



LARGE ELECTRIC MACHINES PLANT

**NOMENCLATURE CATALOGUE
OF ASYNCHRONOUS MACHINES**



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1. ELECTRIC MOTORS WITH SQUIRREL-CAGE ROTOR 1.1. HORIZONTAL ELECTRIC MOTORS

ELECTRIC MOTORS OF A5K-355 TYPE

Electric motors with squirrel cage rotor are used to drive pumps, fans, smoke exhausters and other mechanisms, which don't require rotational speed adjustment, and they are rated for continuous operating mode S1 from AC network 50 Hz .

The motors meet the IEC requirements.

The motors are manufactured for voltage 6000 V.

Construction mounting arrangement - IM1001.

The motors are produced with frictionless bearings, with one shaft end.

Outlet ends are removed in the terminal box and connected in "star on four insulators".

Degree of protection for the outlet box — IP54.

Degree of protection for the motors — IP23.

The motors are cooled with self-ventilation.

The motor designation is decoded as follows:

A5K	-	XXX	-	XXX	-	2, 4, 6	-	Y3
<div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto;"> <div style="border-bottom: 1px solid black; width: 40%; text-align: center;">Climatic construction and allocation category</div> <div style="border-bottom: 1px solid black; width: 40%; text-align: center;">Number of poles</div> </div> <div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto; margin-top: 5px;"> <div style="border-bottom: 1px solid black; width: 40%; text-align: center;">Rated power, kW</div> <div style="border-bottom: 1px solid black; width: 40%; text-align: center;">Height of the axis of rotation in mm</div> </div>								
Designation: A – asynchronous motor with squirrel-cage rotor; 5 – series number; K – made in Novaya Kakhovka.								

Technical data on motors are shown in Table 1.

Overall and mounting dimensions of the motors are shown in Table 2.

Table 1

Motor type	Power, kW	Rotational speed(synch.), rpm	Eff., %	cos φ	$\frac{M_{max}}{M_{nom}}$	$\frac{M_{start}}{M_{nom}}$	$\frac{I_{start}}{I_{nom}}$
A5K-355-200-2	200	3000	92,8	0,89	3,0	0,9	7,0
A5K-355-250-2	250		93,3		2,7	0,9	6,0
A5K-355-315-2	315		93,7		2,3	0,9	5,5
A5K-355-400-2	400		94,1		2,5	0,9	7,0
A5K-355-500-2	500		94,5		2,6	0,9	6,0
A5K-355-200-4	200	1500	93,4	0,90	2,2	1,1	6,2
A5K-355-250-4	250		93,8		2,2	1,1	6,0
A5K-355-315-4	315		94,0		2,2	1,0	5,5
A5K-355-400-4	400		94,5		2,2	1,0	5,5
A5K-355-200-6	200	1000	93,2	0,85	2,0	0,9	4,8
A5K-355-250-6	250		93,6		2,0	0,9	4,7

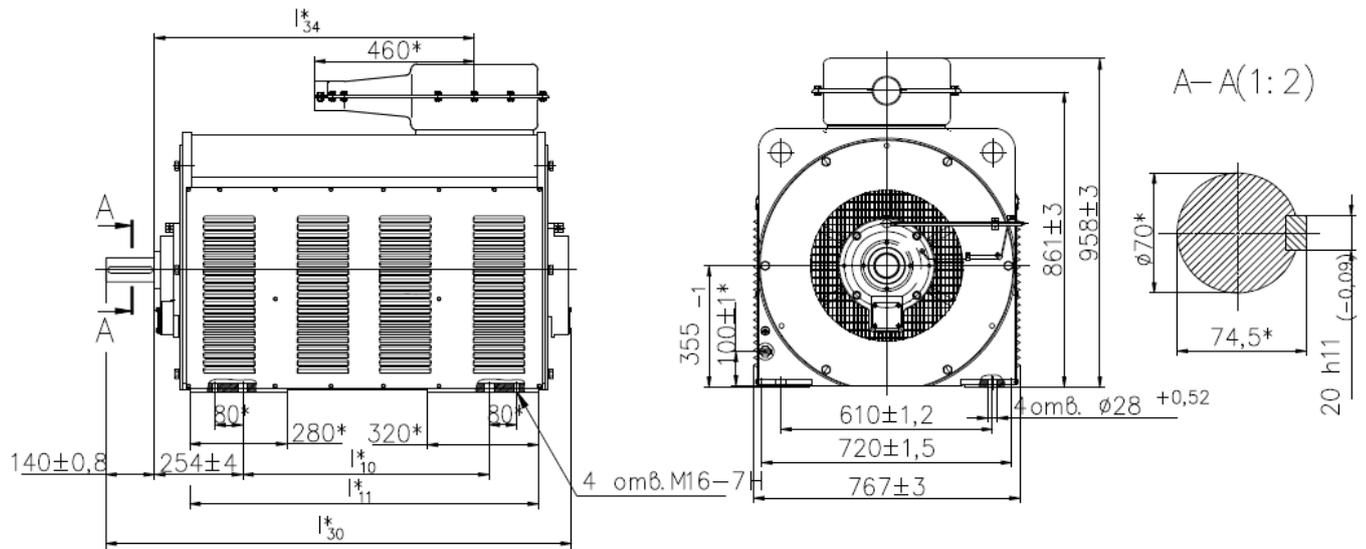


Fig. 1

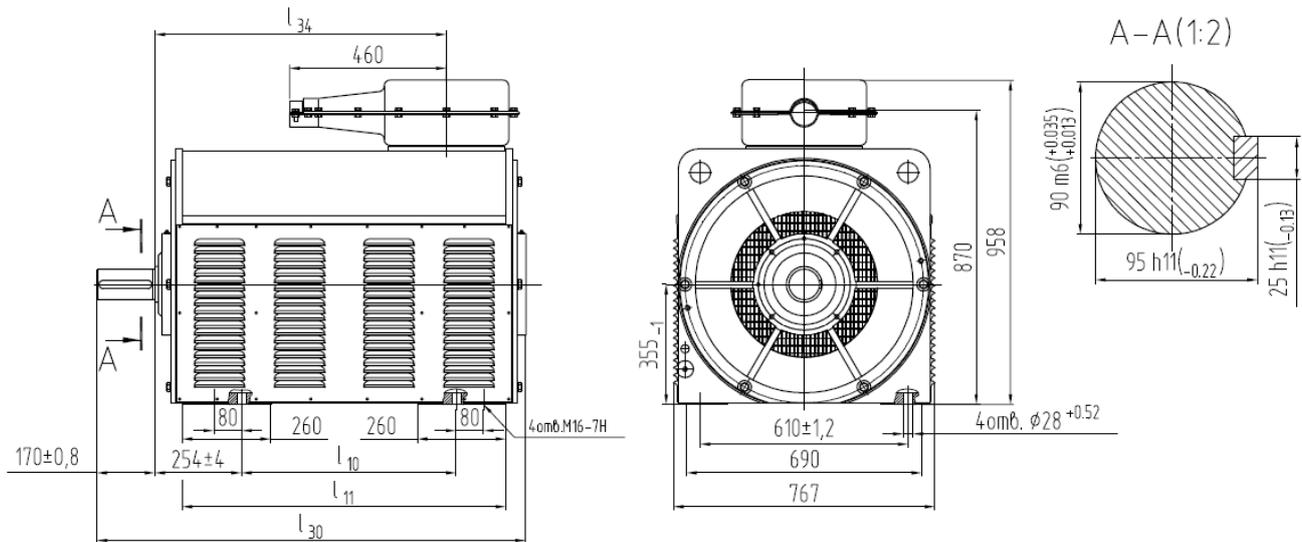


Fig. 2

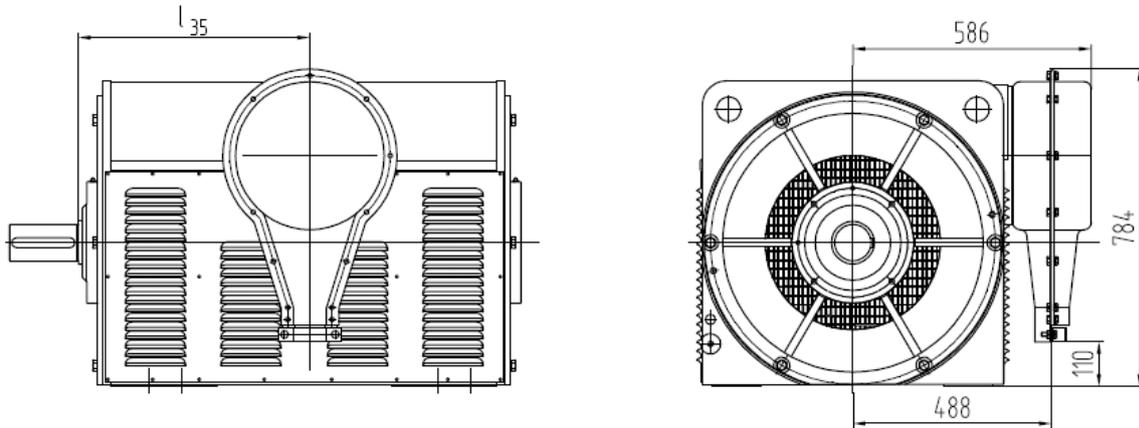


Fig. 3. See the rest in fig. 2

Table 2

Motor type	Fig.	l_{10}	l_{11}	l_{30}	l_{34}	l_{35}	Weight, kg
A5K-355-200-2	1	710	1005	1340	921	-	1270
A5K-355-250-2	1	710	1005	1340	921	-	1260
A5K-355-315-2	1	710	1005	1340	921	-	1400
A5K-355-400-2	1	800	1105	1440	1021	-	1470
A5K-355-500-2	1	800	1105	1440	1021	-	1620
A5K-355-200-4	2-3	630	950	1258	855	569	1260
A5K-355-250-4	2-3	630	950	1258	855	569	1330
A5K-355-315-4	2-3	710	1010	1318	915	609	1500
A5K-355-400-4	2-3	800	1110	1418	1015	654	1730
A5K-355-200-6	2-3	630	950	1258	855	569	1500
A5K-355-250-6	2-3	710	1010	1318	915	609	1525



ELECTRIC MOTORS OF A, ДАЗО TYPES, VOLTAGE 6000 V

Electric motors with squirrel cage rotor are used to drive pumps, fans, smoke exhausters and other mechanisms, which don't demand rotational speed adjustment, and they are rated for continuous operating mode S1 from AC network, 50 Hz or 60Hz.

The motors meet the IEC requirements.

The motors are manufactured for voltage 6000 V.

The motors are produced with frictionless bearings, with one shaft end.

Outlet ends are brought out to the welded terminal box, unless undersize pressed box is specified when motor is being ordered.

Degree of protection for motors of:

A series — motor IP23, output device- IP55.

ДАЗО series — motor IP54, output device- IP55, housing of outer fan - IP51.

The motors are cooled by self-ventilation.

The motor designation is decoded as follows:

A, ДАЗО	-	400,450	-	X, Y XK, YK		4, 6, 8, 10, 12		Y1, T1, T2, Y3, T3
								Climatic construction and allocation category
							Number of poles	
							Reference length of the motor	
							Height of the axis of rotation in mm;	

Designation:
A — asynchronous motor with squirrel-cage rotor;
ДАЗО — asynchronous blowing motor with squirrel-cage rotor;

Technical data on the motors of climatic version Y1 and Y3 are shown in Table3.

Overall and mounting dimensions of the motors of A type are shown in Table 4.

Overall and mounting dimensions of the motors of ДАЗО type are shown in Table 5.

Table 3

Motor type	Power, kW	Rotational speed (synch.), rpm	Eff., %	cos φ	M _{max} /M _{nom}
A-400Xk1-4Y3	315	1500	94,0	0,89	2,1
A-400Xk-4Y3	400	1500	94,3	0,88	2,2
A-400X-4Y3	500	1500	94,7	0,89	2,2
A-400Y-4Y3	630	1500	95,2	0,89	0,9
A-400Xk-6Y3	315	1000	93,6	0,85	1,9
A-400X-6Y3	400	1000	94,0	0,86	1,9
A-400Y-6Y3	500	1000	94,4	0,86	1,9
A-400X-8Y3	250	750	93,2	0,81	2,0
A-400Y-8Y3	315	750	93,5	0,82	2,0
A-400X-10Y3	200	600	92,2	0,79	1,9
A-400Y-10Y3	250	600	92,6	0,80	1,8
A-450X-4Y3	800	1500	95,2	0,89	2,0
A-450Y-4Y3	1000	1500	95,5	0,89	2,1
A-450X-6Y3	630	1000	94,7	0,87	1,8
A-450Y-6Y3	800	1000	95,0	0,87	1,8
A-450X-8Y3	400	750	93,8	0,83	1,9
A-450Yk-8Y3	500	750	94,2	0,84	1,8
A-450Y-8Y3	630	750	94,4	0,84	1,8
A-450X-10Y3	315	600	92,8	0,84	1,9
A-450Y-10Y3	400	600	93,1	0,84	1,8
A-450X-12Y3	250	500	92,1	0,77	1,8
A-450Y-12Y3	315	500	92,5	0,80	1,8



Table 3. Continuation

Motor type	Power, kW	Rotational speed (synch.), rpm	Eff., %	cos φ	M _{max} /M _{nom}
ДА30-400Хк1-4У1	250	1500	93,8	0,87	2,8
ДА30 -400Хк-4У1	315	1500	93,8	0,87	2,8
ДА30 -400Х-4У1	400	1500	94,3	0,88	2,8
ДА30 -400У-4У1	500	1500	94,8	0,88	2,8
ДА30 -400Хк1-6Т2	160	1000	92,4	0,80	3,0
ДА30 -400Хк-6У1	250	1000	93,3	0,84	2,5
ДА30 -400Х-6У1	315	1000	93,9	0,86	2,4
ДА30 -400У-6У1	400	1000	94,2	0,86	2,4
ДА30 -400Х-8У1	200	750	92,7	0,78	2,4
ДА30 -400У-8У1	250	750	93,2	0,80	2,4
ДА30 -400У-10У1	200	600	92,2	0,79	2,2
ДА30 -450Х-4У1	630	1500	94,8	0,88	2,4
ДА30 -450У-4У1	800	1500	95,1	0,89	2,6
ДА30 -450Х-6У1	500	1000	94,5	0,86	2,2
ДА30 -450У-6У1	630	1000	94,8	0,86	2,3
ДА30 -450Х-8У1	315	750	93,5	0,81	2,4
ДА30 -450Ук-8У1	400	750	93,9	0,81	2,3
ДА30 -450У-8У1	500	750	94,3	0,82	2,3
ДА30 -450Х-10У1	250	600	92,8	0,80	2,3
ДА30 -450У-10У1	315	600	93,3	0,83	2,3
ДА30 -450Х-12У1	200	500	92,0	0,75	2,2
ДА30 -450У-12У1	250	500	92,3	0,75	2,2

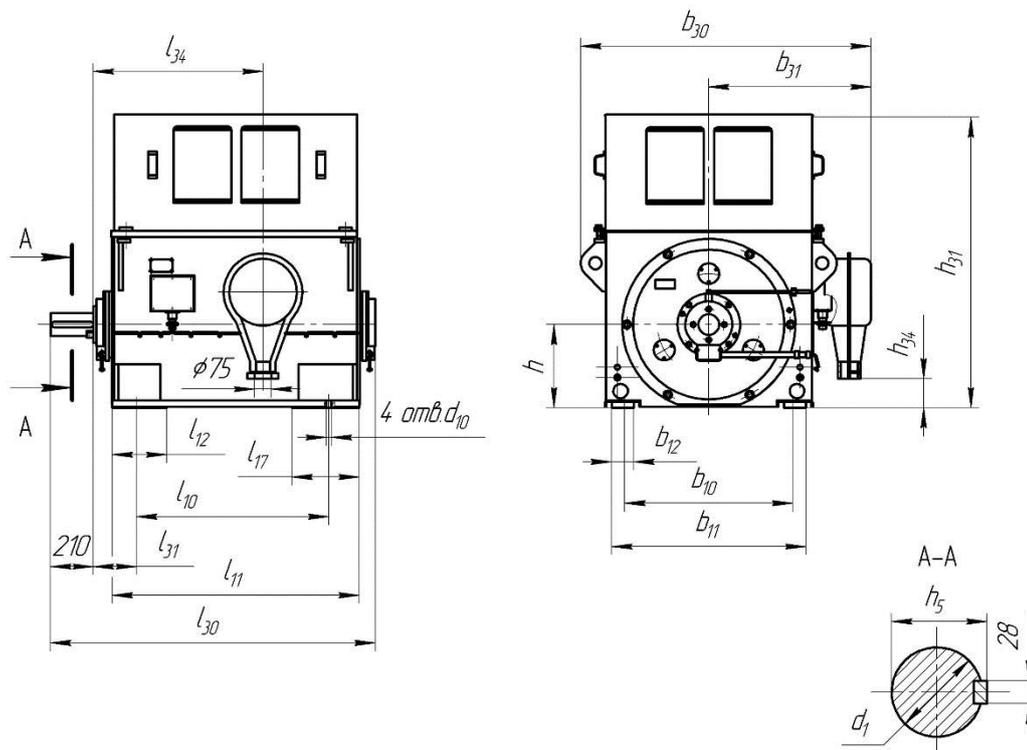


Figure 1. Electric motor of A type with pressed box



Table 4. Continuation

Motor type	Dimensions, mm								Weight, kg	
	l ₃₀	l ₃₁	l ₃₄		h	h ₅	h ₃₁	h ₃₄		
			Fig. 1	Fig. 2				Fig. 1		Fig. 2
A-400Xκ1-4Y3	1530	200	790		400	106	1305	105		2010
A-400Xκ-4Y3			2010							
A-400X-4Y3			2150							
A-400Y-4Y3			1630	840						2480
A-400Xκ-6Y3			1530	790						2055
A-400X-6Y3			1630	840						2185
A-400Y-6Y3			1530	790						2455
A-400X-8Y3			1630	840						2290
A-400Y-8Y3			1630	840						2600
A-400X-10Y3			1600	825						2235
A-400Y-10Y3	1680	905	2430							
A-450X-4Y3	1530	224	790		450	116	1410	206	105	2720
A-450Y-4Y3	1630		890 840	3040						
A-450X-6Y3	1530		790	2750						
A-450Y-6Y3	1630		890 840	3065						
A-450X-8Y3	1530		790	2690						
A-450Yκ-8Y3	1630		840	2960						
A-450Y-8Y3	1630		890 840	3200						
A-450X-10Y3	1610		835	2630						
A-450Y-10Y3	1710		935	2815						
A-450X-12Y3	1610		835	2710						
A-450Y-12Y3	1710		935	2945						

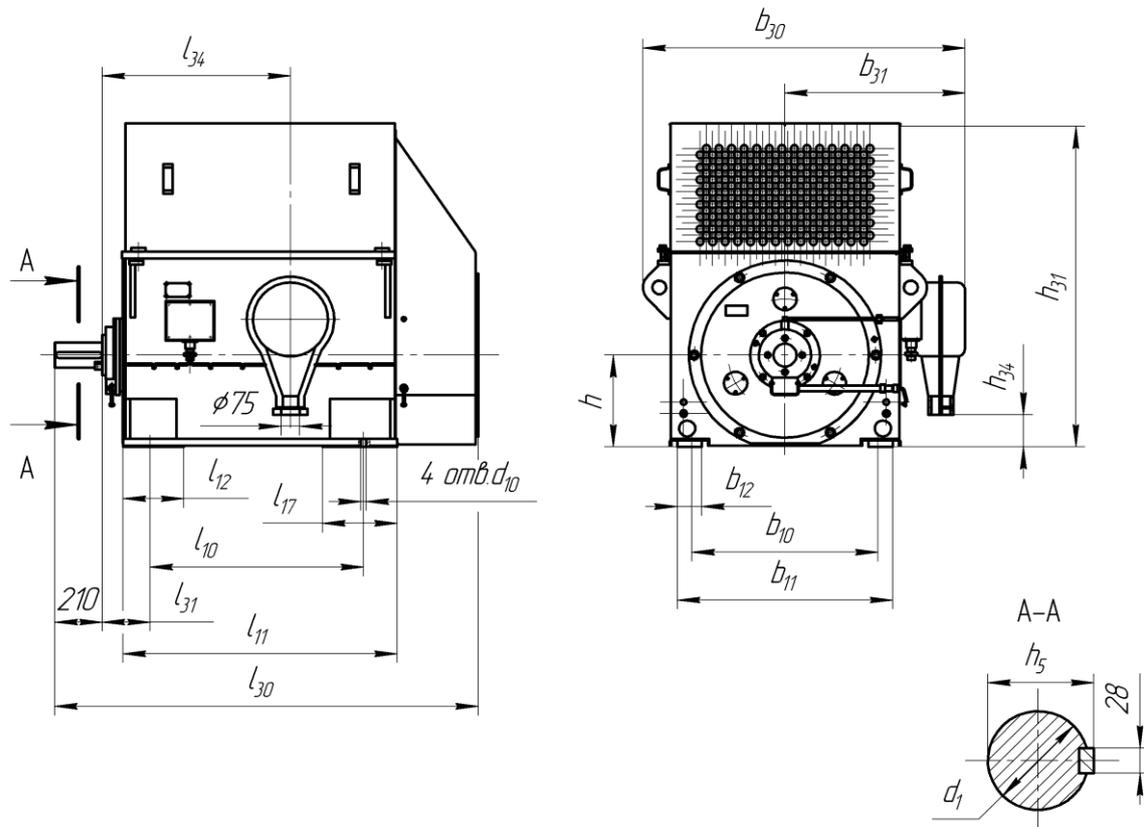


Figure 3. Electric motor of ДА30 type with pressed box

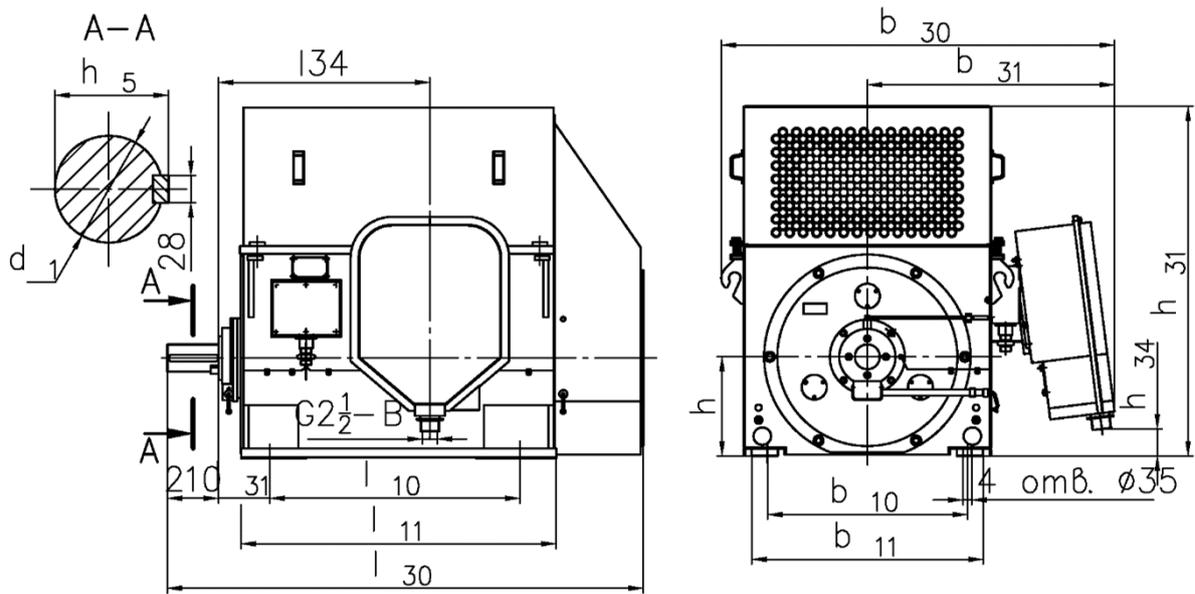


Figure 4. Electric motor of DA30 type with welded box

Table 5

Motor type	Dimensions, mm											
	b ₁₀	b ₁₁	b ₁₂	b ₃₀		b ₃₁		d ₁	l ₁₀	l ₁₁	l ₁₂	l ₁₇
				Fig. 3	Fig. 4	Fig. 3	Fig. 4					
ДА30 -400Xк1-4У1	800	920	105	1315	1600	705	990	100m6	900	1160	260	320
ДА30 -400Xк-4У1									1000	1260		
ДА30 -400X-4У1									900	1160		
ДА30 -400Y-4У1									1000	1260		
ДА30 -400Xк1-6Т2									900	1160		
ДА30 -400Xк-6У1									1000	1260		
ДА30 -400X-6У1									900	1160		
ДА30 -400Y-6У1									1000	1260		
ДА30 -400X-8У1									900	1160		
ДА30 -400Y-8У1									1000	1260		
ДА30 -450X-4У1	900	1040	120	1415	1700	755	1040	110m6	900	1160	300	360
ДА30 -450Y-4У1									1000	1260		
ДА30 -450X-6У1									900	1160		
ДА30 -450Y-6У1									1000	1260		
ДА30 -450X-8У1									900	1160		
ДА30 -450Yк-8У1									1000	1260		
ДА30 -450Y-8У1									1000	1260		
ДА30 -400Y-10У1									800	920		
ДА30 -450X-10У1	900	1040	120	1415	1700	755	1040	110m6	900	1240		
ДА30 -450X-12У1									1000	1340		
ДА30 -450Y-10У1									900	1240		
ДА30 -450Y-12У1									1000	1340		



Table 5. Continuation

Motor type	Dimensions, mm								Weight, kg				
	l ₃₀	l ₃₁	l ₃₄		h	h ₅	h ₃₁	h ₃₄					
			Fig. 3	Fig. 4				Fig. 3		Fig. 4			
ДА304-400Хк1-4У1	1795	200	790		400	106	1330	105		2360			
ДА30-400Хк-4У1										2360			
ДА30-400Х-4У1										2500			
ДА30-400У-4У1	1895		840				1410			2830			
ДА30-400Хк1-6Т2	1795									790		1330	2400
ДА30-400Хк-6У1													2400
ДА30-400Х-6У1			2530										
ДА30-400У-6У1	1895		840				1410			2800			
ДА30-400Х-8У1	1795									790		1330	2520
ДА30-400У-8У1	1895												840
ДА30-450Х-4У1	1825	790		1515	105	3100							
ДА30-450У-4У1	1925					890 840		1615	3500				
ДА30-450Х-6У1	1825								790		1515	3160	
ДА30-450У-6У1	1925	890 840		1615								3520	
ДА30-450Х-8У1	1825					790		1515				3050	
ДА30-450Ук-8У1	1925								840		1515	3420	
ДА30-450У-8У1	1925	890 840		1615								3670	
ДА30-400У-10У1	1950					200	905					400	106
ДА30-450Х-10У1	1910					224	835		450	116	1515	105	3020
ДА30-450Х-12У1		935		1615									3120
ДА30-450У-10У1	2010				935		1615	3340					
ДА30-450У-12У1		3450											



ELECTRIC MOTORS OF A, ДАЗО TYPES, VOLTAGE 10000 V

Electric motors with squirrel cage rotor are used to drive pumps, fans, smoke exhausters and other mechanisms, which don't demand rotational speed adjustment, and they are designed for continuous operating mode S1 from AC network, 50 Hz. At a customer's request the motors can be delivered for network frequency 60Hz.

The motors meet the IEC requirements.

The motors are manufactured for voltage 10000 V.

The motors are produced with frictionless bearings, with one shaft end. Outlet ends are removed in the terminal box. The terminal box has a bursting disk and meets modern requirements to short-circuit current resistance.

Degree of protection for A motors — IP23, output device- IP55.

Degree of protection for ДАЗО motors — IP54, output device- IP55, housing of outer fan - IP51.

The motors are cooled by self-ventilation.

Winding insulation of motors is thermosetting of "Monolith – 2" type with class of thermal classification «F» by GOST 8865. Admissible maximum temperature excess in stator windings determined by resistance method at rated continuous operational mode should not access more, than plus 80°C.

The motor designation is decoded as follows:

A, ДАЗО	-	500	-	X, Y XK, YK		4, 6, 8		Y1, Y3
								Climatic construction and allocation category
								Number of poles
								Reference length of the motor
								Height of the axis of rotation in mm;

Designation:
A — asynchronous motor with squirrel-cage rotor;
ДАЗО — asynchronous blowing motor with squirrel-cage rotor;

Technical data on the motors are shown in Table 6, overall and mounting dimensions - in Table 7.

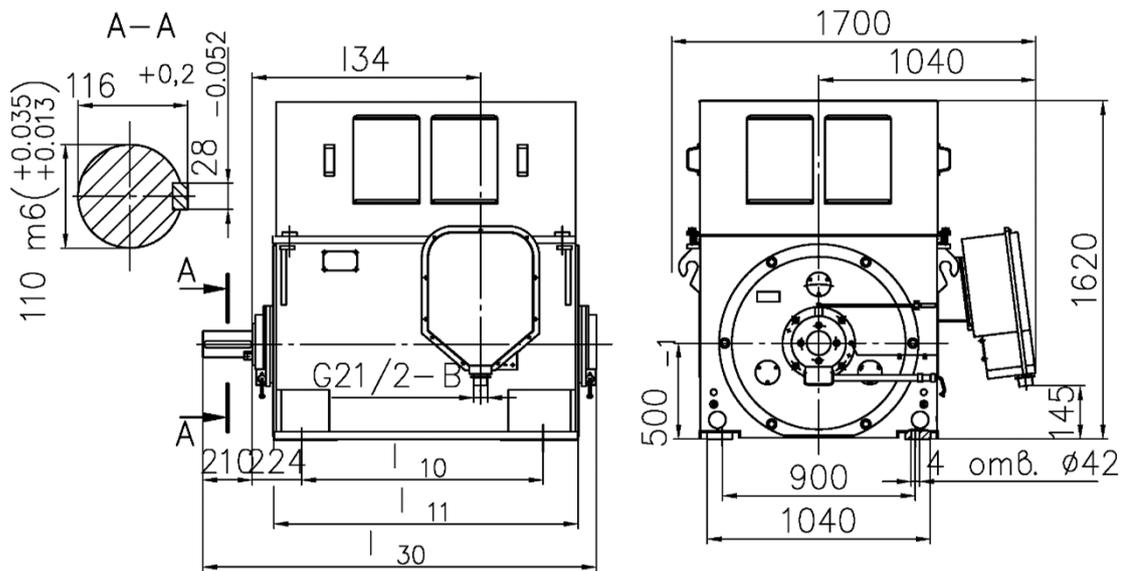
Table 6

Motor type	Power, kW	Rotational speed (synch.), rpm	Eff., %	cos φ	M _{max} /M _{nom}	M _{start} /M _{nom}	I _{start} /I _{nom}
A-500Xk-4Y3	315	1500	93.2	0.87	2.4	1.0	6.0
A-500X-4Y3	400		93.8	0.88	2.5	1.3	6.0
A-500Yk1-4Y3	500		94.2	0.89	2.3	1.0	6.0
A-500Yk-4Y3	630		94.5	0.88	2.4	1.3	6.0
A-500Y-4Y3	800		94.9	0.89	2.2	1.0	6.0
A-500X-6Y3	400	1000	93.8	0.86	2.1	1.0	5.5
A-500Yk-6Y3	500		94.2	0.85	2.4	1.1	6.0
A-500Y-6Y3	630		94.4	0.86	2.1	1.0	5.5
A-500Yc-6Y3	800		94.7	0.86	2.0	1.1	5.5
A-500Xk-8Y3	315	750	93.0	0.81	2.1	1.1	5.0
A-500X-8Y3	400		93.5	0.81	2.1	1.2	5.0
A-500Y-8Y3	500		94.1	0.81	2.2	1.2	5.5
ДАЗО-500Xk-4Y1	250	1500	92.5	0.86	2.9	1.1	7.5
ДАЗО-500X-4Y1	315		93.0	0.86	3.0	1.2	7.5
ДАЗО-500Yk1-4Y1	400		93.7	0.88	2.8	1.3	7.5
ДАЗО-500Yk-4Y1	500		94.0	0.88	2.8	1.4	7.5
ДАЗО-500Y-4Y1	630		94.5	0.88	2.8	1.4	7.2

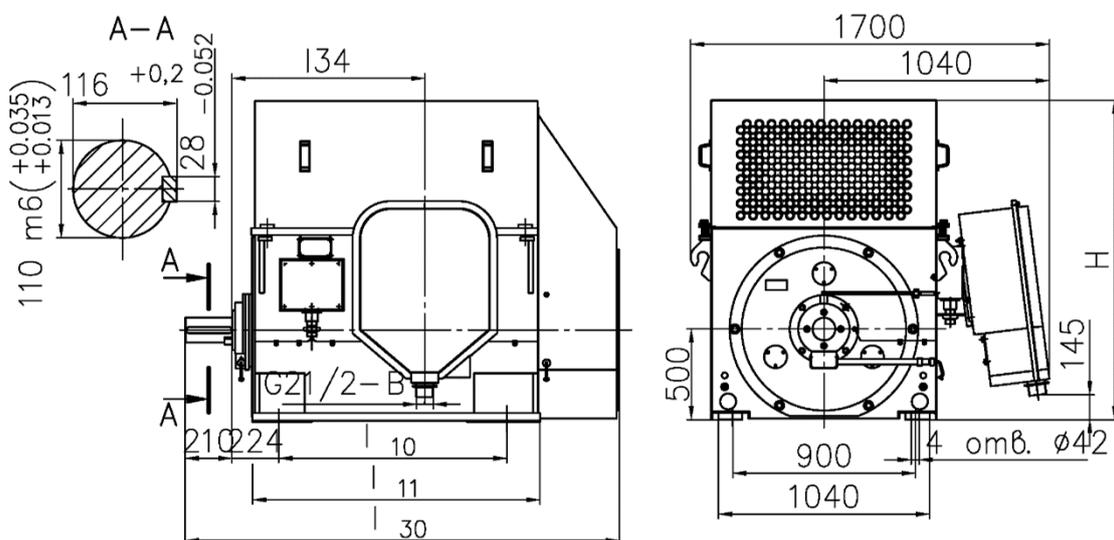


Table 6. Continuation

Motor type	Power, kW	Rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}	M _{start} /M _{nom}	I _{start} /I _{nom}
ДА30-500Х-6У1	315	1000	93.4	0.84	2.6	1.4	6.6
ДА30-500Ук-6У1	400		93.9	0.82	3.0	1.4	7.2
ДА30-500У-6У1	500		94.2	0.85	2.6	1.4	6.8
ДА30-500Ус-6У1	630		94.6	0.84	2.5	1.4	6.5
ДА30-500Хк-8У1	250	750	92.3	0.78	2.6	1.3	6.5
ДА30-500Х-8У1	315		93.0	0.78	2.6	1.4	6.5
ДА30-500У-8У1	400		93.8	0.78	2.8	1.5	6.6



Electric motors of A type, 10 000 V



Electric motors of ДА30 type, 10 000 V



Table 7

Motor type	Dimensions, mm				Weight, kg			
	L ₁₀	L ₁₁	L ₃₀	L ₃₄				
A-500X _к -4Y3	1000	1260	1630	830	2475			
A-500X-4Y3					2620			
A-500X-6Y3					2750			
A-500X _к -8Y3					2660			
A-500X-8Y3					2850			
A-500Y _{к1} -4Y3					2800			
A-500Y _к -4Y3	1120	1380	1750	950	2805			
A-500Y-4Y3					3040			
A-500Y _к -6Y3					3030			
A-500Y-6Y3					3170			
A-500Y _с -6Y3					1440	1810	1010	3380
A-500Y-8Y3					1380	1750	950	3225
ДА30-500Y _{к1} -4Y1	1120	1380	2045	950	3255			
ДА30-500Y _к -4Y1					3260			
ДА30-500Y-4Y1					3495			
ДА30-500Y _к -6Y1					3490			
ДА30-500Y-6Y1					3630			
ДА30-500Y-8Y1					3690			
ДА30-500X _к -4Y1	1000	1260	1925	830	2810			
ДА30-500X-4Y1					2950			
ДА30-500X-6Y1					3085			
ДА30-500X _к -8Y1					2995			
ДА30-500X-8Y1					3185			



ELECTRIC MOTORS OF AOD 560 TYPE

Asynchronous electric motors with squirrel cage rotor of AOD type, 560 gabarit, are used to drive mechanisms with heavy start conditions (smoke exhausters, fans and other mechanisms with the same data).

The motors are rated for continuous operating mode S1 from AC network, 50 Hz or 60 Hz.

The motors meet the IEC requirements.

The motors are manufactured for voltage 6000V and 10000V.

The motors are produced with frictionless bearings, with one shaft end. Outlet ends are removed in the terminal box. The terminal box has a bursting disk and meets modern requirements to short-circuit current resistance.

Degree of protection of AOD motors — IP54, output device – IP55, housing of outer fan – IP21.

The motors are cooled by self-ventilation.

The motor designation is decoded as follows:

AOD	-	XXXX	-	XX	-	10	-	Y1, T2
								Climatic construction by GOST 15150;
								Voltage 10 kV, sign is absent for voltage 6 kV;
								Number of poles;
								Power, kW;

A – asynchronous;
O –blown;
Д –motor.

By request the motors for other power, rotational speed and climatic construction.

Technical data for 6000V motors are shown in Table 8. Overall and mounting dimensions - in Table 9.

Technical data for 10000V motors are shown in Table 10. Overall and mounting dimensions - in Table 11.

Table 8

6 000V

Motor type	Power, kW	Rotational speed (synch.), rpm	Eff. %	cos φ	M _{max} /M _{nom}
AOD-1000-4Y1,T2	1000	1500	95.3	0.89	2.3
AOD-1250-4Y1,T2	1250		95.6	0.89	2.4
AOD-1600-4Y1,T2	1600		95.8	0.89	2.4
AOD-2000-4Y1,T2	2000		96.0	0.90	2.5
AOD-800-6Y1,T2	800	1000	95.1	0.85	2.2
AOD-1000-6Y1,T2	1000		95.5	0.85	2.3
AOD-1250-6Y1,T2	1250		95.8	0.86	2.2
AOD-1600-6Y1,T2	1600		96.0	0.86	2.2
AOD-1700-6Y1,T2	1700		96	0.89	2.2
AOD-500-8Y1,T2	500	750	94.6	0.83	2.3
AOD-630-8Y1,T2	630		94.8	0.79	2.3
AOD-700-8Y1,T2	700		95.2	0.83	2.3
AOD-800-8Y1,T2	800		95.0	0.80	2.3
AOD-1000-8Y1,T2	1000		95.3	0.80	2.3
AOD-400-10Y1,T2	400	600	93.8	0.78	2.2
AOD-500-10Y1,T2	500		94.2	0.78	2.2
AOD-630-10Y1,T2	630		94.7	0.79	2.2
AOD-800-10Y1,T2	800		94.9	0.80	2.2
AOD-315-12Y1,T2	315	500	93.3	0.74	2.1
AOD-400-1UY1,T2	400		93.7	0.75	2.1
AOD-500-12Y1,T2	500		94.1	0.75	2.1
AOD-630-12Y1,T2	630		94.5	0.75	2.0

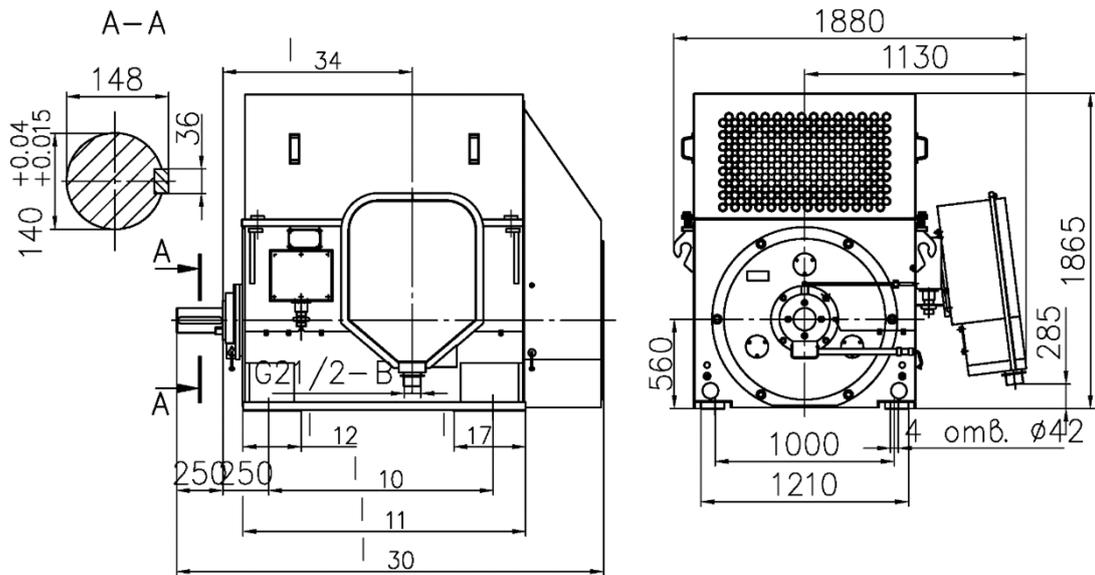


Table 9

6 000 V

Motor type	Dimensions, mm						Weight, kg	
	l_{10}	l_{11}	l_{12}	l_{17}	l_{30}	l_{34}		
АОД-1000-4У1	1000	1420	345	435	2185	1030	4910	
АОД-1250-4У1							5180	
АОД-1600-4У1	1250	1560			2325	1170	5790	
АОД-2000-4У1		1630			2395	1290	6430	
АОД-800-6У1	1000	1260			2025	920	4480	
АОД-1000-6У1		1420			2185	1030	5060	
АОД-1250-6У1	1250	1560			2325	1170	5630	
АОД-1600-6У1		1670			2435	1310	6540	
АОД-1700-6У1								6860
АОД-500-8У1	1000	1260			265	355	2025	950
АОД-630-8У1		1560	345	435	2325	1170	4970	
АОД-700-8У1	1250	1560	345	435	2325	1170	5830	
АОД-800-8У1		1620	290	355	2385	1300	5540	
АОД-1000-8У1							6480	
АОД-400-10У1	1000	1260	345	435	2025	920	4250	
АОД-500-10У1		265	355	2325	950	4620		
АОД-630-10У1	1250	1560	345	435	2325	1170	5380	
АОД-800-10У1		265	355	2325	1250	5930		
АОД-315-12У1	1000	1260	345	435	2025	920	4240	
АОД-400-12У1		265	355	2325	950	4600		
АОД-500-12У1	1250	1560	345	435	2325	1170	5340	
АОД-630-12У1		265	355	2325	1025	5990		

Data in the Table 9 can be specified for certain orders.



Table 10

10 000V

Motor type	Power, kW	Rotational speed, rpm	Eff. %	cos φ	M _{max} /M _{nom}
АОД-800-10-4У1,Т2	800	1500	94.8	0.89	2.5
АОД-1000-10-4У1,Т2	1000		95.1	0.89	2.5
АОД-1050-10-4У1,Т2	1050		95.2	0.89	3.0
АОД-1250-10-4У1,Т2	1250		95.5	0.89	2.6
АОД-1600-10-4У1,Т2	1600		96.0	0.89	2.5
АОД-2000-10-4У1,Т2	2000		96.1	0.90	2.4
АОД-800-10-6У1,Т2	800	1000	94.9	0.85	2.2
АОД-1000-10-6У1,Т2	1000		95.2	0.87	2.2
АОД-1250-10-6У1,Т2	1250		95.3	0.88	2.3
АОД-1600-10-6У1,Т2	1600		95.6	0.87	2.3
АОД-630-10-8У1,Т2	630	750	94.4	0.83	2.5
АОД-800-10-8У1,Т2	800		94.7	0.82	2.3
АОД-1000-10-8У1,Т2	1000		95.0	0.83	2.3
АОД-250-10-10У1,Т2	250	600	92.4	0.75	3.0
АОД-400-10-10У1,Т2	400		93.6	0.79	2.6
АОД-500-10-10У1,Т2	500		93.8	0.79	2.7
АОД-630-10-10У1,Т2	630		94.2	0.80	2.6
АОД-315-10-12У1,Т2	315	500	92.9	0.72	2.4
АОД-400-10-12У1,Т2	400		93.2	0.71	2.7
АОД-500-10-12У1,Т2	500		93.7	0.72	2.5

Table 11

10 000V

Motor type	Dimensions, mm						Weight, kg
	l ₁₀	l ₁₁	l ₁₂	l ₁₇	l ₃₀	l ₃₄	
АОД-800-10-4У1,Т2	1000	1420	345	435	2185	1030	5100
АОД-1000-10-4У1,Т2							5100
АОД-1050-10-4У1,Т2	1250	1560	265	355	2325	1170	5420
АОД-1250-10-4У1,Т2		1560					5420
АОД-1600-10-4У1,Т2							6000
АОД-2000-10-4У1,Т2		6430					
АОД-800-10-6У1	1000	1420	345	435	2185	1030	4620
АОД-1000-10-6У1	1250	1560			2325	1170	5300
АОД-1250-10-6У1		1670			2435	1310	5800
АОД-1600-10-6У1,Т2	6540						
АОД-630-10-8У1	1000	1420	290	355	2185	1030	4850
АОД-800-10-8У1	1250	1560			2325	1170	5780
АОД-1000-10-8У1		1620			2385	1300	6480
АОД-250-10-10У1,Т2	1000	1260			345	435	2025
АОД-400-10-10У1,Т2			265	355	950	4620	
АОД-500-10-10У1,Т2	1250	1560	345	435	2325	1170	5380
АОД-630-10-10У1,Т2			265	355		1250	5930
АОД-315-10-12У1,Т2	1000	1260	265	355	2025	950	4600
АОД-400-10-12У1,Т2	1250	1560	345	435	2325	1170	5340
АОД-500-10-12У1,Т2			265	355		1025	5990

Data in the Table 11 can be specified for certain orders.



ELECTRIC MOTORS OF 2 DAO AND AOD TYPE (OVER 560 GABARIT)

Asynchronous electric motors of 2 DAO and AOD types with squirrel-cage rotor are designed to drive different mechanisms with heavy starting conditions, without speed adjustment (blowing machines, fans, smoke-exhausters and other mechanisms with similar starting characteristics).

The motor is rated for continuous operating mode S1 from AC network, 50 Hz. The motors are manufactured for voltage 6000 V, 10000 V.

Protection degree of the motor - IP54, the terminal box - IP55.

Motor cooling - aerial. Cooling method - ICO161 by GOST 20459.

This motor is produced with one sense of rotation. Constructively it enables change of sense of rotation by means of stator windings shift, and it is necessary to turn over the fan of the outer cooling cycle.

Constructive mounting arrangement: 1M1101 by GOST 2479; on raised feet, with two panel plain bearings, horizontal shaft, one working cylindrical shaft end. Stator winding insulation is thermosetting – “Monolith-2”. Resistance thermal converters of TCP or TCM type control temperature of the core active steel and stator winding.

The motor has plain bearings with combined lubrication. Resistance thermal converters of TCP or TCM type installed in bearing cases control temperature of the bearing inserts.

The motor designation is decoded as follows:

2DAO-XXXX-XXX-XX-Y1

2	DAO	- XXXX	- XXX	- XX	- Y1	
						Climatic construction;
						Voltage, kV;
						Rotational speed (synchr.), rpm;
						Power, kW;
	Д - motor А - asynchronous О - blown					
Serial number						

AOD-XXXX-XX-XX-Y1

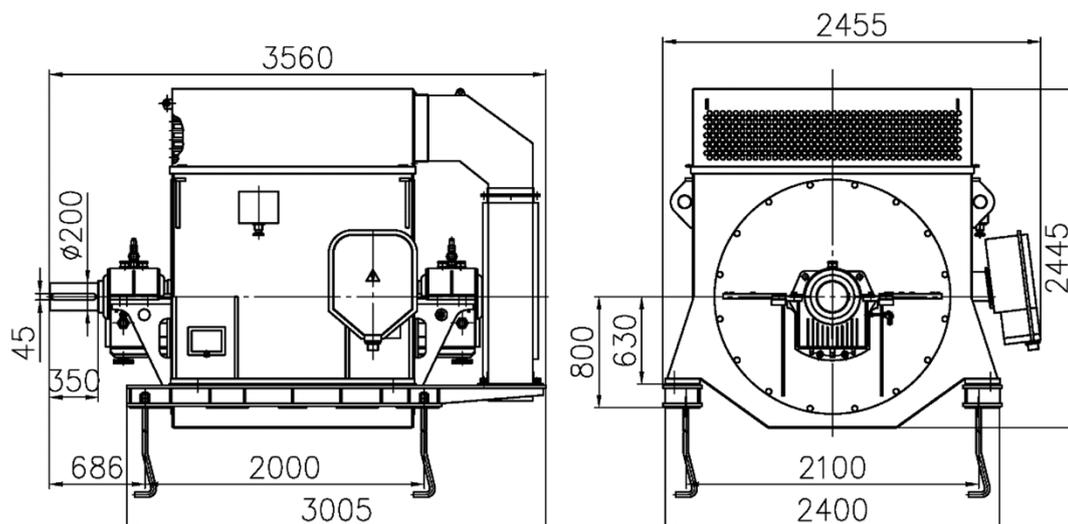
AOD	- XXXX	- XX	- XX	- Y1	
					Climatic construction;
					Number of poles;
					Voltage, kV;
					Power, kW;
А - asynchronous О - blown Д - motor					

Technical data of the motors are shown in Table 12.

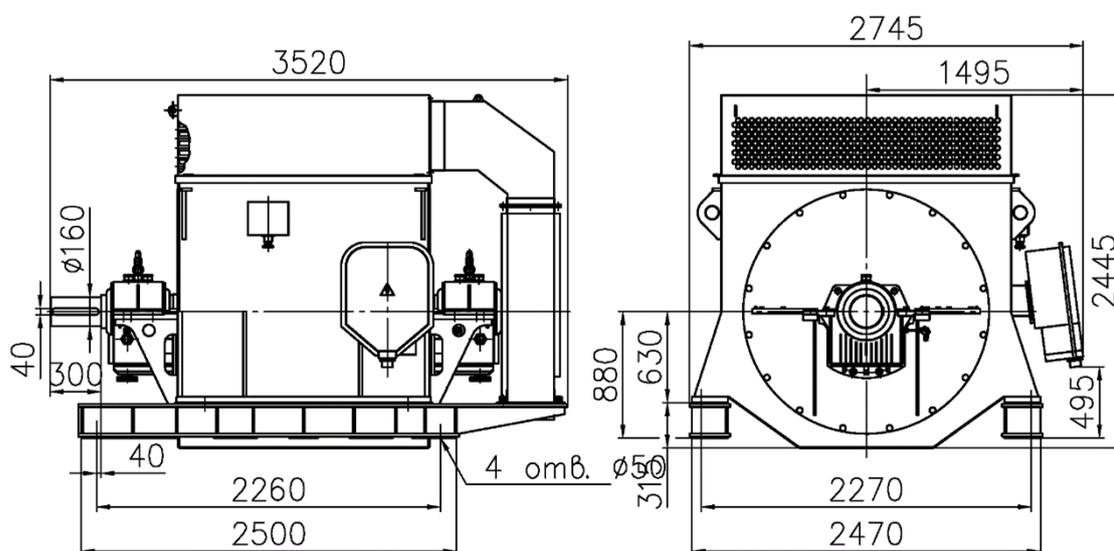
Overall and mounting dimensions of electric motors are shown in figures.

Table 12

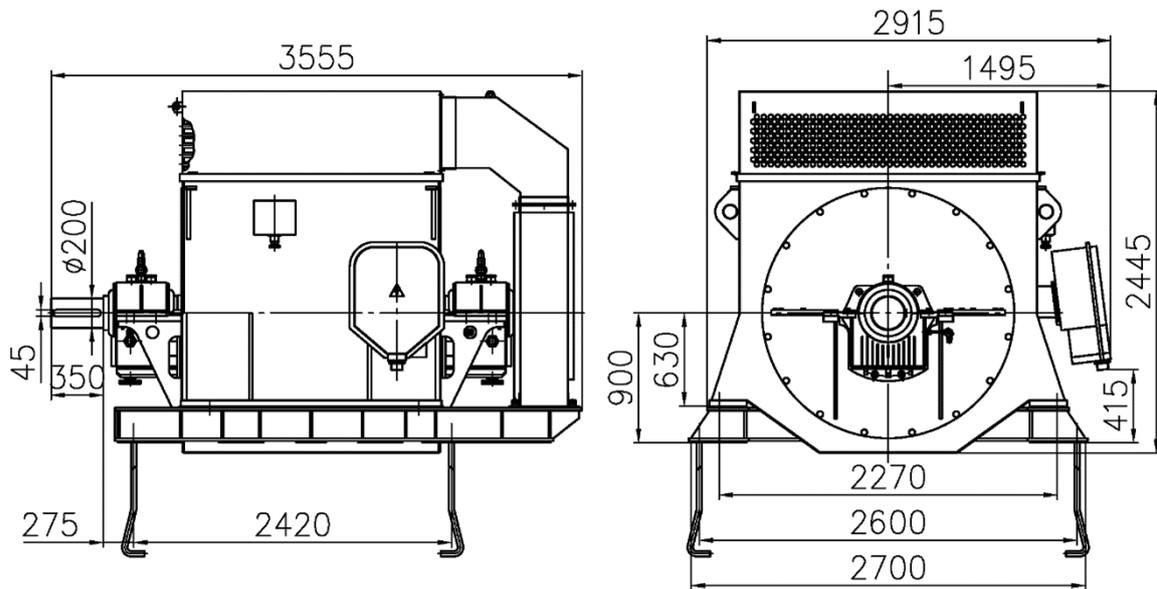
Type of the motor	Voltage, V	Power, kW	Rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}	Weight, kg
2DAO 2000-1000-6Y1	6000	2000	1000	95,7	0,9	2,9	16470
2DAO 2000-1000-10Y1	10000			95,5			
2DAO 1250-1000-6Y1	6000	1250	750	95,0	0,88	3,0	15830
AOD-1800-6-8Y1		1800		94,9	0,88	2,6	15800
AOD-2000-6-8Y1		2000		94,9	0,89	2,4	15400
AOD-1250-10Y1		1250	600	94,5	0,83	2,6	16670
AOD-1600-6-10Y1		1600		95,2	0,85	2,1	15900
AOD-1600-10-10Y1		10000	1600	600	95,0	0,84	2,4
AOD-1600-6-12T2	6000	1600	500	95,4	0,76	2,3	17380



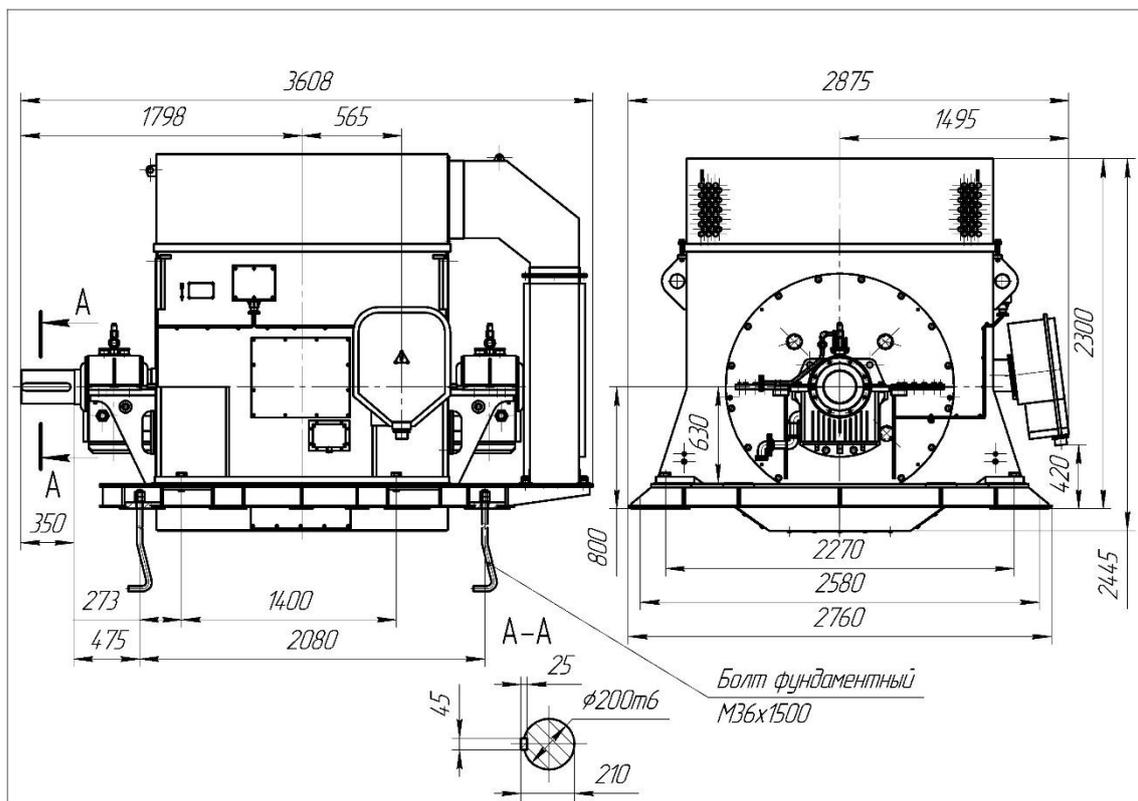
2ДАО 2000-1000-6/10У1



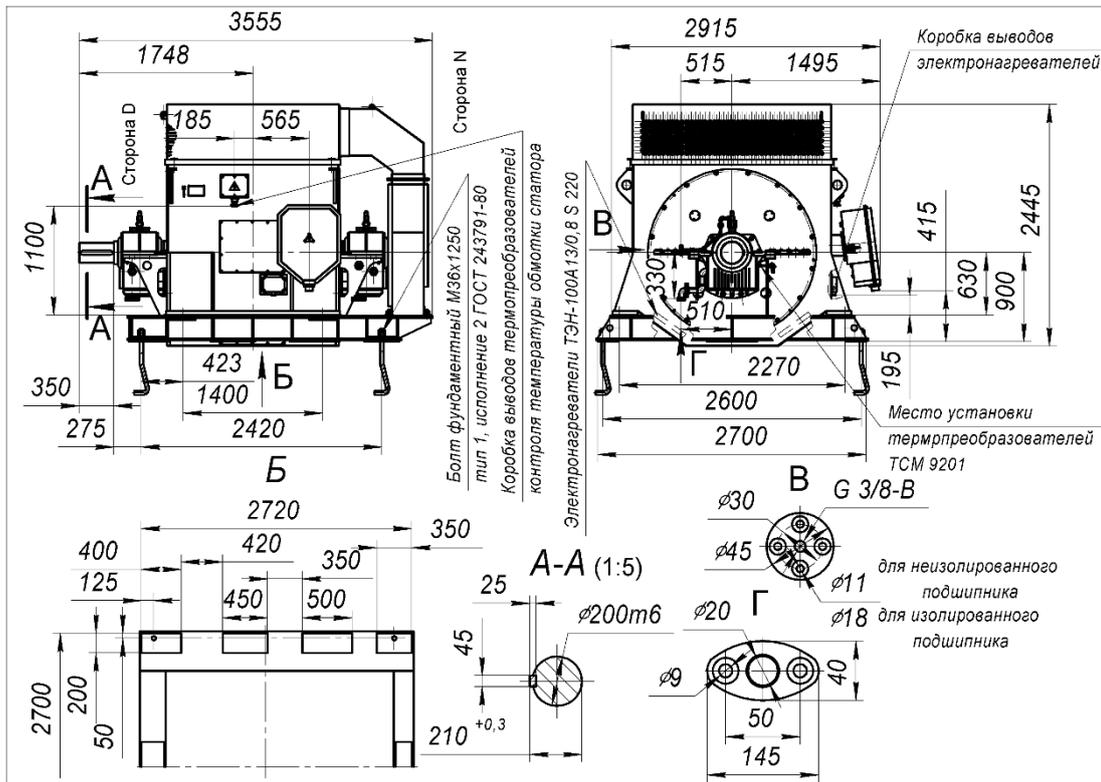
2ДАО 1250-1000-6У1



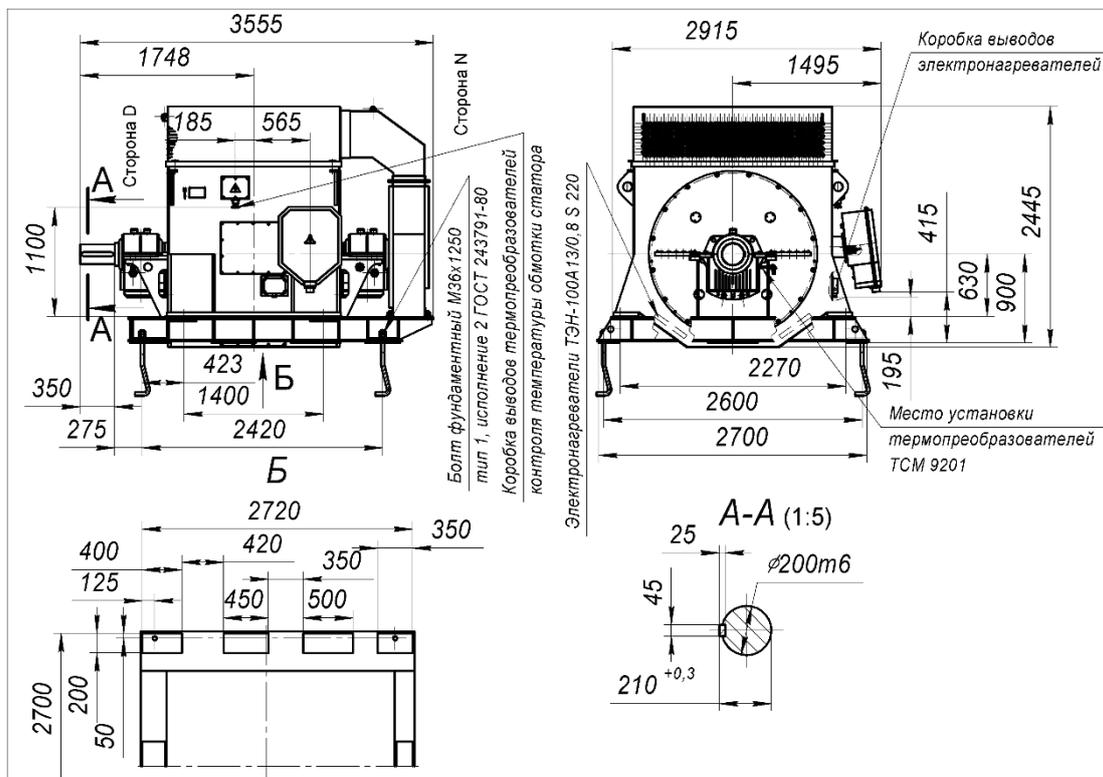
АОД-1600-10-10У1



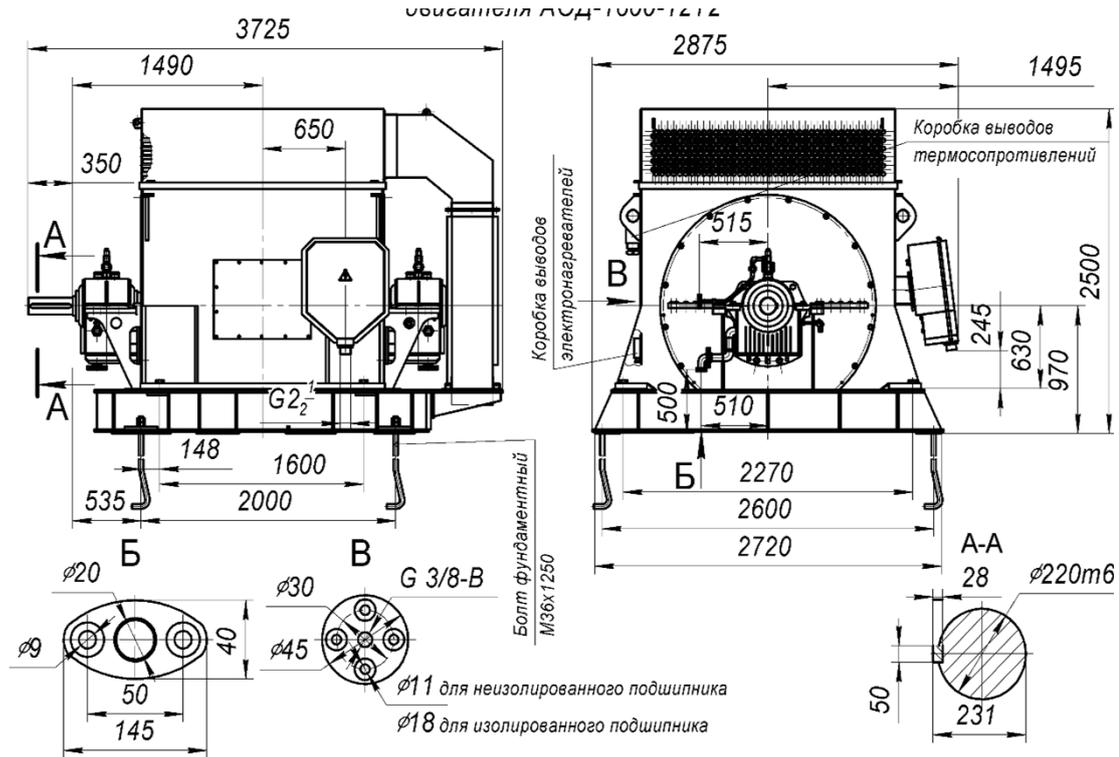
АОД-1250-10У1



АОД-1800(2000)-6-8У1



АОД-1600-6-10У1



АОД-1600-6-12Т2



DOUBLE-SPEED ELECTRIC MOTORS OF AOD TYPE

Asynchronous double-speed electric motors of AOD type are designed to drive mechanisms with heavy starting conditions (smoke-exhausters, fans, etc.).

These motors are rated for operation from AC network, 50 Hz, 6000 V.

Rated operating mode – continuous S1.

Motor run is direct, it is realized both at rated voltage, and at mains voltage reduction during the start up to 0,8 Unom. Starting should be incremental-type (initially with lower rotational speed, then it is skipped to the top speed).

They enable two cold starts successively or one hot start. The interval between the subsequent starts is not less than three hours. Total quantity of starts is 500 per a year and 1000 starts during the service life.

Constructive mounting arrangement – closed, blown, with self-ventilation, horizontal shaft, on foundation girders or bedplate, with panel plain bearings with autonomous ring or combined (forced and ring) lubrication, with one free shaft end for coupling with the working mechanism by a half-coupling.

The air cooler “air-to-air” can be installed on the top of the frame. Sense of rotation is right. Motors with left sense can be manufactured (specified in the contract).

Motors have two windings electrically inter-insulated of «Monolith-2» type.

Stator winding has six terminals brought to their box. Phase connecting circuit – “star”.

The motors are delivered with build-in electric heaters.

The motor designation is decoded as follows:

AOD	-	XXXX/XXXX	-	XX/XX	-	Y1, T1
						Climatic construction and allocation category;
						Number of poles;
						Power, kW;
Asynchronous blown motor with squirrel-cage rotor						

Main data of the motors at rated voltage 6000 V and network frequency 50 Hz are specified in Table 13. Overall and mounting dimensions of AOD-400/170-6/8Y1, AOD-400/250-6/8Y1, AOD-400/200-8/10Y1 motors are shown in Figure 1 and Table 14, dimensions of other motors – in Figure 2 and Table 15.

Table 13

Type of the motor	Rated effective power, kW	Rated voltage, V	Rated stator current, A	Synchronous rotational speed, rpm	Rated efficiency, %	Rated cos φ	Rated sliding, %	Weight, kg
AOD-400/170-6/8Y1	400/170	6000	49,5/24,5	1000/750	93,0/91,8	0,84/0,73	0,60/0,65	4620
AOD-400/250-6/8Y1	400/250		49,5/35,0		93,0/92,4	0,84/0,74		4630
AOD-1250/630-6/8T1	1250/630		144,0/77,0		93,0/92,6	0,90/0,85	0,65/0,60	15590
AOD-1600/800-6/8Y1	1600/800		183,0/96,2		93,5/93,1	0,9/0,86	0,65/0,60	15590
AOD-400/200-8/10Y1	400/200		54,0/31,5	750/600	92,7/91,5	0,77/0,67	0,67/0,83	5235
AOD-1000/500-8/10Y1	1000/500		120,0/65,0		93,5/93,0	0,86/0,8	0,65/0,65	14470
AOD-1250/800-8/10Y1	1250/800		145,6/99,0		93,9/93,7	0,88/0,83	0,66/0,66	15410
AOD-1600/800-8/10Y1	1600/800		188,0/100,0		94,2/93,6	0,87/0,82	0,66/0,5	18810
AOD-1250/800-10/12Y1	1250/800		150,0/108,0	600/500	94,6/94,0	0,85/0,76	0,50/0,40	17940
AOD-1600/800-10/12Y1	1600/800		194,0/108,5	600/500	94,5/93,2	0,84/0,76	0,70/0,65	18350
AOD-1600/1000-10/12Y1	1600/1000		193,0/133,8		94,9/94,6	0,84/0,76	0,5/0,6	18060

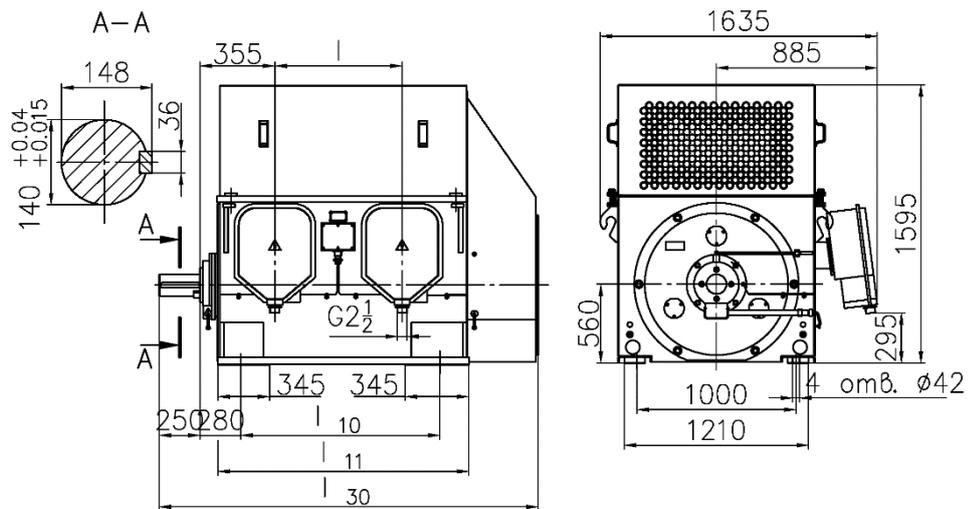


Fig. 1

Table 14

Type of the motor	Dimensions, m			
	l	l ₁₀	l ₁₁	l ₃₀
АОД-400/170-6/8У1	880	1000	1300	2055
АОД-400/250-6/8У1				
АОД-400/200-8/10У1	970	1120	1420	2175

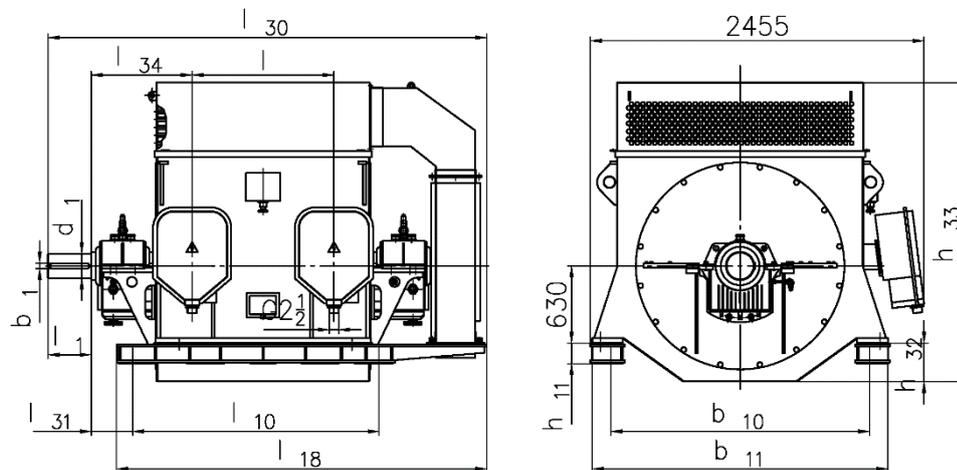


Fig. 2

Table 15

Type of the motor	Dimensions, mm													
	l	l ₁	l ₁₀	l ₁₈	l ₃₀	l ₃₁	l ₃₄	b ₁	b ₁₀	b ₁₁	h ₁₁	h ₃₂	h ₃₃	
АОД-1000/500-8/10У1	970	250	1750	2690	3290	450	840	36	2270	2430	250	315	2370	
АОД-1250/800-8/10У1	1050	350	2000	-	3655	535	830	50	2600	2880	340	340	2470	
АОД-1600/800-8/10У1	1300	350	2000	-	3725	535	833	50	2600	2720	340	340	2500	
АОД-1250/800-10/12У1	1300	350	2000	-	3725	535	833	50	2600	2720	340	340	2500	
АОД-1600/800-10/12У1	1310	350	2000	2635	3560	535	830	50	2600	2840	340	340	2490	
АОД-1600/1000-10/12У1	1300	350	2000	-	3725	535	840	50	2600	2880	270	270	2430	



ELECTRIC MOTORS OF АОДА5 TYPE

Asynchronous electric motors with squirrel cage rotor of АОДА5 type are designed for continuous operating mode S1 from AC network, 50 Hz, to work in structure of pump devices delivered to NPP.

The motors meet the IEC requirements.

The motors are manufactured for voltage 6000V and 10000V.

The motors are produced with frictionless bearings, with one shaft end. Bearing greasing is liquid independent with build-in oil coolers. Outlet ends are removed in the terminal box.

Degree of protection for the motors — IP54, for the terminal box – IP55.

The motors are cooled by self-ventilation. Cooling method - ICW37A71 by GOST 20459. Heated air is cooled by one horizontal air cooler fixed above on the motor housing.

Winding insulation of motors is thermosetting of "Monolith – 2" type with class of thermal classification «F» by GOST 8865, which is used by class «B».

The motor designation is decoded as follows:

АОДА5	-	XXX	-	X	-	2	-	XXX	X
								Allocation category;	
								Climatic construction;	
								Number of poles;	
								Voltage of the motor, kV;	
								Rated power, kW;	

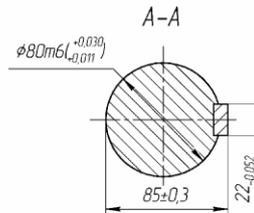
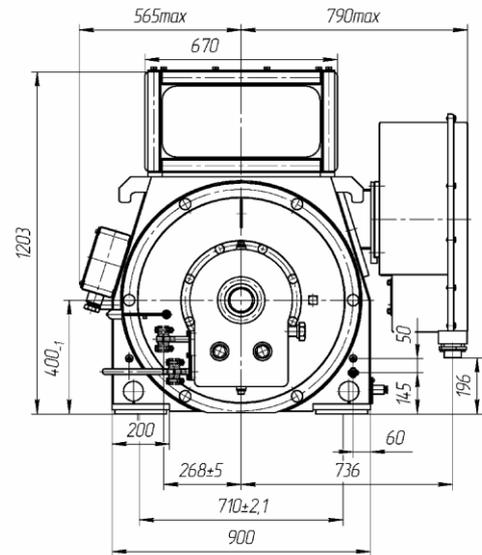
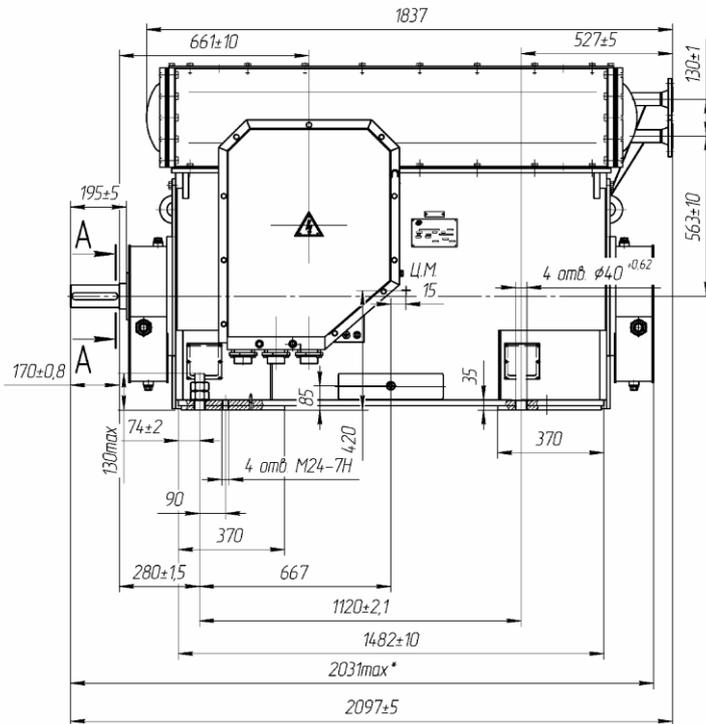
Designation:
 АОДА – asynchronous blown motor for NPP;
 5 – series number.

Example of designation for the motor for power 800 kW, voltage 10000 V, with two poles, УХЛ climatic version, allocation category - 4, with network frequency 50 Hz, left sense of rotation, with right-mounted terminal box to order it and in the documentation on the other item «Electric motor АОДА5-800-10-2УХЛ4, 10000 V, 50 Hz, left sense of rotation, right-mounted terminal box by АШГА 528121.006 ТУ»

Technical data on the motors are shown in Table 16. Overall and mounting dimensions - in Figure.

Table 16

Motor type	Power, kW	Rotational speed (synch.), rpm	Eff., %	cos φ	M _{max} /M _{nom}	M _{start} /M _{nom}	I _{start} /I _{nom}	Weight, kg
АОДА5-500-6-2	500	3000	94.0	0.9	2.4	1.1	5.6	2850
АОДА5-630-6-2	630		95.0	0.9	2.4	1.0	6.0	2970
АОДА5-800-6-2	800		95.2	0.9	2.4	1.0	6.0	3150
АОДА5-500-10-2	500		94.3	0.9	2.5	1.2	6.1	2950
АОДА5-630-10-2	630		94.7	0.91	2.4	1.1	5.7	3100
АОДА5-800-10-2	800		95.0	0.91	2.4	1.2	5.7	3250





ELECTRIC MOTORS OF АД TYPE

Electric motors with squirrel cage rotor are used to drive mechanisms, which don't require rotational speed adjustment, and they are rated for continuous operating mode S1 from AC network, 50 Hz.

The motors are manufactured for voltage 6000 V.

Degree of protection— IP23.

The motors are cooled by self-ventilation.

The motors are produced with frictionless bearings, with one shaft end. Terminals are brought to the terminal box. The terminal box has a bursting disk and meets modern requirements to short-circuit current resistance.

Winding insulation is thermosetting, type "Monolith-2".

The motor designation is decoded as follows:

АД	-	XXXX	-	X	-	XX	-	XXX
								Climatic construction and allocation category;
								Number of poles;
								Voltage in kV, other than 6 kV;
								Power, kW;

А – asynchronous;
Д – motor.

Technical data on motors are shown in Table 17. Overall and mounting dimensions - in Figures 1 and 2 and Table 18.

Table 17

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	M_{max}/M_{nom}	M_{start}/M_{nom}	I_{start}/I_{nom}
АД-1250-8У3	1250	750	95,5	0,82	2,0	1,1	5,5
АД-315-10-10У3	315	600	92,8	0,75	2,6	1,4	6,5
АД-800-12У3	800	500	94,0	0,78	2,0	1,1	5,0
АД-500-16ТC3	500	375	93,0	0,76		1,0	

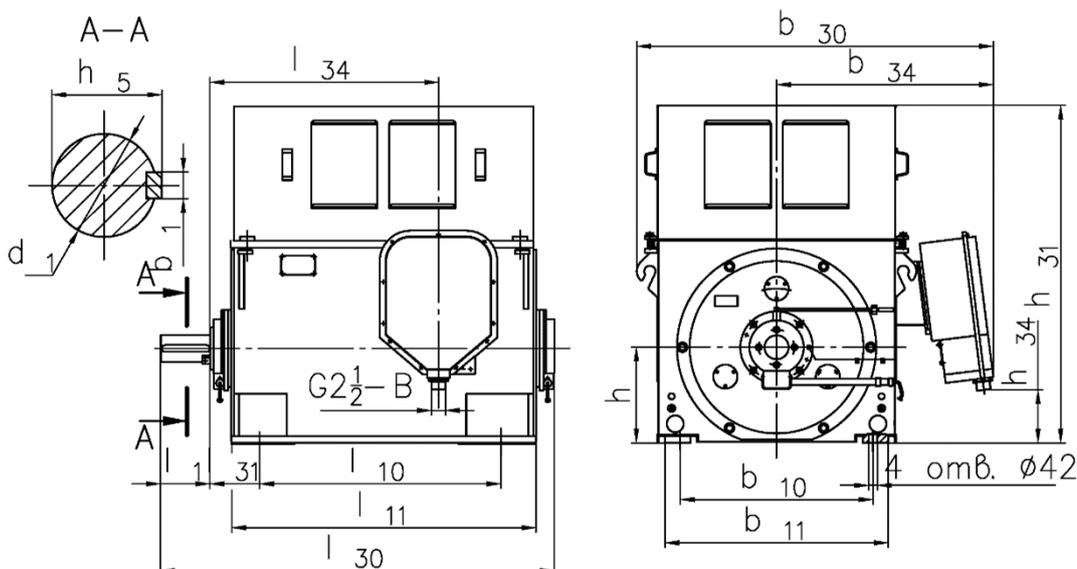


Figure 1. Overall and mounting dimensions of motors АД-315, 800, 1250



Table 18

Type of the motor	Dimensions, mm											
	b ₁	b ₁₀	b ₁₁	b ₃₀	b ₃₄	d ₁	l ₁	l ₁₀	l ₁₁	l ₃₀	l ₃₁	l ₃₄
АД-1250-8У3	36	1000	1210	1880	1130	150	250	1250	1620	2205	250	1300
АД-315-10-10У3						140		1000	1260	1741		920
АД-800-12У3						45	190	350	1250	1560	2220	280

Type of the motor	Dimensions, mm				Weight, kg
	h	h ₅	h ₃₁	h ₃₄	
АД-1250-8У3	560	158	1865	275	6480
АД-315-10-10У3		148			3770
АД-800-12У3		200	1820		5770

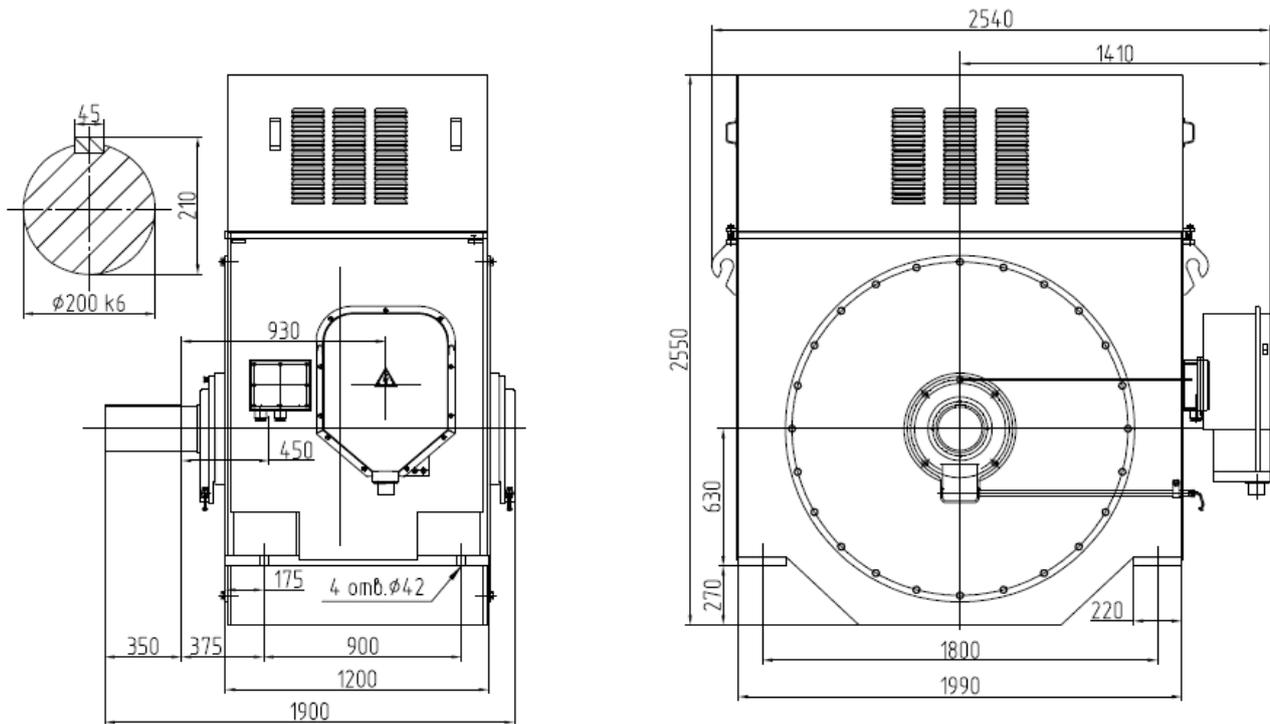


Figure 2. Overall and mounting dimensions of motors АД-500-16ТC3.
Weight of the motor – 7950 kg.



ELECTRIC MOTORS SERIES АД-15, 16, 17 SIZES AND АД3-15, 16, 17 SIZES

Squirrel-cage three-phase induction motors are intended to complete mechanisms with relatively easy starting conditions.

Degree of protection of the motors АД-IP20, АД3-IP44 as per GOST 17494-87.

Method of cooling of the motors АД-ICA01, АД3- ICA37 as per GOST 20459-87

Mode of operation - S1 as per GOST 183-74.

Climatic version of the motors АД – УХЛ4 or 04, АД3-У3 or Т3 as per GOST 15150-69.

Technical data of the motors АД are listed in Table 19, АД3 – in Table 21.

Overall and mounting dimensions of the motors АД are listed in Figure 1 and in Table 20, АД3 – Figure 2 and Table 22.

Table 19

Motor type	Power, kW	Voltage, V	Synchronous rotational speed, rpm	$\frac{M_{max}}{M_{rated}}$	Weight, kg
АД-15-62-6УХЛ4	1000	6000	1000	2,5	5400
АД-15-76-6УХЛ4	1250	6000	1000	2,5	6050
АД-15-62-8УХЛ4	800	6000	750	2,0	5300
АД-15-76-8УХЛ4	1000	6000	750	2,0	5900
АД-15-62-10УХЛ4	630	6000	600	2,0	5200
АД-15-76-10УХЛ4	800	6000	600	2,0	5750
АД-16-62-6УХЛ4	1600	6000	1000	2,5	7600
АД-16-76-6УХЛ4	2000	6000	1000	2,5	8600
АД-16-62-8УХЛ4	1250	6000	750	2,0	7400
АД-16-76-8УХЛ4	1600	6000	750	2,0	8400
АД-16-62-10УХЛ4	1000	6000	600	1,9	6700
АД-16-76-10УХЛ4	1250	6000	600	1,9	7700
АД-16-50-12УХЛ4	500	6000	500	2,1	6350
АД-16-62-12УХЛ4	630	6000	500	2,1	6800
АД-16-76-12УХЛ4	800	6000	500	2,1	7600
АД-17-62-10УХЛ4	1600	6000	600	2,1	10150
АД-17-62-12УХЛ4	1000	6000	500	2,1	10200
АД-17-76-12УХЛ4	1250	6000	500	2,1	11500
АД-17-41-16УХЛ4	500	6000	375	2,1	6500
АД-17-50-16УХЛ4	630	6000	375	2,1	7100

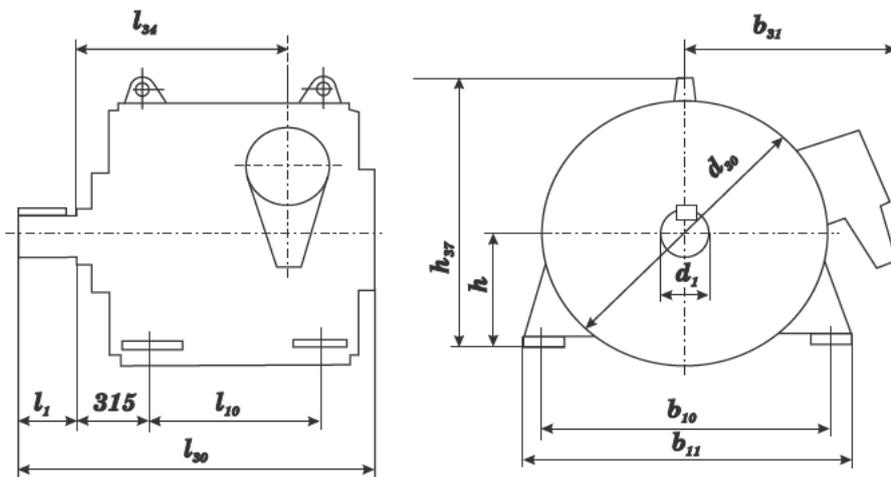


Figure 1. Overall and mounting dimensions of the motor АД



Table 20

Motor type	Dimensions, mm										
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₄	h	h ₃₇
АД-15-62-6УХЛ4	1400	1500	1070	160	1300	300	1400	2300	1420	500	1150
АД-15-76-6УХЛ4							1600	2440	1560		
АД-15-62-8УХЛ4							1400	2300	1420		
АД-15-76-8УХЛ4							1600	2440	1560		
АД-15-62-10УХЛ4							1400	2300	1420		
АД-15-76-10УХЛ4							1600	2440	1560		
АД-16-62-6УХЛ4	1500	1700	1180	200	1500	350	1400	2350	1420	630	1380
АД-16-76-6УХЛ4							1600	2490	1560		
АД-16-62-8УХЛ4							1400	2350	1420		
АД-16-76-8УХЛ4							1600	2490	1560		
АД-16-62-10УХЛ4							1400	2350	1420		
АД-16-76-10УХЛ4							1600	2490	1560		
АД-16-50-12УХЛ4							1250	2170	1240		
АД-16-62-12УХЛ4							1400	2350	1420		
АД-16-76-12УХЛ4							1600	2490	1560		
АД-17-62-10УХЛ4							1800	2000	1310		
АД-17-62-12УХЛ4	1600	2490	1560								
АД-17-76-12УХЛ4	1120	2080	1150								
АД-17-41-16УХЛ4	1250	2170	1240								
АД-17-50-16УХЛ4	1250	2170	1240								

Table 21

Motor type	Power, kW	Voltage, V	Synchronous rotational speed, rpm	M _{max}		Weight, kg
				M _{max}	M _{rated}	
АД3-15-62-6У3	1000	6000	1000	2,5		5400
АД3-15-76-6У3	1250	6000	1000	2,5		6050
АД3-15-62-8У3	800	6000	750	2,0		5300
АД3-15-76-8У3	1000	6000	750	2,0		5900
АД3-15-62-10У3	630	6000	600	2,0		5200
АД3-15-76-10У3	800	6000	600	2,0		5750
АД3-16-62-6У3	1600	6000	1000	2,5		7600
АД3-16-76-6У3	2000	6000	1000	2,5		8600
АД3-16-62-8У3	1250	6000	750	2,0		7400
АД3-16-76-8У3	1600	6000	750	2,0		8400
АД3-16-62-10У3	1000	6000	600	1,9		6700
АД3-16-76-10У3	1250	6000	600	1,9		7700
АД3-16-50-12У3	500	6000	500	2,1		6350
АД3-16-62-12У3	630	6000	500	2,1		6800
АД3-16-76-12У3	800	6000	500	2,1		7600
АД3-17-62-10У3	1600	6000	600	2,1		10150
АД3-17-62-12У3	1000	6000	500	2,1		10200
АД3-17-76-12У3	1250	6000	500	2,1		11500
АД3-17-41-16У3	500	6000	375	2,1		6500
АД3-17-50-16У3	630	6000	375	2,1		7100

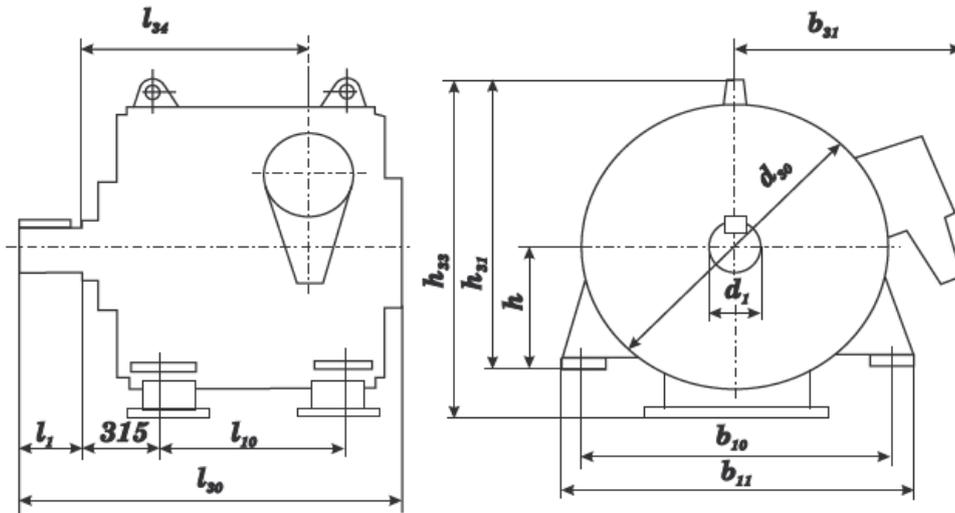


Figure 2. Overall and mounting dimensions of the motor АД3

Table 22

Motor type	Dimensions, mm											
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₄	h	h ₃₁	h ₃₃
АД3-15-62-6У3	1400	1500	1070	160	1300	300	1250	2155	1470	500	1285	1485
АД3-15-76-6У3							1400	2295	1610			
АД3-15-62-8У3							1250	2155	1470			
АД3-15-76-8У3							1400	2295	1610			
АД3-15-62-10У3							1250	2155	1470			
АД3-15-76-10У3							1400	2295	1610			
АД3-16-62-6У3	1500	1700	1180	200	1500	350	1250	2200	1470	630	1515	1685
АД3-16-76-6У3							1400	2340	1610			
АД3-16-62-8У3							1250	2200	1470			
АД3-16-76-8У3							1400	2340	1610			
АД3-16-62-10У3							1250	2200	1470			
АД3-16-76-10У3							1400	2340	1610			
АД3-16-50-12У3	1800	2000	1310	1800	1800	350	1120	2020	1290	630	1665	1985
АД3-16-62-12У3							1250	2200	1470			
АД3-16-76-12У3							1400	2340	1610			
АД3-17-62-10У3							1250	2200	1470			
АД3-17-62-12У3							1400	2340	1610			
АД3-17-41-16У3							1000	1930	1200			
АД3-17-50-16У3	1120	2020	1290									



ELECTRIC MOTORS OF SERIES AC3-2-17-61-6Y3, AC3-17-64-8УХЛ4, ATK 20C8-12 УХЛ4

Squirrel-cage three-phase induction motors self-ventilated of closed design are intended for the drive of reserve excitation assemblies of turbo-generators.

Mode of operation - S1 as per GOST 183-74.

Degree of protection - IP44 as per GOST 17494-87.

Method of cooling - ICW37A91 as per GOST 20459-87.

Climatic version and category of location - Y3 or T3 of the motors AC3-2-17-61-6, УХЛ4 – for the motors AC3-17-64-8 and ATK20C8-12 as per GOST 15150-69.

Technical data of the motors are listed in Tables 23, 24, 25, 26.

Overall and mounting dimensions Figures 1, 2, 3, 4.

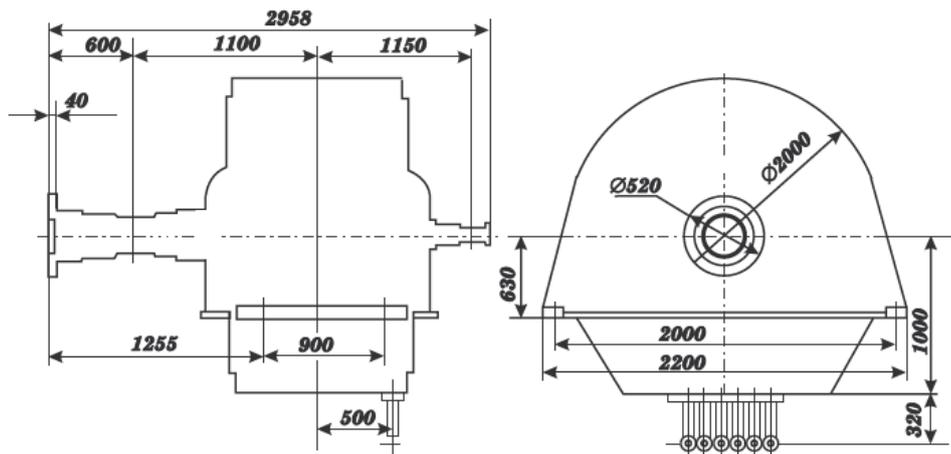


Figure 1. Overall and mounting dimensions of the motor AC3-2-17-61-6Y3

Table 23

Motor type	Power, kW	Voltage, V	Synchronous rotation frequency, rpm	Design dynamic moment of armature inertia, kgm ²		Weight, kg
				rotor	of the working mechanism (permissible)	
AC3-2-17-61-6Y3	1250	6000	1000	425	2575	10050

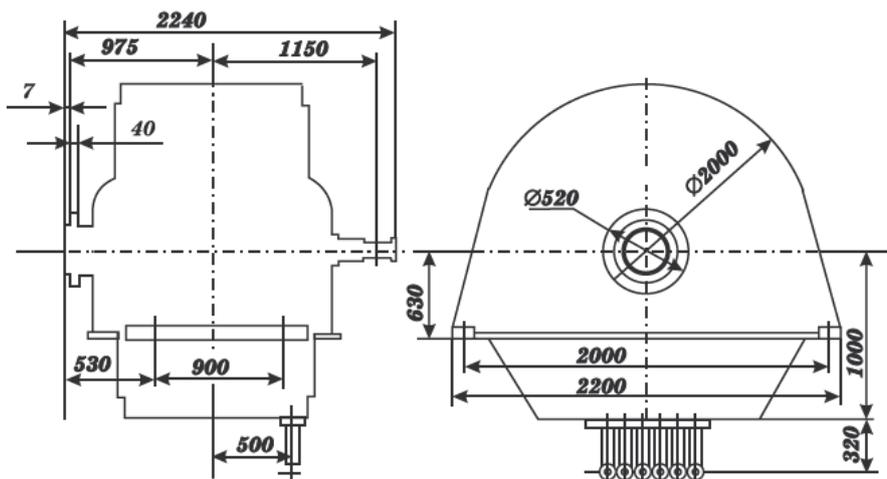


Figure 2. Overall and mounting dimensions of the motor AC3-2-17-61-6T3

Table 24

Motor type	Power, kW	Voltage, V	Synchronous rotation frequency, rpm	Design dynamic moment of armature inertia, kgm ²		Weight, kg
				rotor	of the working mechanism (permissible)	
AC3-2-17-61-6T3	1250	6000	1000	425	2575	10450

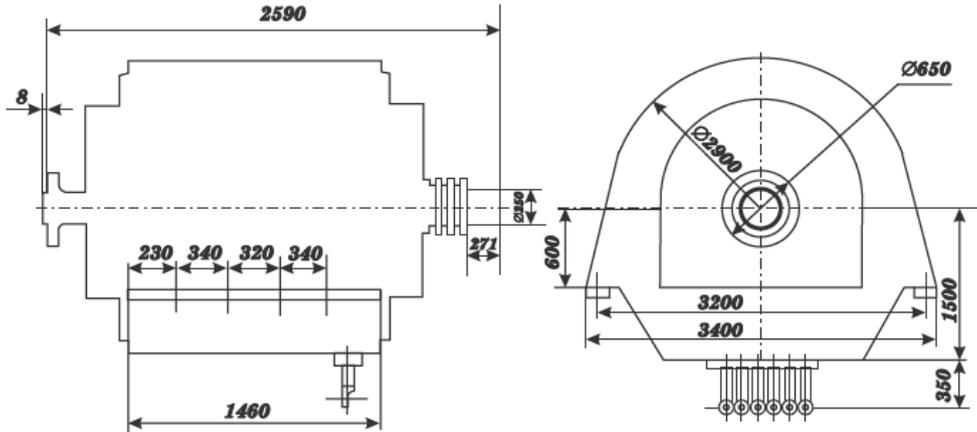


Figure 3. Overall and mounting dimensions of the motor AC3-17-64-8УХЛ4

Table 25

Motor type	Power, kW	Voltage, V	Synchronous rotation frequency, rpm	Total dynamic moment of assembly masses, kgm ²	Weight, kg
AC3-17-64-8УХЛ4	1800	6000	750	6250	21720

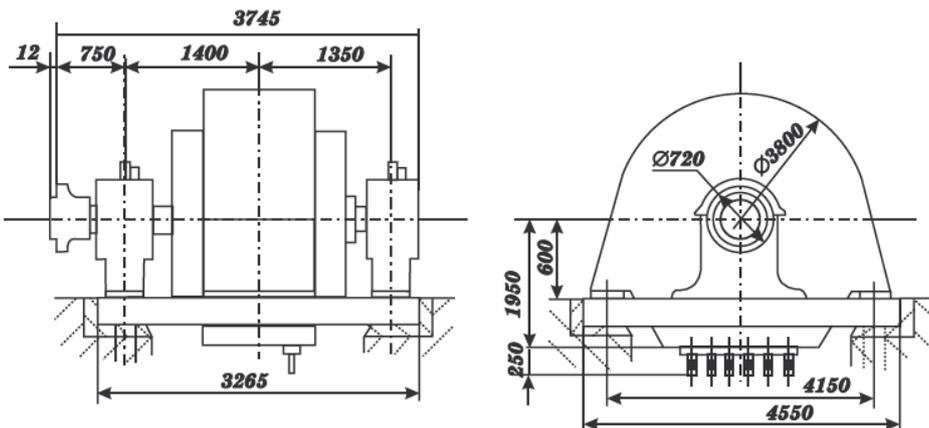


Figure 4. Overall and mounting dimensions of the motor ATK-20C8-12УХЛ4

Table 26

Motor type	Power, kW	Voltage, V	Synchronous rotation frequency, rpm	Total dynamic moment of assembly masses, kgm ²	Weight, kg
ATK-20C8-12УХЛ4	3200	6000	500	13650	37000



ELECTRIC MOTORS OF A3Д TYPE

Asynchronous electric motors of A3Д-13-52-12 type with squirrel-cage rotor and plain bearings are used to drive grinders.

Climatic construction - УХЛ4, Т4. Protection degree - IP44.

The motors are rated for operation from AC network, 50 Hz, 6000 V and 3000 V.

Rated operating mode — continuous S1.

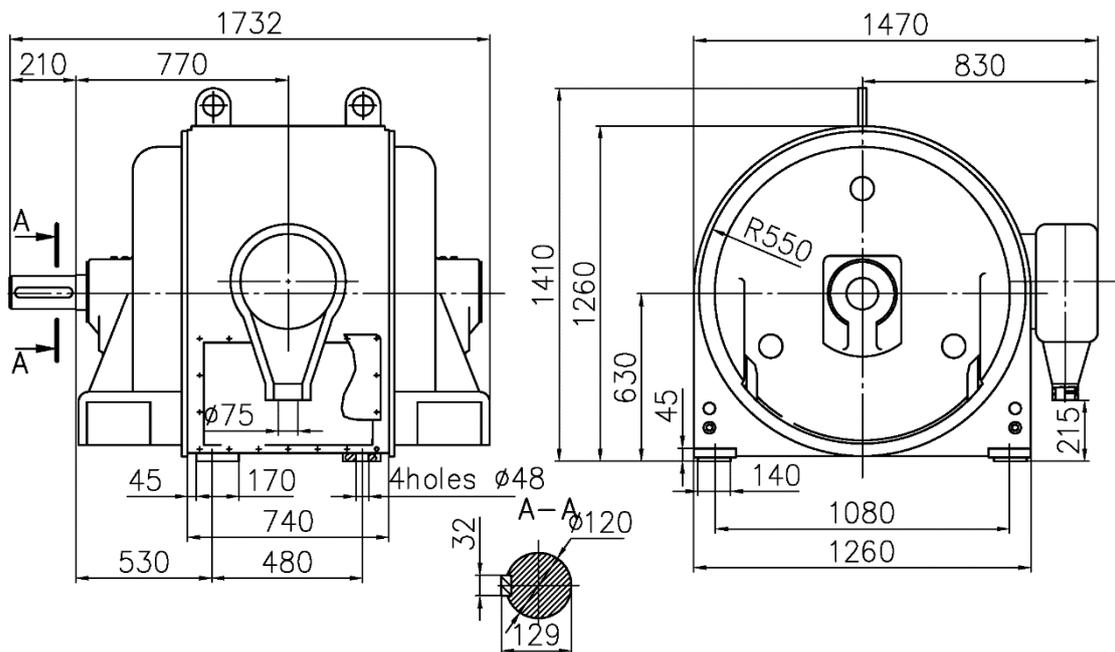
Motor run is direct at full network voltage.

Stator winding has six outlet ends fixed on four insulators in the terminal box. Phase connecting circuit – “star”.

Technical data of the motors are shown in Table 27.

Table 27

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ
A3Д-13-52- 12УХЛ4	250	500	92.3	0.76





ELECTRIC MOTORS OF SERIES AH -2-15, 16 AND 17 SIZES

Squirrel-cage three-phase induction motors are intended for operation of auxiliary mechanisms that do not need regulation of rotation frequency (pumps, fans with normal moment of inertia).

Mode of operation - S1 as per GOST 183-74.

Degree of protection - IP20 as per GOST 17494-87.

Method of cooling - ICA01 as per GOST 20459-87.

Climatic version and location category – УХЛ4 or 04 as per GOST 15150-69.

Technical data of the motors are listed in Table 28.

Overall and mounting dimensions of the motors are listed in Figure 1 and in Table 29.

Table 28

Motor type	Power, kW	Voltage, V	Synchronous rotation frequency, rpm	$\frac{M_{max}}{M_{rated}}$	Weight, kg
АН-2-15-57-6УХЛ4	1000	6000	1000	2,7	4800
АН-2-15-69-6УХЛ4	1250	6000	1000		5450
АН-2-16-57-6УХЛ4	1600	6000	1000	2,1	7400
АН-2-16-69-6УХЛ4	2000	6000	1000	2,4	8000
АН-2-15-57-8УХЛ4	800	6000	750	2,2	4700
АН-2-15-69-8УХЛ4	1000	6000	750	2,2	5250
АН-2-16-57-8УХЛ4	1250	6000	750	1,9	7250
АН-2-16-69-8УХЛ4	1600	6000	750	1,9	7500
АН-2-16-83-8УХЛ4	2000	6000	750	2,0	9200
АН-2-15-57-10УХЛ4	630	6000	600	2,0	4600
АН-2-15-69-10УХЛ4	800	6000	600	2,0	5150
АН-2-16-57-10УХЛ4	1000	6000	600	2,1	6700
АН-2-16-69-10УХЛ4	1250	6000	600	2,1	7650
АН-2-17-57-10УХЛ4	1600	6000	600	2,3	8900
АН-2-17-69-10УХЛ4	2000	6000	600	2,3	10000
АН-2-16-39-12УХЛ4	500	6000	500	2,3	5530
АН-2-16-48-12УХЛ4	630	6000	500	2,3	6200
АН-2-16-57-12УХЛ4	800	6000	500	2,4	6700
АН-2-17-48-12УХЛ4	1000	6000	500	2,3	8080
АН-2-17-57-12УХЛ4	1250	6000	500	2,3	8900
АН-2-17-31-16УХЛ4	500	6000	375	2,0	5850
АН-2-17-39-16УХЛ4	630	6000	375	2,0	6650

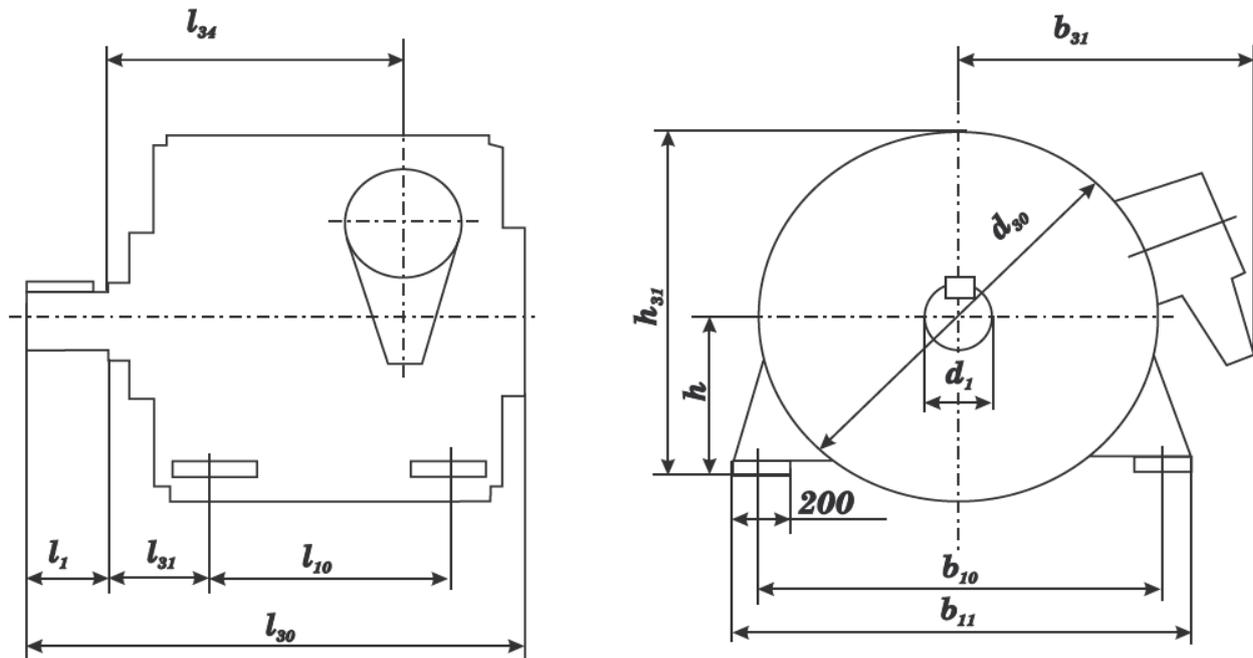


Figure 1. Overall and mounting dimensions of the motor AH-2

Table 29

Motor type	Dimensions in mm											
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₁	l ₃₄	h	h ₃₁
AH-2-15-57-6УХЛ4	1400	1500	930	160	1300	300	1120	2015	355	1160	500	1150
AH-2-15-69-6УХЛ4	1400	1500	930	160	1300	300	1250	2135	355	1280	500	1150
AH-2-15-57-8УХЛ4	1400	1500	930	160	1300	300	1120	2015	355	1160	500	1150
AH-2-15-69-8УХЛ4	1400	1500	930	160	1300	300	1250	2135	355	1280	500	1150
AH-2-15-57-10УХЛ4	1400	1500	930	160	1300	300	1120	2015	355	1160	500	1150
AH-2-15-69-10УХЛ4	1400	1500	930	160	1300	300	1250	2135	355	1280	500	1150
AH-2-16-57-6УХЛ4	1500	1700	985	200	1500	350	1120	2085	375	1180	630	1380
AH-2-16-69-6УХЛ4	1500	1700	985	200	1500	350	1250	2205	375	1300	630	1380
AH-2-16-57-8УХЛ4	1500	1700	985	200	1500	350	1120	2085	375	1180	630	1380
AH-2-16-69-8УХЛ4	1500	1700	985	200	1500	350	1250	2205	375	1300	630	1380
AH-2-16-83-8УХЛ4	1500	1700	985	200	1500	350	1400	2345	375	1440	630	1380
AH-2-16-57-10УХЛ4	1500	1700	985	200	1500	350	1120	2085	375	1180	630	1380
AH-2-16-69-10УХЛ4	1500	1700	985	200	1500	350	1250	2205	375	1300	630	1380
AH-2-16-39-12УХЛ4	1500	1700	985	200	1500	350	900	1905	375	1000	630	1380
AH-2-16-48-12УХЛ4	1500	1700	985	200	1500	350	1000	1995	375	1090	630	1380
AH-2-16-57-12УХЛ4	1500	1700	985	200	1500	350	1120	2085	375	1180	630	1380
AH-2-17-57-10УХЛ4	1800	2000	1135	200	1800	350	1120	2085	375	1180	630	1530
AH-2-17-69-10УХЛ4	1800	2000	1135	200	1800	350	1250	2205	375	1300	630	1530
AH-2-17-48-12УХЛ4	1800	2000	1135	200	1800	350	1000	1995	375	1090	630	1530
AH-2-17-57-12УХЛ4	1800	2000	1135	200	1800	350	1120	2085	375	1180	630	1530
AH-2-17-31-16УХЛ4	1800	2000	1135	200	1800	350	800	1825	375	920	630	1530
AH-2-17-39-16УХЛ4	1800	2000	1135	200	1800	350	900	1905	375	1000	630	1530



ELECTRIC MOTORS SERIES AH-4- 15, 16 AND 17 SIZES

Squirrel-cage three-phase induction motors are intended for operation of auxiliary mechanisms that do not need regulation of rotation frequency (pumps, fans with normal moment of inertia).

Mode of operation - S1 as per GOST 183-74.

Degree of protection - IP21 as per GOST 17494-87.

Method of cooling - ICA01 as per GOST 20459-87.

Climatic version and location category – Y3 and T3 as per GOST 15150-69.

Technical data of the motors are listed in Table 30.

Overall and mounting dimensions of the motors are listed in Figure 1 and in Table 31.

Table 30

Motor type	Power, kW	Voltage, V	Synchronous rotation frequency, rpm	$\frac{M_{max}}{M_{rated}}$	Weight, kg
AH-4-15-45-6Y3	1000	6000	1000	2,3	4200
AH-4-15-57-6Y3	1250	6000	1000		4750
AH-4-16-45-6Y3	1600	6000	1000	2,4	5700
AH-4-16-57-6Y3	2000	6000	1000	2,4	6500
AH-4-15-45-8Y3	800	6000	750	2,0	4100
AH-4-15-57-8Y3	1000	6000	750	2,0	4800
AH-4-16-45-8Y3	1250	6000	750	1,9	5600
AH-4-16-57-8Y3	1600	6000	750	1,9	6300
AH-4-16-69-8Y3	2000	6000	750	1,9	7100
AH-4-15-45-10Y3	630	6000	600	1,9	4000
AH-4-15-57-10Y3	800	6000	600	1,9	4800
AH-4-16-45-10Y3	1000	6000	600	1,9	5400
AH-4-16-57-10Y3	1250	6000	600	1,9	6100
AH-4-17-45-10Y3	1600	6000	600	1,9	8050
AH-4-17-57-10Y3	2000	6000	600	2,0	9250
AH-4-16-33-12Y3	500	6000	500	2,1	4600
AH-4-16-38-12Y3	630	6000	500	2,0	4900
AH-4-16-45-12Y3	800	6000	500	2,0	5300
AH-4-17-38-12Y3	1000	6000	500	2,3	7300
AH-4-17-45-12Y3	1250	6000	500	2,3	8000
AH-4-17-28-16Y3	500	6000	375	2,0	5700
AH-4-17-33-16Y3	630	6000	375	2,0	6050

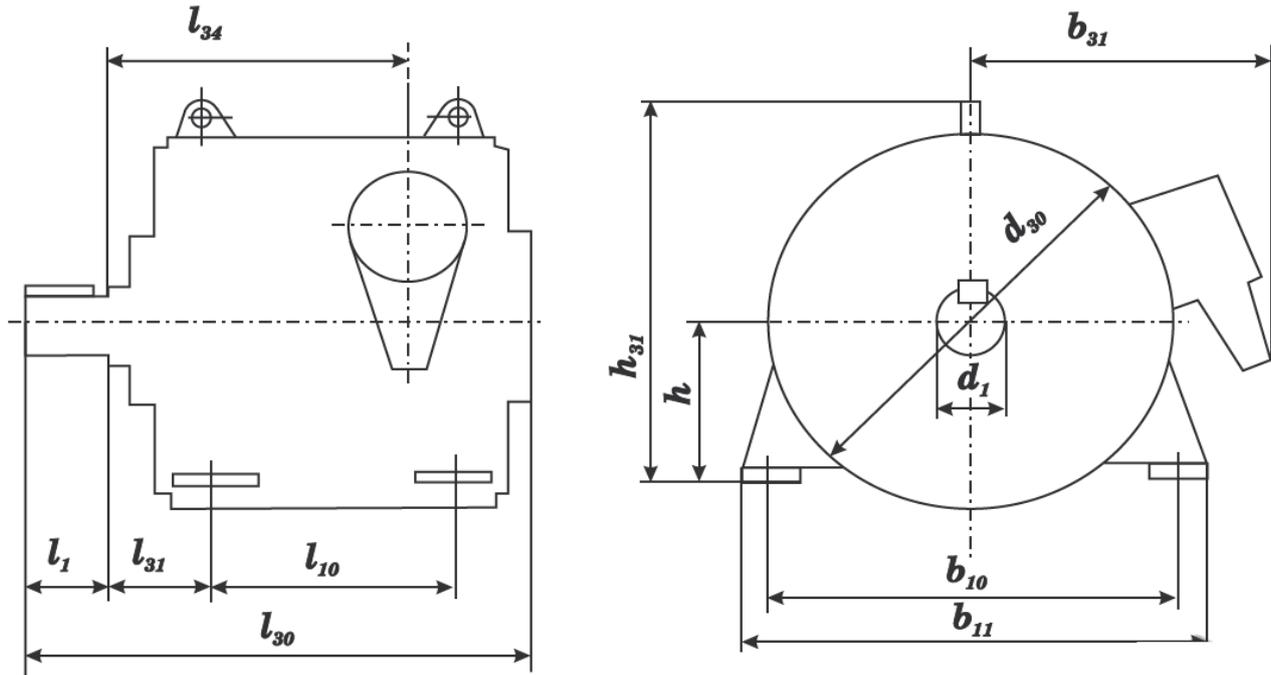


Figure 1. Overall and mounting dimensions of the motor AH-4

Table 31

Motor type	Dimensions in mm																			
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₁	l ₃₄	h	h ₃₁								
AH-4-15-45-6Y3	1400	1500	900	160	1300	300	1120	2000	355	1380	500	1285								
AH-4-15-57-6Y3							1250	2120		1500										
AH-4-15-45-8Y3							1120	2000		1380										
AH-4-15-57-8Y3							1250	2120		1500										
AH-4-15-45-10Y3							1120	2000		1380										
AH-4-15-57-10Y3							1250	2120		1550										
AH-4-16-45-6Y3	1500	1700	995	200	1500	350	1120	2070	375	1400	630	1515								
AH-4-16-57-6Y3							1250	2190		1520										
AH-4-16-45-8Y3							1120	2070		1400										
AH-4-16-57-8Y3							1250	2190		1520										
AH-4-16-69-8Y3							1400	2330		1660										
AH-4-16-45-10Y3							1120	2070		1400										
AH-4-16-57-10Y3							1250	2190		1520										
AH-4-16-33-12Y3							900	1890		1220										
AH-4-16-38-12Y3							1000	1980		1310										
AH-4-16-45-12Y3							1120	2070		1400										
AH-4-17-45-10Y3							1800	2000		1135			1800	350	1120	2070	375	1700	630	1665
AH-4-17-57-10Y3															1250	2190		1520		
AH-4-17-38-12Y3															1000	1980		1310		
AH-4-17-45-12Y3															1120	2070		1400		
AH-4-17-28-16Y3	800	1810	1140																	
AH-4-17-33-16Y3	900	1890	1220																	



ELECTRIC MOTORS OF SERIES AH3-2-15, 16 AND 17 SIZES AND AH3-4-15, 16 AND 17 SIZES

Squirrel-cage three-phase induction motors are intended for operation of auxiliary mechanisms that do not need regulation of rotation frequency.

The motors are of closed design with forced ventilation from separate fan.

Mode of operation - S1 as per GOST 183-74.

Degree of protection - IP20 as per GOST 17494-87.

Method of cooling - ICA37 as per GOST 20459-87.

Climatic version and location category Y3 or T3 as per GOST 15150-69.

Technical data of the motors AH3-2 are listed in Table 32, AH3-4 in Table 34.

Overall and mounting dimensions of the motors AH3-2 are listed in Figure 1 and in Table 33, for the motors AH3-4 – in Figure 2 and Table 35.

Table 32

Motor type	Power, kW	Voltage, V	Synchronous rotation frequency, rpm	M_{max}	Weight, kg
				M_{rated}	
AH3-2-15-57-6Y3	1000	6000	1000	2,7	5000
AH3-2-15-69-6Y3	1250	6000	1000	2,7	5600
AH3-2-16-57-6Y3	1600	6000	1000	2,1	7000
AH3-2-16-69-6Y3	2000	6000	1000	2,4	8300
AH3-2-15-57-8Y3	800	6000	750	2,2	5000
AH3-2-15-69-8Y3	1000	6000	750	2,2	5500
AH3-2-16-57-8Y3	1250	6000	750	1,9	6900
AH3-2-16-69-8Y3	1600	6000	750	1,9	8300
AH3-2-16-83-8Y3	2000	6000	750	2,0	9270
AH3-2-15-57-10Y3	630	6000	600	2,0	4800
AH3-2-15-69-10Y3	800	6000	600	2,0	5400
AH3-2-16-57-10Y3	1000	6000	600	2,1	6800
AH3-2-16-69-10Y3	1250	6000	600	2,1	7800
AH3-2-17-57-10Y3	1600	6000	600	2,3	8950
AH3-2-17-69-10Y3	2000	6000	600	2,3	10600
AH3-2-16-39-12Y3	500	6000	500	2,3	5600
AH3-2-16-48-12Y3	630	6000	500	2,3	6200
AH3-2-16-57-12Y3	800	6000	500	2,4	6800
AH3-2-17-48-12Y3	1000	6000	500	2,3	8100
AH3-2-17-57-12Y3	1250	6000	500	2,3	8900
AH3-2-17-31-16Y3	500	6000	375	2,0	6100
AH3-2-17-39-16Y3	630	6000	375	2,0	6700

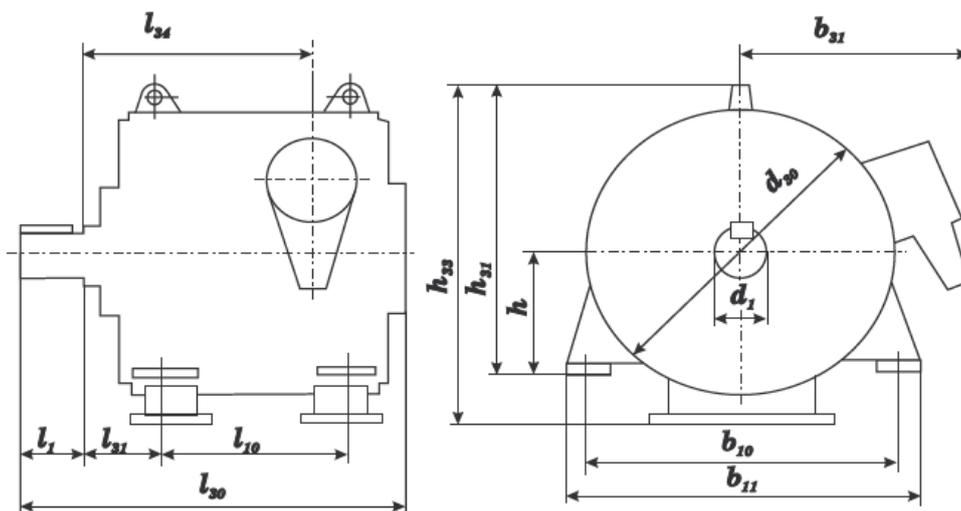


Figure 1. Overall and mounting dimensions of the motor AH3-2



Table 33

Motor type	Dimensions in mm																				
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₁	l ₃₄	h	h ₃₁	h ₃₃								
AH3-2-15-57-6Y3	1400	1500	930	160	130 0	300	1000	1965	315	1275	500	1285	1350								
AH3-2-15-69-6Y3							1120	2085		1395											
AH3-2-15-57-8Y3							1000	1965		1275											
AH3-2-15-69-8Y3							1120	2085		1395											
AH3-2-15-57-10Y3							1000	1965		1275											
AH3-2-15-69-10Y3							1120	2085		1395											
AH3-2-16-57-6Y3	1600	1700	1030	200	150 0	350	1000	2035	355	1295	630	1515	1550								
AH3-2-16-69-6Y3							1120	2155		1415											
AH3-2-16-57-8Y3							1000	2035		1295											
AH3-2-16-69-8Y3							1120	2155		1415											
AH3-2-16-83-8Y3							1250	2295		1555											
AH3-2-16-57-10Y3							1000	2035		1295											
AH3-2-16-69-10Y3							1120	2155		1415											
AH3-2-16-39-12Y3							800	1855		1115											
AH3-2-16-48-12Y3							900	1945		1205											
AH3-2-16-57-12Y3							1000	2035		1295											
AH3-2-17-57-10Y3							1800	2000		1170				180 0		1000	2035		1295	1665	1850
AH3-2-17-69-10Y3																1120	2155		1415		
AH3-2-17-48-12Y3	900	1945	1205																		
AH3-2-17-57-12Y3	1000	2035	1295																		
AH3-2-17-31-16Y3	800	1775	1035																		
AH3-2-17-39-16Y3	800	1855	1115																		

Table 34

Motor type	Power, kW	Voltage, V	Synchronous rotation frequency, rpm	M_{max}	Weight, kg	
				M_{rated}		
AH3-4-15-45-6Y3	1000	6000	1000	2,3	4400	
AH3-4-15-57-6Y3	1250				4900	
AH3-4-16-45-6Y3	1600				5700	
AH3-4-16-57-6Y3	2000			6500		
AH3-4-15-45-8Y3	800			750	2,0	4400
AH3-4-15-57-8Y3	1000					4900
AH3-4-16-45-8Y3	1250		6600			
AH3-4-16-57-8Y3	1600		6300			
AH3-4-16-69-8Y3	2000		7100			
AH3-4-15-45-10Y3	630		600	1,9	4350	
AH3-4-15-57-10Y3	800				4900	
AH3-4-16-45-10Y3	10000				5400	
AH3-4-16-57-10Y3	1250				6100	
AH3-4-17-45-10Y3	1600				8050	
AH3-4-17-57-10Y3	2000				9250	
AH3-4-16-33-12Y3	500		500	2,1	4600	
AH3-4-16-38-12Y3	630				4900	
AH3-4-16-45-12Y3	800				5300	
AH3-4-17-38-12Y3	1000			2,3	7350	
AH3-4-17-45-12Y3	1250				8000	
AH3-4-17-28-16Y3	500				5700	
AH3-4-17-33-16Y3	630		375	2,0	6050	

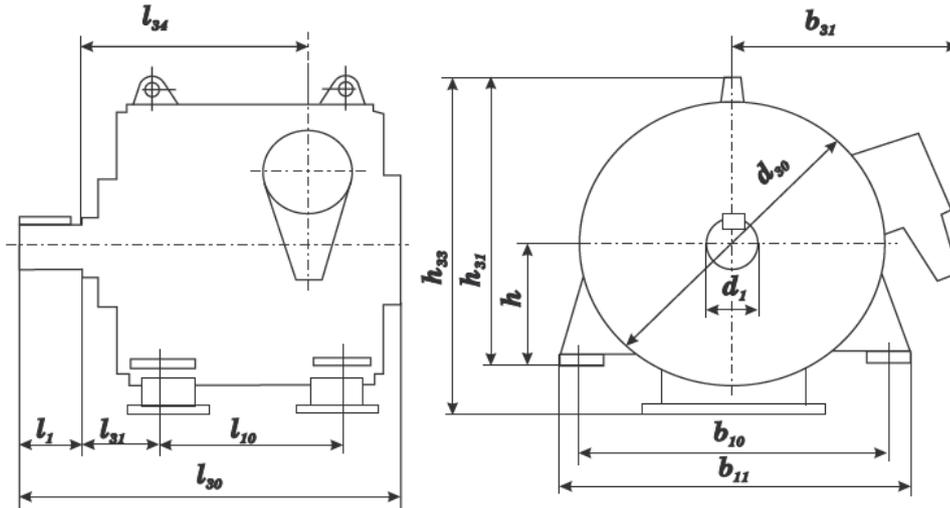


Figure 2. Overall and mounting dimensions of the motor AH3-4

Table 35

Motor type	Dimensions, mm												
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₁	l ₃₄	h	h ₃₁	h ₃₃
AH3-4-15-45-6Y3	1400	1500	900	160	1300	300	1000	1965	315	1275	500	1285	1350
AH3-4-15-57-6Y3	1400	1500	900	160	1300	300	1120	2085	315	1395	500	1285	1350
AH3-4-15-45-8Y3	1400	1500	900	160	1300	300	1000	1965	315	1275	500	1285	1350
AH3-4-15-57-8Y3	1400	1500	900	160	1300	300	1120	2085	315	1395	500	1285	1350
AH3-4-15-45-10Y3	1400	1500	900	160	1300	300	1000	1965	315	1275	500	1285	1350
AH3-4-15-57-10Y3	1400	1500	900	160	1300	300	1120	2085	315	1395	500	1285	1350
AH3-4-16-45-6Y3	1600	1700	995	200	1500	350	1000	2035	335	1295	630	1515	1550
AH3-4-16-57-6Y3	1600	1700	995	200	1500	350	1120	2155	335	1415	630	1515	1550
AH3-4-16-45-8Y3	1600	1700	995	200	1500	350	1000	2035	335	1295	630	1515	1550
AH3-4-16-57-8Y3	1600	1700	995	200	1500	350	1120	2155	335	1415	630	1515	1550
AH3-4-16-69-8Y3	1600	1700	995	200	1500	350	1250	2295	335	1555	630	1515	1550
AH3-4-16-45-10Y3	1600	1700	995	200	1500	350	1000	2035	335	1295	630	1515	1550
AH3-4-16-57-10Y3	1600	1700	995	200	1500	350	1120	2155	335	1415	630	1515	1550
AH3-4-16-33-12Y3	1600	1700	995	200	1500	350	800	1855	335	1115	630	1515	1550
AH3-4-16-38-12Y3	1600	1700	995	200	1500	350	900	1945	335	1205	630	1515	1550
AH3-4-16-45-12Y3	1600	1700	995	200	1500	350	1000	2035	335	1295	630	1515	1550
AH3-4-17-45-10Y3	1800	2000	1135	200	1800	350	1000	2035	335	1295	630	1665	1850
AH3-4-17-57-10Y3	1800	2000	1135	200	1800	350	1120	2155	335	1415	630	1665	1850
AH3-4-17-38-12Y3	1800	2000	1135	200	1800	350	900	1945	335	1205	630	1665	1850
AH3-4-17-45-12Y3	1800	2000	1135	200	1800	350	1000	2035	335	1295	630	1665	1850
AH3-4-17-28-16Y3	1800	2000	1135	200	1800	350	800	1775	335	1035	630	1665	1850
AH3-4-17-33-16Y3	1800	2000	1135	200	1800	350	800	1855	335	1115	630	1665	1850



ELECTRIC MOTORS OF A4P SERIES

Low-voltage asynchronous electric motors of A4P series with squirrel-cage rotor are designed for mechanisms, which operate with an adjustable-frequency electric drive.

Protection degree of the motors - IP23.

The motors are made with frictionless bearings.

Technical characteristics are given in the Table 36.

Asynchronous electric motors of **A, ДАЗО, АОД** series with squirrel-cage rotor can be used in structure of the adjustable-frequency electric drive and can be used with soft starters in most cases without additional improvement, if following conditions are performed:

- mechanism has quadratic moment- speed dependence;
- voltage on clamps of the electric motor should vary proportionally to square of supply voltage frequency;
- current waveform distortion factor of the motor is less 5%;
- working control range of supply voltage frequency from 20 to 50 Hz.

Power factor $\cos\varphi$ is kept constant.

Table 36

Motor type	Power, kW	Voltage, V	Synchronous rotational speed, rpm	Eff., %	$\cos\varphi$	M_{\max}/M_{nom}	Connection of stator winding
A4P-500-0,38/0,66-4Y3	500	380/660	1500	94.9	0.90	2.5	Δ/Y
A4P-630-0,38/0,66-4Y3	630			95.1	0.89	2.5	Δ/Y
A4P-800-0,66-4Y3	800	660		95.5	0.91	2.3	Y
A4P-1000-0,66-4Y3	1000			95.5	0.89	2.4	Δ
A4P-400-0,38-6Y3	400	380	1000	94.0	0.86	1.9	Y
A4P-500-0,38/0,66-6Y3	500	380/660		94.5	0.86	2.0	Δ/Y
A4P-630-0,38/0,66-6Y3	630			94.8	0.87	1.9	Δ/Y
A4P-800-0,38/0,66-6Y3	800	95.2		0.88	1.8	Δ/Y	
A4P-1600-0,66-6Y3	1600	660		96.1	0.89	2.1	Δ
A4P-500-0,38/0,66-8Y3	500	380/660	750	94.2	0.83	2.0	Δ/Y
A4P-630-0,38/0,66-8Y3	630			95.0	0.82	2.1	Δ/Y
A4P-800-0,66-8Y3	800	660		95.2	0.82	1.9	Y



ELECTRIC MOTORS OF A, A3, SERIES, 12TH AND 13TH GABARITS

AC electric motors with squirrel cage rotor of A, A3 types are used to drive mechanisms, which don't demand rotational speed adjustment (pumps, fans, and others).

These motors are rated for operation from AC network, 50 Hz, 6000 V.

The necessity to create some low-voltage asynchronous electric motors of these series appeared for last several days. Technical characteristics are given in the Table 37. Overall dimensions meet overall dimensions of motors for voltage 6000 V.

Rated operating mode – continuous.

A, A3 motors are started directly, it is provided as at rated voltage, as at voltage reduction during the start up to 0,8 Unom.

The motors enable two cold starts successively or one hot start.

Construction mounting arrangement of the motor – horizontal, without bed plate, with two shield bearings, one free shaft end coupled with the operating mechanism with a half-coupling.

A, A3 motors are designed protected. They operate with self-ventilation in closed premises with normal environment.

Insulation of stator winding belongs to heat-resistance class not lower "B".

Stator winding has six outlet ends fixed on four insulators in the terminal box. Phase connection - "star".

The terminal box is fixed on the right side if you are looking on the free shaft end (left location is specified in the order).

Motors have left and right sense of rotation. Sense of rotation is changed only in rest state.

The motor designation is decoded as follows:

A, A3 — XX-XXX-X-XXXX4

A — asynchronous motor with squirrel-cage rotor

A3 — closed asynchronous motor with squirrel-cage rotor

XX — gabarit of the electric motor

XXX — overall length of the stator core, in cm

X — number of poles

XXXX — climatic construction

Table 37

Type of the motor	Power, kW	Voltage, V	Synchronous rotational speed, rpm	Eff., %	cos φ	M_{max}/M_{nom}	Connection of stator winding
A3 12-39-6УХЛ4	400	380	1000	94.3	0.86	2.3	Y



ELECTRIC MOTORS OF A TYPE, GABARIT 12 & 13

Protection degree	IP01
Mounting arrangement	1M1001
Cooling method	IC01
Operating mode	S1

These motors can be manufactured for voltage 3000 V.
Technical data of the motors are shown in Table 38.
Overall dimensions — in Tables 39, 40.

Table 38

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	M_{\max}/M_{nom}	Max GD^2 of the mechanism, $\text{kg} \times \text{m}^2$
A 12-32-4УХЛ4	400	1500	93.5	0.89	2.1	600
A 12-41-4УХЛ4	500	1500	93.5	0.89	2.2	750
A 12-52-4УХЛ4	630	1500	94.5	0.89	2.2	950
A 13-46-4УХЛ4	800	1500	95.0	0.90	2.1	1200
A 13-59-4УХЛ4	1000	1500	94.5	0.90	2.5	1400
A 12-35-6УХЛ4	250	1000	92.0	0.85	2.2	600
A 12-39-6УХЛ4	320	1000	92.5	0.86	2.2	750
A 12-49-6УХЛ4	400	1000	93.0	0.87	2.4	950
A 13-37-6УХЛ4	500	1000	93.5	0.87	2.0	2000
A 13-46-6УХЛ4	630	1000	94.0	0.87	2.0	2500
A 13-59-6УХЛ4	800	1000	94.5	0.87	2.2	3200
A 12-35-8УХЛ4	200	750	92.0	0.81	2.1	1500
A 12-42-8УХЛ4	250	750	92.5	0.82	2.1	1900
A 12-52-8УХЛ4	320	750	93.0	0.83	2.2	2500
A 13-42-8УХЛ4	400	750	93.5	0.83	2.1	3800
A 13-52-8УХЛ4	500	750	94.0	0.84	2.0	4500
A 13-62-8УХЛ4	630	750	94.0	0.84	2.1	6400
A 12-42-10УХЛ4	200	600	91.5	0.79	2.4	1500
A 12-52-10УХЛ4	250	600	92.0	0.80	2.5	2000
A 13-42-10УХЛ4	320	600	92.5	0.81	2.1	3000
A 13-52-10УХЛ4	400	600	93.0	0.82	2.0	4500
A 13-62-10УХЛ4	500	600	93.5	0.83	2.1	6500
A 13-42-12УХЛ4	200	500	91.5	0.75	2.3	5000
A 13-52-12УХЛ4	250	500	92.0	0.76	2.3	6000
A 13-62-12УХЛ4	320	500	92.5	0.77	2.1	8500

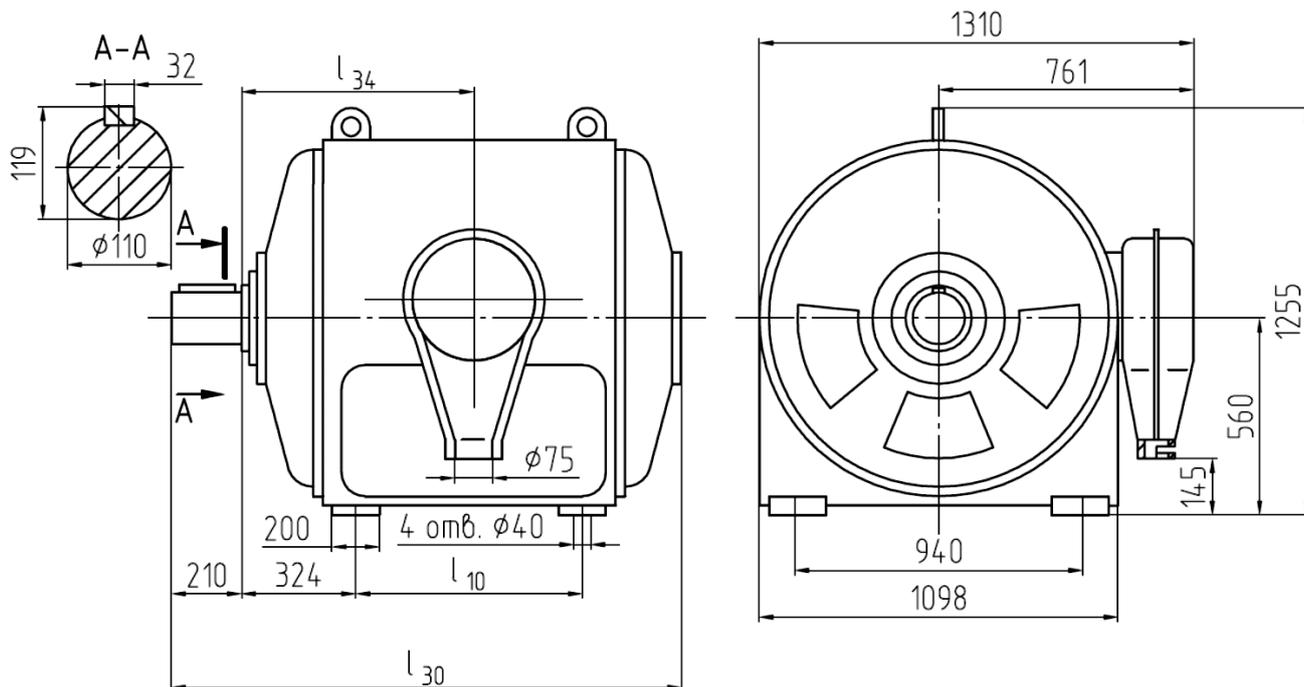


Table 39

Type of the motor	Dimensions, mm			Weight, kg
	l_{10}	l_{30}	l_{34}	
A 12-32-4УХЛ4	480	1315	564	2325
A 12-41-4УХЛ4	580	1415	614	2660
A 12-52-4УХЛ4	680	1515	664	3060
A 12-35-6УХЛ4	580	1415	614	2340
A 12-39-6УХЛ4	580	1415	614	2490
A 12-49-6УХЛ4	680	1515	664	2840
A 12-35-8УХЛ4	480	1315	564	2310
A 12-42-8УХЛ4	580	1415	614	2570
A 12-52-8УХЛ4	680	1515	664	2830
A 12-42-10УХЛ4	480	1315	564	2445
A 12-52-10УХЛ4	580	1415	614	2800

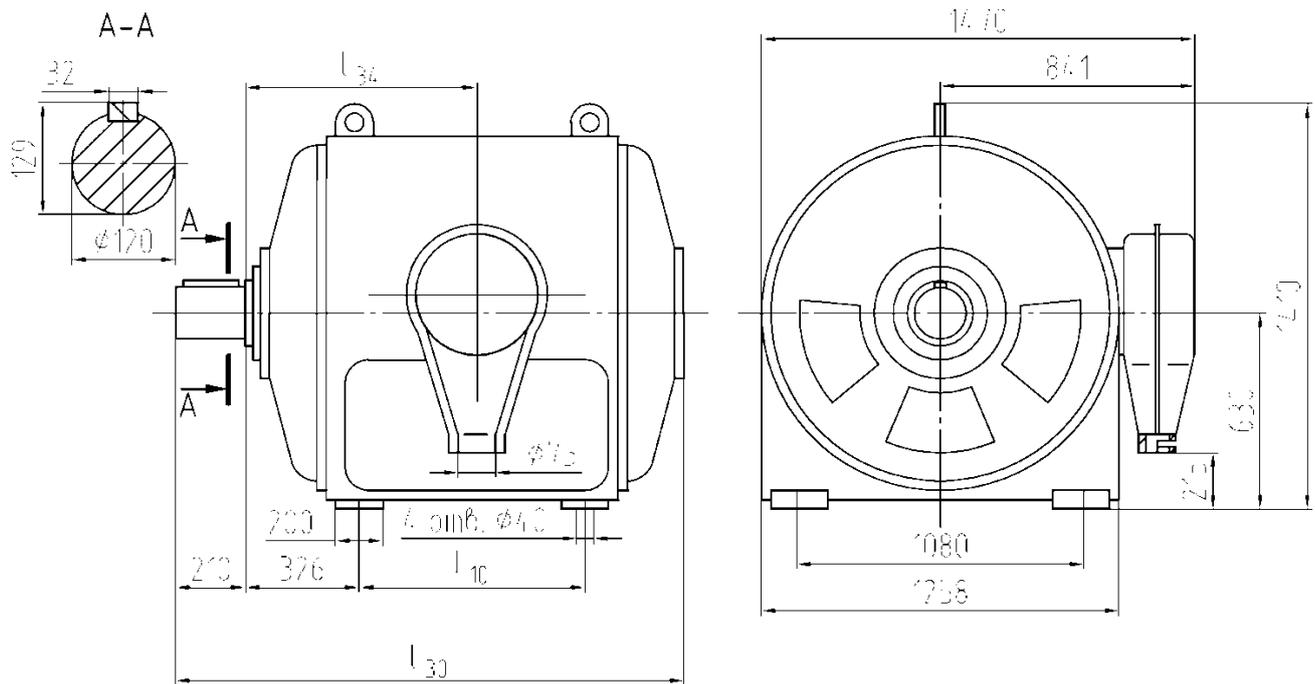


Table 40

Type of the motor	Dimensions, mm			Weight, kg
	l_{10}	l_{30}	l_{34}	
A 13-46-4УХЛ4	680	1517	666	3750
A 13-59-4УХЛ4	930	1667	741	4240
A 13-37-6УХЛ4	580	1417	616	3160
A 13-46-6УХЛ4	680	1517	666	3590
A 13-59-6УХЛ4	830	1667	741	4170
A 13-42-8УХЛ4	580	1417	616	3255
A 13-52-8УХЛ4	680	1517	666	3800
A 13-62-8УХЛ4	830	1667	741	4280
A 13-42-10УХЛ4	580	1417	616	3320
A 13-52-10УХЛ4	580	1417	616	3655
A 13-62-10УХЛ4	680	1517	666	4180
A 13-42-12УХЛ4	580	1417	616	3240
A 13-52-12УХЛ4	580	1417	616	3625
A 13-62-12УХЛ4	680	1517	666	4135



ELECTRIC MOTORS OF A3 TYPE, GABARIT 12 & 13

Protection degree	IP44
Mounting arrangement	1M1001
Cooling method	IC37
Operating mode	S1

These motors can be manufactured for voltage 3000 V.
Technical data of the motors are shown in Table 41.
Overall dimensions — in Tables 42, 43.

Table 41

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}	Max GD ² of the mechanism, kg x m ²
A3 12-32-4УХЛ4	400	1500	93.5	0.89	2.1	600
A3 12-41-4УХЛ4	500	1500	93.5	0.89	2.2	750
A3 12-52-4УХЛ4	630	1500	94.5	0.89	2.2	950
A3 13-46-4УХЛ4	800	1500	95.0	0.90	2.1	1200
A3 13-59-4УХЛ4	1000	1500	94.5	0.90	2.5	1400
A3 12-35-6УХЛ4	250	1000	92.0	0.85	2.2	600
A3 12-39-6УХЛ4	320	1000	92.5	0.86	2.2	750
A3 12-49-6УХЛ4	400	1000	93.0	0.87	2.4	950
A3 13-37-6УХЛ4	500	1000	93.5	0.87	2.0	2000
A3 13-46-6УХЛ4	630	1000	94.0	0.87	2.0	2500
A3 13-59-6УХЛ4	800	1000	94.5	0.87	2.2	3200
A3 12-35-8УХЛ4	200	750	92.0	0.81	2.1	1500
A3 12-42-8УХЛ4	250	750	92.5	0.82	2.1	1900
A3 12-52-8УХЛ4	320	750	93.0	0.83	2.2	2500
A3 13-42-8УХЛ4	400	750	93.5	0.83	2.1	3800
A3 13-52-8УХЛ4	500	750	94.0	0.84	2.0	4500
A3 13-62-8УХЛ4	630	750	94.0	0.84	2.1	6400
A3 12-42-10УХЛ4	200	600	91.5	0.79	2.4	1500
A3 12-52-10УХЛ4	250	600	92.0	0.80	2.5	2000
A3 13-42-10УХЛ4	320	600	92.5	0.81	2.1	3000
A3 13-52-10УХЛ4	400	600	93.0	0.82	2.0	4500
A3 13-62-10УХЛ4	500	600	93.5	0.83	2.1	6500
A3 13-42-12УХЛ4	200	500	91.5	0.75	2.3	5000
A3 13-52-12УХЛ4	250	500	92.0	0.76	2.3	6000
A3 13-62-12УХЛ4	320	500	92.5	0.77	2.1	8500

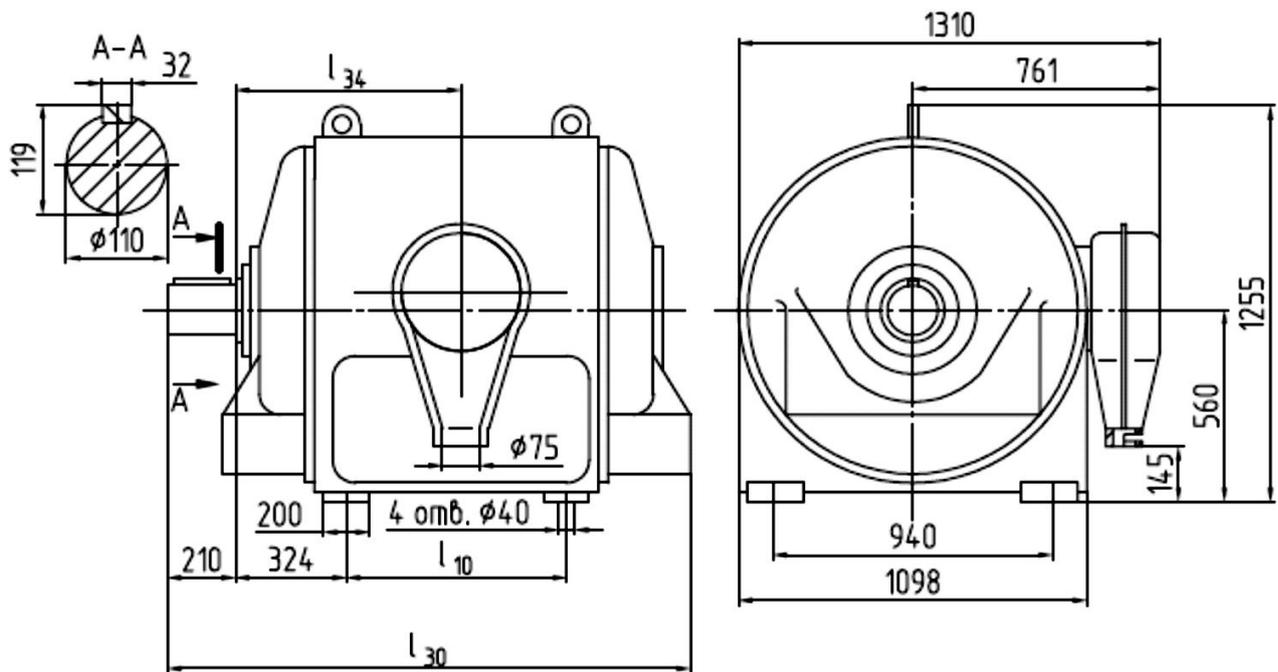


Table 42

Type of the motor	Dimensions, mm			Weight, kg
	l_{10}	l_{30}	l_{34}	
A3 12-32-4УХЛ4	480	1365	564	2390
A3 12-41-4УХЛ4	580	1465	614	2730
A3 12-52-4УХЛ4	680	1565	664	3120
A3 12-35-6УХЛ4	580	1465	614	2400
A3 12-39-6УХЛ4	580	1465	614	2555
A3 12-49-6УХЛ4	680	1565	664	2900
A3 12-35-8УХЛ4	480	1365	564	2375
A3 12-42-8УХЛ4	580	1465	614	2635
A3 12-52-8УХЛ4	680	1565	664	2895
A3 12-42-10УХЛ4	480	1365	564	2510
A3 12-52-10УХЛ4	580	1465	614	2865

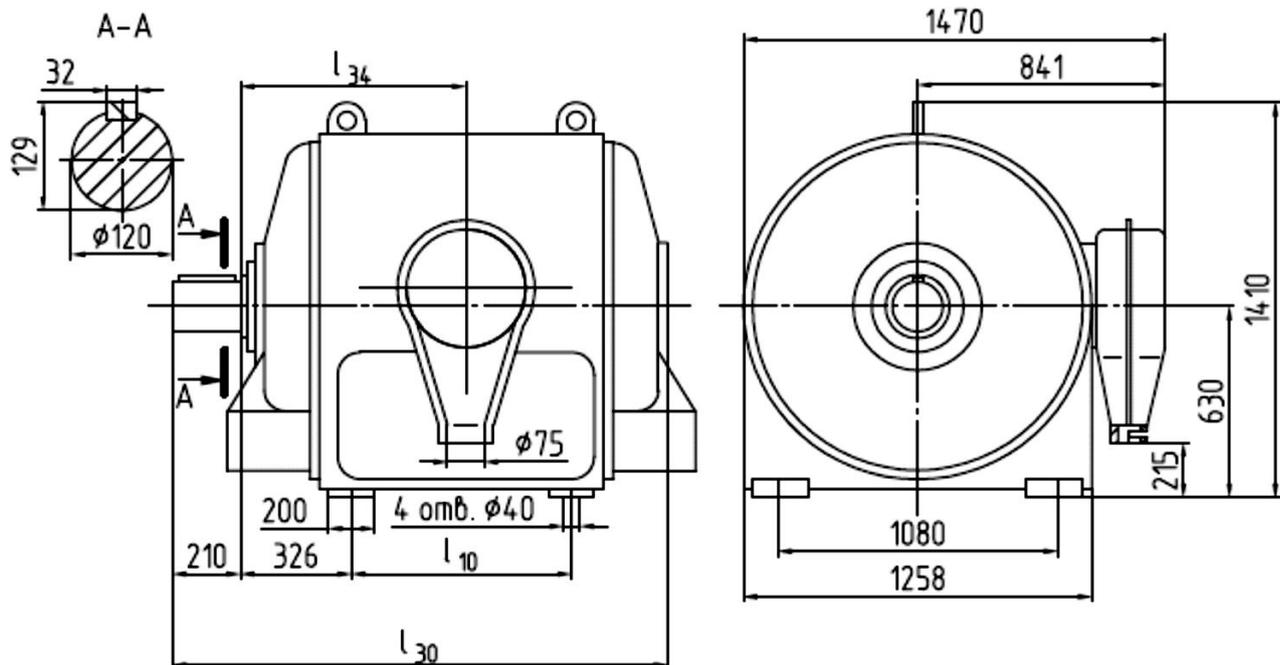


Table 43

Type of the motor	Dimensions, mm			Weight, kg
	l_{10}	l_{30}	l_{34}	
A3 13-46-4УХЛ4	680	1585	666	3780
A3 13-59-4УХЛ4	830	1735	741	4280
A3 13-37-6УХЛ4	580	1485	616	3200
A3 13-46-6УХЛ4	680	1585	666	3630
A3 13-59-6УХЛ4	830	1735	741	4200
A3 13-42-8УХЛ4	580	1485	616	3290
A3 13-52-8УХЛ4	680	1585	666	3825
A3 13-62-8УХЛ4	830	1735	741	4315
A3 13-42-10УХЛ4	580	1485	616	3350
A3 13-52-10УХЛ4	580	1485	616	3690
A3 13-62-10УХЛ4	680	1585	666	4210
A3 13-42-12УХЛ4	580	1485	616	3280
A3 13-52-12УХЛ4	580	1485	616	3660
A3 13-62-12УХЛ4	680	1585	666	4170



ELECTRIC MOTORS OF SERIES AH, SIZES 8-11, FOR SPECIAL NEEDS

Induction squirrel-cage motors series AH, sizes 8-11 are designed for operation from AC supply mains, 50 Hz, voltage 380 V or 220 V as a drive of auxiliary mechanisms (pumps, fans, compressors, etc).

Climatic version - OM, category of location – 5 for operation in premises with elevated humidity (ships, etc).

Ambient temperature range from 40°C to + 45° C, relative humidity – 95% at temperature 40° C.

Power: from 17 to 185 kW.

Rotation frequency (synchronous): 750, 1000, 1500, 3000 rpm.

Specified life: 25-30 years prior to commissioning.

Service life: 80-100 thousand hours prior to commissioning.

Degree of protection: splash-proof.

Motor mounting enclosure:

- horizontal – with flange and flangeless; with one shaft extension or with two shaft extensions;

- vertical –feet-mounted or without feet; with standard or elongated shaft extension.

Letter “Y” in the motor designation means with elongated shaft extension.

Technical data of the motors are listed in Table 44.

Overall and mounting dimensions are listed in Tables 45, 46.

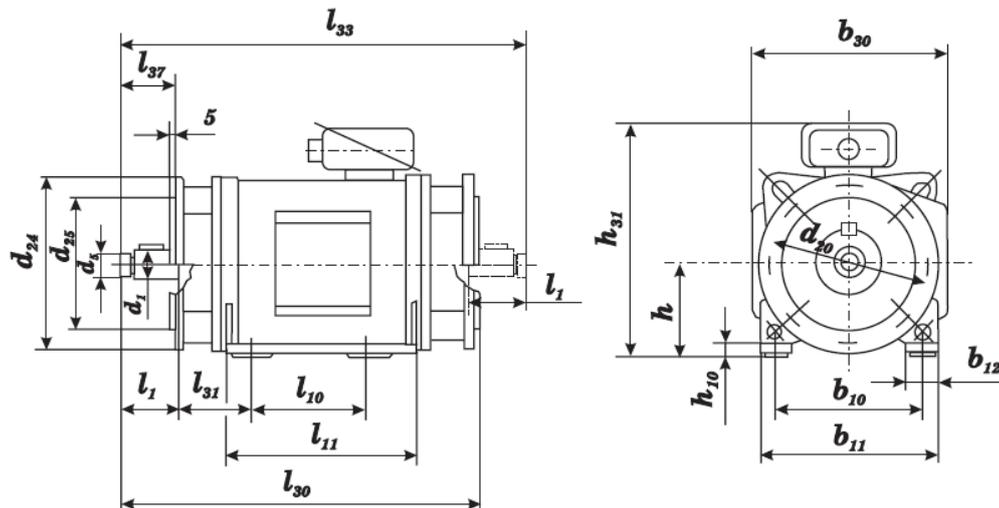
Table 44

Motor type	Rated data				Dynamic moment of inertia, kgm ²
	Power, kW	Rotation frequency, rpm	Eff., %	$\frac{M \text{ max.}}{M \text{ rated.}}$	
3000 rpm (synchronous)					
AH81-2-OM5	35	2895	88	2,0	0,64
AHY81-2-OM5					
AH82-2-OM5	42	2925	89	2,2	0,75
AHY82-2-OM5					
AH91-2-OM5	55	2910	87	1,9	1,7
AHY91-2-OM5					
AH92-2-OM5	73	2910	88	2,0	1,9
AHY92-2-OM5					
AH101-2-OM5	100	2925	89	2,0	2,48
AHY101-2-OM5					
AH102-2-OM5	125	2925	90	2,0	2,83
AHY102-2-OM5					
AH111-2-OM5	160	2916	89	1,9	4,7
AHY111-2-OM5					
AH112-2-OM5	185	2925	90	2,1	5,35
AHY112-2-OM5					
1500 rpm (synchronous)					
AH81-4-OM5	22	1455	88	2,1	1,13
AHY81-4-OM5					
AH82-4-OM5	30	1455	88	2,1	1,35
AHY82-4-OM5					
AH91-4-OM5	37	1455	87	2,1	2,55
AHY91-4-OM5					
AH92-4-OM5	45	1455	87	2,2	2,8
AHY92-4-OM5					
AH101-4-OM5	70	1460	90	2,2	4,3
AHY101-4-OM5					4,4
AHY101-4A-OM5					
AH102-4-OM5	90	1462	90	2,0	4,81
AHY102-4-OM5					
AH111-4-OM5	110	1462	90	2,2	8,12
AH112-4-OM5	132	1465	90	2,1	9,12

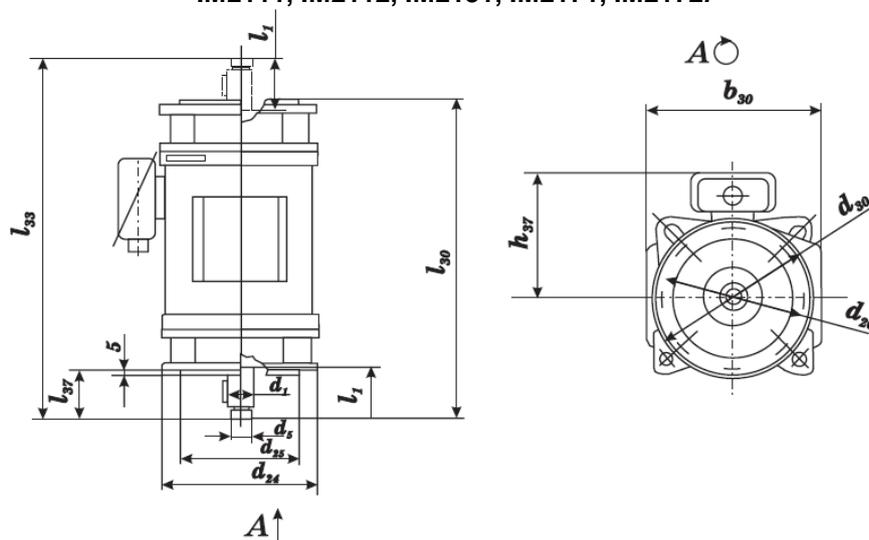


Table 44. Continuation

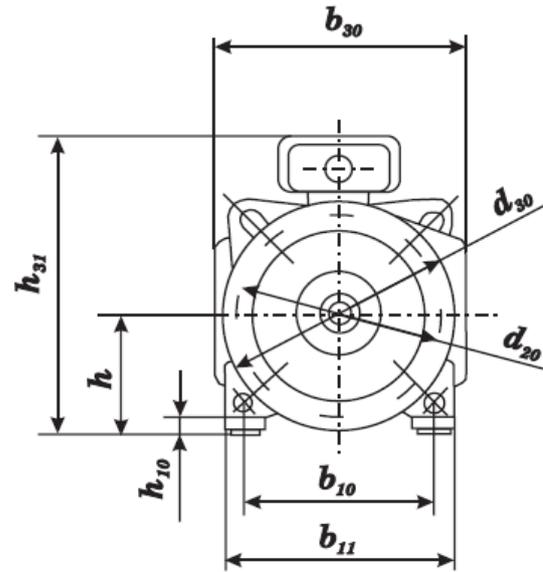
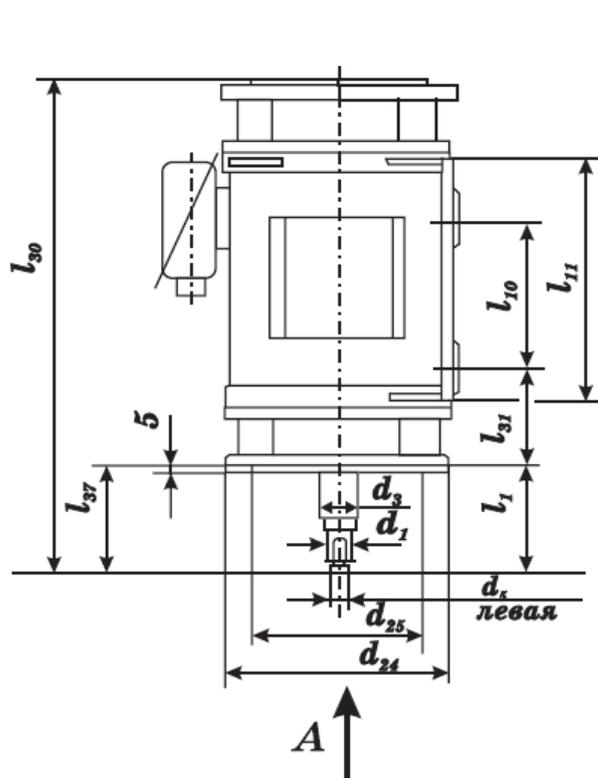
Motor type	Rated data				Dynamic moment of inertia, kgm ²
	Power, kW	Rotation frequency, rpm	Eff., %	$\frac{M \text{ max.}}{M \text{ rated.}}$	
1000 rpm (synchronous)					
AH81-6-OM5	17	970	85	2,2	1,23
AH82-6-OM5	22	965	86	2.2	1,47
AH91-6-OM5	30	970	84	2,0	3,5
AH92-6-OM5	37	970	85	2,0	3,95
AH101-6-OM5	55	970	86	2,0	5,38
AH102-6-OM5	63	970	88	2,0	6,41
AH111-6-OM5	90	970	89	2,0	10,2
750 rpm (synchronous)					
AH92-8-OM5	22	728	83	2,0	4,6
AH101-8-OM5	35	728	84	2,0	4,72
AH102-8-OM5	45	728	85	2,0	8,12
AH111-8-OM5	65	731	86	2,0	11,1



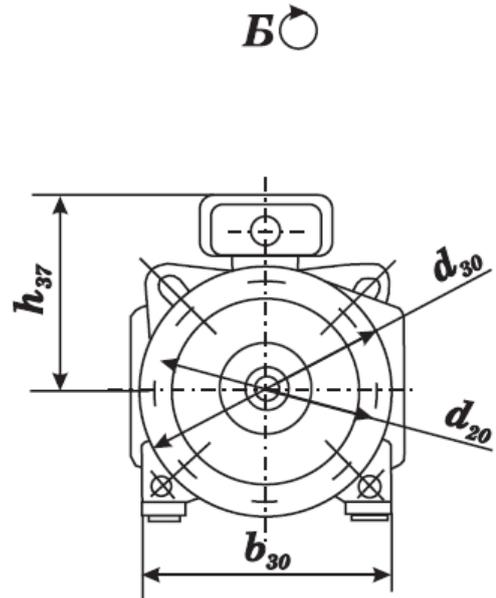
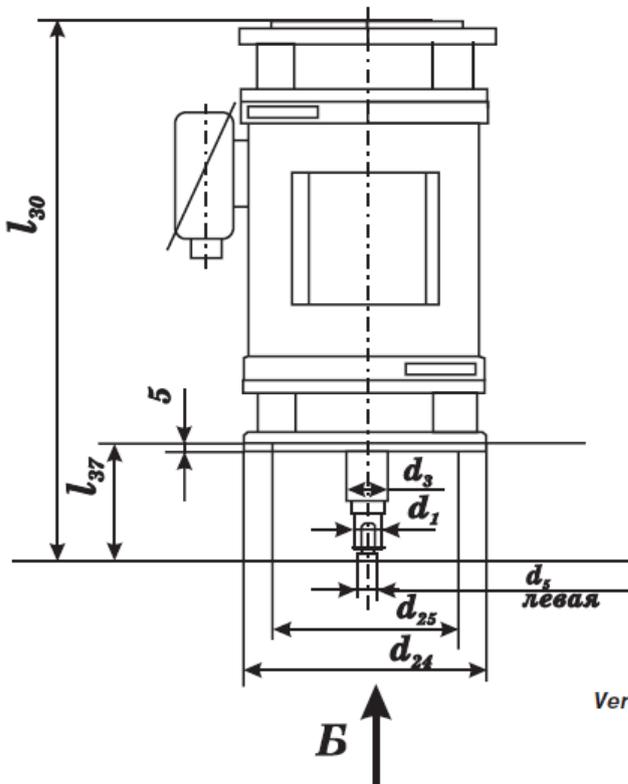
Universal feet - mounted motors: IM1001, IM1002, IM1071, IM1072, IM2101, IM2102, IM2111, IM2112, IM2131, IM2171, IM2172.



Vertical mounted motors without feet: IM3611, IM3612, IM3631.



Vertical feet-mounted motors IM211



Vertical mounted motors without feet IM 3611 with elongated shaft extension.



Table 45

Motor type	Dimensions, mm										
	b ₁₀	b ₁₁	b ₁₂	b ₃₀	d ₁	d ₅	d ₂₀	d ₂₄	d ₂₅	d ₃₀	l ₁
AH81-2-OM5	340	400	80	450	42	M27x1,5	330	400	280	405	110
AH82-2-OM5											
AH81-4-OM5											
AH82-4-OM5											
AH81-6-OM5											
AH82-6-OM5											
AH91-2-OM5	400	470	90	490	55	M48x2	400	450	350	470	
AH92-2-OM5											
AH91-4-OM5											
AH92-4-OM5											
AH91-6-OM5											
AH92-6-OM5											
AH92-8-OM5											
AH101-2-OM5	470	550	100	570	65	M48x2	450	500	400	525	
AH102-2-OM5											
AH101-4-OM5											
AH102-4-OM5											
AH101-6-OM5											
AH102-6-OM5											
AH101-8-OM5											
AH102-8-OM5											
AH111-2-OM5	550	640	110	680	75	M56x3	550	610	500	620	
AH112-2-OM5											
AH111-4-OM5											
AH112-4-OM5											
AH111-6-OM5											
AH112-6-OM5											
AH111-8-OM5											
AH112-8-OM5											

Table 45. Continuation

Motor type	Dimensions, mm										Weight, kg							
	l ₁₀	l ₁₁	l ₃₀	l ₃₁	l ₃₃	l ₃₇	h	h ₁₀	h ₃₁	h ₃₇	Feet-mounted motor	Motor without feet						
AH81-2-OM5	200	380	767	190	869	107	200	20	560	360	300	290						
AH82-2-OM5	240	420	807		909						325	315						
AH81-4-OM5	200	327	717		819						280	270						
AH82-4-OM5	240	357	757		859						310	300						
AH81-6-OM5	200	327	717		819						280	270						
AH82-6-OM5	240	357	757		859						310	300						
AH91-2-OM5	260	460	865	198	970	110	236	24	620	384	400	390						
AH92-2-OM5	300	500	905		1010						435	430						
AH91-4-OM5	260	460	895		1030						400	385						
AH92-4-OM5	300	500	935		1070						435	420						
AH91-6-OM5	260	460	895		1030						400	385						
AH92-6-OM5	300	500	935		1070						475	460						
AH92-8-OM5				1070	460	445												
AH101-2-OM5	340	520	981	205	1076	140	265	28	680	415	550	530						
AH102-2-OM5					1116						600	575						
AH101-4-OM5					300						480	941	1076	585	565			
AH102-4-OM5					340						520	981	1116	615	590			
AH101-6-OM5					300						480	941	1076	570	550			
AH102-6-OM5					340						520	981	1116	640	615			
AH101-8-OM5	300	480	941	1076	560	540												
AH102-8-OM5	340	520	981	205	1116	140	265	28	680	415	640	615						
AH111-2-OM5	310	545	1032	238	1164	137	315	32	765	450	845	815						
AH112-2-OM5	350	585	1072		1204						915	880						
AH111-4-OM5	310	545	1057	221	1214	162	315	32	765	450	845	815						
AH112-4-OM5	350	585	1097		1254						1254	162	315	32	765	450	915	880
AH111-6-OM5																	870	835
AH112-6-OM5	350	585	1097		1254						1254	162	315	32	765	450	915	880
AH111-8-OM5																	870	835



Table 46

Motor type	Dimensions, mm									
	b ₁₀	b ₁₁	b ₃₀	d ₁	d ₃	d ₅	d ₂₀	d ₂₄	d ₂₅	d ₃₀
AHY81-2-OM5	340	400	450	38	45	M30x1,5	330	400	280	405
AHY82-2-OM5	340	400	450	38	45	M30x1,5	330	400	280	405
AHY81-4-OM5	340	400	-	50	60	M30x1,5	330	400	280	405
AHY82-4-OM5	340	400	-	50	60	M30x1,5	330	400	280	405
AHY91-2-OM5	400	470	490	50	60	M30x1,5	400	450	350	470
AHY92-2-OM5	400	470	490	50	60	M30x1,5	400	450	350	470
AHY91-4-OM5	400	470	490	60	70	M30x1,5	400	450	350	470
AHY92-4-OM5	400	470	490	60	70	M30x1,5	400	450	350	470
AHY101-2-OM5	470	550	570	60	70	M48x2	450	500	400	525
AHY102-2-OM5	470	550	570	60	70	M48x2	450	500	400	525
AHY101-4-OM5	470	550	570	70	80	M48x2	450	500	400	525
AHY102-4-OM5	470	550	570	70	80	M48x2	450	500	400	525
AHY101-4A-OM5	470	550	570	60	65	M48x2	450	500	400	525
AHY111-2-OM5	530	640	680	70	80	M48x2	550	610	500	620
AHY112-2-OM5	550	640	680	70	80	M48x2	550	610	500	620

Table 46. Continuation

Motor type	Dimensions, mm										Weight, kg	
	l ₁	l ₁₀	l ₁₁	l ₃₀	l ₃₁	l ₃₇	h	h ₁₀	h ₃₁	h ₃₇	Feet-mounted motor	Motor without feet
AHY81-2-OM5	86	200	380	915	362	255	200	20	560	360	305	295
AHY82-2-OM5	86	240	420	955	362	255	200	20	560	360	330	320
AHY81-4-OM5	86	200	327	875	372	265	200	20	560	360	285	275
AHY82-4-OM5	86	240	367	915	372	265	200	20	560	360	315	305
AHY91-2-OM5	93	260	460	1020	370	265	236	24	620	384	405	395
AHY92-2-OM5	93	300	500	1060	370	265	236	24	620	384	440	425
AHY91-4-OM5	93	260	460	1020	370	265	236	24	620	384	405	385
AHY92-4-OM5	93	300	500	1060	370	265	236	24	620	384	440	420
AHY101-2-OM5	130	300	480	1076	350	275	265	28	680	415	555	535
AHY102-2-OM5	130	340	520	1116	350	275	265	28	680	415	605	575
AHY101-4-OM5	93	300	480	1076	387	275	265	28	680	415	590	565
AHY102-4-OM5	93	340	520	1116	387	275	265	28	680	415	620	590
AHY101-4A-OM5	115	300	480	1210	465	365	265	28	680	-	690	-
AHY111-2-OM5	105	310	545	1180	421	285	315	32	765	450	850	815
AHY112-2-OM5	105	350	585	1220	421	285	315	32	765	450	920	880



1.2 EXPLOSION-PROOF ELECTRIC MOTORS

ELECTRIC MOTORS OF BAO8K, BAO8KY TYPES

Explosion-proof asynchronous blown electric motors BAO8K-450,560,630, BAO8K-1600-6Д и BAO8KY-630 are designed for continuous operating mode S1 from AC network, 50 Hz or 60 Hz as drives for various mechanisms used in places of operation, where by production technology formation of explosive concentration of gases, vapor and dust is possible. They are enterprises of the fuel and energy complex, mining and processing industries: coal, oil, chemical, gas and others. Electric motors of BAO8K type have a wide scope, and they are intended to build up various pumps, fans, mixers, elevating mechanisms, etc. Electric motors of BAO8KY type are specially developed to drive coal-exhausters in mines, where coal is mined by hydroway, but they also can be widely used for other mine mechanisms.

BAO8K motors are designed and made to replace motors of BAO2 and BAO5K types and meet their installation and mounting dimensions, and they are also designed to replace similar motors made by other manufacturers.

Explosion-proof versions:

BAO8K-450, 560, 630 — 1 ExdIIBT4 or PB-4B; PBExdl;

BAO8K-1600-6D — 1ExdIIBT4

BAO8KY— PB-4B; PBExdl;

BAO8K for voltage 3000 V - 1 ExdIIBT4.

Climatic versions: Y2; T2; ХЛ2; Y5; T5.

Constructive mounting arrangement: IM 1001 — horizontal, on feet with two end shells, with one free shaft end.

Protection degree: case and terminal box — IP54, housing of the outer fan — IP20.

Cooling method: ICA 0151 — blown, with self-ventilation.

The motors are coupled with the driving mechanism by means of gear or elastic sleeve-bolt couplings (for motor with 750, 1000, 1500 rpm); gear, elastic sleeve-bolt or plate couplings (for motors with 3000 rpm). The motors are manufactured with one cylindrical shaft end in accordance with GOST 12080 and delivered completely with keys by GOST 23360 (electric motors BAO8K-450, 560 – with one key, BAO8K, BAO8KY-630, BAO8K-1600-6Д - with two keys).

Motor run is direct, it is realized both with rated voltage, and with mains voltage reduction during the start up to 0,8 Unom. Motors BAO8K-450, 560, 630 with 1500, 1000, 750 rpm, BAO8K-1600-6Д with 1000 rpm, BAO8KY with 1500 rpm are designed for 2400 starts per a year; they enable three cold starts running, two hot starts with interval between starts from 3 to 5 minutes, and with allowable quantity of starts per a day not over than 8.

Motors BAO8K-450, 560 with 3000 rpm are designed for 1000 starts per a year, they enable two cold starts with interval between starts not less than 15 minutes or one hot start. Next starts should be done not earlier than in 3 hours of motor operation.

The motors are manufactured for voltage 3000, 6000 and 10000 V.

Motors have rolling-contact bearings and resistance temperature detectors to control temperature in bearings. Motors with 3000 rpm are provided with bearings of the firm SKF. Motors with other polarity are provided with such bearings at a customer's request.

Lubrication of the bearings is consistent, re-lubrication can be done without motor stop. For motors BAO8K-560-2 (except for BAO8K-560-500-2, 630-2, 400-2Д) – liquid independent lubrication.

Winding insulation materials belong to heat-resistance class "F".

Motors can be manufactured with the device monitoring temperature of the stator winding, bearings, casing and controlling vibration. For such modifications additional outlet boxes are provided on the stator case.

Variants of motor configuration:

1) **Variant 1** (base). The motor is provided with YCBT or YCBT M device controlling vibration rate and temperature (climatic versions Y2, T2, Y5, T5).

YCBT is designed to be used in explosive rooms and outdoor plants acc. to Chapter 7.3 in Electrical installation code (for Russia) and Chapter 4 in НПАОП 40.1-1.32-01 (for Ukraine) and other normative documents, which regulates the use of electrical equipment in explosive areas and in coal mines, which are dangerous by gas and dust acc. to НПАОП 10.0-1.01-05 «Safety rules in coal mines».

The device is designed for:

- case temperature alarm (one temperature sensor), bearing temperature alarm (one temperature sensor per one bearing), stator windings temperature alarm (one temperature sensor per one phase) in the electric machine and bearing temperature alarm in the mechanism (one temperature sensor per one bearing);

- vibration rate alarm, vibration rate is measured on the bearing units of the electric machine and the mechanism (one vibration rate sensor per one bearing unit);

- giving alarm lights about exceeding the limits of preset areas for temperature and vibration rate;

- giving warning lights about break or sensor absence;

- giving electrical signals (dry contact) for connecting external alarm and control devices.

- possibility to transfer and read data on the personal computer (PC) with using general industrial standard «MODBUS»/RS485.



USVT-M device has additional possibility:

- to display current parameters of temperature and vibration rate of the electric motor and configurations of sensors on the personal computer with corresponding software installed.

Depending on the order, the device is provided with different quantity of temperature and vibration rate sensors.

Example of device designation in the order is shown below.

Additionally, the device set can be provided with the device to disconnect the temperature and vibration rate sensors in the mechanism.

2) **Variant 2** Temperature of bearing assemblies is controlled by resistance thermal converters of TCM type with unique sensor curve characteristic HCX: $R_0=50 \text{ Ohm}$; $W_{100}=1,428$; four-wire connection circuit; 1 thermal converter per one bearing assembly.

3) **Variant 3** Temperature of bearing assemblies is controlled by manometric thermometers TKP-160 by TY25-12.091870-81 for thermal control of bearing assemblies, they are cut only in non-sparking electrical network of the lamp and sound signaling devices.

4) **Variant 4** Temperature of the stator winding, bearing assemblies of the motor by resistance thermal converters of TC type, which have unique sensor curve characteristic HCX: $R_0=50 \text{ Ohm}$; $W_{100}=1,428$; four-wire connection circuit; 1 thermal converter per one bearing assembly, 2 thermal converters per one winding phase.

At a customer's request for Variants 2,4:

a) thermal converters with other unique sensor curve characteristic HCX (R_0 , W_{100}), connection circuit (two-wire or three-wire), can be installed to control temperature of the bearings;

b) thermal converters with other unique sensor curve characteristic HCX (R_0 , W_{100}) and connection circuit (two-wire or three-wire), can be installed to control winding temperature. Three thermal converters can be installed on the winding phase with 2-wire or 3-wire connection scheme.

At a customer's request for Variants 2,3,4 the special platforms can be installed on the end shells to control vibration of the bearing supports. Quantity of platforms, overall and mounting dimensions and their location is specified by the customer.

The terminal box has three power clamps and grounding clamps (internal and external); it enables inlet of the armoured cable with copper or aluminum veins with dry bunching of cable conductors or filling with cable compound.

Motors are manufactured for right and left senses of rotation (if you see from side of the driving mechanism). If the customer has not specified the sense of rotation, VAO8K electric motors are manufactured with left sense of rotation, and BAO8KY electric motors – with right sense of rotation.

At a customer's request electric motors can be manufactured:

- with left-sided terminal box;
- with cable input in the terminal box, turned in 180° (for the motors BAO8K-630, 6 000V);
- with copper rotor winding;
- with decreased size b_{31} (for some motors of PB 4B version);
- with SKF bearings;
- with possibility to change sense of rotation at full motor stop (except for motors for 3000 rpm).

Motor designation is decoded as follows:

BAO	8KY	-	XX	-	XXXX	X	XX	XXX
								Climatic construction
								Additional signs (Д, М,)*
								Number of poles
								Motor power, kW
								Frame (height of the axis of rotation, mm)
								Series number (K - made in Novaya Kakhovka; Y- for coal-exhausters)
Motor type (explosion-proof asynchronous blown electric motor)								

* additional signs are specified if:

- motor is designed for voltage 10 000 V - "Д"; there is no sign for voltage 3000, 6000 V (table 2);
- motor with copper rotor - "М"; motor with aluminium rotor has no any sign.

Example of designation of BAO8K-450 motor, with four poles, with aluminium rotor winding, with climatic construction Y2, for power 250 kW, voltage 6000V, network frequency 50 Hz, having explosion-proof construction IExdIIBT4, left sense of rotation, right-sided terminal box, 2nd variant of thermal control - in the order and documentation on the other item:

«Motor BAO8K-450-250-4Y2, 6000V, 50Hz, IExdIIBT4, left sense of rotation, right-sided terminal box, thermal control variant 2, TY Y 31.1-32832237-026:2009».

Example of designation of BAO8K-450 motor, with four poles, with copper rotor winding, complete with YCBT (device controlling vibration rate and temperature), with climatic construction Y2, power 250 kW, voltage 10000V, network frequency 50 Hz, having explosion-proof construction IExdIIBT4, left sense of rotation, right-sided terminal box - in the order and documentation on the other item:



«Motor BAO8K-450-250-4ДМУ2, 10000V, 50Hz, IExdIIBT4, left sense of rotation, right-sided terminal box, with YCBT-36V-4411Y2».

Example of designation of BAO8K, for power 1600 kW, with six poles, with copper rotor winding, with climatic construction Y2, for voltage 10 000 V, network frequency 50 Гц, having explosion-proof construction 1ExdIIBT4, left sense of rotation, right-sided terminal box, with the device controlling vibration rate and temperature YCBT-M (4411 type with supply unit БП for voltage 36 V) - in the order and documentation on the other item:

"Motor BAO8K-1600-6ДУ2, 10000V, 50 Hz, 1ExdIIBT4, left sense of rotation, right-sided terminal box, with copper rotor, with YCBT-M-220V-4411Y2"

YCBT designation is decoded as follows:

YCBT	-	XXX	-	X	X	X	X	XX
								Symbolic designation of climatic version: - Y2, Y5 - T2, T5
								Symbolic designation of availability of the terminal for temperature sensors for stator winding: - 0 – no - 1 – yes
								Symbolic designation of availability of temperature sensor for the motor case: - 0 – no - 1 – yes
								Quantity of temperature sensors for bearings: - 2 – only for the electric motor - 4 – for the electric motor and mechanism
								Quantity of vibration sensors: - 2 – only for the electric motor - 4 – for the electric motor and mechanism
								Supply voltage of БП (supply unit): - 24V , or -36V, or - 127V, or - 220V
								Device controlling vibration rate and temperature

Example of designation of YCBT for supply voltage 36 V, which measures vibration rate of the electric motor and mechanism, which has sensors measuring temperature of the bearings in the motor and mechanism, sensor measuring temperature of the motor case, with terminal for sensors measuring temperature of the motor stator winding, with climatic construction Y2 - in the order and documentation on the other item:

1) for delivery within Ukraine:

«Device YCBT-36V-4411 Y2, TY Y 31.6-32832237-009:2007»

2) for delivery abroad:

«Device YCBT-36V-4411 Y2. Export. TY Y 31.6-32832237-009:2007»

Example of designation of YCBT for supply voltage 220 V, which measures vibration rate of the electric motor, which has sensors measuring temperature of the bearings in the motor, with climatic construction Y2 - in the order and documentation on the other item:

1) for delivery within Ukraine:

«Device YCBT-220V-2200 Y2, TY Y 31.6-32832237-009:2007»

2) for delivery abroad:

«Device YCBT-220V-2200 Y2. Export. TY Y 31.6-32832237-009:2007»

Technical data of the motors for frequency 50 Hz and altitude below 1000 m are specified in Table 51. Overall and mounting dimensions and weight of the motors are shown in Table 52.



Table 51

Type of the motor	Power, kW	Slip, %	Stator current, A	Eff., %	cosφ	I _{start} /I _{nom}	M _{start} /M _{nom}	M _{max} /M _{nom}	Type of explosion protection	
Synchronous rotational speed n=3000 rpm, voltage 6000 V										
BAO8K-450-200-2	200	1,1	23,3	93,0	0,89	6,5	1,1	3,0	1ExdIIBT4 PBExdI PB 4B	
BAO8K-450-250-2	250		28,6	93,5						0,9
BAO8K-450-315-2	315		35,8	94,0	0,91	6,0		2,8		
BAO8K-450-400-2	400		44,8	94,4						
BAO8K-560-500-2	500	1,0	57,2	93,5	0,9	6,0	1,0	2,7		
BAO8K-560-630-2	630		71,8	93,8						
BAO8K-560-800-2*	800	0,8	90,4	94,6	0,91	6,5	1,1	2,9		
BAO8K-560-1000-2*	1000		112,5	95,0						7,0
Synchronous rotational speed n=3000 rpm, voltage 10 000 V										
BAO8K-560-200-2Д	200	1,0	13,9	93,1	0,89	7,0	1,1	3,0	1ExdIIBT4 PBExdI PB 4B	
BAO8K-560-250-2Д	250		17,0	93,6						0,9
BAO8K-560-315-2Д	315		21,5	94,1	0,9	6,5				
BAO8K-560-400-2Д	400		27,7	92,7						0,9
BAO8K-560-500-2Д*	500	0,8	34,2	93,4	0,9	7,3	1,2			
BAO8K-560-630-2Д*	630		43,1	93,7						
BAO8K-560-800-2Д*	800		55,0	94,4	0,89	7,0	1,1	2,9		
BAO8K-560-1000-2Д*	1000		66,9	94,8						0,91
Synchronous rotational speed n=1500 rpm, voltage 6000 V										
BAO8K-450-200-4	200	1,2	23,1	93,8	0,89	6,5	1,1	2,7	1ExdIIBT4 PBExdI PB 4B	
BAO8K-450-250-4	250		28,6	94,4				2,6		
BAO8K-450-315-4	315		35,9	94,8				2,7		
BAO8K-450-400-4	400		45,4	95,2				2,5		
BAO8K-560-500-4	500	56,2	95,0	0,9	6,8					
BAO8K-560-630-4	630	70,7	95,3			0,91	7,0	2,8		
BAO8K-560-800-4	800	89,6	95,5							
BAO8K-560-1000-4	1000	110,5	95,7							
BAO8K-630-1250-4	1250	0,9	139,5	95,8	0,9	6,5	1,0	2,3	1ExdIIBT4 PBExdI PB 4B	
BAO8K-630-1600-4	1600		178,2	96,0						
BAO8K-630-2000-4	2000		222,3	96,2						
BAO8KY-630-1250-4	1250		139,5	95,8						
BAO8KY-630-1600-4	1600		178,2	96,0						
BAO8KY-630-2000-4	2000		222,3	96,2						
Synchronous rotational speed n=1500 rpm, voltage 10 000 V										
BAO8K-560-200-4Д	200	0,8	13,8	93,0	0,9	7,5	1,0	2,5	1ExdIIBT4 PBExdI PB 4B	
BAO8K-560-250-4Д	250		17,2	93,4			7,0			1,1
BAO8K-560-315-4Д	315		21,5	93,8						
BAO8K-560-400-4Д	400	1,0	27,6	94,1	0,89	6,9	1,0	2,3		
BAO8K-560-500-4Д	500		34,3	94,5						
BAO8K-560-630-4Д	630		42,1	95,0	0,91	6,5				
BAO8K-560-800-4Д	800		53,3	95,3						
BAO8K-630-1000-4Д	1000		66,4	95,6	0,91	6,0				
BAO8K-630-1250-4Д	1250		82,8	95,8						
BAO8K-630-1600-4Д	1600	105,7	96,0	0,91	6,5	2,4				
BAO8K-630-2000-4Д	2000	131,9	96,2				7,0			
BAO8KY-630-1000-4Д	1000	1,0	66,4	95,6	0,91	6,0	1,0	2,3	PBExdI PB 4B	
BAO8KY-630-1250-4Д	1250		82,8	95,8						
BAO8KY-630-1600-4Д	1600		105,7	96,0						
BAO8KY-630-2000-4Д	2000		131,9	96,2						7,0



Table 51. Continuation

Type of the motor	Power, kW	Slip, %	Stator current, A	Eff., %	cosφ	I _{start} /I _{nom}	M _{start} /M _{nom}	M _{max} /M _{nom}	Type of explosion protection	
Synchronous rotational speed n=1000 rpm, voltage 6000 V										
BAO8K-450-200-6	200	1,0	24,8	93,5	0,83	6,0	1,2	2,8	1ExdIIBT4 PBExdI PB 4B	
BAO8K-450-250-6	250		30,1	93,9						
BAO8K-450-315-6	315		37,9	94,2						
BAO8K-560-400-6	400	0,7	47,8	94,7	0,86	6,0	1,0	2,2		
BAO8K-560-500-6	500		58,9	95,0						
BAO8K-560-630-6	630		74,0	95,2						
BAO8K-560-800-6	800		93,8	95,4						
BAO8K-630-1000-6	1000	0,9	116,8	95,8	0,86	6,5	1,1	2,4		
BAO8K-630-1250-6	1250		145,7	96,0						
Synchronous rotational speed n=1000 rpm, voltage 10000 V										
BAO8K-560-400-6Д	400	0,9	28,4	94,4	0,86	6,2	1,0	2,2	1ExdIIBT4 PBExdI PB 4B	
BAO8K-560-500-6Д	500		35,4	94,7						
BAO8K-560-630-6Д	630		44,6	94,9						
BAO8K-630-800-6Д	800		55,1	95,2	0,88	6,5	1,0	2,4		
BAO8K-630-1000-6Д	1000		68,8	95,4						
BAO8K-1600-6Д	1600	0,6	114,6	96,0	0,84	5,0	1,0	2,1	1ExdIIBT4	
Synchronous rotational speed n=750 rpm, voltage 6000 V										
BAO8K-450-200-8	200	1,0	26,0	93,7	0,79	6,5	1,2	2,8	1ExdIIBT4 PBExdI PB 4B	
BAO8K-450-250-8	250		32,4	94,0						
BAO8K-560-315-8	315	0,8	38,7	94,3	0,83	6,0	1,0	2,6		
BAO8K-560-400-8	400		49,0	94,5						
BAO8K-560-500-8	500	0,7	60,2	95,1	0,84	6,0	1,0	2,2		
BAO8K-560-630-8	630		75,7	95,3						
BAO8K-630-800-8	800	1,0	99,3	95,7	0,81	6,0	1,1	2,2		
BAO8K-630-1000-8	1000		122,4	95,9						0,82
Synchronous rotational speed n=750 rpm, voltage 10000 V										
BAO8K-560-315-8Д	315	1,0	23,3	94,2	0,83	5,5	1,0	2,2		1ExdIIBT4 PBExdI PB 4B
BAO8K-560-400-8Д	400		29,5	94,4						
BAO8K-560-500-8Д	500		36,6	94,9						
BAO8K-630-630-8Д	630		45,5	95,2	0,84	6,0	1,0	2,2		
BAO8K-630-800-8Д	800		57,6	95,5					6,5	

* Motors with liquid lubricant.

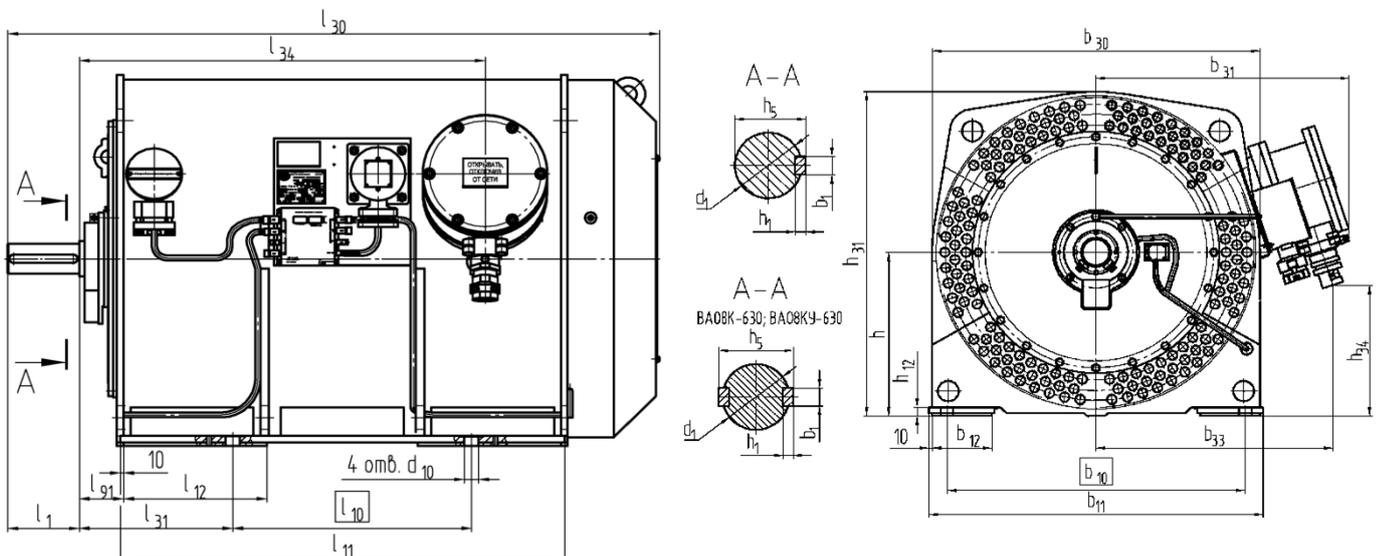




Table 52. Continuation

Type of the motor	Overall dimensions, mm										Installation and mounting dimensions, mm										Weight, kg						
	b ₃₀	b ₃₁	b ₃₂	h ₃₁	l ₁	l ₁₀	l ₁₁	l ₁₂	l ₃₁	l ₃₂	l ₃₄	b ₉	c ₁	c ₁₀	b ₁	b ₁₀	b ₁₁	b ₁₂	b ₂₃	h		h ₁	h ₅	h ₁₂	h ₃₄	N	
BAO8K-560-400-6Д	1810	1210	1045	1165	210	710	1210			1080									980	560	18	117	35	450	450	1	3870/4000
BAO8K-560-500-6Д	1945	1300	1090	1210		800	1280			1090									1020					465	465		4600/4740
BAO8K-560-630-6Д	2045					900	1380			1190									850	560	18	117	35	495	495		5230/5400
BAO8K-560-315-8	1710	1210	900	1165		630	1110			985																	3780/3900
BAO8K-560-400-8						710				1115									890	560	18	117	35	510	510		3970/4100
BAO8K-560-500-8	1945	1300	940	1210		800	1280			1255									980	560	18	117	35	450	450		4580/4740
BAO8K-560-630-8	2045					900	1380			1020									1020	560	18	117	35	450	450		5520/5700
BAO8K-560-315-8Д	1810	1210	1045	1165		710	1210			1020									980	560	18	117	35	450	450		3960/4100
BAO8K-560-400-8Д	1945	1300	1090	1210		800	1280			1090									1020	560	18	117	35	465	465		4690/4840
BAO8K-560-500-8Д	2045					900	1380			1190									1020	560	18	117	35	465	465		5530/5700
BAO8K-630-1250-4	2130	1450	1010	1355		1000	1410			1250									960	630	36	156	35	625	625		6420/6600
BAO8K-630-1600-4	2260					1120	1540			1380									1000	630	36	156	35	645	645		7000/7210
BAO8K-630-2000-4	2470	1530	1050	1395		1250	1750			1590									1100	630	36	156	35	655	655		8280/8510
BAO8K-630-1000-4Д	2130	1450	1110	1355		1000	1410			1250									1100	630	36	156	35	670	670		6360/6540
BAO8K-630-1250-4Д	2260					1120	1540			1380									1100	630	36	156	35	670	670		7020/7230
BAO8K-630-1600-4Д	2470	1530	1190	1395		1250	1750			1590									1135	630	36	156	35	670	670		8170/8400
BAO8K-630-2000-4Д	2470	1530	1190	1395	250	1250	1750			1590									1135	630	36	156	35	670	670		8410/8650
BAO8K-630-1000-6	2130	1450	1010	1355		1000	1410			1250									960	630	36	156	35	625	625		6290/6500
BAO8K-630-1250-6	2260	1530	1050	1395		1120	1540			1380									1000	630	36	156	35	645	645		7330/7560
BAO8K-630-800-6Д	2130	1450	1150	1355		1000	1410			1250									1100	630	36	156	35	655	655		6290/6500
BAO8K-630-1000-6Д	2260	1530	1190	1395		1120	1540			1380									1135	630	36	156	35	670	670		7320/7560
BAO8K-1600-6Д	2920	1775	1320	1790		1400	1880	600	355	1750	170	150	56	40	1400	1640	325	1193	900	900	22	168	45	541	541		-/12500
BAO8K-630-800-8	2130	1450	1010	1355		1000	1410			1250									960	630	36	156	35	625	625		6740/6970
BAO8K-630-1000-8	2260	1530	1050	1395		1120	1540			1380									1000	630	36	156	35	645	645		7970/8230
BAO8K-630-630-8Д	2130	1450	1190	1355		1000	1410			1250									1100	630	36	156	35	655	655		6740/6970
BAO8K-630-800-8Д	2260	1530	1190	1395		1120	1540			1380									1135	630	36	156	35	670	670		7970/8230

Note: N – number of keys on the shaft ends (cross-section A-A).
 In the column «Weight, kg» numerator specifies weights of the motors with aluminium rotor;
 Denominator shows weights of the motor with copper rotor.



ELECTRIC MOTORS OF SERIES "UKRAINE"

Asynchronous explosion-proof motors with squirrelcage rotor series "Ukraine" are manufactured for national economy and for export to the countries with temperate and tropical climate. They draw their power from 6000 V AC, 50 Hz mains supply in coal and shale mines dangerous with methane and coal dust. They may operate in all types of premises and in outside installations where explosive mixtures may be present.

Explanation of designations of the motor "Ukraine" 560M-2Y5:

"Ukraine"- designation of the series

560 - height of the rotation axis

M - designation of length

2 - number of poles

Y - climatic version

5 - location category

The motors are designed for climatic versions "Y" or "T", location category 2 or 5.

Ambient temperature within the limits from - 40°C to + 40°C, relative humidity 97% at temperature +35°C.

Design version of the motors is IM1001, cooling method is ICA01A51.

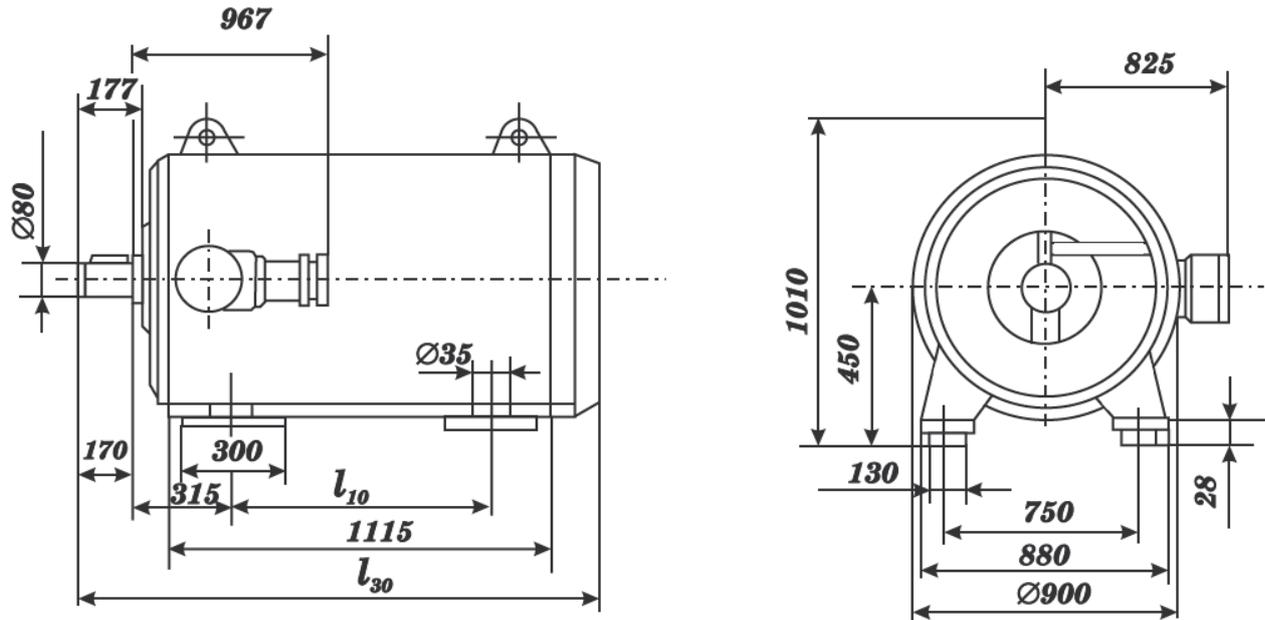
Degree of protection of the main motors jacket and outlets box is IP54, of the fan jacket IP20. Insulation of stator winding is of class "P".

Types and main motors parameters of versions "Y" and "T" are listed in Table 53.

Overall and mounting dimensions and the motors weight are listed in Tables 54 and 55.

Table 53

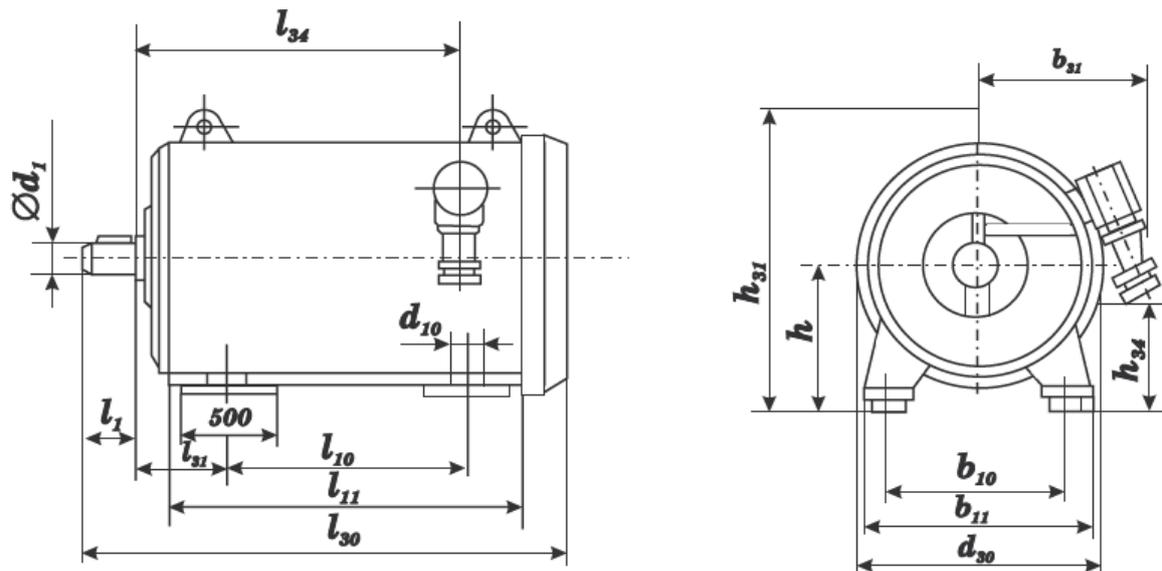
Motor type	Rated data				Cos φ	$\frac{I_{start}}{I_{rated}}$	$\frac{M_{start}}{M_{rated}}$	$\frac{M_{max}}{M_{rated}}$	$\frac{M_{min}}{M_{rated}}$	Design dynamic moment of armature inertia, kgm ²
	Power, kW	Rotational speed (synch.), rpm	Current, A	Eff., %						
«Ukraine» 450M-2Y5	200	3000	24,5	92,5	0,85	6,5	1,0	2,2	0,85	50,0
«Ukraine» 450M-2Y2	200	3000	24,5	92,5	0,85	6,5	1,0	2,2	0,85	50,0
«Ukraine» 450L-2Y5	250	3000	30,0	94,3	0,86	6,5	1,1	2,3	0,85	62,5
«Ukraine» 450L-2Y2	250	3000	30,0	94,3	0,86	6,5	1,1	2,3	0,85	62,5
«Ukraine» 500M-2Y5	315	3000	37,2	94,1	0,88	6,5	1,2	2,3	0,85	80,0
«Ukraine» 500M-2Y2	315	3000	37,2	94,1	0,88	6,5	1,2	2,3	0,85	80,0
«Ukraine» 500L-2Y5	400	3000	45,8	94,5	0,89	6,5	1,2	2,3	0,85	100,0
«Ukraine» 500L-2Y2	400	3000	45,8	94,5	0,89	6,5	1,2	2,3	0,85	100,0
«Ukraine» 560M-2Y5	500	3000	58,3	94,0	0,88	6,5	1,1	2,2	0,9	125,0
«Ukraine» 560L-2Y5	630	3000	72,8	93,4	0,89	6,5	1,2	2,2	0,9	137,5
«Ukraine» 450M-4Y5	200	1500	24,6	93,0	0,84	6,0	1,2	2,2	0,9	375,0
«Ukraine» 450M-4Y2	200	1500	24,6	93,0	0,84	6,0	1,2	2,2	0,9	375,0
«Ukraine» 450L-4Y5	250	1500	30,7	93,7	0,86	6,0	1,2	2,3	0,9	400,0
«Ukraine» 450L-4Y2	250	1500	30,7	93,7	0,86	6,0	1,2	2,3	0,9	400,0
«Ukraine» 500M-4Y5	315	1500	39,0	94,7	0,84	6,0	1,2	2,2	0,9	450,0
«Ukraine» 500M-4Y2	315	1500	39,0	94,7	0,84	6,0	1,2	2,2	0,9	450,0
«Ukraine» 500L-4Y5	400	1500	48,0	95,0	0,86	6,0	1,3	2,3	0,9	575,0
«Ukraine» 500L-4Y2	400	1500	48,0	95,0	0,86	6,0	1,3	2,3	0,9	575,0
«Ukraine» 560M-4Y5	500	1500	59,0	95,2	0,86	5,8	1,4	2,3	0,9	625,0
«Ukraine» 560L-4Y5	630	1500	73,5	95,6	0,87	6,0	1,5	2,4	0,9	825,0
«Ukraine» 630M-4Y5	800	1500	93,5	95,3	0,87	6,5	1,5	2,4	0,9	1000,0
«Ukraine» 630L-4Y5	1000	1500	116,0	95,6	0,87	6,5	1,5	2,7	0,9	1075,0
«Ukraine» 710M-4Y5	1250	1500	145,0	95,4	0,87	6,0	1,4	2,5	0,9	1500,0
«Ukraine» 710L-4Y5	1600	1500	184,0	95,7	0,88	6,0	1,4	2,5	0,9	1625,0



Overall and mounting dimensions of the asynchronous explosion-proof motors with squirrel-cage rotor series "Ukraine"

Table 54

Motor type	l_{10}	l_{30}	Weight, kg
«Ukraine» 450M-2Y5	710	1675	2460
«Ukraine» 450M-2Y2	710	1675	2460
«Ukraine» 450L-2Y5	800	1675	2460
«Ukraine» 450L-2Y2	800	1675	2460
«Ukraine» 450M-4Y5	710	1655	2400
«Ukraine» 450M-4Y2	710	1700	2400
«Ukraine» 450L-4Y5	800	1655	2400
«Ukraine» 450L-4Y2	800	1700	2400



Overall and mounting dimensions of the asynchronous explosion-proof motors with squirrel-cage rotor series "Ukraine".

Table 55

Motor type	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₁₀	d ₃₀	l ₁	l ₁₀	l ₁₁	l ₃₀	l ₃₁	l ₃₄	h	h ₃₁	h ₃₄	Weight, kg
«Ukraine» 500M-2Y5	850	980	865	80	35	995	170	800	1140	1735	335	410	500	1100	180	2700
«Ukraine» 500M-2Y2	850	980	865	80	35	995	170	800	1140	1735	335	410	500	1100	185	2700
«Ukraine» 500L-2Y5	850	980	865	80	35	995	170	900	1240	1835	335	410	500	1100	180	3100
«Ukraine» 500L-2Y2	850	980	865	80	35	995	170	900	1240	1835	335	410	500	1100	185	3100
«Ukraine» 500M-4Y5	850	980	865	80	35	995	170	800	1140	1670	335	410	500	1100	180	2800
«Ukraine» 500M-4Y2	850	980	865	80	35	995	170	800	1140	1715	335	410	500	1100	185	2800
«Ukraine» 500L-4Y5	850	980	865	80	35	995	170	900	1240	1770	335	410	500	1100	180	3250
«Ukraine» 500L-4Y2	850	980	865	80	35	995	170	900	1240	1815	335	410	500	1100	185	3250
«Ukraine» 560M-2Y5	950	1080	900	80	42	1115	170	900	1150	1720	355	480	560	1235	250	3700
«Ukraine» 560L-2Y5	950	1080	900	80	42	1115	170	1000	1295	1860	355	480	560	1235	250	4250
«Ukraine» 560M-4Y5	950	1080	900	120	42	1115	210	900	1130	1840	355	435	560	1235	250	3700
«Ukraine» 560L-4Y5	950	1080	900	120	42	1115	210	1000	1295	1950	355	435	560	1235	250	4370
«Ukraine» 630M-4Y5	1060	1160	940	120	48	1170	210	1000	1540	2260	375	1460	630	1345	400	5130
«Ukraine» 630L-4Y5	1060	1240	980	120	48	1250	210	1120	1720	2345	375	1600	630	1380	425	6400
«Ukraine» 710M-4Y5	1180	1410	1030	130	48	1405	250	1120	1550	2340	400	470	710	1540	580	8000
«Ukraine» 710L-4Y5	1180	1410	1030	140	48	1405	250	1250	2000	2525	400	470	710	1340	580	9200



ELECTRIC MOTORS OF SERIES 2MA 36, 6, 7 SIZES

Asynchronous explosion-proof motors with squirrel-cage rotor series 2MA36 sizes 6,7 are intended for national economy and for export to the countries with temperate and tropical climate for operation in mines dangerous in gas and coal dust as well as in explosively dangerous premises of all classes.

Climatic version "Y" or "T", location category 2 or 5.

Explanation of designations of the motor series 2MA-36-61/4U2:

2 - ordinal number of the series

MA - asynchronous machine

36 - designation of series

6 - designation of dimension

1 - designation of stator core length

4 - number of poles

Y - climatic version

2 - location category

Note: Letter "B" after figure 4 (number of poles) means that the motor is of vertical design.

Design version of the motors according to their mounting:

- horizontal design - IM 1001

- vertical design - IM 3011

Degree of protection of the main motors jacket and outlets box is IP54, of the jacket and outside fan - IP20.

Cooling mode - ICA01.

Ambient temperature within the limits from - 5°C to + 40°C for the motors of the 1st group from -45° to + 45°C for the motors of the 2nd group, upper value of the relative humidity 98% at temperature +35°C.

Technical data of the motors are listed in Tables 56 and 57.

Overall and mounting dimensions are listed in Table 58.

Table 56

Motor type	Rated data				Slip %	Eff., %	Cos φ	I _{start} I _{rated}	M _{start} M _{rated}	M _{max} M _{rated}
	Power, kW	Stator current, A		Rotation speed (synch.), rpm						
		At 380 V	At 660 V							
1	2	3	4	5	6	7	8	9	10	11
2MA36-60/2Y5	200	364	210	3000	0,83	91,5	0,9	6,5	1,0	2,0
2MA36-60/2Y2										
2MA36-61/2Y5	250	453	262	3000	0,83	92,0	0,91	6,5	1,0	2,0
2MA36-61/2Y2										
2MA36-61/4Y5	200	374	216	1500	1,0	92,0	0,89	6,5	1,8	2,5
2MA36-61/4Y2										
2MA36-62/4Y5	250	465	268	1500	1,0	93,0	0,89	6,5	1,8	2,5
2MA36-62/4Y2										
2MA36-61/6Y5	160	305	176	1000	1,0	93,0	0,84	6,5	1,3	2,5
2MA36-61/6Y2	160	305	176	1000	1,0	93,0	0,84	6,5	1,3	2,5
2MA36-61/6BY5	160	305	176	1000	1,0	93,0	0,84	6,5	1,3	2,5
2MA36-61/6BY2	160	305	176	1000	1,0	93,0	0,84	6,5	1,3	2,5
2MA36-62/6Y5	200	380	220	1000	1,0	93,0	0,84	6,5	1,3	2,5
2MA36-62/6Y2										
2MA36-61/8Y5	125	244	141	750	1,3	93,5	0,81	6,5	1,3	2,5
2MA36-61/8Y2										
2MA36-62/8Y5	160	310	180	750	1,3	93,5	0,81	6,5	1,3	2,5
2MA36-62/8Y2										



Table 56. Continuation

1	2	3	4	5	6	7	8	9	10	11
2MA36-71/4Y5	320	587	340	1500	1,0	93,0	0,89	6,5	1,4	2,5
2MA36-71/4Y2										
2MA36-71/6Y5	250	475	274	1000	1,0	93,0	0,86	6,5	1,3	2,5
2MA36-71/6Y2										
2MA36-71/8Y5	200	380	220	750	1,3	93,5	0,85	6,5	1,3	2,5
2MA36-71/8Y2										

Table 57

Motor type	Rated data				Slip %	Stator current, A	Eff, %	Cos φ	$\frac{I_{start}}{I_{rated}}$	$\frac{M_{start}}{M_{rated}}$	$\frac{M_{max}}{M_{rated}}$
	Power, kW	Voltage, V	Network frequency, Hz	Rotational speed (synch.), rpm							
2MA36- 60/2T2, T5	160	380	50	3000	0,83	302	89,5	0,9	8,0	1,2	2,3
	160	400	50	3000	0,83	287	89,5	0,9	8,0	1,2	2,3
	160	415	50	3000	0,83	276	89,5	0,9	8,0	1,2	2,3
	160	440	60	3600	0,83	264	89,5	0,8	8,5	1,2	2,3
2MA36- 61/2T2, T5	200	380	50	3000	0,83	370	90,5	0,91	8,0	1,2	2,3
	200	400	50	3000	0,83	351	90,5	0,91	8,0	1,2	2,3
	200	415	50	3000	0,83	338	90,5	0,91	8,0	1,2	2,3
	200	440	60	3600	0,83	323	90,5	0,9	8,5	1,2	2,3
2MA36- 61/4T2, T5	190	380	50	1500	1,0	364	92,0	0,86	8,0	1,7	2,5
	190	400	50	1500	1,0	346	92,0	0,86	8,0	1,7	2,5
	190	415	50	1500	1,0	334	92,0	0,86	8,0	1,7	2,5
	190	440	60	1800	1,1	319	92,0	0,85	8,5	2,0	2,5
2MA36- 62/4T2, T5	230	380	50	1500	1,0	435	92,5	0,87	8,0	1,7	2,5
	230	400	50	1500	1,0	412	92,5	0,87	8,0	1,7	2,5
	230	415	50	1500	1,0	398	92,5	0,87	8,0	1,7	2,5
	230	440	60	1800	1,1	380	92,5	0,86	8,5	2,0	2,5
2MA36- 61/6T2, T5	140	380	50	1000	1,5	284	92,5	0,81	8,0	1,5	2,5
	140	400	50	1000	1,5	270	92,5	0,81	8,0	1,5	2,5
	140	415	50	1000	1,5	260	92,5	0,81	8,0	1,5	2,5
	140	440	60	1200	1,25	250	92,0	0,8	8,0	2,0	2,5
2MA36- 62/6T2, T5	170	380	50	1000	1,5	343	93,0	0,81	8,0	1,5	2,5
	170	400	50	1000	1,5	326	93,0	0,81	8,0	1,5	2,5
	170	415	50	1000	1,5	314	93,0	0,81	8,0	1,5	2,5
	170	440	60	1200	1,25	302	92,5	0,8	8,0	2,0	2,5
2MA36- 61/8T2, T5	125	380	50	750	1,66	261	93,5	0,78	7,5	1,3	2,5
	125	400	50	750	1,66	248	93,5	0,78	7,5	1,3	2,5
	125	415	50	750	1,66	239	93,5	0,78	7,5	1,3	2,5
	125	440	60	900	1,3	226	93,0	0,78	7,5	1,8	2,5
2MA36- 62/8T2, T5	150	380	50	750	1,66	313	93,5	0,78	7,5	1,3	2,5
	150	400	50	750	1,66	298	93,5	0,78	7,5	1,3	2,5
	150	415	50	750	1,66	286	93,5	0,78	7,5	1,3	2,5
	150	440	60	900	1,3	271	93,0	0,78	7,5	1,8	2,5
2MA36- 71/6T2, T5	220	380	50	1000	1,0	445	92,0	0,82	7,0	1,7	2,7
	220	400	50	1000	1,0	407	92,0	0,85	7,0	1,7	2,7
	220	415	50	1000	1,0	397	92,0	0,84	7,0	1,7	2,7
	220	440	60	1200	0,83	372	91,5	0,85	7,0	1,3	2,7
2MA36- 71/8T2, T5	180	380	50	750	1,3	364	93,0	0,81	6,5	1,5	2,5
	180	400	50	750	1,3	334	93,0	0,84	6,5	1,5	2,5
	180	415	50	750	1,3	326	93,0	0,85	6,5	1,5	2,5
	180	440	60	900	1,1	304	92,5	0,84	6,5	1,2	2,5

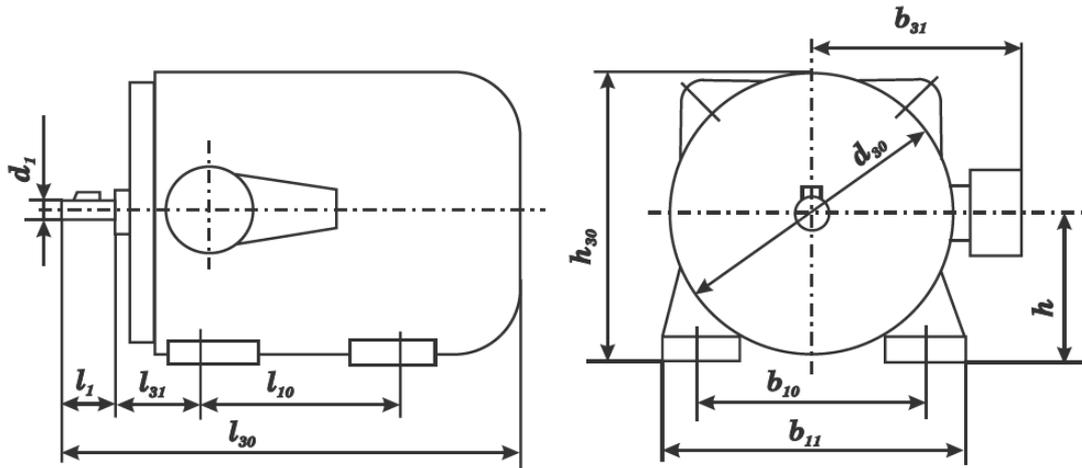


Table 58

Motor type	Dimensions in mm											Weight, kg
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₁	h	h ₃₀	
2MA36-60/2Y5	760±1,4	860	692	75H	864	140	625±1,4	1225	158±4	450-1,0	882	1965
2MA36-60/2Y2	760±1,4	860	692	75H		140	625±1,4	1225	158±4	450-1,0	882	1965
2MA36-61/2Y5	760±1,4	860	692	75H		140	695±1,4	1295	158±4	450-1,0	882	2230
2MA36-61/2Y2	760±1,4	860	692	75H		140	695±1,4	1295	158±4	450-1,0	882	2230
2MA36-61/4,6,8Y5	760±1,4	860	692	90H		170	625±1,4	1255	158±4	450-1,0	882	2050
2MA36-61/4,6,8Y2	760±1,4	860	692	90H		170	625±1,4	1255	158±4	450-1,0	882	2050
2MA36-62/4,6,8Y5	760±1,4	860	692	90H		170	695±1,4	1325	158±4	450-1,0	882	2280
2MA36-62/4,6,8Y2	760±1,4	860	692	90H		170	695±1,4	1325	158±4	450-1,0	882	2280
2MA36-71/4,6,8Y5	900±1,4	1000	750	100H	1002	210	645±1,4	1443	225±4	530-1,0	1031	3290
2MA36-71/4,6,8Y2	900±1,4	1000	750	100H		210	645±1,4	1443	225±4	530-1,0	1031	3290



VERTICAL ELECTRIC MOTORS OF BAOB5K TYPE

Explosion-proof asynchronous blown vertical electric motors of BAOB5K type are designed to drive oil booster pumps of HПБ and HПБ-M types, which operate in conditions of the moderate and cold climate, in places of operation where by production technology formation of explosive concentration of gases, vapor and dust is possible.

Electric motors are certificated in Russia; they have the certificate of conformity GOSTR and Ukrainian & Russian permits for their manufacture and application.

Explosion-proof version: 1ExdIIBT4.

Climatic versions: Y1; YXЛ1 (the motors are made of materials for operation at the temperature up to minus 60°C; fasteners are made of stainless steel).

Constructive mounting arrangement: IM 4011 – without feet, with flange on the frame, with one cylindrical shaft end; output shaft end is downward directed.

The motors are coupled with driving mechanisms by means of gear or elastic sleeve-bolt couplings. The motors are delivered with keys by GOST 23360 in full sets.

Cooling method: ICA0151 – motor case is made with pipes for outside air to pass. Outer and inner fans are placed on the motor shaft.

Protection degree: case and terminal box – IP54; housing of the outer fan – IP20.

Operating mode is continuous S1 from AC network, 50 Hz. Supply voltage of the motor is in accordance with GOST 183-74 - 6000 or 10000 V at a customer's agreement.

Motor run is direct, it is realized both with rated voltage, and with mains voltage reduction during the start up to 0,8 Unom. The motors are rated for 1000 starts per a year; they enable two cold starts successively with interval between starts from 3 up to 5 min, or one hot start. Interval between the subsequent starts is not less than three hours; admissible quantity of starts per a day is up to three starts.

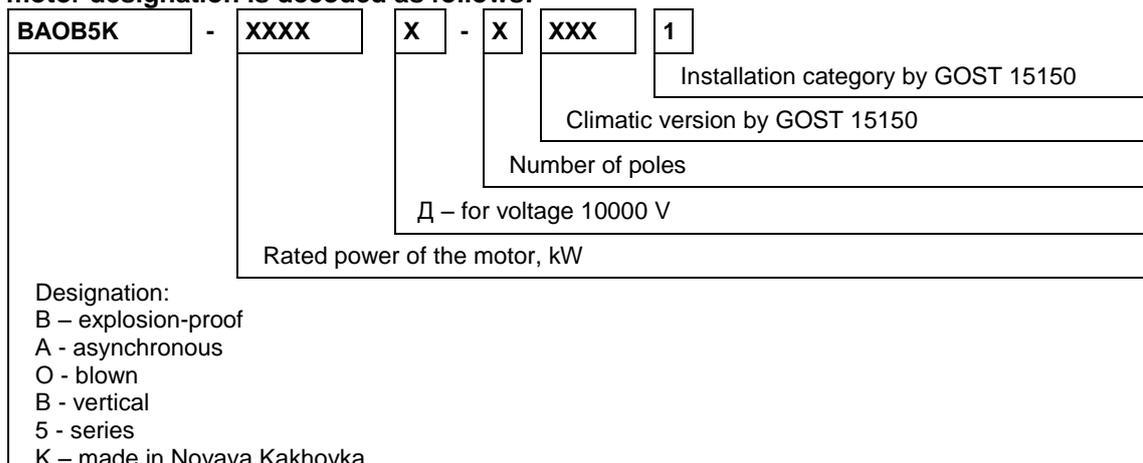
Constructional features: Motors BAOB5K have frictionless bearings manufactured by the firm SKF, Sweden. All electric motors of BAOB5K series in climatic version YXЛ1 are made with frictionless bearings with liquid lubrication in oil reservoirs without external oil circulation (in top and bottom bearing units). Oil reservoirs have remote-controlled electric heaters to heat oil at temperature below zero.

The terminal box has three power clamps and grounding clamps (inner and outer), it enables inlet of the armoured cable with copper or aluminum veins with dry bunching of cable conductors or filling with cable compound.

Winding of the rotor of electric motors for power up to 1000 kW is aluminium, and for power more than 1000 kW is copper. Insulation of stator winding is «MONOLITH-2» is made by technology of vacuum-pressure impregnation of windings by epoxide compound using insulants of heat-resistance class F.

Motors BAOB5K are equipped by temperature sensors for stator winding, bearings and oil in oil reservoirs. Sensors' terminals are brought in the separate terminal box. On panels of the electric motor there are places for installation of sensors to control vibration level in three measuring planes.

The motor designation is decoded as follows:



Example of designation of the asynchronous explosion-proof three-phase blown motor with squirrel-cage rotor, with explosion protection marking 1ExdIIBT4, for power 315 kW, voltage 6000 V, network frequency 50 Hz, with rotational speed 1500 rpm, climatic construction – YXЛ, installation category – 1, with left sense of rotation, in the order and documentation on the other item:

Electric motor BAOB5K-315-4YXЛ1 1ExdIIBT4, TY Y 31.1-32832237-014:2008

The same motor, climatic construction – Y:

Electric motor BAOB5K-315-4Y1 1ExdIIBT4, TY Y 31.1-32832237-014:2008



Example of designation of the asynchronous explosion-proof three-phase blown motor with squirrel-cage rotor, with explosion protection marking 1ExdIIBT4, for power 400 kW, voltage 10000 V, network frequency 50 Hz, with rotational speed 1500 rpm, climatic construction – УХЛ, installation category – 1, with left sense of rotation, in the order and documentation on the other item:

Electric motor BAOB5K-400Д-4УХЛ1 1ExdIIBT4, ТУ У 31.1-32832237-014:2008

The same motor, climatic construction – У:

Electric motor BAOB5K-400Д-4У1 1ExdIIBT4, ТУ У 31.1-32832237-014:2008

Example of designation of the asynchronous explosion-proof three-phase blown motor with squirrel-cage rotor, with explosion protection marking 1ExdIIBT4, for power 315 kW, voltage 6000 V, network frequency 50 Hz, with rotational speed 1000 rpm, climatic construction – УХЛ, installation category – 1, with right sense of rotation, in the order and documentation on the other item:

Electric motor BAOB5K-315-6УХЛ1 1ExdIIBT4, ТУ У 31.1-32832237-014:2008

The same motor, climatic construction – У:

Electric motor BAOB5K-315-6У1 1ExdIIBT4, ТУ У 31.1-32832237-014:2008

Example of designation of the asynchronous explosion-proof three-phase blown motor with squirrel-cage rotor, with explosion protection marking 1ExdIIBT4, for power 630 kW, voltage 10000 V, network frequency 50 Hz, with rotational speed 1000 rpm, climatic construction – УХЛ, installation category – 1, with right sense of rotation, in the order and documentation on the other item:

Electric motor BAOB5K-630Д-6УХЛ1 1ExdIIBT4, ТУ У 31.1-32832237-014:2008

The same motor, climatic construction – У:

Electric motor BAOB5K-630Д-6У1 1ExdIIBT4, ТУ У 31.1-32832237-014:2008

Technical data of electric motors BAOB5K are shown in table 59.

The dimensional, connecting dimensions and weight of motors are given in table 60.

At a customer's request the electric motors may be manufactured for other powers, voltages and current frequency, and with other mounting dimensions.

Table 59

Type of the motor	Power, kW	Voltage, V	Rotational speed (synch), rpm	Slip, %	Stator current, A	Eff., %	cosφ	I _{start} /I _n	M _{start} /M _n	M _{max} /M _n
BAOB5K(M) – 315 - 4	315	6000	1500	1,0	36,0	94,5	0,89	6,5	1,2	2,5
BAOB5K(M) – 400 - 4	400			1,0	45,5	95,0	0,89	6,5	1,2	2,5
BAOB5K(M) - 400Д - 4		10000		1,0	28,8	94,3	0,86	6,5	1,2	2,5
BAOB5K(M) – 800 - 4	800	6000		1,0	89,6	95,5	0,90	6,5	1,2	2,5
BAOB5K(M) - 800Д - 4		10000		1,0	53,9	95,2	0,90	6,0	1,2	2,5
BAOB5K(M)– 1250 - 4	1250	6000		0,6	139,5	95,8	0,90	6,5	1,1	2,5
BAOB5K(M)- 1250Д - 4		10000		0,6	83,9	95,6	0,90	6,5	1,1	2,5
BAOB5K(M)– 2000 - 4	2000	6000		0,6	221,8	96,4	0,90	6,5	1,1	2,5
BAOB5K(M) - 2000Д - 4		10000		0,6	133,4	96,2	0,90	6,5	1,1	2,5
BAOB5K(M) – 315 - 6	315	6000		1000	1,0	38,0	94,0	0,85	6,0	1,1
BAOB5K(M) – 400 - 6	400		1,0		48,0	94,3	0,85	6,0	1,1	2,2
BAOB5K(M) – 630 - 6	630	6000	0,8		73,3	95,1	0,87	6,0	1,1	2,2
BAOB5K(M) - 630Д - 6		10000	0,8	44,1	94,8	0,87	6,0	1,1	2,2	
BAOB5K(M) - 800 - 6	800	6000	1000	0,8	92,2	95,3	0,87	6,0	1,1	2,2
BAOB5K(M) - 800Д - 6		10000		0,8	55,9	95,0	0,87	6,0	1,1	2,2
BAOB5K(M) – 1000 - 6	1000	6000		0,6	121,0	95,8	0,83	5,0	1,0	2,1
BAOB5K(M) - 1000Д - 6		10000	0,6	72,8	95,5	0,83	5,0	1,0	2,1	
BAOB5K(M) – 1250 - 6	1250	6000	1000	0,6	151,0	96,0	0,83	5,0	1,0	2,1
BAOB5K(M) - 1250Д - 6		10000		0,6	90,8	95,8	0,83	5,0	1,0	2,1
BAOB5K(M) – 1600 - 6	1600	6000		0,6	192,4	96,4	0,83	5,0	1,0	2,1
BAOB5K(M) - 1600Д - 6		10000	0,6	115,7	96,2	0,83	5,0	1,0	2,1	



Type of the motor	Power, kW	Voltage, V	Rotational speed (synch), rpm	Slip, %	Stator current, A	Eff., %	cosφ	I _{start} /I _n	M _{start} /M _n	M _{max} /M _n
BAOB5K(M) - 2000 - 6	2000	6000		0,6	237,7	96,4	0,84	5,0	1,0	2,1
BAOB5K(M) - 2000Д - 6		10000		0,6	142,9	96,2	0,84	5,0	1,0	2,1
BAOB5K(M) - 2250 - 6	2250	6000		0,6	267,1	96,5	0,84	5,0	1,0	2,1
BAOB5K(M) - 2250Д - 6		10000		0,6	160,6	96,3	0,84	5,0	1,0	2,1

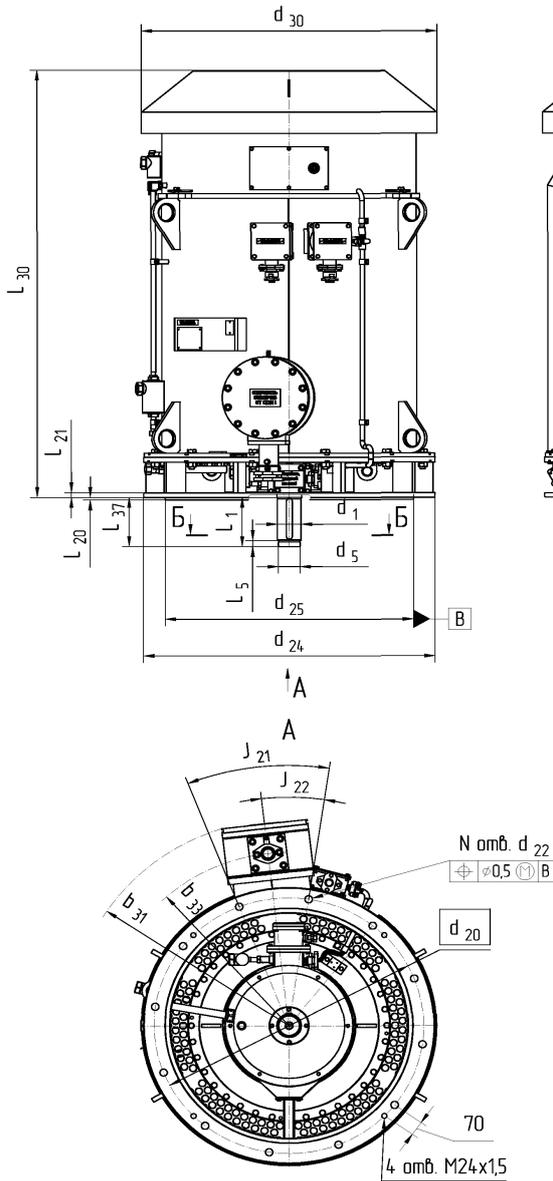


Figure 1

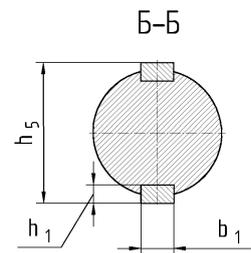
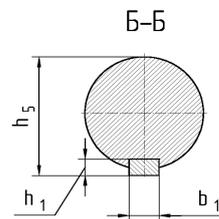
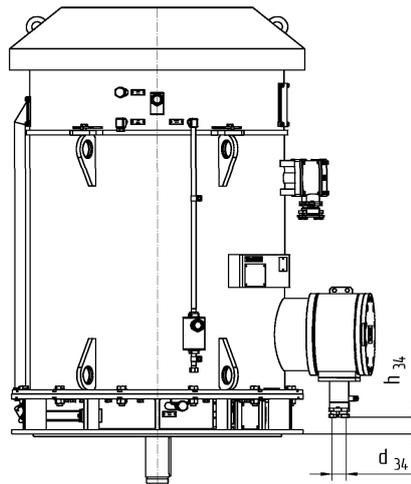


Figure 2
See the rest in Figure 1



Table 60

Type of the motor	Fig.	Overall dimensions, mm			Mounting dimensions, mm							
		b ₃₁	d ₂₄	d ₃₀	b ₁	b ₃₃	d ₁	d ₅	d ₂₀	d ₂₂	d ₂₅	d ₃₄
BAOB5K(M)-315-4	1	965	1150	1260	28	800	100 m6 ^(+0.035/+0.013)	-	1080	28	1000 ±0,028	45
BAOB5K(M)-400-4		995	1350	1370		830	110 m6 ^(+0.035/+0.013)		1250	35	1150 ±0,033	
BAOB5K(M)-400Д-4		1070				900			1400			
BAOB5K(M)-800-4		1075	1500	1450	32	910	120 m6 ^(+0.035/+0.013)		1600	42	1480 ±0,039	65
BAOB5K(M)-800Д-4		1150				980			1800			1680 ±0,046
BAOB5K(M)-1250-4		1225	1720	1780	36	1065	140 m6 ^(+0.040/+0.015)		1800	42	1680 ±0,046	65
BAOB5K(M)-1250Д-4		1420				1065						60
BAOB5K(M)-2000-4		1225	1920	1860	36	1065	140 m6 ^(+0.040/+0.015)		1800	42	1680 ±0,046	65
BAOB5K(M)-2000Д-4		1420				1255						60
BAOB5K(M)-315-6	1	1015	1350	1370	28	850	110 m6 ^(+0.035/+0.013)	M100x2	1250	35	1150 ±0,033	45
BAOB5K(M)-400-6		1140	1500	1605	32	980	120 m6 ^(+0.035/+0.013)	M110x2	1400		1290 ±0,039	
BAOB5K(M)-630-6						1050						
BAOB5K(M)-630Д-6		1220	980	1050	36	1065	140 m6 ^(+0.040/+0.015)	1800	42	1680 ±0,046	65	
BAOB5K(M)-800-6		1140	1255			60						
BAOB5K(M)-800Д-6		1220	1065	65								
BAOB5K(M)-1000-6		1225	1920	1825	36	1065	140 m6 ^(+0.040/+0.015)	1800	42	1680 ±0,046	65	
BAOB5K(M)-1000Д-6		1420				1255					60	
BAOB5K(M)-1250-6		1225	2100	1940	40	1165	150 m6 ^(+0.040/+0.015)	2000	42	1830 ±0,046	65	
BAOB5K(M)-1250Д-6	1420	1290				60						
BAOB5K(M)-1600-6	1325	2	2100	1940	40	1165	150 m6 ^(+0.040/+0.015)	2000	42	1830 ±0,046	65	
BAOB5K(M)-1600Д-6	1455					1290					60	
BAOB5K(M)-2000-6	1325					1165					65	
BAOB5K(M)-2000Д-6	1455					1290					60	
BAOB5K(M)-2250-6	1325					1165					65	
BAOB5K(M)-2250Д-6	1455					1290					60	



Table 60. Continuation

Type of the motor	Mounting dimensions, mm								J ₂₁	J ₂₂	N
	h ₁	h ₅	h ₃₄	L ₁	L ₅	L ₂₀	L ₂₁	L ₃₇			
BAOB5K(M)-315-4	16	106	35	250	-	10	20	250	45°	22°30'	8
BAOB5K(M)-400-4		116							30°	15°	12
BAOB5K(M)-400Д-4		127									
BAOB5K(M)-800-4	18	127	20	250	-	15	35	250	30°	15°	12
BAOB5K(M)-800Д-4	20	148									
BAOB5K(M)-1250-4											
BAOB5K(M)-1250Д-4	20	148	20	250	-	15	35	250	22°30'	11°15'	16
BAOB5K(M)-2000-4											
BAOB5K(M)-2000Д-4											
BAOB5K(M)-315-6	16	116	80	240	30	10	20	240	30°	15°	12
BAOB5K(M)-400-6											
BAOB5K(M)-630-6											
BAOB5K(M)-630Д-6	18	127	100	240	30	10	30	240	30°	15°	12
BAOB5K(M)-800-6											
BAOB5K(M)-800Д-6											
BAOB5K(M)-1000-6	20	148	120	280	30	15	35	280	22°30'	11°15'	16
BAOB5K(M)-1000Д-6											
BAOB5K(M)-1250-6											
BAOB5K(M)-1250Д-6	22	168	150	280	30	15	35	280	22°30'	11°15'	16
BAOB5K(M)-1600-6											
BAOB5K(M)-1600Д-6											
BAOB5K(M)-2000-6											
BAOB5K(M)-2000Д-6											
BAOB5K(M)-2250-6											
BAOB5K(M)-2250Д-6											



Table 60. Continuation

Type of the motor	L ₃₀ ,mm	Weight, kg	Type of the motor	L ₃₀ ,mm	Weight, kg
BAOB5KM-315-4УХЛ1	2100	2900	BAOB5K-315-4У1, УХЛ1	1825	2750
BAOB5KM-400-4УХЛ1	2090	3300	BAOB5K-400-4У1, УХЛ1	1840	3150
BAOB5KM-400Д-4УХЛ1	2270	3520	BAOB5K-400Д-4У1, УХЛ1	2015	3370
BAOB5KM-800-4УХЛ1	2310	4560	BAOB5K-800-4У1, УХЛ1	2115	4410
BAOB5KM-800Д-4УХЛ1	2535	5500	BAOB5K-800Д-4У1, УХЛ1	2340	5350
BAOB5KM-1250-4УХЛ1	2550	8000	BAOB5K-1250-4У1, УХЛ1	2550	7750
BAOB5KM-1250Д-4УХЛ1	2780	9100	BAOB5K-1250Д-4У1, УХЛ1	2780	8850
BAOB5KM-2000-4УХЛ1	2720	10000	BAOB5K-2000-4У1, УХЛ1	2720	9750
BAOB5KM-2000Д-4УХЛ1	3030	11300	BAOB5K-2000Д-4У1, УХЛ1	3030	11050
BAOB5KM-315-6УХЛ1	2090	4000	BAOB5K-315-6У1, УХЛ1	1880	3800
BAOB5KM-400-6УХЛ1	2150	4260	BAOB5K-400-6У1, УХЛ1	1940	4060
BAOB5KM-630-6УХЛ1	2185	5850	BAOB5K-630-6У1, УХЛ1	1995	5650
BAOB5KM-630Д-6УХЛ1	2360	6500	BAOB5K-630Д-6У1, УХЛ1	2165	6300
BAOB5KM-800-6УХЛ1	2310	7150	BAOB5K-800-6У1, УХЛ1	2120	6950
BAOB5KM-800Д-6УХЛ1	2480	8000	BAOB5K-800Д-6У1, УХЛ1	2290	7750
BAOB5KM-1000-6УХЛ1	2400	7300	BAOB5K-1000-6У1, УХЛ1	2400	7050
BAOB5KM-1000Д-6УХЛ1	2630	8100	BAOB5K-1000Д-6У1, УХЛ1	2630	7850
BAOB5KM-1250-6УХЛ1	2500	8500	BAOB5K-1250-6У1, УХЛ1	2500	8250
BAOB5KM-1250Д-6УХЛ1	2730	9500	BAOB5K-1250Д-6У1, УХЛ1	2730	9250
BAOB5KM-1600-6УХЛ1	2610	10000	BAOB5K-1600-6У1, УХЛ1	2610	9750
BAOB5KM-1600Д-6УХЛ1	2870	11000	BAOB5K-1600Д-6У1, УХЛ1	2870	10750
BAOB5KM-2000-6УХЛ1	2730	11200	BAOB5K-2000-6У1, УХЛ1	2730	10950
BAOB5KM-2000Д-6УХЛ1	3000	12500	BAOB5K-2000Д-6У1, УХЛ1	3000	12250
BAOB5KM-2250-6УХЛ1	2850	13000	BAOB5K-2250-6У1, УХЛ1	2850	12750
BAOB5KM-2250Д-6УХЛ1	3090	14500	BAOB5K-2250Д-6У1, УХЛ1	3090	14250



VERTICAL ELECTRIC MOTORS OF BACO5K TYPE

Explosion-proof vertical asynchronous three-phase AC electric motors BACO5K with squirrel-cage rotor are rated for continuous operating mode S1 as direct drive of the fans in air-cooling devices.

Explosion-proof version: 1ExdIIBT4

Climatic construction: Y1; XΠ1.

Constructive mounting arrangement: M 9633

Protection degree: the case and terminal box — IP54.

Cooling method: ICA0141 — blown with self-ventilation.

Motor run is direct, it is realized both at rated voltage, and at mains voltage reduction during the start up to 0,8 Unom.

The motors have frictionless bearings. Lubrication of the bearings is consistent.

Motors are made with one projecting conic shaft end in accordance with GOST 12081.

Winding insulation materials of the stator belong to heat-resistance class "F".

The terminal box has three power clamps and grounding clamps, it enables inlet of the armoured cable with copper or aluminum veins. The terminal box enables turning around 90° and 180°. Following information is stipulated in the order: - «terminal box downwards», «upwards», «leftwards», «rightwards», if you see on the motor installed on feet (outlet shaft end facing upwards) from the side of the terminal box.

The motors enable right and left senses of rotation.

At a customer's request the electric motors can be manufactured for other power, voltage, current frequency, with other climatic version, and also with other mounting dimensions in accordance with demands of the contract.

At a customer's request the electric motors can be completed with

- bearings of firm SKF;
- magneto-liquid sealer;
- places for vibration sensors;
- resistance thermometer detectors to control bearings temperature;
- place for installation of the terminal box.

Motors BACO5K-37-24 can be manufactured with cylindrical shaft end (see Fig. 2) by GOST 12080

The motor designation is decoded as follows:

BACO5K	-	37, 55, 75, 90	-	24, 32	-	Y, XΠ	1
		Power, kW			Number of poles		Installation category by GOST 15150
						Climatic construction by GOST 15150	
Designation: B - explosion-proof A – asynchronous C– special O - blown 5 – series number K - manufactured in Novaya Kahovka							

Electric motors **BACO5K** are completely interchangeable with types BACO2 and BACO4, thus 24-pole motors BACO5K have following advantages before analogues:

- Direct saving of user's operating costs — $\cos\phi$ of these motors is higher in 10-15%, than $\cos\phi$ of analogous motors of other manufacturers, that considerably reduces input current (in 10-15%, too).
- Reduction in load on the foundation - weight of motors is reduced in 20-30 % in comparison with analogues.

Technical data of the motors are specified in Table 61.

Overall and mounting dimensions and motor weight are shown in Table 62 and in figure 1.

Overall and mounting dimensions and weight of the BACO5K-37-24 motor with cylindrical shaft end are shown in figure 2.



Type of the motor	Power, kW	Voltage, V	Rotational speed, rpm	Eff., %	cos φ
BACO5K-37-24	37	380	250	90,0	0,70
BACO5K-55-24	55			91,0	0,70
BACO5K-75-24	75			92,0	0,70
BACO5K-90-24	90			92,1	0,71
BACO5K-30-32	30		187,5	89,4	0,70
BACO5K-75-32	75	91,0		0,71	

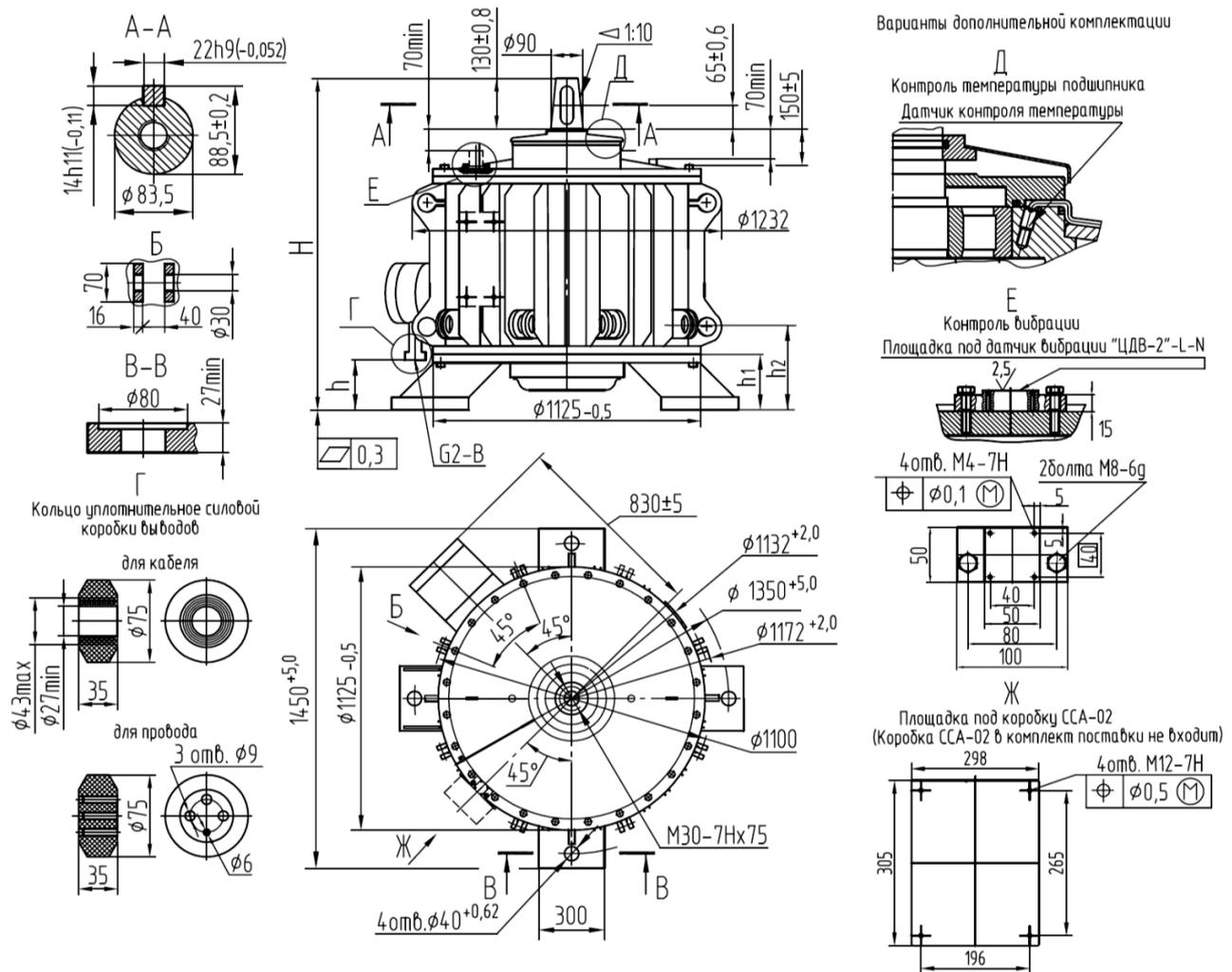


Figure 1. Overall and mounting dimensions of BACO5K motors

Table 62

Type of the motor	H	h	h ₁	h ₂	Weight, kg
BACO5K-37-24	1116 ^{+4,2}	170 ±2	345±3	412	1400
BACO5K-55-24	1266 ^{+5,0}	270 ±2	445±4	512	1600
BACO5K-75-24	1310 ^{+5,0}				1760
BACO5K-90-24	1130 ^{+4,2}	0	170±3	237	2000
BACO5K-30-32	990 ^{+3,6}				1500
BACO5K-75-32	1170 ^{+5,0}				2090

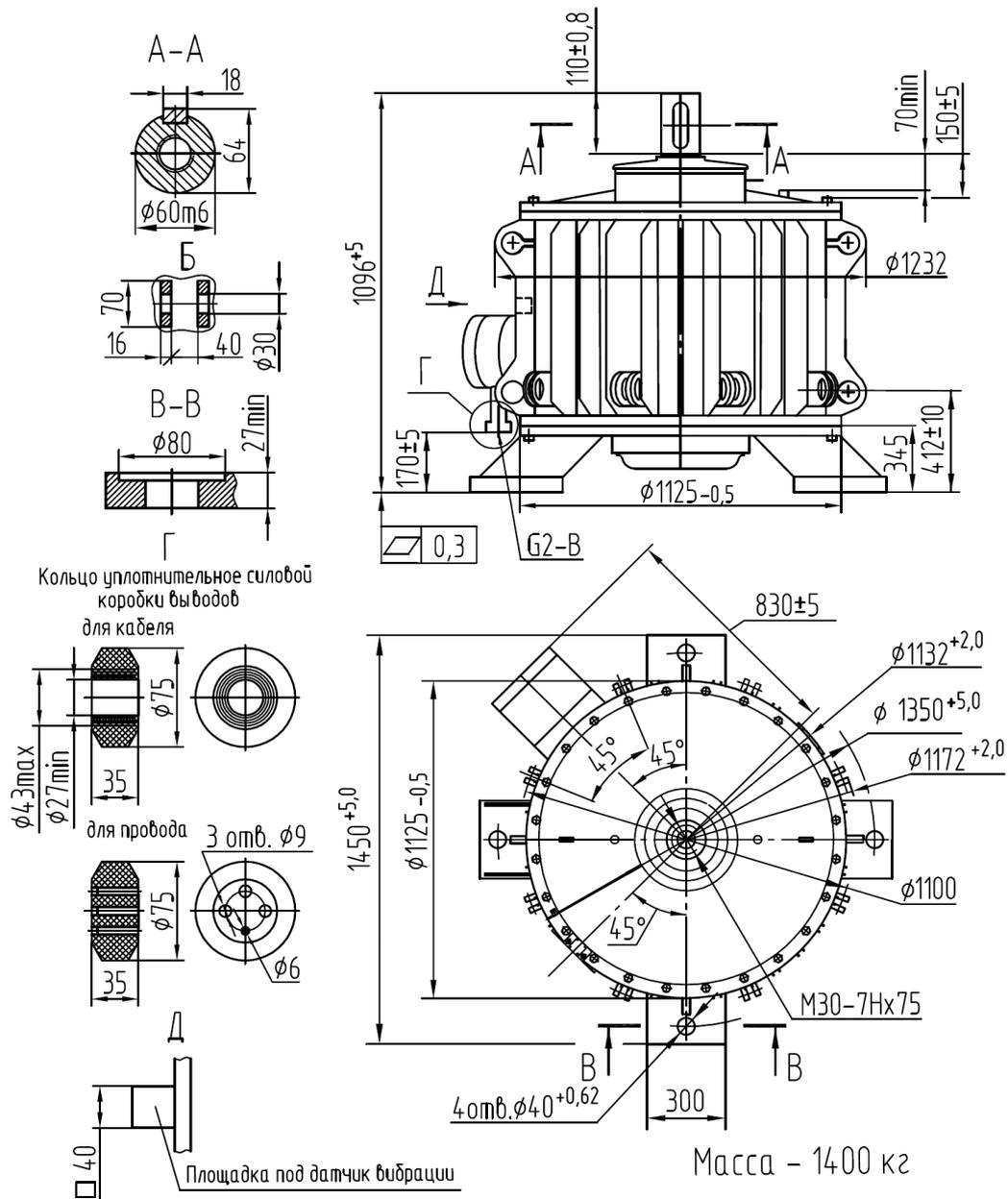


Figure 2. Overall and mounting dimensions and weight of the BACO5K-37-24 motor with cylindrical shaft end



ELECTRIC MOTOR MA37-62/4ВПУ2

Asynchronous three-phase explosion-proof motors with squirrel-cage rotor are intended for national economy and for export to the countries with temperate climate. They are intended for drives completing of vertical pumps when used for pumping over of the oil products in explosively dangerous premises of all classes and in the outside installations.

Climatic version - "Y", location category 2

Explanation of designations of the motor MA-37-52/4ВПУ2:

MA - asynchronous machine

37 - designation of the series

5 - designation of dimension

2 - designation of stator core length, cm

4- number of poles

B - shaft

П - hollow

Y - climatic version

2 - location category

The motors are explosion-proof with an impenetrable shell.

Design version of the motors - IM3011.

Method of cooling - ICA01.

Degree of protection of the main shell - IP54, of the outside fan unit - IP20.

Stator winding insulation is of class "F".

Ambient temperature range is from - 40°C to + 40°C, upper value of relative humidity is 100% at + 25°C.

The main parameters and weight of the motors are listed in Table 63.

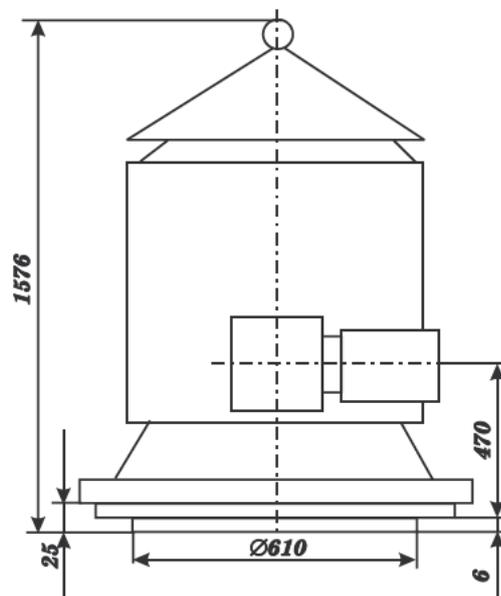


Table 63

Motor type	Rated data			Eff., %	$\frac{M_{start}}{M_{rated}}$	Weight, kg
	Power, kW	Voltage, V	Synchronous rotation speed, rpm			
MA37-52/4ВПУ2	160	380/660	1500	92,9	2.5	1640



1.3. VERTICAL ELECTRIC MOTORS

ELECTRIC MOTORS OF ACBO 15, BACB 17, ACBO5K TYPES

The motors are designed to drive (directly) the fans in cooling towers and rated for operation from AC network with voltage: ACBO15 — 380V; BACB 17 — 6000V, ACBO5K — 380 V and 380/660 V, and frequency 50Hz.

Motors ACBO15 and BACB 17.

Operating mode is continuous. Climatic construction: Y1.

Stator winding insulation is thermosetting of «Monolith 2» type of heat-resistance class «F».

Motors have constructive mounting arrangement:

ACBO 15 — vertical — IM8421;

BACB 17 —vertical —IM8221.

Degree of protection: case and terminal box:

ACBO — blown, with protection degree IP44;

BACB — with water cooling, with protection degree IP44.

Along the shaft these electric motors can be completed with magnetic-liquid sealing, which prevents ingress of moisture, dust, etc. in the bearing assembly.

Motors ACBO5K.

Operating mode is continuous. Climatic construction and installation category - Y1.5 by GOST 15150-69.

Electric motors ACBO5K are designed to replace electric motors ACBO15.

Constructive mounting arrangement: IM 9631

Protection degree: the case and terminal box — IP54.

Cooling method: ICA0141 — blown, with self-ventilation.

Motor run is direct, it is realized both at rated voltage and at mains voltage drop during the start up to 0,8 Unom.

Motors have frictionless bearings. Bearing lubrication – consistent grease.

Motors have left and right sense of rotation.

Stator winding insulation is thermosetting of «Monolith 2» type of heat-resistance class «F».

The terminal box has three power clamps and grounding clamps, it enables inlet of the armoured cable with copper or aluminum veins.

Temperature sensors are installed in frontal parts of the winding to control stator temperature.

The resistance thermal converters with nonlinear static characteristic 50M are installed to control bearing temperature; at a customer's request no resistance thermal converters may be installed.

At a customer's request the motors may be completed with magnetic-liquid sealing on the side of the working shaft end.

The motor designation is decoded as follows:

ACBO5K	-	75	-	34	Y1.5
					Type of climatic version and installation category by GOST 15150
					Number of poles
					Power of the motor in kW

A - asynchronous,
C - special,
B - vertical,
O - blown
5 - series number
K – made in Novaya Kakhovka

Technical data on the motors ACBO15, ACBO5K, BACB 17 are specified in Tables 64-67 and in Figures.

Table 64

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	Weight, kg
ACBO15-23-34MY1	75	176.5	87.5	3240

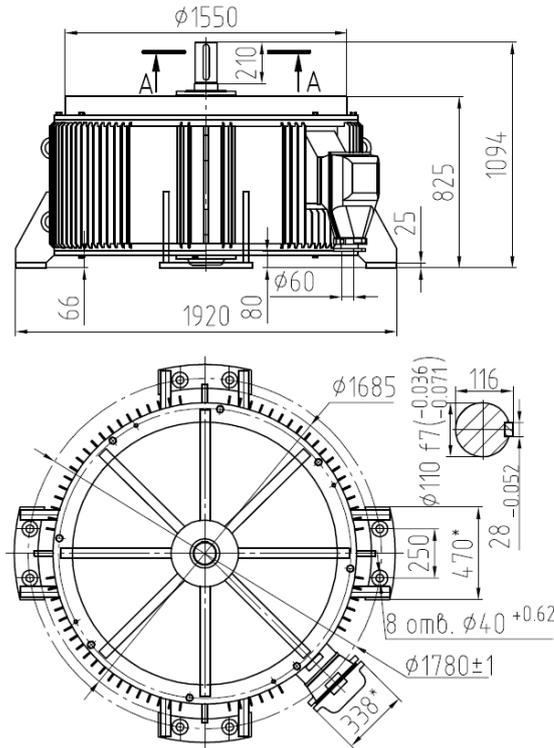


Fig. 1 Overall and mounting dimensions of the electric motors ACBO15-23-34MY1

Table 65

Motor type	Rated power, kW	Rated voltage, V	Connecting circuit of stator windings	Synchronous rotational speed, rpm	Eff. %	cosφ
ACBO5K-37-24	37	380	Y	250,0	90,0	0,70
ACBO5K-55-24	55				91,0	
ACBO5K-75-24	75				92,0	
ACBO5K-90-24	90				92,1	0,71
ACBO5K-30-32	30	380	Y	187,5	89,5	0,7
		380/660	Y/Δ		89,7	0,68
ACBO5K-55-32	55	380	Y		90,0	0,71
		380/660	Y/Δ		90,3	
ACBO5K-75-32	75	380	Y		91,1	0,71
		380/660	Y/Δ		90,7	0,7
ACBO5K-90-32	90	380	Y		91,8	0,71
		380/660	Y/Δ		91,0	0,72
ACBO5K-110-32	110	380	Y		92,0	0,71
		380/660	Y/Δ		92,0	
ACBO5K-132-32	132	380	Y	92,1		
		380/660	Y/Δ	92,2		
ACBO5K-75-34	75	380	Y	176,4	90,0	0,7
ACBO5K-75-34*	75	380	Y		87,5	0,68

Note: * with copper rotor

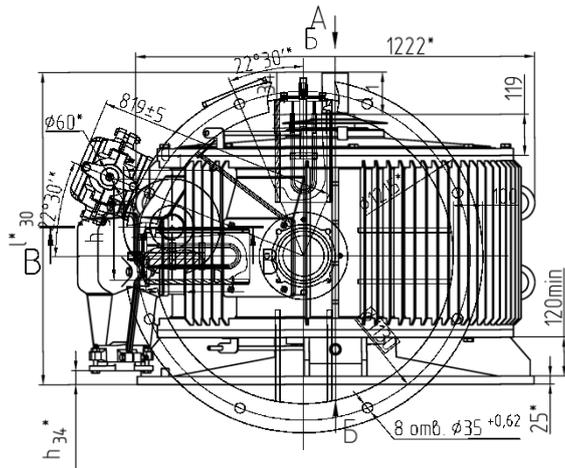


Fig. 2

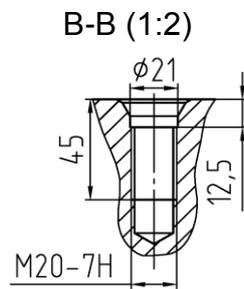


Fig. 3

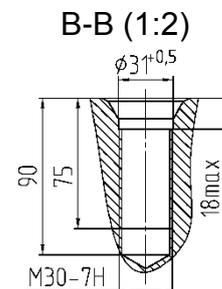


Fig. 4

Overall and mounting dimensions of ACBO5K electric motors

Table 66

Motor type	b ₁	d ₁	h ₅	Fig.	h ₃₄	l ₁	l ₃₀	Weight, kg
ACBO5K-37-24	22 ^{-0,52}	80h6 ^(-0,052)	88	2, 3	45	130±0,8	960	1650
ACBO5K-55-24	28 ^{-0,52}	110f7 ^($\frac{-0,036}{-0,071}$)	116	2, 4	163	210±0,925	1170	1880
ACBO5K-75-24								2045
ACBO5K-90-24								2175
ACBO5K-30-32	22 ^{-0,52}	80h6 ^(-0,052)	88	2, 3	45	130±0,8	960	1650
ACBO5K-55-32	28 ^{-0,52}	110f7 ^($\frac{-0,036}{-0,071}$)	116	2, 4	163	210±0,925	1170	1880
ACBO5K-75-32								2045
ACBO5K-90-32								2175
ACBO5K-110-32								2620
ACBO5K-132-32								2870
ACBO5K-75-34					185		1360	2185

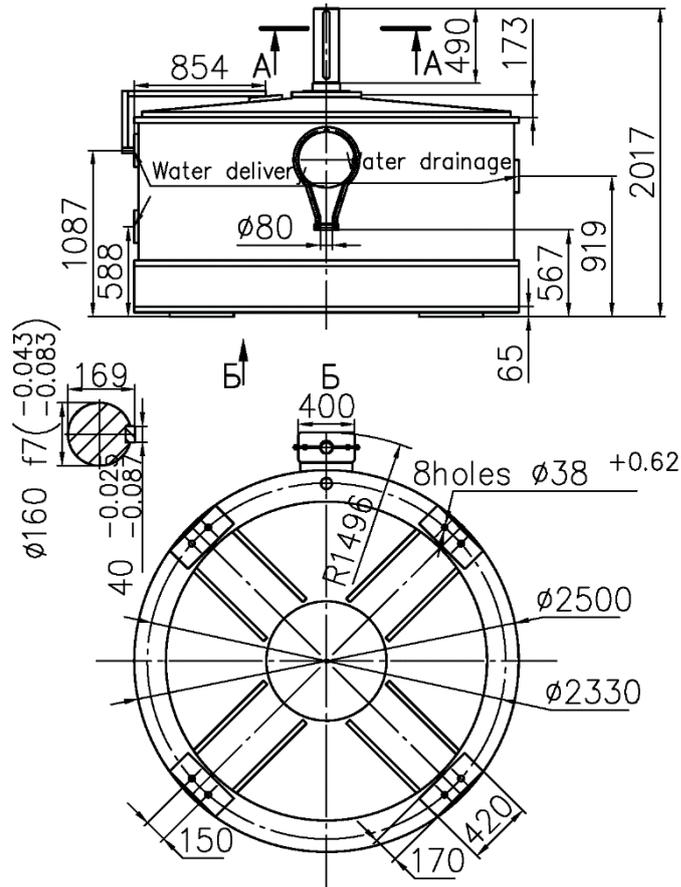


Fig. 5 Overall and mounting dimensions of electric motor BACB17-40-52Y1

Table 67

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %
BACB17-40-52Y1	200	115.4	84.8



VERTICAL ELECTRIC MOTORS OF 4AOB TYPE

Vertical asynchronous electric motors of 4AOB type with squirrel-cage rotor are used to drive mechanisms with easy starting conditions (pumps and other mechanisms with similar characteristics).

The motors are designed to operate from AC network, 50 Hz, 6000 V.

At a customer's request the electric motors can be manufactured for other power, voltage, and rotational speed.

Rated operating mode of the motors — continuous (S1) by GOST 183-74.

Constructive mounting arrangement — IM3011.

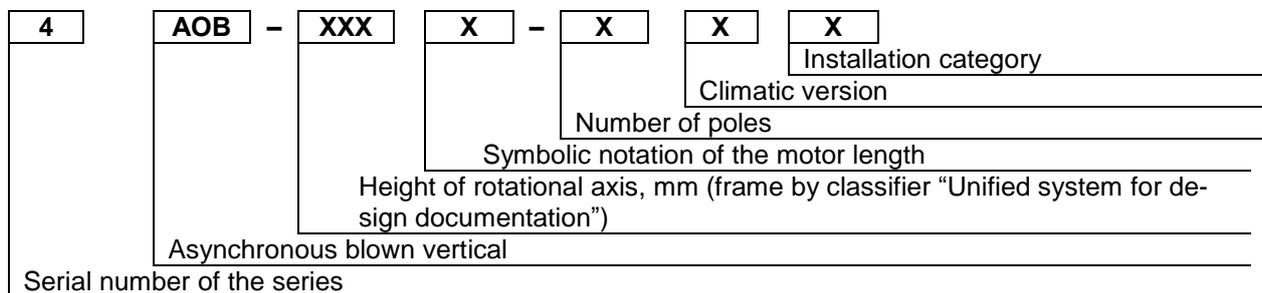
Degree of protection of the motor— IP44, outlet device — IP55, housing of the outer fan — IP21.

Winding insulation of the stator is thermosetting — “Monolith-2”.

Cooling method is self-ventilation.

Phase connecting circuit — “star”.

The motor designation is decoded as follows:

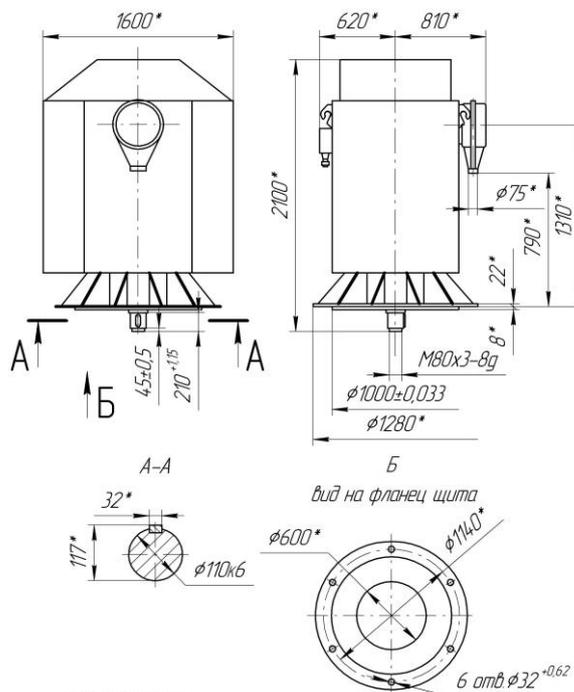


The motors are rated for two senses of rotation.

Technical data of the motors are specified in Table 68.

Table 68

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	Weight, kg
4AOB-400Y-4Y3	500	1500	94.8	0.88	3420





VERTICAL ELECTRIC MOTORS OF АОДВ-355 SERIES

ТУ У 31.1-30955275-006:2005

Vertical asynchronous three-phase electric motors of АОДВ series with squirrel-cage rotor are designed to drive mechanisms, which don't demand rotational speed control (pumps, fans, smoke exhausters, etc.).

The motors are rated for operation from AC network, 50 Hz, 6000 V.

Climatic version of the motors — Y2.

Rated operating mode — continuous, S1.

Constructive mounting arrangement — IM3011.

Motor cooling method — ICO151.

Protection degree of the motor — IP54, the outlet device — IP55, housing of the outside fan — IP21.

Winding insulation of the stator is thermosetting of type "Monolith-2".

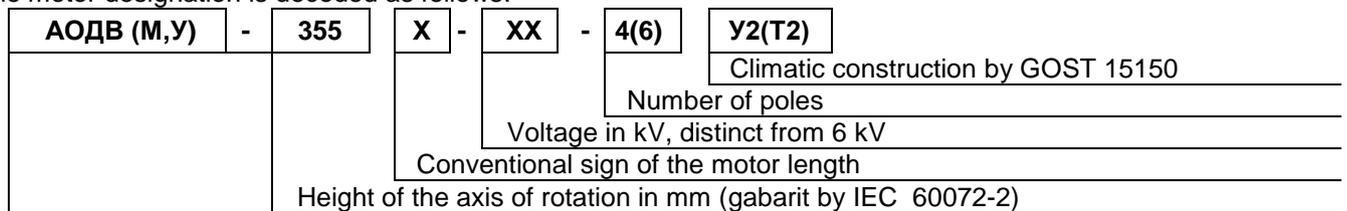
Stator winding has six outlet ends fixed on four insulators in the terminal box. Phase connecting circuit — "star".

The motors enable right and left senses of rotation. Sense of rotation can be changed only in rest state.

Mounting and connecting dimensions of motors of АОДВ types meet dimensions of AO4-355 and AO3-400 series, АОДВМ types — AB series of gabarit 11.

At customer's request motor can be manufactured under agreed technical requirements on different working supply voltage with different mounting and connecting dimensions, with temperature sensors and places for vibration detectors.

The motor designation is decoded as follows:



Designation:

АОДВ — asynchronous blown vertical electric motor;

АОДВМ — asynchronous blown vertical electric motor modified;

АОДВМУ — asynchronous blown vertical electric motor modified, unified;

Information concerning designation of motor of АОДВ type, power 250 kW, voltage 6000 V, rotational speed (synchronous) 1500 rpm, mains frequency 50 Hz, right sense of rotation, with M56x4 thread on working shaft end when ordering and in documentation on another product:

«Electric motor of АОДВ-355X-4Y2 type, 250 kW, 6000 V, 50 Hz, right sense of rotation, figure B.1, specifications ТУ У 31.1-30955275-006:2005».

Principal data of the motors at rated voltage 6000 V and mains frequency 50 Hz are specified in Table 69. Overall, mounting and connecting dimensions and motor weight are shown in Table 70 and at figures, specified in Table 70.

Table 69

Motor type	Power, kW	Voltage, V	Stator current A	Slip, %	Eff., %	cos φ	M _{max} /M _{nom}	M _{start} /M _{nom}	I _{start} /I _{nom}
Synchronous rotational speed 1500 rpm									
АОДВ(М,У)-355Xk-4Y2	200	6000	23,3	1,4	94,1	0,88	2,2	1,2	5,6
АОДВ(М,У)-355X-4Y2	250	6000	29,0	1,4	94,3	0,88	2,1	1,1	5,5
АОДВ(М,У)-355Y-4Y2	315	6000	36,5	1,4	94,5	0,87	2,1	1,2	6,3
Synchronous rotational speed 1000 rpm									
АОДВ(М,У)-355X-6Y2	200	6000	24,8	1,3	93,7	0,83	2,3	1,4	6,0
АОДВ(М,У)-355Y-6Y2	250	6000	30,5	1,4	94,0	0,84	2,0	1,2	5,4

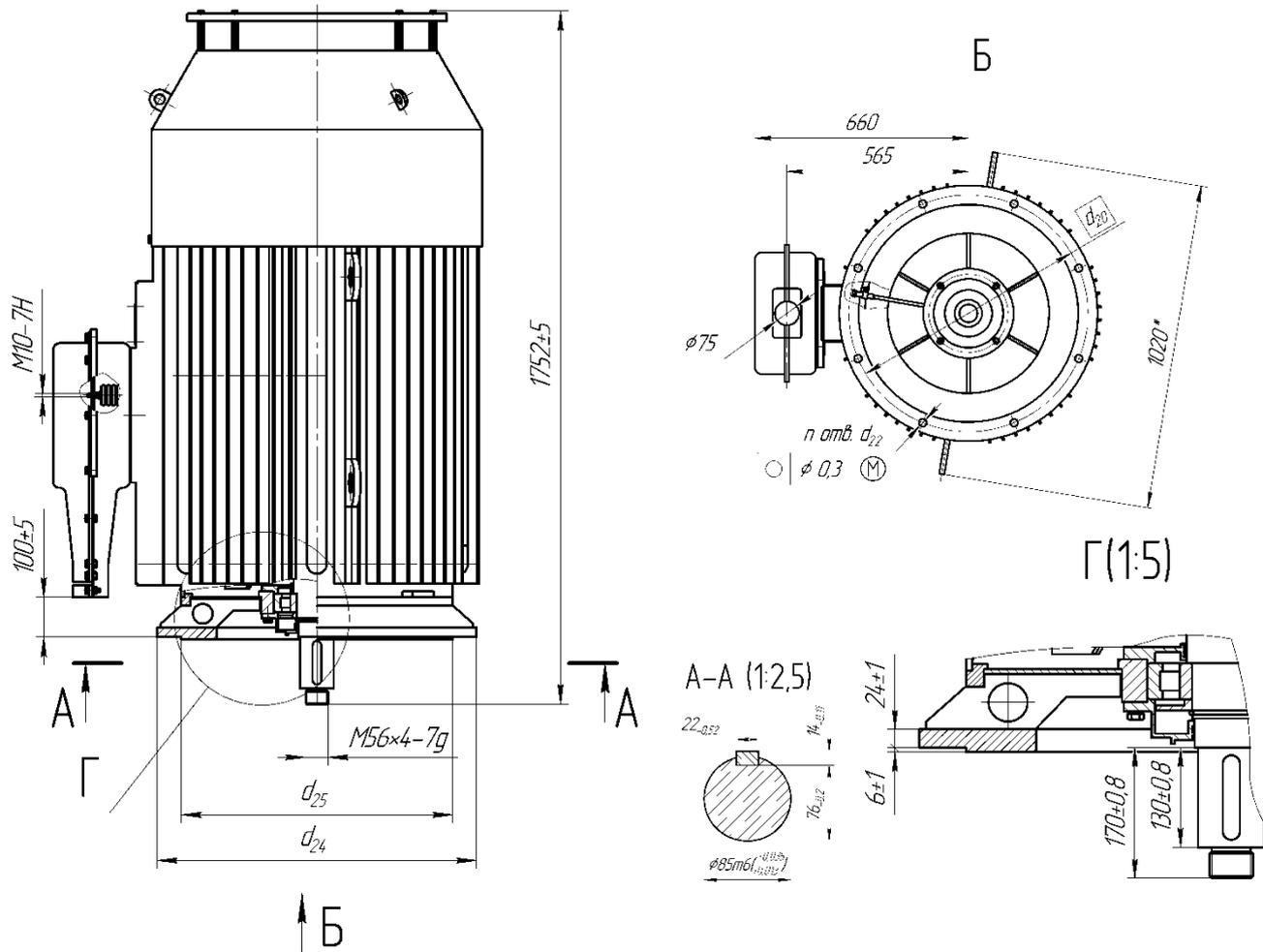


Figure 1.
Overall , mounting and connecting dimensions of AOДВ(M)-
355 motors

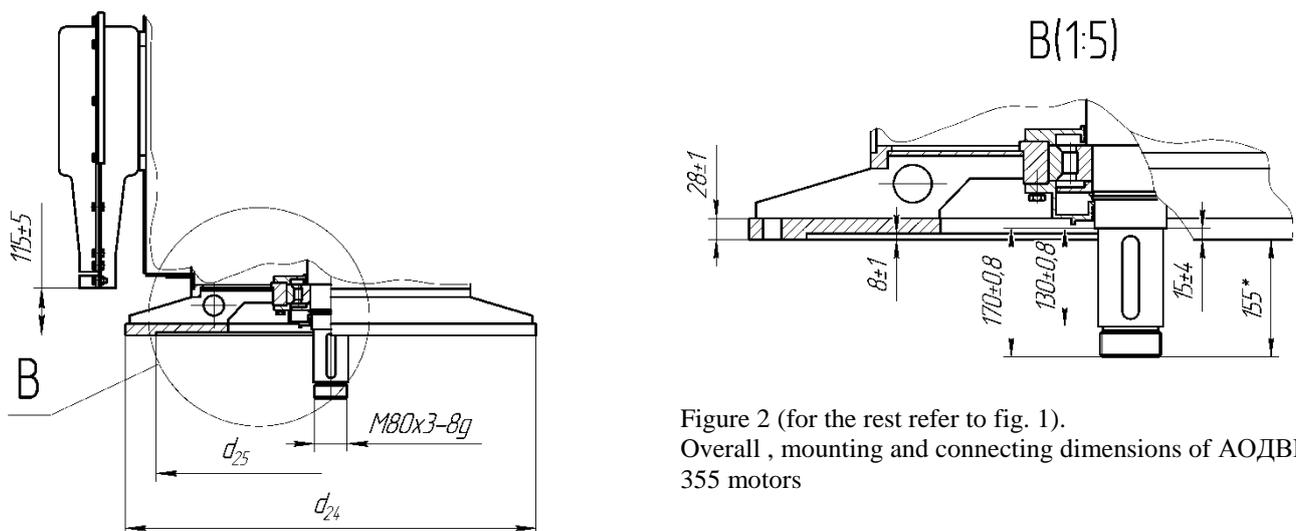


Figure 2 (for the rest refer to fig. 1).
Overall , mounting and connecting dimensions of AOДВМУ-
355 motors



Table 70

Motor type	d ₂₀	d ₂₂	d ₂₄	d ₂₅	n	Fig.	Weight, kg
АОДВ-355Xk-4Y2	740	24 ^{+0.52}	800	680±0,025	8	1	2040
АОДВ-355X-4Y2							2100
АОДВ-355Y-4Y2							2180
АОДВ-355X-6Y2							2100
АОДВ-355Y-6Y2							2180
АОДВМ-355Xk-4Y2	940	28 ^{+0.52}	1000	880±0,028	8	1	2050
АОДВМ-355X-4Y2							2110
АОДВМ-355Y-4Y2							2190
АОДВМ-355X-6Y2							2110
АОДВМ-355Y-6Y2							2190
АОДВМУ-355Xk-4Y2	925	26 ^{+0.52}	1000	850±0,028	12	2	2050
АОДВМУ-355X-4Y2							2110
АОДВМУ-355Y-4Y2							2190
АОДВМУ-355X-6Y2							2110
АОДВМУ-355Y-6Y2							2190



VERTICAL ELECTRIC MOTORS OF BAH-5, BAH-5A TYPES

Vertical asynchronous electric motors of BAH-5 type with squirrel-cage rotor are used to drive vertical hydraulic pumps for national economy needs, and electric motors of BAH-5A type – for NPP pumps. Electric motors are produced for inner and export deliveries.

These electric motors meet IEC standards.

The motors are rated for continuous operating mode S1 from AC network, 50 Hz, 6000 V.

Climatic construction – Y, T, allocation category – 3 by GOST 15150-69 and GOST 15543.1-89.

Winding insulation of the motor is thermosetting «Monolith-2», it belongs to heat-resistance class "F" by GOST 8865-93, and with temperature usage as class "B". Temperature excess for motor parts meets GOST 183-74.

The stator winding has six terminals, which go to one terminal box. Phase connection is "star". Winding ends are connected in "zero" on one insulator inside the terminal box.

Constructive mounting arrangement - IM8425 by GOST 2479-79.

During operation motors take weight loads from rotating pump parts and water reaction. In motors of 118, 143 gabarits the flange with the shaft are made separately, in motor of 173, 215 gabarits the flange with the shaft are made as an integral item.

Motors are made with right sense of rotation, if you see from side of the working shaft end.

Protection degree of the motor meets IP23, of the terminal box - IP55 by GOST 17494-87.

Cooling method - ICA01 GOST 20459-87.

The motor designation is decoded as follows:

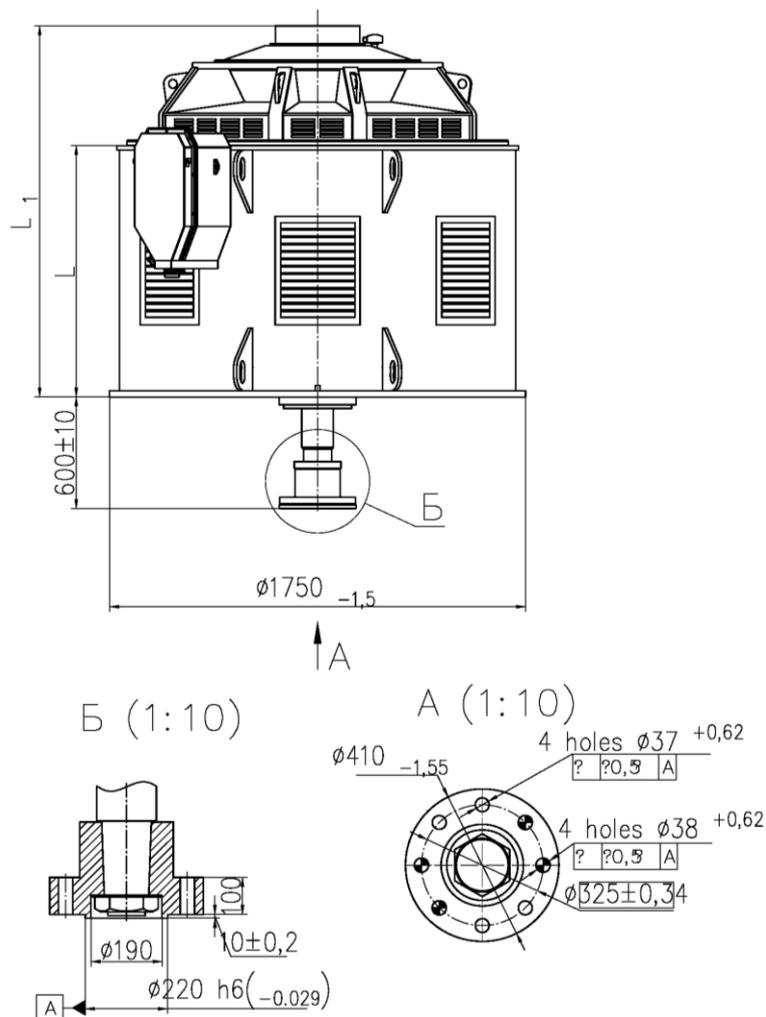
BAH5A	-	X	-	X	K	Э	M	X	3
								Allocation category	
								Climatic construction (Y, T);	
								With coolers for sea water	
								Version for installing the electromechanical drive to turn pump blades	
								With contact rings	
								Number of poles	
								Motor power, kW	
<p>Designation: B – vertical A – asynchronous H – to drive pumps 5 – number of series A – for NPP.</p>									

Technical data of the motors are shown in Table 71. Overall and mounting dimensions are given in figures.

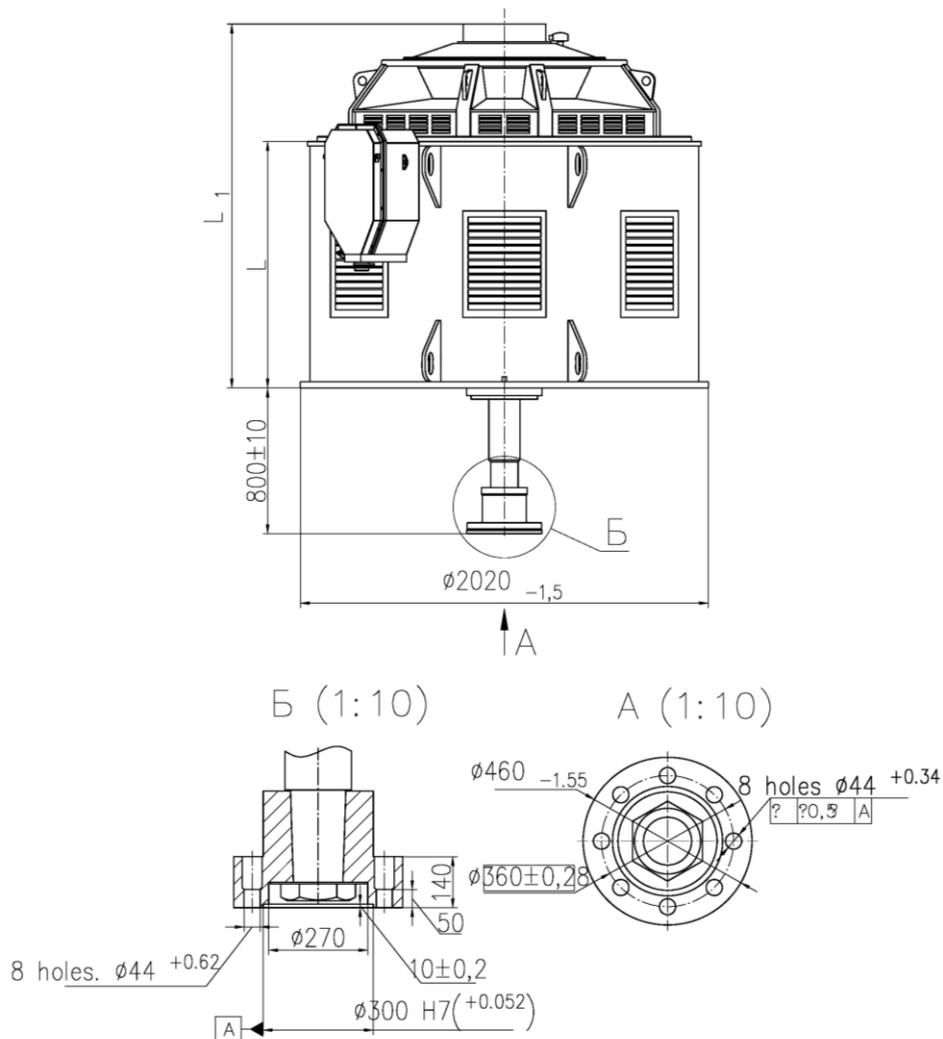


Table 71

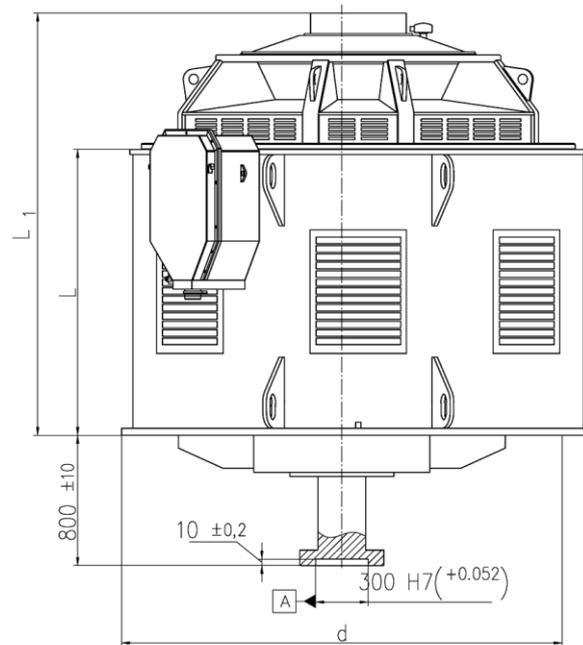
Motor type	Power, kW	Rotational speed, rpm	Eff., %	cos φ	Weight, kg
BAH5-400-8	400	740	92,5	0,84	5050
BAH5-800-8	800		94,4	0,86	6200
BAH5-1000-8	1000		94,4	0,86	6700
BAH5-315-10	315	587	91,8	0,77	5000
BAH5-630-10	630		93,5	0,79	6150
BAH5-800-10	800		93,9	0,82	6650
BAH5-1000-10	1000	592	94,2	0,84	8680
BAH5-1250-10	1250		94,4	0,83	9400
BAH5-1600-10	1600		94,6	0,86	11690
BAH5-315-12	315	490	91,7	0,73	5250
BAH5-630-12	630		93,2	0,74	6650
BAH5-800-12	800	493	94,2	0,80	8610
BAH5-1000-12	1000		94,2	0,81	9350
BAH5-1250-12	1250		94,2	0,83	11565
BAH5-1600-12	1600		94,5	0,84	12285
BAH5-2000-12	2000		94,8	0,84	13530
BAH5-2500-12	2500		94,8	0,85	17690
BAH5-500-16	500		368	92,3	0,70
BAH5-630-16	630	93,1		0,72	9020
BAH5-800-16	800	93,5		0,76	10700
BAH5-1000-16	1000	93,8		0,77	11750
BAH5-1250-16	1250	94,2		0,77	12905
BAH5-1600-16	1600	94,5		0,83	15055
BAH5-2500-16	2500	94,7		0,83	20250



Electric motor	L, mm	L1, mm
BAH5-400-8	970	1660
BAH5-800-8	1050	1690
BAH5-1000-8	1150	1840
BAH5-315-10	970	1660
BAH5-630-10	1050	1690
BAH5-800-10	1150	1840
BAH5-315-12	970	1660
BAH5-630-12	1150	1840

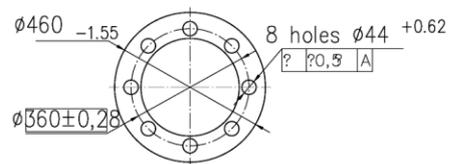


Electric motor	L, mm	L1, mm
BAH5-1000-10	1150	1840
BAH5-1250-10	1250	1940
BAH5-800-12	1150	1840
BAH5-1000-12	1250	1940
BAH5-500-16	950	1640
BAH5-630-16	1150	1840

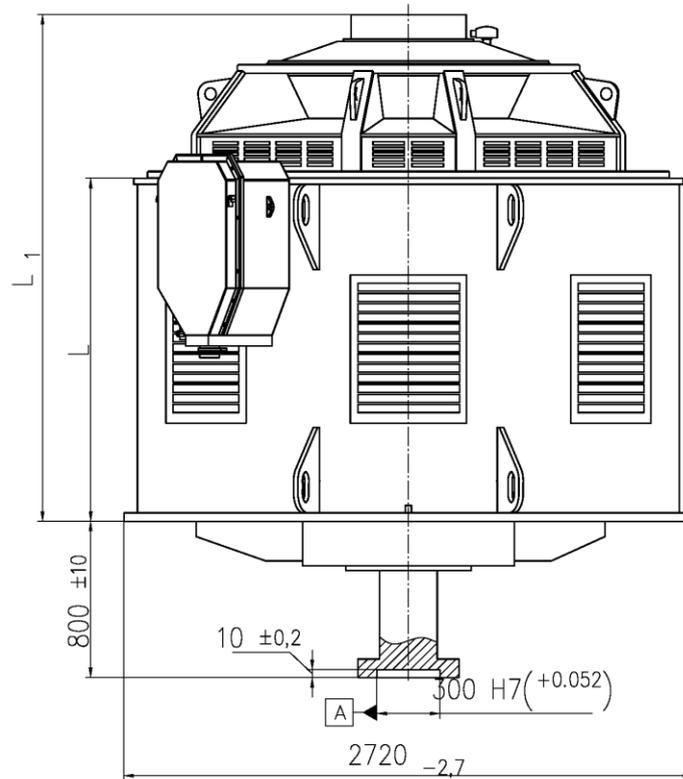


↑ A

A (1:10)

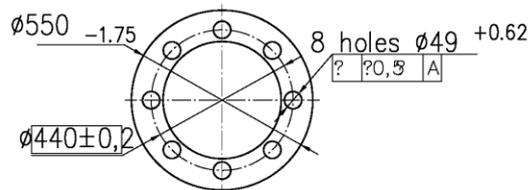


Electric motor	L, mm	L ₁ , mm	d, mm
BAH5-1600-10	1050	1740	2220-2,2
BAH5-1250-12			
BAH5-1600-12	1150	1840	
BAH5-2000-12	1250	1940	
BAH5-800-16	950	1640	
BAH5-1000-16	1150	1840	
BAH5-1250-16	1250	1940	
BAH5-1600-16	1150	1840	2720-2,7



↑
A

A (1:10)



Electric motor	L, mm	L1, mm
BAH5-2500-12	1150	2050
BAH5-2500-16	1250	2150



VERTICAL ELECTRIC MOTORS OF BAH3-5, BAH3-5A TYPE

Asynchronous vertical electric motors of BAH3-5 type with squirrel-cage rotor are designed to drive vertical hydraulic pumps for national economy needs, electric motors of BAH3-5A type – to driven vertical hydraulic pumps delivered for NPP.

These electric motors meet IEC standards.

The motors are rated for continuous operating mode S1 from AC network, 50 Hz, 6000 V.

The motors are manufactured with frictionless bearings with one shaft end. Bearing lubrication is liquid in oil reservoirs.

Winding insulation of the motor is thermosetting «Monolith-2», it belongs to heat-resistance class "F" by GOST 8865-93, and with temperature usage as class "B". Temperature excess for motor parts meets GOST 183-74.

The stator winding has six terminals, which go to one terminal box. Phase connection is "star". Winding ends are connected in "zero" on one insulator inside the terminal box.

Protection degree of the motor – IP 54, terminal box - IP55.

Constructive mounting arrangement - IM8425 by GOST 2479-79.

During operation motors take weight loads from rotating pump parts and water reaction.

Motors are made with right sense of rotation, if you see from side of the working shaft end.

Motor is cooled by self-ventilation. Motor cooling method: ICW37A71 by GOST 20459.

Climatic construction and allocation category – УХЛ4. The electric motors can be manufactured in tropical version TB3.

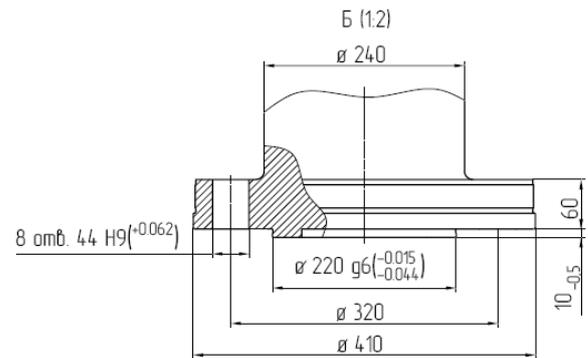
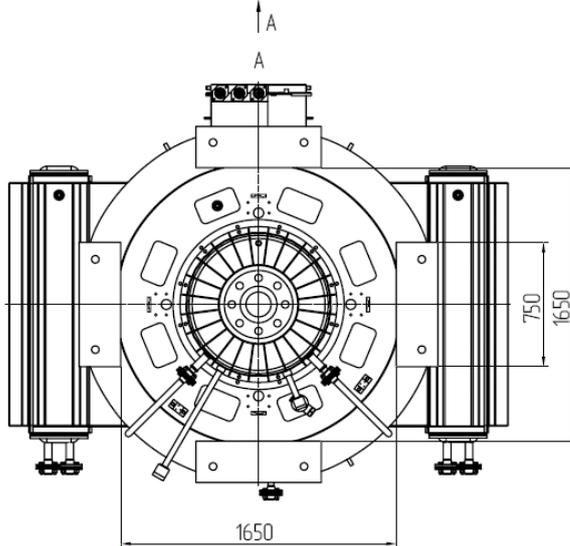
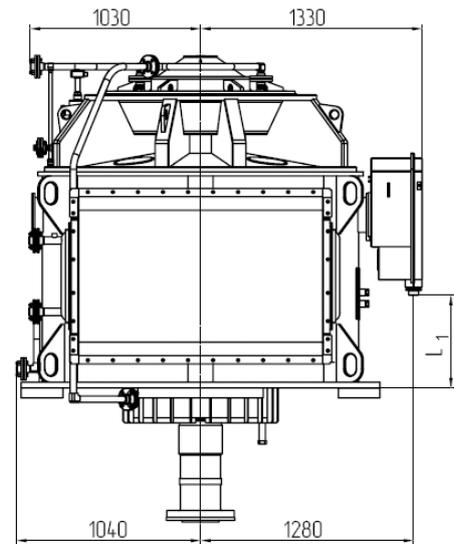
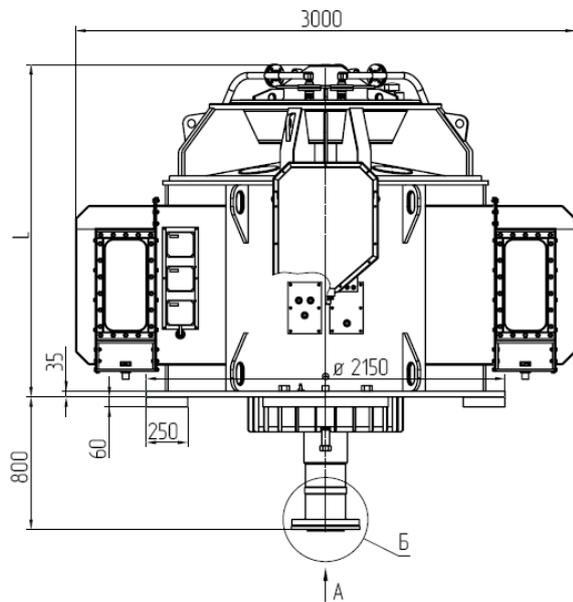
The motor designation is decoded as follows:

BAH3-5(A)	-	XXXX	-	10		XXX		X
				Number of poles		Climatic construction		Allocation category
		Rated power, kW						
Designation: B – vertical A – asynchronous H – to drive the pump 3 – protected 5 – series number A – for operation at NPP								

Technical data of the motors are shown in Table 72. Overall and mounting dimensions – in figure.

Table 72

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	Weight, kg	Type of the pump
BAH3-5-1000-10	1000	592	95	0,82	11800	VA 5500-50A
BAH3-5-1250-10	1250	592	95	0,82	12500	VA 4500-50A



Electric motor	L, mm	L ₁ , mm
BAH3-5-1000-10	2010	570
BAH3-5-1250-10	2110	670



VERTICAL ELECTRIC MOTORS BAH3-5A-1250-12Y3

Asynchronous vertical electric motor BAH3-5-5A-1250-12Y3 with squirrel-cage rotor is designed to drive a vertical pump of ОПБ 5-110 МБ type in monoblock construction, which is installed at "Zaporozhskaya NPP".

The electric motor is rated for continuous operating mode S1 from AC network, 50 Hz, 6000 V.

Protection degree of the motor – IP 54, outlet stator device - IP55.

Constructive mounting arrangement - IM4011 by GOST 2479-79. The motor is installed directly on the flange of the pump case, and it makes a monoblock unit with the pump.

Climatic construction and allocation category – Y3.

The motors are manufactured with frictionless bearings with one shaft end. Bearing lubrication is consistent.

The motors are made with right sense of rotation, if you see from side of the working shaft end.

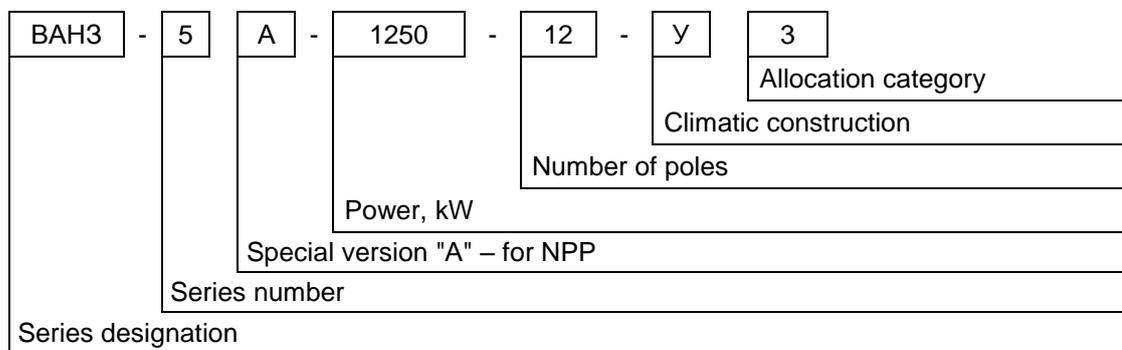
The motor shaft is coupled with the pump shaft by flexible coupling.

Winding insulation of the motor is thermosetting of «Monolith-2» type, it belongs to heat-resistance class "F" by GOST 8865-93, and with temperature usage as class "B". Temperature excess for motor parts meets GOST 183-74.

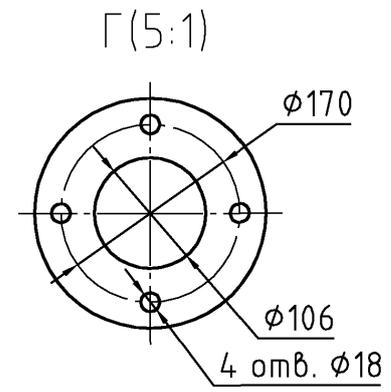
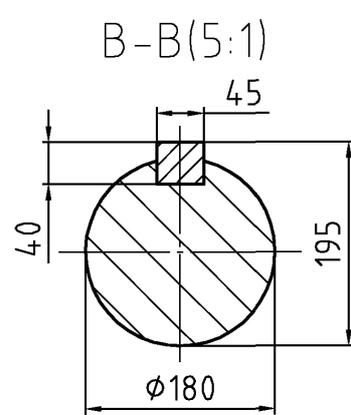
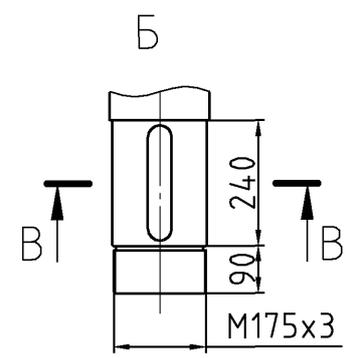
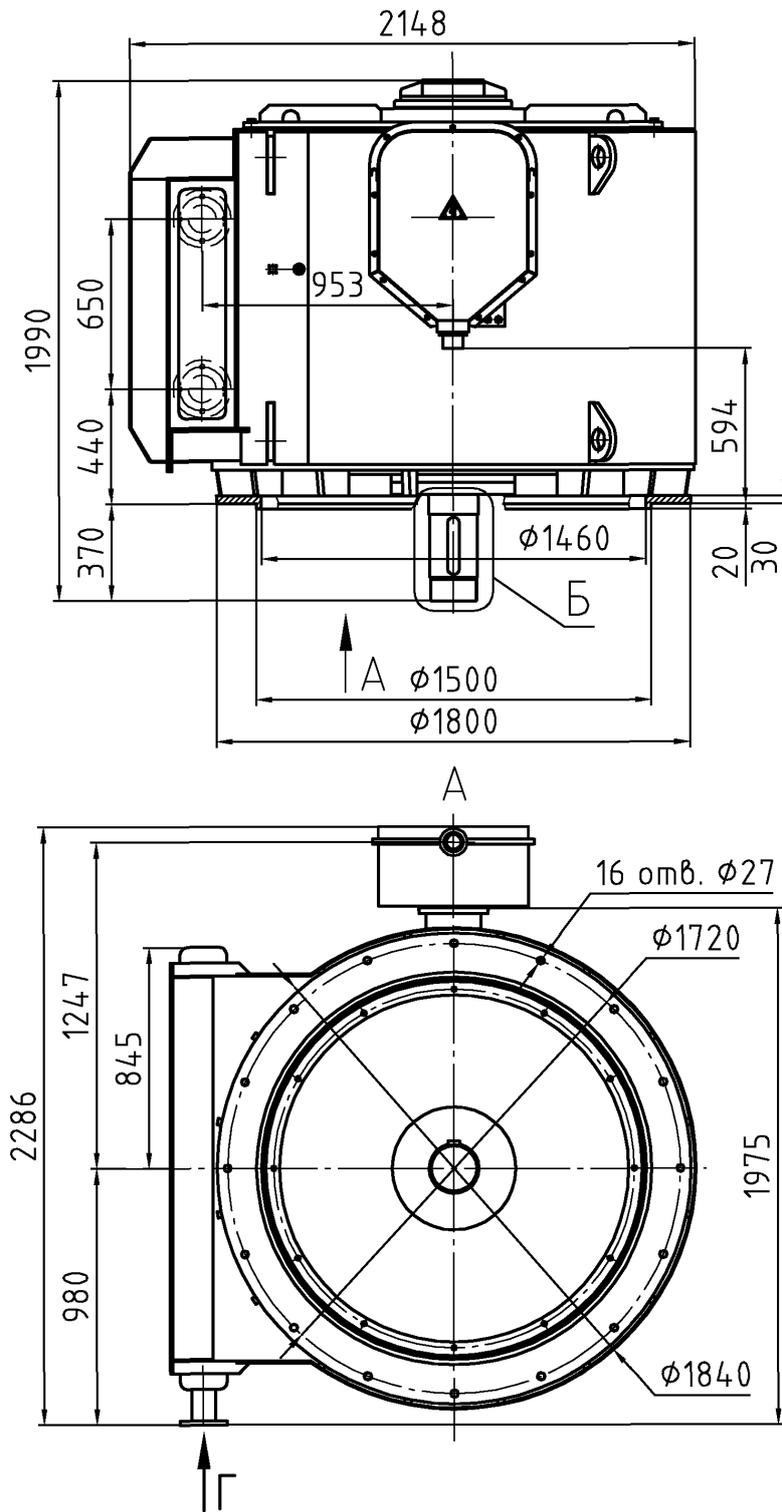
The stator winding has six terminals, which go to one terminal box. Phase connection is "star". Winding ends are fixed on four insulators inside the outlet device.

Motor is cooled by self-ventilation. Motor cooling method: ICW37A71 by GOST 20459.

The motor designation is decoded as follows:



Motor type	Power, kW	Rotational speed, (synch.), rpm	Eff., %	cos φ	Weight, kg
BAH3-5A-1250-12Y3	1250	495	95,7	0,84	8500





VERTICAL ELECTRIC MOTORS OF AB5A TYPE

Vertical asynchronous electric motors of AB5A type with squirrel-cage rotor are used to drive vertical hydraulic pumps delivered to NPP. Electric motors are produced for inner and export deliveries.

These electric motors meet IEC standards.

The motors are rated for continuous operating mode S1 from AC network, 50 Hz, 6000 V.

The motors are manufactured with frictionless bearings with one shaft end. Bearing lubrication of electric motors AB5A-800 is consistent, bearing lubrication of AB5A-1000 and AB5A-2000 motors is liquid in oil reservoirs.

Winding insulation of the motor is thermosetting «Monolith-2», it belongs to heat-resistance class "F" by GOST 8865-93, and with temperature usage as class "B". Temperature excess for motor parts meets GOST 183-74.

The stator winding has six terminals, which go to one terminal box. Phase connection is "star". Winding ends are connected in "zero" on one insulator inside the terminal box.

Protection degree of the motor meets IP 54, of the terminal box - IP55.

Constructive mounting arrangement – IM 4011 by GOST 2479-79.

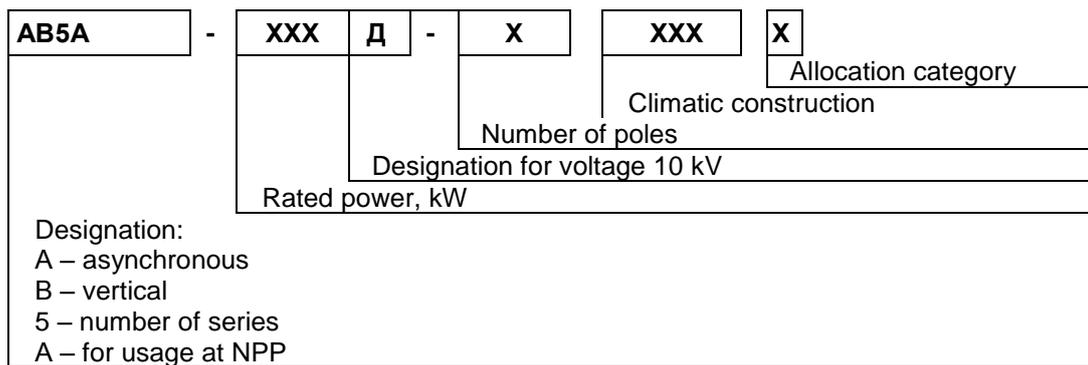
The motor shaft is coupled with the pump shaft by flexible coupling, thus axial efforts should not affect on the motor shaft.

Motors are made with right sense of rotation, if you see from side of the working shaft end.

Cooling method - ICW37A81 GOST 20459-87.

Climatic construction and allocation category is УХЛ4. Electric motors of tropical version TB3 may be manufactured. .

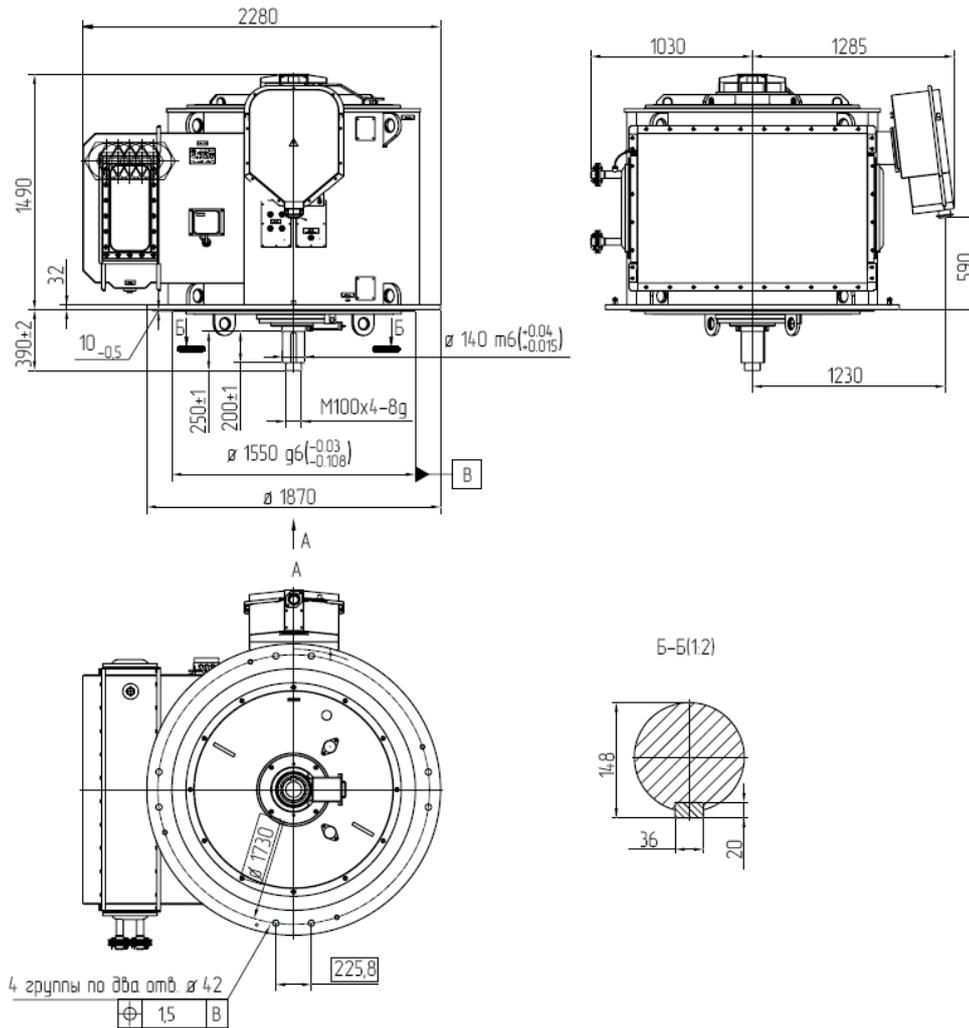
The motor designation is decoded as follows:



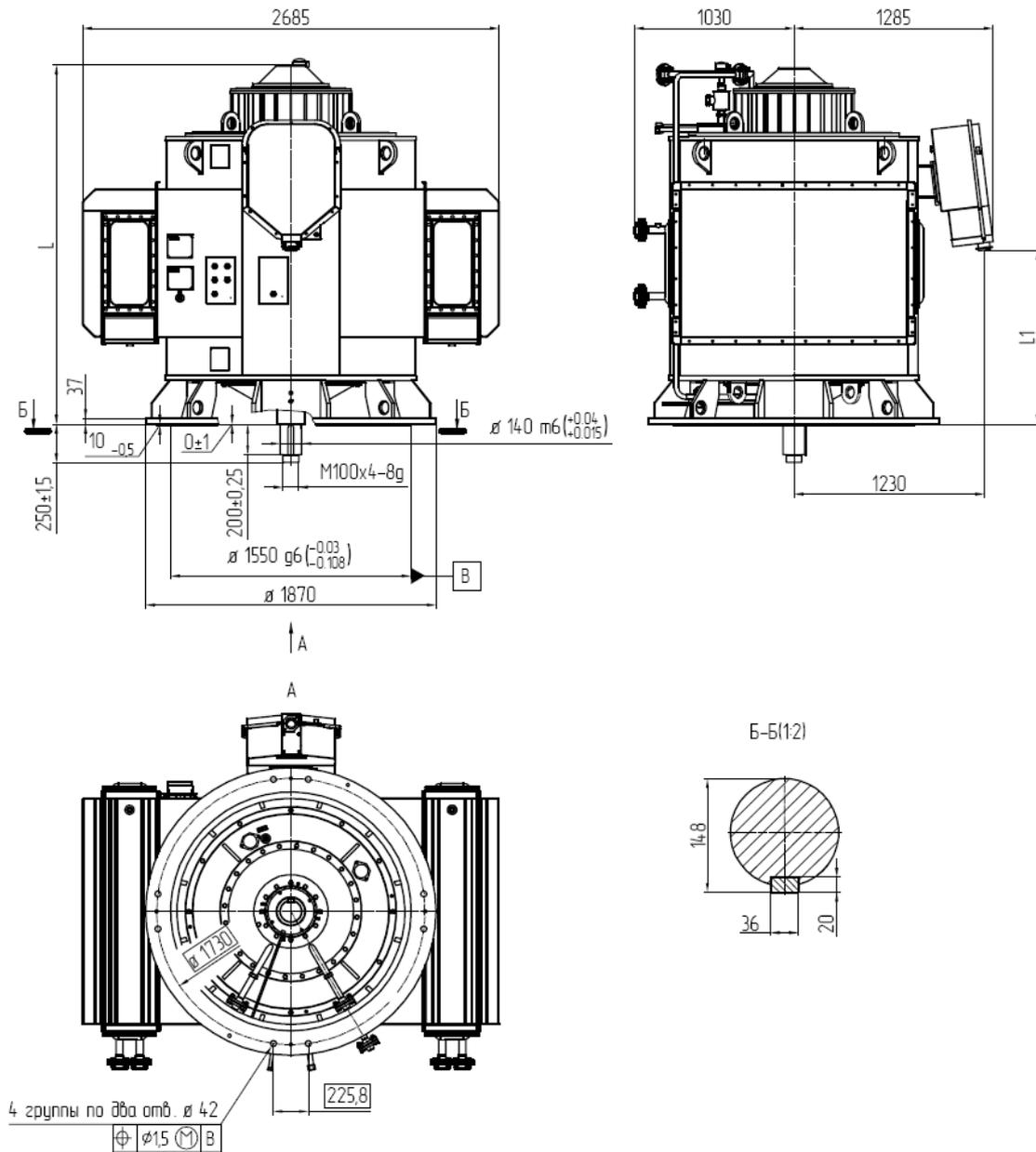
Technical data of the motors are specified in the Table 73. Overall and mounting dimensions are given in figures.

Table 73

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	Weight, kg	Type of the pump
AB5A-500-4УХЛ4	500	1490	95,0	0,89	3900	КЭНА 1050-100
AB5A-1000-4УХЛ4	1000		95,5	0,90	6800	АКсВА 1000-190-1
AB5A-1250-4УХЛ4	1250		95,0	0,88	8800	КЭНА 1250-250
AB5A-2000-4УХЛ4	2000		96,0	0,90	9900	АКсВА 2200-220-1
AB5A-2000Д-4УХЛ4		95,6	0,89	10600	КЭНА 2245-220	
AB5A-800Д-6УХЛ4	800	990	95	0,86	7700	КЭНА 2000-100
AB5A-800-8УХЛ4		740	95,0	0,83	6300	АКсВА 1500-120-2



AB5A-800-8УХЛ4 electric motor



Name of the motor	L, mm	L1, mm
AB5A-1000-4УХЛ4	2130	930
AB5A-2000-4УХЛ4	2330	1130



VERTICAL ELECTRIC MOTORS OF AOB5A TYPE

Vertical asynchronous electric motors of AOB5A type with squirrel-cage rotor are designed to drive pumps delivered to NPP. Electric motors are produced for inner and export deliveries.

These electric motors meet IEC standards.

The motors are rated for continuous operating mode S1 from AC network, 50 Hz, 6000 V and 10000 V.

The motors are manufactured with frictionless bearings with one shaft end. Bearing lubrication is consistent.

Winding insulation of the motor is thermosetting «Monolith-2», it belongs to heat-resistance class "F" by GOST 8865-93, and with temperature usage as class "B". Temperature excess for motor parts meets GOST R 52776.

The stator winding has six terminals, which go to one terminal box. Phase connection is "star". Winding ends are connected in "zero" on one insulator inside the terminal box.

Protection degree of the motor meets IP 54, of the stator input device - IP55, of the outer fan – IP21.

Constructive mounting arrangement – IM 4011 by GOST 2479-79.

The motor shaft is coupled with the pump shaft by flexible coupling, thus axial efforts should not affect on the motor shaft.

Motors are made with right sense of rotation, if you see from side of the working shaft end.

Cooling method - ICA 0151 by GOST 20459-87.

Climatic construction and allocation category is УХЛ4.

The motor designation is decoded as follows:

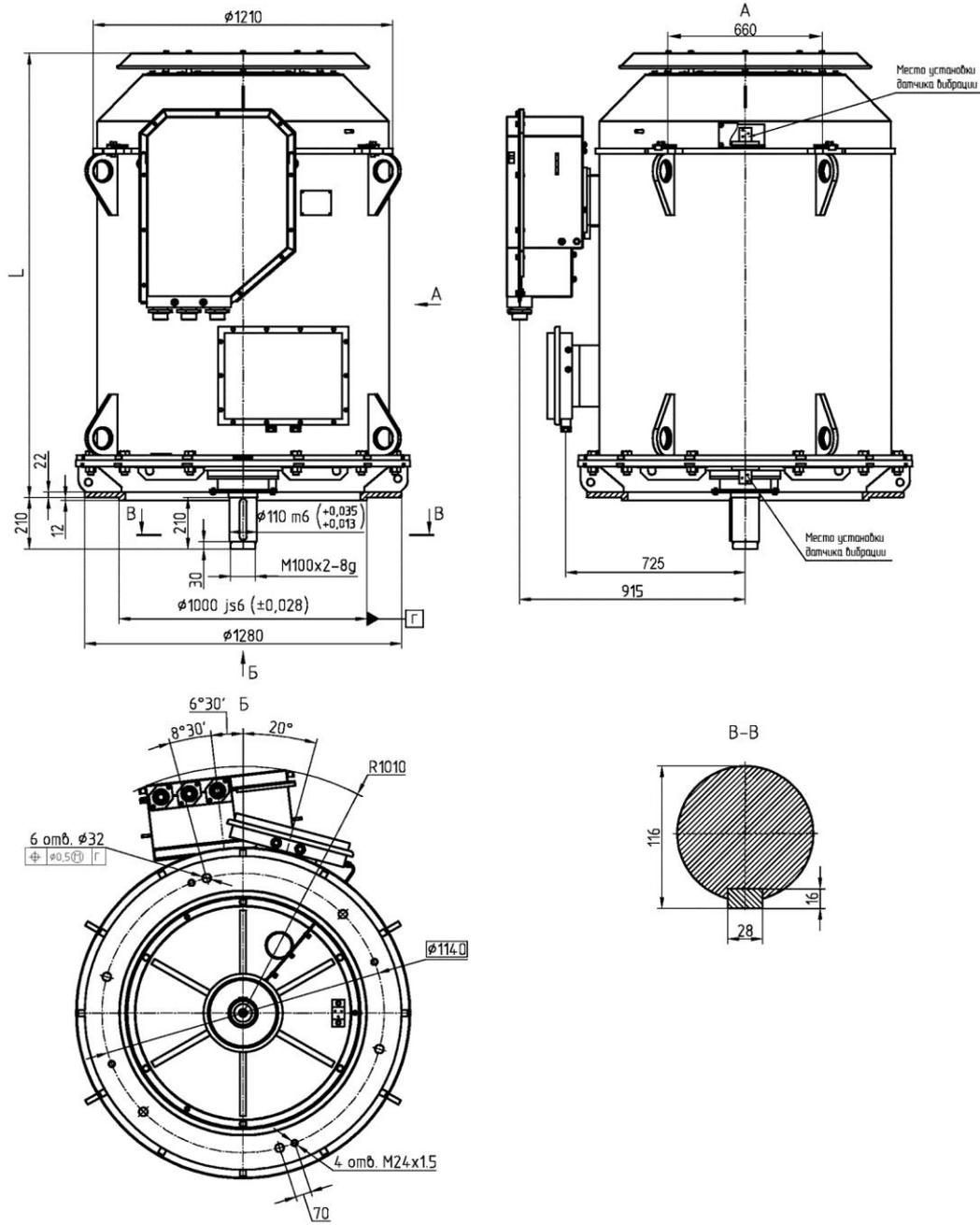
AOB5A	-	XXX	Д	-	X	-	XXX	X
		Rated power, kW			Designation for voltage 10 kV		Climatic construction	
					Number of poles		Allocation category	

Designation:
 A – asynchronous
 O - blown
 B – vertical
 5 – number of series
 A – for usage at NPP

Technical data of the motors are specified in the Table 74. Overall and mounting dimensions are given in the figure.

Table 74

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	L, mm	Weight, kg	Type of the pump
AOB5A-400-4УХЛ4	400	1485	95,0	0,89	1800	3700	AKcBA 650-135
AOB5A-400Д-4УХЛ4			94,3	0,86	1910	3900	КЭНА 440-220
AOB5A-500-4УХЛ4	500		95,0	0,89	1860	3900	AKcBA 1050-100
AOB5A-500Д-4УХЛ4			94,3	0,86	1970	4100	КЭНА 1050-100
AOB5A-630-4УХЛ4	630		95,0	0,9	1890	4100	AKcBA 900-180
AOB5A-630Д-4УХЛ4			94,3	0,86	2000	4300	





ELECTRIC MOTORS OF SERIES AB3-2-17

Squirrel-cage three-phase induction motors self-ventilated of closed design are intended to complete the drive of vertical rolls of mills.

The motors are of closed blowing through design with forced ventilation.

Mode of operation S1 as per GOST 183-74.

Degree of protection IP44 as per GOST 17494-87.

Method of cooling ICA17 as per GOST 20459-87.

Climatic version and category of location Y3 or T3 as per GOST 15150-69. .

Technical data of the motors are listed in Table 75.

Overall and mounting dimensions – Figure 1.

Table 75

Motor type	Power, kW	Voltage, V	Synchronous rotation speed, rpm	$\frac{M_{max}}{M_{rated}}$	Weight, kg
				2,3	
AB3-2-17-39-16Y3	630	6000	375	2,3	8700
AB3-2-17-39-16T3		6600			
AB3-2-17-50-16Y3		10000			10250
AB3-2-17-50-16T3		11000			

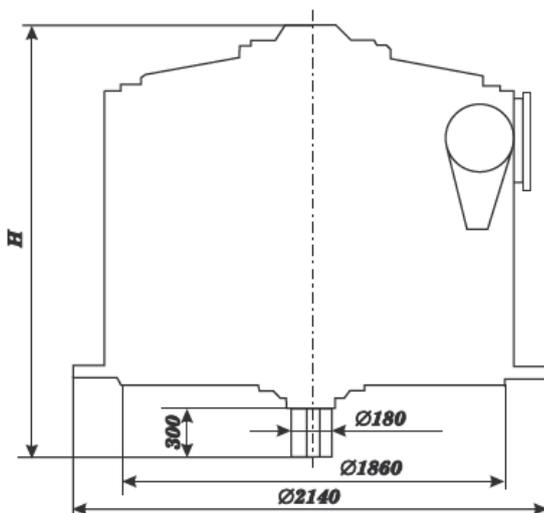


Figure 1. Overall and mounting dimensions of the motor AV3-2

Motor type	H, mm
AB3-2-17-39-16Y3	2085
AB3-2-17-39-16T3	
AB3-2-17-50-16Y3	2195



2. ELECTRIC MOTORS WITH PHASE ROTOR 2.1. ELECTRIC MOTORS OF GENERAL PURPOSE INDUSTRIAL VERSION

ELECTRIC MOTORS OF AK TYPE

AC electric motors of AK type with phase rotor are designed to drive mechanisms, which have heavy starting conditions and need speed adjustment.

These motors are rated for operation from AC network, 50 Hz, 6000 V and 3000 V. The motors for 3000 V are manufactured with the same overall dimensions as motors for 6000 V with the same power. Stator current of 3000 V motors is twice more than stator current of 6000 V motors.

At a customer's request the motors for other power, voltage and network frequency can be manufactured on base of above-stated motors in accordance with demands of the contract.

Rated operating mode – continuous.

The motor is started at full network voltage with starting resistance going through the rotor circuit by a control station.

The electric motors can be delivered with the starting equipment of УПТФ type as complete units.

Constructive mounting arrangement – horizontal, on feet, with two panel bearings, with one free shaft end.

Protection degree of the motors – IP23, of the outlet device of the stator – IP55.

Way of cooling – self-ventilation.

The ventilation separating casing with windows (closed by shutters) for air going in or out can be installed in the top part of the frame.

Winding insulation materials of the stator and rotor belong to heat-resistance class "F" with temperature usage in accordance with class "B".

Stator winding insulation is thermosetting, "Monolith-2" type.

Stator winding has six outlet ends fixed on four isolators in the terminal box.

Phase connecting circuit – "star".

Motors have right and left senses of rotation. Change of sense of rotation is realized only in rest state.

Technical data of the motors are shown in Table 76, overall and mounting dimensions – in Table 77.

Table 76

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}	Rotor current, A	Rotor voltage, V
AK-400XK-4Y3,T3	400	1500	93.5	0.88	2.0	490	510
AK-400X-4Y3,T3	500		94.0	0.88	2.0	525	595
AK-400Y-4Y3,T3	630		94.7	0.89	2.0	550	715
AK-450X-4Y3,T3	800		94.7	0.89	2.0	700	715
AK-450Y-4Y3,T3	1000		95.2	0.90	2.0	690	895
AK-400XK-6Y3,T3	315	1000	92.9	0.86	1.9	395	500
AK-400X-6Y3,T3	400		93.3	0.87	1.9	435	580
AK-400Y-6Y3,T3	500		93.6	0.87	1.9	460	680
AK-450X-6Y3,T3	630		94.0	0.88	1.9	580	680
AK-450Y-6Y3,T3	800		94.4	0.88	1.9	600	835
AK-400X-8Y3,T3	250	750	92.5	0.83	2.1	320	485
AK-400Y-8Y3,T3	315		92.8	0.84	2.0	360	550
AK-450X-8Y3,T3	400		93.2	0.84	2.0	450	550
AK-450YK-8Y3,T3	500		93.6	0.85	2.0	485	645
AK-450Y-8Y3,T3	630		94.0	0.85	2.0	510	775
AK-450Y-10Y3,T3	400	600	93.4	0.84	1.9	365	670

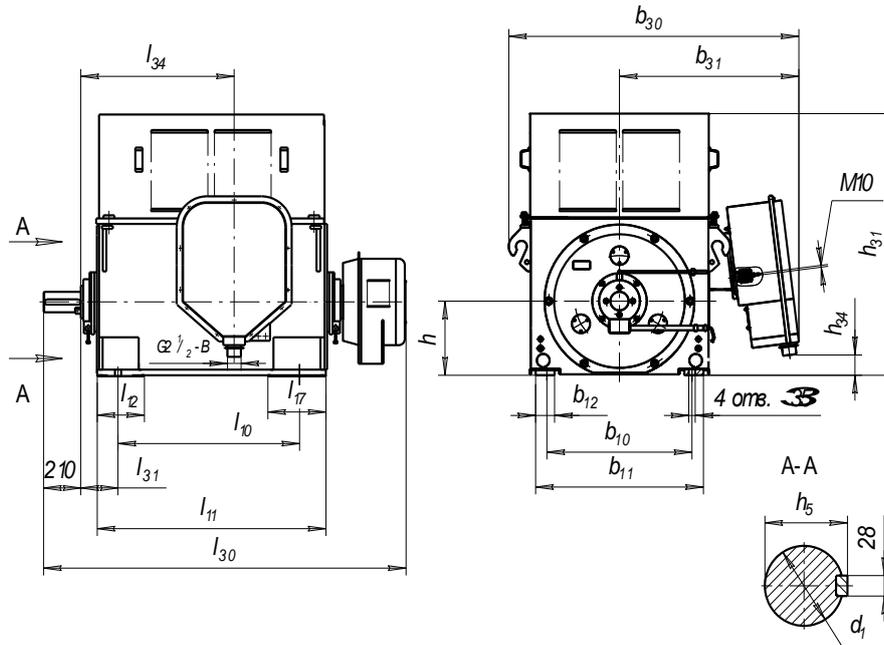


Table 77

Type of the motor	Dimensions, mm									
	b ₁₀	b ₁₁	b ₁₂	b ₃₀	b ₃₁	d ₁	l ₁₀	l ₁₁	l ₁₂	l ₁₇
AK-400Xк-4Y3	800	920	105	1600	990	100m6	900	1160	260	320
AK-400X-4Y3							1000	1260		
AK-400Y-4Y3							900	1160		
AK-400Xк-6Y3							1000	1260		
AK-400X-6Y3							900	1160		
AK-400Y-6Y3							1000	1260		
AK-450X-4Y3	900	1040	120	1700	1040	110m6	900	1160		
AK-450Y-4Y3							1000	1260		
AK-450X-6Y3							900	1160		
AK-450Y-6Y3							1000	1260		
AK-400X-8Y3	800	920	105	1600	990	100m6	900	1160		
AK-400Y-8Y3							1000	1260		
AK-450X-8Y3	900	1040	120	1700	1040	110m6	900	1160		
AK-450Yк-8Y3							1000	1260		
AK-450Y-8Y3							900	1160		
AK-450Y-10Y3							1000	1260		

Type of the motor	Dimensions, mm							Weight, kg
	l ₃₀	l ₃₁	l ₃₄	h	h ₅	h ₃₁	h ₃₄	
AK-400Xк-4Y3	1985	200	790	400	106	1305	105	2250
AK-400X-4Y3			2405					
AK-400Y-4Y3	2085		840					2645
AK-400Xк-6Y3	1985		790					2300
AK-400X-6Y3			2440					
AK-400Y-6Y3	2085		840					2680
AK-450X-4Y3	1985	224	790	450	116	1410	95	2920
AK-450Y-4Y3	2085		840					3250
AK-450X-6Y3	1985		790					2970
AK-450Y-6Y3	2085		840					3300
AK-400X-8Y3	1985	200	790	400	106	1305	105	2475
AK-400Y-8Y3	2085		840					2700
AK-450X-8Y3	1985	224	790	450	116	1410	95	2870
AK-450Yк-8Y3	2085		840					3140
AK-450Y-8Y3			3410					
AK-450Y-10Y3	3455							



ELECTRIC MOTORS OF AK, AK3 SERIES, 12 - 13 SIZES

AC electric motors of AK, AK3 types with phase rotor are used to drive mechanisms:

- which demand rotational speed adjustment (belt conveyers, and others);
- which don't demand rotational speed adjustment, but with heavy start conditions (fans, cement and coal mills, and others).

These motors are rated for operation from AC network, 50 Hz, 6000 V.

The necessity to create some low-voltage asynchronous electric motors of these series appeared for last several days. Technical characteristics are given in the Table 78. Overall dimensions meet overall dimensions of motors for voltage 6000 V.

Rated operating mode – continuous.

AK, AK3 motors are started manually with the help of the starting rheostat and automatically by magnetic station. At a customer's request the starting rheostat or magnetic station can be delivered with the electric motor as a complete unit.

The motors enable two cold starts successively or one hot start.

Construction mounting arrangement of the motor – horizontal, without bed plate, with two shield bearings, one free shaft end coupled with the operating mechanism with a half-coupling.

AK, AK3 motors are designed closed. They operate with forced ventilation by clear air in closed premises with dirty environment.

Insulation of stator winding belongs to heat-resistance class not lower "B".

Stator winding has six outlet ends fixed on four insulators in the terminal box. Phase connection - "star".

The terminal box is fixed on the right side if you are looking on the free shaft end (left location is specified in the order).

Motors have left and right sense of rotation. Sense of rotation is changed only in rest state.

The motor designation is decoded as follows:

AK, AK3 — XX-XXX-X-XXXX4

AK — asynchronous motor with phase rotor

AK3 — closed asynchronous motor with phase rotor

XX — gabarit of the electric motor

XXX — overall length of the stator core, in cm

X — number of poles

XXXX — climatic construction

Table 78

Type of the motor	Power, kW	Voltage, V	Synchronous rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}	Connection of stator winding
AK 12-42-8УХЛ4	250	380	750	92.5	0.86	1.8	Y
AK3 12-49-6УХЛ4	500	380	1000	94.0	0.89	2.2	Y



ELECTRIC MOTORS OF AK TYPE, 12 & 13 SIZES

Protection degree	IP01
Mounting arrangement	1M1001
Cooling method	IC01
Operating mode	S1

These motors can be manufactured for voltage 3000 V.
Technical data of the motors are shown in Table 79.
Overall dimensions — in Tables 80, 81.

Table 79

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}
AK 12-32-4УХЛ4	400	1500	93.5	0.89	2.3
AK 12-41-4УХЛ4	500	1500	93.5	0.89	2.7
AK 12-52-4УХЛ4	630	1500	94.0	0.89	2.4
AK 13-46-4УХЛ4	800	1500	94.0	0.90	2.4
AK 13-59-4УХЛ4	1000	1500	94.5	0.90	2.8
AK 12-35-6УХЛ4	250	1000	92.0	0.85	2.2
AK 12-39-6УХЛ4	320	1000	92.5	0.86	2.3
AK 12-49-6УХЛ4	400	1000	93.0	0.87	2.2
AK 13-37-6УХЛ4	500	1000	93.5	0.87	2.0
AK 13-46-6УХЛ4	630	1000	94.0	0.88	2.0
AK 13-59-6УХЛ4	800	1000	94.0	0.88	2.1
AK 12-35-8УХЛ4	200	750	91.5	0.81	2.3
AK 12-42-8УХЛ4	250	750	92.0	0.83	2.1
AK 12-52-8УХЛ4	320	750	92.5	0.83	2.1
AK 13-42-8УХЛ4	400	750	93.0	0.84	2.0
AK 13-52-8УХЛ4	500	750	93.5	0.84	1.9
AK 13-62-8УХЛ4	630	750	93.5	0.85	2.0
AK 12-42-10УХЛ4	200	600	91.0	0.79	2.4
AK 12-52-10УХЛ4	250	600	91.5	0.80	2.3
AK 13-42-10УХЛ4	320	600	92.0	0.82	1.9
AK 13-52-10УХЛ4	400	600	92.5	0.83	1.8
AK 13-62-10УХЛ4	500	600	93.0	0.84	1.9
AK 13-42-12УХЛ4	200	500	91.0	0.76	2.2
AK 13-52-12УХЛ4	250	500	91.5	0.77	2.1
AK 13-62-12УХЛ4	320	500	92.0	0.78	2.0

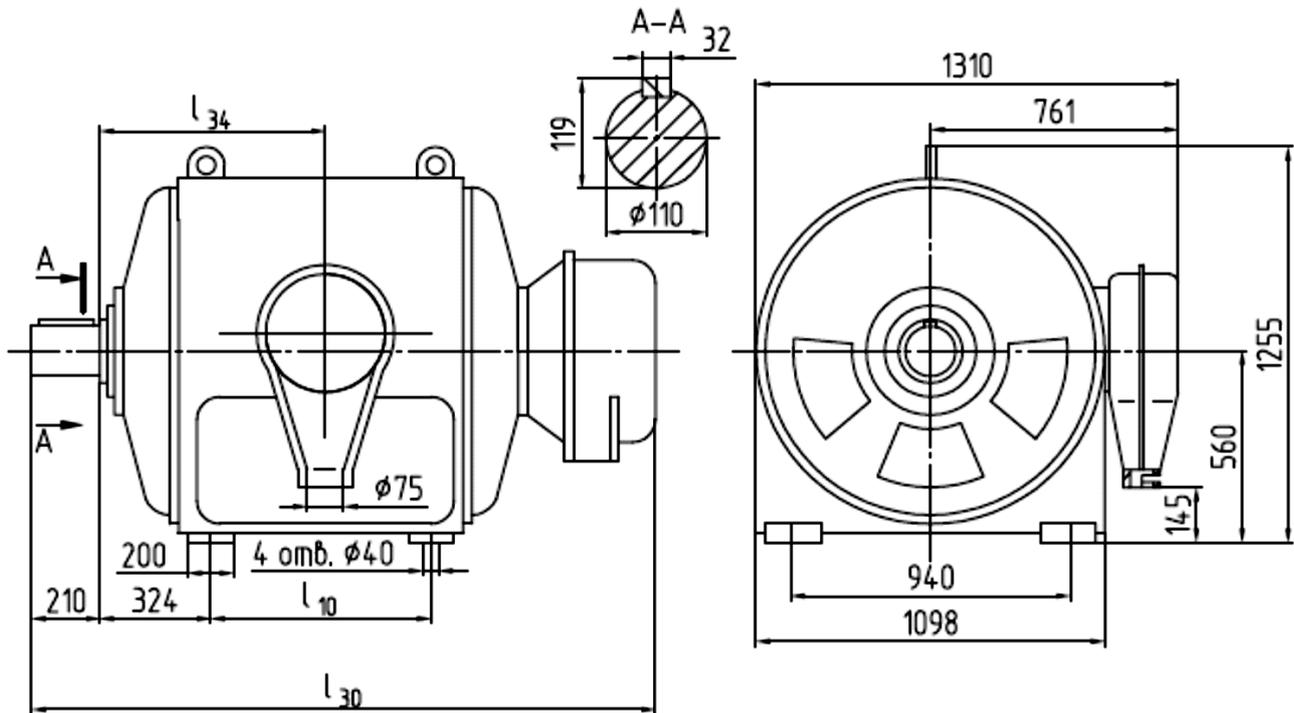


Table 80

Type of the motor	Dimensions, mm			Weight, kg
	l_{10}	l_{30}	l_{34}	
AK 12-32-4УХЛ4	480	1730	564	2570
AK 12-41-4УХЛ4	580	1830	614	2890
AK 12-52-4УХЛ4	680	1930	664	3340
AK 12-35-6УХЛ4	580	1830	614	2580
AK 12-39-6УХЛ4	580	1830	614	2760
AK 12-49-6УХЛ4	680	1930	664	3080
AK 12-35-8УХЛ4	480	1730	564	2550
AK 12-42-8УХЛ4	580	1830	614	2810
AK 12-52-8УХЛ4	680	1930	664	3180
AK 12-42-10УХЛ4	480	1730	564	2670
AK 12-52-10УХЛ4	580	1830	614	3070

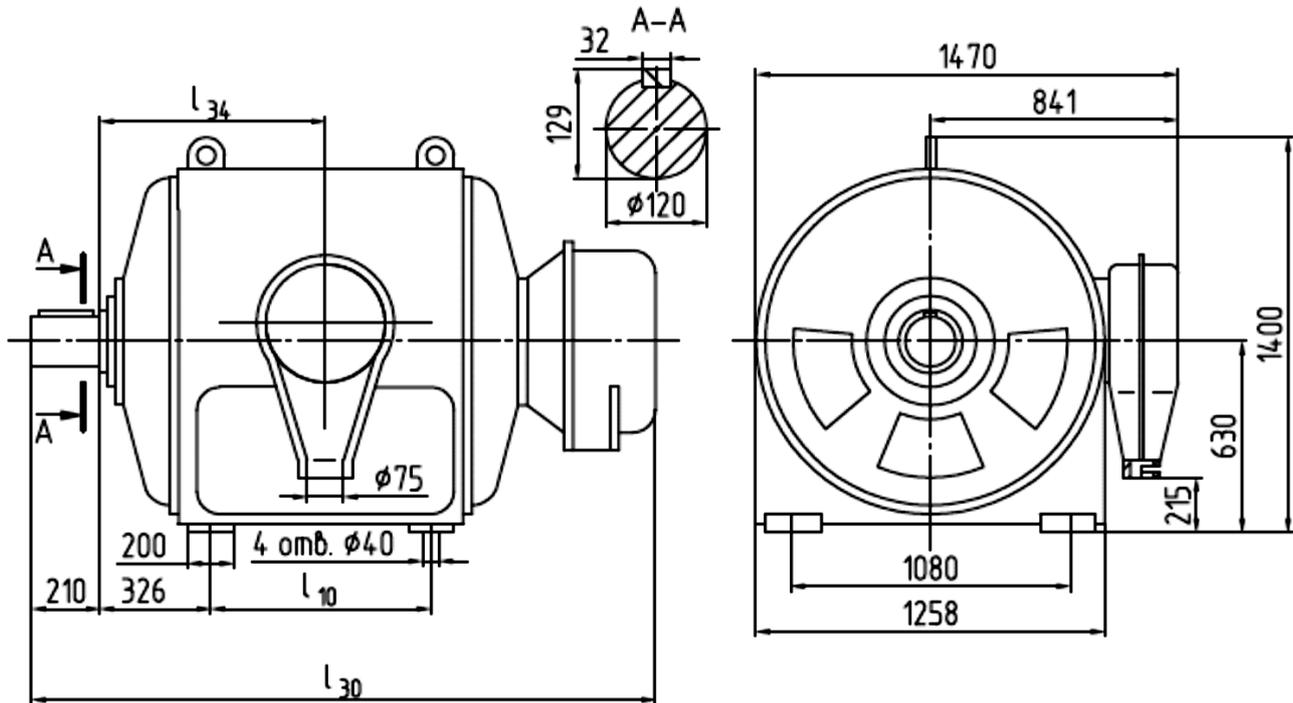


Table 81

Type of the motor	Dimensions, mm			Weight, kg
	l_{10}	l_{30}	l_{34}	
AK 13-46-4УХЛ4	680	1940	666	4130
AK 13-59-4УХЛ4	830	2090	741	4840
AK 13-37-6УХЛ4	580	1840	616	3520
AK 13-46-6УХЛ4	680	1940	666	3860
AK 13-59-6УХЛ4	830	2090	741	4570
AK 13-42-8УХЛ4	580	1840	616	3650
AK 13-52-8УХЛ4	680	1940	666	4100
AK 13-62-8УХЛ4	830	2090	741	4780
AK 13-42-10УХЛ4	580	1840	616	3660
AK 13-52-10УХЛ4	580	1840	616	4050
AK 13-62-10УХЛ4	680	1940	666	4510
AK 13-42-12УХЛ4	580	1840	616	3510
AK 13-52-12УХЛ4	580	1840	616	4000
AK 13-62-12УХЛ4	680	1940	666	4480



ELECTRIC MOTORS OF AK3 TYPE, 12 & 13 SIZES

Protection degree	IP44
Mounting arrangement	1M1001
Cooling method	IC37
Operating mode	S1

These motors can be manufactured for voltage 3000 V.
Technical data of the motors are shown in Table 82.
Overall dimensions — in Tables 83, 84.

Table 82

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}
AK3 12-32-4УХЛ4	400	1500	93.5	0.89	2.3
AK3 12-41-4УХЛ4	500	1500	93.5	0.89	2.7
AK3 12-52-4УХЛ4	630	1500	94.0	0.89	2.4
AK3 13-46-4УХЛ4	800	1500	94.0	0.90	2.4
AK3 13-59-4УХЛ4	1000	1500	94.5	0.90	2.8
AK3 12-35-6УХЛ4	250	1000	92.0	0.85	2.2
AK3 12-39-6УХЛ4	320	1000	92.5	0.86	2.3
AK3 12-49-6УХЛ4	400	1000	93.0	0.87	2.2
AK3 13-37-6УХЛ4	500	1000	93.5	0.87	2.0
AK3 13-46-6УХЛ4	630	1000	94.0	0.88	2.0
AK3 13-59-6УХЛ4	800	1000	94.0	0.88	2.1
AK3 12-35-8УХЛ4	200	750	91.5	0.81	2.3
AK3 12-42-8УХЛ4	250	750	92.0	0.83	2.1
AK3 12-52-8УХЛ4	320	750	92.5	0.83	2.1
AK3 13-42-8УХЛ4	400	750	93.0	0.84	2.0
AK3 13-52-8УХЛ4	500	750	93.5	0.84	1.9
AK3 13-62-8УХЛ4	630	750	93.5	0.85	2.0
AK3 12-42-10УХЛ4	200	600	91.0	0.79	2.4
AK3 12-52-10УХЛ4	250	600	91.5	0.80	2.3
AK3 13-42-10УХЛ4	320	600	92.0	0.82	1.9
AK3 13-52-10УХЛ4	400	600	92.5	0.83	1.8
AK3 13-62-10УХЛ4	500	600	93.0	0.84	1.9
AK3 13-42-12УХЛ4	200	500	91.0	0.76	2.2
AK3 13-52-12УХЛ4	250	500	91.5	0.77	2.1
AK3 13-62-12УХЛ4	320	500	92.0	0.78	2.0

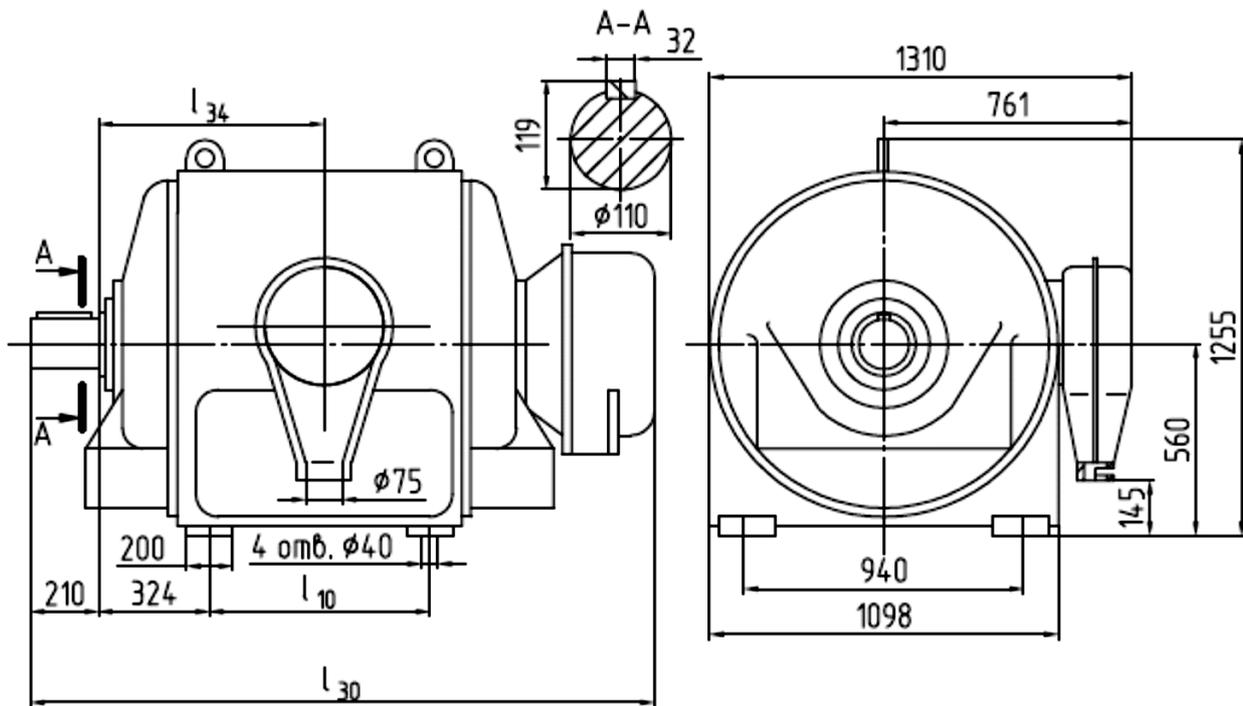


Table 83

Type of the motor	Dimensions, mm			Weight, kg
	l_{10}	l_{30}	l_{34}	
AK3 12-32-4УХЛ4	480	1730	564	2620
AK3 12-41-4УХЛ4	580	1830	614	2940
AK3 12-52-4УХЛ4	680	1930	664	3390
AK3 12-35-6УХЛ4	580	1830	614	2640
AK3 12-39-6УХЛ4	580	1830	614	2810
AK3 12-49-6УХЛ4	680	1930	664	3140
AK3 12-35-8УХЛ4	480	1730	564	2600
AK3 12-42-8УХЛ4	580	1830	614	2860
AK3 12-52-8УХЛ4	680	1930	664	3230
AK3 12-42-10УХЛ4	480	1730	564	2720
AK3 12-52-10УХЛ4	580	1830	614	3120

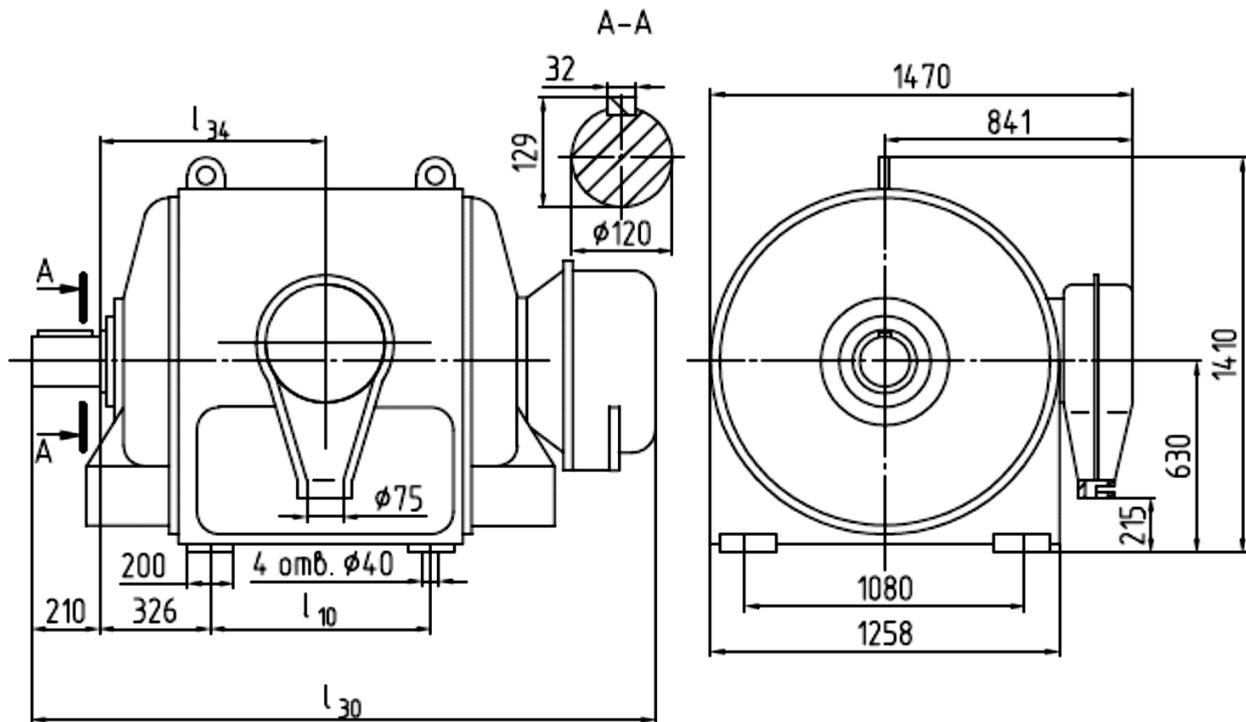


Table 84

Type of the motor	Dimensions, mm			Weight, kg
	l_{10}	l_{30}	l_{34}	
AK3 13-46-4УХЛ4	680	1940	666	4170
AK3 13-59-4УХЛ4	830	2090	741	4880
AK3 13-37-6УХЛ4	580	1840	616	3560
AK3 13-46-6УХЛ4	680	1940	666	3900
AK3 13-59-6УХЛ4	830	2095	741	4610
AK3 13-42-8УХЛ4	580	1840	616	3690
AK3 13-52-8УХЛ4	680	1940	666	4140
AK3 13-62-8УХЛ4	830	2090	741	4820
AK3 13-42-10УХЛ4	580	1840	616	3690
AK3 13-52-10УХЛ4	580	1840	616	4080
AK3 13-62-10УХЛ4	680	1940	666	4550
AK3 13-42-12УХЛ4	580	1840	616	3540
AK3 13-52-12УХЛ4	580	1840	616	4040
AK3 13-62-12УХЛ4	680	1940	666	4520



ELECTRIC MOTORS OF АКБ TYPE, 12-13 SIZES

Three-phase electric motors with phase rotor are designed to drive hoists of drill units.

Climatic construction - Y2 or YXЛ2.

Protection degree - IP23.

These motors are rated for operation from AC network, 50 Hz, 6000 V and 3000 V.

Rated operating mode of the motors is intermittent mode — S5.

The motor is started at full network voltage with starting resistance going through the rotor circuit by means of the control station.

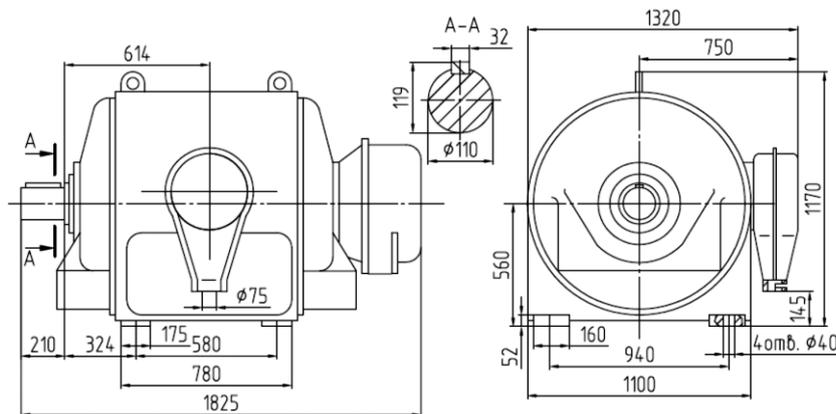
Stator winding has six outlet ends fixed on four isolators in the terminal box. Phase connecting circuit – “star”.

Motors have right and left senses of rotation. Sense of rotation is changed only in rest state.

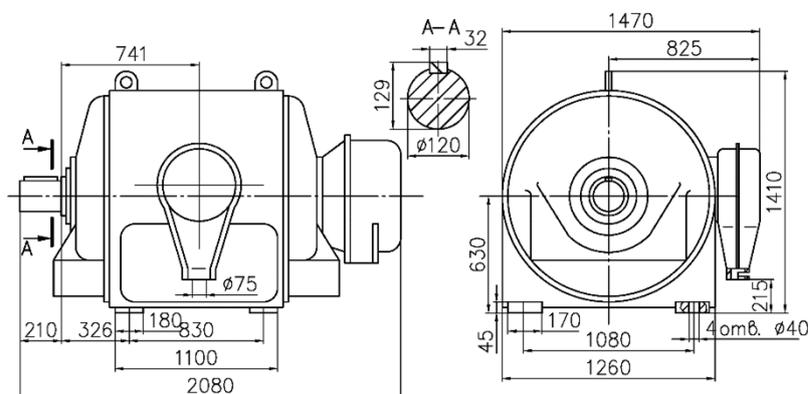
Technical data of the motors are shown in Table 85.

Table 85

Type of the motor	Power, kW	Rotational speed, rpm	Eff., %	cos φ	Weight, kg
АКБ-12-39-6У2	315	1000	91.5	0.87	2785
АКБ-13-62-8УХЛ2	560	750	94.2	0.84	4300



Electric motor АКБ-12-39-6У2



Electric motor АКБ-13-62-8УХЛ2



ELECTRIC MOTORS OF AKH2 TYPE, 18 & 19 SIZES

Induction three-phase electric motors with phase-wound rotor are intended to drive hoisting mechanisms with frequent starts and other mechanisms with rotational speed control as well as for mechanisms with heavy starting conditions (smoke exhausters, conveyors, etc.).

Operational mode – S5 by GOST 183-74.

Protection degree – IP00 by GOST 17494-87.

Constructive mounting arrangement - IM 7311.

Cooling method - ICA01 by GOST20459-87.

Climatic construction and allocation category – УХЛ4 by GOST 15150-69.

At customer's request motors can be equipped with tachogenerator for rotational speed control. Technical characteristics of the motors are given in the Table 86.

Table 86

Motor type	Power, kW	Stator voltage, V	Stator current, A	Eff., %	Rotor voltage, V	Rotor current, A	Synchronous rotational speed, rpm	Weight, kg
AKH2-18-43-12МУХЛ4	1600	6000	188,5	95,0	850	1150	500	10250
AKH2-18-53-12МУХЛ4	2000	6000	235	95,1	850	1150	500	11750
AKH2-18-36-16МУХЛ4	800	6000	108	94,1	950	520	375	8900
AKH2-18-43-16МУХЛ4	1000	6000	134	94,5	1090	565	375	9660
AKH2-18-53-16МУХЛ4	1250	6000	163	94,8	805	950	375	10870
AKH2-18-27-20МУХЛ4	500	6000	72	92,2	715	440	300	7570
AKH2-18-36-20МУХЛ4	630	6000	87	93,0	900	435	300	8600
AKH2-18-43-20МУХЛ4	800	6000	112	93,3	1100	445	300	9370
AKH2-18-27-24МУХЛ4	315	6000	50,4	91,2	525	370	250	7560
AKH2-18-31-24МУХЛ4	400	6000	63,7	91,6	620	400	250	8050
AKH2-18-36-24МУХЛ4	500	6000	77,5	92,6	750	410	250	8630
AKH2-18-47-24МУХЛ4	630	6000	97	93,3	990	390	250	9750
AKH2-19-33-20МУХЛ4	1000	6000	130	93,8	1050	590	300	10600
AKH2-19-41-20МУХЛ4	1250	6000	159	94,3	800	690	300	12000
AKH2-19-33-24МУХЛ4	800	6000	111,3	93,5	880	560	250	10440
AKH2-19-41-24МУХЛ4	1000	6000	139	93,7	1080	570	250	11780
AKH2-19-47-24МУХЛ4	1520	6000	127,7	94,1	1280	600	250	12740



ELECTRIC MOTORS OF SERIES AKH-4

Induction three-phase motors with phase-wound rotor are intended to complete the drive of mechanisms with regulation of rotation frequency as well as for mechanisms with heavy starting conditions (mine hoist, fans with large inertia moment of the working wheel and so on).

Mode of operation - S1 as per GOST 183-74.

Degree of protection - IP21 as per GOST 17494-87.

Method of cooling - ICA01 as per GOST 20459-87.

Climatic version and location category - Y3 or T3 as per GOST 15150-69.

Technical data of the motors are listed in Table 87.

Overall and mounting dimensions of the motors are listed in Figure 1 and in Table 88.

Table 87

Motor type	Power, kW	Voltage, V	Synchronous rotational speed, rpm	M_{max}		Weight, kg
				M_{rated}		
AKH-4-15-45-6Y3	1000	6000	1000	2,3		4500
AKH-4-15-57-6Y3	1250	6000	1000	2,3		5050
AKH-4-16-45-6Y3	1600	6000	1000	2,3		5900
AKH-4-16-57-6Y3	2000	6000	1000	2,3		6700
AKH-4-15-45-8Y3	800	6000	750	2,3		4500
AKH-4-15-57-8Y3	1000	6000	750	2,3		5050
AKH-4-16-45-8Y3	1250	6000	750	2,2		5800
AKH-4-16-57-8Y3	1600	6000	750	2,2		6500
AKH-4-16-69-8Y3	2000	6000	750	2,2		7300
AKH-4-15-45-10Y3	630	6000	600	2,3		4450
AKH-4-15-57-10Y3	800	6000	600	2,3		5000
AKH-4-16-45-10Y3	1000	6000	600	2,3		5600
AKH-4-16-57-10Y3	1250	6000	600	2,3		6300
AKH-4-17-45-10Y3	1600	6000	600	2,0		8250
AKH-4-17-57-10Y3	2000	6000	600	2,0		9450
AKH-4-16-33-12Y3	500	6000	500	2,3		4800
AKH-4-16-38-12Y3	630	6000	500	2,3		5100
AKH-4-16-45-12Y3	800	6000	500	2,3		5500
AKH-4-17-38-12Y3	1000	6000	500	2,3		7550
AKH-4-17-45-12Y3	1250	6000	500	2,3		8200
AKH-4-17-24-16Y3	315	6000	375	2,6		5450
AKH-4-17-24-16Y3	400	6000	375	2,3		5450
AKH-4-17-28-16Y3	500	6000	375	2,3		5900
AKH-4-17-33-16Y3	630	6000	375	2,3		6250
AKH-4-17-28-20Y3	315	6000	300	2,3		5900
AKH-4-17-33-20Y3	400	6000	300	2,3		6200

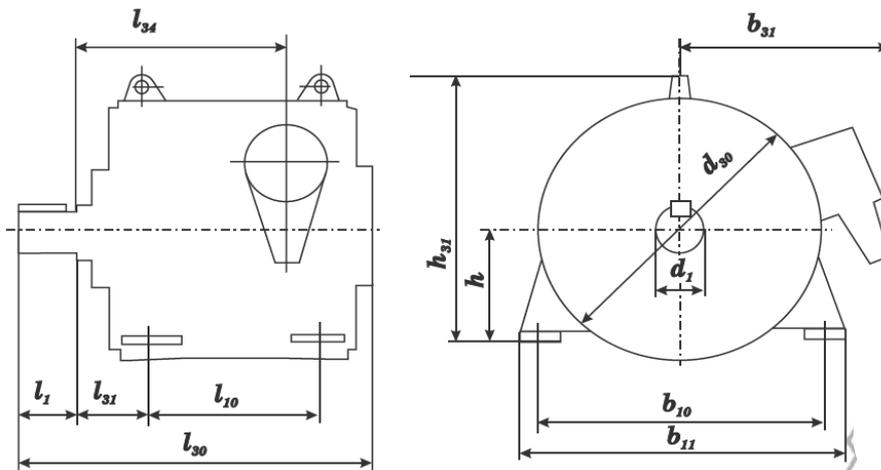




Figure 1. Overall and mounting dimensions of the motors AKH-4

Table 88

Motor type	Dimensions in mm											
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₁	l ₃₄	h	h ₃₁
AKH-4-15-45-6Y3	1400	1500	900	160	1300	300	1120	2525	355	1380	500	1285
AKH-4-15-57-6Y3	1400	1500	900	160	1300	300	1250	2645	355	1500	500	1285
AKH-4-15-45-8Y3	1400	1500	900	160	1300	300	1120	2525	355	1380	500	1285
AKH-4-15-57-8Y3	1400	1500	900	160	1300	300	1250	2645	355	1500	500	1285
AKH-4-15-45-10Y3	1400	1500	900	160	1300	300	1120	2525	355	1380	500	1285
AKH-4-15-57-10Y3	1400	1500	900	160	1300	300	1250	2645	355	1500	500	1285
AKH-4-16-45-6Y3	1500	1700	995	200	1500	350	1120	2595	375	1400	630	1515
AKH-4-16-57-6Y3	1500	1700	995	200	1500	350	1250	2715	375	1520	630	1515
AKH-4-16-45-8Y3	1500	1700	995	200	1500	350	1120	2595	375	1400	630	1515
AKH-4-16-57-8Y3	1500	1700	995	200	1500	350	1250	2715	375	1520	630	1515
AKH-4-16-69-8Y3	1500	1700	995	200	1500	350	1400	2855	375	1660	630	1515
AKH-4-16-45-10Y3	1500	1700	995	200	1500	350	1120	2595	375	1400	630	1515
AKH-4-16-57-10Y3	1500	1700	995	200	1500	350	1250	2715	375	1520	630	1515
AKH-4-16-33-12Y3	1500	1700	995	200	1500	350	900	2415	375	1220	630	1515
AKH-4-16-38-12Y3	1500	1700	995	200	1500	350	1000	2505	375	1310	630	1515
AKH-4-16-45-12Y3	1500	1700	995	200	1500	350	1120	2595	375	1400	630	1515
AKH-4-17-45-10Y3	1800	2000	1135	200	1800	350	1120	2595	375	1400	630	1665
AKH-4-17-57-10Y3	1800	2000	1135	200	1800	350	1250	2715	375	1520	630	1665
AKH-4-17-38-12Y3	1800	2000	1135	200	1800	350	1000	2505	375	1310	630	1665
AKH-4-17-45-12Y3	1800	2000	1135	200	1800	350	1120	2595	375	1400	630	1665
AKH-4-17-24-16Y3	1800	2000	1135	200	1800	350	800	2295	375	1100	630	1665
AKH-4-17-28-16Y3	1800	2000	1135	200	1800	350	800	2335	375	1140	630	1665
AKH-4-17-33-16Y3	1800	2000	1135	200	1800	350	900	2415	375	1220	630	1665
AKH-4-17-28-20Y3	1800	2000	1135	200	1800	350	800	2335	375	1140	630	1665
AKH-4-17-33-20Y3	1800	2000	1135	200	1800	350	900	2415	375	1220	630	1665



ELECTRIC MOTORS OF AKH3 SERIES

Asynchronous three-phase motor of AKH3 series with phase rotor is designed to drive mechanisms with heavy starting conditions and mechanisms with adjustment of rotational speed (hoisting towers, band conveyers, mills and so forth).

Operational mode of the motors - continuous S1. Motors enable operation in intermittent mode with frequent starts, if mean square value of power isn't over its rated meaning.

Protection degree of the motor - IP44, terminal box – IP55.

Constructive mounting arrangement of the motors - IM1101 (with cylindrical shaft end) by GOST 2479-79.

Cooling way - ICA37 (closed construction with forced ventilation) by GOST 20459-87.

Climatic construction and allocation category – Y3 by GOST 15150-69.

The motors are manufactured with frictionless bearings with consistent grease.

The motors are made with right sense of rotation and enable left sense of rotation. Sense of rotation can be changed only in rest state by switching stator windings.

Insulation of stator and rotor winding is thermosetting of "Monolith – 2" type of class of thermal classification «F».

Stator winding has 6 terminals brought to the terminal box and fixed on four insulators. Rotor winding has 3 outlet ends brought to the brush device. Connection of phases of stator and rotor windings is "star".

The resistance thermal converters (TC) with nonlinear static characteristic 100P are installed to control temperature of the bearings and stator winding: one TC per one bearing unit, 6 TC for the winding and 3 for the stator core.

Terminal boxes of the stator and TC are placed on the right side, if you see from side of the working shaft end.

The motor designation is decoded as follows:

AKH3	-	2,4	-	XX	-	XX	-	XX	X	X	
											Allocation category;
											Climatic version;
											Number of stator winding poles
											Length of the stator core, cm
											Motor frame (that is symbolic notation of the outer diameter of the stator core;
											Sequence of series developed;

A – asynchronous,

K – with contact rings,

H – «normal», that is basic version by kind of mounting and degree of protection,

3 – closed construction of the motor

Technical characteristics of the electric motors are given in tables 89 and 90 and in the figure.

Table 89

Motor type	Power, kW	Voltage, V	Rated rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}
AKH3-2-15-57-8Y3	800	6000	741	95,1	0,86	2,3
AKH3-2-15-69-8Y3	1000			95,1	0,87	2,3
AKH3-4-15-57-8Y3	1000			95,0	0,87	1,9
AKH3-4-15-45-10Y3	630		591	94,2	0,83	1,75



ELECTRIC MOTORS OF SERIES AKH3-4

Induction motors series AKH3-4 are designed for needs of national economy and for export to the countries of temperate and tropical climate.

Phase-wound motors are intended to complete mechanisms with heavy starting conditions: for cement and coil mills, conveyers, for chipping machines.

Climatic version Y or T, category of location 3.

Explanation of designation of the motor AKH3-4-15-45-6Y3:

AKH3 – induction motor with slip rings (phase-wound) of closed normal design.

4 - series number

15 - conventional number of dimension

45 - core length of magnetic circuit, cm

6 - quantity of poles

Y - climatic version

3 - category of location

Ambient temperature changes: from minus 45°C to plus 40°C.

The motors are of closed blowing through design with forced ventilation, method of cooling ICA37, degree of motors protection and terminal box - IP44.

Mounting design - IM1101.

Insulation of the stator winding is thermosetting with thermal endurance of class “F”, rotor insulation is of class “B”. The rotor insulation of the motors for ferrous metallurgy enterprises and for tropics is of class “F”.

Types and main parameters of the motors of voltage 6 kV with frequency of supply mains 50 Hz are listed in Table 1 for the version Y.

Main parameters of the motors of climatic version T correspond to the values of Table 91 for the version Y.

Overall and mounting dimensions and weight of the motors are listed in Table 92.

Table 91

Motor type	Rated data			Slip %	Eff., %	Cos φ	$\frac{M_{max}}{M_{rated}}$	Rotor data	
	Power, kW	Stator current, A	Rotation speed (synch.), rpm					Voltage, V	Current, A
AKH3-4-15-45-6Y3	1000	117	1000	1,5	95,0	0,86	2,3	750	790
AKH3-4-15-57-6Y3	1250	145	1000	1,5	95,1	0,87	2,3	920	800
AKH3-4-16- 45-6Y3	1600	182	1000	1,2	95,4	0,88	2,3	1200	780
AKH3-4-16-57-6Y3	2000	225	1000	1,2	95,8	0,89	2,3	1480	800
AKH3-4-15-45-8Y3	800	95	750	1,8	94,7	0,85	2,3	850	555
AKH3-4-15-57-8Y3	1000	117	750	1,8	94,9	0,86	2,3	1050	560
AKH3-4-16-45-8Y3	1250	145	750	1,3	95,1	0,87	2,2	1050	700
AKH3-4-16-57-8Y3	1600	183	750	1,3	95,3	0,88	2,2	1300	725
AKH3-4-16-69-8Y3	2000	225	750	1,3	95,6	0,88	2,2	1590	740
AKH3-4-15-45-10Y3	630	80	600	1,7	94,4	0,80	2,3	750	500
AKH3-4-15-57-10Y3	800	101	600	1,7	94,8	0,80	2,3	950	500
AKH3-4-16-45-10Y3	1000	121	600	1,7	94,6	0,84	2,3	1000	590
AKH3-4-16-57-10Y3	1250	150	600	1,3	94,9	0,84	2,3	1280	580
AKH3-4-17-45-10Y3	1600	186	600	1,3	94,9	0,87	2,0	1240	765
AKH3-4-17-57-10Y3	2000	231	600	1,3	95,3	0,87	2,0	1570	750
AKH3-4-16-33-12Y3	500	67	500	2,0	93,8	0,78	2,3	620	480
AKH3-4-16-38-12Y3	630	82	500	2,0	93,9	0,79	2,3	710	525
AKH3-4-16-45-12Y3	800	103	500	2,0	94,3	0,79	2,3	860	550

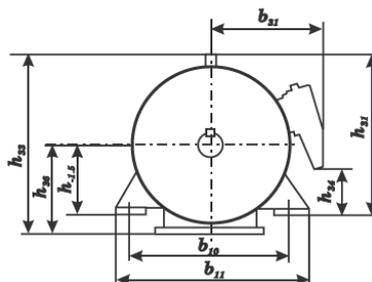
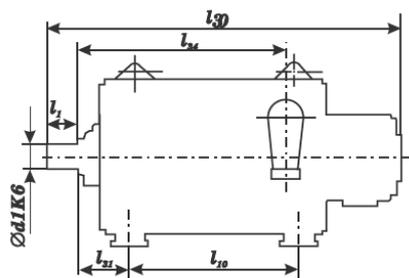


Table 91. Continuation

Motor type	Rated data			Slip %	Eff., %	Cos φ	$\frac{M_{max}}{M_{rated}}$	Rotor data	
	Power, kW	Stator current, A	Rotation speed (synch.), rpm					Power, kW	Stator current, A
AKH3-4-17-24-16Y3	315	45	375	2,7	92,5	0,73	2,6	550	345
AKH3-4-17-24-16Y3	400	55	375	2,7	92,3	0,76	2,3	550	440
AKH3-4-17-28-16Y3	500	68	375	2,7	92,7	0,76	2,3	645	460
AKH3-4-17-33-16Y3	630	82	375	2,7	93,1	0,79	2,3	760	495
AKH3-4-17-28-20Y3	315	47	300	2,8	92,0	0,70	2,3	495	380
AKH3-4-17-33-20Y3	400	58	300	2,8	92,5	0,72	2,3	590	405

Table 92

Motor type	Dimensions, mm														Weight, kg
	b ₁₀	b ₁₁	b ₃₁	d ₁	l ₁	l ₁₀	l ₃₀	l ₃₁	l ₃₄	h	h ₃₁	h ₃₃	h ₃₄	h ₃₆	
AKH3-4-15-45-6Y3	1400	1500	900	160	300	1000	2360	315	1285	500	1285	1485	310	700	4500
AKH3-4-15-57-6Y3						1120	2480		1395						5150
AKH3-4-15-45-8Y3						1000	2360		1275						4600
AKH3-4-15-57-8Y3						1120	2480		1395						5150
AKH3-4-15-45-10Y3						1000	2360		1275						4550
AKH3-4-15-57-10Y3						1120	2480		1395						5100
AKH3-4-16-45-6Y3	1600	1700	995	200	350	1000	2430	335	1295	630	1515	1685	470	800	6000
AKH3-4-16-57-6Y3						1120	2550		1415						6800
AKH3-4-16-45-8Y3						1000	2430		1295						5900
AKH3-4-16-57-8Y3						1120	2550		1415						6600
AKH3-4-16-69-8Y3						1250	2690		1555						7400
AKH3-4-16-45-10Y3						1000	2430		1295						5700
AKH3-4-16-57-10Y3						1120	2550		1415						6400
AKH3-4-16-33-12Y3						800	2250		1115						4900
AKH3-4-16-38-12Y3						900	2340		1205						5200
AKH3-4-16-45-12Y3						1000	2430		1295						5600
AKH3-4-17-45-10Y3	1800	2000	1135	500	350	1000	2430	335	1295	630	1665	1985	520	950	8350
AKH3-4-17-57-10Y3						1120	2550		1415						9550
AKH3-4-17-38-12Y3						900	2340		1205						7650
AKH3-4-17-45-12Y3						1000	2090		1295						8300
AKH3-4-17-24-16Y3						710	2130		995						5550
AKH3-4-17-28-16Y3						800	2170		1035						6000
AKH3-4-17-33-16Y3						800	2250		1115						6350
AKH3-4-17-28-20Y3						800	2170		1035						6000
AKH3-4-17-33-20Y3						800	2250		1115						6300



Overall and mounting dimensions of the motor
AKH3-4



ELECTRIC MOTORS OF SERIES АКД-15, 16 AND 17 SIZES, АКД3-15, 16 AND 17 SIZES

Induction motors with phase-wound rotor are intended to complete the drive of mechanisms with regulation of rotation frequency as well as for mechanisms with heavy starting conditions (mine hoist, fans with large inertia moment of the working wheel and so on).

Degree of protection of the motors АКД - IP20, АКД3 – IP44 as per GOST 17494-87.

Method of cooling of the motors АКД - ICA01, АКД3 - ICA37 as per GOST 20459-87.

Climatic version of the motors АКД – УХЛ4 or 04, of the motors АКД3 - У3 or Т3 as per GOST 15150-69.

Technical data of the motors АКД are listed in Table 93, АКД3 – in Table 95.

Overall and mounting dimensions of the motors АКД are listed in Figure 1 and in Table 94, АКД3 – in Figure 2 and Table 96.

TECHNICAL DATA

Table 93

Motor type	Power, kW	Voltage, V	Synchronous rotation speed, rpm	M_{max}	Weight, kg
				M_{rated}	
АКД-15-62-6 УХЛ4	1000	10000	1000	2,3	6000
АКД-15-76-6 УХЛ4	1250	10000	1000	2,4	6650
АКД-15-62-8 УХЛ4	800	10000	750	2,3	5900
АКД-15-76-8 УХЛ4	1000	10000	750	2,3	6500
АКД-15-62-10 УХЛ4	630	10000	600	2,3	5800
АКД-15-76-10 УХЛ4	800	10000	600	2,3	6350
АКД-16-62-6 УХЛ4	1600	10000	1000	2,4	8200
АКД-16-76-6 УХЛ4	2000	10000	1000	2,5	9200
АКД-16-62-8 УХЛ4	1250	10000	750	2,3	8000
АКД-16-76-8 УХЛ4	1600	10000	750	2,3	9000
АКД-16-62-10 УХЛ4	1000	10000	600	2,3	7300
АКД-16-76-10 УХЛ4	1250	10000	600	2,3	8300
АКД-16-50-12 УХЛ4	500	10000	500	2,3	6950
АКД-16-62-12 УХЛ4	630	10000	500	2,3	7400
АКД-16-76-12 УХЛ4	800	10000	500	2,3	8200
АКД-17-62-10 УХЛ4	1600	10000	600	2,5	10450
АКД-17-62-12 УХЛ4	1000	10000	500	2,3	10500
АКД-17-76-12 УХЛ4	1250	10000	500	2,3	11800
АКД-17-41-16 УХЛ4	500	10000	375	2,3	6800
АКД-17-50-16 УХЛ4	630	10000	375	2,4	7600

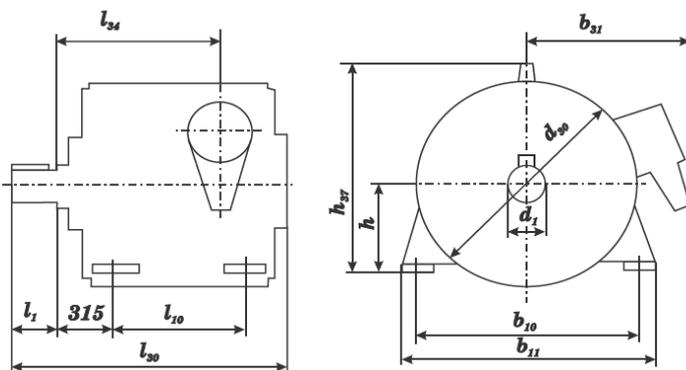


Figure 1. Overall and mounting dimensions of the motor АКД



Table 94

Motor type	Dimensions in mm										
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₄	h	h ₃₇
АҚД-15-62-6 УХЛ4	1400	1500	1070	160	1300	300	1400	2765	1420	500	1150
АҚД-15-76-6 УХЛ4	1400	1500	1070	160	1300	300	1600	2905	1560	500	1150
АҚД-15-62-8 УХЛ4	1400	1500	1070	160	1300	300	1400	2765	1420	500	1150
АҚД-15-76-8 УХЛ4	1400	1500	1070	160	1300	300	1600	2905	1560	500	1150
АҚД-15-62-10 УХЛ4	1400	1500	1070	160	1300	300	1400	2765	1420	500	1150
АҚД-15-76-10 УХЛ4	1400	1500	1070	160	1300	300	1600	2905	1560	500	1150
АҚД-16-62-6 УХЛ4	1500	1700	1180	200	1500	350	1400	2815	1420	630	1380
АҚД-16-76-6 УХЛ4	1500	1700	1180	200	1500	350	1600	2955	1560	630	1380
АҚД-16-62-8 УХЛ4	1500	1700	1180	200	1500	350	1400	2815	1420	630	1380
АҚД-16-76-8 УХЛ4	1500	1700	1180	200	1500	350	1600	2955	1560	630	1380
АҚД-16-62-10 УХЛ4	1500	1700	1180	200	1500	350	1400	2815	1420	630	1380
АҚД-16-76-10 УХЛ4	1500	1700	1180	200	1500	350	1600	2955	1560	630	1380
АҚД-16-50-12 УХЛ4	1500	1700	1180	200	1500	350	1250	2635	1240	630	1380
АҚД-16-62-12 УХЛ4	1500	1700	1180	200	1500	350	1400	2815	1420	630	1380
АҚД-16-76-12 УХЛ4	1500	1700	1180	200	1500	350	1600	2955	1560	630	1380
АҚД-17-62-10 УХЛ4	1800	2000	1310	200	1800	350	1400	2815	1420	630	1530
АҚД-17-62-12 УХЛ4	1800	2000	1310	200	1800	350	1400	2815	1420	630	1530
АҚД-17-76-12 УХЛ4	1800	2000	1310	200	1800	350	1600	2955	1560	630	1530
АҚД-17-41-16 УХЛ4	1800	2000	1310	200	1800	350	1120	2545	1150	630	1530
АҚД-17-50-16 УХЛ4	1800	2000	1310	200	1800	350	1250	2635	1240	630	1530

Main technical data of the motors

Table 95

Motor type	Power, kW	Voltage, V	Synchronous rotation speed, rpm	$\frac{M_{max}}{M_{rated}}$	Weight, kg
АҚД3-15-62-6 У3	1000	10000	1000	2,3	6000
АҚД3-15-76-6 У3	1250		1000	2,4	6650
АҚД3-15-62-8 У3	800		750	2,3	5900
АҚД3-15-76-8 У3	1000		750	2,3	6500
АҚД3-15-62-10 У3	630		600	2,3	5800
АҚД3-15-76-10 У3	800		600	2,3	6350
АҚД3-16-62-6 У3	1600		1000	2,4	8200
АҚД3-16-76-6 У3	2000		1000	2,5	9200
АҚД3-16-62-8 У3	1250		750	2,3	8000
АҚД3-16-76-8 У3	1600		750	2,3	9000
АҚД3-16-62-10 У3	1000		600	2,3	7300
АҚД3-16-76-10 У3	1250		600	2,3	8300
АҚД3-16-50-12 У3	500		500	2,3	6950
АҚД3-16-62-12 У3	630		500	2,3	7400
АҚД3-16-76-12 У3	800		500	2,3	8200
АҚД3-17-62-10 У3	1600		600	2,5	10450
АҚД3-17-62-12 У3	1000		500	2,3	10500
АҚД3-17-76-12 У3	1250		500	2,3	11800
АҚД3-17-41-16 У3	500		375	2,3	6800
АҚД3-17-50-16 У3	630		375	2,4	7600

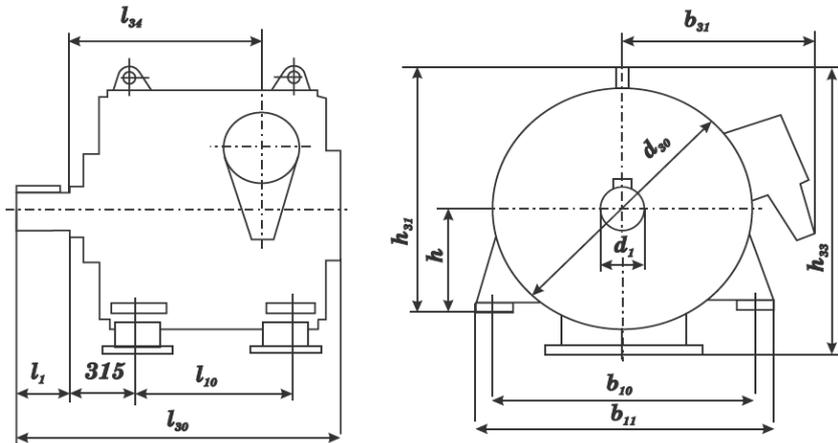


Figure 2. Overall and mounting dimensions of the motor AKД3

Table 96

Motor type	Dimensions in mm											
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₀	l ₃₄	h	h ₃₁	h ₃₃
AKД3-15-62-6 Y3	1400	1500	1070	160	1300	300	1250	2705	1470	500	1285	1485
AKД3-15-76-6 Y3	1400	1500	1070	160	1300	300	1400	2845	1610	500	1285	1485
AKД3-15-62-8 Y3	1400	1500	1070	160	1300	300	1250	2705	1470	500	1285	1485
AKД3-15-76-8 Y3	1400	1500	1070	160	1300	300	1400	2845	1610	500	1285	1485
AKД3-15-62-10 Y3	1400	1500	1070	160	1300	300	1250	2705	1470	500	1285	1485
AKД3-15-76-10 Y3	1400	1500	1070	160	1300	300	1400	2845	1610	500	1285	1485
AKД3-16-62-6 Y3	1500	1700	1180	200	1500	350	1250	2755	1470	630	1515	1685
AKД3-16-76-6 Y3	1500	1700	1180	200	1500	350	1400	2895	1610	630	1515	1685
AKД3-16-62-8 Y3	1500	1700	1180	200	1500	350	1250	2755	1470	630	1515	1685
AKД3-16-76-8 Y3	1500	1700	1180	200	1500	350	1400	2895	1610	630	1515	1685
AKД3-16-62-10 Y3	1500	1700	1180	200	1500	350	1250	2755	1470	630	1515	1685
AKД3-16-76-10 Y3	1500	1700	1180	200	1500	350	1400	2895	1610	630	1515	1685
AKД3-16-50-12 Y3	1500	1700	1180	200	1500	350	1120	2575	1290	630	1515	1685
AKД3-16-62-12 Y3	1500	1700	1180	200	1500	350	1250	2755	1470	630	1515	1685
AKД3-16-76-12 Y3	1500	1700	1180	200	1500	350	1400	2895	1610	630	1515	1685
AKД3-17-62-10 Y3	1800	2000	1310	200	1800	350	1250	2755	1470	630	1665	1985
AKД3-17-62-12 Y3	1800	2000	1310	200	1800	350	1250	2755	1470	630	1665	1985
AKД3-17-76-12 Y3	1800	2000	1310	200	1800	350	1400	2895	1610	630	1665	1985
AKД3-17-41-16 Y3	1800	2000	1310	200	1800	350	1000	2485	1200	630	1665	1985
AKД3-17-50-16 Y3	1800	2000	1310	200	1800	350	1120	2575	1290	630	1665	1985



ELECTRIC MOTORS OF SERIES AK30-15, 16 AND 17 SIZES

Induction three-phase motors with phase-wound rotor are of closed design with self-ventilation and with heat exchanger "air-air" are intended for the drive of mechanisms with regulation of rotation frequency for operation in the open air under shed (fans, smoke exhausters).

Mode of operation - S1 as per GOST 183-74.

Degree of protection - IP44 as per GOST 17494-87.

Method of cooling - ICA01A61 as per GOST 20459-87.

Climatic version and location category - Y2 or T2.

Technical data of the motors are listed in Table 97.

Overall and mounting dimensions are listed in Figure 1 and in Table 98.

Table 97

Motor type	Power, kW	Voltage, V	Synchronous rotation speed, rpm	$\frac{M_{max}}{M_{rated}}$	Weight, kg
AK30-16-45-6Y2	1120	6000	1000	2,6	8900
AK30-16-57-6Y2	1400	6000	1000	2,6	9800
AK30-15-57-8Y2	710	6000	750	3,0	7250
AK30-16-45-8Y2	900	6000	750	2,6	8800
AK30-16-57-8Y2	1120	6000	750	2,6	9600
AK30-16-69-8Y2	1400	6000	750	2,6	10400
AK30-16-45-10Y2	710	6000	600	2,5	7700
AK30-16-57-10Y2	900	6000	600	2,7	8900
AK30-17-38-12Y2	710	6000	500	2,3	9400
AK30-17-45-12Y2	900	6000	500	2,3	10100
AK30-17-28-16Y2	355	6000	375	2,5	7800
AK30-17-33-16Y2	450	6000	375	2,3	8000
AK30-17-38-16Y2	560	6000	375	2,3	8600

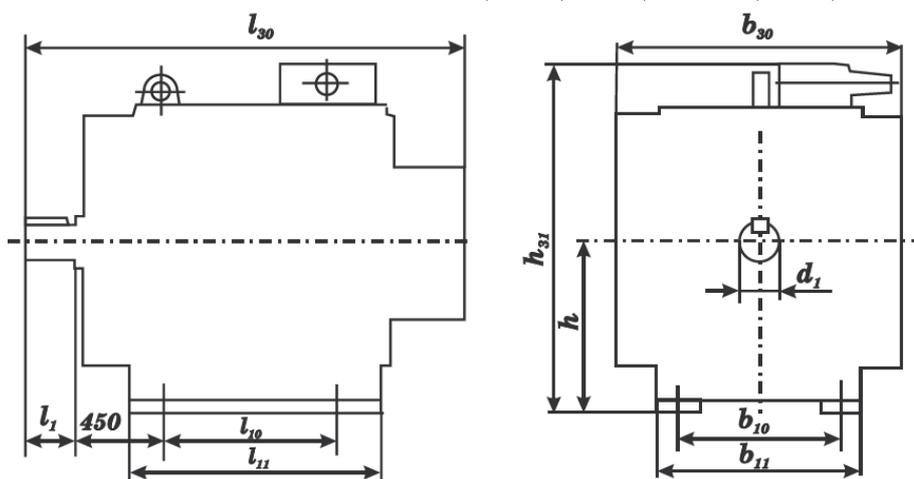


Figure 1. Overall and mounting dimensions of the motor AK30



Table 98

Motor type	Dimensions in mm									
	b ₁₀	b ₁₁	b ₃₀	d ₁	l ₁	l ₁₀	l ₁₁	l ₃₀	h	h ₃₁
AK30-15-57-8Y2	1000	1200	1870	160	300	1120	1500	2630	630	1430
AK30-16-45-6Y2	1250	1450	2120	200	350	1000	1380	2560	800	1800
AK30-16-57-6Y2	1250	1450	2120	200	350	1120	1500	2680	800	1800
AK30-16-45-8Y2	1250	1450	2120	200	350	1000	1380	2560	800	1800
AK30-16-57-8Y2	1250	1450	2120	200	350	1120	1500	2680	800	1800
AK30-16-69-8Y2	1250	1450	2120	200	350	1250	1620	2800	800	1800
AK30-16-45-10Y2	1250	1450	2120	200	350	1000	1380	2560	800	1800
AK30-16-57-10Y2	1250	1450	2120	200	350	1120	1500	2680	800	1800
AK30-17-38-12Y2	1600	1800	2470	200	350	900	1310	2490	900	2050
AK30-17-45-12Y2	1600	1800	2470	200	350	1000	1380	2560	900	2050
AK30-17-28-16Y2	1600	1800	2470	200	350	800	1210	2390	900	2050
AK30-17-33-16Y2	1600	1800	2470	200	350	900	1260	2440	900	2050
AK30-17-38-16Y2	1600	1800	2470	200	350	900	1310	2490	900	2050



ELECTRIC MOTORS OF SERIES АКДЭ

Three-phase induction motors with phase-wound rotor are intended for completing the drive of the working wheel of the rotor excavating machine.

The motors are of closed design with forced ventilation from separate fan.

Mode of operation - S1 as per GOST 183-74.

Degree of protection - IP44 as per GOST 17494-87.

Method of cooling - ICA37 as per GOST 20459-87.

Climatic version and location category – Y2 or XJ2 as per GOST 15150-69.

Technical data

Motor type	Power, kW	Voltage, V	Synchronous rotation speed, rpm	$\frac{M_{max}}{M_{rated}}$	Weight, kg
АКДЭ-16-62-10У2	1000	10000	600	2,3	7900
АКДЭ-16-62-10ХЛ2					

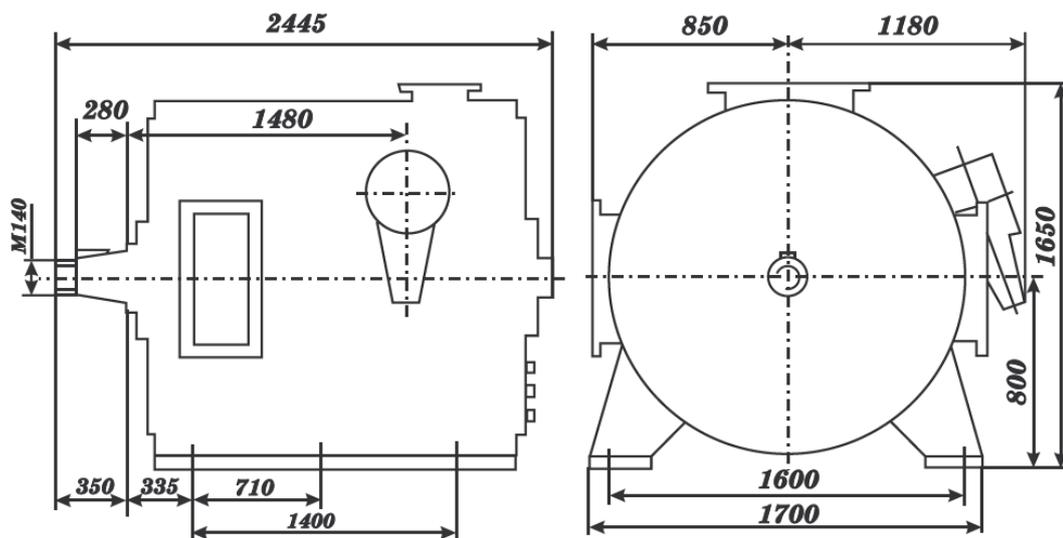


Figure 1. Overall and mounting dimensions of the motor AKDE-16-62-10.



ELECTRIC MOTORS OF SERIES AT20C8-12УХЛ4, AT20C8-12Т3, AT20C12-12УХЛ4 И AT20C12-12Т3

Three-phase induction motors with phase-wound rotor are of closed design with forced ventilation from separate fan are intended for the drive with heavy starting conditions (cement mills, fans).

Mode of operation - S1 as per GOST 183-74.

Degree of protection - IP41, degree of protection of slip rings IP00 as per GOST 17494-87.

Method of cooling - ICW37 A91 or ICA37 as per GOST 20459-87.

Climatic version and location category - УХЛ4 or Т3 as per GOST 15150-69.

Technical data of the motors are listed in Table 99 and Table 100.

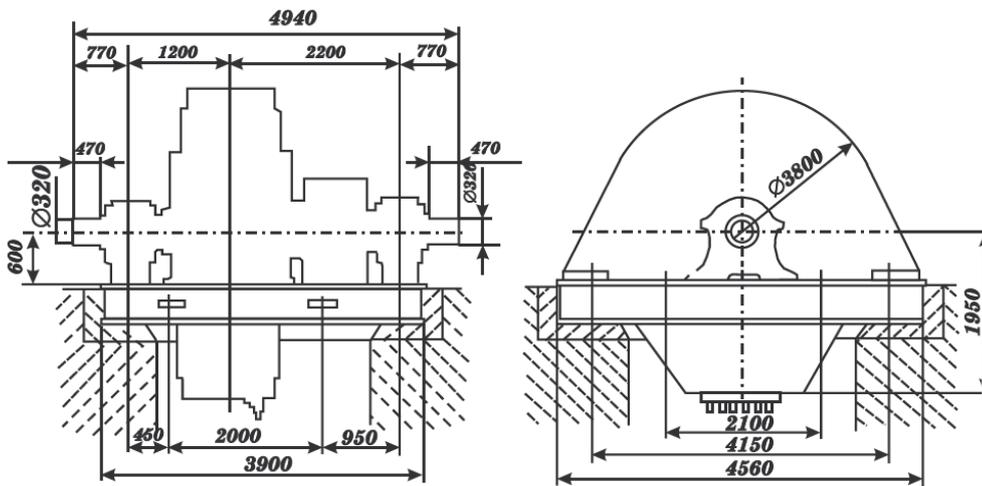


Figure 1. Overall and mounting dimensions of the motors AT20C8-12УХЛ4, AT20CB-12Т3.

Table 99

Motor type	Power, kW	Voltage, V	Synchronous rotation speed, rpm	Design dynamic moment of armature inertia, kgm ²	Weight, kg
AT20C8-12УХЛ4	3550	6000	500	7500	34600
AT20C8-12Т3	3150				

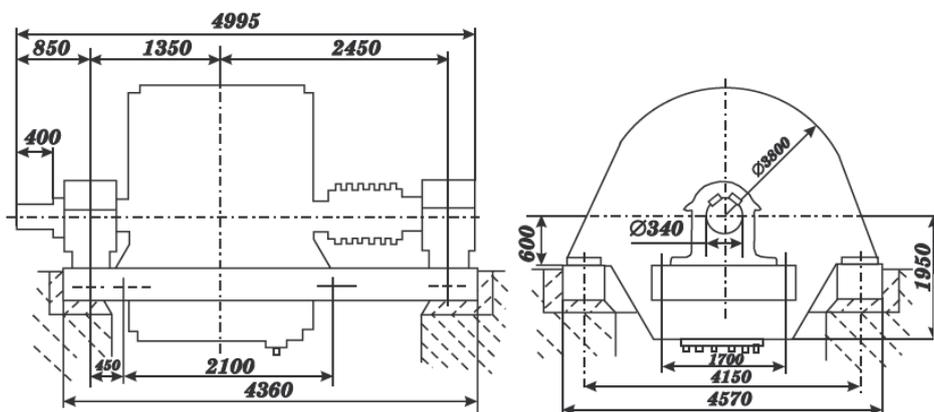


Figure 2. Overall and mounting dimensions of the motor.

Table 100

Motor type	Power, kW	Voltage, V	Synchronous rotation speed, rpm	Design dynamic moment of armature inertia, kgm ²	Weight, kg
AT20C12-12УХЛ4	4000	10000	500	10750	44200
AT20C12-12Т3	3550	11000			



ELECTRIC MOTORS OF AKC TYPE

Asynchronous three-phase motor of AKC type with phase rotor is designed to drive mechanisms with heavy starting conditions and other mechanisms with adjustment of rotational speed (hoisting towers, band conveyers, mills and so forth).

Operational mode of the motors is continuous S1.

Protection degree of the motor – IP54, fan casing – IP20.

Cooling way - IC0151 by GOST 20459-87 - aerial with self-ventilation and with built-in cooler (distributing).

Constructive mounting arrangement of the motors - IM1001 by GOST 2479-79, with two end shields, on feet, horizontal shaft with cylindrical shaft end.

Climatic construction and allocation category – Y2 by GOST 15150-69.

The motors are manufactured with frictionless bearings with consistent grease.

The motors are made with right sense of rotation and enable left sense of rotation. Sense of rotation can be changed only in rest state by switching stator windings.

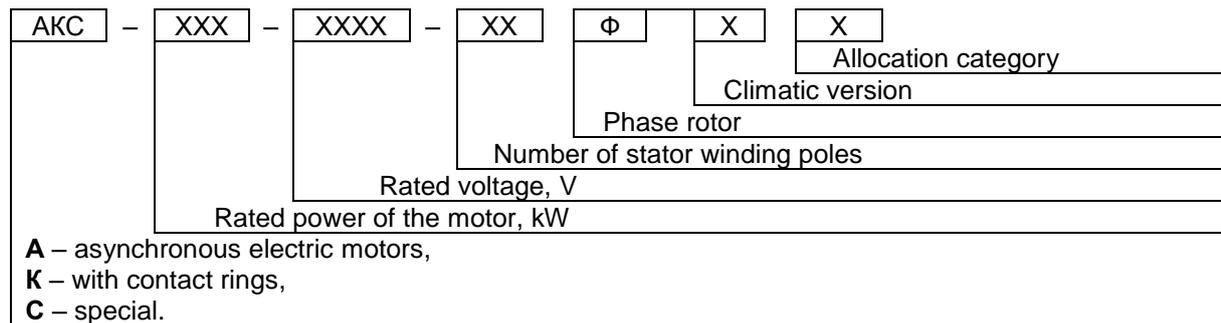
Insulation of stator winding is thermosetting of "Monolith – 2" type of class «F» of thermal classification.

Stator winding has 6 terminals brought to the terminal box and fixed on four insulators. Rotor winding has 3 outlet ends brought to the bus bars of the brush device. Connection of phases of stator and rotor windings is "star".

The resistance thermal converters (TC) with nonlinear static characteristic 100П are installed to control temperature of the bearings and stator winding: one TC per one bearing unit, 6 TC for the winding and 3 for the stator core.

Terminal boxes of the stator and TC are placed on the left side, if you see from side of the working shaft end.

The motor designation is decoded as follows:



Technical characteristics of the electric motors are given in the Table 101 and in Figure 1.

Table 101

Motor type	Power, kW	Voltage, V	Rated rotational speed, rpm	Eff., %	cos φ	M _{max} /M _{nom}	Weight, kg
AKC-315-6000-6ΦY2	315	6000	1000	93,5	0,88	2,3	4000

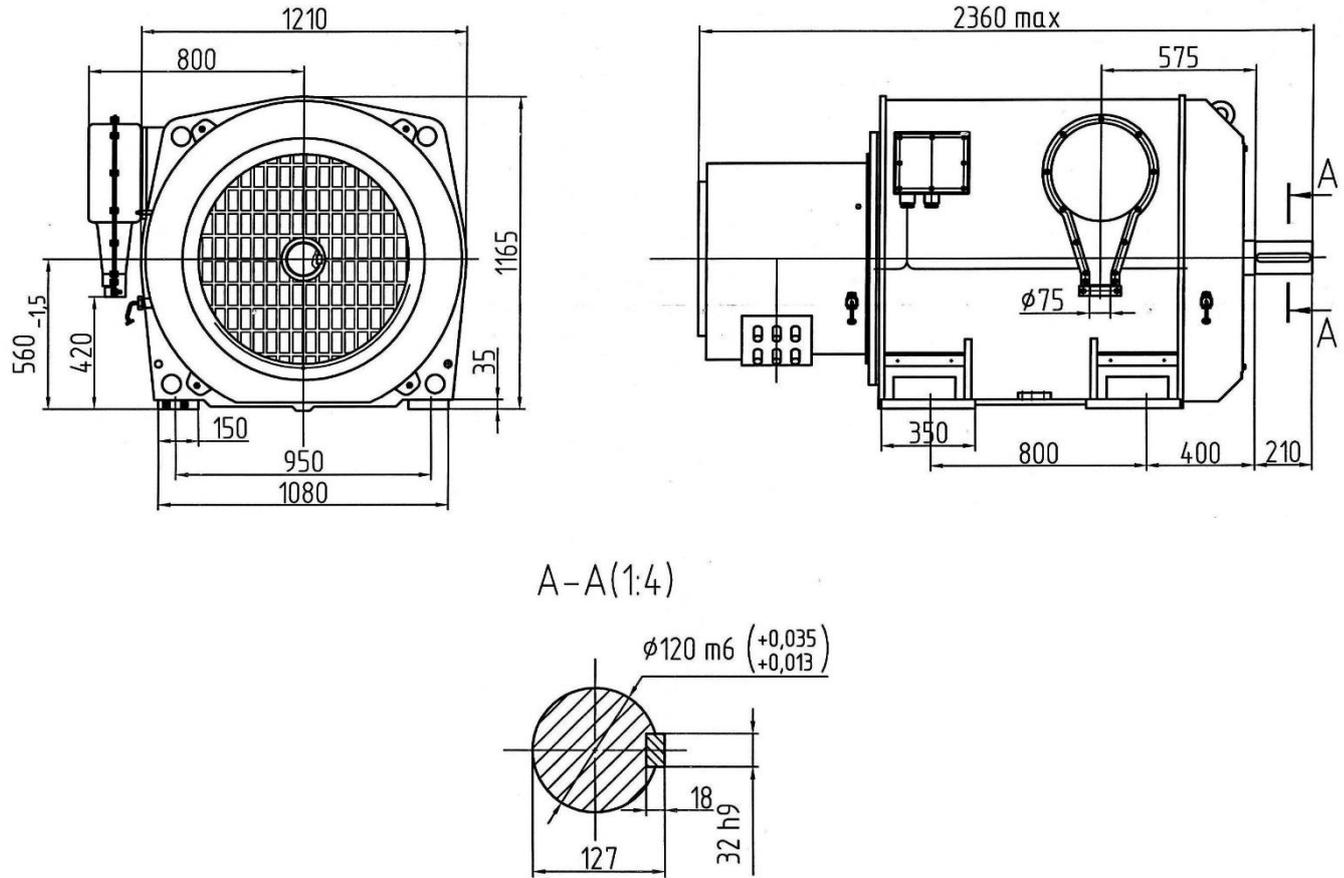


Figure 1. Electric motor AKC-315-6000-6ΦY2



2.2. EXPLOSION-PROOF ELECTRIC MOTORS

ELECTRIC MOTORS OF TYPE «UKRAINE»

Asynchronous explosion-proof motors with phase-wound rotor series “Ukraine” are intended for needs of national economy and for export to the countries with temperate climate, for operation in stationary installations, for mining and coil industries including mines dangerous in gas (methane) and coil dust.

Climatic version - Y, category of location 5.

Explanation of designations of the motor “Ukraine”560M-6ΦY5:

“Ukraine”- designation of the series

560 – height of the rotation axis, mm

M – designation of length of the armature core

6 - number of poles

Φ - phase-wound rotor

Y- climatic version

5 - location category

The motor voltage is 6000 V, frequency of supply mains is 50 Hz.

Ambient temperature within the limits from - 5°C to + 35°C, relative humidity 100% at temperature +35°C.

Design version of the motors is IM1001.

Cooling method of the motors is ICA01A51, level of explosion protection – version PB-4B.

Degree of protection of the main shell of the motors and outlets box – IP-54, of the outside fan housing – IP20.

Insulation of stator winding is thermosetting of thermal endurance class “F”.

Insulation of rotor winding is of class “F”.

Types and main motors parameters are listed in Table 102.

Overall and mounting dimensions and the motors weight are listed in Table 103.

Table 102

Motor type	Rated data				Cos φ	$\frac{M_{max}}{M_{rated}}$	Rotor	
	Power, kW	Rotational speed (synch.), rpm	Stator current, A	Eff., %			Voltage, V	Current, A
«Ukraine» 560S-6ΦY5	315	1000	38	93,5	0,86	2,8	520	370
«Ukraine» 560M-6ΦY5	400	1000	48	94,0	0,86	2,8	620	390
«Ukraine» 560L-6ΦY5	500	1000	59	94,5	0,87	2,8	760	400

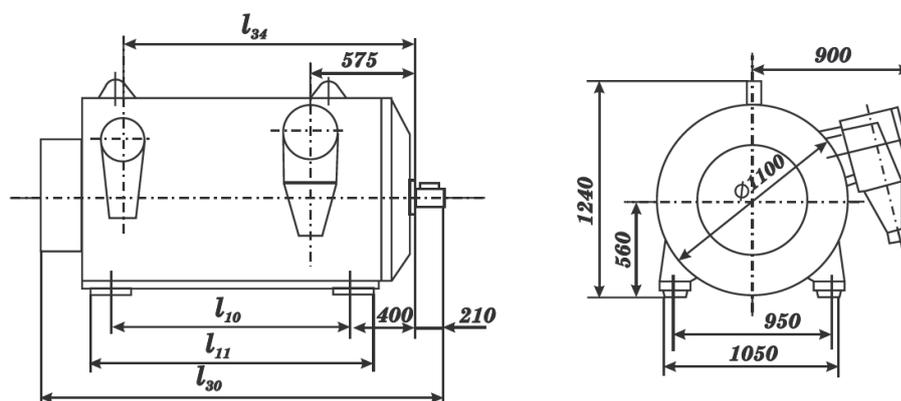


Table 103

Motor type	Dimensions, mm				Weight, kg	Moment of inertia, kgm ²
	l ₁₀	l ₁₁	l ₃₀	l ₃₄		
«Ukraine» 560S-6ΦY5	800	1110	2420	1385	4000	39,5
«Ukraine» 560M-6ΦY5	900	1185	2495	1460	4320	44,75
«Ukraine» 560L-6ΦY5	1000	1305	2615	1580	4770	53



ELECTRIC MOTORS OF TYPE 2MA36 6,7 SIZES

Asynchronous explosion-proof motors series 2MA36 sizes 6,7 with phase-wound rotor are intended for continuous operation regime in underground openings of coal mines and mines dangerous in gas and coal dust (group 1) as well as in explosively dangerous premises of all classes and in outside installations dangerous in gas and vapour mixtures (group 2).

Climatic version - "Y" or "T", location category 2 or 5.

Explanation of designations of the motor series 2MA36-71/6ΦY5:

2 – ordinal number of the series

MA - asynchronous machine

36 - designation of series

7 - designation of dimension

1 – designation of stator core length

6 - number of poles

Φ – phase-wound rotor

Y - climatic version

5 - location category

Design version of the motors as to mounting mode is IM 1001, degree of protection of the main shell of the motors and outlets box is IP54, of housing of the outside fan is IP20, cooling method of the motors is ICA01.

Ambient temperature is from - 5°C to + 40° C, relative humidity 98% at temperature 35°C.

Insulation of stator and rotor windings is of class "F" thermal endurance.

Technical data of the motors are listed in Table 104 and Table 105.

Overall and mounting dimensions are listed in Table 106.

Table 104

Motor type	Rated data				Slip %	Eff., %	Cos φ	$\frac{M_{max}}{M_{rated}}$	Rotor data	
	Power, kW	Stator current, A		Rotation speed (synch.), rpm					Voltage, V	Current, A
		at 380V	at 660V							
Synchronous rotation frequency– 1000 rpm										
2MA36-61/6φY5	160	300	174	985	1,5	92,5	0,87	3,0	575	165
2MA36-61/6φY2										
2MA36-62/6φY5	200	374	216	985	1,5	93,0	0,87	3,0	715	165
2MA36-62/6φY2										
2MA36-71/6φY5	250	460	265	990	1,0	93,5	0,88	3,0	1000	150
2MA36-71/6φY2										
2MA36-72/6φY5	315	577	334	990	1,0	94,0	0,88	3,0	1170	158
2MA36-72/6φY2										
Synchronous rotation frequency – 750 rpm										
2MA36-61/8φY5	125	247	143	740	1,3	92,5	0,83	3,0	440	170
2MA36-61/8φY2										
2MA36-62/8φY5	160	310	180	740	1,3	93,0	0,84	3,0	500	190
2MA36-62/8φY2										
2MA36-71/8φY5	200	377	218	740	1,3	93,5	0,86	3,0	1000	120
2MA36-71/8φY2										
2MA36-72/8φY5	250	465	269	740	1,3	94,0	0,87	3,0	1200	120
2MA36-72/8φY2										



Table 105

Motor type	Rated data					Slip %	Eff., %	Cos φ	$\frac{M_{max}}{M_{rated}}$	Rotor data	
	Power, kW	Voltage, V	Stator current, A	Frequency, Hz	Rotation speed (synch.), rpm					Voltage, V	Current, A
2MA36-61/6φT5	160	380	300	50	1000	1,5	92,5	0,87	3,0	575	165
		400	285						3,3	600	157
		415	275						3,5	625	150
2MA36-61/6φT2		440	271	60	1200	1,3	92,5	0,84	4,0	660	142
2MA36-62/6φT5	200	380	374	50	1000	1,5	93,0	0,87	3,0	715	165
		400	355						3,3	750	157
		415	343						3,5	780	150
2MA36-62/6φT2		440	336	60	1200	1,3	93,0	0,84	4,5	825	143
2MA36-71/6φT5	250	380	460	50	1000	1,0	93,5	0,88	3,0	1000	150
		400	435						3,3	1050	142
		415	420						3,5	1090	138
2MA36-71/6φT2		440	420	60	1200	0,8	93,0	0,84	4,5	1140	130
2MA36-72/6φT5	315	380	577	50	1000	1,0	94,0	0,88	3,0	1170	158
		400	547						3,3	1230	150
		415	530						3,5	1275	145
2MA36-72/6φT2		440	521	60	1200	0,8	93,5	0,85	4,5	1330	140
2MA36-61/8φT5	125	380	247	50	750	1,3	92,5	0,83	3,0	440	170
		400	235						3,3	465	162
		415	226						3,5	480	156
2MA36-61/8φT2	125	440	222	60	900	1,1	92,5	0,80	3,8	490	150
2MA36-62/8φT5	160	380	310	50	750	1,3	93,0	0,84	3,0	500	190
		400	295						3,3	525	180
		415	285						3,5	545	174
2MA36-62/8φT2	160	440	276	60	900	1,1	93,0	0,82	3,8	560	170
2MA36-71/8φT5	200	380	377	50	750	1,3	93,5	0,86	3,0	1000	120
		400	360						3,3	1050	114
		415	345						3,5	1090	110
2MA36-71/8φT2	200	440	336	60	900	1,1	93,0	0,84	3,8	1170	100
2MA36-72/8φT5	250	380	465	50	750	1,3	94,0	0,87	3,0	1200	120
		400	440						3,3	1260	114
		415	425						3,5	1310	110
2MA36-72/8φT2	250	440	413	60	900	1,1	93,5	0,85	3,8	1400	105

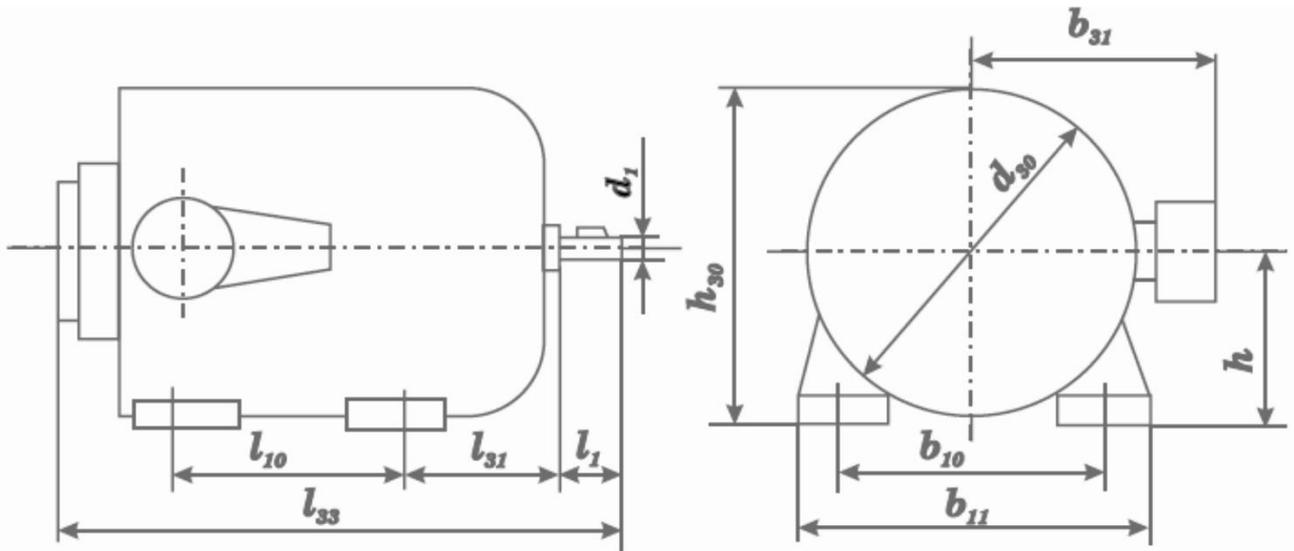


Table 106

Motor type	Dimensions, mm											Weight, kg
	b ₁₀	b ₁₁	b ₃₁	d ₁	d ₃₀	l ₁	l ₁₀	l ₃₁	l ₃₃	h	h ₃₀	
2MA36-61/6φY5	760±1,4	860	692	90H	864	170	625±1,4	313±4	1681	450-1,0	882	2340
2MA36-61/8φY5	760±1,4	860	692	90H		170	625±1,4	313±4	1681	450-1,0	882	2340
2MA36-61/6φY2	760±1,4	860	692	90H		170	625±1,4	313±4	1681	450-1,0	882	2340
2MA36-61/8φY2	760±1,4	860	692	90H		170	625±1,4	313±4	1681	450-1,0	882	2340
2MA36-62/6φY5	760±1,4	860	692	90H		170	695±1,4	313±4	1751	450-1,0	882	2548
2MA36-62/8φY5	760±1,4	860	692	90H		170	695±1,4	313±4	1751	450-1,0	882	2548
2MA36-62/6φY2	760±1,4	860	692	90H		170	695±1,4	313±4	1751	450-1,0	882	2548
2MA36-62/8φY2	760±1,4	860	692	90H		170	695±1,4	313±4	1751	450-1,0	882	2548
2MA36-71/6φY5	900±1,4	1000	750	100H	1002	210	645±1,4	377,5±4	1843	530-1,0	1031	3480
2MA36-71/8φY5	900±1,4	1000	750	100H		210	645±1,4	377,5±4	1843	530-1,0	1031	3480
2MA36-71/6φY2	900±1,4	1000	750	100H		210	645±1,4	377,5±4	1843	530-1,0	1031	3480
2MA36-71/8φY2	900±1,4	1000	750	100H		210	645±1,4	377,5±4	1843	530-1,0	1031	3480
2MA36-72/6φY5	900±1,4	1000	750	100H		210	725±1,4	377,5±4	1923	530-1,0	1031	3710
2MA36-72/8φY5	900±1,4	1000	750	100H		210	725±1,4	377,5±4	1923	530-1,0	1031	3710
2MA36-72/6φY2	900±1,4	1000	750	100H		210	725±1,4	377,5±4	1923	530-1,0	1031	3710
2MA36-72/8φY2	900±1,4	1000	750	100H		210	725±1,4	377,5±4	1923	530-1,0	1031	3710



3. GENERATORS

ASYNCHRONOUS GENERATOR OF SERIES AFB 280L4-OM 2

The generator is intended to complete the wind turbine VSW 56-100. It is mounted on the main frame of the changeover platform of the wind turbine and connected to the drive shaft of the wind turbine by flexible coupling.

Climatic version - OM, location category 2.

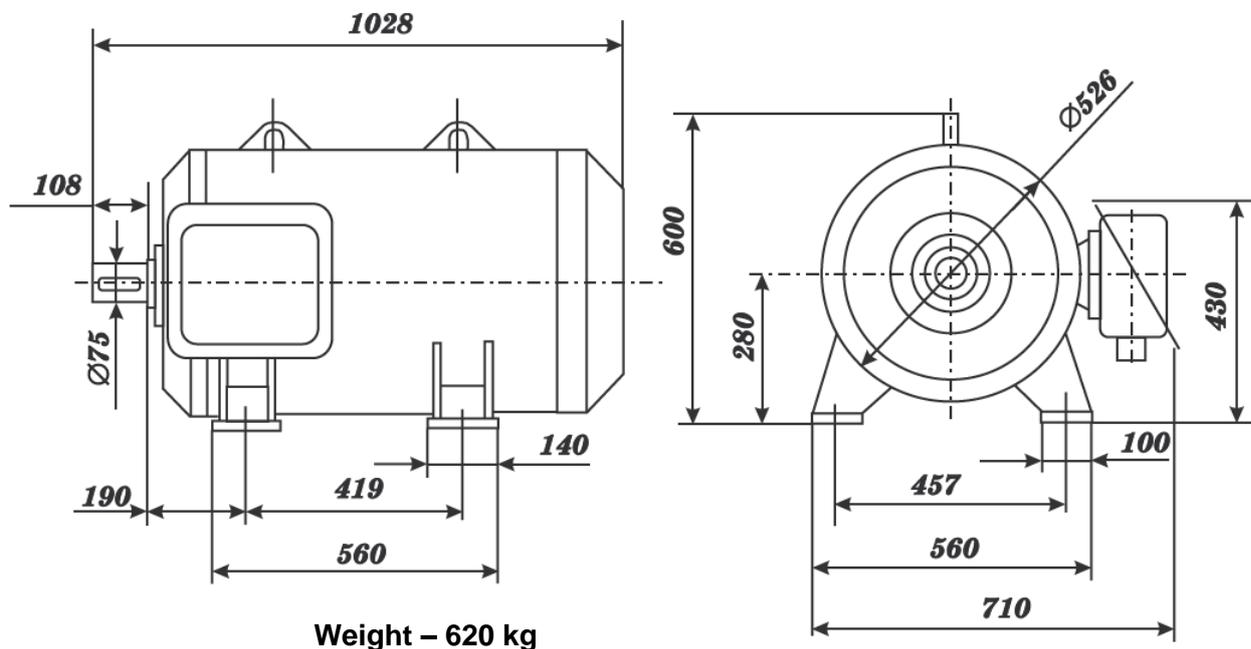
Degree of protection - IP54.

Cooling method - ICA01.

Continuous operation mode S1.

Main parameters of the generator AFB280L4-OM2.

Parameter	Rated data	
Rated current frequency, Hz	50	60
Rated power, kW	110	110
Rated voltage, V	380	480
Rated current, A	202	175
Rotation frequency (synchr.) rpm	1500	1800
Efficiency, %	93,5	93,5
Maximum torque, Hm	2000	3000





HYDRO-GENERATORS FOR MINI HEPS

Hydro-generators are designed for power generation. Driver of the hydro-generators is water turbine.
Protection degree - IP23, cooling is self-ventilation.
Hydro-generators are made on rolling bearings.
Technical characteristics of asynchronous generators are given in the Table 107.

Table 107

Type of the hydro-generator	Power, kW	Voltage, kV	Synchronous rotational speed, rpm
АГГ-400-0,4-10У3	400	0,4	600
АГГ-800-10,5-8У3	800	10,5	750

The motor designation is decoded as follows:

АГГ- XXX - X – X U3

АГГ – asynchronous horizontal generator;

XXX - power, kW;

X - voltage, kV;

X - number of poles.



EXAMPLES OF PUMP, FAN AND SMOKE-EXHAUSTER COMPLETE SET WITH ELECTRIC MOTORS MANUFACTURED BY JSC "LEMP"

Pump complete set

JSC "NASOENERGOMASH", SUMY

Type of the electric motor	Power, kW	Rotational speed, rpm	Voltage, V	Type of the pump
ДАЗО-400ХК-4У1	315	1500	6000	СЭ 800-100-11
ДАЗО-400ХК-4У1	315	1500	6000	СЭ 1250-70-11
А-400У-4У3	630	1500	6000	СЭ 1250-140-11
ДАЗО-450Х-4У1	630	1500	6000	
А-400Х-4У3	500	1500	6000	СЭ 2500-60-11
ДАЗО-400У-4У1	500	1500	6000	
А-400У-4У3	630	1500	6000	СЭ 2500-60-11-1
ДАЗО-450Х-4У1	630	1500	6000	
А-400У-4У3	630	1500	6000	СЭ 2500-60-8
ДАЗО-450Х-4У1	630	1500	6000	
А-400У-4У3	630	1500	6000	СЭ 2500-60-16
ДАЗО-450Х-4У1	630	1500	6000	
АОД-1250-4У1	1250	1500	6000	СЭ 5000-70-6
АОД-1250-4У1	1250	1500	6000	СЭ 5000-70-5
А-400ХК-4У3	400	1500	6000	ЦН 400/21
ДАЗО-400ХК-4У1	315	1500	6000	ЦН 400/210
А-400У-4У3	630	1500	6000	ЦН 1000-180-3
ДАЗО-450Х-4У1	630	1500	6000	
А-400Х-4У3	500	1500	6000	ЦН 1000-180а-3
ДАЗО-400У-4У1	500	1500	6000	
А-450У-6У3	800	1000	6000	Д 2000-100-2
А-450Х-6У3	630	1000	6000	Д 2000-100а-2
ДАЗО-450У-6У1	630	1000	6000	
А-450Х-6У3	630	1000	6000	Д 2000-100б-2
ДАЗО-450У-6У1	630	1000	6000	
А-450Х-6У3	630	1000	6000	Д 2500-62-2
ДАЗО-450У-6У1	630	1000	6000	
А-400У-6У3	500	1000	6000	Д 2500-62а-2
ДАЗО-450Х-6У1	500	1000	6000	
А-400У-8У3	315	750	6000	Д 3200-33-2
А-400Х-6У3	400	1000	6000	
ДАЗО-400У-6У1	400	1000	6000	Д 3200-33а-2
А-400ХК-6У3	315	1000	6000	
ДАЗО-400Х-6У1	315	1000	6000	Д 3200-33б-2
А-400ХК-6У3	315	1000	6000	
ДАЗО-400Х-6У1	315	1000	6000	Д 3200-75-2
А-450Х-8У3	400	750	6000	
ДАЗО-450УК-8У1	400	750	6000	Д 3200-75-2
А-450У-6У3	800	1000	6000	
А-450У-8У3	630	750	6000	Д 4000-95-2
А-450У-8У3	630	750	6000	Д4000-95а-2-10
А-450У-8У3	630	750	6000	Д 6300-27-3
А-450У-8У3	630	750	6000	Д 6300-27-3-1
А-450УК-8У3	500	750	6000	Д 6300 -27а-3
ДАЗО-450У-8У1	500	750	6000	
ВАОВ5К-315-6	315	1000	6000	НПВ 1250-60-М
ВАОВ5К-400-6	400	1000	6000	НПВ 2500-40-М
ВАОВ5К-630-6	630	1000	6000	НПВ 1250-110-М
ВАОВ5К-630Д-6	630	1000	10000	НПВ 3600-45-М
ВАОВ5К-800-6	800	1000	6000	НПВ 2500-80-М
ВАОВ5К-800Д-6	800	1000	10000	
ВАОВ5К-1000-6	1000	1000	6000	НПВ 2500-120а-М
ВАОВ5К-100Д-6	1000	1000	10000	



BAOB5K-1250-6	1250	1000	6000	НПВ 2500-120-М НПВ 3600-90-М НПВ 5000-120-М
BAOB5K-1250Д-6	1250	1000	10000	
BAOB5K-1600-6	1600	1000	6000	НПВ 3600-120-М
BAOB5K-1600Д-6	1600	1000	10000	НПВ 3600-135а-М
BAOB5K-2000-6	2000	1000	6000	НПВ 3600-135-М
BAOB5K-2000Д-6	2000	1000	10000	
BAOB5K-2250-6	2250	1000	6000	НПВ 5000-120-М
BAOB5K-2250Д-6	2250	1000	10000	

JSC "LIVHYDROMASH", LIVNY

Type of the electric motor	Power, kW	Rotational speed, rpm	Voltage, V	Type of the pump
ДА3О-400ХК-4У1	315	1500	6000	1Д630x90
ДА3О-400Х-4У1	400	1500	6000	1Д630x125
А-400ХК-4У1	400	1500	6000	
ДА3О-400ХК-4У1	315	1500	6000	1Д1250x63
А-400У-4У3	630	1500	6000	1Д1250x125
А-400Х-4У3	500	1500	6000	
А-400ХК-4У3	400	1500	6000	
ДА3О-450Х-4У1	630	1500	6000	
А-400ХК-4У3	400	1500	6000	1Д1600x90
А-400Х-4У3	500	1500	6000	
А-400У-4У3	630	1500	6000	

JSC "BOBRUIK MACHINE-BUILDING FACTORY", BOBRUIK

Type of the electric motor	Power, kW	Rotational speed, rpm	Voltage, V	Type of the pump
А-450У-8У3	1500	750	6000	1СД 2400/756
А-450УК-8У3	500	750	6000	СД 2400/756
А-450Х-6У3	400	1000	6000	БМ 1500/45
ДА3О-450У-6У1	630	1000	6000	ГРАТ 900/67
ДА3О-450У-8У1	500	750	6000	ГРАК 1400/40
ДА3О-450У-8У1	500	750	6000	ГРАТ 1400/40
А3-13-52-8УХЛ4	500	750	6000	1ГРК 1600/50
А3-13-52-8УХЛ4	500	750	6000	1ГРТ 1600/50
ДА3О-450У-6У1	630	1000	6000	ГРТ 1250/71
ДА3О-450У-8У1	315	750	6000	ГРАУ 1600/25

JSC " URALHYDROMASH ", SYSERT

Type of the electric motor	Power, kW	Rotational speed, rpm	Voltage, V	Type of the pump
BAOB5K-400-4	400	1500	6000	НПВ1250-60-1 НПВ1250-60-2 НПВ1250-60-1/3 НПВ1250-60-2/3
BAOB5K-800-4	800		6000	НПВ 2500-80-1 НПВ 2500-80-2
BAOB5K-800Д-4			10000	НПВ 2500-80-1/3 НПВ 2500-80-2/3
BAOB5K-1250-4	1250		6000	НПВ 3600-90-1 НПВ 3600-90-2
BAOB5K-1250Д-4			10000	НПВ 3600-90-3
BAOB5K-2000-6	2000		6000	НПВ 5000-120-1 НПВ 5000-120-2
BAOB5K-2000Д-6			10000	НПВ 5000-120-3



Type of the electric motor	Power, kW	Voltage, V	Type of the pump
BAH5-630-10Y3	630	6000	OB2-87-Y3
BAHD5-315/500-10/12УХЛ4	315/500	6000	OPB2-87-Y3
BAH5-100-8Y3	1000	6000	OB3-87-Y3 OPB3-87-Y3
BAH5-630-10Y3	630	6000	OB5-87-Y3
BAHD5-315/500-10/12УХЛ4	315/500	6000	OPB5-87-Y3
BAH5-315-12Y3	315	6000	OB16-87Y3 OPB16-87-Y3
BAH5-315-10Y3	315	6000	OB16-87-Y3 OPB16-87-Y3
BAH5-1000-12Y3	1000	6000	OB2-110-Y3 OPB2-110-Y3
BAH5-1600-10Y3	1600	6000	OB3-110-Y3 OPB3-110-Y3
BAH5-1000-12Y3	1000	6000	OB5-110-Y3
BAHD 5-1000/500-12/16УХЛ3	1000/500	6000	OPB5-110-Y3
BAH5-500-16Y3	500	6000	OB16-110-Y3 OPB16-110-Y3
BAH5-630-12Y3	630	6000	OB16-110-Y3 OPB16-110-Y3
BAH5-1600-16Y3	1600	6000	OB2-145-Y3 OPB2-145-Y3
BAH5-1600-16Y3	1600	6000	OB5-145-Y3 OPB5-145-Y3
BAH5-2500-16Y3	2500	6000	OB10-145-Y3 OPB10-145-Y3
BAH5-1000-16Y3	1000	6000	OB16-145-Y3 OPB16-145-Y3
BAH5-1000-12Y3	1000	6000	96ДВ-4,5/23Y3
BAH5-1600-12Y3	1600	6000	130ДВ-8/23Y3
BAH5-2500-16Y3	2500	6000	130ДПВ-8/23-ЭY3
BAH5-1600-16Y3	1600	6000	170ДВ-12/22-Y3 170ДПВ-12/22-Y3
BAHD5-4000/2500-20/24УХЛ3	4000/2500	6000	ОГ5-87А-Y3
A-450Y-12Y3	315	6000	600В-1,6/100-0
BAH5-1250-10Y3	1250	6000	1000В-4/63-0
BAH5-1600-16Y3	1600	6000	1000В-4/40
BAH5-2000-12Y3	2000	6000	1200В-6,3/40-I
BAH5-2500-16Y3	2500	6000	1200В-6,3/40-0
BAH3-5-2500-20Y3	2500	6000	800В-2,5/40
BAH5-1600-10Y3	1600	6000	800В-2,5/40-0
BAH5-1600-12Y3	1600	6000	1600В-10/40-Y3 1600В-10/40-0Y3 1600BP-10/40-0-Y3
BAH3-5-3150-24Y3	3150	6000	СДВ2700/26,5-UHL4 СДВ4000/28-UHL4
BAH5-400-8Y3	400	6000	СДВ7200/29-UHL4
BAH5-630-16Y3	630	6000	СДВ9000/45-UHL
BAH5-500-16Y3	500	6000	ЦН900-310-Y3
BAH5-1000-12Y3	1000	6000	ГрТ1500/71 ГрТ1500/71-a ГрТ4000/71
BAH5-800-12Y3	800	6000	СЭУ-1250-140-11
BAH5-1600-12УХЛ4	1600	6000	Д1250-125UHL4
ДА3О2-16-59-4Y1	1250	6000	Д1600-90UHL4
ДА3О-800-6-750УХЛ1	800	6000	Д2000-100-0 UHL4
A-450Y-8MY3	630	6000	Д2500-62 UHL4
A-400Y-4Y3	630	6000	Д3200-33 UHL4
A12-52-4Y3	630	6000	Д3200-75-0 UHL4
ДА3О-450X-4Y3	630	6000	
ДА3О-450X-4Y1	630	6000	
A-450X-8Y3	400	6000	
A-450X-6Y3	630	6000	
A-400Y-6Y3	500	6000	
ДА3О4-85/50-6Y1	400	10000	
A-450X-8Y3	400	6000	
ДА3О4-85/62-8Y1	400	6000	



A-450Y-8Y3	630	6000	Д4000-95-0 UHL4
A-450Y-8Y3	630	6000	Д5000-32 UHL4
A-450X-10Y53	315	6000	Д5000-32-0 UHL4
A-450Y-8Y3	630	6000	Д6300-27 UHL4
A-450X-10Y3	315	6000	Д6300-27-0 UHL4
BAO2-450-315-4	315	6000	ДХ650-90-У1
ДА304-450X-6Y3	315	6000	1ТХ2200/29-Е-СД-У3
ДА304-400XК-4AY3	250	6000	ЦНА800/70-К-251(251/251)-У3 ЦНА800/70/6-К-251(251/251)-У3 ЦНА300/80-К-251(251/251)-У3
A-400Y-10Y3	250	6000	ОХГ8-55-И-СД-У3
A-450X-10Y3	315	6000	ОХГ8-70-К, Е, И-СД-У3
A-450Y-12	315	6000	ОХГ6-87-К, Е, И-СД-У3

JSC «JASNOGORSK MACHINE WORKS», JASNOGORSK

Type of the electric motor	Power, kW	Voltage, V	Type of the pump
BAO2-450-250-4	250	1500	ЦНСК 300-180
BAO2-450-315-4	315	1500	ЦНСК 300-180
BAO2-450-250-4	250	1500	ЦНСК А 300-180
BAO2-450-315-4	315	1500	ЦНСК А 300-240
BAO2-450-400-4	400	1500	ЦНС А 300-300
BAO2-560-500-4	500	1500	ЦНСК А 300-360
BAO2-560-630-4	630	1500	ЦНСК А 300-420
BAO2-560-630-4	630	1500	ЦНСК А 300-480
BAO2-560-800-4	800	1500	ЦНСК А 300-540
BAO2-560-800-4	800	1500	ЦНСК А 300-600
BAO2-450-400-4	400	1500	ЦНК 900-90
A-400XК-4Y3	400	1500	ЦНК 900-90
BAO2-450-400-4	400	1500	ЦНК 450-120
BAO2-560-1000-4	1000	1500	12У6
BAO2-630-1600-4	1600	1500	14УВ6
BAO2-450-400-4	400	1500	У450-120
BAO2-450-400-4	400	1500	У900-90
BAO2-450-200-4	200	1500	ЦНСн 300-120
BAO2-450-400-4	400	1500	ЦНСн 300-180
BAO2-560-500-4	500	1500	ЦНСн 300-240
BAO2-560-630-4	630	1500	ЦНСн 300-300
A-400XК-4	400	1500	ЦНС(Г,М) 300-300
BAO2-560-630-4	630	1500	ЦНСн 300-360
A-400X4	500	1500	ЦНС(Г,М) 300-360
BAO2-560-630-4	630	1500	ЦНСн 300-420
A-400X4	500	1500	ЦНС(Г,М) 300-420
BAO2-560-800-4	800	1500	ЦНСн 300-480
A-400X4	630	1500	ЦНС(Г,М) 300-480
BAO2-560-800-4	800	1500	ЦНСн 300-540
A-450X4	800	1500	ЦНС(Г,М) 300-540
BAO2-560-800-4	800	1500	ЦНС 300-600
A-450X4	800	1500	ЦНС(Г,М)
BAO2-450-400-4	400	1500	ЦНСнА 180-383
BAO2-450-400-4	400	1500	ЦНСА 500-160
BAO2-560-630-4	630	1500	ЦНСА 500-240
BAO2-560-800-4	800	1500	ЦНСА 500-320
BAO2-560-1000-4	1000	1500	ЦНСА 500-400
BAO2-560-1 000-4	1000	1500	ЦНСА 500-480
BAO2-630-1 250-4	1250	1500	ЦНСА 500-560
BAO2-630-1600-4	1600	1500	ЦНСА 500-640
BAO2-630-1600-4	1600	1500	ЦНСА 500-720
BAO2-560-630-4	630	1500	ЦНСнА 500-160
BAO2-560-800-4	800	1500	ЦНСнА 500-240
BAO2Y-630-1250-4	1250	1500	ЦНСнА 500-320
BAO2Y-630-1600-4	1600	1500	ЦНСнА 500-400,



			ЦНЧА 500-480
BAO2Y-630-2000-4	2000	1500	ЦНЧА 500-560, ЦНЧА 500-640
A-450X-4Y3	800	1500	ЦНЧА, ЦНЧГА 850-240

JSC "DIMITROVGRADHIMMASH", DIMITROVGRAD

Type of the electric motor	Power, kW	Voltage, V	Type of the pump
BAO2-450-250-4	250	1500	ЦНЧА 180-255
BAO2-450-250-4	250	1500	ЦНЧА 300-180
BAO2-450-315-4	315	1500	ЦНЧА 180-297
BAO2-450-315-4)	315	1500	ЦНЧА 180-340
BAO2-450-315-4	315	1500	ЦНЧА 180-383
BAO2-450-315-4	315	1500	ЦНЧА 180-425
BAO2-450-315-4	315	1500	ЦНЧА 300-240
BAO2-450-400-4	400	1500	ЦНЧА 300-300
BAO2-560-500-4	500	1500	ЦНЧА 300-360
BAO2-560-500-4	500	1500	ЦНЧА 300-420

JSC «SUMY FRUNZE SPA», SUMY, (FOR NPS)

Type of the electric motor	Power, kW	Rotational speed, rpm	Voltage, V	Type of the pump
BAH3-5A-800-8TB3	800	750	6000	AKcBA 1500-120-2
BAH3-5A-2000-4TB3	2000	1500	6000	AKcBA 2200-220-1
BAH3-5A-1000-10TM3	1000	600	6000	BA 5500-50A
BAH3-5A-1250-10TM3	1250	600	6000	BA 4500-50A
AOA5-800-6-2TB3	800	3000	6000	АЦНА 60-185-1
AOA5-630-6-2TB3	630	3000	6000	АПЭА 150-85-1
AOA-800-10-6TB3	800	1000	10000	ЦН 6000-30



DRAFT MACHINE COMPLETE SET

JSC "SIBENERGOMASH", BARNaul

Type of the electric motor	Power, kW	Rotational speed, rpm	Voltage, V	Smoke extractor or fan
АОД-1250-10У1	1250	600	6000	ДОД-28.5
АОД-1600-10У1	1600	600	6000	
АОД-1250-10У1	1250	600	6000	ДОД-28.5-ГМ
АОД-1600-10У1	1600	600	6000	
АОД-1250-10У1	1250	600	6000	ДОД-28.5-І
АОД-1600-10У1	1600	600	6000	
АОД-1250-10У1	1250	600	6000	ДОД-28.5-ІГМ
АОД-1600-10У1	1600	600	6000	
АОД-1250-10У1	1250	600	6000	ДОД-28.5-ІФГМ
АОД-2000-12У1	2000	500	6000	ДОД-31.5
АОД-2000-12У1	2000	500	6000	ДОД-31.5ГМ
АОД-2000-12У1	2000	500	6000	ДОД-31.5Ф
АОД-2000-12У1	2000	500	6000	ДОД-31.5ФГМ
ДАЗО-450УК-8У1	400	750	6000	ДН-22x2-0.62
ДАЗО-450Х-10У1	250	600	6000	
ДАЗО-450УК-8У1	400	750	6000	ДН-22x2-0.62ГМ
ДАЗО-450Х-10У1	250	600	6000	
АОД-630-8У1	630	750	6000	ДН-24x2-0.62
АОД-630/400-8/10У1	630/400	750/600	6000	ДН-24x2-0.62ГМ
АОД-1000-8У1	1000	750	6000	ДН-26x2-0.62
АОД-1000-10-8У1	1000	750	10000	
АОД-500-10У1	500	600	6000	ДН-26x2-0.62ГМ
АОД-1000/500-8/10У1	1000/500	750/600	6000	
ДАЗО-400ХК-4У1	315	1500	6000	ДН-15Б
ДАЗО-400Х-4У1	400	1500	6000	ДН-15БГМ
ДАЗО-400Х-4У1	400	1500	6000	ДН-17Б
ДАЗО-400У-4У1	500	1500	6000	
ДАЗО-400У-10У1	200	600	6000	ДН-19М
ДАЗО-450У-4У1	800	1500	6000	ДН-19МГМ
ДАЗО-400У-6У1	400	1000	6000	ДН-19С
АОД-400/250-6/8У1	400/250	1000/750	6000	ДН-21М
ДАЗО-450Х-8У1	315	750	6000	ДН-21МГМ
ДАЗО-450Х-10У1	250	600	6000	ДН-22
ДАЗО-450УК-8У1	400	750	6000	ДН-22ГМ
ДАЗО-450Х-10У1	250	600	6000	ДН-24
ДАЗО-450У-10У1	315	600	6000	ДН-24ГМ
АОД-630-8У1	630	750	6000	ДН-26
АОД-630-10-8У1	630	750	10000	
АОД-630/400-8/10У1	630/400	750/600	6000	ДН-26ГМ
ДАЗО-450У-10У1	315	600	6000	ДН-26Ф
АОД-630-8У1	630	750	6000	
АОД-630-10-8У1	630	750	10000	ДН-26ФГМ
АОД-630/400-8/10У1	630/400	750/600	6000	
АОД-630-8У1	630	750	6000	ДН-24x2Ф
АОД-630/400-8/10У1	630/400	750/600	6000	
АОД-1000/630-8/10У1	630/400	750/600	6000	ДН-24x2ФГМ
ДАЗО-400ХК-6У1	250	1000	6000	Д-15.5
ДАЗО-400У-8У1	250	750	6000	Д-15.5ГМ
ДАЗО-450Х-8У1	315	750	6000	Д-18
ДАЗО-450У-8У1	500	750	6000	
ДАЗО-400У-10У1	200	600	6000	Д-18ГМ
ДАЗО-400У-8У1	250	750	6000	
ДАЗО-450Х-8У1	315	750	6000	Д-20
ДАЗО-450У-8У1	315	750	6000	
ДАЗО-450УК-8У1	400	750	6000	Д-20ГМ
АОД-315/200-8/10У1	315/200	750/600	6000	
АОД-400/200-8/10У1	400/200	750/600	6000	Д-18x2Б
АОД-800-8У1	800	750	6000	
АОД-800-8У1	800	750	6000	Д-18x2БГМ
АОД-800-8У1	800	750	6000	Д-20x2Б



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АОД-630-10У1	630	600	6000	Д-20х2БГМ
АОД-800/400-8/10У1	800/400	750/600	6000	
АОД-630-8У1	630	750	6000	
АОД-500-10У1	500	600	6000	Д-21.5х2Б
АОД-400-10У1	400	600	6000	Д-21.5х2БГМ
АОД-800-8У1	800	750	6000	
АОД-1000-8У1	1000	750	6000	
АОД-1600-10У1	1600	600	6000	Д-25х2ШБ
АОД-630/400-8/10У1	630/400	750/600	6000	Д-25х2ШБТН
АОД-1600-6У1	1600	1000	6000	ВДН-25х2У
АОД-1600/800-6/8У1	1600/800	1000/750	6000	ВДН-25х2М
АОД-1600-6У1	1600	1000	6000	ВДН-25х2
ДАЗО-400ХК-4У1	315	1500	6000	ВДН-25х2-1
ДАЗО-400Х-4У1	400	1500	6000	ВДН-15
ДАЗО-400У-6У1	400	1000	6000	ВДН-17
ДАЗО-400Х-6У1	315	1000	6000	ВДН-19
ДАЗО-400У-6У1	400	1000	6000	ВДН-18
ДАЗО-400У-8У1	250	750	6000	
АОД-315/160-6/8У1	315/160	1000/750	6000	ВДН-20
АОД-400/250-6/8У1	400/250	1000/750	6000	
ДАЗО-400У-8У1	250	750	6000	ВДН-22
ДАЗО-450УК-8У1	400	750	6000	ВДН-24
ДАЗО-450У-10У1	315	600	6000	
АОД-630-8У1	630	750	6000	ВДН-26
АОД-630/400-8/10У1	630/400	750/600	6000	
АОД-800-8У1	800	750	6000	
АОД-1000-8У1	1000	750	6000	ВДН-28
АОД-800/400-8/10У1	800/400	750/600	6000	
АОД-800/500-8/10У1	800/500	750/600	6000	
АОД-1250/800-8/10У1	1250/800	750/600	6000	ВДН-31.5
АОД-1000/630-8/10У1	1000/630	750/600	6000	
АОД-1250/800-8/10У1	1250/800	750/600	6000	
АОД-1000/630-8/10У1	1000/630	750/600	6000	ВДН-32Б
АОД-1250/800-8/10У1	1250/800	750/600	6000	
АОД-630/370-10/12У1	630/370	600/500	6000	
ДАЗО-400ХК-4У1	315	1500	6000	ВГДН-15Б
ДАЗО-400Х-4У1	400	1500	6000	ВГДН-17Б
ДАЗО-400ХК-6У1	250	1000	6000	ВГДН-19М
ДАЗО-400У-6У1	400	1000	6000	ВГДН-21М
ДАЗО-450Х-4У1	630	1500	6000	ВГД-225Д
ДАЗО-450Х-6У1	500	1000	6000	
ДАЗО-450У-6У1	630	1000	6000	ГД-20
АОД-630-6У1	630	1000	6000	
АОД-800/500-8/10У1	800/500	750/600	6000	ГД-31
ДАЗО-450У-4У1	800	1500	6000	ДРГ-19.5
АОД-400-8У1	400	750	6000	ДРГ-19.5Ф
ДАЗО-450У-6У1	630	1000	6000	ДРГ-25
АОД-1250-6У1	1250	1000	6000	ГД-25М
АОД-1250-10-6У1	1250	1000	10000	ГД26х2
ДАЗО-450У-6У1	630	1000	6000	ГД26х2- I
АОД-1000-6У1	1000	1000	6000	ВМ-160/850-I
АОД-630-6У1	630	1000	6000	
АОД-1250-4У1	1250	1500	6000	ВМ-180/1100-I
ДАЗО-400У-4У1	500	1500	6000	
ДАЗО-500УК-4У1	500	1500	10000	ВМ-18Дл
ДАЗО-450У-4У1	800	1500	6000	
АОД-1000-10-4У1	1000	1500	10000	ВМ-20Дл
ДАЗО-400У-4У1	500	1500	6000	ВВН-18
АОД-1250-4У1	1250	1500	6000	
АОД-1250-10-4У1	1250	1500	10000	ВВН-20
АОД-800-10-6У1	800	1000	10000	
АОД-1000-6У1	1000	1000	6000	
АОД-1000-10-6У1	1000	1000	10000	ВМ-18А
АОД-630-6У1	630	1000	6000	



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ДА30-400Y-4Y1	500	1500	6000	BM-20A
АОД-1250-4Y1	1250	1500	6000	BBP-18
АОД-1250-10-4Y1	1250	1500	10000	
АОД-800-10-6Y1	800	1000	10000	BBP-22
АОД-1000-6Y1	1000	1000	6000	
АОД-1000-10-6Y1	1000	1000	10000	
АОД-630-6Y1	630	1000	6000	
ДА30-450Y-4Y1	800	1500	6000	ВКС-20
ДА30-400X-4Y1	400	1500	6000	ДН-15БНЖ
ДА30-400X-4Y1	400	1500	6000	ДН-17БНЖ
ДА30-450Y-4Y1	800	1500	6000	ВСК-20
ДА30-450X-4Y1	630	1500	6000	ВСК-16 ВСК-16М
ДА30-450Y-4Y1	800	1500	6000	ВСК-17 ВСК-17М
ДА30-400X-6Y1	315	1000	6000	ВСК-17-1 ВСК-17-1М
ДА30-450YK-8Y1	400	750	6000	BC-24
AK-450Y-6Y3	800	1000	6000	ДЦ-25x2
ДА30-450Y-10Y1	315	600	6000	ДРЦ-21x2
ДА30-450Y-12Y1	250	500	6000	
АОД-630-8Y1	630	750	6000	