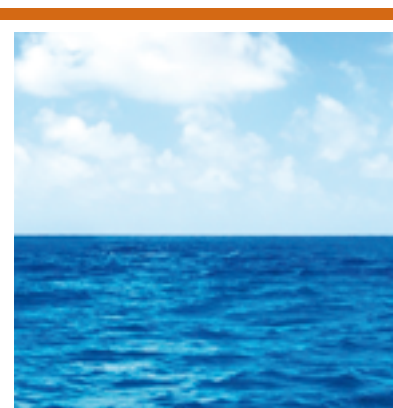




**ENGINEERING AND MANUFACTURING CENTER  
«SKB UKRELECTROMASH»**



**PRODUCTS AND SERVICES**



# TRADITIONS OF ENGINEERING



The UPEC Industrial Group is one of Ukraine's largest private companies, occupying a leading position in several engineering segments and in production of components.

UPEC is one of the CIS leading manufacturers of bearings, electric motors, pumps, CNC grinding machines, transmissions and chassis, air-cycle climate control systems, as well as other machinery, equipment, units and components for the railway, automotive, agricultural, general and power engineering, defense and metallurgical industries.

The Company was established in 1995, and today it unites a number of leading manufacturing companies and engineering centres with more than half a century of history.

The main know-how of the Company is generated in the UPEC Joint Engineering Centre, which includes a number of specialized engineering centres and departments.

The main manufacturing sites of the UPEC Industrial Group:

- Kharkov Bearing Plant (HARP)
- Oskol Bearing Plant HARP
- Lozova Forging-Mechanical Plant (LKMZ)
- Kharkov Electro-Technical Plant «Ukrelectromash» (HELZ)
- Kharkov Machine-Tool Plant (Harverst)
- Ukrainian Casting Company (ULK)



The SKB Ukrelectromash as an independent company was founded in 1963, and in accordance with the Decree of the Council of Ministers of the USSR it was determined as the main enterprise for design and industrial implementation of electric motors for military equipment used by Navy and Air Defense.

Since the foundation of the organization and up to the present moment, electric motors developed and manufactured by the SKB drive wheels of pumps, blades of fans, working parts of compressors and other mechanisms installed in a huge number of surface ships and submarines.

Our enterprise, during its activity, has developed low-noise motors series, including those designed in accordance with the highest standards to vibro-acoustic characteristics and requirements for low-magnetic properties, in a wide range of capacities and height of rotation axes.

Currently, military-purpose products are represented by electric motors of the following series:

- DM for the first generation of vessels;
- 2DMSH for the second generation of vessels;
- 3DMSH for the third generation of vessels;
- 4DMSH for the fourth generation of vessels;
- electric motors with variable frequency at AC 400Hz for Air Defence;
- electric motors for rocket technology, as well as marine technology;
- built-in and submersible electric motors.

«SKB Ukrelectromash» provides the full complex of works on development, prototyping, testing and preparing for manufacturing of military equipment. Every technological step is accompanied with quality control, correspondence to the requirements of Ministry of Defense and Russian Maritime Register of Shipping.

The new big step in the better future was made when SKB Ukrelectromash became a part of the UPEC Industrial group – one of the biggest private companies in the East Ukraine. The UPEC is one of the CIS leading manufacturers of bearings, electric motors, pumps, CNC grinding machines, transmissions and chassis, air-cycle climate control systems, trailed agricultural machinery, as well as other machinery, equipment, units and components for the railway, automotive, agricultural, general and power engineering, defense, metallurgical and other industries. The Company was established in 1995, and today it unites a number of leading manufacturing companies and engineering centres with more than half a century of history.

At present SKB Ukrelectromash conducts extensive works on the reconstruction of industrial sites, purchases new equipment, involves huge powers of the company in the technological process, integrates new progressive technological processes. Quality of the manufacturing products is constantly improving. All above mentioned allowed to the SKB, during the time spend after the collapse of the USSR, not to lose the possibility to develop the high-intelligent technique, but to extend the product line, to have possibility to be sure in better tomorrow. SKB Ukrelectromash is ready to supply high-quality serial products as well as develop the new products at the highest technical level.

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# MARINE LOW-NOISE MOTORS 2DMSH (2DMШ) SERIES

## INDUCTION MOTOR WITH LOW VIBRATION AND EXTERNAL ELECTROMAGNETIC FIELD OF 2DMSH63-200 SERIES

Induction marine three-phase with short-circuited rotor electric motors 2DMSH63-200 and its modifications are designed for marine mechanisms drive (fans, conditioners, pumps, compressors, etc.) and for exploitation on marine surface ships and nuclear submarines of the second generation in unrestricted navigation area. The motors can be manufactured with height of rotation of 63, 71, 80, 90, 100, 112, 132, 160, 180 and 200 mm.

The motors have:

- special referencing of output to mounting dimensions can be made on customer's request;
- vibration velocity value in the elastic mount is 0,7 mm/s in accordance with IEC60034-14;
- increased lifetime and reliability (complete lifetime is 60,000 h, not less than 0.97);
- increased resistance to mechanical influence (vibration, single and multiple actions shock, oscillatory motion, lurch and trim differences, etc.);
- special mounting units, which provide life time. On customer's request in the motor can be mounted closed-type bearings with two seals, filled with lubrication for the whole term of exploitation or opened-type bearings with devices for lubrication refilling;
- IP55 protection degree and higher upon customer request;
- self-ventilation cooling method - IC0141;
- moisture- and oil-resistant winding insulation of heat-resistance class H;
- operational mode S1 or according to the cycle scheme agreed with the customer;
- additional balancing device ready-assembled with a mechanism to ensure minimum values of vibration amplitude at all frequency range;
- mounting arrangement IMB3, IMB5, IMB35, the motor location is free in the space;
- three-phase voltage supply 380 V, 50 Hz.

A-weighted sound power level corresponds to class 2 for motors with a self-blowing fan and to class 3 - for motors without fans according the IEC60034-9. 2DMSHМ motors provide low level of values of magnetic rates components.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	2DMSH 63A2-OM5	0.09	220 or 380	3000	53.457	7.6
2	2DMSH 63B2-OM5	0.12	220 or 380	3000	60.1	8.0
3	2DMSHO 63B2-OM5					6.7
4	2DMSHOV 63 B2-OM5					6.7
5	2DMSH 63A4-OM5	0.06	220 or 380	1500	45.1	7.0
6	2DMSH 63B4-OM5	0.09	220 or 380	1500	51.79	7.7
7	2DMSH 71A2-OM5	0.18	220 or 380	3000	70.96	10.3
8	2DMSHO 71A2-OM5					9.0
9	2DMSHOV 71A2-OM5					9.0
10	2DMSH 71B2-OM5	0.25	220 or 380	3000	74.3	11.0
11	2DMSHO71B2-OM5					9.9
12	2DMSHOV 71B2-OM5					9.9
13	2DMSH 71A4 OM5	0.12	220 or 380	1500	55.5	10.3
14	2DMSH 71B4 OM5	0.18	220 or 380	1500	60.1	11.0
15	2DMSH 80A2 OM5	0.37	220 or 380	3000	71.4	14.6
16	2DMSHM 80A2 OM5					14.6
17	2DMSHO 80A2 OM5					12.1
18	2DMSHOV 80A2 OM5					12.1

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg				
1	2	3	4	5	6	7				
19	2DMSH 80B2-OM5	0.55	220 or 380	3000	77.88	16.4				
20	2DMSHM 80B2-OM5					16.4				
21	2DMSHO 80B2-OM5					13.1				
22	2DMSHOV 80B2-OM5					13.1				
23	2DMSHN 80B2-OM5					16.1				
24	2 DMSHMN 80B2-OM5					16.1				
25	2DMSH 80A4-OM5	0.25	220 or 380	1500	63.7	14.6				
26	2DMSHO 80A4-OM5					12.4				
27	2DMSHOV 80A4-OM5					12.4				
28	2DMSH 80B4-OM5	0.37	220 or 380	1500	72.4	15.7				
29	2DMSHO 80B4-OM5					13.2				
30	2DMSHOV 80B4-OM5					13.2				
31	2DMSH 80A6-OM5	0.18	220 or 380	1000	61.7	14.1				
32	2DMSH 80B6-OM5	0.25	220 or 380	1000	65.7	15.3				
33	2DMSH 90SA2-OM 5	0.75	220 or 380	3000	81.8	20.5				
34	2DMSHM 90SA2-OM 5					20.5				
35	2DMSHO 90SA2-OM 5					18.9				
36	2DMSHOV 90SA2-OM 5					18.9				
37	2DMSHN 90SA2-OM 5					20.0				
38	2DMSHMN 90SA2-OM 5					20.0				
39	2DMSH 90SB2-OM5	1.1	220 or 380	3000	78.8	22.5				
40	2DMSHM 90SB2-OM5					22.5				
41	2DMSHO 90SB2-OM5					20.0				
42	2DMSHOV 90SB2-OM5					20.0				
43	2DMSHN 90SB2-OM5	1.1	220 or 380	3000	83.12	23.6				
44	2DMSHMN 90SB2-OM5					23.6				
45	2DMSH 90SA4-OM 5	0.55	220 or 380	1500	74.81	19.5				
46	2DMSHM 90SA4-OM 5					19.5				
47	2DMSHO 90SA4-OM 5					16.2				
48	2DMSHOV 90SA4-OM 5					16.2				
49	2DMSH 90SB4-OM5	0.75	220 or 380	1500	74.3	21.5				
50	2DMSHM 90SB4-OM5					21.5				
51	2DMSHO 90SB4-OM5					19.7				
52	2DMSHOV 90SB4-OM5					19.7				
53	2DMSH 90SA6-OM 5	0.37	220 or 380	1000	67.98	19.5				
54	2DMSHM 90SA6-OM 5									
55	2DMSH 90SB6-OM5	0.55	220 or 380	1000	67.3	20.9				
56	2DMSHM 90SB6-OM5									
57	2DMSH 90SA8-OM 5	0.25	220 or 380	750	59.8	19.3				
58	2DMSHM 90SA8-OM 5									
59	2DMSH 100SA2-OM 5					1.5	220 or 380	3000	80.9	28.0
60	2DMSHM 100SA2-OM 5									28.0
61	2DMSHO 100SA2-OM 5	25.4								
62	2DMSHOV 100SA2-OM 5	25.4								
63	2DMSHN100SA2-OM5	28.0								
64	2DMSHMN 100SA2-OM 5	28.0								
65	2DMSH 100L2-OM 5	2.2	220 or 380	3000	82.5	31.8				
66	2 DMSHM 100L2-OM 5					31.8				
67	2DMSHO 100L2-OM 5					27.5				
68	2DMSHOV 100L2-OM 5					27.6				
69	2DMSHN 100L2-OM 5					31.4				
70	2DMSHMN 100L2-OM 5					31.4				
71	2DMSH 100SA4-OM 5	1.1	220 or 380	1500	77.5	27.6				
72	2DMSHM 100SA4-OM 5					27.6				
73	2DMSHO 100SA4-OM 5					23.3				
74	2DMSHOV 100SA4-OM5					23.3				

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
75	2DMSH 100L4-OM5	1.5	220 or 380	1500	80.6	31.0
76	2DMSHM 100L4-OM5					31.0
77	2DMSHO 100L4-OM5					28.2
78	2DMSHOV 100L4-OM5					28.2
79	2DMSHN 100L4-OM5					31.8
80	2DMSHMN 100L4-OM5					31.8
81	2DMSH 100SA6-OM5	0.75	220 or 380	1000	72.1	27.0
82	2DMSHM 100SA6-OM5	1.1	220 or 380	1000	74.2	28.6
83	2DMSH 100SB6-OM5					
84	2DMSHM 100SB6-OM5					
85	2DMSH 100SA8-OM5	0.37	220 or 380	750	67.7	26.6
86	2DMSHM 100SA8-OM5	0.55	220 or 380	750	72	30.5
87	2DMSH 100L8-OM5					
88	2DMSHM 100L8-OM5					
89	2DMSH 112S2-OM5	3	220 or 380	3000	83.75	39.0
90	2DMSHM 112S 2-OM5					39.0
91	2DMSHO 112S2-OM5					35.0
92	2DMSHOV 112S2-OM5					35.0
93	2DMSHN 112S 2-OM5					40.0
94	2DMSHMN 112S2-OM5					40.0
95	2DMSH 112MA2-OM5	4	220 or 380	3000	84.82	45.7
96	2DMSHM 112MA2-OM5					45.7
97	2DMSHO 112MA2-OM5					39.8
98	2DMSHOV 112MA2-OM5					39.8
99	2DMSHN 112MA2-OM5					46.3
100	2DMSHMN 112MA2-OM5					46.3
101	2DMSH 112S4-OM5	2.2	220 or 380	1500	81.53	39.5
102	2DMSHM 112S4-OM5					39.5
103	2DMSHO 112S4-OM5					35.3
104	2DMSHOV 112S4-OM5					35.3
105	2DMSHN 112S4-OM5					38.8
106	2DMSHMN 112S4-OM5					38.8
107	2DMSH 112MA4-OM5	3	220 or 380	1500	83.9	45.5
108	2DMSHM 112MA4-OM5					45.5
109	2DMSHO 112MA4-OM5					40.2
110	2DMSHOV 112MA4-OM5					40.2
111	2DMSHN 112MA4-OM5					46.0
112	2DMSHMN 112MA4-OM5					46.0
113	2DMSH 112MB4-OM5	4	220 or 380	1500	85.78	49.9
114	2DMSHM 112MB4-OM5					49.9
115	2DMSHO 112MB4-OM5					46.4
116	2DMSHOV 112MB4-OM5					46.4
117	2DMSHN 112MB4-OM5					50.4
118	2DMSHMN 112MB4-OM5					50.4
119	2DMSH 112S6-OM5	1.5	220 or 380	1000	78.2	38.9
120	2DMSHM 112S6-OM5	2.2	220 or 380	1000	79.3	41.3
121	2DMSH 112SA6-OM5					
122	2DMSHM 112SA6-OM5					
123	2DMSH 112S8-OM5	0.75	220 or 380	750	71.7	38.2
124	2 DMSHM 112S8-OM5	1.1	220 or 380	750	73.4	40.5
125	2DMSH 112SA8-OM5					
126	2DMSHM 112SA8-OM5					
127	2DMSH 112SB8-OM5	1.5	220 or 380	750	76	44.1
128	2DMSHM 112SB8-OM5					

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	2DMSH 132A2-OM5	5.5	220 or 380	3000	85.29	74
2	2DMSHM 132A2-OM5					74
3	2DMSHN 132A2-OM5					75
4	2DMSHMN 132A2-OM5					75
5	2DMSHO 132A2-OM5					69
6	2DMSH 132B2-OM5	7.5	220 or 380	3000	86.14	84
7	2DMSHM 132B2-OM5					84
8	2DMSHN 132B2-OM5					85
9	2DMSHMN 132B2-OM5					85
10	2DMSHO 132B2-OM5					79
11	2DMSH 132SB4-OM5	5.5	220 or 380	1500	86.9	82
12	2DMSHM 132SB4-OM5					82
13	2DMSHN 132SB4-OM5					83
14	2DMSHMN 132SB4-OM5					83
15	2DMSHO 132SB4-OM5					77
16	2DMSH 132MA6-OM5	3	220 or 380	1000	83.3	85
17	2DMSHM 132MA6-OM5					85
18	2DMSHN 132MA6-OM5					86
19	2DMSHMN 132MA6-OM5					86
20	2DMSH 132MB6-OM5	4	220 or 380	1000	83.14	88
21	2DMSHM 132MB6-OM5					88
22	2DMSHN 132MB6-OM5					89
24	2DMSHMN 132MB6-OM5	4	220 or 380	1000	83.01	89
25	2DMSH 132MA8-OM5	2.2	220 or 380	750	81.41	83
26	2 DMSHM 132MA8-OM5					
27	2DMSH 132MB8-OM5	3	220 or 380	750	82.2	86
28	2DMSHM 132MB8-OM5					
29	2DMSH 160MA2-OM5	11	220 or 380	3000	87.3	119
30	2DMSHM 160MA2-OM5					119
31	2DMSHN 160MA2-OM5					120
32	2DMSHMN 160MA2-OM5					120
33	2DMSH1N 160MA2-OM5					120
34	2DMSHM1N 160MA2-OM5					120
35	2DMSHO 160MA2-OM5	113				
36	2DMSH 160MA4-OM5	7.5	220 or 380	1500	88.7	119
37	2DMSHM 160MA4-OM5					119
38	2DMSHN 160MA4-OM5					120
39	2DMSHMN 160MA4-OM5					120
40	2DMSHO 160MA4-OM5					115
41	2DMSH 160MB4-OM5	11	220 or 380	1500	86.9	126
42	2DMSHM 160MB4-OM5					126
43	2DMSHN 160MB4-OM5					127
44	2DMSHMN 160MB4-OM5					127
45	2DMSHO 160MB4-OM5					121
46	2DMSH 160MA6-OM5	5.5	220 or 380	1000	88.3	121
47	2DMSHM 160MA6-OM5					121
48	2DMSHN 160MA6-OM5					122
49	2DMSHMN 160MA6-OM5					122
50	2DMSH 160MB6-OM5	7.5	220 or 380	1000	87.7	128
51	2DMSHM 160MB6-OM5					128
52	2DMSHN 160MB6-OM5					129
53	2DMSHMN 160MB6-OM5					129
54	2DMSH 160MB8-OM5	4	220 or 380	750	89.4	128
55	2DMSHM 160MB8-OM5					128
56	2DMSHN 160MB8-OM5					129
57	2DMSHMN 160MB8-OM5					129



№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
58	2DMSH 160L8-OM5	5.5	220 or 380	750	87.6	150
59	2DMSHM 160L8-OM5					150
60	2DMSHN 160L8-OM5					146
61	2DMSHMN 160L8-OM5	5.5	220 or 380	750	86.8	146
62	2DMSH 160L4/2-OM2	9/13	220 or 380	1500/3000	85.5/83.5	146
63	2DMSH 180A2-OM5	15	220 or 380	3000	89.2	164
64	2DMSHM 180A2-OM5					164
65	2DMSHN 180A2-OM5					165
66	2DMSHMN 180A2-OM5					165
67	2DMSHO 180A2-OM5					158
68	2DMSH 180B2-OM5	18.5	220 or 380	3000	91.4	184
69	2DMSHM 180B2-OM5					184
70	2DMSHN 180B2-OM5					185
71	2DMSHMN 180B2-OM5					185
72	2DMSHO 180B2-OM5					178
73	2DMSH 180SB4-OM5	15	220 or 380	1500	93.6	160
74	2DMSHM 180SB4-OM5					160
75	2DMSHN 180SB4-OM5					161
76	2DMSHMN 180SB4-OM5					161
77	2DMSHO 180SB4-OM5					154
78	2DMSH 180M4-OM5	18.5	220 or 380	1500	93.5	179
79	2DMSHM 180M4-OM5					179
80	2DMSHN 180M4-OM5					180
81	2DMSHMN 180M4-OM5					180
82	2DMSHO 180M4-OM5					175
83	2DMSH 180M6-OM5	11	220 or 380	1000	89.2	177
84	2DMSHM 180M6-OM5					177
85	2DMSHN 180M6-OM5					178
86	2DMSHMN 180M6-OM5					178
87	2DMSH2K180M6-OM5					186
88	2DMSH 180M8-OM5	7.5	220 or 380	750	88.3	175
89	2DMSHM 180M8-OM5					175
90	2DMSHN 180M8-OM5					176
91	2DMSHMN 180M8-OM5					176
92	2DMSH 200M2-OM5	22	220 or 380	3000	93.2	240
93	2DMSHM 200M2-OM5					240
94	2DMSHN200M2-OM5					241
95	2DMSHMN 200M2-OM5					241
96	2DMSHO 200M2-OM5					234
97	2DMSH 200L2-OM5	30	220 or 380	3000	92.1	266
98	2DMSHM 200L2-OM5					266
99	2DMSHN 200L2-OM5					267
100	2DMSHMN 200L2-OM5					267
101	2DMSHO 200L2-OM5					260
102	2DMSH 200M4-OM5	22	220 or 380	1500	93.3	239
103	2DMSHM 200M4-OM5					239
104	2DMSHN 200M4-OM5					240
105	2DMSHMN 200M4-OM5					240
106	2DMSHO 200M4-OM5					233
107	2DMSH 200M6-OM5	15	220 or 380	1000	91.9	232
108	2DMSHM 200M6-OM5					232
109	2DMSHN 200M6-OM5					233
110	2DMSHMN 200M6-OM5					233

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
111	2DMSH 200M8-OM5	11	220 or 380	750	91.2	232
112	2DMSHM 200M8-OM5					232
113	2DMSHN 200M8-OM5					233
114	2DMSHMN 200M8-OM5					233

Built-in motors

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	2DMSHV 112A2-OM5	4.0	380	3000	83.2	22
2	2DMSHV 112A2-OM5	7.5	380	3000	85.6	30
3	2DMSHV 160B4	13.0	380	1500	87.5	75
4	2DMSHV 180A4	18.5	380	1500	91.1	115
5	2DMSHV 200B2	37.0	380	1500	89.3	165

# MARINE LOW-NOISE MOTORS 3DMSH (3DMШ) SERIES WITH INCREASED REQUIREMENTS TO VIBROACOUSTIC CHARACTERISTICS

## INDUCTION MOTOR WITH LOW VIBRATION AND EXTERNAL ELECTROMAGNETIC FIELD OF 3DMSH63-180 SERIES

Induction marine three-phase with short-circuited rotor electric motors 3DMSH63-180 and its modifications are designed for marine mechanisms drive (fans, conditioners, pumps, compressors, etc.) and for exploitation on marine surface ships and nuclear submarines of the third generation in unrestricted navigation area. The motors can be manufactured with height of rotation of 63, 71, 80, 90, 100, 112, 132, 160 and 180 mm.

The motors have:

- vibration velocity value in the elastic mount is 0.45 mm/s in accordance with IEC60034-14.
- increased lifetime and reliability (complete lifetime is 60,000 h, not less than 0.98);
- increased resistance to mechanical influence (vibration, single and multiple actions shock, oscillatory motion, lurch and trim differences, etc.);
- special bearing units with mounted bearings of low vibration level of class 4 accuracy, that provide durability. Upon customer request it is possible to mount sealed bearings with two seals pre-lubricated for the whole lifetime period, or open bearings with grease refilling tools;
- IP55 protection degree and higher upon customer request;
- self-ventilation cooling method;
- moisture- and oil-resistant winding insulation of heat-resistance class H;
- operational mode S1 or according to the cycle scheme agreed with the customer;
- additional balancing device ready-assembled with a mechanism to ensure minimum values of vibration amplitude at all frequency range;
- mounting arrangement IMB3, IMB5, IMB35, the motor location is free in the space;
- three-phase voltage supply 380 V, 50 Hz.

A-weighted sound power level corresponds to class 2 for motors with a self-blowing fan and to class 3 - for motors without fans according the IEC60034-9. 3DMSH motors provide a lower value of magnetic moment components in comparison with electric motors of 2DMSH series.

No	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	3DMSH 63B2-OM5	0.12	380	3000	58.4	8.0
2	3DMSH OV 63B2-OM5	0.12	380	3000	63.9	7.2
3	3DMSH OV 71A2-OM5	0.18	380	3000	74.8	9.5
4	3DMSH 71B2-OM5	0.25	380	3000	76.3	11.0
5	3DMSH 80B2-OM5	0.55	380	3000	78.6	16.4
6	3DMSH 80A4-OM5	0.25	380	1500	72.4	14.6
7	3DMSH 90SB2-OM5	1.1	380	3000	81.5	22.5
8	3DMSH OV 90SA4-OM5	0.55	380	1500	75.1	17.6
9	3DMSH 100L2-OM5	2.2	380	3000	83.8	31.8
10	3DMSH OV 100SA4-OM5	1.1	380	1500	79.7	25.0
11	3DMSH OV 100L4-OM5	1.5	380	1500	76.3	28.2
12	3DMSH 112MA2-OM5	4.0	380	3000	85.1	45.7
13	3DMSH 112MB4-OM5	4.0	380	1500	86.4	49.9
14	3DMSH 132MB2-OM5	7.5	380	3000	85.9	81
15	3DMSH 160MA2-OM5	11.0	380	3000	87.2	119
16	3DMSH 180MB2-OM5	18.5	380	3000	91.4	177

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	3DMSHn 132SB4-OM5	5.5	380	1500	84.3	77
2	3DMSHn 160MA4-OM5	7.5	380	1500	87.5	116
3	3DMSH 160MB4-OM5	11.0	380	1500	88.6	122
4	3DMSHn 160MB4-OM5	11.0	380	1500	88.6	123
5	3DMSHn 180SB4-OM5	15.0	380	1500	92.4	153
6	3DMSHn 180M4-OM5	18.5	380	1500	92.1	174
7	3DMSH 200S4-OM5	7.5	380	1500	91.2	210
8	3DMSH 2K200S6-OM5	11.0	380	1000	93.6	225
9	3DMSHM 2K200S6-OM5	11.0	380	1000	91.9	227
10	3DMSHn 160MB6/4-OM5 (two-speed)	2.2	380	1000	84.4	123
		4.0	380	1500	88.0	

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	3DMSHn 90SA2-OM5	0.75	380	3000	75.8	21.5
2	3DMSHk 90SB4-OM5	0.75	127	1500	73.7	21.5
		0.75	220	1500	74.9	21.5
4	3DMSHP 90SB4-OM5	0.75	127	1500	71.5	20.5
		0.75	220	1500	72.6	20.5
5	3DMSHV 100SA4-OM5	1.1	380	1500	75.5	27
6	3DMSHn 112S2-OM5	2.2	380	3000	86.9	41.0
7	3DMSHn 112S4-OM5	2.2	380	1500	84.9	40.0
8	3DMSH 112S4-OM5	2.2	380	1500	83.1	39.0
9	3DMSH 112MA4-OM5	3.0	380	1500	84.3	44.6
10	3DMSHn 112MA4-OM5	3.0	380	1500	82.6	45.1
11	3DMSHn 112MB4-OM5	4.0	380	1500	85.9	51.0

## INDUCTION MOTOR WITH LOW VIBRATION AND EXTERNAL ELECTROMAGNETIC FIELD OF 3DMSHR160MA4-OM5 SERIES

Marine three-phase squirrel-cage induction motors 3DMSHR 160MA4-OM5 are designed for turbine's shaft-turning gear drives when starting and stopping in order to eliminate thermal deformations and operation on marine ships and submarines of the third generation in the unrestricted navigation area.

Mounting arrangement for IMB3 and IMB5 is with two free shaft ends.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	3DMSHR 160MA4-OM5	380	5.5	1500	87.8	106
						111

\* Motor weight for IMB3 is stated at the top, and for IMB5 - at the bottom.

Other characteristics of 3DMSHR160MA4 OM5 motor correspond to the specifications of 3DMSH160 motors.

# MARINE LOW-NOISE MOTORS 4DMSH (4DMШ) SERIES WITH INCREASED REQUIREMENTS TO VIBROACOUSTIC CHARACTERISTICS

Marine three-phase squirrel-cage induction motors are designed for marine machinery drives and for operation on marine surface vessels and nuclear-powered submarines (NPS) of the fourth generation in the unrestricted navigation area.

The motors have:

- Vibration velocity value in the elastic mount is 0.11 mm/s in accordance with IEC60034-14.
- Increased lifetime and reliability (complete lifetime is 60,000 h, not less than 0.99);
- increased resistance to mechanical influence (vibration, single and multiple actions shock, oscillatory motion, lurch and trim differences, etc.);
- special bearing unit with mounted bearings of low vibration level of class 4 accuracy, that provide durability. Upon customer request it is possible to mount sealed bearings with two seals pre-lubricated for the whole lifetime period, or open bearings with grease refilling tools;
- IP55 protection degree and higher upon customer request;
- water cooling method (by feeding fresh water to a special cooling channels);
- moisture- and oil-resistant winding insulation of heat-resistance class H
- operational mode S1 or according to the cycle scheme agreed with the customer;
- additional balancing device ready-assembled with a mechanism to ensure minimum values of the vibration amplitude at all frequency range;
- mounting arrangement IMB3, IMB5, IMB35, the motor location is free in the space;
- three-phase voltage supply 380 V, 50 Hz.

A-weighted sound power level corresponds to class 3 according to IEC60034-9 for motors with a self-blowing fan and Class 3 - for motors without fans according the IEC60034-9.

3DMSHM motors provide a lower value of magnetic moment components in comparison with electric motors of 2DMSHm series. Three-phase phase voltage supply 380 V, 50 Hz. A -weighted sound power level corresponds to class 3 according to IEC60034-9.

## INDUCTION MOTOR WITH LOW VIBRATION LEVEL OF 4DMSH2K200V2-OM5 SERIES

- Is designed for compressor drives of NPS of the fourth generation.
- Mounting arrangement is IMB35 with two free shafts ends;

Three-phase squirrel-cage induction motors are designed for compressor drives for operation in the unrestricted navigation area. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on a customer's request. Motors meet the requirements of GOST 183-78, GOST B 23396-78 and Terms of delivery ... No. 01-1874-62. Motors are designed for three-phase AC power supply, 380V, 50Hz. Mounting arrangement is IM 2002 in accordance with GOST 2479-79. Rated operating mode is continuous duty (S1) according to GOST 183-74. Protection degree of the motor is watertight according to GOST B 23396-78 (IP55 according to 14254-96). Cooling method is with fresh water according to GOST 2874-82.

Induction motor 4DMSH2K200V2-OM5 has a rated power of 7.5 kW.

No	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4DMSH 2K200B2-OM5	7.5	380	3000	85.0	120

## INDUCTION MOTORS WITH LOW VIBRATION LEVEL OF 4DMSHN112SA-OM5, 4DMSHN132MA2-OM5, 4DMSHN180SA6- OM5 SERIES

Motors are designed for drives of screw electric pump units and operation on NPS of the fourth generation in the unrestricted navigation area.

- Cooling method of is IC0041 (free convection)
- Mounting arrangement is IMV10;

Vibration velocity value in the elastic mount is 0.28 mm/s in accordance with IEC60034-14.

A-weighted sound power level corresponds to class 3 according to IEC60034-9.

Induction motors 4DMSHN112SA2-OM5 has a rated power of 0.75 kW, 4DMSHN132MA2-OM5 - 2.2 kW and 4DMSHN180SA6-OM5 - 3.0 kW.

Induction motor 4DMSHN112SA2-OM5 has a rated power of 0.75 kW, 4DMSHN132MA2-OM5 – 2.2 kW and 4DMSHN180SA6-OM5 – 3.0 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4DMSHN 112SA2-OM5	0.75	380	3000	81.2	35
2	4DMSHN 132MA2-OM5	2.2	380	3000	79	79
3	4DMSHN 180SA6-OM5	3.0	380	1000	77.6	150

## INDUCTION MOTORS WITH LOW VIBRATION LEVEL OF 4DMSHV2K90V4-OM5 AND 4DMSHV2K112A2-OM5 SERIES

Motors are designed for drives of screw electric pump units and operation on NPS of the fourth generation in the unrestricted navigation area.

Mounting arrangement is integrated.

A-weighted sound power level corresponds to class 3 according to IEC60034-9.

Motor cooling is provided by the compressor design.

Induction motors 4DMSHV2K90B4 and 4DMSHV2K112A2 have a rated power of 0.37 and 1.1 kW.

Induction motors – 4DMSHV2K90B4 and 4DMSHV2K112A2 – have a rated power of 0.37 and 1.1 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4DMSHV 2K90B4	0.37	380	1500	67.6	8.2
2	4DMSHV 2K112A2	1.1	380	3000	80	16.7

## INDUCTION MOTORS WITH LOW VIBRATION LEVEL OF 4DMSH, 4DMSHOV AND 4DMSHO SERIES

Marine three-phase squirrel-cage induction motors are designed for marine machinery drives and for operation on marine surface vessels and nuclear-powered submarines (NPS) of the fourth generation in the unrestricted navigation area.

- 4DMSH - for drives of centrifugal fans, chargers and central air conditioners;
- 4DMSHOV - for summer air conditioner drives;
- 4DMSHO - for screw fan drives.

The motors have:

- Cooling method IC0141 for 4DMSH motors (with a self-blowing cooling fan), IC019 – for 4DMSHOV and 4DMSHO motors;
- Vibration velocity value in the elastic mount is 0.28 mm/s according to IEC60034-14.
- A-weighted sound power level corresponds to class 2 for 4DMSHOV and 4DMSHO motors, class 3 - for motors 4DMSH according to IEC60034-9.

Mounting arrangement is:

1) for motors 4DMSH – IM2001 and IM2071 in accordance with GOST 2479-79. The motors can rotate round the axis when mounted in the fan.

2) for motors 4DMSHOV - horizontal; mounting is on the side of a free shaft end - on four mounting lugs for 71 and 90 frame sizes, and on three lugs for 100 frame size, with a tight spigot; on the opposite side - with a tight spigot and four threaded holes on the bearing shield end;

3) for motors 4DMSHO - horizontal; mounting is on the side of a free shaft end and on the opposite side - with a tight spigot

and four threaded holes on the bearing shield end.

Induction motors 4DMSH, 4DMSHOV and 4DMSHO have a rated power range from 0.12 to 4.0 kW.

Mounting arrangement is:

- for motors 4DMSH – IM2001 and IM2071 in accordance with GOST 2479-79. Motors can rotate round the axis while mounting in the fan.
- for motors 4DMSHOV – horizontal; mounting is on the side of the shaft end extension – with four mounting bosses for 71 and 90 frame sizes, and with three bosses for 100 frame size, with a tight spigot; on the opposite side – with a tight spigot and four threaded holes on the bearing shield end.
- for motors 4DMSHO – horizontal; mounting is on the side of the shaft end extension and on the opposite side – with a tight spigot and four threaded holes on the bearing shield end.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4DMSH 90SB2-OM5	1.1	380	3000	78	22.0
2	4DMSH 100L2-OM5	2.2	380	3000	78	31.0
3	4DMSH 112MA2-OM5	4.0	380	3000	83.2	45.7
4	4DMSHOV 71A2-OM5	0.18	380	3000	66.7	10.5/9.7
5	4DMSHOV 90SB4-OM5	0.37	380	1500	75.8	20.2/19.0
6	4DMSHOV 100SA6-OM5	0.55	380	1000	62.8	23.6/22.4
7	4DMSHO 63B2-OM5	0.12	380	3000	63.5	14.3/13.5

## INDUCTION MOTORS WITH LOW VIBRATION LEVEL OF 4DMSHB, 4DMSH1B AND 4DMSHP SERIES

Marine three-phase squirrel-cage induction motors are designed for marine machinery drives and for operation on marine surface vessels and submarines of the fourth generation in the unrestricted navigation area:

4DMSHB and 4DMSH1B are motors for centrifugal fan drives;

4DMSHP are motors for drives of centrifugal plug fans.

The motors have:

- specific capacity pegging to the mounting and connecting dimensions;
- increased lifetime and reliability (complete lifetime is 60,000 h, the probability of failure-free operation for the period of 5,000 h is at least 0.98);
- increased resistance to mechanical influence (single action shocks, oscillatory motion, lurch and trim differences);
- bearing units with radial bearings of medium series of class 4 accuracy with two pre-lubricated seals;
- IP55 protection degree;
- IC19 cooling method for 4DMSHB, 4DMSH1B motors; IC00 - for engines 4DMSHP;
- moisture- and oil-resistant winding insulation of heat-resistance class H;
- mode S1;
- additional balancing device ready-assembled with a mechanism;
- mounting arrangement IMB35 for 4DMSHB, 4DMSH1B motors, horizontal with one free end of the shaft and mounting lugs on 4DMSHP motor frame;
- three-phase voltage supply, 380 V, 50 Hz.

Vibration velocity value in the elastic mount is 0.28 mm/s in accordance with IEC60034-14. A-weighted sound power level corresponds to class 3 according to IEC60034-9. Cooling of motor is provided by a fan design. Induction motors 4DMSHB, 4DMSH1B and 4DMSHP have a rated power range from 0.25 to 5.5 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4DMSHB90A2-OM5	0.25	380	3000	74	15.7
2	4DMSHB112A2-OM5	0.75	380	3000	76	26.5
3	4DMSH1B112A2-OM5	1.1	380	3000	79.1	
4	4DMSHP 132B2-OM5	2.2	380	3000	83.5	40.7
5	4DMSHP 160A2-OM5	3.0	380	3000	81.8	74.7
6	4DMSHP 160B2-OM5	4.0	380	3000	87.9	79.7
7	4DMSHP 200A2-OM5	5.5	380	3000	88.5	100.5
8	4DMSHP 160B4-OM5	3.0	380	1500	86.8	74.7

## INDUCTION MOTORS WITH LOW VIBRATION LEVEL OF 4DMSHNV180B4-OM5 SERIES

Marine three-phase squirrel-cage induction motors are designed for marine machinery drives and for operation on marine surface vessels and submarines of the fourth generation in the unrestricted navigation area.

The motor has:

- specific capacity pegging to the mounting and connecting dimensions;
- increased lifetime and reliability (complete lifetime is 60,000 h, the probability of failure-free operation for the period of 5,000 h is at least 0.98);
- increased resistance to mechanical influence (single action shocks, oscillatory motion, lurch and trim differences);
- bearing units with open bearings with a grease refilling tool;
- IP55 protection degree;
- water cooling method (with fresh water);
- moisture- and oil-resistant winding insulation of heat-resistance class H;
- mode S1;
- additional balancing device ready-assembled with a mechanism;
- mounting arrangement IMV10;
- three-phase voltage supply, 380 V, 50 Hz.

Vibration velocity value in the elastic mount is 0.11 mm/s in accordance with IEC60034-14. A-weighted sound power level corresponds to class 3 according to IEC60034-9. Motor design, based on the degree of internal parts protection against the intrusion of solid objects and water, is IP54 according to GOST 17494. Induction motor 4DMSHNV180B4-OM5 has a rated power of 15 kW.

Motor design, based on the degree of internal parts protection against the intrusion of solid objects and water, is IP54 according to GOST 17494. Cooling method is with fresh water.

Induction motor 4DMSHNV180B4-OM5 has a rated power of 15 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %
1	2	3	4	5	6
1	4DMSHNV 180B4-OM5	15.0	380	1500	87.2

## BDA1,1-OM5 (БДА1,1-OM5)

Induction motor block BDA1,1-OM5 is manufactured in accordance with technical specifications 16-90. It consists of two marine three-phase squirrel-cage induction motors 4DMSHV90SA4-OM5 for a vacuum pump block drive and is designed for operation in the unrestricted navigation area. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74, GOST B 23396-78 and «Terms of delivery». Motors are designed for three-phase AC power supply, 380V, 50Hz. Mounting arrangement is IM3011 in accordance with GOST 2479-79. Rated operating mode is temporary duty (S2) according to GOST 183-74. Motor design is watertight according to GOST B 23396-78 (IP55 in accordance with GOST 14254-96). Cooling method is IC00 according to GOST 20459-87 (without a cooling blower fan).

Induction motor block BDA1,1-OM5 has a rated power of 0.55 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4DMSHV 90SA4-OM5	0.55	380	1500	72.7	18.7



# MARINE MOTORS SERIES

## DR (ДР)

Three-phase squirrel-cage induction motors, DR series, are manufactured in accordance with technical specifications 16-513.456-78 for the drives of pumps, centrifugal and axial fans.

Motors meet the requirements of GOST B 23396-78. Mounting arrangement in accordance with GOST 2479-79 is IM2081 for DR100-112 and DRN and IM5002 for DRV. Cooling method according to GOST 20459-87 is IC0141 for DR and DRN (with self-ventilation) and IC3141 for DRV. Protection degree of motors DR and DRN is IP54 according to GOST 17494-87 and IP20 for fan frame. Rated operating mode is continuous duty (S1) according to GOST 183-74.

Motors provide both left and right directions of rotation.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DR 100SA2 01	1.50	220 or 380	2892	72	26.8
2	DR 100L2 01	2.20	220 or 380	2878	77	30.8
3	DR 112S2 01	3.00	220 or 380	2850	82	39.5
4	DR 112MA2 01	4.00	220 or 380	2850	82	45.7
5	DR 100SA4 01	1.10	220 or 380	1410	72	27.2
6	DRN 100SA2 01	1.10	220 or 380	2900	71	26.8
7	DRN 100L2 01	1.50	220 or 380	2900	75	30.8
8	DRN 112S2 01	2.20	220 or 380	2910	77	39.5
9	DRN 112MA2 01	3.00	220 or 380	2910	83	45.7
10	DRN 112MB2 01	4.00	220 or 380	2900	85	50.1
11	DRV 100A2 01	1.50	220 or 380	2892	75	12.4
12	DRV 100B2 01	2.20	220 or 380	2892	79	16.0
13	DRV 112A2 01	3.00	220 or 380	2850	83	21.2
14	DRV 112B2 01	4.00	220 or 380	2850	84	26.3
15	DRV 100A4 01	1.10	220 or 380	1410	72	12.5

## 2DMG100 (2ДМГ100), 2DMG112 (2ДМГ112)

Three-phase squirrel-cage induction motors – 2DMG100 and 2DMG112 – are manufactured in accordance with technical specifications 16-513.514-82. Motors are designed for gastight fan drives. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request.

Motors meet the requirements of GOST B 23396-78 and engineering documentation.

Mounting arrangement is IM2001 in accordance with GOST 2479-79. Cooling method is IC0040 according to GOST 20459-87. Rated operating mode of the motor is continuous duty (S1) according to GOST 183-74. Motors are designed for power supply of 380V, 50Hz.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	2DMG 100SA2-B5	0.25	380	3000	68	26.5
2	2DMG 100L2-B5	0.55	380	3000	78	30.5
3	2DMG 112MB2-B5	1.5	380	3000	82	48.5

## 3DMG100L2-OM5 (3ДМГ100L2-OM5)

Squirrel-cage induction motors 3DMG00L2-OM5 are manufactured in accordance with technical specifications 16-525.603-85. Motors are designed for gastight electric fan drives and correspond to GOST B 23396-78. Mounting arrangement is IM2001 in accordance with GOST 2479-79. Cooling method is IC0040 according to GOST 20459-87. Rated operating mode is continuous duty (S1) according to GOST 183-74. Motors are designed for power supply of 380V, 50Hz.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	3 DMG 100L2-OM5	0.55	380	3000	78	32

## 4A71P3POM5-4A100P3POM5 (4A71P3POM5-4A100P3POM5)

Induction motors 4A71P3POM5-4A100P3POM5 are manufactured in accordance with technical specifications 16510.653-77 and are designed for configuration of gearbox motors, which are installed in the workshops of fish factory ships with unrestricted navigation area for national economic needs.

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74 and "Rules for Classification and Construction of Sea-going Ships" Register, part XI, edition 2005.

Motors are designed for power supply of 220V and 380V, 50Hz. Motors can be manufactured according to other standard voltage ratings not exceeding 660V on customer's request.

Rated operating mode is continuous duty (S1) according to GOST 183-74. Mounting arrangement is IM3001 in accordance with GOST 2479-79. Cooling method is IC0141 according to GOST 20459-87. Ambient climate factor ratings correspond to GOST 15150-69.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4A71B4P3POM5	0.55	220 or 380	1500	60.0	17.5
2	4A71B6P3POM5	0.37	220 or 380	1000	58.0	18
3	4A80A4P3POM5	0.75	220 or 380	1500	69.0	19.5
4	4A80B4P3POM5	1.10	220 or 380	1500	70.0	22.0
5	4A80A6P3POM5	0.55	220 or 380	1000	63.0	19.5
6	4A80B6P3POM5	0.75	220 or 380	1000	65.0	22.0
7	4A90L4P3POM5	1.50	220 or 380	1500	75.0	32.0
8	4A90L6P3POM5	1.10	220 or 380	1000	71.0	33.0
9	4A100S4P3POM5	2.20	220 or 380	1500	80.0	38.0
10	4A100L4P3POM5	3.00	220 or 380	1500	80.0	44.5
11	4A100L6P3POM5	1.50	220 or 380	1000	76.0	43.0

## DM2SHN (ДМ2ШН) 80, 90

Squirrel-cage induction motors DM2ShN 80, 90 are manufactured in accordance with technical specifications 513.107-77. Motors are designed for pump drives.

Motors meet the requirements of GOST 183-74 and «Terms of delivery».

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Mounting arrangement is IM2031 for DM2ShN80B4 and IM3011 for DM2ShN90SA2 in accordance with GOST 2479-79. Cooling method is IC0141 according to GOST 20459-87. Motor design is watertight according to GOST B 23396-78. Motors provide both left and right directions of rotation.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DM2ShN 80B4 OM5	0.37	380	1500	61	15.8
2	DM2ShN 90SA2 OM5	0.75	380	3000	69	19.7

## DM2SHN (ДМ2ШН) 132, 180

Induction motors DM2ShN 132, 180 are manufactured in accordance with technical specifications 513.109-77. Motors meet the requirements of GOST 183-74 and «Terms of delivery». Motors are designed for pump drives.

Cooling method is IC0141 according to GOST 20459-87. Rated operating mode is continuous duty (S1) according to GOST 183-74. Motor design is watertight according to GOST B 23396-78.

Motors DM2ShN132SB4 provide both left and right directions of rotation, which shall be discussed while placing an order. Motors DM2ShN180SB2 provide right direction of rotation.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DM2ShN 132SB4 OM5	5.5	380	1500	82.8	80
		6.5			82.5	
2	DM2ShN 180SB2 OM5	18.5	380	3000	88.0	160
		20.0			88.0	
		22.5			87.5	
		25.0			87.0	
		27.0			86.5	

## DMO2SH63-90 (ДМО2Ш63-90), DM2SH71-132 (ДМ2Ш71-132)

Squirrel-cage induction motors – DMO2Sh63-90 and DM2Sh71-132 – are manufactured in accordance with technical specifications 513.108-77. Motors DMO2Sh are designed for axial fan drives, and motors DM2Sh are designed for centrifugal fan drives.

Motors meet the requirements of GOST 183-74 and «Terms of delivery». Mounting arrangement in accordance with GOST 2479-79 is IM2001, IM2011, IM2031 and IM2071 for DM2Sh and IM9201 for DMO2Sh. Cooling method is IC0141 for DM2Sh and IC3841 for DMO2Sh according to GOST 20459-87. Rated operating mode is continuous duty (S1) according to GOST 183-74. The number of start-ups per hour is no more than 6 evenly over time. Three start-ups at a run are provided after warm-up. Motor design is watertight according to GOST B 23396-78. Motors provide both left and right directions of rotation.

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DMO2Sh 63A2OM5	0.09	380	3000	51	6.7
2	DMO2Sh 71A2OM5	0.18	380	3000	52	9.2
3	DMO2Sh 71B2OM5	0.25	380	3000	61	10.0
4	DMO2Sh 80B2OM5	0.55	380	3000	67	14.2
5	DMO2Sh 90SB2OM5	1.1	380	3000	75	20.2
6	DM2Sh 71A2OM5	0.18	380	3000	52	10.0
7	DM2Sh 71B2OM5	0.25	380	3000	60	10.7
8	DM2Sh 80B2OM5	0.55	380	3000	67	16.0
9	DM2Sh 90SA2OM5	0.75	380	3000	69	20.0
10	DM2Sh 100SA2OM5	1.5	380	3000	71	28.0
11	DM2Sh 112SA2OM5	3.0	380	3000	80	40.0
12	DM2Sh 132SA2OM5	5.5	380	3000	82.7	73.0

## DA112 (ДА112)

Induction motors DA112 are manufactured in accordance with technical specifications of Ukraine 3.06 048-94 Motors are designed for:

- DA112MA2 and DA112MB2 – for general industrial machinery drives
- DA112MA4 and DA112MB6 – for lifeboat launching and lifting gears

Motors meet the requirements of GOST 183, DSTU 2365, the requirements of current technical specifications and engineering documentation. Motors DA112MA4 and DA112MB6 correspond to the «Russian Register of Shipping».

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors are designed for voltage of 380V, 50Hz. Mounting arrangement in accordance with GOST 2479 is IM1081, IM2081, IM3081 for DA112MA2 and DA112MB2, and IM3081 for DA112MA4 and DA112MB6. Motor protection degree is IP54, and for DA112MA4 and DA112MB6 it is IP56, according to GOST 17494. Protection of motors DA112MA4 and DA112MB6 against water intrusion through the shaft line is provided with the machinery. Cooling method is IC0141, and for motors DA112MA4 and DA112MB6 it is IC0041 according to GOST 20459.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kgw
1	2	3	4	5	6	7
1	DA 112MA2	5.5	380	3000	86	43.8
						45.8
						44.9
2	DA 112MB2	7.5	380			49
						51
3	DA 112MA4	4	380	1500	78	42
4	DA 112MB6		380	1000	76	50

\*weight depends on the design

## AIRB80E2EBO-M5 (AIPB80E2ЭБО-M5)

Induction motors AIRB80E2EBO-M5 are of special design with an electromagnetic brake and manual unbraking device, with a built-in thermal protection, and are manufactured in accordance with technical specifications 16-91. Motors are designed for the bridge crane drives, which are mounted on the ships with unrestricted navigation area and designed for frequency of 50Hz.

Motors meet the requirements of GOST 183, GOST 28330 and «Russian Register of Shipping», edition 2005. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Mounting arrangement is IM3001 in accordance with GOST 2479. Rated operating mode is intermittent periodic duty (S4) according to GOST 183 with 240 start-ups per hour and inertia coefficient FJ = 1.2, and with duty cycle DC=15% for single-speed motors and DC = 20/25% for two-speed motors.

Protection degree is IP54 according to GOST 17494. Cooling method is IC0040 according to GOST 20459.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	AIRB 80A8E2	0.37	380	750	65	17.3
2	AIRB 80B8E2	0.55		750	65	18.3
3	AIRB 80A8/2E2	0.18/0.63		750/3000	35/65	17.5

## DM (ДМ), DMM (ДММ), DMO (ДМО) 132-180

Marine three-phase squirrel-cage induction motors – DM, DMM and DMO132-180 – and their modifications are manufactured in accordance with technical specifications 16-513.363-74. Motors meet the requirements of GOST 183-74 and «Rules while Regulations for the Construction and Classification of Marine Vessels».

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Mounting arrangement in accordance with GOST 2479-79 is 1M1081, 1M2081, IM3081 for DM and DMM; IM2081, IM3081 for DMN, DMMN, DMNU and DMMNU; IM1081, IM2081, IM3081, IM2282 for DMB and DMMB; IM1081 for DMO. Rated operating mode is continuous duty (S1), operation in temporary duty (S2) of 10, 30, 60 min is available for motors DM, DMN, DMNU, DMM, DMMN, DMMNU according to GOST 183-74. Protection degree is watertight (IP55 according to GOST 14254-96). Motors are designed for 380V, 50Hz.

DM, DMN, DMNU, DMM, DMMN, DMMNU, DMO

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	132SA2	5.5	220; 380	3000	82.7	76; 77; 78
2	132SB2	7.5	220; 380	3000	85	83; 84; 85
3	132SB4	5.5	220; 380	1500	83.9	83; 84; 85
4	132MB4	7.5	220; 380	1500	83	88; 89; 90
5	132MA6	3	220; 380	1000	81	79; 80; 81
6	132MB6	4	220; 380	1000	81	87; 88; 89
7	132MA8	2.2	220; 380	750	73.5	79; 80; 81
8	160MA2	11	220; 380	3000	85.7	122; 123; 124
9	160MB2	15	220; 380	3000	87.6	134; 135; 136
10	160L2	18.5	220; 380	3000	88	148; 149; 150
11	160MB4	11	220; 380	1500	86.8	130; 131; 132
12	160L4	15	220; 380	1500	87.4	146; 147; 148

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
13	160MB6	5.5	220; 380	1000	82	129; 129; 130
14	160L6	7.5	220; 380	1000	84	144; 145; 146
15	160MA8	3	220; 380	750	72.9	120; 121; 122
16	160MB8	4	220; 380	750	78.7	129; 130; 131
17	160L8	5.5	220; 380	750	79	143; 144; 145
18	180M2	22	220; 380	3000	90	189; 190; 191
19	180L2	25	220; 380	3000	89.5	209; 210; 211
20	180M4	18.5	220; 380	1500	87.8	182; 183; 184
21	180L4	22	220; 380	1500	88.2	208; 209; 210
22	180M6	11	220; 380	1000	86.5	180; 181; 182
23	180L6	15	220; 380	1000	87.1	208; 209; 210
24	180M8	7.5	220; 380	750	82.5	179; 180; 181
25	180L8	11	220; 380	750	84.7	208; 209; 210
26	200L2	45	220; 380	3000	91	263
27	250S2	75	220; 380	3000	90	585
28	250M2	90	220; 380	3000	92	650

\* weight of 1 DM, DMM; 2 DMN, DMMN; 3 DMNU, DMMNU. Motor weight is stated for IM2081.

#### Multi-speed DM, DMM

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %
1	2	3	4	5	6
1	132SB4/2	4	220; 380	1500	82.2
		5.5	220; 380	3000	77.7
2	132MB4/2	4.5	220; 380	1500	82.5
		6.3	220; 380	3000	79.1
3	160MB4/2	6	220; 380	1500	87.5
		9	220; 380	3000	87.3
4	160L4/2	9	220; 380	1500	88
		12	220; 380	3000	88.2
5	180L4/2	12	220; 380	1500	89
		15	220; 380	3000	88
6	132MA8/4	2	220; 380	750	66.3
		3	220; 380	1500	76.6
7	160MA8/4	2.5	220; 380	750	61.4
		4	220; 380	1500	85.4
8	160MB8/4	3	220; 380	750	70.4
		5.5	220; 380	1500	83.7
9	160L8/4	4	220; 380	750	75.7
		7.5	220; 380	1500	82.2
10	180M8/4	5.5	220; 380	750	80
		11	220; 380	1500	88
11	180L8/4	7.5	220; 380	750	80.9
		15	220; 380	1500	87

#### DMB, DMMB

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	132SB2	2.2	220; 380	3000	74	75
2	132MB4	1.7	220; 380	1500	78.9	84
3	132MA6	1	220; 380	1000	65.3	78
4	132MB6	1.3	220; 380	1000	72.2	84
5	132MA8	1.1	220; 380	750	73.1	78
6	160MB2	3	220; 380	3000	88.2	119
7	160L2	3.55	220; 380	3000	82.1	140
8	160MB4	4	220; 380	1500	85.1	122

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
9	160L4	5.5	220; 380	1500	86.6	134
10	160MB6	3	220; 380	1000	83.2	119
11	160L6	4	220; 380	1000	85.9	135
12	160MA8	1.5	220; 380	750	76	112
13	160MB8	2.2	220; 380	750	78.5	122
14	160L8	3	220; 380	750	83	134
15	180M2	7	220; 380	3000	82.7	177
16	180L2	9	220; 380	3000	92.5	193
17	180L4	7	220; 380	1500	87.1	195
18	180L6	5.5	220; 380	1000	89.5	190
19	180L8	4	220; 380	750	83.6	201

Motor weight of DMB, DMMB is stated for IM2081.

## AOMSH (AOMШ) 1, 2, 3, 4

Three-phase squirrel-cage special-purpose induction motors AOMSh of sizes 1, 2, 3 and 4, and their modifications are manufactured in accordance with technical specification 16-513.405-76 and are designed for auxiliary machinery drives. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors are also designed for operation in conditions of placement categories 2, 3 and 4.

Motors meet the requirements of GOST B 23396-78 and engineering documentation. Mounting arrangement is IM1081, IM1082, IM2081, IM2082, IM3081 and IM3082 in accordance with GOST 2479-79. Motors are designed watertight, but it is not provided through the shaft line. Rated operating mode is continuous duty (S1) according to GOST 183-74. Temporary duty (S2) according to GOST 183-74 and intermittent periodic duty (S3) according to GOST 183-74 are available as well. Motors are designed for AC power supply, voltage of 127V, 220V, 380V, 50Hz.

The production of sizes 1 and 2 is reestablished. The production of sizes 3 and 4 can be reestablished if required.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	AOMSh 11-2	0.35	127; 220; 380	3000	64	10.5
2	AOMShM 11-2	0.35	127; 220; 380	3000	64	10.5
3	AOMSh 12-2	0.65	127; 220; 380	3000	68.7	12.5
4	AOMShM 12-2	0.65	127; 220; 380	3000	68.7	12.5
5	AOMShU 12-2	0.55	127; 220; 380	3000	67	12.6
6	AOMSh 11-4	0.18	127; 220; 380	1500	51	10.5
7	AOMShM 11-4	0.18	127; 220; 380	1500	51	10.5
8	AOMSh 12-4	0.32	127; 220; 380	1500	59	12.5
9	AOMShM 12-4	0.32	127; 220; 380	1500	59	12.5
10	AOMSh 21-2	0.80	127; 220; 380	3000	68	15.5
11	AOMShM 21-2	0.80	127; 220; 380	3000	68	15.5
12	AOMShU 21-2	0.80	127; 220; 380	3000	68	15.6
13	AOMShU 21-2M	0.80	127; 220; 380	3000	68	16.3
14	AOMSh 22-2	1.15	127; 220; 380	3000	75	18.5
15	AOMShM 22-2	1.15	127; 220; 380	3000	75	18.5
16	AOMShU 22-2	1.15	127; 220; 380	3000	75	17.5
17	AOMSh 21-4	0.50	127; 220; 380	1500	63	15.5
18	AOMShM 21-4	0.50	127; 220; 380	1500	63	15.5
19	AOMSh 22-4	0.80	127; 220; 380	1500	68	18.5
20	AOMShM 22-4	0.80	127; 220; 380	1500	68	18.5
21	AOMSh 31-2	1.50	127; 220; 380	3000	74	26.5
22	AOMShM 31-2	1.50	127; 220; 380	3000	74	26.5
23	AOMSh 32-2	2.20	127; 220; 380	3000	78	31
24	AOMShM 32-2	2.20	127; 220; 380	3000	78	31
25	AOMSh 31-4	1.00	127; 220; 380	1500	69	26.5
26	AOMShM 31-4	1.00	127; 220; 380	1500	69	26.5
27	AOMSh 32-4	1.5	127; 220; 380	1500	70	31
28	AOMShM 32-4	1.5	127; 220; 380	1500	70	31

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
29	AOMSh 41-2	3.2	127; 220; 380	3000	79	39
30	AOMShM 41-2	3.2	127; 220; 380	3000	79	39
31	AOMSh 42-2	4.5	127; 220; 380	3000	82	46
32	AOMShM 42-2	4.5	127; 220; 380	3000	82	46
33	AOMShU 42-2	4.50	127; 220; 380	3000	80	55
34	AOMSh 41-4	2.2	127; 220; 380	1500	75	39
35	AOMShM 41-4	2.2	127; 220; 380	1500	75	39
36	AOMSh 42-4	3.2	127; 220; 380	1500	78	46
37	AOMShM 42-4	3.2	127; 220; 380	1500	78	46
38	AOMSh 42-6	2.2	127; 220; 380	1000	72.6	46
39	AOMShM 42-6	2.2	127; 220; 380	1000	72.6	46

## AIR56OM2–AIR200OM2 (AIP56OM2-AIP200OM2), AIR56BOM2–AIR200BOM2 (AIP56BOM2-AIP200BOM2)

Motors are designed for AC power supply, voltage of 220V and 380V, 50Hz and 60Hz, for auxiliary machinery drives on sea and river ships of civil navy in the unrestricted navigation area. Motors are manufactured in accordance with technical requirements 525000.001 and meet the requirements of ND 2-020101-064.

Technical characteristics:

- Rated operating mode is continuous duty (S1)
- Protection degree is not less than IP54
- Cooling method is IC0141 (blown with an external blower fan mounted on the shaft) and IC48 (without a cooling blower fan) according to GOST 20459-87
- Motor insulation is oiltight, temperature class F
- Mounting arrangement is IM1081, IM1082, IM2081, IM2082, IM3041 and IM3042 for AIR56OM2-AIR200OM2; and IM2181, IM2182, IM3641 and IM3642 for AIR56OM2-AIR100OM2 in accordance with DSTU IEC 60034-7:2005
- Motors are manufactured in cast iron or aluminum alloy frame
- Motors AIR56BOM2-AIR200BOM2 contain a built-in temperature protection TP211 according to GOST 27888-88

Rated values of the main motor parameters for frequency of 50Hz:

№	Series, type	Power, kW	Current A		Efficiency, %	Cos φ	Synchronous speed, rpm	Slip, %
			220 V	380 V				
1	2	3	4	5	6	7	8	9
1	AIR 56A2	0.18	0.93	0.54	68.5	0.74	3000	9.5
2	AIR 56B2	0.25	1.20	0.69	69.0	0.79	3000	9.5
3	AIR 63A2	0.37	1.50	0.87	75.0	0.86	3000	6.0
4	AIR 63B2	0.55	2.21	1.28	76.0	0.86	3000	6.0
5	AIR 71A2	0.75	3.00	1.75	79.0	0.80	3000	6.0
6	AIR 71B2	1.10	4.40	2.50	79.5	0.83	3000	6.5
7	AIR 80A2	1.50	5.70	3.30	82.0	0.85	3000	4.0
8	AIR 80B2	2.20	8.00	4.60	79.5	0.87	3000	4.5
9	AIR 90L2	3.00	10.60	6.10	84.5	0.88	3000	5.0
10	AIR 100S2	4.00	13.70	7.90	87.0	0.88	3000	5.0
11	AIR 100L2	5.50	18.50	10.70	88.0	0.89	3000	5.0
12	AIR 112M2	7.50	25.60	15.00	87.5	0.88	3000	3.5
13	AIR 132M2	11.00	37.70	22.00	89.0	0.86	3000	3.0
14	AIR 160S2	15.00	50.00	30.00	90.5	0.89	3000	2.5
15	AIR 160M2	18.50	60.00	35.00	91.0	0.89	3000	2.5
16	AIR 180S2	22.00	74.60	43.20	89.0	0.87	3000	2.5
17	AIR 180M2	30.00	96.50	55.70	92.0	0.89	3000	2.5
18	AIR 200M2	37.00	116.00	67.00	93.0	0.90	3000	2.0
19	AIR 200L2	45.00	141.00	81.50	93.4	0.90	3000	2.0
20	AIR 56A4	0.12	0.74	0.43	62.0	0.68	1500	10.0

№	Series, type	Power, kW	Current A		Efficiency, %	Cos φ	Synchronous speed, rpm	Slip, %
			220 V	380 V				
1	2	3	4	5	6	7	8	9
21	AIR 56B4	0.18	1.1	0.63	64.0	0.67	1500	10.0
22	AIR 63A4	0.25	1.41	0.81	68.5	0.68	1500	7.0
23	AIR 63B4	0.37	2.01	1.16	69.0	0.70	1500	7.0
24	AIR 71A4	0.55	2.90	1.70	71.0	0.73	1500	9.5
25	AIR 71B4	0.75	3.70	2.10	75.0	0.80	1500	10.0
26	AIR 80A4	1.10	4.70	2.70	76.5	0.77	1500	5.5
27	AIR 80B4	1.50	6.1	3.50	77.0	0.81	1500	6.0
28	AIR 90L4	2.20	8.60	5.00	81.5	0.82	1500	7.0
29	AIR 100S4	3.00	11.60	6.70	83.0	0.82	1500	6.0
30	AIR 100L4	4.00	14.70	8.50	85.0	0.84	1500	6.0
31	AIR 112M4	5.50	20.00	12.00	86.0	0.86	1500	4.7
32	AIR 132S4	7.50	27.10	15.70	87.5	0.83	1500	4.0
33	AIR 132M4	11.00	39.00	22.50	88.5	0.83	1500	3.4
34	AIR 160S4	15.00	52.00	30.00	90.0	0.84	1500	3.0
35	AIR 160M4	18.50	63.00	36.50	90.0	0.86	1500	3.0
36	AIR 180S4	22.00	75.10	43.50	91.5	0.84	1500	3.0
37	AIR 180M4	30.00	100.70	58.30	92.0	0.85	1500	3.0
38	AIR 200M4	37.00	124.50	72.00	92.0	0.85	1500	2.0
39	AIR 200L4	45.00	150.00	87.00	92.5	0.85	1500	2.0
40	AIR 63A6	0.18	1.33	0.77	56.5	0.63	1000	9.0
41	AIR 63B6	0.25	1.71	0.99	59.0	0.65	1000	9.5
42	AIR 71A6	0.37	2.30	1.30	65.0	0.66	1000	8.5
43	AIR 71B6	0.55	3.00	1.75	68.5	0.70	1000	8.5
44	AIR 80A6	0.75	3.90	2.30	71.0	0.71	1000	9.5
45	AIR 80B6	1.10	5.30	3.10	75.0	0.74	1000	7.5
46	AIR 90L6	1.50	7.10	4.10	76.0	0.70	1000	6.5
47	AIR 100L6	2.20	9.60	5.60	81.5	0.74	1000	5.5
48	AIR 112MA6	3.00	13.50	7.60	83.0	0.72	1000	5.0
49	AIR 112MB6	4.00	16.00	9.00	82.0	0.81	1000	5.0
50	AIR 132S6	5.50	22.00	13.00	86.0	0.76	1000	4.0
51	AIR 132M6	7.50	51.00	30.00	86.5	0.77	1000	5.0
52	AIR 160S6	11.00	41.00	24.00	87.5	0.81	1000	3.0
53	AIR 160M6	15.00	94.00	54.00	89.0	0.82	1000	3.0
54	AIR 180M6	18.50	114.60	66.5	89.5	0.82	1000	2.5
55	AIR 200M6	22.00	133.20	44.5	90.5	0.83	1000	2.5
56	AIR 200L6	30.00	104.00	60.0	90.5	0.84	1000	2.5
57	AIR 71B8	0.25	1.80	1.05	61.0	0.60	750	8.0
58	AIR 80A8	0.37	2.60	1.50	63.5	0.59	750	8.0
59	AIR 80B8	0.55	3.60	2.10	65.0	0.60	750	8.0
60	AIR 90LA8	0.75	3.60	2.10	72.5	0.71	750	6.0
61	AIR 80B8	0.55	3.60	2.10	65.0	0.60	750	8.0
62	AIR 90LA8	0.75	3.60	2.10	72.5	0.71	750	6.0
63	AIR 90LB8	1.10	5.20	3.00	76.0	0.72	750	6.0
64	AIR 100L8	1.50	6.80	3.90	76.5	0.70	750	6.0
65	AIR 112MA8	2.20	11.00	6.00	78.0	0.70	750	7.0
66	AIR 112MB8	3.00	14.00	8.00	80.0	0.70	750	7.0
67	AIR 132S8	4.00	19.00	11.00	83.0	0.70	750	6.0
68	AIR 132M8	5.50	41.50	24.00	84.0	0.72	750	6.0
69	AIR 160S8	7.50	55.00	32.00	86.0	0.72	750	3.5
70	AIR 160M8	11.00	79.00	45.60	87.0	0.73	750	3.5
71	AIR 180M8	15.00	60.50	35.00	88.0	0.74	750	2.7
72	AIR 200M8	18.50	115.00	41.00	90.0	0.76	750	2.0
73	AIR 200L8	22.00	83.30	48.50	90.0	0.77	750	2.0



# MARINE BUILT-IN MOTORS SERIES

## AV2K (AB2K)

Induction motors AV2K are manufactured in accordance with technical specifications 16-513.506-81. Marine built-in three-phase squirrel-cage motors are designed for compressor and oil pump drives. Motors meet the requirements of GOST 183-74, GOST B 23396 and «Terms of delivery». Motors are designed for three-phase AC power supply, 50Hz, 380V and 220V. Mounting arrangement is IM5010 in accordance with GOST 2479-79. Rated operating mode is continuous duty (S1) according to GOST 183-74. Cooling method is ICE (Fr) 37 for compressor drives and ICU37 for oil pump drives according to GOST 20459-87. Induction motors AV2K have a rated power range from 0.55 to 7.5 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	AV2K 0,55-2f	0.55	220 or 380	3000	84	9.80
2	AV2K 0,75-2f	0.75			83	9.80
3	AV2K 1,1-2f	1.10			83	11.10
4	AV2K 1,5-2f	1.50			83	11.45
5	AV2K 2,2-2f	2.20			83	12.80
6	AV2K 3-2f	3.00			85	16.75
7	AV2K 4-2f	4.00			86	19.00
8	AV2K 5,5-2f	5.50			87	27.20
9	AV2K 7,5-2f	7.50			87	30.70
10	AV2KM 1,5-2f	1.5			83	10.5
11	AV2KM 2,2-2f	2.2			83	12,0/12,4
12	AV2KM 3,9-2f	3.0			85	14.0
13	AV2KM 4,7-2f	3.9			86	14.8
14	AV2KM 1,8-2f	4.7			85.5	21.6
15	AB2KM 1.8-2φ	1.8			83	10.0

## 3AVSH132 (3ABЛ132)

Induction motors 3AVSh132 are manufactured in accordance with technical specifications 16-525.569-84. Marine built-in three-phase squirrel-cage motors are designed for gastight compressor drives of electrochemical air revitalization. Motors meet the requirements of GOST B 23396-78 and «Terms of delivery». Motors are designed for three-phase AC power supply, 50Hz, 380V and 220V. Mounting arrangement is IM5010 in accordance with GOST 2479-79. Rated operating mode is continuous duty (S1) according to GOST 183-74. Cooling method is ICW3741 according to GOST 20459-87.

Induction motors 3AVSh132 have a rated power range from 5.5 to 7.5 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	3AVSh 132A2	5.5	380	3000	84	37
2	3AVSh 132B2	7.5		3000	85	47

## 4AVSH132 (4ABЛ132)

Built-in three-phase squirrel-cage induction motors 4AVSh are manufactured in accordance with technical specification 16-90. Motors are designed for compressor drives. Motors meet the requirements of GOST B 23396-78 and «Terms of delivery».

Mounting arrangement is IM5010 in accordance with GOST 2479-79. Cooling method is ICW3741 in accordance with GOST 20459-87. Cooling of the motor in all operating modes is provided with the machinery. Rated operating mode is continuous duty (S1) according to GOST 183-74. The number of start-ups per hour is no more than 6 evenly over time. Motors provide both left and right directions of rotation.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4AVSh 132A2	380	5.5	3000	86	47.0
2	4AVSh 132B2		7.5			54.3

## 3AV2K (3AB2K)

Induction motors 3AV2K are manufactured in accordance with technical specifications 16-525.570-84. Built-in three-phase squirrel-cage induction motors are designed for gastight freon compressor drives and oil pump drives of refrigerating machines. Motors meet the requirements of GOST B 23396-78 and «Terms of delivery». Motors are designed for three-phase AC power supply, 50Hz, 380V. Mounting arrangement is IM5010 in accordance with GOST 2479-79. Rated operating mode is continuous duty (S1) according to GOST 183-74. Cooling method of motors 3AV2K 1,5-6f, 3AV2K 2,2-6f, 3AV2K 2,2-4f, 3AV2K 4-4f for gastight freon compressor drives is ICE (Fr) 37; and of motors 3AV2K 1.5-4f and 3FV2K 2.2-4f for oil pump drives it is ICU37 according to GOST 20459-87.

Induction motors AV2K have a rated power range from 1.5 to 4.0 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	3AV2K1,5-4f	1.5	380	1500	79	13.5
2	3AV2K2,2-4f	2.2		1500	79	16.7
3	3AV2K4-4f	4.0		1500	81	25.8
4	3AV2K1,5-6f	1.5		1000	77	18.8
5	3AV2K2,2-6f	2.2		1000	79	23.2

## DAT 130-250-3 (ДАТ 130-250-3)

Built-in induction motors DAT 130-250-3 are manufactured in accordance with technical specifications 16513.513-82 and are designed for compressor drives KGBK (КГБК) and BSKA (БСКА).

Motors are manufactured in accordance with GOST B 14000.0-78 and GOST B 14000.3-78. Motors are designed for 50Hz, 127V. Rated operating mode is according to GOST 183-74 SI. Mounting arrangement is IM5010 in accordance with GOST 2479-79.

Motors can operate positively in the following operating environments:

- halocarbon 12 GOST 19212-87 and oil KhF 12-16 GOST 5546-86
- halocarbon 22 GOST 8502-93 and oil KhF 22C-16 GOST 5546-86
- halocarbon 502 technical specification 6-02-1200-84 and oil KhF 22C-16 GOST 5546-86

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DAT 130-250-3	0.25	127	3000	81	max. 6.5

## DAV80B2BN (ДАВ80В2БН), DAV132BN (ДАВ132БН)

Built-in squirrel-cage induction motors – DAV80B2BN and DAV132BN – are of special design and are manufactured in accordance with technical specifications of Ukraine 3.06 050-94. Motors are designed for submersible monoblock pumps TsMK (ЦМК), TsMF (ЦМФ), GNOM (ГНОМ), which pump feces fluid, domestic and industrial waste water. Motors meet the requirements of current technical specification, GOST 183, DSTU 2365-94 and engineering documentation.

Resistance of motors to external mechanical factors corresponds to mechanical design M6 in accordance with GOST 17516.1. Mounting arrangement is IM5010 in accordance with GOST 2479-79 (built-in, without a shaft and bearings). Motor stator is mounted in the pump frame and motor rotor – on two bearing supports of the pump. Any mounting arrangement of the motor is available. Rated operating mode is continuous duty (S1) according to GOST 183. Cooling method is IC0040 according to GOST 20459. Motors are mounted in a sealed finned pump frame, which provides motor cooling:

- open air operation – due to unit design (finning of the pump frame)
- liquid operation – due to cooling with this liquid

Motors provide both left and right directions of rotation.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DAV 80B2BNU5.1	1.5	380; 415	3000	84	9.7
2	DAV 132B2BNU5.1	5.5	380; 415	3000	86.5	32
3	DAV 132B4BNU5.1	4	380; 415	1500	83	32

## AVSH100A2F (АВШ100А2Ф), AVSH100B2F (АВШ100В2Ф)

Induction motors – AVSh100A2F and AVSh100V2F – have universal marine low-magnetic configuration and are designed for oil pump drives of refrigerating compressors. Motors are manufactured in accordance with technical specifications 16-510.627-77. Motors are designed for operation in a sealed refrigerating system in halocarbon 12 GOST 19212-73, halocarbon 22 GOST 8502-73, refrigerator oils KhA-30 and KhF22-24 GOST 5546-66, KhS-40 technical specification 38.40.151-73 with oil intake temperature max. 85°C.

Motors meet the requirements of GOST 183-74 and «Terms of delivery», groups 23-24 of interdepartment standard HO.005.026.

Mounting arrangement is IM5010 in accordance with GOST 2479-79. Cooling method is ICU53 according to GOST 20459-75. Rated operating mode is continuous duty (S1) according to GOST 183-74. Motors are shock-resistant of grade I and vibration-resistant of grade A according to current rules and regulations №063-76.4-001.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	AVSh 100A2F	1.5	380	3000	85	13
2	AVSh 100B2F	2.2	380		86.5	16.6

## DAV112B4BD1 (ДАВ112В4БД1)

Built-in induction motors DAV112B4BD1 are manufactured in accordance with technical specifications 08-00213799-053-94. Motors are designed for sealed refrigerating compressor drives. Motors meet the requirements of current technical specifications, GOST 183, technical regulations on electromagnetic compatibility and engineering documentation.

Mounting arrangement is IM5010 in accordance with GOST 2479 (stator core with winding and rotor without a shaft). Cooling method is ICE37 according to GOST 20459. Cooling of the motor in all operating modes is provided with a compressor. Motor incorporated in the compressor can operate positively in halocarbon 22 according to GOST 8502 and in oil drops KhF22-24 or KhF22S-16 according to GOST 5546, KhS-40 according to technical specification 38.101763-82. Rated operating mode is continuous duty (S1) according to GOST 183. Mechanical design is M4 in accordance with GOST 17516.1. Motors provide both left and right directions of rotation.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DAV 112B4BD1	1.5	380	1500	81	17

## 2DMGKHM41-4 (2ДМГХМ41-4)

Induction motors 2DMGKhM41-4 are manufactured in accordance with technical specifications 16-89. Motors meet the requirements of GOST B 20.39.304-76.

Mounting arrangement is IM5010 in accordance with GOST 2479-79. Cooling method is ICE (Fr) 37 according to GOST 20459-87. Cooling of the motor in all operating modes is provided with a compressor. Motors can operate positively in halocarbon 12 according to GOST 19212-87, halocarbon 22 according to GOST 8502-93, halocarbon 502 according to technical specification 6-02-1200-84 and in oil drops KhF22S-16 according to GOST 5546-86. Motors provide both left and right directions of rotation.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	2DMGKhM41-4	1.8	220; 380; 220/380	1500	82	18.3

## AIV71-2BF2 (АИВ71-2БФ2), AIV100-2BF2 (АИВ100-2БФ2), AIV71-2F2 (АИВ71-2Ф2), AIV100-2F2 (АИВ100-2Ф2)

Induction motors – AIV71-2BF2, AIV100-2BF2, AIV71-2F2 and AIV100-2F2 – are manufactured in accordance with technical specifications 16-88. Motors are designed for sealed freon compressor drives. Motors meet the requirements of GOST 183-74, while motors AIV71B2BF2, AIV71B2F2, AIV71S2BF2, AIV71S2F2 and AIV71E2F2 additionally meet the requirements of OST 160.510.065-90. Mounting arrangement is IM5010 in accordance with GOST 2479-79. Cooling method is ICE (Fr) 37 according to GOST 20459-87. Rated operating mode is continuous duty (S1) according to GOST 183-74. Motors provide both left and right directions of rotation.

Motors – AIV100-2BF2 and AIV100-2F2 – are designed for voltage of 220V and 380V with Y-connection windings, 3 outputs, 50Hz. Single-phase motors AMUE71 are designed for voltage of 220V, 50Hz and 60Hz.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	AIV 71D2BF2 AIV 71D2F2	0.25	220; 240; 380; 415; 230; 400; 440	3000	79.0	5.0
2	AIV 71A2BF2 AIV 71A2F2 AIV 71A2F2K	0.37		127;220; 380	3000	80.6
3	AIV 71B2BF2 AIV 71B2F2	0.55	220; 240; 380; 415; 230; 400; 440	3000	79.4	6.0
4	AIV 71C2BF2 AIV 71C2F2	0.75		3000	80.5	6.5
5	AMUE 71D2BF2 AMUE 71D2F2	0.25	220	3000	73.0	5.6
6	AMUE 71A2BF2 AMUE 71A2F2	0.37		3000	73.0	6.0
7	AMUE 71B2BF2 AMUE 71B2F2	0.55		3000	74.0	6.5
8	AMUE 71C2BF2 AMUE 71C2F2	0.75		3000	75.0	7.0
9	AMUE 71E2BF2 AMUE 71E2F2	1.1	220	3000	71.0	8.4
10	AIV 71E2BF2 AIV 71E2F2	1.1	220; 240; 380; 415; 440; 230; 400	3000	80.0	7.1
11	AIV 100A2BF2 AIV 100A2F2	2.2	220; 380	3000	83.0	12.8

## DVK (ДВК)

Three-phase squirrel-cage induction motors DVK are manufactured in accordance with technical specifications 16-513.476-80. Motors are designed for sealed refrigerating compressor drives. Motors meet the requirements of GOST 183-74. Mounting arrangement is IM5010 in accordance with GOST 2479-79. Cooling method is ICE (Fr) 37 according to GOST 20459-87. Cooling of the motor in all operating modes is provided with a compressor. Rated operating mode is continuous duty (S1) according to GOST 183-74. Motors provide both left and right directions of rotation.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DVK16-1,1	1.1	220 or 380	3000	84.5	22
2	DVK16-2,2	2.2	220 or 380	3000	83.0	22
3	DVK16-3,0	3.0	220 or 380	3000	85.0	22
4	DVK2-1,1	1.1	220 or 380	3000	84.0	11.9
5	DVK2-2,2	2.2	220 or 380	3000	84.0	15.45
6	DVK2-3,0	3.0	220 or 380	3000	85.5	17.37
7	DVKUT2-2,2	2.2	220 or 380	3000	83.0	17.35

## ADV (АДВ)

Three-phase and single-phase squirrel-cage induction motors ADV are manufactured in accordance with technical requirements. Motors are designed for sealed refrigerating compressor drives. Motors meet the requirements of GOST 183-74. Mounting arrangement is IM5010 according to GOST 2479-79. Cooling method is ICE (Fr) R22 according to GOST 20459-87. Cooling of the motor in all operating modes is provided with a compressor. Rated operating mode is continuous duty (S1) according to GOST 183-74.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %
1	2	3	4	5	6
1	ADV 16-2,2	2.2	220	3000	81
2	ADV 16-3,0	3.0	220	3000	80

# MOTORS SERIES WITH INCREASED RELIABILITY AND DURABILITY

## DMR 71-112 (ДМР 71-112), DMRM 71-112 (ДМРМ 71-112)

Induction motors – DMR 71-112 and DMRM 71-112 – are manufactured in accordance with technical specifications 16510.656-77. Three-phase squirrel-cage motors of increased reliability and durability are designed for auxiliary machinery drives. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74. Motors are designed for three-phase AC power supply, 50Hz, 380V and 220V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74. Environmental protection degree is IP44 according to GOST 17494-87. Cooling method is IC0141 according to GOST 20459-87 (with a fan, self-ventilation).

Legend:

- DMR – motor series
- M – modified
- DM1R – motor with a special-purpose flange shield
- B, G, E, K, L, N, S – special-purpose shaft end type
- 71, 80, 90, 100, 112 – height of rotation axis
- S, M, L – conventional frame length
- A, V – conventional stator core length
- 2, 4, 6 – number of poles
- T2 – climate version

Example of motor designation:

DMRN 100 SA4T2 – three-phase squirrel-cage motor of increased reliability and durability, with special-purpose shaft end N, height of rotation axis of 100mm, conventional frame length S, conventional stator core length A, four poles and climate version T2.

Motors – DMR 71-112 and DMRM 71-112 – have a rated power range from 0.12 to 4.0 kW.

No	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %
1	2	3	4	5	6
1	DMR 71A2T2	0.18	220/380	3000	60.0
2	DMR 71B2T2	0.25	220/380	3000	68.0
3	DMR 71A4T2	0.12	220/380	1500	43.0
4	DMR 71B4T2	0.18	220/380	1500	50.0
5	DMR 80A2T2	0.37	220/380	3000	62.0
6	DMR 80B2T2	0.55	220/380	3000	67.0
7	DMR 80A4T2	0.25	220/380	1500	59.0
8	DMR 80B4T2	0.37	220/380	1500	66.0
9	DMR 90SA2T2	0.75	220/380	3000	67.0
10	DMR 90SB2T2	1.10	220/380	3000	75.0
11	DMR 90SA4T2	0.55	220/380	1500	65.6
12	DMR 90SB4T2	0.75	220/380	1500	67.0
13	DMR 90SA6T2	0.37	220/380	1000	61.4
14	DMR 90SB6T2	0.55	220/380	1000	67.3
15	DMR 100SA2T2	1.50	220/380	3000	72.0
16	DMR 100L2T2	2.20	220/380	3000	77.0
17	DMR 100SA4T2	1.10	220/380	1500	71.0
18	DMR 100L4T2	1.50	220/380	1500	70.0
19	DMR 100SA6T2	0.75	220/380	1000	70.0
20	DMR 100SB6T2	1.10	220/380	1000	71.6
21	DMR 112S2T2	3.00	220/380	3000	78.5
22	DMR 112MA2T2	4.00	220/380	3000	81.0
23	DMR 112S4T2	2.20	220/380	1500	77.0

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %
1	2	3	4	5	6
24	DMR 112MA4T2	3.00	220/380	1500	79.0
25	DMR 112MB4T2	4.00	220/380	1500	82.0
26	DMR 112S6T2	1.50	220/380	1000	76.8
27	DMR 112SA6T2	2.20	220/380	1000	75.8

## DMR 160MA4-02 (ДМР 160МА4-02)

Induction motors DMR 160MA4-02 are manufactured in accordance with technical specifications 16-510.708-79. Three-phase squirrel-cage motors of increased reliability and durability are designed for auxiliary machinery drives. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request.

Motors meet the requirements of GOST 183-74. Motors are designed for three-phase AC power supply, 50Hz, 380V or 220V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74. Environmental protection degree is IP44 according to GOST 17494-87. Cooling method is IC0141 according to GOST 20459-87 (with a fan, self-ventilation).

Induction motors DMR 160MA4-02 have a rated power of 7.5 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DMR 160MA4-02	7.50	220/380	1500	85.0	110

## 2DMR90SB2UKHL (2ДМР90SB2УХЛ), 2DMR100L2UKHL (2ДМР100L2УХЛ)

Induction motors – 2DMR90SB2UKhL and 2DMR100L2UKhL – are manufactured in accordance with technical specifications 16513.527-83. Three-phase squirrel-cage motors are designed for fan drives. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74. Motors are designed for three-phase AC power supply, 50Hz, 380V and 220V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74. Environmental protection degree is IP44 according to GOST 17494-87. Cooling method is IC0141 according to GOST 20459-87 (with a fan, self-ventilation).

Induction motors – 2DMR90SB2UKhL and 2DMR100L2UKhL – have a rated power range from 1.1 to 2.2 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	2DMR 90SB2UKHL	1.1	220/380	3000	75.0	75
2	2DMR 100L2UKHL	2.2	220/380	3000	77.0	77

## 2DMR112MA 4/2 UKHL (2ДМР112МА 4/2 УХЛ)

Induction motors 2DMR112MA 4/2 UKhL are manufactured in accordance with technical specifications 16 525.687-86. Three-phase squirrel-cage motors are designed for mobile unit compressor drives. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74. Motors are designed for three-phase AC power supply, 50Hz, 380V and 220V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74. Environmental protection degree is IP44 according to GOST 17494-87. Cooling method is IC0141 according to GOST 20459-87 (with a fan, self-ventilation).

Induction motors 2DMR112MA 4/2 UKhL have a rated power of 2.2/3.0 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	2DMR 112MA4/2UKHL	2.2/3.0	380	1500/3000	75	45

## 2DMSHOR112MA2UKHL (2ДМШОР112МА2УХЛ)

Induction motors 2DMSHOR112MA2UKhL are manufactured in accordance with technical specifications 16-88. Motors are designed for axial flow fan drives. Motors meet the requirements of GOST B 20.39.304-76 and GOST 183-74.

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Protection degree is IP44 according to GOST 17494-87. Mounting arrangement is M9201 in accordance with GOST 2479-79 (with six mounting bosses for fan frame on the shields). Cooling method is ICA3841 according to GOST 20459-87. Motors provide left direction of rotation from the side of the shaft end extension. Rated operating mode is continuous duty (S1) according to GOST 183-74. Motors are designed for three-phase AC power supply, 50Hz, 380V.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	2DMSHOR 112MA2UKHL	4	380	3000	81	42

## DRO 12-2-02 (ДРО 12-2-02)

Induction motors DRO 12-2-02 are manufactured in accordance with technical specifications. Motors meet the requirements of GOST B 14000.0-78.

Mounting arrangement is horizontal; without feet with three bosses on the side of the shaft end extension and a tight spigot on the opposite side. Rated operating mode is according to GOST 183-74. Environmental protection degree is IPX5 according to GOST 14254-96. Cooling method is ICA3841 according to GOST 20459-87.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DRO 12-2-02	0.37	220; 380	3000	66	max. 12.00

## DAT 128-250-3 (ДАТ 128-250-3)

Three-phase squirrel-cage induction motors DAT 128-250-3 are manufactured in accordance with technical specifications 16-92. Motors are designed for axial flow fan drives. Motors meet the requirements of GOST B 14000.3 and GOST 14000.0. Mounting arrangement is IM1001 in accordance with GOST 2479. Rated operating mode is continuous duty (S1) according to GOST 183. Cooling method is IC0841 according to GOST 20459. Protection degree is IP54 according to GOST 17494.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DAT 128-250-3	0.25	220; 380	3000	72.3	6.5

# MOTORS SERIES WITH INCREASED SPEED, 400HZ

## DMCH (ДМЧ)

Induction motors DMCh are manufactured in accordance with technical specifications 16-510.340-71. Three-phase squirrel-cage high-frequency motors are designed for drives of pumps, fans and other auxiliary machinery. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74. Motors are designed for 400Hz, 380V and 220V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74, except for DMChTs 112-3-16, its rated operating mode is temporary duty S2:3 min operation, 1 hour operation interval. Protection degree of the motor, based on the degree of internal parts protection against the intrusion of solid objects and water, is watertight according to GOST B 23396-78. Protection against water intrusion through the shaft line is not provided. Cooling method is ICA0141 according to GOST 20459-87.

Induction motors DMCh have a rated power range from 0.18 to 18.5 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DMChTs 56-1-8OM2	0.18	220/380	6000	51.0	5.9
2	DMChTs 63-1-8OM2	0.55	220/380	6000	67.0	8.6
3	DMChN 63-1-8OM2					
4	DMChTs 63-2-8OM2	0.75	220/380	6000	68.0	9.2
5	DMChN 63-2-8OM2			6000		
6	DMChTs 71-1-8OM2	1.10	220/380	6000	64.5	11.4
7	DMChN 71-1-8OM2			6000		
8	DMChTs 71-2-8OM2	1.50	220/380	6000	69.0	12.0
9	DMChN 71-2-8OM2			6000		
10	DMChTs 80-1-8OM2	2.20	220/380	6000	73.0	16.1
11	DMChN 80-1-8OM2					16.0
12	DMChTs 80-2-8OM2	3.00	220/380	6000	75.5	17.6
13	DMChN 80-2-8OM2			6000		17.5
14	DMChTs 100-1-8OM2	4.00	220/380	6000	79.0	24.8
15	DMChN 100-1-8OM2			6000		
16	DMChTs 100-2-8OM2	5.50	220/380	6000	82.0	27.5
17	DMChN 100-2-8OM2			6000		
18	DMChTs 112-1-8OM2	7.50	220/380	6000	82.5	30.8
19	DMChN 112-1-8OM2			6000		30.6
20	DMChTs 112-2-8OM2	11.00	220/380	6000	86.0	35.0
21	DMChN 112-2-8OM2			6000		34.8
22	DMChTs 132-1-8OM2	15.00	220/380	6000	87.0	61.2
23	DMChN 132-1-8OM2					61.0
24	DMChTs 132-2-8OM2	18.50	220/380	6000	87.0	67.2
25	DMChN 132-2-8OM2					67.0
26	DMChTs 100-1-16OM2	1.10	220/380	3000	63.0	24.8
27	DMChTs 100-2-16OM2	1.50	220/380	3000	63.0	27.5
28	DMChTs 112-1-16OM2	2.20	220/380	3000	73.0	30.8
29	DMChTs 112-2-16OM2	3.00	220/380	3000	72.5	37.1
30	DMChTs 112-3-16OM2	5.50	220/380	3000	71.0	38.7
31	DMChTs 132-1-16OM2	4.00	220/380	3000	77.0	61.2
32	DMChTs 132-2-16OM2	5.50	220/380	3000	79.0	67.2
33	DMChTs 100-2-8MOM2	5.50	220/380	6000	82.0	31.5
34	DMChTs 56-1-8NOM2	0.18	220/380	6000	51.0	6.1
35	DMChTs 63-1-8NOM2	0.55	220/380	6000	67.0	9.0
36	DMChN 63-1-8NOM2					
37	DMChTs 63-2-8NOM2	0.75	220/380	6000	72.0	9.6
38	DMChN 63-2-8NOM2					



№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
39	DMChTs 71-1-8NOM2	1.10	220/380	6000	70.0	12.2
40	DMChN 71-1-8NOM2					
41	DMChTs 71-2-8NOM2	1.50	220/380	6000	74.0	12.8
42	DMChN 71-2-8NOM2					
43	DMChTs 80-1-8NOM2	2.20	220/380	6000	78.0	17.3
44	DMChN 80-1-8NOM2					17.2
45	DMChTs 80-2-8OM2	3.00	220/380	6000	80.0	18.8
46	DMChN 80-2-8OM2					18.7
47	DMChTs 100-1-8NOM2	4.00	220/380	6000	81.0	27.9
48	DMChN 100-1-8NOM2					
49	DMChTs 100-2-8NOM2	5.50	220/380	6000	82.0	30.6
50	DMChN 100-2-8NOM2					
51	DMChTs 112-1-8NOM2	7.50	220/380	6000	84.0	32.7
52	DMChN 112-1-8NOM2					32.5
53	DMChTs 112-2-8NOM2	11.00	220/380	6000	86.0	36.9
54	DMChN 112-2-8NOM2					36.7
55	DMChTs 132-1-8NOM2	15.00	220/380	6000	87.0	63.6
56	DMChN 132-1-8NOM2					63.4
57	DMChTs 132-2-8NOM2	18.50	220/380	6000	87.0	69.6
58	DMChN 132-2-8NOM2					69.0
59	DMChTs 100-1-16NOM2	1.10	220/380	3000	63.0	27.9
60	DMChTs 100-2-16NOM2	1.50	220/380	3000	65.0	30.6
61	DMChTs 112-1-16NOM2	2.20	220/380	3000	72.0	30.8
62	DMChTs 112-2-16NOM2	3.00	220/380	3000	76.0	37.1
63	DMChTs 132-1-16NOM2	4.00	220/380	3000	77.0	63.6
<b>Modified motors</b>						
64	DMChN 63-2-8M OM2	0.75	220/380	6000	68	11
65	DMChTs 80-1-8M OM2	2.2	220/380	6000	73	16.1
66	DMChN 80-2-8M OM2	3	220/380	6000	75	17.5
67	DMChTs 100-2-8M OM2	5.5	220/380	6000	82.0	31.5
68	DMChN 112-1-8M OM2	7.5	220/380	6000	82.5	47
69	DMChTs 132-2-16M OM2	5.5	220/380	3000	77	90

## DCHR (ДЧР)

Induction motors of increased speed DChR are manufactured in accordance with technical specifications 16-513.369-74. Three-phase squirrel-cage motors are designed for drives of pumps, fans and mobile unit power machinery. Motors meet the requirements of GOST 183-74. Motors are designed for three-phase AC power supply, 400Hz, 220V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74. Protection degree of motors DChRK and DChRU is IP44 according to GOST 17494-87. Environmental protection degree of motors DChRV is provided by customer. Cooling method of motors DChR, DChRK and DChRV is cooling air with self-ventilation – ICA0141; cooling method of motors DChRV is cooling air, blown by an axial flow electric fan, which is mounted in the motor – ICA3141 according to GOST 20459-87. Induction motors of increased speed DChR have a rated power range from 0.75 to 4.0 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DChR 71-2-10	0.75	220	4570	66	9.5
2	DChRU 71-2-10	0.75	220	4570	66	9.6
3	DChR 71-2-6	1.50	220	7680	78	9.5
4	DChR 80-1-6	2.20	220	7650	78	11.3
5	DChR 80-2-6	3.00	220	7700	80	11.9
6	DChRU 80-2-6	3.00	220	7700	80	12.1
7	DChR 100-1-6	4.00	220	7800	81	15.8
8	DChRU 100-1-6	4.00	220	7800	81	16.0
9	DChRV 71-2-6	1.50	220	7700	82	4.3
10	DChRV 80-1-6	2.20	220	7664	84	5.2
11	DChRK 80-2-8	3.00	220	5620	77.5	12.5

## DF (ДФ) 00, 0, 1, 2, 3, 4

Induction motors DF of sizes 00, 0, 1, 2, 3, 4 are manufactured in accordance with technical specifications 16513.448-78. Marine three-phase squirrel-cage motors are designed for marine machinery drives (fans, compressors, pumps, converters and others). Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74. Motors are designed for three-phase AC power supply, 400Hz, 380V and 220V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74. Environmental protection degree for DF42-8 and DFR42-8 is IP44, and for others it is IP56 according to GOST 17494-87. Cooling method is ICA0141 according to GOST 20459-87.

Induction motors DF of sizes 00, 0, 1, 2, 3, 4 have a rated power range from 0.25 to 13.3 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DF 01-8 OM5	0.45	220 or 380	6000	65.4	8.0
2	DF 02-6 OM5	1.0	220 or 380	8000	74.0	9.0
3	DF 11-6 OM5	1.5	220 or 380	8000	71.0	9.5
4	DF 11-8 OM5	1.0	220 or 380	6000	62.5	9.5
5	DF 21-6 OM5	3.2	220 or 380	8000	78	11.9
6	DF 22-8 OM5	3.2	220 or 380	6000	77.0	15.4
7	DF 31-12/6 OM5	0.85	220	4000	55	30
		1.70		8000	73	
8	DF 42-8 OM5	13.3	220 or 380	6000	87.5	42.5
9	DFR 001-6 OM5	0.25	220 or 380	2860	47.2	6.5
10	DFR 02-6 OM5	1.0	220 or 380	1600	71.0	14
11	DFR 11-6 OM5	1.5	220 or 380	1600	66.0	13.9
12	DFR 42-8 OM5	11.0	220 or 380	1000	35.7	63.1
13	DF 22-8M OM5	3.2	220 or 380	6000	77.0	16.3

## DFO (ДФО) 0, 1, 2, 3

Induction motors DFO of sizes 0, 1, 2, 3 are manufactured in accordance with technical specifications 16513.426-76. Marine three-phase squirrel-cage motors are designed for axial flow fan drives. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74 and GOST B 23396-78. Motors are designed for three-phase AC power supply, 400Hz, 380V and 220V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74. Environmental protection degree is watertight according to GOST 17494-87. Cooling method is ICA3841 according to GOST 20459-87.

Induction motors DFO of sizes 0, 1, 2, 3 have a rated power range from 0.7 to 8.0 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DFO 01-6 OM5	0.7	220 or 380	8000	75	7.5
2	DFO 02-6 OM5	1.0	220 or 380	8000	74	8.5
3	DFO 11-6 OM5	1.5	220 or 380	8000	72	10.0
4	DFO 12-6 OM5	2.2	220 or 380	8000	76	12.0
5	DFO 21-6 OM5	3.2	220 or 380	8000	79	13.0
6	DFO 22-6 OM5	4.5	220 or 380	8000	80	15.0
7	DFO 31-6 OM5	6.0	220 or 380	8000	86	19.5
8	DFO 32-6 OM5	8.0	220 or 380	8000	88	23.0

## DMChF (ДМЧФ)

Induction motors DMChF are manufactured in accordance with technical specifications 16-510.338-71. Marine three-phase squirrel-cage motors are designed for operation in marine sealed refrigerating compressors. Motors meet the requirements of GOST 183-74 and GOST B 23396-78. Motors are designed for three-phase AC power supply, 400Hz, 380V and 220V. Mounting arrangement is IM5010 in accordance with GOST 2479-79. Rated operating mode is continuous duty (S1) according to GOST 183-74. Cooling method is ICE (Fr) 37 according to GOST 20459-87.

Induction motors DMChF have a rated power range from 0.55 to 5.5 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DMChF 100-1-12	0.55	220 or 380	4000	79.5	7.3
2	DMChF 100-2-12	1.5			83	10.8
3	DMChF 112-1-12	3.0			82.5	12.0
4	DMChF 112-2-12	5.5			83	15.6

## AOL (АОЛ)

Induction motors of increased speed AOL are manufactured in accordance with technical specifications 16-513.218-70. Marine three-phase squirrel-cage motors are designed for general purpose industrial equipment and export. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST 183-74 and GOST B 23396-78. Motors are designed for three-phase AC power supply, 400Hz, 380V, 220V and 200V. Mounting arrangement is in accordance with GOST 2479-79 and shall be discussed while placing an order. Rated operating mode is continuous duty (S1) according to GOST 183-74. Protection degree is IP2X according to GOST 17494-87. Cooling method is IC0141 according to GOST 20459-87.

Induction motors AOL have a rated power range from 1.0 to 1.7 kW.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	AOL 31-12 M	1.0	380. 220. 200	4000	74	11.2
2	AOL 32-12 M	1.7	380. 220. 200		78	12.2

## DFV (ДФВ)

Three-phase induction motors DFV are manufactured in accordance with technical specifications 16-525.671-86 and are designed for operation in the following machinery: motors DFVP, except for DFVP 22-8 and DFVP 31-8, – in plug fans; motors DFVV – in air-cooling units; motors DFVP 22-8 and DFVP 31-8 – in group air conditioners; motors DFVM – in unit air conditioners; motors DFVK – in central air conditioners; motors DFVTs – in centrifugal snail fans.

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of GOST B 23396-78 and engineering documentation. Mounting arrangement in accordance with GOST 2479-79 is:

- M9233, M9234, M9213, M9203, M9214, M9204 – for motors DFVO of sizes 00, 0, 1, 2
- IM2274 – for motors DFVM of size 0
- IM2204, IM2274 – for motors DFVM of size 1-2
- IM2003, IM2073 – for motors DFVTs and DFVK
- IM3003, IM3033, IM3013 – for motors DFVP of sizes 000-3
- IM3003 – for motors DFVP of sizes 4-5
- IM3233 – for motors DFVV

Cooling method according to GOST 20459-87 is:

- IC3841 (cooling with a fan, a motor is placed in its flow) – for motors DFVO, DFVP, DFVV
- IC3841 (cooling with flow air of the conditioner at 1+1.5 m/s) – for motors DFVM
- IC0141 – for motors DFVK and DFVTs

Rated operating mode is continuous duty (S1) according to GOST 183-74. Motors are designed for 400Hz, 380V.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DFVP 0001-8	0.05	380	6000	37	3.5
2	DFVP 002-8	0.25	380	6000	61	8.0
3	DFVP 01-8	0.45	380	6000	71	8.0
4	DFVP 02-8	0.70	380	6000	73	10.0
5	DFVP 11-8	1.00	380	6000	67	11.4
6	DFVP 12-8	1.50	380	6000	74	13.9
7	DFVP 22-8	3.20	380	6000	76	22.0
8	DFVP 31-8	4.50	380	6000	82	27.0

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
9	DFVP 41-8	8.00	380	6000	85	39.8
10	DFVP 42-8	11.0	380	6000	88	49.8
11	DFVP 51-8	17.0	380	6000	90	80.8
12	DFVP 52-8	20.00	380	6000	90	95.8
13	DFVO 002-8	0.25	380	6000	61	7.0
14	DFVO 01-8	0.45	380	6000	71	8.0
15	DFVO 02-8	0.70	380	6000	73	10.0
16	DFVO 11-8	1.00	380	6000	67	10.0
17	DFVO 12-8	1.50	380	6000	74	13.0
18	DFVO 21-8	2.20	380	6000	73	16.0
19	DFVO 22-8	3.20	380	6000	76	19.5
20	DFVM 01-8	0.14	380	6000	55	12.0
21	DFVM 02-8	0.25	380	6000	63	13.5
22	DFVM 11-8	0.45	380	6000	65	15.0
23	DFVM 21-8	1.00	380	6000	75	22.0
24	DFVK 50-8	14.00	380	6000	87	85
25	DFVK 51-8	17.00	380	6000	90	92
26	DFVts 42-8	11.00	380	6000	88	55
27	DFVts 52-8	20.00	380	6000	88	103
28	DFW 11-8	1.00	380	6000	67	11.5
29	DFW 21-8	2.20	380	6000	78	16.5
30	DFW 31-16	0.70	380	3000	60	26
31	DFW 41-16	1.50	380	3000	71	40

## DFE-51-12 (ДФЕ-51-12)

Single-phase squirrel-cage induction motors DFE-51-12 are manufactured in accordance with technical specifications 16-513.107-69 and are designed for special machinery drives and only for operation in a sealed metal capsule. Motors meet the requirements of GOST B 14000.3-78. Rated operating mode is S3 according to GOST 183-74. Cooling method is ICA0041 according to GOST 20459-87. Protection degree is IP44 according to GOST 17494-87.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DFE-51-12	0.5	220	4000	61	63

# MOTORS SERIES WITH OUTER ROTOR FOR CENTRIFUGAL FANS

## DN80-100 (ДН80-100)

Marine special-purpose three-phase squirrel-cage induction motors DN80-100 are manufactured in accordance with 16-513.443-77. Motors are designed for centrifugal fan drives of double inlet fans. Motors meet the requirements of GOST B 23396-78, current technical specification, engineering documentation and «Terms of delivery» (on customer's request).

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Mounting arrangement is horizontal. Motor design provides the possibility of motor mounting to the fan frame with the shaft ends. Cooling is provided with air flow blown by a fan, in which the motor is built-in. Rated operating mode is continuous duty (S1) according to GOST 183-74. Motors provide 12 start-ups per hour evenly over time. Motors are designed for 50Hz, 220V and 380V. Protection degree is IP44 according to GOST 14254-80 and GOST 17494-72. Protection against water intrusion through the shaft line is not provided.

No	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	DN 80S4OM4	0.09	220; 380	1500	50	8.9
2	DN 80M4OM4	0.18	220; 380	1500	62	9.5
3	DN 90S4OM4	0.37	220; 380	1500	72	13
4	DN 90M4OM4	0.75	220; 380	1500	72	15
5	DN 100S2OM4	1.1	220; 380	3000	70	22.4
6	DN 100M2OM4	2.2	220; 380	3000	82	28.2

Design and development work of motors with outer rotor is in the planning stage:

- DN 112 A6 – 2.2 kW
- DN 132 A6 – 3.0 kW
- DN 132 B6 – 4.0 kW

# ELEVATOR INDUCTION MOTORS SERIES

## ADB160L6/18LBU3 (АДБ160Л6/18ЛБУ3), ADB180M6/18LBU3 (АДБ180М6/18ЛБУ3), ADBKh180L12LBU3 (АДБХ180Л12ЛБУ3)

Induction motors – ADB160L6/18LBU3, ADB180M6/18LBU3 and ADBKh180L12LBU3 – are manufactured in accordance with technical specification 3.08-23752688-100-98. Motors ADB are designed for elevator drives, and motors ADBKh180 – for gearless elevator drives in operation together with frequency converter for AC power supply of 50Hz. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors meet the requirements of technical specification 3.08-23752688-100-98, DSTU 2365 and GOST 28330. Cooling method is IC00 for ADB160, ICA01 (without a fan mounted on the shaft) – for ADB180 and IC01 (without a fan mounted on the shaft) – for ADBKh according to DSTU IEC 60034-6 (GOST 20459).

Operating mode is S5 for motors ADB. Rated operating mode of motors ADBKh is intermittent periodic duty with starting and operating at higher speed, switching and operating with lower speed and a pause. Protection degree is IP10 according to DSTU IEC 60034-5 (GOST 17494).

№ п/п	Series. type	Power. kW	Voltage. V	Synchronous speed, rpm	Efficiency. %
1	2	3	4	5	6
1	ADB 160B6/18LBU3	3.55/1.18	380	1000/333	70/40
2	ADB 180M6/18LBU3	4.2/1.25	380	1000/333	73/42

### ADBKh180L2LBU3

Parameters	Mode parameter value		
	Object inspection mode	Minimum mode	Nominal mode
1	2	3	4
Rated power, kW	0.637	3.520	6.750
Rated speed, rpm	56.000	134.000	203.000
Line voltage, V	150.000	275.000	380.000
Line frequency, Hz	6.000	15.000	24.000
Current, A, max.	23.500	17.000	21.000
Rated torque, Nm, min.	110.000	250.000	320.000
Efficiency, %, min.	15.000	62.500	35.500
Cos φ	0.795	0.822	0.912

# VARIABLE FREQUENCY MOTORS SERIES

## AI40 (AI40), AI56 (AI56), AIKH80 (AIKX80), AIKH90 (AIKX90)

Variable frequency and increased frequency induction motors – AI40, AI56, AIKh80 and AIKh90 – and their modifications are built-in, open, self-cooling, and manufactured in accordance with technical specifications of Ukraine 3.06 044-93. Motors are designed for household appliance drives, for operation on the converter, which converts single-phase AC power supply with frequency of 50Hz into three-phase with increased frequency of 100Hz, 200Hz, 300Hz. Motors meet the requirements of GOST 183 and DSTU 2365.

Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Motors are designed for voltage of 150V, three outlet conductors and Y-connected circuit. Rated operating mode according to GOST 183 is:

- intermittent periodic duty with duty cycle of 40% (S3, DC – 40) for motors with rated speed of 18 000 rpm
- continuous duty (S1) for motors with rated speed of 12 000 and 3 000 rpm

Protection degree according to GOST 17494 is:

- IP00 for motors AI40 and AI56
- IP10 for motors AIO40, AIO56, AIOKh80 and AIOKh90
- IP54 for motors AIKh80 and AIKh90

Cooling method according to GOST 20459 is: IC01 for motors AIOB40S2 (except for AIOB40S2), AI56 and AIOKh80; IC0141 for motors AIKh80 and AIKh90; IC91 for motors AIOB40S2, AI40 and AI56 and provided with the machinery. Mechanical environment stability is M8 according to GOST 17516.1.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %
1	2	3	4	5	6
1	AI40D2	0.08	150	18000	65
2	AI40A2	0.12	150	18000	65
3	AI40B2	0.18	150	18000	66
4	AI40C2	0.25	150	18000	66
5	AI56D2	0.37	150	18000	67
6	AI56A2	0.55	150	18000	71
7	AI56B2	0.75	150	18000	72
8	AI56D2	0.25	150	12000	72
9	AI56A2	0.37	150	12000	74
10	AI56B2	0.55	150	12000	75
11	AI56C2	0.75	150	12000	79
12	AIKh80A4	1.1	150	3000	75
13	AIKh80B4	1.5	150	3000	79
14	AIKh90A4	2.2	150	3000	80

## AIKH63 (AIKX63), AIKH80 (AIKX80), AIKH112 (AIKX112)

Variable frequency induction motors – AIKh63, AIKh80 and AIKh112 – are manufactured in accordance with technical specifications 16-92. Motors are designed for operation in CNC machinery.

Motors meet the requirements of GOST 183 and DSTU 2365. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Mounting arrangement is IM3081 in accordance with GOST 2479. Rated operating mode is continuous duty (S1) according to GOST 183. Protection degree is IP54 for the motors, IP42 for the tachometer generator, IP23 for the fan according to GOST 17494. Protection of the motor through the shaft line is provided by customer. Cooling method is IC46 according to GOST 20459 with separate ventilation. Motors correspond to mechanical environment stability M8 according to GOST 17516.1. Tachometer generator TA40-6-D46 is attached to the motor according to technical specification 16-91.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	AIKh63B8	0.75	220	6000	70	6.8
2	AIKh80A8	1.5			71	13.0
3	AIKh80B8	3.0			77	17.0
4	AIKh112S8	5.5			82	24.0
5	AIKh112L8	11.0			86	37.5

# MOTORS FOR NUCLEAR POWER PLANTS

## AIRB71A1 (AIPБ71A1), AIRB80A1 (AIPБ80A1), AIRB100A1 (AIPБ100A1)

Special-purpose induction motors – AIRB71A1, AIRB80A1 and AIRB100A1 – are manufactured in accordance with technical specifications 16-91. Motors are designed for electric drives in containment areas of NPP, for frequency of 50Hz, for national economy needs and for export with frequency of 50Hz and 60Hz.

Motors meet the requirements of GOST 183-74, «OTT-87. Armature for equipment and pipelines of NPP. General specifications», «Special terms of delivery of equipment, appliances, materials and products for nuclear power facilities». Rated operating mode is intermittent periodic duty (S3) according to GOST 183-74 with duty cycle (DC) of 10% and with six start-ups per hour. Protection degree through the shaft line is IP55, motor and current lead design is IPX7 according to GOST 17494-87. Cooling method is IC0040 according to GOST 20459-87. Electric motors can be manufactured for all climate regions (including marine, cold, tropical, etc.) on customer's request. Rated values of motor main parameters with voltage of 380V and frequency of 50Hz correspond to the ones specified in the table.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	AIRB 71A4A1	0.63	380	1500	63.0	18.5
2	AIRB 71B4A1	0.90	380	1500	63.0	18.0
3	AIRB 80A4A1	1.30	380	1500	65.0	24.0
4	AIRB 80B4A1	1.70	380	1500	67.0	25.5
5	AIRB 100S4A1	3.20	380	1500	75.0	36.4
6	AIRB 100LA4A1	4.25	380	1500	77.0	41.4
7	AIRB 100LB4A1	5.20	380	1500	82.0	44.4

## 4AS71A5-4AS100A5 (4AC71A5-4AC100A5)

Induction motors 4AS71A5-4AS100A5 are manufactured in accordance with technical specifications 16-510.610-76. Motors are designed for operation in armature drives mounted under the containment vessel of the NPP, which can be located in any climate area in accordance with GOST 15150-69. Motors meet the requirements of GOST 183-74.

Due to the mounting arrangement the motors are designed in a unified design IM3081 in accordance with GOST 2479-79. Rated operating mode is temporary duty (S2), 6 min, according to GOST 183-74. Motors must be sealed. Protection degree is IPX7 according to GOST 14254-96 and IP55 through the shaft line according to GOST 17494-87.

№	Series, type	Power, kW	Voltage, V	Synchronous speed, rpm	Efficiency, %	Weight, kg
1	2	3	4	5	6	7
1	4AS71A4A5	0.63	0	1500	63	17.5
2	4AS71B4A5	0.9			63	18
3	4AS80A4A5	1.3			62	24
4	4AS80B4A5	1.7			64	25.5
5	4AS90L4A5	2.4			74	30
6	4AS100S4A5	3.2			75	40
7	4AS100L4A5	4.25			77	46.5



## 4AKH71A4A1 (4AX71A4A1), 4AKHS71B4A1 (4AXC71B4A1), 4AS100S4A1 (4AC100S4A1)

Induction motors – 4AKh71A4A1, 4AKhS71B4A1 and 4AS100S4A1 – are manufactured in accordance with technical specifications 16-513.351-74. Motors are designed for AC power supply, 220V/380V, 50Hz, and for operation in equipment and armature drives mounted under the containment vessel of the Loviisa NPP in Finland. Motors meet the requirements of GOST 183-74 and OST 16 0.510.010-86.

Motors are designed in unified mounting arrangements IM3001 and IM3031 in accordance with GOST 2479-79. Rated operating mode according to GOST 183-74 is:

- continuous duty (S1) for motors 4AKh71A4A1
- temporary duty (S2), 6 min, for motors 4AKhS71B4A1 and 4AS100S4A1

Motors 4AKh71A4A1 are designed for operation in a foot volume with environment parameters inside the containment vessel, which correspond to the rated operating mode and must ensure safe operation after the conditions of “small” accident according to OST 16 0.510.010-86. Motors 4AKhS71B4A1 and 4AS100S4A1 are designed for operation in a foot volume with environment parameters inside the containment vessel, which correspond to the rated operating mode and mode of “small” accident according to OST 16 0.510.010-86. After the conditions of “large” accident the motors must ensure safe operation after revision, drying and minor repairing.

<b>№</b>	<b>Series, type</b>	<b>Power, kW</b>	<b>Voltage, V</b>	<b>Synchronous speed, rpm</b>	<b>Efficiency, %</b>	<b>Weight, kg</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
1	4AKh71A4A1	0.37	220/380	1400	70	12.5
2	4AKhS71B4A1	0.9	220/380	1340	66	12.5
3	4AS100S4A1	3.7	220/380	1360	77	34.5

# «SKB UKRELECTROMASH» SERVICES

## TESTING AND CERTIFICATION

The SKB Testing Centre consists of Mechanical and Climate Testing Department and Electric and Vibroacoustic Testing Department, which provide full testing range of electric motors, electric generators and aggregated devices.

### Vibroacoustic and electric testing

- Acceptance, periodic, standard electric and thermal testing of electric motors and generators, electromechanical devices with electric motors and generators of max. 100kW power and 400Hz frequency.
- Aerodynamic testing of electromechanical devices with max. 100 kW power and 400Hz frequency.
- Safety testing of household and similar electric devices.
- Noise testing and research of electric motors and electromechanical devices with max. 100 kW power and 400Hz frequency.
- Vibration testing and research of electric motors and electromechanical devices with max. 100 kW power and 400Hz frequency.

### Mechanical testing

Sinusoidal vibration testing:

Tested object weight	max. 200 kg	max. 60 kg
Vibration range	35 Hz	10-1000 Hz
Vibration amplitude	max. 5 mm	max. 3 mm
Maximum acceleration	max. 5 g	–

Single and repeated impact testing:

Maximum acceleration	max. 150 g
Pulse duration	max. 20 ms
Pulse repetition frequency	max. 120 strokes per min.
Tested object weight	max. 200 kg

### Climate testing

High and low ambient temperature testing:

Chamber operating volume	2.0 m <sup>3</sup>
Temperature range	60 ± 100°C
Tested object weight	max. 200 kg
Tested object dimensions	750 x 750 x 750 mm

Air humidity testing:

Chamber operating volume	1.0 m <sup>3</sup>
Operating temperature range	+20 +100 °C
Relative humidity	98 ± 2 (%)
Tested object weight	max. 200 kg
Tested object dimensions	600 x 600 x 600 m

Insulating and mechanical testing of:

- copper circular enamelled wires with diameter of 0.28-1.60 mm
- copper winding wires with fiber glass and polyester glass insulation and with diameter of 0.315–1.5 mm
- film and film-containing materials

# DEVELOPMENT OF SPECIAL-PURPOSE AND UNIQUE ELECTRIC MOTORS

The SKB is an experienced developer and manufacturer of electric motors with unique design, electrical, mechanical and other parameters in contrast to general-purpose industrial motors manufactured at electro-technical plants (with max. power of 30 kW):

- motors for drives of fans, pumps, compressors and air conditioners, which can operate in any climate area
- variable frequency motors with separate ventilation
- motors for NPP
- motors with power frequency of 50, 60, 100, 400 Hz
- motors for operation on rolling stocks and marine vessels in the unrestricted navigation area
- built-in motors with freon and oil resistant insulation
- permanent magnet generators
- AC converter-fed motors

The development of design documentation corresponds to technical requirements of customer. Experimental and prototype sampling is available.

## MODIFICATION OF ELECTRIC MOTORS

«SKB Ukrelectromash» provides services in engineering development for electromechanical products with power of max. 30 kW and frequency of max. 400 Hz in order to achieve low noise and vibration levels.

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