

# **SYNCHRONOUS ELECTRIC MACHINES**

## ELECTRIC MOTORS SERIES MC AND СДС3

Synchronous three-phase motors series MC and СДС3 are designed to drive mill rollers, converting units and fans. Designed for operation from AC mains at voltages 6 kW, 10 kW, 10,5 kW and frequency 50 Hz.

### Explanation of designations of the motors series MC 325-9/12УХЛ4:

MC- designation of the series  
 325 - designation of dimension  
 9 - quantity of stator packages  
 12 - quantity of poles  
 УХЛ - climatic version  
 4 - location category

### Explanation of designations of the motors series СДС3-18-39-20РУХЛ4:

СДС3 - designation of the series  
 18 - designation of dimension  
 39 - stator core length, cm  
 20 - quantity of poles  
 P - reversible (two-sides rotation)  
 УХЛ - climatic version  
 4 - location category

Climatic version УХЛ and O, location category 4. The motors parameters of climatic version O are to be coordinated in every specific case with the plant-manufacturer.

Rated mode of operation is continuous S1.

Types and main parameters of the motors are listed in Table 1.

Overall and mounting dimensions of the motors are listed in Tables 2, 3, 4 and Figures 21, 22, 23, 24.

Table 1

Motor type	Rated data			M <sub>max.</sub> M <sub>rated</sub>	Rotation speed, rpm	Dynamic moment of armature inertia, kgm <sup>2</sup>
	Power, kW	Voltage, V	Eff., %			
MC325-9/12УХЛ4	5600	6000	96.0	2.30	500	9500
MC325-9/12УХЛ4	4000	10000	95.5	2.50	500	9500
MC325-12/12УХЛ4	7100	6000	96.1	2.50	500	13750
MC325-12/12УХЛ4	5000	10500	95.7	2.80	500	13750
MC325-15/12УХЛ4	9000	6000	96.3	2.50	500	15500
MC325-15/12УХЛ4	7100	10500	96.0	3.00	500	15500
MC325-20/12УХЛ4	10900	6000	96.4	2.50	500	21125
MC325-20/12УХЛ4	9000	10000	96.2	2.80	500	21125
СДС3-290-12/16УХЛ4	5600	6000	96.4	2.00	375	13750
СДС3-290-12/16УХЛ4	4500	10000	95.9	2.10	375	13750
СДС3-19-59-16УХЛ4	8000	6000	96.0	2.55	375	30000
СДС3-19-59-19УХЛ4	8000	10000	96.0	2.80	375	30000
СДС3-19-125-16УХЛ4	19500	6000	97.5	1.90	375	47500
СДС3-19-125-16УХЛ4	18500	10500	97.5	2.10	375	47500
СДС3-18-39-20УХЛ4	2000	6000	95.3	2.00	300	4500
СДС3-18-39-20РУХЛ4	2000	6000	95.3	2.00	300	5200
СДС3-18-49-20УХЛ4	2500	6000	95.6	2.00	300	5500

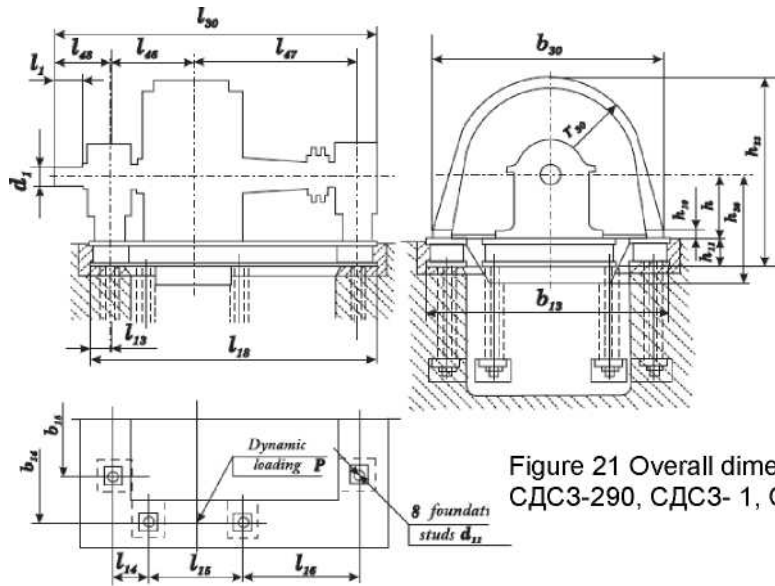


Figure 21 Overall dimensions of motors СДС3-290, СДС3-1, СДС3-19

Table 2 (to Figure 21)

Motor type	Dimensions, mm												
	b <sub>13</sub>	b <sub>14</sub>	b <sub>15</sub>	b <sub>30</sub>	d <sub>1</sub>	d <sub>11</sub>	l <sub>1</sub>	l <sub>13</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>18</sub>	l <sub>30</sub>
СДС3-290-12/16УХЛ4	4550	4150	1750	4500	400	M64	650	315	550	1750	1500	4430	5230
СДС3-19-59-16УХЛ4	5050	4650	2300	5000	500	M64	650	370	700	2000	1850	5290	6100
СДС3-18-39-20УХЛ4	4060	3750	1600	4000	300	M48	500	250	450	1300	1150	3400	3980
СДС3-18-49-20УХЛ4	4030	3750	1500	4000	320	M48	470	250	420	1500	1150	3570	4120
СДС3-18-61-20УХЛ4	4030	3295	1750	4000	360	M42	450	210	70	1310	-	3155	3675

Table 2. Continuation

Motor type	Dimensions, mm									Weight, kg			P, kN
	l <sub>46</sub>	l <sub>47</sub>	l <sub>48</sub>	h	h <sub>10</sub>	h <sub>11</sub>	h <sub>33</sub>	h <sub>36</sub>	Γ <sub>30</sub>	stator	rotor	total	
СДС3-290-12/16УХЛ4	1400	2400	1055	600	55	400	2900	1950	1900	16600	27500	57100	177
СДС3-19-59-16УХЛ4	1700	2850	1115	800	55	400	3150	2000	2150	25570	41000	86500	230
СДС3-18-39-20УХЛ4	1100	1800	800	600	50	450	2700	1700	1650	9200	9550	25750	111
СДС3-18-49-20УХЛ4	1170	1900	770	600	35	450	2700	1700	1650	10600	11850	2800	145
СДС3-18-61-20УХЛ4	1200	1450	780	600	35	340	2590	1700	1650	11200	14200	33000	234

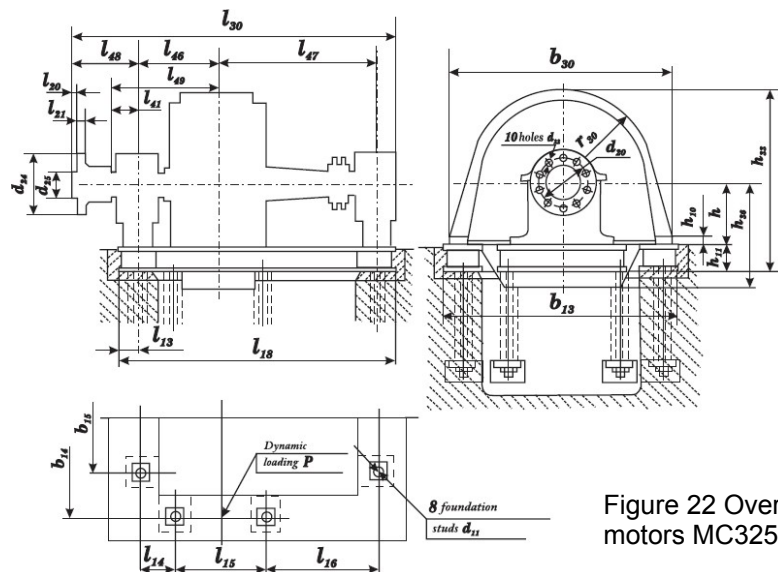


Figure 22 Overall dimensions of motors MC325 and СДС3-290

Table 3 (to Figure 22)

Motor type	Dimensions, mm										
	b <sub>13</sub>	b <sub>14</sub>	b <sub>15</sub>	b <sub>30</sub>	d <sub>11</sub>	d <sub>20</sub>	d <sub>22</sub>	d <sub>24</sub>	d <sub>25</sub>	l <sub>13</sub>	l <sub>14</sub>
MC325-9/12УХЛ4	4540	4150	2000	4500	M48	580	50	720	400	295	600
СДС3-290-12/16УХЛ4	4540	4150	2200	4500	M48	580	50	720	400	350	550

Continuation

Motor type	Dimensions, mm										
	l <sub>15</sub>	l <sub>16</sub>	l <sub>18</sub>	l <sub>20</sub>	l <sub>21</sub>	l <sub>30</sub>	l <sub>41</sub>	l <sub>46</sub>	l <sub>47</sub>	l <sub>48</sub>	l <sub>49</sub>
MC325-9/12УХЛ4	1450	1450	4015	12	70	4582	410	1300	2200	842	1710
СДС3-290-12/16УХЛ4	1750	1450	4400	12	70	5140	470	1450	2300	1012	1920

Continuation

Motor type	Dimensions, mm						Weight, kg			P, kN
	h	h <sub>10</sub>	h <sub>11</sub>	h <sub>33</sub>	h <sub>36</sub>	r <sub>30</sub>	stator	rotor	total	
MC325-9/12УХЛ4	600	55	380	2880	1950	1900	15100	24000	49500	182
СДС3-290-12/16УХЛ4	600	55	600	3100	1950	1900	17100	27400	57000	177

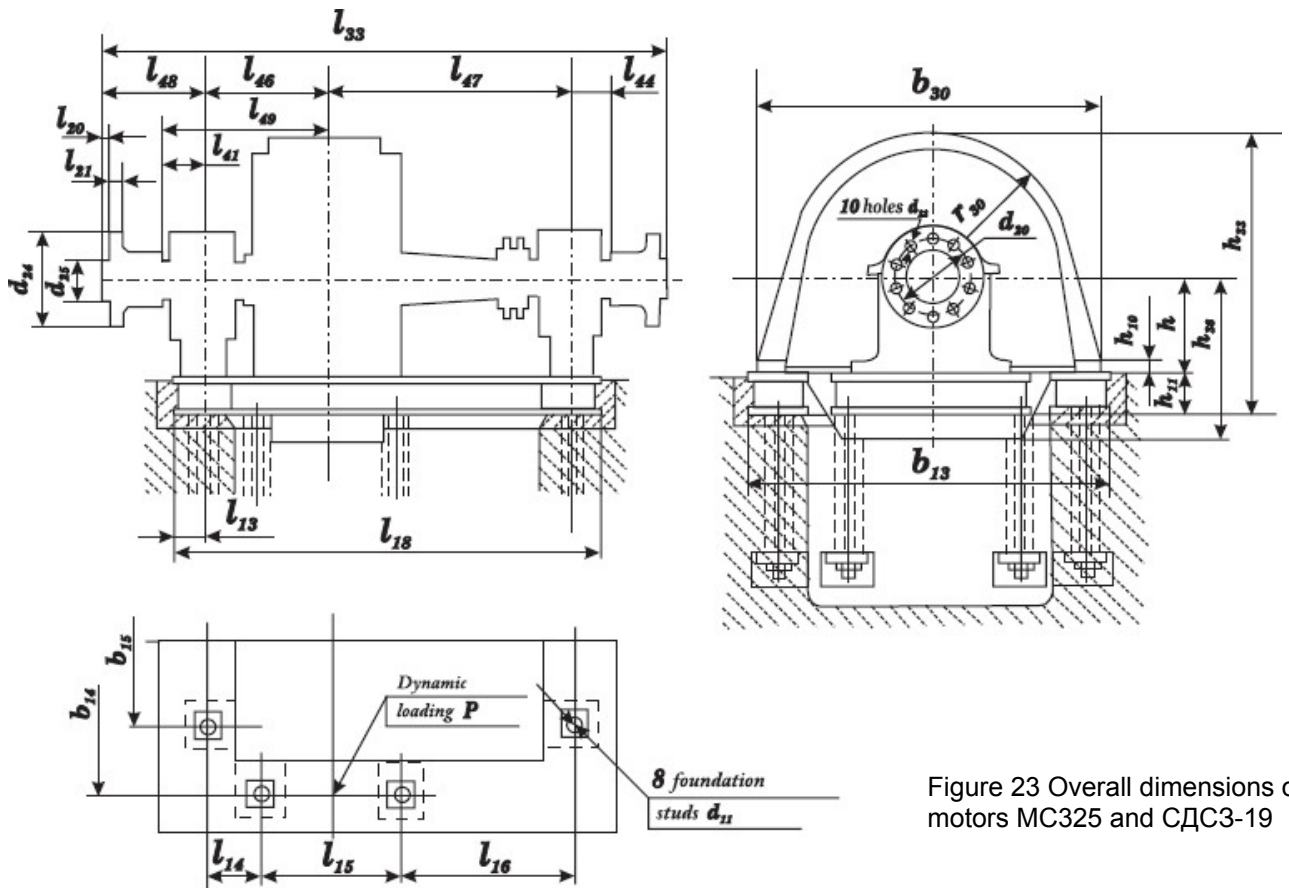


Figure 23 Overall dimensions of motors MC325 and СДС3-19

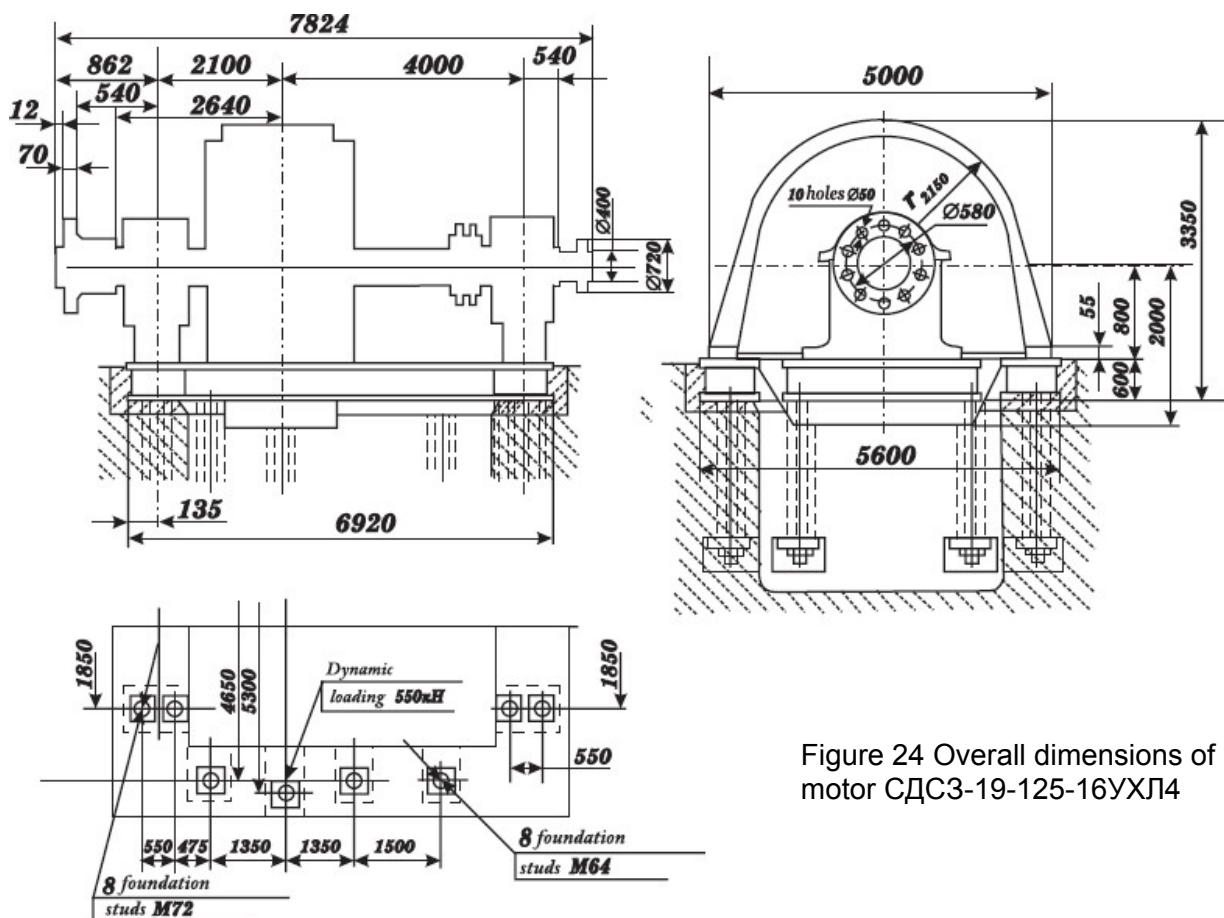


Figure 24 Overall dimensions of motor СДС3-19-125-16УХЛ4

Table 4 (to Figure 23)

Motor type	Dimensions, mm										
	b <sub>13</sub>	b <sub>14</sub>	b <sub>15</sub>	b <sub>30</sub>	d <sub>11</sub>	d <sub>20</sub>	d <sub>22</sub>	d <sub>24</sub>	d <sub>25</sub>	l <sub>13</sub>	l <sub>14</sub>
МС325-12/12УХЛ4	4540	4150	2000	4500	M48	580	50	720	400	310	640
МС325-15/12УХЛ4	4530	4150	2000	4500	M48	580	50	720	400	310	600
МС325-20/12УХЛ4	4540	4150	2100	4500	M48	580	50	720	400	350	745
СДС3-19-59-16УХЛ4	5050	4650	2300	5000	M48	580	50	720	400	370	700

Continuation

Motor type	Dimensions, mm										
	l <sub>15</sub>	l <sub>16</sub>	l <sub>18</sub>	l <sub>20</sub>	l <sub>21</sub>	l <sub>33</sub>	l <sub>41</sub>	l <sub>44</sub>	l <sub>46</sub>	l <sub>47</sub>	l <sub>48</sub>
МС325-12/12УХЛ4	1760	1750	4770	12	70	5874	412	412	1600	2650	862
МС325-15/12УХЛ4	1900	1900	5020	12	70	6124	412	412	1550	2850	862
МС325-20/12УХЛ4	2250	2255	5950	12	70	7374	612	612	1850	3400	1062
СДС3-19-59-16УХЛ4	2000	1850	5290	12	70	6074	465	465	1700	2850	765

Continuation

Motor type	Dimensions, mm							Weight, kg			P, kN
	l <sub>49</sub>	h	h	h <sub>11</sub>	h <sub>33</sub>	h <sub>36</sub>	Γ <sub>30</sub>	stator	rotor	total	
МС325-12/12УХЛ4	1812	600	55	330	2880	1950	1900	18200	30000	58300	196
МС325-15/12УХЛ4	1962	600	55	380	2880	1950	1900	21400	34050	65800	324
МС325-20/12УХЛ4	2462	600	55	380	2880	1950	1900	28000	46600	86000	450
СДС3-19-59-16УХЛ4	2165	800	55	400	3150	2000	2150	25600	41000	86500	230

## SYNCHRONOUS MOTORS SERIES СДЭ2 SIZES 16, 17

Synchronous three-phase motors series СДЭ2 are designed to complete converter units of excavators. They may be used for drives of different mechanisms on agreement between the customer and the plant-manufacturer. Designed for operation from AC mains supply 6000 V and 10 000 V, frequency 50 Hz.

### Explanation of designations of the motors series СДЭ2-16-36-6У2:

СДЭ2 - designation of the series

16 - designation of dimension

36 - stator core length, cm

6 - quantity of poles

У – climatic version

2- location category

Climatic version У, ХЛ and Т, location category 2.. The motors parameters of climatic version Т are to be coordinated in every concrete case with the plant-manufacturer.

Rated mode of operation is continuous S1 with alternating loading.

Ambient temperature from – 45° C to + 45° C is for climatic version “U” and from - 60° C to + 45° C is for climatic version “ХЛ”.

Design version of the motors as to the mode of mounting is IM1102, cooling method. - ICA21. Degree of protection of the motors is IP21, for the outlets box is IP44.

Insulation of the stator and rotor windings is of class “F”.

The motors are self-ventilated, air supply from the premises through shields, air ejection is under the assembly plate.

Excitation of the motors is performed from thyristor excitation arrangements. On customer's requirements excitation of motors can be performed from electric machine excitation unit which is a part of the converter set as well as the motor or from separate excitation unit.

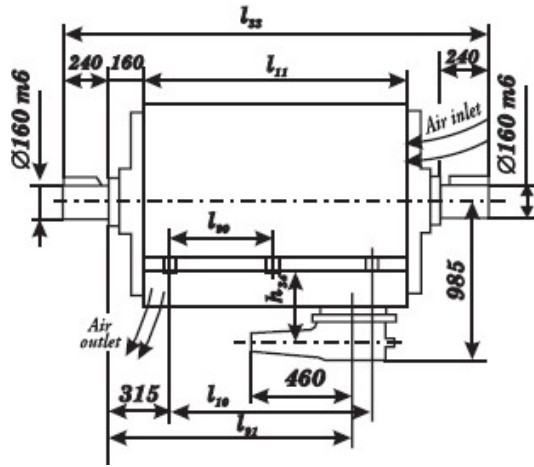
Types and main parameters of the motors are listed in Table 5.

Overall and mounting dimensions of the motors and weight of the motors are listed in Tables 6, 7, 8, 9.

Table 5

Motor type	Rated data				M <sub>max</sub> M <sub>rated</sub>	Motor inertia moment, tm <sup>2</sup>	Permissible inertia moment of the mechanism, tm <sup>2</sup>
	Power, kW	Voltage, kV	Rotation speed, rpm	Eff., %			
СДЭ2-15-34-6У2	630	6	1000	95.5	2.1	0.048	0.12
СДЭ2-16-36-6У2	1000	6	1000	95.5	2.1	0.102	0.88
СДЭ2-16-36-6ХЛ2	1000	6	1000	95.5	2.1	0.102	0.88
СДЭ2-16-36-6У2	800	10	1000	94.5	2.0	0.102	0.88
СДЭ2-16-36-6ХЛ2	800	10	1000	94.5	2.0	0.102	0.88
СДЭ2-16-46-6У2	1250	6	1000	96.0	2.1	0.122	1.0
СДЭ2-16-46-6ХЛ2	1250	6	1000	96.0	2.1	0.122	1.0
СДЭ2-16-46-6У2	1000	10	1000	95.0	2.0	0.122	1.0
СДЭ2-16-46-6ХЛ2	1000	10	1000	95.0	2.0	0.122	1.0
СДЭ2-16-57-6У2	1600	6	1000	96.4	2.0	0.142	1.13
СДЭ2-16-57-6ХЛ2	1600	6	1000	96.4	2.0	0.142	1.13
СДЭ2-16-57-6У2	1250	10	1000	95.5	2.0	0.142	1.13
СДЭ2-16-57-6ХЛ2	1250	10	1000	95.5	2.0	0.142	1.13
СДЭ2-17-46-6У2	2000	6	1000	96.3	2.1	0.32	1.25
СДЭ2-17-46-6ХЛ2	2000	6	1000	96.3	2.1	0.32	1.25
СДЭ2-17-46-6У2	1600	10	1000	95.3	2.0	0.32	1.25
СДЭ2-17-46-6ХЛ2	1600	10	1000	95.3	2.0	0.32	1.25
СДЭ2-17-57-6У2	2500	6	1000	96.4	2.0	0.384	1.38
СДЭ2-17-57-6ХЛ2	2500	6	1000	96.4	2.0	0.384	1.38
СДЭ2-17-57-6У2	2000	10	1000	95.7	2.0	0.384	1.38
СДЭ2-17-57-6ХЛ2	2000	10	1000	95.7	2.0	0.384	1.38
СДЭ2-17-69-6У2	2500	10	1000	96.2	1.9	0.445	1.50
СДЭ2-17-69-6ХЛ2	2500	10	1000	96.2	1.9	0.445	1.50
СДЭ2-17-69-8У2	2500	6	750	96.2	2.0	0.582	2.90
СДЭ2-17-69-8ХЛ2	2500	6	750	96.2	2.0	0.582	2.90
СДЭ2-17-69-8У2	2250	10	750	96.0	2.0	0.582	2.90
СДЭ2-17-69-8ХЛ2	2250	10	750	96.6	2.0	0.582	2.90

**Variant 1**



**Variant 2**

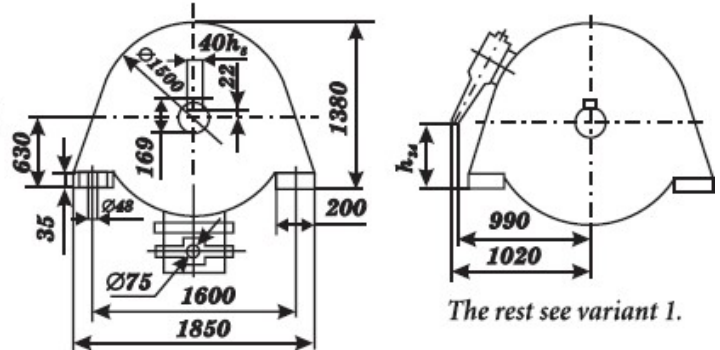


Figure 25. Overall and mounting dimensions of the motor СДЭ2 size 16, voltage 6 kV

Table 6

Motor type	Version	Dimensions, mm						Weight, kg
		l <sub>10</sub>	l <sub>11</sub>	l <sub>33</sub>	l <sub>90</sub>	l <sub>91</sub>	h <sub>34</sub>	
СДЭ2-16-36-6У2	1	1000	1350	2200	500	1235	255	6210
СДЭ2-16-36-6ХЛ2								
СДЭ2-16-36-6У2	2	1000	1350	2200	500	1235	500	6210
СДЭ2-16-36-6ХЛ2								
СДЭ2-16-46-6У2	1	1120	1450	2300	560	1335	255	6950
СДЭ2-16-46-6ХЛ2								
СДЭ2-16-46-6У2	2	1120	1450	2300	560	1335	500	6950
СДЭ2-16-46-6ХЛ2								
СДЭ2-16-57-6У2	1	1250	1560	2410	630	1445	255	7830
СДЭ2-16-57-6ХЛ2								
СДЭ2-16-57-6У2	2	1250	1560	2410	630	1445	500	7830
СДЭ2-16-57-6ХЛ2								

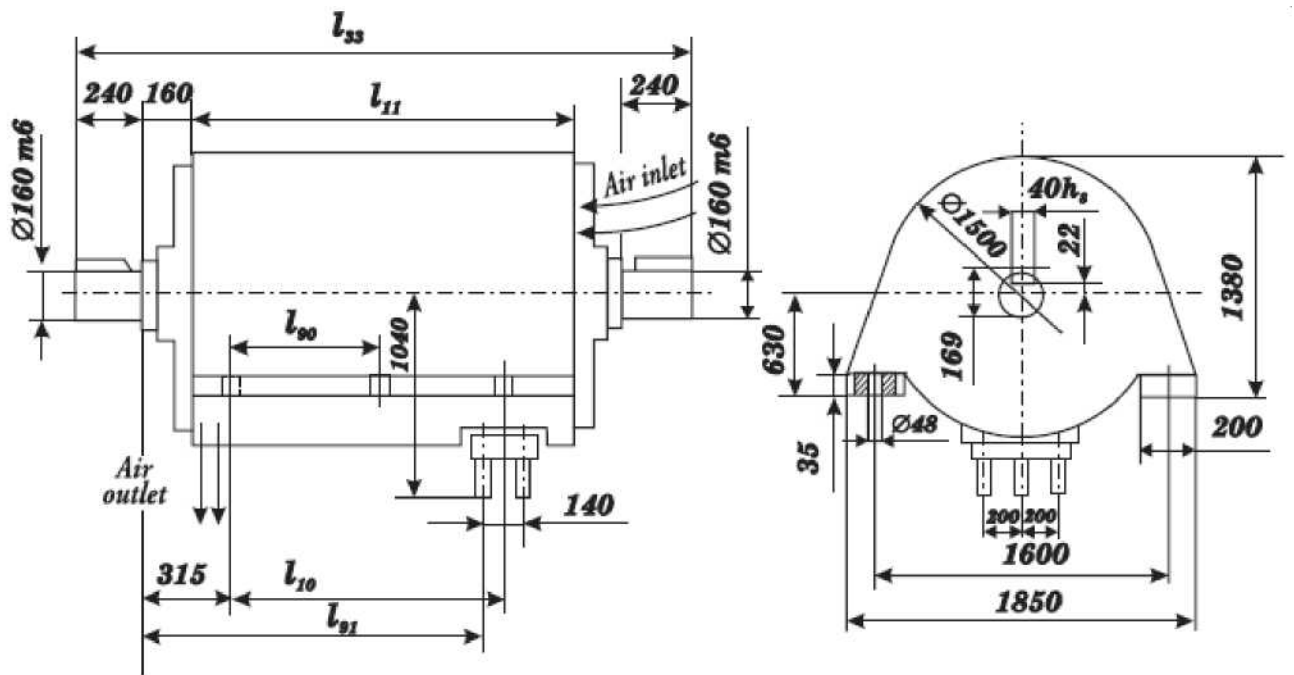
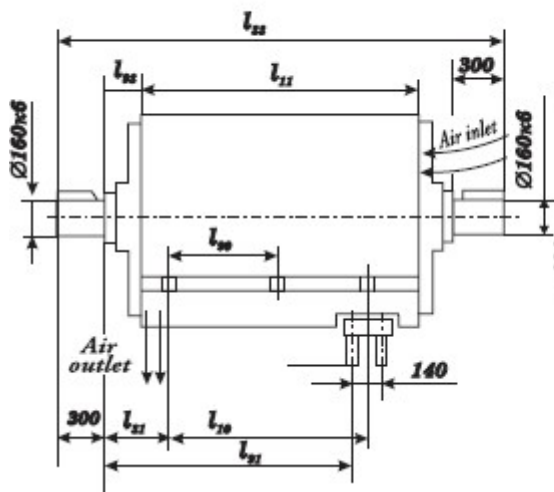


Figure 26. Overall and mounting dimensions of the motor CDЭ2 voltage 10 kV.

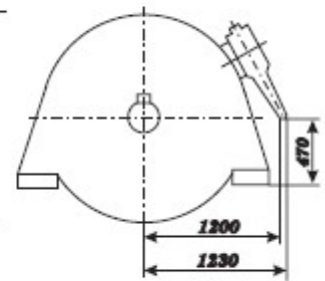
Table 7

Motor type	Dimensions, mm					Weight, kg
	$l_{10}$	$l_{11}$	$l_{33}$	$l_{90}$	$l_{91}$	
CDЭ2-16-36-6Y2	1000	1350	500	1215	2200	6170
CDЭ2-16-36-6XЛ2						
CDЭ2-16-46-6Y2	1120	1450	560	1265	2300	6930
CDЭ2-16-46-6XЛ2						
CDЭ2-16-57-6Y2	1250	1560	630	1320	2410	7800
CDЭ2-16-57-6XЛ2						

**Variant 1**



**Variant 2**



See Variant 1

Figure 27. Overall and mounting dimensions of the motor CDЭ2 size 17, rotation speed 1000 rpm



Table 8

Motor type	Version	Voltage, kV	Dimensions, mm							Weight, kg
			l <sub>10</sub>	l <sub>11</sub>	l <sub>31</sub>	l <sub>33</sub>	l <sub>90</sub>	l <sub>91</sub>	l <sub>93</sub>	
СДЭ2-17-46-6У2	1	6	1400	1640	336	2670	710	1345	190	10900
СДЭ2-17-46-6ХЛ2										
СДЭ2-17-46-6У2	2	6	1400	1640	336	2670	710	-	190	10900
СДЭ2-17-57-6У2	1	6	1400	1640	336	2670	710	1425	160	12660
СДЭ2-17-57-6ХЛ2										
СДЭ2-17-46-6У2	1	10	1400	1640	335	2670	710	1345	190	10720
СДЭ2-17-46-6ХЛ2										
СДЭ2-17-57-6У2										
СДЭ2-17-57-6ХЛ2										
СДЭ2-17-69-6У2										
СДЭ2-17-69-6ХЛ2	1	6/6,3	1400	1750	315	2720	710	1425	160	12660
СДЭ2-17-57-6У2										

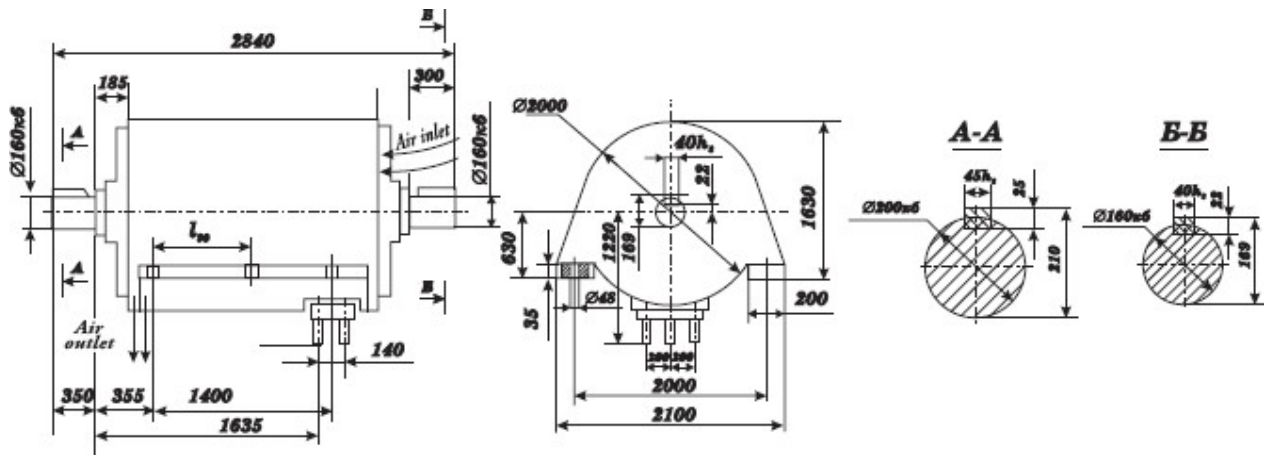


Figure 28 Overall and mounting dimensions of the motor СДЭ2 size17, rotation frequency 750 rpm.

Table 9

Motor type	Voltage, kV	Weight, kg
СДЭ2-17-69-8У2	6	14025
СДЭ2-17-69-8ХЛ2		
СДЭ2-17-69-8У2		
СДЭ2-17-69-8У2	10	14050
СДЭ2-17-69-8ХЛ2		
СДЭ2-17-69-8У2		