

Australian Standard[®]

Rotating electrical machines

Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code)



This Australian Standard® was prepared by Committee EL-009, Rotating Electrical Machinery. It was approved on behalf of the Council of Standards Australia on 11 June 2009. This Standard was published on 15 July 2009.

The following are represented on Committee EL-009:

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 - Australian Chamber of Commerce and Industry
 - Australian Electrical and Electronic Manufacturers Association
 - Australian Greenhouse Office, Department of the Environment and Water Resources
 - Australian Industry Group
 - Bureau of Steel Manufacturers of Australia
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 - Energy Efficiency and Conservation Authority of New Zealand
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-

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Rotating electrical machines

Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code)

Originated as AS 1359.22—1994.
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-009, Rotating Electrical Machinery to supersede AS 1359.107—1996, *Rotating electrical machines—General requirements—Classification of types of construction and mounting arrangements (IM Code)* on publication.

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee EL-009. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify requirements for classification of types of construction, mounting arrangements and terminal box position.

This Standard is identical with, and has been reproduced from IEC 60034-7, Ed. 2.1 (2001), *Rotating electrical machines – Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code)*.

This Standard is Part 7 of a Series dealing with rotating electrical machinery. Additional parts will be added from time to time. This Series when complete will consist of the following parts:

AS

1359.102.2	Rotating electrical machines—Methods for determining losses and efficiency of rotating electrical machinery from tests—Measurement of losses by the calorimetric method
60034	Rotating electrical machines
60034.1	Part 1: Rating and performance
60034.2.1	Part 2.1: Methods for determining losses and efficiency from tests (excluding machines for traction vehicles)
60034.3	Part 3: Specific requirements for synchronous generators driven by steam turbines or combustion gas turbines
60034.4	Part 4: Methods for determining synchronous machine quantities from tests
60034.5	Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code)—Classification
60034.6	Part 6: Method of cooling (IC code)
60034.7	Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM code) (this Standard)
60034.8	Part 8: Terminal markings and direction of rotation
60034.9	Part 9: Noise limits
60034.11	Part 11: Thermal protection
60034.12	Part 12: Starting performance of single-speed three-phase cage induction motors
60034.14	Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher—Measurement, evaluation and limits of vibration severity
60034.15	Part 15: Impulse voltage withstand levels of rotating a.c. machines with form-wound stator coils
60034.16	Part 16: Excitation systems for synchronous machines (all parts)
60034.17	Part 17: Cage induction motors when fed from converters—Application guide
60034.18	Part 18: Functional evaluation of insulation systems (all parts)
60034.19	Part 19: Specific test methods for d.c. machines on conventional and rectifier-fed supplies
60034.20.1	Part 20.1: Control motors—Stepping motors
60034.22	Part 22: AC generators for reciprocating internal combustion (RIC) engine driven generating sets
60034.23	Part 23: Specification for the refurbishing of rotating electrical machines

AS

60034.25	Part 25: Guidance for the design and performance of a.c. motors specifically designed for converter supply
60034.26	Part 26: Effects of unbalanced voltages on the performance of three-phase cage induction motors
60034.27	Part 27: Off-line partial discharge measurements on the stator winding insulation of rotating electrical machines
60034.28	Part 28: Test methods for determining quantities of equivalent circuit diagrams for the three-phase low voltage cage induction motors
60034.29	Part 29: Equivalent loading and superposition techniques—Indirect testing to determine temperature rise.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text 'IEC 60034-7' should read 'AS 60034.7'.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard**Rotating electrical machines**
Part 7: Classification of types of construction, mounting arrangements
and terminal box position (IM Code)

Section 1: Scope and definitions**1.1 Scope**

This part of IEC 60034 specifies the IM Code, a classification of types of construction, mounting arrangements and the terminal box position of rotating electrical machines.

Two systems of classification are provided as follows:

- Code I (see section 2): An alpha-numeric designation applicable to machines with end-shield bearing(s) and only one shaft extension.
- Code II (see section 3): An all-numeric designation applicable to a wider range of types of machines including types covered by Code I.

The type of machine not covered by Code II should be fully described in words.

The relationship between Code I and Code II is given in annex A.

1.2 Definitions

For the purposes of this part of IEC 60034, the following definitions apply:

1.2.1**type of construction**

the arrangement of machine components with regard to fixings, bearing arrangement and shaft extension

(IEV 60411-13-34)¹⁾

1.2.2**mounting arrangement**

the orientation on site of the machine as the whole with regard to shaft alignment and position of fixings

(IEV 60411-13-35)

1.2.3**shaft extension**

a portion of a shaft extending beyond an extreme bearing

(IEV 60411-13-07)

NOTE The bearing may be on the machine itself or be part of an assembly comprising a machine and (an) additional bearing(s).

¹⁾ IEC 60050(411): 1973, *International Electrotechnical Vocabulary (IEV) – Chapter 411: Rotating machinery*.

1.2.4

drive-end of a machine (D-end)

that end of the machine which accommodates the shaft end

(IEV 60411-13-36)

NOTE This is normally the driving end of a motor or the driven end of a generator.

Where for some machines the above definition is inadequate, the D-end is defined as follows:

- Machine with two shaft extensions of different diameter: the end with the larger shaft diameter;
- Machine with a cylindrical shaft extension and a conical shaft extension of the same diameter: the end with cylindrical shaft extension;
- Machine with other arrangements: according to IEC 60034-8 if applicable; otherwise by agreement.

NOTE The outer diameter of a forged-on flange is taken to be the diameter of the shaft extension.

1.2.5

non-drive end of the machine (N-end)

that end of the machine opposite to the drive end

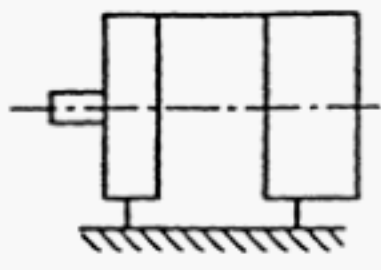
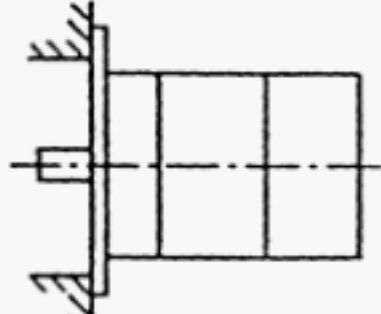
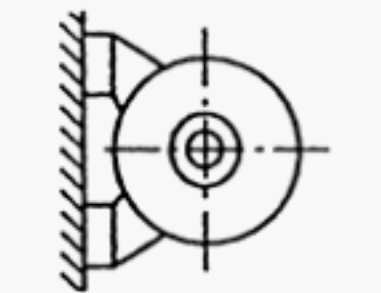
(IEV 60411-13-37).

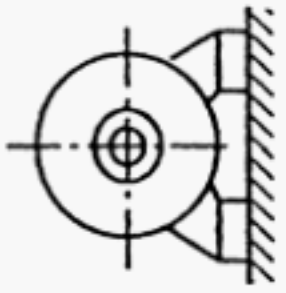
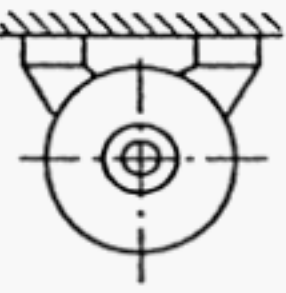
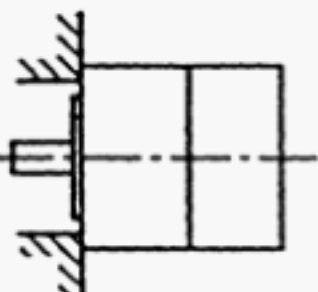
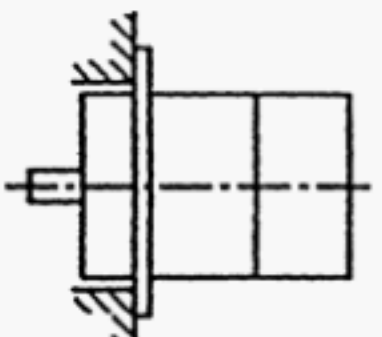
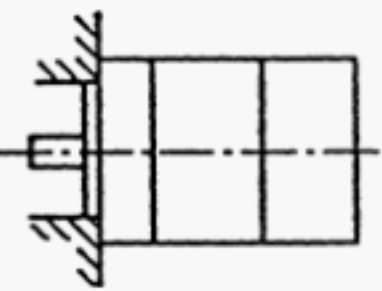
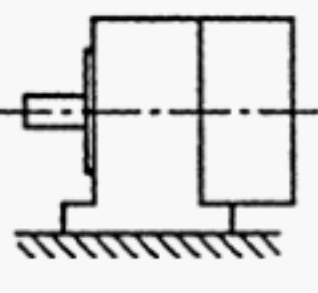
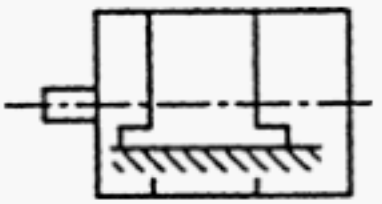
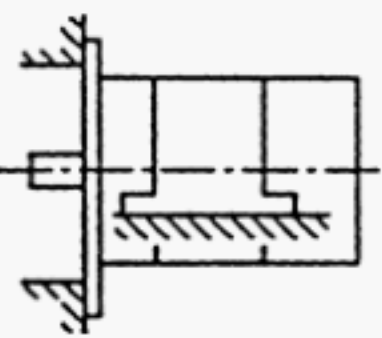
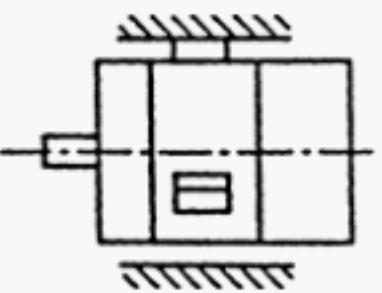
Section 2: Code I (alpha-numeric designation)

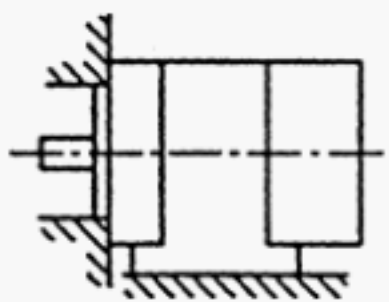
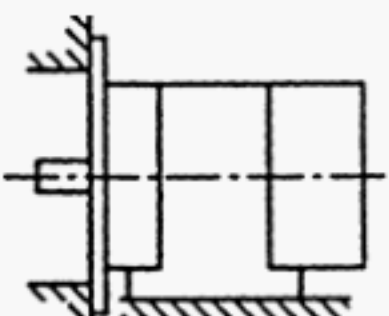
2.1 Designation of machines with horizontal shafts

In Code I, a machine with a horizontal shaft is designated by the code letters IM (International Mounting), followed by a space, the letter B, one or two numerals as shown in table 1 and an optional letter as shown in 2.3.

Table 1 – Designations for machines with horizontal shafts (IM B...)

Designation	Sketch	Type of construction				Mounting arrangement (Horizontal shaft)
		Number of end-shields bearings	Feet	Flange	Other details	
IM B3		2	With feet	–	–	Mounted by feet, feet down
IM B5		2	–	With flange	Endshield flange at D-end with access to back	Mounted on D-end side of flange
IM B6		2	With feet	–	–	Mounted by feet, feet left (viewed from D-end)

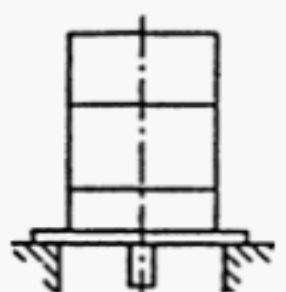
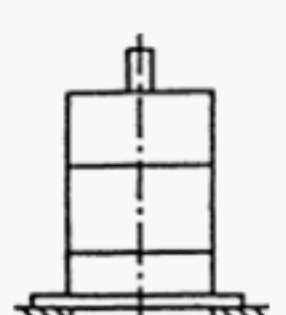
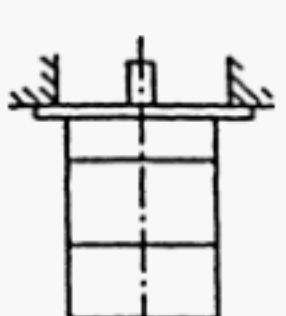
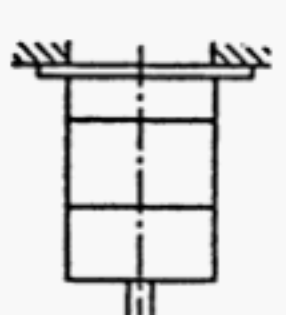
Designation	Sketch	Type of construction				Mounting arrangement (Horizontal shaft)
		Number of end-shields bearings	Feet	Flange	Other details	
IM B7		2	With feet	–	–	Mounted by feet, feet right (viewed from D-end)
IM B8		2	With feet	–	–	Mounted by feet, feet up
IM B9		1	–	–	No endshield or bearing at D-end	Mounted on end face of frame at D-end
IM B10		2	–	With flange	Special flange at D-end	Mounted on D-end side of flange
IM B14		2	–	With flange	Endshield spigot. No access to back Flange at D-end	Mounted on D-end side of flange
IM B15		1	With feet	–	No endshield or bearing at D-end. Additional mounting provisions on D-end of frame	Mounted by feet, feet down, with additional mounting on end face of frame
IM B20		2	With raised feet	–	–	Mounted by feet, feet down
IM B25		2	With raised feet	With flange	Endshield flange at D-end with access to back	Mounted by feet, feet down, with additional mounting on flange
IM B30		2	–	–	3 or 4 pads on endshield(s) or frame	Pad mounted

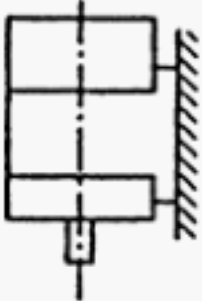
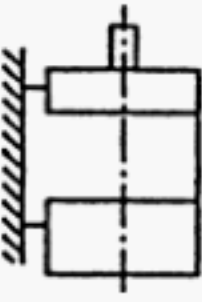
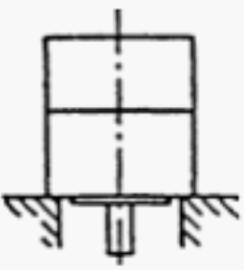
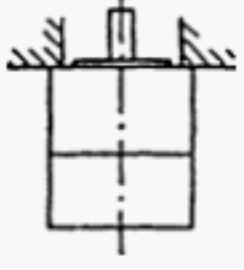
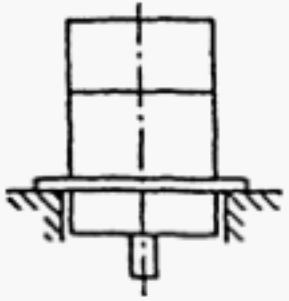
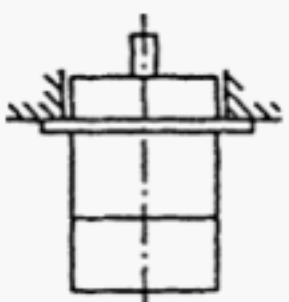
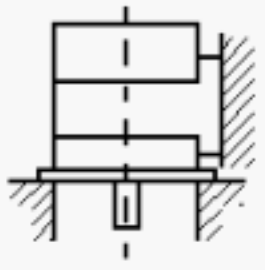
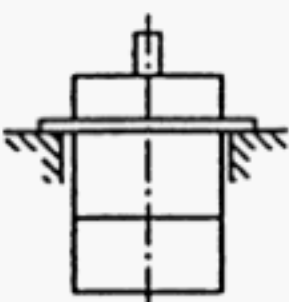
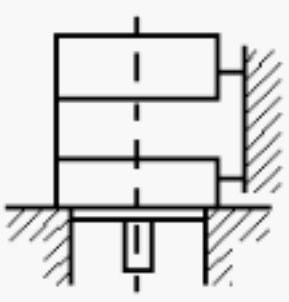
Designation	Sketch	Type of construction				Mounting arrangement (Horizontal shaft)
		Number of end-shields bearings	Feet	Flange	Other details	
IM B34		2	With feet	With flange	Endshield spigot No access to back Flange at D-end	Mounted by feet, feet down, with additional mounting on D-end side of flange
IM B35		2	With feet	With flange	Endshield flange at D-end with access to back	Mounted by feet, feet down, with additional mounting on D-end side of flange

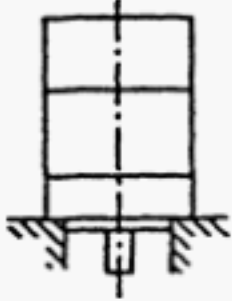
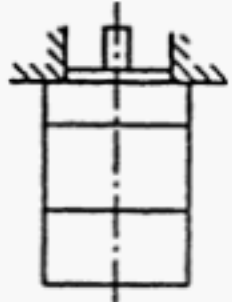
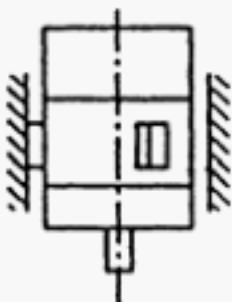
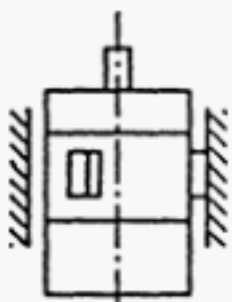
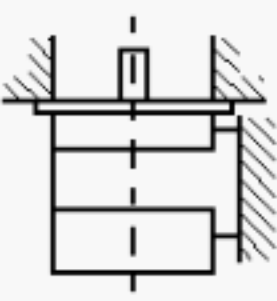
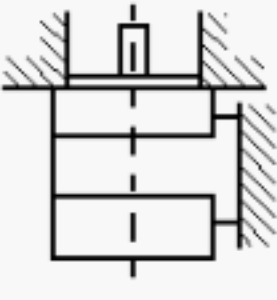
2.2 Designation of machines with vertical shafts

In Code I, a machine with a vertical shaft is designated by the code letters IM (International mounting), followed by a space, the letter V, one or two numerals as shown in table 2 and an optional letter as shown in 2.3.

Table 2 – Designations for machines with vertical shafts (IM V...)

Designation	Sketch	Type of construction				Mounting arrangement (Vertical shaft)
		Number of end-shields bearings	Feet	Flange	Other details	
IM V1		2	–	With flange	Endshield flange at D-end with access to back	Mounted on D-end side of flange, D-end down
IM V2		2	–	With flange	Endshield flange at N-end with access to back	Mounted on N-end side of flange, D-end up
IM V3		2	–	With flange	Endshield flange at D-end with access to back	Mounted on D-end side of flange, D-end up
IM V4		2	–	With flange	Endshield flange at N-end with access to back	Mounted on N-end side of flange, D-end down

Designation	Sketch	Type of construction				Mounting arrangement (Vertical shaft)
		Number of end-shields bearings	Feet	Flange	Other details	
IM V5		2	With feet	–	–	Mounted by feet, D-end down
IM V6		2	With feet	–	–	Mounted by feet, D-end up
IM V8		1	–	–	No endshield or bearing at D-end	Mounted on end face of frame at D-end, D-end down
IM V9		1	–	–	No endshield or bearing at D-end	Mounted on end face of frame at D-end, D-end up
IM V10		2	–	With flange	Special flange at D-end	Mounted on D-end side of flange, D-end down
IM V14		2	–	With flange	Special flange at D-end	Mounted on D-end side of flange, D-end up
IM V15		2	With feet	With flange	Endshield flange at D-end with access to back	Mounted by feet, with additional mounting on D-end side of flange, D-end down
IM V16		2	–	With flange	Special flange at D-end	Mounted on N-end side of flange, D-end up
IM V17		2	With feet	With flange	Endshield spigot no access to back Flange at D-end	Mounted by feet, with additional mounting on D-end side of flange, D-end down

Designation	Sketch	Type of construction				Mounting arrangement (Vertical shaft)
		Number of end-shields bearings	Feet	Flange	Other details	
IM V18		2	–	With flange	Endshield spigot no access to back Flange at D-end	Mounted on D-end side of flange, D-end down
IM V19		2	–	With flange	Endshield spigot No access to back Flange at D-end	Mounted on D-end side of flange, D-end up
IM V30		2	–	–	3 or 4 pads on endshield(s) or frame	Pad-mounted D-end down
IM V31		2	–	–	3 or 4 pads on endshield(s) or frame	Pad-mounted, D-end up
IM V35		2	With feet	With flange	Endshield flange at D-end with access to back	Mounted by feet, with additional mounting on D-end side of flange, D-end up
IM V37		2	With feet	With flange	Endshield spigot no access to back Flange at D-end	Mounted by feet, with additional mounting on D-end side of flange, D-end up

2.3 Terminal box location

When designated, the terminal box position shall be coded with a final letter in accordance with the following rules:

- machines with feet shall be viewed from the D-end with the feet at 6 o'clock;
- machines with flange only and with drains shall be viewed from the D-end and with the drains at 6 o'clock;
- other configurations shall not have a coding.

The coding shall conform to the following table:

Letter designation	Terminal box location	
R	Right	3 o'clock
B	Bottom	6 o'clock
L	Left	9 o'clock
T	Top	12 o'clock
None	Unspecified	

Section 3: Code II (all-numeric designation)

3.1 Designation

In Code II, a machine is designated by the Code letters IM (International Mounting) followed by a space and four numerals.

The first, second and third numerals designate aspects of construction (see 3.2 and 3.4).

The fourth numeral designates the type of shaft extension (see 3.3).

When used, a letter following the four numerals shall designate the terminal box position, see 3.5.

3.2 Significance of the first numeral

The significance of the first numeral is given in table 3 below.

Table 3 – Significance of the first numeral

First numeral	Significance	Table relevant to the second and third numerals
0	Not allocated	–
1	Foot-mounted machines with endshield bearing(s) only	5
2	Foot-and-flange-mounted machines with endshield bearing(s) only	6
3	Flange-mounted machines with endshield bearing(s) only, with a flange part of an endshield	7
4	Flange-mounted machines with endshield bearing(s) only, with a flange not part of an endshield but an integral part of the frame or other component	8
5	Machines without bearings	9
6	Machines with endshield bearing(s) and pedestral bearing(s)	10
7	Machines with pedestal bearing(s) only	11
8	Vertical machines of construction not covered by first numeral 1 to 4	12
9	Machines with special mounting arrangements	13

3.3 Significance of the fourth numeral

The significance of the fourth numeral is given in table 4 below.

Table 4 – Significance of the fourth numeral

Fourth numeral	Significance
0	No shaft extension
1	One cylindrical shaft extension
2	Two cylindrical shaft extensions
3	One conical shaft extension
4	Two conical shaft extensions
5	One flanged shaft extension
6	Two flanged shaft extensions
7	Flanged shaft extension (D-end) and cylindrical shaft extension (N-end)
8	(Not allocated)
8	Other arrangement

3.4 Significance of the second and third numerals

The significance of the second and third numerals is specified in tables 5 to 13 depending on the first numeral with which they are associated (see table 3).

3.5 Terminal box location

When designated, the terminal box position shall be coded with a final letter in accordance with the following rules:

- machines with feet shall be viewed from the D-end with the feet at 6 o'clock;
- machines with flange only and with drains shall be viewed from the D-end and with the drains at 6 o'clock;
- other configurations shall not have a coding.

The coding shall conform to the following table:

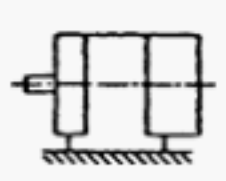
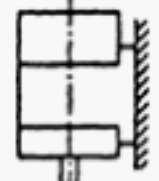
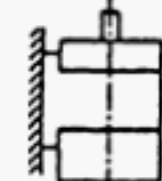
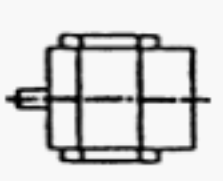
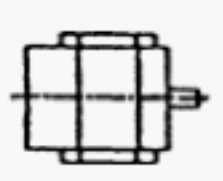
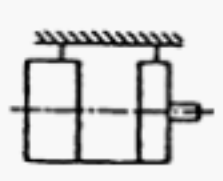
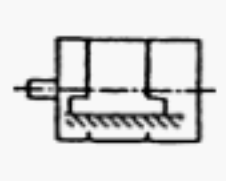
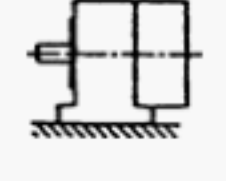
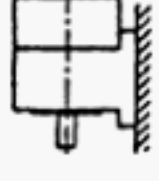
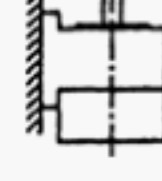
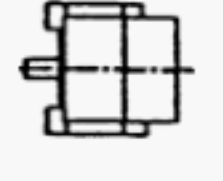
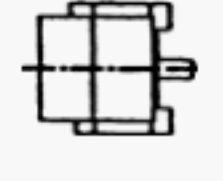
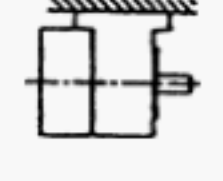
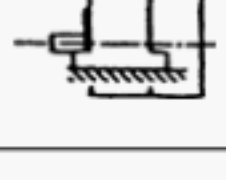
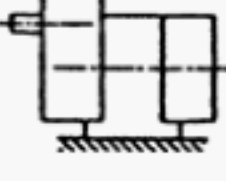
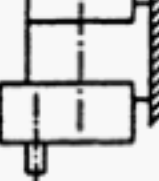
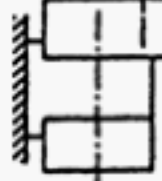
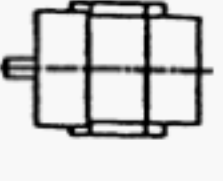
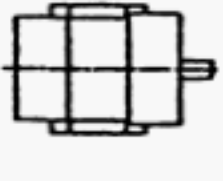
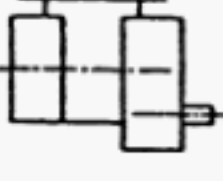
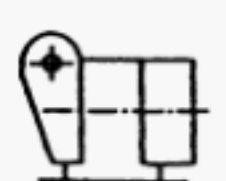
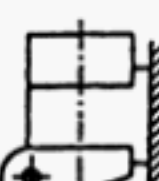
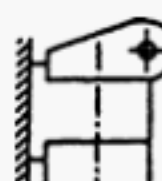
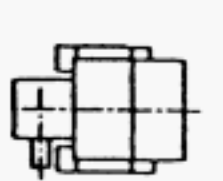
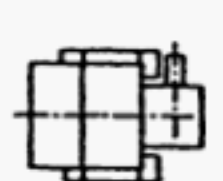

Letter designation	Terminal box location	
R	Right	3 o'clock
B	Bottom	6 o'clock
L	Left	9 o'clock
T	Top	12 o'clock
None	Unspecified	

3.6 Examples of designations

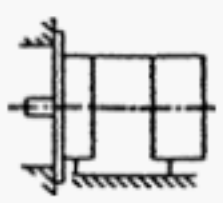
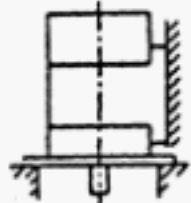
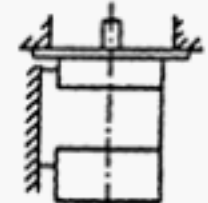
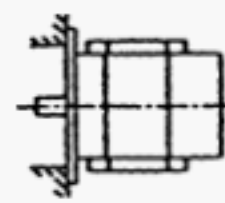
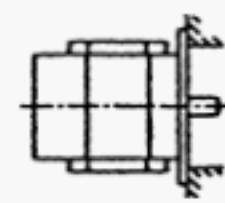
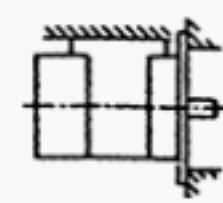
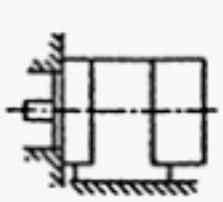
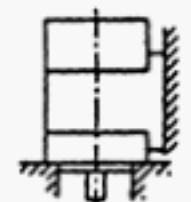
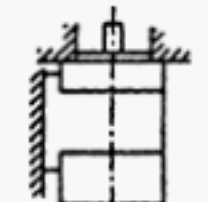
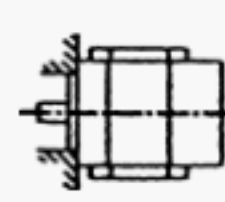
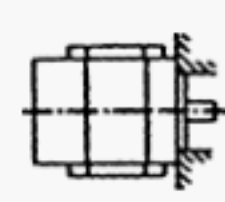
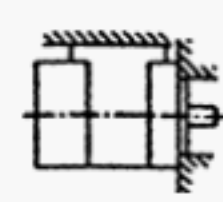
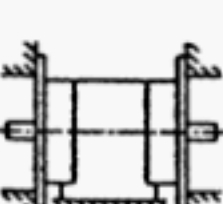
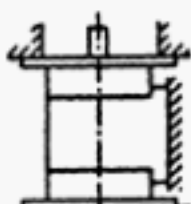
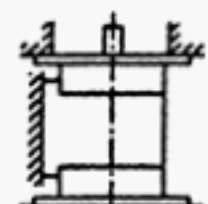
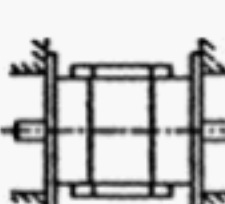
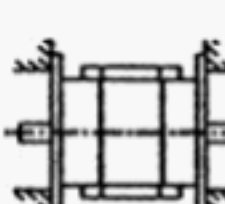
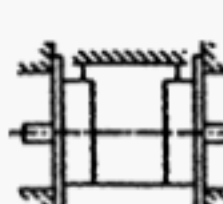
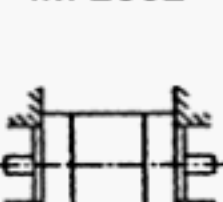
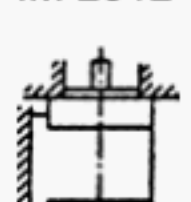
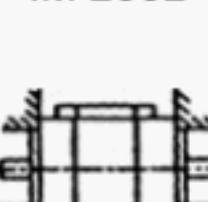
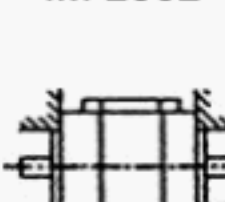
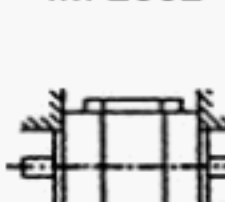
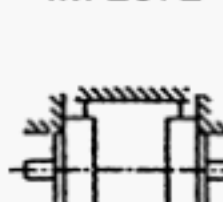
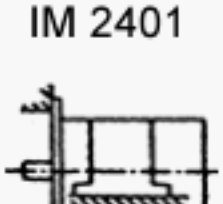
In tables 5 to 13 common types of construction and mounting arrangements are illustrated by sketches, and their designations are given using a particular fourth numeral. Other fourth numerals could be applicable (see table 4). The absence of a sketch does not imply that a designation is not available.

Numerals to which a significance has been allocated in the appropriate tables may be combined to form a valid designation. Some of these designations may be impracticable.

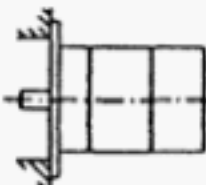
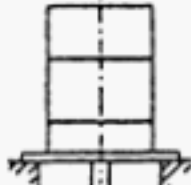
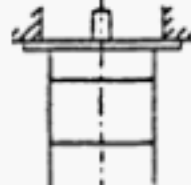
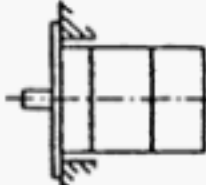
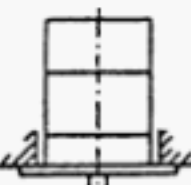

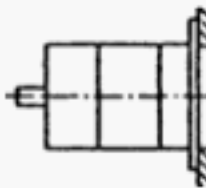
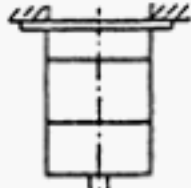
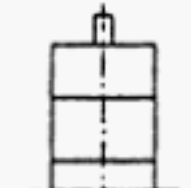
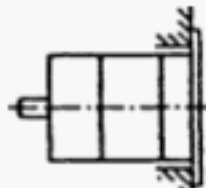
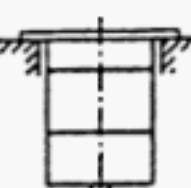
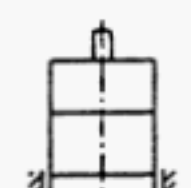
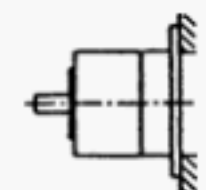
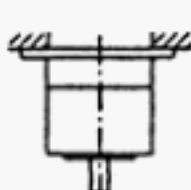
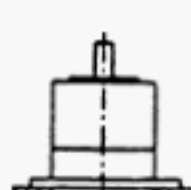
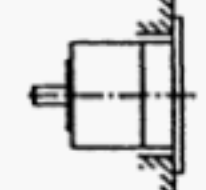
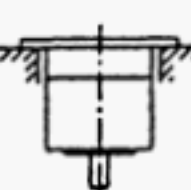
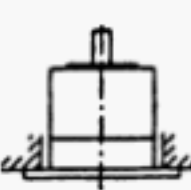
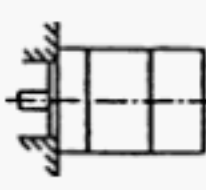
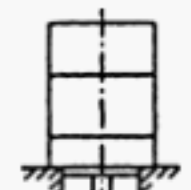
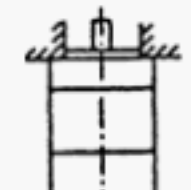
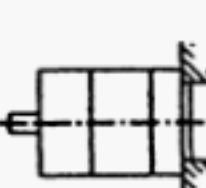
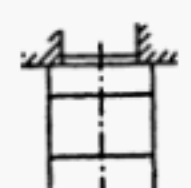
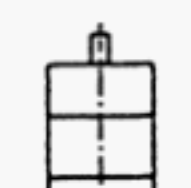
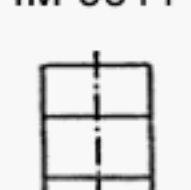
**Table 5 – Significance of second and third numerals for first numeral 1
(Foot-mounted machines with endshield bearing(s) only)**

Machine construction		Second numeral	Designation and sketch (see 3.5)									
Number of bearings	Feet (gearbox)		Third numeral									
			0 (Shaft horizontal, feet down)	1 (D-end down)	2	3 (D-end up)	4	5 (D-end left, feet at back)	6 (D-end right, feet at back)	7 (Shaft horizontal, feet up)	8	9
2	Normal feet (no gearbox)	0	IM 1001 	IM 1011 	Suitable for operation in accordance with third numerals 0 and 1	IM 1031 	Suitable for operation in accordance with third numerals 0, 1 and 3	IM 1051 	IM 1061 	IM 1071 	Suitable for operation in accordance with third numerals 0, 1, 3, 5, 6 and 7	Not covered by third numerals 0 to 8 – inclination of shaft not specified
2	Raised feet (no gearbox)	1	IM 1101 			–						
1	Normal feet (no gearbox)	2	IM 1201 	IM 1211 		IM 1231 		IM 1251 	IM 1261 	IM 1271 		
1	Raised feet (no gearbox)	3	IM 1301 									
(Not allocated)		4	–	–		–		–	–	–		
(Not allocated)		5	–	–		–		–	–	–		
2	Normal feet, integral gearbox with output shaft parallel to input shaft	6	IM 1601 	IM 1611 		IM 1631 		IM 1651 	IM 1661 	IM 1671 		
2	Normal feet, integral gearbox with output shaft at right angles to input shaft	7	IM 1701 	IM 1711 		IM 1731 		IM 1751 	IM 1761 	IM 1771 		
(Not allocated)		8	–	–		–		–	–	–		
(Non allocated)		9	–	–		–		–	–	–		

**Table 6 – Significance of second and third numerals for first numeral 2
(Foot-and-flange-mounted machines with endshield bearing(s) only)**

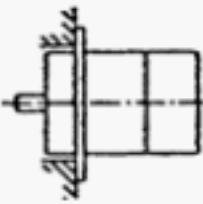
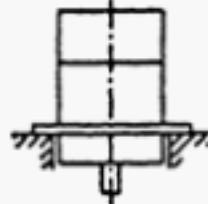
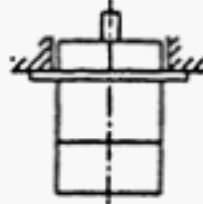
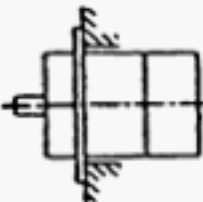
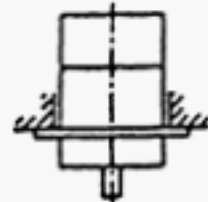
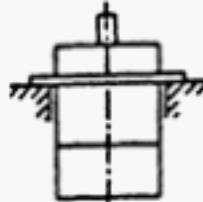
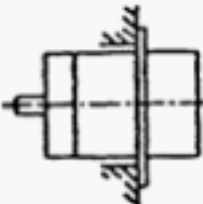
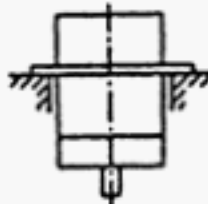
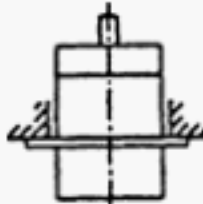
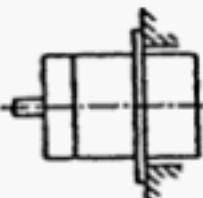
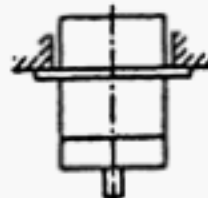
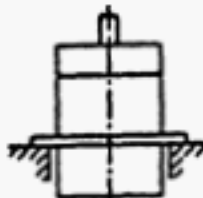
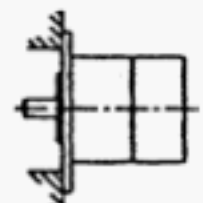
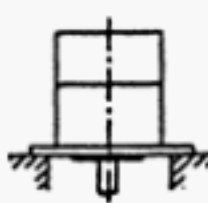
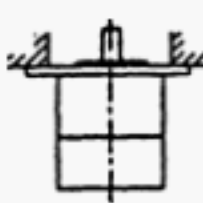
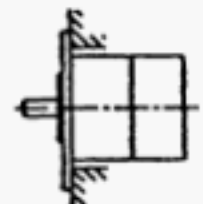
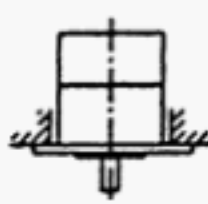
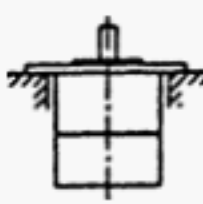
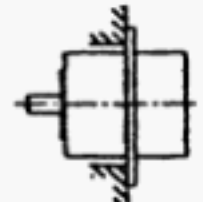
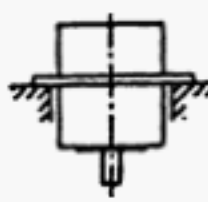
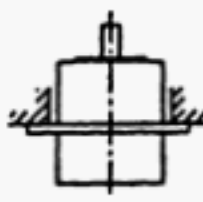
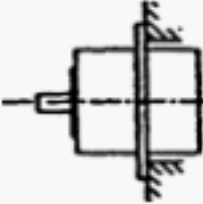
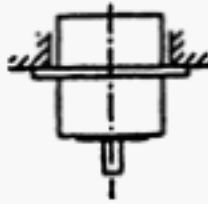
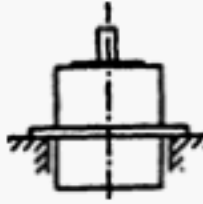
Machine construction		Second numeral	Designation and sketch (see 3.5)									
Feet	Number of flanges and access thereto		Third numeral									
			0 (Shaft horizontal, feet down)	1 (D-end down)	2	3 (D-end up)	4	5 (D-end left, feet at back)	6 (D-end right, feet at back)	7 (Shaft horizontal, feet up)	8	9
Normal feet	1 flange, access to back	0	IM 2001 	IM 2011 	Suitable for operation in accordance with third numerals 0 and 1	IM 2031 	Suitable for operation in accordance with third numerals 0, 1 and 3	IM 2051 	IM 2061 	IM 2071 	Suitable for operation in accordance with third numerals 0, 1, 3, 5, 6 and 7	Not covered by third numerals 0 to 8 – inclination of shaft not specified
Normal feet	1 flange, no access to back	1	IM 2101 	IM 2111 		IM 2131 		IM 2151 	IM 2161 	IM 2171 		
Normal feet	2 flanges, access to back	2	IM 2202 	IM 2212 		IM 2232 		IM 2252 	IM 2262 	IM 2272 		
Normal feet	2 flanges, no access to back	3	IM 2302 	IM 2312 		IM 2332 		IM 2352 	IM 2362 	IM 2372 		
Raised feet	1 flange, access to back	4	IM 2401 									
(Not allocated)		5	—	—		—		—	—	—		
(Not allocated)		6	—	—		—		—	—	—		

**Table 7 – Significance of second and third numerals for first numeral 3
(Flange-mounted machines with endshield bearing(s) only with a flange part of an endshield)**

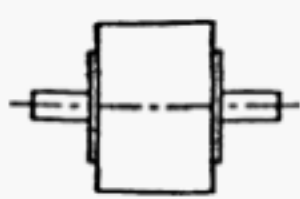
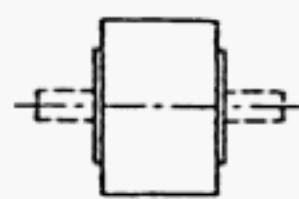
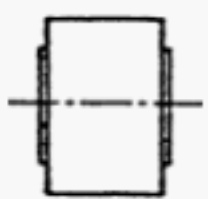
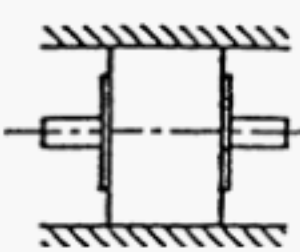
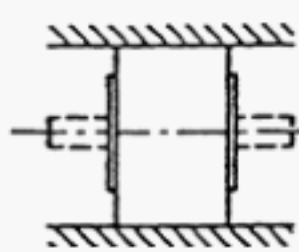
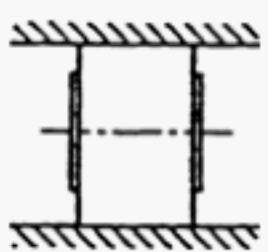
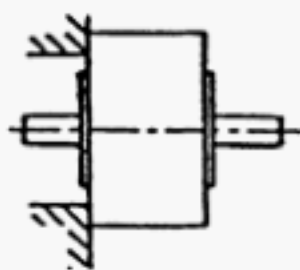
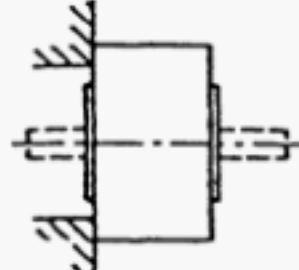
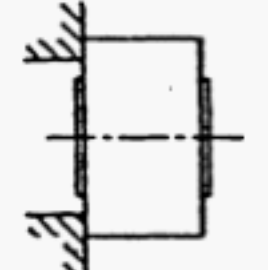
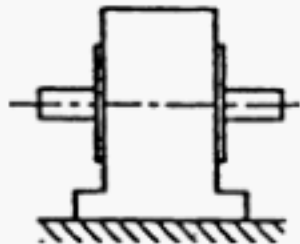
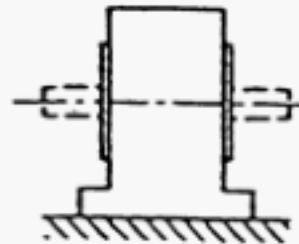
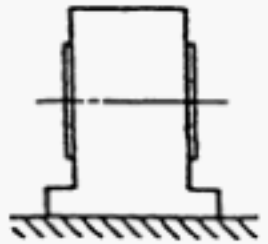
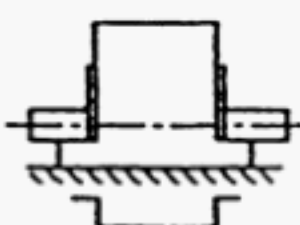
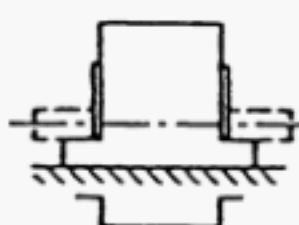
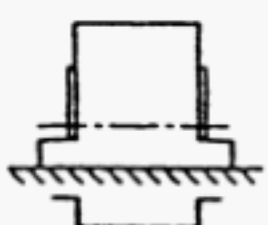
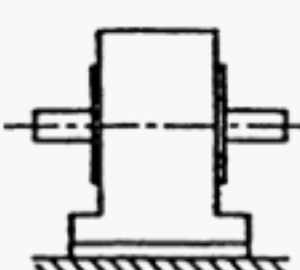
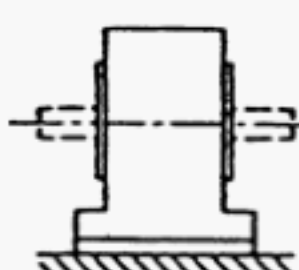
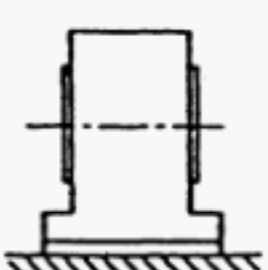
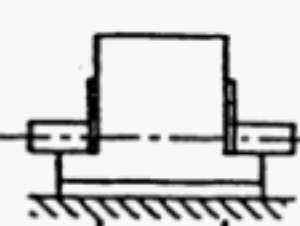
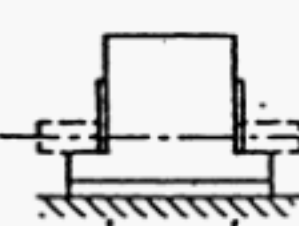
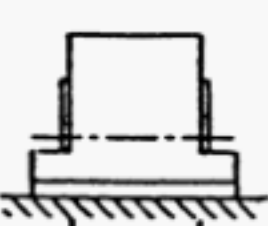
Machine construction				Second numeral	Designation and sketch (see 3.5)						
Number of bearings	Flange position	Access to back of flange	Face of flange faces towards		Third numeral						
					0 (Shaft horizontal)	1 (D-end down)	2	3 (D-end up)	4	5 to 8 (Not allocated)	9
2	D-end	Yes	D-end	0	IM 3001 	IM 3011 	Suitable for operation in accordance with third numerals 0 and 1	IM 3031 	Suitable for operation in accordance with third numerals 0, 1 and 3		
2	D-end	Yes	N-end	1	IM 3101 	IM 3111 		IM 3131 			
2	N-end	Yes	N-end	2	IM 3201 	IM 3211 		IM 3231 			
2	N-end	Yes	D-end	3	IM 3301 	IM 3311 		IM 3331 			
1	D-end	Yes	N-end	4	IM 3401 	IM 3411 		IM 3431 			
1	N-end	Yes	D-end	5	IM 3501 	IM 3511 		IM 3531 			
2	D-end	No	D-end	6	IM 3601 	IM 3611 		IM 3631 			
2	N-end	No	N-end	7	IM 3701 	IM 3711 		IM 3731 			
2	D-end skirt part of end-shield ¹⁾	Yes	D-end	8		IM 3811 	Not covered by third numerals 0 to 4 – inclination of shaft not specified				

¹⁾ Second numeral 8 is the same as second numeral 0 except for the skirt.

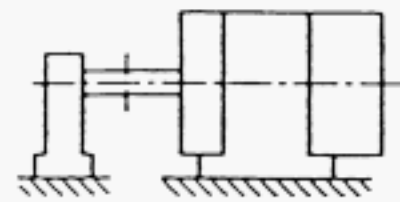
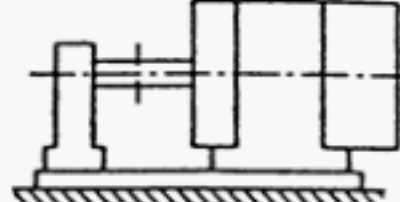
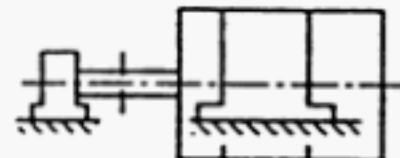
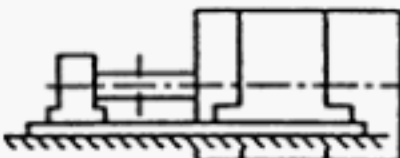
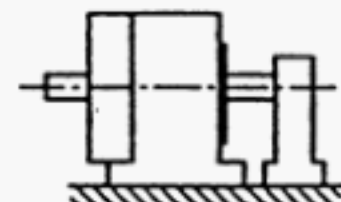
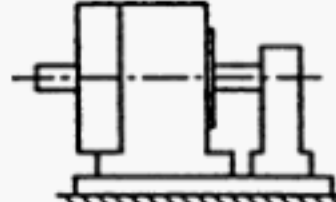
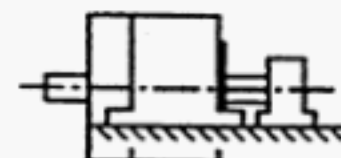
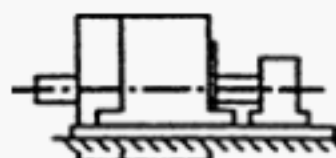
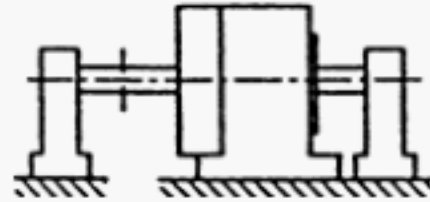
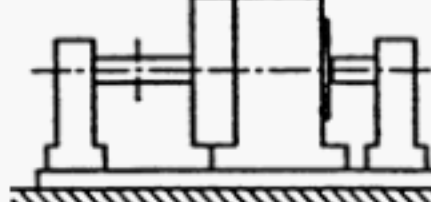
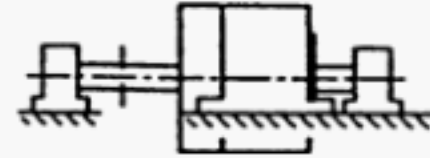
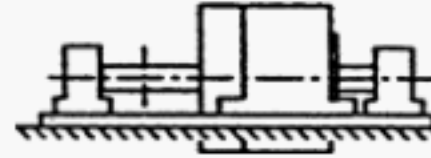
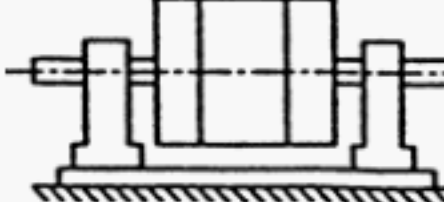
**Table 8 – Significance of second and third numerals for first numeral 4
(Flange-mounted machines with endshield bearing(s) only with a flange not part
of an endshield, but an integral part of the frame or other component)**

Machine construction				Second numeral	Designation and sketch (see 3.5)						
Number of bearings	Flange position	Access to back of flange	Face of flange faces towards		Third numeral						
					0 (Shaft horizontal)	1 (D-end down)	2	3 (D-end up)	4	5 to 8 (Not allocated)	9
2	D-end	Yes	D-end	0	IM 4001 	IM 4011 	Suitable for operation in accordance with third numerals 0 and 1	IM 4031 	Suitable for operation in accordance with third numerals 0, 1 and 3		Not covered by third numerals 0 to 4 – inclination of shaft not specified
2	D-end	Yes	N-end	1	IM 4101 	IM 4111 		IM 4131 			
2	N-end	Yes	D-end	2	IM 4201 	IM 4211 		IM 4231 			
2	N-end	Yes	N-end	3	IM 4301 	IM 4311 		IM 4331 			
1	D-end	Yes	D-end	4	IM 4401 	IM 4411 		IM 4431 			
1	D-end	Yes	N-end	5	IM 4501 	IM 4511 		IM 4531 			
1	N-end	Yes	D-end	6	IM 4601 	IM 4611 		IM 4631 			
1	N-end	Yes	N-end	7	IM 4701 	IM 4711 		IM 4731 			
(Not allocated)				8	—	—		—			

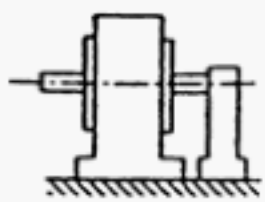
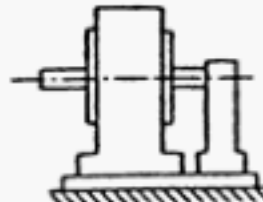
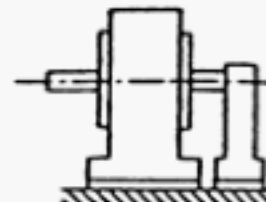
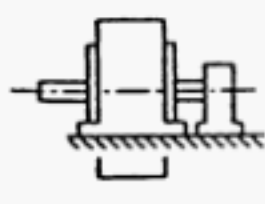
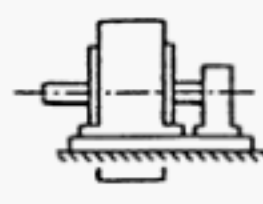
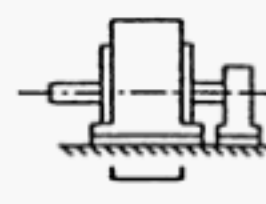
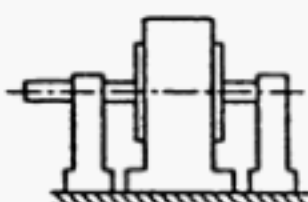
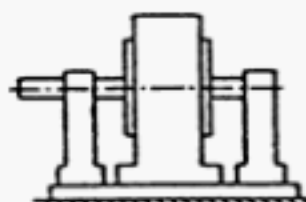
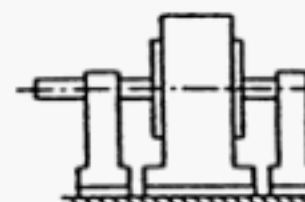
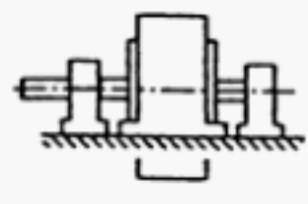
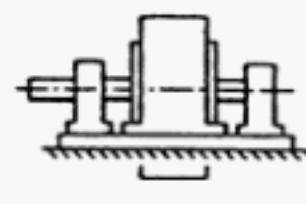
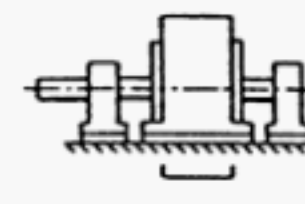
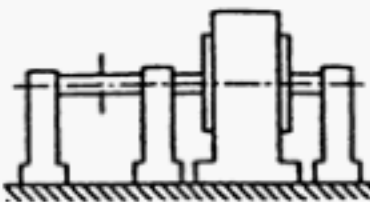
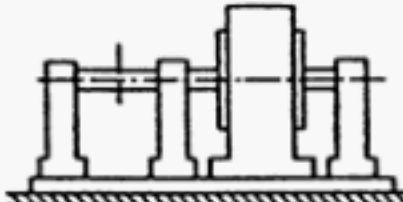
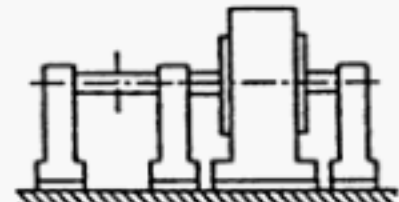
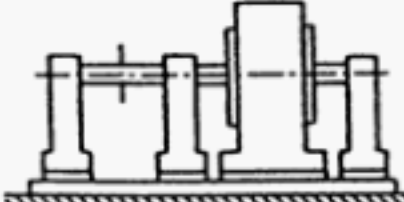
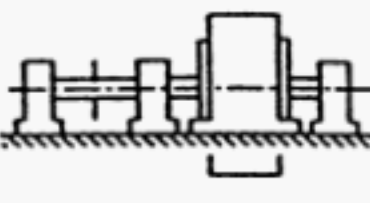
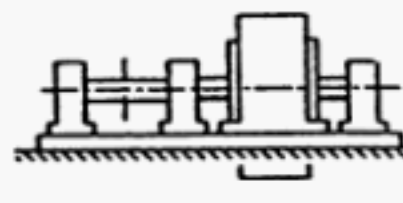
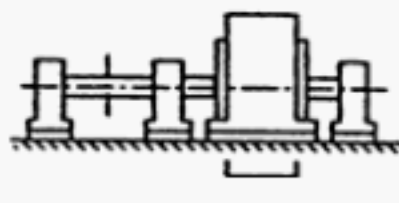
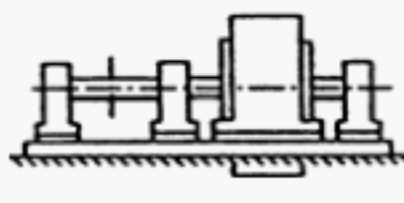
**Table 9 – Significance of second and third numerals for first numeral 5
(Machines without bearings)**

Machine construction		Second numeral	Designation and sketch (see 3.5)		
Frame	Mounting arrangement		Third numeral		
			0 (With rotor, with shaft)	1 (With rotor, without shaft)	2 (Stator only)
Without frame	Not specified	0	IM 5002 	IM 5010 	IM 5020 
With frame	With cylindrical support	1	IM 5102 	IM 5110 	IM 5120 
With frame	On end-face of frame at D-end	2	IM 5202 	IM 5210 	IM 5220 
(Not allocated)		3	—	—	—
With frame	By normal feet	4	IM 5402 	IM 5410 	IM 5420 
With frame	By raised feet	5	IM 5502 	IM 5510 	IM 5520 
With frame	By normal feet and sole-plates	6	IM 5602 	IM 5610 	IM 5620 
With frame	By raised feet and sole-plates	7	IM 5702 	IM 5710 	IM 5720 

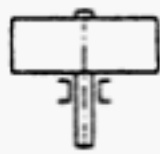
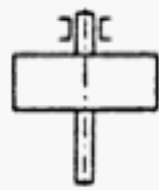
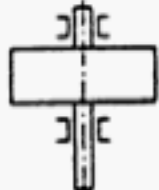
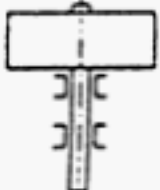

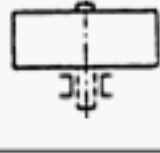
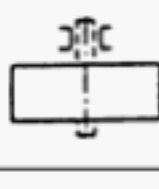
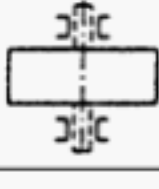
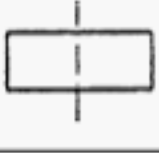
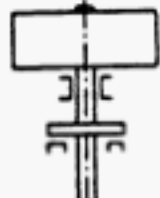
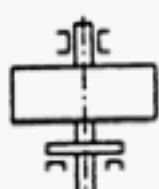
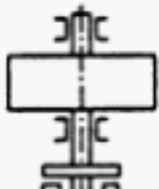
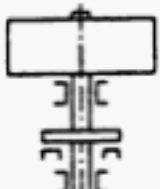
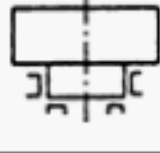
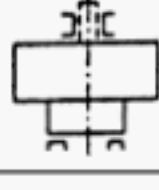
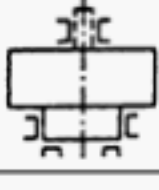
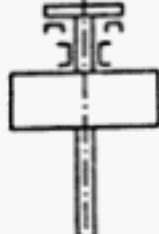
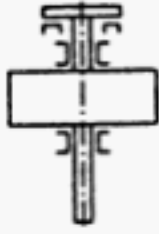
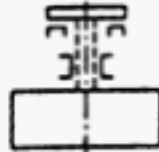

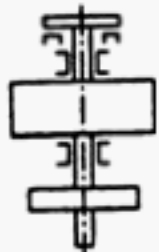
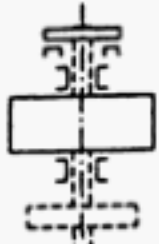
**Table 10 – Significance of second and third numerals for first numeral 6
(Machines with endshield bearings and pedestal bearings)**

Machine construction			Second numeral	Designation and sketch (see 3.5)	
Feet	Number of endshield bearings	Number of pedestal bearings		Third numeral	
				0 (Without bedplate)	1 (With bedplate)
Normal feet	2	1 (D-end)	0	IM 6000 	IM 6010 
Raised feet	2	1 (D-end)	1	IM 6100 	IM 6110 
Normal feet	1 (D-end)	1 (N-end)	2	IM 6201 	IM 6211 
Raised feet	1 (D-end)	1 (N-end)	3	IM 6301 	IM 6311 
(Not allocated)			4	–	–
(Not allocated)			5	–	–
Normal feet	1 (D-end)	2	6	IM 6600 	IM 6610 
Raised feet	1 (D-end)	2	7	IM 6700 	IM 6710 
Without feet	2	2	8	–	IM 6811 

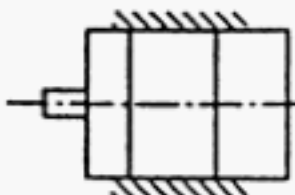
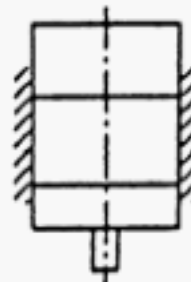
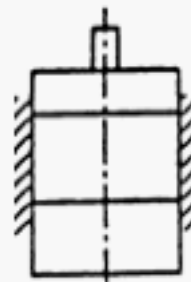
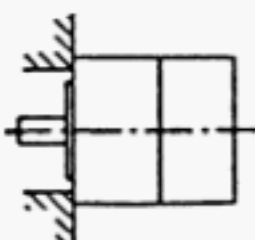
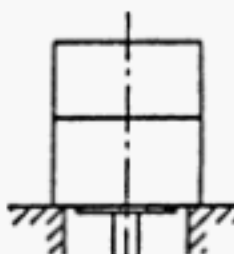
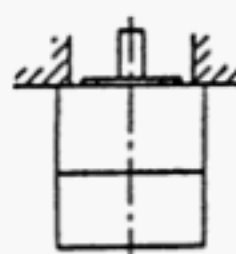
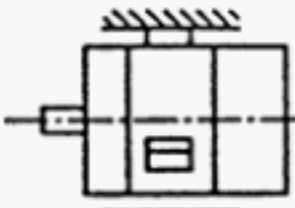
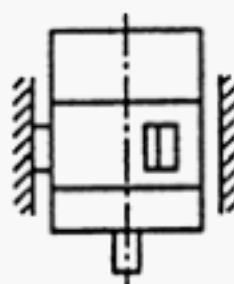
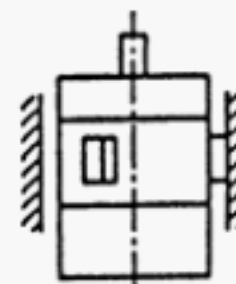
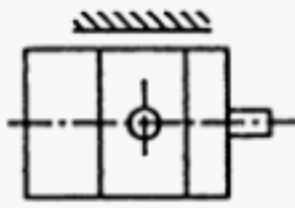
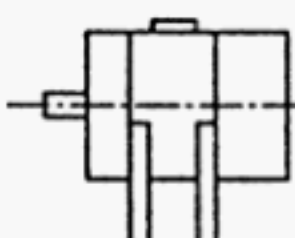
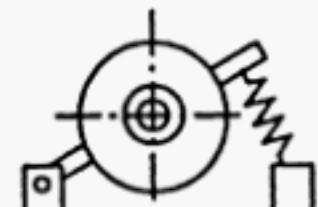
**Table 11 – Significance of second and third numerals for first numeral 7
(Machines with pedestal bearings only)**

Machine construction		Second numeral	Designation and sketch (see 3.5)			
Feet	Number of pedestal bearings		Third numeral			
			0 (Without bedplate without sole-plates)	1 (With bedplate)	2 (With sole-plate)	3 (With bedplate with sole-plate)
Normal feet	1	0	IM 7001 	IM 7011 	IM 7021 	
Raised feet	1	1	IM 7101 	IM 7111 	IM 7121 	
Normal feet	2	2	IM 7201 	IM 7211 	IM 7221 	
Raised feet	2	3	IM 7301 	IM 7311 	IM 7321 	
Normal feet	3	4	IM 7400 	IM 7410 	IM 7420 	IM 7430 
Raised feet	3	5	IM 7500 	IM 7510 	IM 7520 	IM 7530 

**Table 12 – Significance of second and third numerals for first numeral 8
(Vertical machines of construction not covered by first numerals 1 to 4)**

Machine construction			Second numeral	Designation and sketch (see 3.5)				
Thrust bearing position	Shaft	Fly-wheel		Third numeral				
				0 (One guide bearing below rotor)	1 (One guide bearing above rotor)	2 (Two guide bearings, one above and one below rotor)	3 (Two guide bearings below rotor)	4 (No guide bearing)
Without thrust bearing	With shaft	Without flywheel	0	IM 8001 	IM 8011 	IM 8021 	IM 8031 	IM 8041 
Without thrust bearing	Without shaft	Without flywheel	1	IM 8100 	IM 8110 	IM 8120 		IM 8140 
Below rotor	With shaft	Without flywheel	2	IM 8201 	IM 8211 	IM 8221 	IM 8231 	
Below rotor	Without shaft	Without flywheel	3	IM 8300 	IM 8310 	IM 8320 		
Above rotor	With shaft	Without flywheel	4		IM 8411 	IM 8421 		
Above rotor	Without shaft	Without flywheel	5		IM 8510 			
Above rotor	With shaft	With flywheel	6			IM 8621 		
Above rotor	With shaft	With flywheel	7			IM 8721 		
Above rotor	Without shaft	With flywheel	8			IM 8820 		

**Table 13 – Significance of second and third numerals for first numeral 9
(Machines with special mounting arrangements)**

Machine construction		Second numeral	Designation and sketch (see 3.5)						
Number of endshield bearings	Mounting arrangement		Third numeral						
			0 (Shaft horizontal)	1 (D-end down)	2	3 (D-end up)	4	5 to 8 (Not allocated)	9
2	With cylindrical frame for building-in	0	IM 9001 	IM 9011 	Suitable for operation in accordance with third numerals 0 and 1	IM 9031 	Suitable for operation in accordance with third numerals 0, 1 and 3	—	Not covered by third numerals 0 to 4 – inclination of shaft not specified
1	For mounting on end face of frame at D-end	1	IM 9101 	IM 9111 		IM 9131 		—	
2	By pads	2	IM 9201 	IM 9211 		IM 9231 		—	
2	By trunnions	3	IM 9301 					—	
2	By axle suspension	4	IM 9401 					—	
2	By pendulum suspension	5	IM 9501 					—	

Annex A (informative)

Relationship between Code I and Code II

The relationship between Code I and Code II is given in tables A.1 and A.2.

**Table A.1 – Relationship between Code I and Code II
for machines with horizontal shafts (IM B...)**

Code I	Code II
IM B3	IM 1001
IM B5	IM 3001
IM B6	IM 1051
IM B7	IM 1061
IM B8	IM 1071
IM B9	IM 9101
IM B10	IM 4001
IM B14	IM 3601
IM B15	IM 1201
IM B20	IM 1101
IM B25	IM 2401
IM B30	IM 9201
IM B34	IM 2101
IM B35	IM 2001

**Table A.2 – Relationship between Code I and Code II
for machines with vertical shafts (IM V...)**

Code I	Code II
IM V1	IM 3011
IM V2	IM 3231
IM V3	IM 3031
IM V4	IM 3211
IM V5	IM 1011
IM V6	IM 1031
IM V8	IM 9111
IM V9	IM 9131
IM V10	IM 4011
IM V14	IM 4031
IM V15	IM 2011
IM V16	IM 4131
IM V17	IM 2111
IM V18	IM 3611
IM V19	IM 3631
IM V30	IM 9211
IM V31	IM 9231
IM V35	IM 2031
IM V37	IM 2131

NOTES

NOTES

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