



Product Catalog



VERTICAL HOLLOW SHAFT CAGE ROTOR ASYNCHRONOUS MOTORS

(Pump Motors)

(Rated Outputs: 3 ... 370kW)

Elsan Elk. San. ve Tic. A.Ş.



GENERAL INFORMATION

APPLICATION

The ever increasing demand for water necessary for irrigation, domestic and drinking purposes is being met from underground supplies mainly by use of deep-well vertical turbine pumps. VHS motors are primarily designed and particularly suited to drive vertical turbine pumps due to ease of installation, protected construction, permanent shaft alignment, and troublefree service under arduous conditions with a minimum of maintenance.

VHS motors utilise a hollow shaft through which the pump shaft passes and are designed to carry the thrust loads of the pump. An easily accessible coupling situated at the top of the motor (under the cowl) facilitates coupling and permits vertical adjustment of the pump shaft to position the impellers of the pump. Motors are generally fitted with 7000 series bearings which enables them to carry heavy thrust loads for long periods. This document contains IP22 VHS motors.

MECHANICAL PROTECTION

Enclosure of the drip-proof motors are grade IP22 according to the TS 3209 EN 60034-5. This enclosure protects the motor against ingress of solid bodies greater than 12 mm in diameter and also against splash water from above up to 60 from vertical; therefore suitable in relatively dry environments or in sheltered positions. Higher grade protection class can be provided on request. Inquire for IP55 protection motors.

VOLTAGE, FREQUENCY AND SPEED

Motors are designed for operation on 380 Volts, 3 phase, 50 Hz. Motors for other voltages and frequencies can be made on request. A voltage variation of 6% and frequency variation of 5% does not effect the motor performance.

The standard synchronous speeds are:

Frequency	2 poles	4 poles
50 Hz	3000 rpm	1500 rpm
60 Hz	3600 rpm	1800 rpm

Full load speeds are 2-5% lower than the synchronous speeds. All the performance values are given for 50 Hz operation. If the standard motor is connected to a 60 Hz supply the speed will increase by 20%, the torque will fall by 17% and the power will not change.

RATING AND OUTPUT

The rated output and operating characteristics given in the tables refer to continuous duty (S1) at a rated frequency of 50Hz, rated voltage a maximum ambient temperature of 40°C and an altitude of up to 1000m above sea level. Motors at operating temperature are capable of withstanding for 15 seconds 1.6 times the rated torque without excessive heating and impairment of use full life. For operation in ambient temperatures other than 40°C the rated output is corrected as follows.

Amb. Temp. [°C]	30	35	40	45	50	55	60
% Rated Output	107	104	100	95	91	86	80

For operations at altitude exceeding 1000m above sea level the output is corrected as follows.

Altitude Above Sea Level [m]	1000	2000	3000	4000	5000
% of Rated Output	100	94	87	80	77

INSULATION CLASSES AND WINDINGS

Stator is wound with F or H class enamelled copper wire. The wound stators are then double impregnated and furnace dried to render them resistant to moisture.

MOUNTING

Motors have Nema Style "P" bases or IEC "A" flanges and are designed for vertical mounting only.

ROTOR AND STATOR

Both rotor and stator packets are made from low loss silicon steel laminations. Squirrel cage in rotor is produced by aluminium pressure die casting. The complete rotor-together with shaft and fan-is dynamically balanced.

IMPORTANT NOTE:

- Due to the continuous development policy, our company reserves the right to make changes the values, dimensions and constructions on this document and to invalidate this document at any time with or without any notice in advance. In no case shall our company be liable for any possible loss of revenue or profit.
- Please visit our web site (www.elsanas.com.tr or www.emtas.com.tr) for the current dimensions and values.

GENERAL INFORMATION

STARTING

All motors are wound for 380 V delta and therefore are suitable for direct on line or star/delta starting. With direct on line starting, motors produce 200-300 % full load torque at start and has a starting current of 400-750 % full load current. With star/delta starting both the starting torque and current drops to about 1/3 of these values.

NON-REVERSE BACK STOP

The standard VHS motors are designed for anti-clockwise rotation viewed from coupling end. The back stop protects the pump against damage caused by accidental reversal of backspin caused by the head of water draining back through the pump.

BEARING AND BEARING LIFE

Motors are provided with bearings having ample trust capacity which are capable of withstanding the entire trust loads of rotor, pump shaft assembly and the column of water.

All motors are fitted with 72-73 or 29 series bearings at the top end for trust and radial loads, and 62-63 series single row deep groove ball bearings at the bottom end for radial guiding. The bearing types and lubrication methods and permissible trust loads are shown in the following pages. The bearings are so chosen as to give a minimum bearing life of 10000 hours at the quoted down thrust loads. Reducing the trust load will increase the bearing life.

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- Please visit our web site (www.elsanas.com.tr or www.emtas.com.tr) for the current dimensions and values.

Rated Output		Speed [rpm]	Type	Thrust Load [kgf]	Rated Current [A]	Rated Torque [Nm]	Power Factor Cos φ			Efficiency η %			Starting Current I _K / I _N	Starting Torque M _K / M _N	Breakdown Torque M _D / M _N	Lower Flange AK [mm]	Shaft Hole XG [mm]	Coupling Hole BX [mm]	Thrust Bearing	Guide Bearing
[kW]	[PS]						%100	%75	%50	%100	%75	%50								
380 V 3000 rpm 2 Poles 50 Hz																				
3	4	2830	DKPM-G 3 / 2	1041	7,0	10,1	0,86	0,83	0,75	76	78	75	6,10	1,71	2,70	209,55	22,0	19,05	7310 B	6307
4	5,5	2870	DKPM-G 4 / 2	1041	8,4	13,3	0,88	0,85	0,78	82	84	81	6,90	2,16	2,25	209,55	22,0	19,05	7310 B	6307
5,5	7,5	2870	DKPM-G 5,5 / 2	1041	11,6	18,3	0,87	0,84	0,77	83	84	82	5,60	2,52	2,61	209,55	22,0	19,05	7310 B	6308
7,5	10	2870	DKPM-G 7,5 / 2	1041	16,2	25,0	0,86	0,83	0,75	82	84	81	6,25	2,34	2,70	209,55	22,0	19,05	7310 B	6308
11	15	2915	DKPM-G 11 / 2	1325	23,4	36,0	0,87	0,84	0,77	82	84	81	6,50	2,43	2,52	209,55	33,5	25,40	7312 B	6310
15	20	2915	DKPM-G 15 / 2	1325	30,8	49,1	0,88	0,85	0,78	84	86	83	6,50	2,79	2,97	209,55	33,5	25,40	7312 B	6310
18,5	25	2915	DKPM-G 18,5/2	1325	38,9	60,6	0,86	0,83	0,75	84	86	83	6,40	2,97	2,88	209,55	33,5	25,40	7312 B	6310
22	30	2915	DKPM-G 22 / 2	1325	43,7	72,1	0,90	0,87	0,80	85	87	84	7,10	2,16	2,97	209,55	33,5	25,40	7312 B	6310
30	40	2930	DKPM-S 30 / 2	1826	58,9	97,8	0,88	0,85	0,78	88	90	87	6,64	2,34	2,61	343,00	33,5	30,20	7220 B	6310
37	50	2930	DKPM-S 37 / 2	1826	73,4	120,6	0,88	0,85	0,78	87	89	86	7,62	2,70	2,88	343,00	33,5	30,20	7220 B	6310
45	60	2940	DKPM-S 45 / 2	1826	89,3	146,2	0,89	0,86	0,79	86	88	85	7,40	2,25	2,79	343,00	33,5	30,20	7220 B	6212
55	75	2940	DKPM-S 55 / 2	1826	106,7	178,7	0,90	0,87	0,80	87	89	86	7,29	2,07	2,97	343,00	33,5	30,20	7220 B	6212
75	100	2955	DKPM-S 75 / 2	2101	143,9	242,4	0,88	0,85	0,78	90	92	89	6,50	2,16	3,15	343,00	38,5	38,20	7222 B	6315
90	125	2955	DKPM-S 90 / 2	2101	178,6	290,9	0,87	0,84	0,77	88	90	87	7,20	2,25	3,06	343,00	38,5	38,20	7222 B	6315
110	150	2968	DKPM-S 110 / 2	2910	213,4	353,9	0,90	0,91	0,91	87	87	90	7,00	2,05	2,90	343,00	45,0	42,90	7322 B	6315
132	180	2975	DKPM-S 132 / 2	2910	247,6	423,7	0,90	0,91	0,91	90	87	90	6,90	2,10	2,85	343,00	45,0	42,90	7322 B	6315
380 V 1500 rpm 4 Poles 50 Hz																				
3	4	1415	DKPM-G 3 / 4	1298	7,3	20,2	0,79	0,73	0,63	79	81	78	5,90	2,16	2,61	209,55	27,0	19,05	7310 B	6307
4	5,5	1415	DKPM-G 4 / 4	1298	8,9	27,0	0,83	0,79	0,70	82	84	81	5,70	2,70	2,52	209,55	27,0	19,05	7310 B	6307
5,5	7,5	1425	DKPM-G 5,5 / 4	1298	12,0	36,9	0,83	0,79	0,70	84	86	83	5,65	2,25	2,52	209,55	27,0	19,05	7310 B	6308
7,5	10	1425	DKPM-G 7,5 / 4	1298	16,0	50,3	0,84	0,80	0,72	85	87	84	6,30	2,43	2,52	209,55	27,0	19,05	7310 B	6308
11	15	1440	DKPM-G 11 / 4	1624	23,7	73,0	0,83	0,79	0,70	85	87	84	6,23	2,16	2,61	209,55	33,5	25,40	7312 B	6310
15	20	1450	DKPM-G 15 / 4	1624	31,9	98,8	0,83	0,79	0,70	86	88	85	6,21	2,61	2,79	209,55	33,5	25,40	7312 B	6310
18,5	25	1450	DKPM-G 18,5/4	1624	39,4	121,8	0,83	0,79	0,70	86	88	85	6,60	2,70	2,61	209,55	33,5	25,40	7312 B	6310
22	30	1450	DKPM-S 22 / 4	2211	46,8	144,9	0,83	0,79	0,70	86	88	85	6,64	2,60	2,70	343,00	33,5	30,20	7220 B	6310
30	40	1445	DKPM-S 30 / 4	2211	60,9	198,3	0,86	0,83	0,75	87	89	86	6,16	2,61	2,70	343,00	33,5	30,20	7220 B	6310
37	50	1450	DKPM-S 37 / 4	2211	74,3	243,7	0,87	0,85	0,78	87	89	86	6,64	2,79	2,43	343,00	33,5	30,20	7220 B	6212
45	60	1460	DKPM-S 45 / 4	2211	88,3	294,3	0,88	0,83	0,75	88	90	87	6,60	2,61	2,25	343,00	33,5	30,20	7220 B	6212
55	75	1465	DKPM-S 55 / 4	3360	110,4	358,5	0,86	0,81	0,73	88	90	87	6,25	2,61	2,52	343,00	38,5	38,20	7320 B	6315
75	100	1470	DKPM-S 75 / 4	3360	148,8	487,2	0,87	0,81	0,73	88	90	87	5,76	2,16	1,98	343,00	38,5	38,20	7320 B	6315
90	125	1475	DKPM-S 90 / 4	3434	172,8	582,7	0,86	0,81	0,73	92	94	91	5,54	2,07	2,52	343,00	45,0	38,20	7322 B	6315
110	150	1475	DKPM-S 110 / 4	3434	213,6	712,2	0,86	0,83	0,75	91	93	90	7,10	1,89	2,07	343,00	45,0	42,90	7322 B	6315
132	180	1475	DKPM-S 132 / 4	3434	256,3	854,6	0,86	0,83	0,75	91	93	90	6,85	2,07	2,16	343,00	45,0	42,90	7322 B	6315
160	218	1480	DKPM-S 160 / 4	7625	297,3	1.032,4	0,87	0,83	0,75	94	94	93	6,50	2,07	1,80	343,00	58,0	49,20	2 x 7324	7316+6316
185	250	1480	DKPM-S 185 / 4	7625	343,7	1.193,8	0,87	0,83	0,75	94	94	93	6,50	2,07	1,80	343,00	58,0	49,20	2 x 7324	7316+6316
200	270	1480	DKPM-S 200 / 4	7625	371,6	1.290,5	0,87	0,84	0,76	94	94	93	5,31	1,88	1,75	343,00	58,0	49,20	2 x 7324	7316+6316
250	340	1480	DKPM-S 250 / 4	19250	449,6	1.613,2	0,88	0,85	0,78	96	96	95	5,30	1,80	2,20	343,00	58,0	49,20	29428	7318+6318
280	380	1480	DKPM-S 280 / 4	19250	503,6	1.806,8	0,88	0,85	0,78	96	96	95	4,47	1,74	1,85	343,00	58,0	49,20	29428	7318+6318
315	430	1480	DKPM-S 315 / 4	19250	566,5	2.032,6	0,88	0,85	0,79	96	96	95	5,40	1,72	1,90	343,00	58,0	49,20	29428	7318+6318
355	485	1480	DKPM-S 355 / 4	19250	652,0	2.290,7	0,88	0,87	0,83	94	93	90	5,15	1,73	1,90	343,00	58,0	55,60	29428	7318+6318
370	504	1480	DKPM-S 370 / 4	19250	665,4	2.387,5	0,88	0,85	0,79	96	96	95	5,40	1,73	1,90	343,00	58,0	55,60	29428	7318+6318

Note: G denotes grease lubricated, S denotes oil lubricated

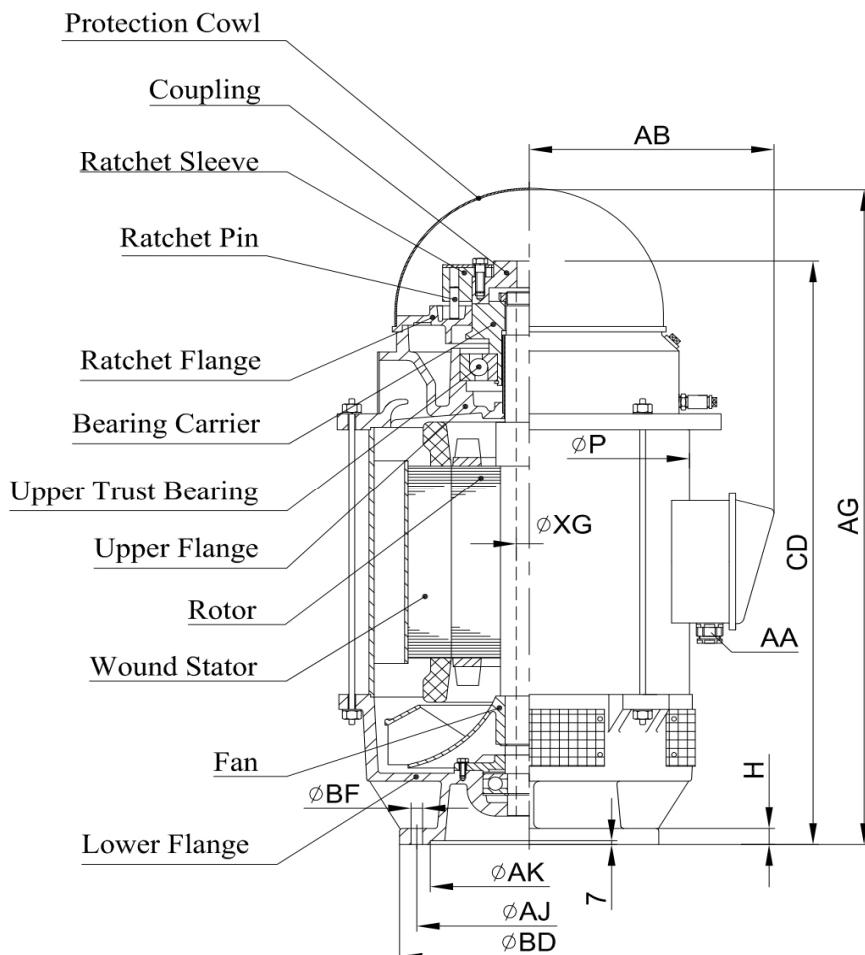
PERFORMANCE DATA

Rated Output		Speed [rpm]	Type	Thrust Load [kgf]	Rated Current [A]	Rated Torque [Nm]	Power Factor Cos φ			Efficiency η %			Starting Current I _K / I _N	Starting Torque M _K / M _N	Breakdown Torque M _D / M _N	Lower Flange AK [mm]	Shaft Hole XG [mm]	Coupling Hole BX [mm]	Thrust Bearing	Guide Bearing	
[kW]	[PS]						%100	%75	%50	%100	%75	%50									
380 V 3600 rpm 2 Poles 60 Hz																					
3,0	4,1	3396	DKPM-G 3 / 2	1041	7,0	8,4	0,86	0,83	0,75	76	78	75	6,10	1,71	2,70	209,55	22,0	19,05	7310 B	6307	
4,0	5,4	3444	DKPM-G 4 / 2	1041	8,4	11,1	0,88	0,85	0,78	82	84	81	6,90	2,16	2,25	209,55	22,0	19,05	7310 B	6307	
5,5	7,5	3444	DKPM-G 5,5 / 2	1041	11,6	15,3	0,87	0,84	0,77	83	84	82	5,60	2,52	2,61	209,55	22,0	19,05	7310 B	6308	
7,5	10,2	3444	DKPM-G 7,5 / 2	1041	16,2	20,8	0,86	0,83	0,75	82	84	81	6,25	2,34	2,70	209,55	22,0	19,05	7310 B	6308	
11,0	15,0	3498	DKPM-G 11 / 2	1325	23,4	30,0	0,87	0,84	0,77	82	84	81	6,50	2,43	2,52	209,55	33,5	25,40	7312 B	6310	
15,0	20,4	3498	DKPM-G 15 / 2	1325	30,8	41,0	0,88	0,85	0,78	84	86	83	6,50	2,79	2,97	209,55	33,5	25,40	7312 B	6310	
18,5	25,2	3498	DKPM-G 18,5/2	1325	38,9	50,5	0,86	0,83	0,75	84	86	83	6,40	2,97	2,88	209,55	33,5	25,40	7312 B	6310	
22,0	29,9	3498	DKPM-G 22 / 2	1325	43,7	60,1	0,90	0,87	0,80	85	87	84	7,10	2,16	2,97	209,55	33,5	25,40	7312 B	6310	
30,0	40,8	3516	DKPM-S 30 / 2	1826	58,9	81,5	0,88	0,85	0,78	88	90	87	6,64	2,34	2,61	343,00	33,5	30,20	7220 B	6310	
37,0	50,3	3516	DKPM-S 37 / 2	1826	73,4	100,5	0,88	0,85	0,78	87	89	86	7,62	2,70	2,88	343,00	33,5	30,20	7220 B	6310	
45,0	61,2	3528	DKPM-S 45 / 2	1826	89,3	121,8	0,89	0,86	0,79	86	88	85	7,40	2,25	2,79	343,00	33,5	30,20	7220 B	6212	
55,0	74,8	3528	DKPM-S 55 / 2	1826	106,7	148,9	0,90	0,87	0,80	87	89	86	7,29	2,07	2,97	343,00	33,5	30,20	7220 B	6212	
75,0	102,0	3546	DKPM-S 75 / 2	2101	143,9	202,0	0,88	0,85	0,78	90	92	89	6,50	2,16	3,15	343,00	38,5	38,20	7222 B	6315	
90,0	122,4	3546	DKPM-S 90 / 2	2101	178,6	242,4	0,87	0,84	0,77	88	90	87	7,20	2,25	3,06	343,00	38,5	38,20	7222 B	6315	
110,0	149,6	3562	DKPM-S 110 / 2	2910	213,4	295,0	0,90	0,91	0,91	87	87	90	7,00	2,05	2,90	343,00	45,0	42,90	7322 B	6315	
132,0	179,5	3570	DKPM-S 132 / 2	2910	247,6	353,1	0,90	0,91	0,91	90	87	90	6,90	2,10	2,85	343,00	45,0	42,90	7322 B	6315	
380 V 1800 rpm 4 Poles 60 Hz																					
3,0	4,1	1698	DKPM-G 3 / 4	1298	7,3	16,9	0,79	0,73	0,63	79	81	78	5,90	2,16	2,61	209,55	27,0	19,05	7310 B	6307	
4,0	5,4	1698	DKPM-G 4 / 4	1298	8,9	22,5	0,83	0,79	0,70	82	84	81	5,70	2,70	2,52	209,55	27,0	19,05	7310 B	6307	
5,5	7,5	1710	DKPM-G 5,5 / 4	1298	12,0	30,7	0,83	0,79	0,70	84	86	83	5,65	2,25	2,52	209,55	27,0	19,05	7310 B	6308	
7,5	10,2	1710	DKPM-G 7,5 / 4	1298	16,0	41,9	0,84	0,80	0,72	85	87	84	6,30	2,43	2,52	209,55	27,0	19,05	7310 B	6308	
11,0	15,0	1728	DKPM-G 11 / 4	1624	23,7	60,8	0,83	0,79	0,70	85	87	84	6,23	2,16	2,61	209,55	33,5	25,40	7312 B	6310	
15,0	20,4	1740	DKPM-G 15 / 4	1624	31,9	82,3	0,83	0,79	0,70	86	88	85	6,21	2,61	2,79	209,55	33,5	25,40	7312 B	6310	
18,5	25,2	1740	DKPM-G 18,5/4	1624	39,4	101,5	0,83	0,79	0,70	86	88	85	6,60	2,70	2,61	209,55	33,5	25,40	7312 B	6310	
22,0	29,9	1740	DKPM-S 22 / 4	2211	46,8	120,7	0,83	0,79	0,70	86	88	85	6,64	2,60	2,70	343,00	33,5	30,20	7220 B	6310	
30,0	40,8	1734	DKPM-S 30 / 4	2211	60,9	165,2	0,86	0,83	0,75	87	89	86	6,16	2,61	2,70	343,00	33,5	30,20	7220 B	6310	
37,0	50,3	1740	DKPM-S 37 / 4	2211	74,3	203,1	0,87	0,85	0,78	87	89	86	6,64	2,79	2,43	343,00	33,5	30,20	7220 B	6212	
45,0	61,2	1752	DKPM-S 45 / 4	2211	88,3	245,3	0,88	0,83	0,75	88	90	87	6,60	2,61	2,25	343,00	33,5	30,20	7220 B	6212	
55,0	74,8	1758	DKPM-S 55 / 4	3360	110,4	298,8	0,86	0,81	0,73	88	90	87	6,25	2,61	2,52	343,00	38,5	38,20	7320 B	6315	
75,0	102,0	1764	DKPM-S 75 / 4	3360	148,8	406,0	0,87	0,81	0,73	88	90	87	5,76	2,16	1,98	343,00	38,5	38,20	7320 B	6315	
90,0	122,4	1770	DKPM-S 90 / 4	3434	172,8	485,6	0,86	0,81	0,73	92	94	91	5,54	2,07	2,52	343,00	45,0	38,20	7322 B	6315	
110,0	149,6	1770	DKPM-S 110 / 4	3434	213,6	593,5	0,86	0,83	0,75	91	93	90	7,10	1,89	2,07	343,00	45,0	42,90	7322 B	6315	
132,0	179,5	1770	DKPM-S 132 / 4	3434	256,3	712,2	0,86	0,83	0,75	91	93	90	6,85	2,07	2,16	343,00	45,0	42,90	7322 B	6315	
160,0	217,6	1776	DKPM-S 160 / 4	7625	297,3	860,4	0,87	0,83	0,75	94	94	93	6,50	2,07	1,80	343,00	58,0	49,20	2 x 7324	7316+6316	
185,0	251,6	1776	DKPM-S 185 / 4	7625	343,7	994,8	0,87	0,83	0,75	94	94	93	6,50	2,07	1,80	343,00	58,0	49,20	2 x 7324	7316+6316	
200,0	272,0	1776	DKPM-S 200 / 4	7625	371,6	1.075,5	0,87	0,84	0,76	94	94	93	5,31	1,88	1,75	343,00	58,0	49,20	2 x 7324	7316+6316	
250,0	340,0	1776	DKPM-S 250 / 4	19250	449,6	1.344,3	0,88	0,85	0,78	96	96	95	5,30	1,80	2,20	343,00	58,0	49,20	29428	7318+6318	
280,0	380,8	1776	DKPM-S 280 / 4	19250	503,6	1.505,6	0,88	0,85	0,78	96	96	95	4,47	1,74	1,85	343,00	58,0	49,20	29428	7318+6318	
315,0	428,4	1776	DKPM-S 315 / 4	19250	566,5	1.693,8	0,88	0,85	0,79	96	96	95	5,40	1,72	1,90	343,00	58,0	49,20	29428	7318+6318	
355,0	482,8	1776	DKPM-S 355 / 4	19250	638,5	1.908,9	0,88	0,85	0,79	96	96	95	5,40	1,73	1,90	343,00	58,0	55,60	29428	7318+6318	
370,0	503,2	1776	DKPM-S 370 / 4	19250	665,4	1.989,6	0,88	0,85	0,79	96	96	95	5,40	1,73	1,90	343,00	58,0	55,60	29428	7318+6318	

PERFORMANCE DATA

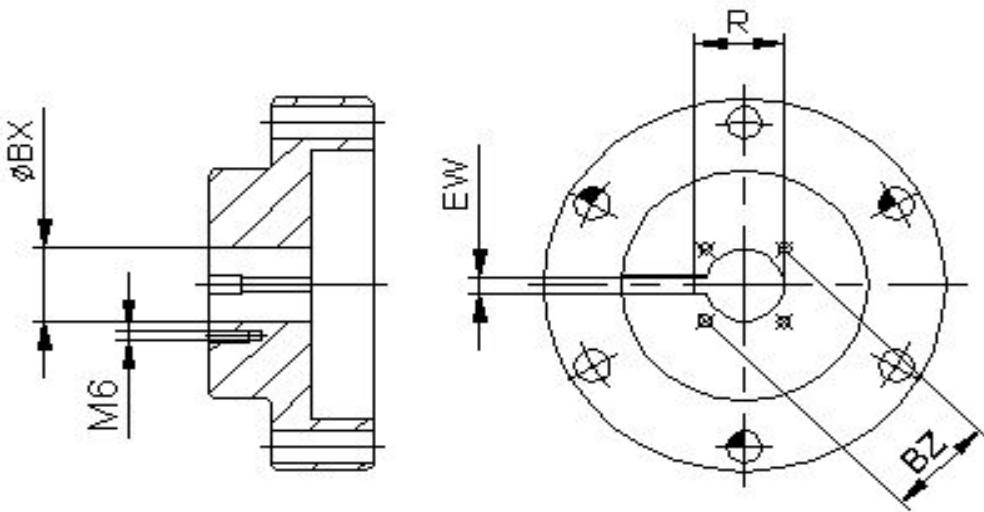
Note: G denotes grease lubricated, S denotes oil lubricated

DIMENSIONS - MOTOR



Speed [rpm]	Rated Output [kW]	BD	P	AA	AB	AG	AJ	AK	BF	CD	XG	H
3.000	3 - 4 - 5,5 - 7,5		264	M 20	202	600			505	22		15
1.500										27		
3.000	11 - 15 - 18,5		265			740	232	209,55	11	653		
1.500	11 - 15									738		
3.000	22		360		270	825						
1.500	18,5											20
3.000	30 - 37		420	340		900				818		
1.500	22 - 30									796	33,5	
3.000	45		430	370		875				846		
1.500	37					925				831		
3.000	55					930				896	38,5	
1.500	45					1000				946		
	55					1050				1030		
3.000	75					1150				1120		
1.500						1240				1030		
3.000	90					1150				1170		
1.500						1290						
3.000	110									1302		
1.500						1420				1382		
3.000	132					1500				1462		
						1580				1512		
	160					1630				1627		
	185					1745				1682		
	200					1800						
1.500	225											
	250											
	280											
	315											
	355											
	370											

DIMENSIONS - COUPLING



Speed [rpm]	Rated Output [kW]	EW	R	BZ	BX	BX Tolerance
3.000	3 - 4 - 5,5 - 7,5	4,76	21,26	35	19,05	
1.500						
3.000	11 - 15 - 18,5 - 22	6,35	28,3		25,4	
1.500	11 - 15 - 18,5					
3.000	30 - 37 - 45 - 55	9,52	33,2	44,5	30,2	+0,03 0
1.500	22 - 30 - 37 - 45					
3.000	75 - 90	9,52	42,4	54	38,2	
1.500	55 - 75					
	90					
3.000	110 - 132	12,7	47,22	63,5	42,9	
	110 - 132					
1.500	160 - 185 - 200					
	250 - 280 - 315 355 - 370					

IMPORTANT NOTE:

- Due to the continuous development policy, our company reserves the right to make changes the values, dimensions and constructions on this document and to invalidate this document at any time with or without any notice in advance. In no case shall our company be liable for any possible loss of revenue or profit.
- Please visit our web site (www.elsanas.com.tr or www.emtas.com.tr) for the current dimensions and values.

KAT.DKPM.09.19.ENG

PRODUCTION PROGRAM

POLE CHANGE MOTOR



SLIP - RING MOTOR



WATER COOLED
TBM MOTOR



FORKLIFT MOTOR



TRACTION MOTOR



MARINE MOTOR
(Water Cooled)



VIBRATION MOTOR



BRAKE MOTOR



VHS PUMP MOTOR
(Vertical Hollow Shaft Motor)
(VHS)



SYNCHRONOUS MOTOR
(PMSM - IE5)



TORQUE MOTOR



LOW CENTER SAW MOTOR



TOWER CRANE
MOTOR



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