

LIST OF REQUIREMENTS
on development of a general purpose induction squirrel
cage motor with combined windings

№	Parameter name	Required value
1 The main parameters and performance requirements		
1.1	Starting torque, N·m	no less than 35,3
1.2	Rated torque, N·m	no less than 11,0
1.3	Breakdown torque, N·m	no less than 40,4
1.4	Pull-up torque, N·m	no less than 34,7
1.5	Power factor	no less than 0,55
1.6	Energy conversion efficiency, % Efficiency class according to GOST IEC 60034-30-1-2016	no less than 81,0 IE3
1.7	Mass, kg	no more than 19,2
1.8	Input power, kW	no more than 1,4
1.9	Output power, kW	no less than 1,1
1.10	Supply voltage, V	380
1.11	Starting voltage, V	no more than 25
1.12	Short circuit losses, W	no more than 7690
1.13	Overall losses (rotor and stator winding losses, iron losses, mechanical losses), W	no more than 265
1.14	No load losses, W	no more than 186
1.15	Slip, %	no more than 4,2
1.16	Linear resistance of stator winding (at 20 °C), Ohm	no more than 7,2
1.17	Initial starting current, A	no more than 17,7
1.18	Stator current, A	no more than 3,8
1.19	No load current, A	no more than 3,3
1.20	Shaft speed, rpm	no less than 955
1.21	Synchronous shaft speed, rpm and/or the number of poles, pcs	1000 6
1.22	Frequency, Hz	50
1.23	Duty type according to GOST IEC 60034-1-2014	S1
2 Design requirements		
2.1	Height of the centre of the shaft (frame), mm	90
2.2	Installation dimension along the length of the body (S – short, M – medium, L – long) and/or stator iron length (A – short, B – long)	L

№	Parameter name	Required value
2.3	Linkage dimensions, mm: – the distance between axes of shoulder bolt holes in feet b_{10} – the hole diameter in a foot d_{10} – the pitch circle diameter on a flange d_{20} – the diameter of a smooth hole (FF) or a threaded hole (FT) in a flange d_{22} – the flange outer diameter d_{24} – the diameter of tongue-and-groove flange face d_{25} – the distance from feet setting to a shaft axis of rotation (height of an axis of rotation) h – the distance between bolt holes axes in feet l_{10} – length of tongue-and-groove flange face l_{20} – the distance from a shaft extension area shoulder to the closest hole in a foot l_{31} – the distance from a shaft extension area shoulder to a flange support face l_{39} – the angle of flange fastener holes with respect to the vertical line if hole pitch is $4 \times 90^\circ$ α_{20}	140 10 — — — 90 125 — 56 — —
2.4	Cooling method according to GOST R MEC 60034-6-2012	IC01
2.5	Protection degrees provided by the integral design according to GOST IEC 60034-5-2011	IP55
2.6	Types of construction and mounting arrangements according to GOST 2479-79	IM1081
2.7	The type of a shaft end	cylindrical end according to GOST 12080-66
2.8	A slot at the end of a shaft for a key joint and the type of the key	a slot at the end of a shaft for a prismatic key according to GOST 360-78
2.9	The direction of shaft rotation	any direction
2.10	The number of stator winding outputs, pcs	three phase outputs and output neutral
2.11	Grounding terminal	yes
2.12	Built-in thermal protection	no
2.13	Vibration speed of bearing system, mm/sec	no more than 1,3
2.14	Stator windings temperature exceedance, °C	no more than 105
2.15	Stator winding insulation resistance regarding to a body, MOhm: – on standard environmental conditions – on temperature closed to operational – on upper value of humidity	10 3 0,5

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2.16	Dielectric strength of stator windings insulation regarding to a body, V	no less than 1760 (within the period of 1 min)
2.17	Marking type	nameplate
3 Resistance and strength requirements to external influencing factors		
3.1	Environment climatic version and category of location according to GOST 15150-69	Y2
3.2	Operating temperature range, °C	-45...+40
3.3	Limiting temperature range, °C	-60...+50
3.4	Relative humidity, %	100 (at 25 °C)
3.5	The maximum working acceleration amplitude at sinusoidal vibration, m·sec ²	10 (within the limits of 0,5...55 Hz)
4 Production requirements		
4.1	The need for manufacturing equipment selection	yes
4.2	Необходимость постановки в производство	yes
4.3	Estimated production output, pcs	50 000
5 Customer information		
5.1	Company name	
5.2	TIN	
5.3	Contact: – position – given name, surname – tel – e-mail	
6 Additional requirements		
6.1	Acceptance	Military Acceptance
6.2		
6.3		
6.4		
6.5		
6.6		
6.7		
6.8		