Annexe C — Dispositifs de freinage

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This document was prepared by Technical Committee ISO/TC 118, *Compressors and pneumatic tools, machines and equipment*, Subcommittee SC 3, *Pneumatic tools and machines*.

Hand-held portable power tools — Test methods for evaluation of vibration emission —

Part 2: Wrenches, nutrunners and screwdrivers

AMENDMENT 1: Changes in Annex C — Brake devices

Page 26, Annex C

Replace the existing Annex C with the following:

Annex C

(normative)

Brake devices — Assembly specification and example drawings of parts

This annex gives requirements for the brake and also examples of brake designs.

C.1 Specification of brake device

The requirements on the brake system are:

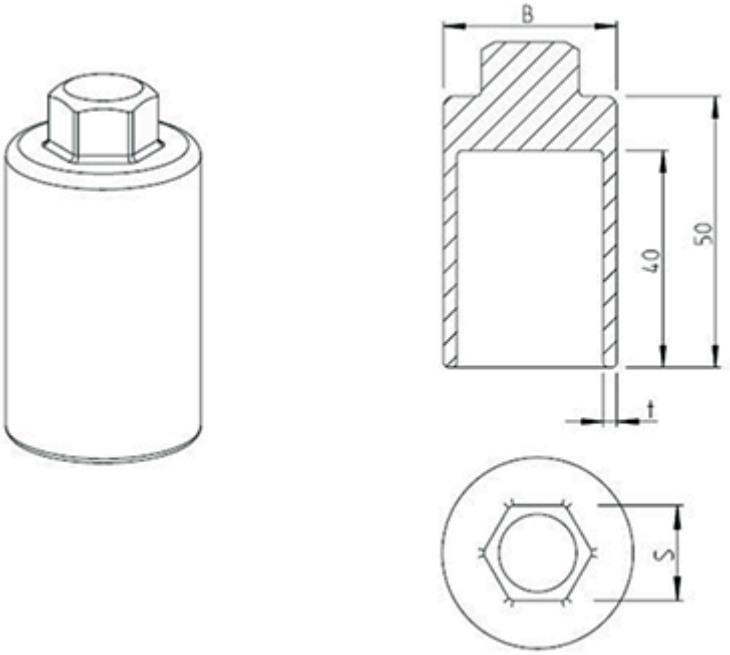
— The size of the sockets should be according to Figures C.1 to C.5. The reason is to define the weight of the sockets.

— The static friction coefficient of the brake shall not exceed the dynamic friction coefficient with more than 20%.

— The brake force should not vary more than 20 % over a test run. This is obtained if the brake design uses conical disc springs. If other design is used, the variation in brake force needs to be verified by measurement.

— The mounted test rig shall not have any resonances within the frequency range for hand–arm vibration that could influence the test results. This can be assured by bolting the base frame to a concrete block having a mass of at least 400 kg.

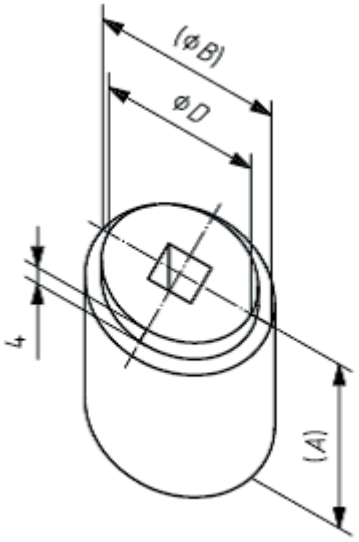
C.2 Drawings, sockets

Name of part	Material	Dimensions mm
Socket 1009	General engineering steel Carbonitrided 0,15	

No.	*s* (across flat)	*B*	*t*
1009-1	8	14	1
1009-02	13	22,2	2
1009-03	16	31,8	2

Dimensions of the hex head is according to ISO 4014.

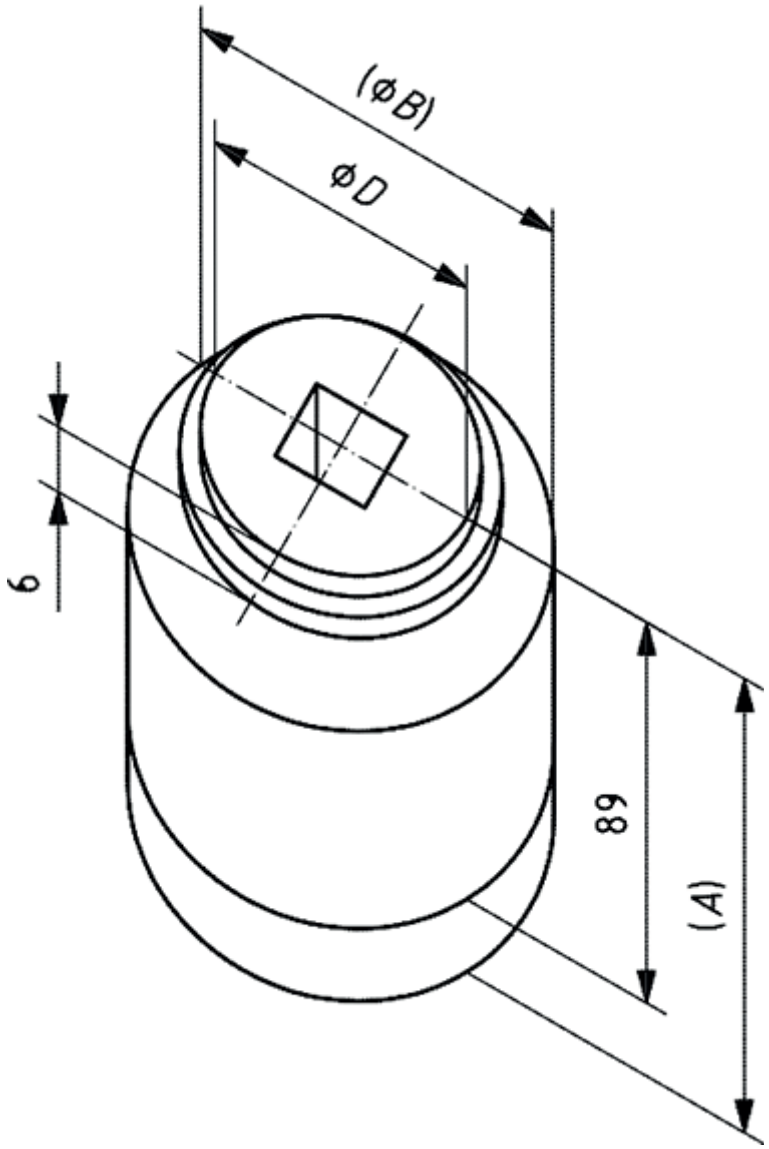
Figure C.1 — Socket, 1009

<table>
<tr><th>Name of part</th><th>Material</th><th>Dimensions
mm</th></tr>
<tr><td>Socket 1010</td><td>General engineering steel</td><td>


<table>
<tr><th>No.</th><th>Square drive</th><th>B</th><th>D</th></tr>
<tr><td>1010-04</td><td>12,5;1/2</td><td>50,8</td><td>43</td></tr>
<tr><td>1010-05</td><td>16;5/8</td><td>50,8</td><td>43</td></tr>
</table>
A may be made shorter if a suitable stud is added between the socket and the lower cover plate. Other combinations of square drive size and socket outer diameter may be used as long as the rotational speed can be kept within given limits.

For guided sockets, use the specification in ISO/TS 21108:2011.
</td></tr>
</table>

Figure C.2 — Socket, 1010

Name of part	Material	Dimensions mm
Socket 1011	General engineering steel	

No.	Square drive	*A*	*B*	*D*
1011-01	20;3/4	101,6	69,9	42
1011-02	25;1	114,3	101,6	71

A may be made shorter if a suitable stud is added between the socket and the lower cover plate. Other combinations of square drive size and socket outer diameter may be used as long as the rotational speed can be kept within given limits.

For guided sockets, use the specification in ISO/TS 21108:2011.

Figure C.3 — Socket, 1011

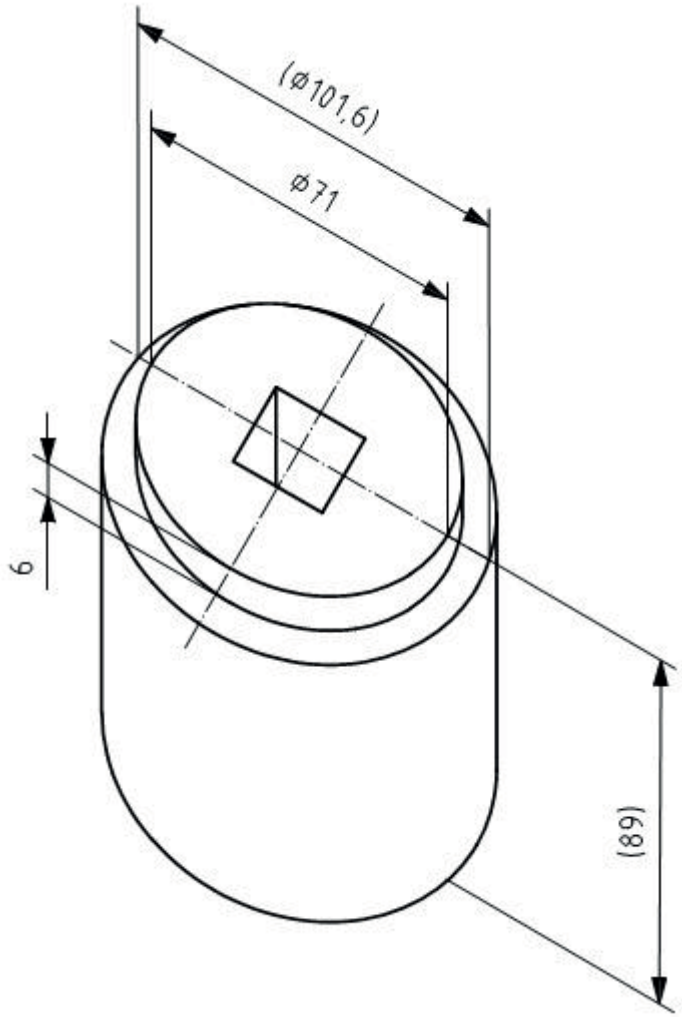
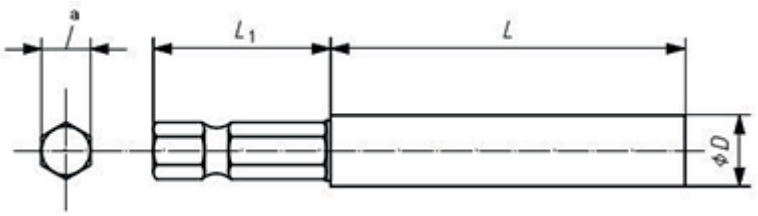
Name of part	Material	Dimensions mm
Socket 1012	General engineering steel	 Square drive 1½ 38 mm For guided sockets, use the specification in ISO/TS 21108:2011.

Figure C.4 — Socket, 1012

<table>
<tr><th>Name of part</th><th>Material</th><th>Dimensions
mm</th></tr>
<tr><td>Socket 1013</td><td>General engineering steel</td><td>


<table>
<tr><th>No.</th><th>a</th><th>L_1</th><th>L</th><th>D</th></tr>
<tr><td>1013-01</td><td rowspan="2">1/4</td><td>25</td><td>50</td><td>10</td></tr>
<tr><td>1013-02</td><td>25</td><td>50</td><td>8</td></tr>
<tr><td colspan="5">a Standards hex drive 1/4 inch or other drive suitable for the machine to be tested.</td></tr>
</table>
L may be made shorter if a suitable stud is added between the socket and the lower cover plate..
</td></tr>
</table>

Figure C.5 — Socket, 1013

Page 39, Annex D

The following new Annex D has been added:

Annex D

(informative)

Drawings, example of brake blocks

Example of brake block design:

— a steel base for mounting the brake and supporting the inner brake block;

— a pair of brake blocks for example aluminium blocks with a lining on the cylindrical surface (see Tables D.1 and D.2 footnotes);

— a steel plate which supports the outer brake block;

— two cover plates made of steel;

— a socket that is rotated by the machine;

— bolts, nuts and spring washers used to apply the contact pressure between the socket and the brake block;

— mounting screws for stopping the axial movements of the socket.

The conical disc spring shall be mounted in suitable directions to give an appropriate contact pressure, i.e. such that they are half-compressed when the specified rotational frequency is reached.

Intense use of the brake device may necessitate the introduction of air cooling by the addition of a small hole in the lower cover plate.

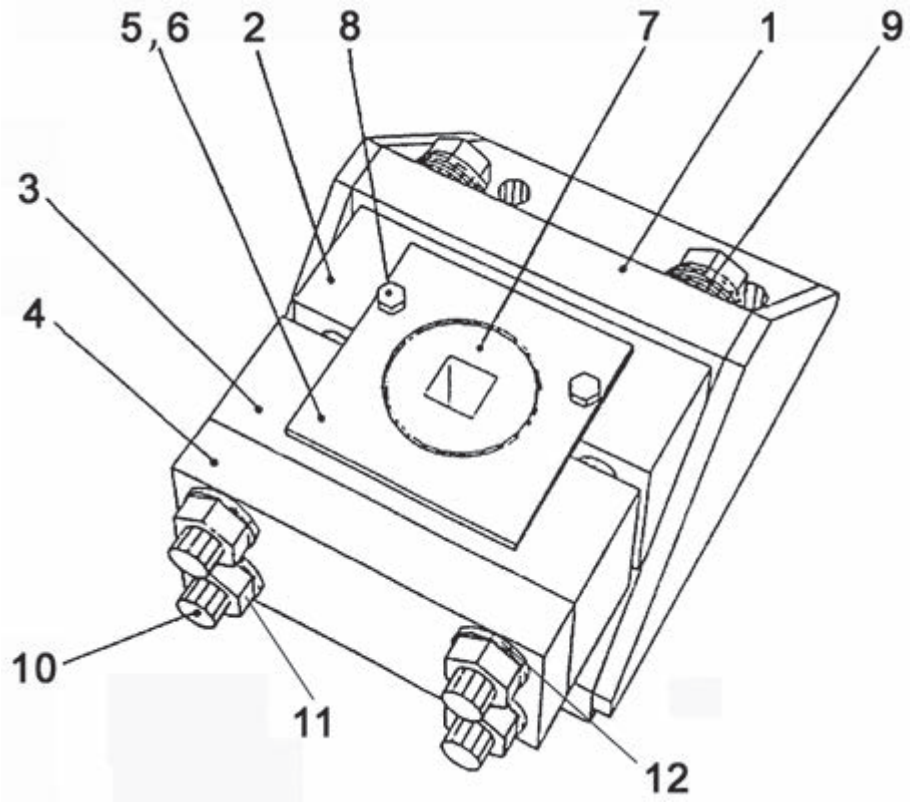


Figure D.1 — Brake device, large — For machines with shaft sizes 20 mm**,** 25 mm **and** 40 mm

Table D.1 — Brake device, large

Brake device, large mm				**Square drive size**		
				3/4	1	11/2
				20	25	38
Pos.	**Name of part**	**No.**	**Material**	**Quantity**		
1	Base	1001	Structural steel	1	1	1
2	Block, large (R 35)	1002-01	a	1	—	—
2	Block, large (R 51)	1002-02		—	1	1
3	Block, large (R 35)	1002-03		1	—	—
3	Block, large (R 51)	1002-04		—	1	1
4	Plate, large	1004	Tool steel	1	1	1
5	Coverplate, large upper	1006-01	General engineering steel	1	—	—
5	Coverplate, large upper	1006-02	General engineering steel	—	1	1
6	Coverplate, large lower	1007	General engineering steel	1	1	1
7	Socket (3/4; 69,9)	1011-01		1	—	—
7	Socket (1; 101,6)	1011-02		—	1	—
7	Socket (1½; 101,6)	1012		—	—	1
8	Screw M8 x 100		ISO 8-8	2	2	2
9	Conical disc spring 40/20,4/2,25 (approx.)		DIN 2093 — A 40 GR 2	40	40	40

Table D.1 *(continued)*

Brake device, large mm				Square drive size		
				3/4 20	1 25	11/2 38
Pos.	**Name of part**	**No.**	**Material**	**Quantity**		
10	Screw M20 × 250		ISO 8-8	4	4	4
11	Nut M20		ISO 8-8	4	4	4
12	Plain washer 37 × 21,3 × 3,3 (approx.)		General engineering steel	8	8	8
[a] Solid aluminum block with a lining on its cylindrical surface. Linings shall be made of a friction material, whose coefficient of friction shall be tested and the difference between static and dynamic friction shall be less than 20 %.						

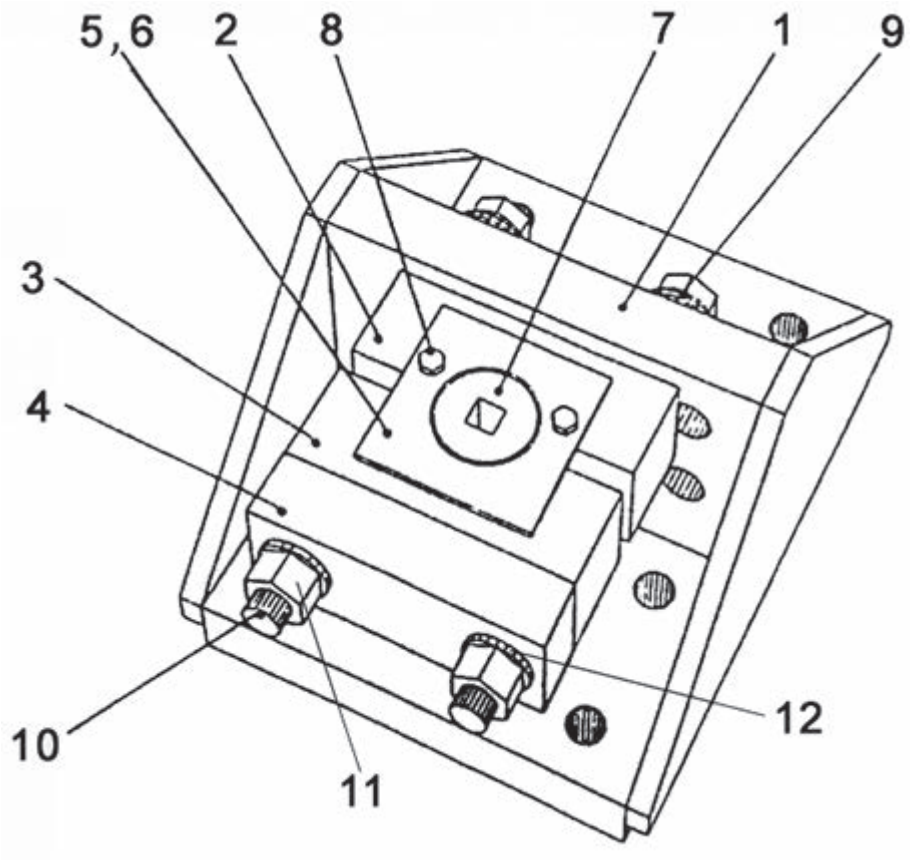


Figure D.2 — Brake device, small — For machines with shaft sizes 6,3 mm, 10 mm, 12,5 mm **and** 16 mm

Table D.2 — Brake device, small

Brake device, small mm				Square drive size					Female hex	
				1/4 6,3	1/4 6,3	3/8 10	1/2 12,5	5/8 16	1/4	
Pos.	**Name of part**	**No.**	**Material**	**Quantity**						
1	Base	1001	Structural steel	1	1	1	1	1	1	1
2	Block, small (R 11,25)	1003-01	a	—	1	—	—	—	—	—
2	Block, small (R 16)	1003-02		—	—	1	—	—	—	—
2	Block, small (R 25,5)	1003-03		—	—	—	1	1	—	—
3	Block, small (R 11,25)	1003-04		—	1	—	—	—	—	—
3	Block, small (R 16)	1003-05		—	—	1	—	—	—	—
3	Block, small (R 25,5)	1003-06		—	—	—	1	1	—	—
3	Block, small (R 7)	1003-7		1	—	—	—	—	—	—
3	Block, small (R 7)	1003-8		1	—	—	—	—	—	—
3	Block, small (R 5)	1003-9		—	—	—	—	—	1	—
3	Block, small (R 5)	1003-10		—	—	—	—	—	1	—
3	Block, small (R 4)	1003-11		—	—	—	—	—	—	1
3	Block, small (R 4)	1003-12		—	—	—	—	—	—	1
4	Plate, small	1005	Tool steel	1	1	1	1	1	1	1
5	Coverplate, small upper	1008-01	General engineering steel	1	1	1	—	—	1	1
5	Coverplate, small upper	1008-02	General engineering steel	—	—	—	1	1	—	—
5	Coverplate, small upper	1008-03	General engineering steel	—	—	—	—	—	1	1
6	Coverplate, small lower	1009	General engineering steel	1	1	1	1	1	1	1
7	Socket (1/4; 22,2)	1010-01		—	1	—	—	—	—	—
7	Socket (3/8; 22,2)	1010-02		—	—	1	—	—	—	—
7	Socket (1/2; 50,8)	1010-03		—	—	—	1	—	—	—
7	Socket (5/8; 50,8)	1010-04		—	—	—	—	1	—	—
7	Socket (1/4; 14)	1010-05		1	—	—	—	—	—	—
7	Socket (hex 1/4; 10)	1013-01		—	—	—	—	—	1	—
7	Socket (hex 1/4; 8)	1013-02		—	—	—	—	—	—	1
8	Screw M6 x 60		ISO 8-8	2	2	2	2	2	2	2
9	Conical disc spring 31,5/16,3/1,75 (approx.)		DIN 2093 — A 31,5 GR 2	20	20	20	20	20	20	20
10	Screw M16 × 200		ISO 8-8	2	2	2	2	2	2	2
11	Nut M16		ISO 8-8	2	2	2	2	2	2	2
12	Plain washer 30 × 17,3 × 3,3 (approx)		General engineering steel	4	4	4	4	4	4	4

[a] Solid block of phenolic cotton laminate (fine grade), or aluminum block with a lining on its cylindrical surface. Linings shall be made of a friction material, whose coefficient of friction shall be tested and the difference between static and dynamic friction shall be less than 20 %.

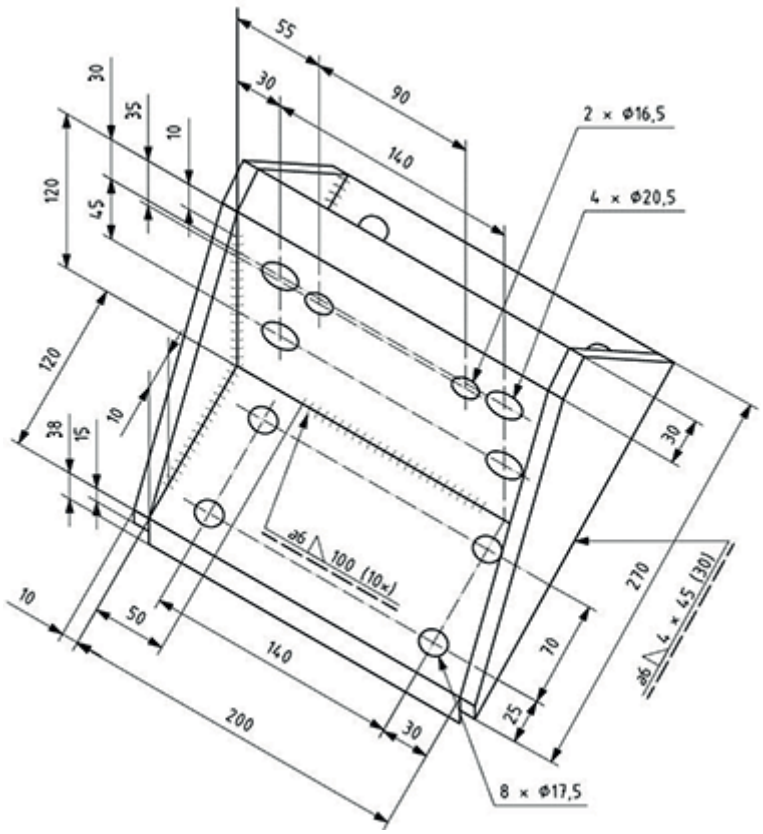
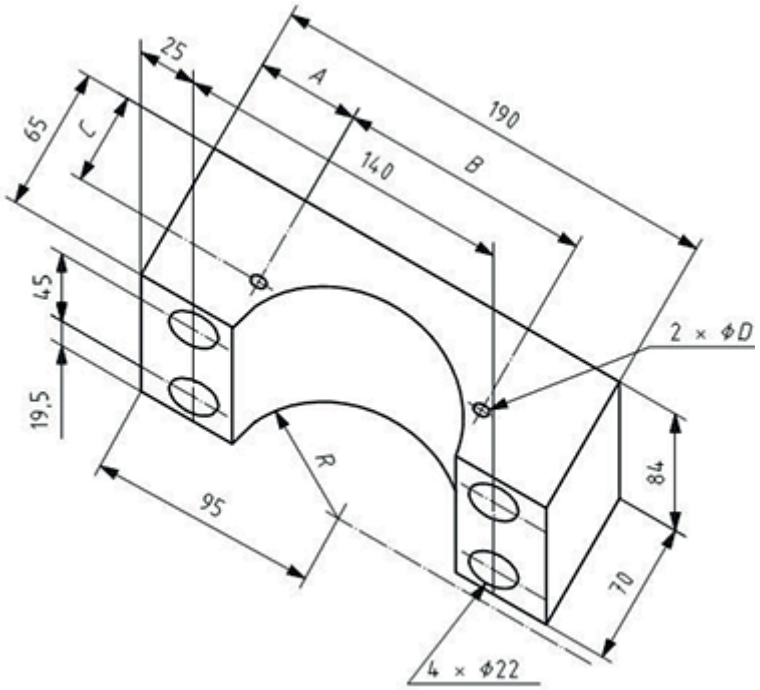
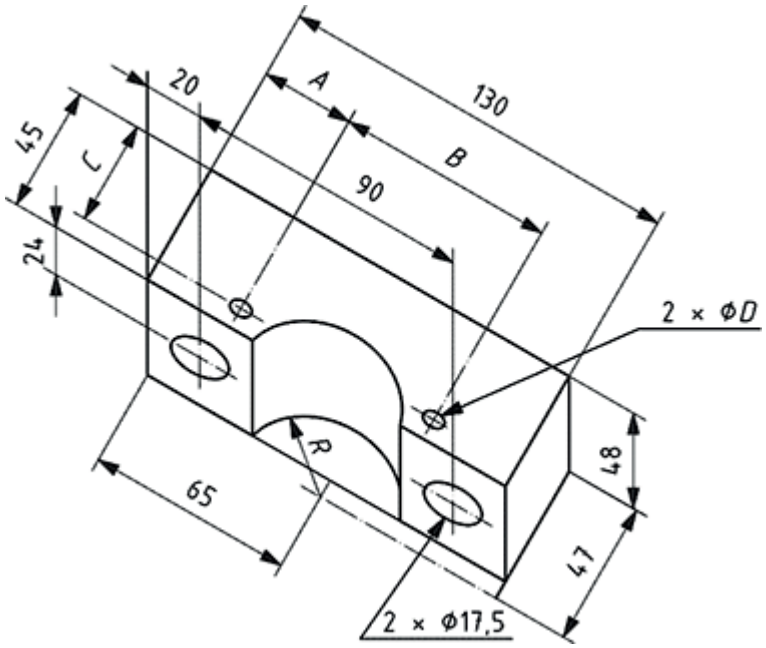
Name of part	Material	Dimensions mm
Base 1001	Structural steel	

Figure D.3 — Base — 1001

Name of part	Material	Dimensions mm
Block, large 1002	Solid block of phenolic cotton laminate (fine grade), or aluminum block with a lining on its cylindrical surface. Linings shall be made of a friction material, whose coefficient of friction shall be tested and the difference between static and dynamic friction found to be less than 20 %.	

No.	*A*	*B*	*C*	*D*	*R*
1002-01	43	104	45	9	35
1002-02	43	104	35	9	51
1002-03	—				35
1002-04	—				51

Figure D.4 — Block, large, 1002

Name of part	Material	Dimensions mm
Block, small 1003	Solid block of phenolic cotton laminate (fine grade), or aluminum block with a lining on its cylindrical surface. Linings shall be made of a friction material, whose coefficient of friction shall be tested and the difference between static and dynamic friction found to be less than 20 %.	

No.	*A*	*B*	*C*	*D*	*R*
1003-7	34	62	38	7	7
1003-8	—	—	—	—	7
1003-9	34	62	38	7	5
1003-10	—	—	—	—	5
1003-11	34	62	38	7	4
1003-12	—	—	—	—	4
1003-01	34	62	38	7	11,25
1003-02	34	62	38	7	16
1003-03	34	62	30	7	25,5
1003-04	—	—	—	—	11,25
1003-05	—	—	—	—	16
1003-06	—	—	—	—	25,5

Figure D.5 — Block, small, 1003

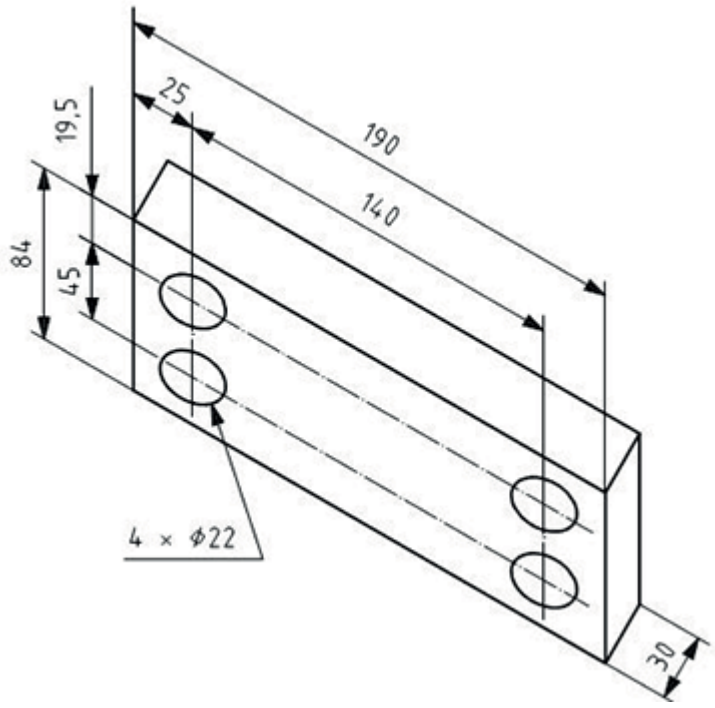
Name of part	Material	Dimensions mm
Plate, large 1004	Tool steel	

Figure D.6 — Plate, large, 1004

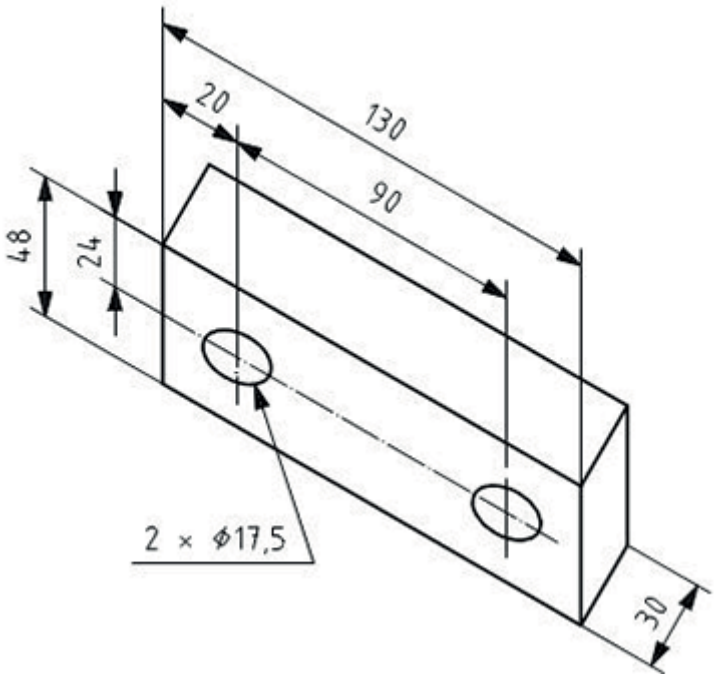
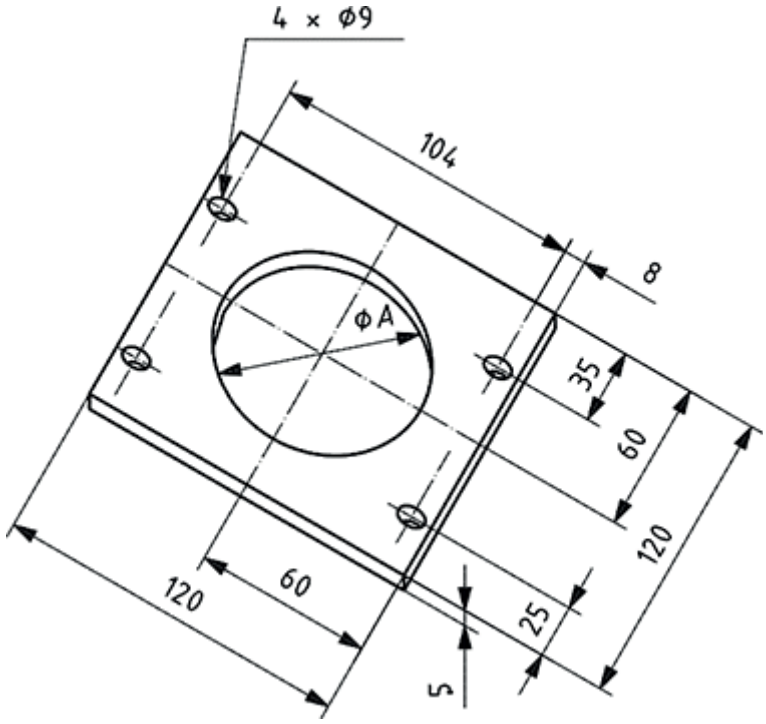
Name of part	Material	Dimensions mm
Plate, small 1005	Tool steel	

Figure D.7 — Plate, small, 1005

Name of part	Material	Dimensions mm
Coverplate, large, upper 1006	Tool steel	

No.	*A*
1006-01	46
1006-02	75

Figure D.8 — Coverplate, large, upper, 1006

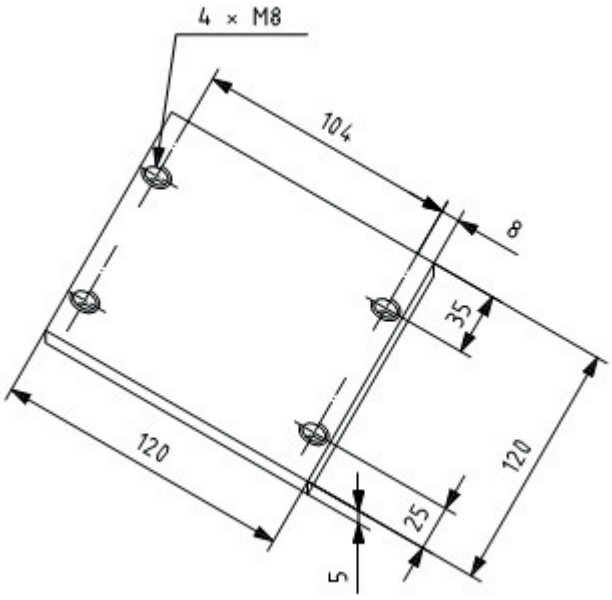
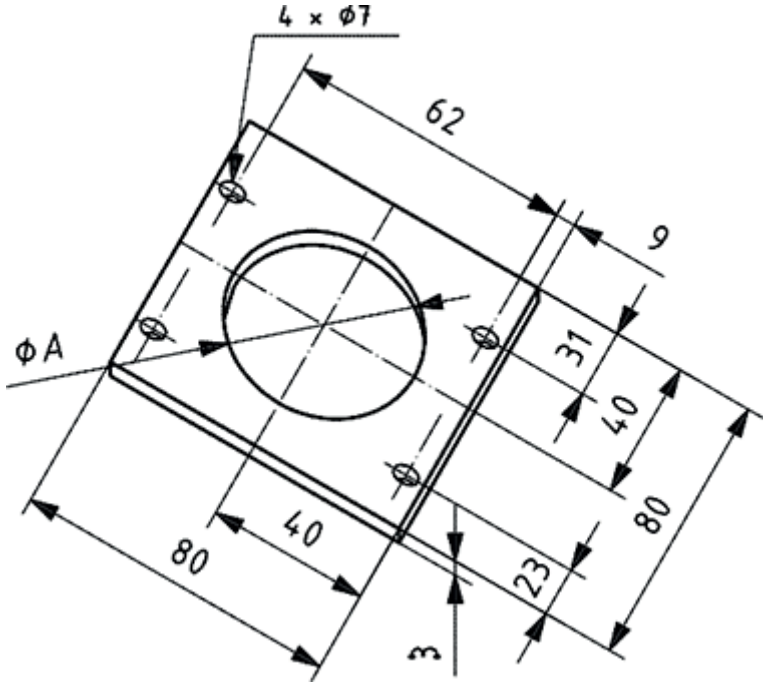
Name of part	Material	Dimensions mm
Coverplate, large, lower 1007	General engineering steel	

Figure D.9 — Coverplate, large, lower, 1007

Name of part	Material	Dimensions mm
Coverplate, small, upper 1008	General engineering steel	

No.	*A*
1008-01	19
1008-02	46
1008-03	12
1008-04	7,5

Figure D.10 — Coverplate, small, upper, 1008

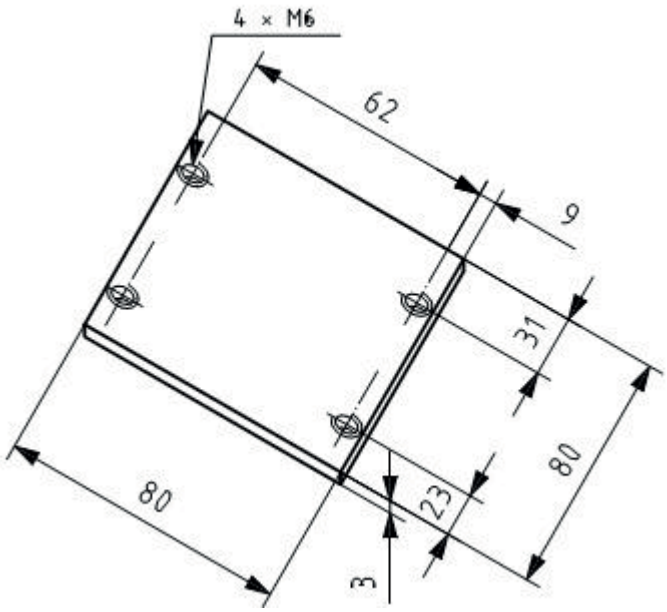
Name of part	Material	Dimensions mm
Coverplate, small, lower 1009	General engineering steel	

Figure D.11 — Coverplate, small, lower, 1009

Page 39, Bibliography

Add the following reference in the Bibliography:

[4] Electronic paper. Vibration comparison test on brake devices. Edited 2015-03-10 [Viewed 2017-02-13].

Available at: http://www.uryu.co.jp/english/pdf/vibration_copmarison_test_on_brake_devices.pdf

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