

IEC Squirrel Cage Motors

Instruction Manual V1.05

Instruction Manual

General Note
The specifications and instructions are to be considered in all supplied operating instructions and other directions.

WARNING

This is vital to avoid **dangers** and **damage**! Additional safety information is enclosed, which includes extended specifications about safety relating to electrical machines and devices. This safety direction is therefore also an extension to all further supplied operating and other instructions. Furthermore, the **national, local and system-specific determinations and requirements** applicable in each case are to be considered! **Custom-built designs** and **construction variants** can deviate in technical details! In case of any possible problems, it is urgently recommended to hold a return discussion with the manufacturer, with specification of type designation and serial number. All work is to be carried out only with electrically de-energized status of the system!

1. Construction designs

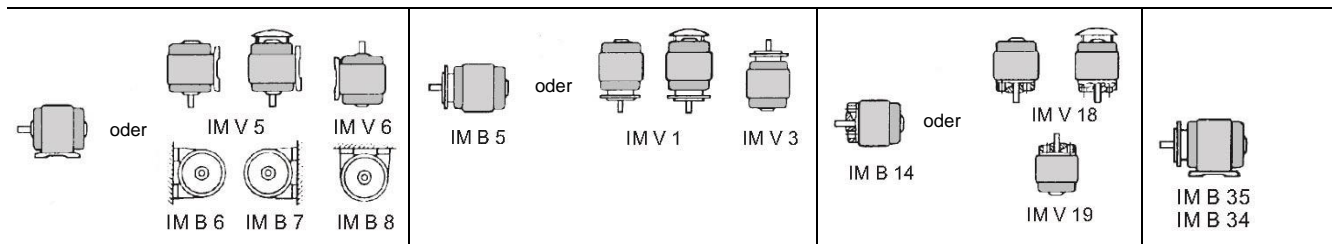


Illustration 1: Construction designs

2. Field of application

The motors correspond to the protection type IP55. In case of installation in the open air or at special environments or climatic conditions a special protective measure may necessary on the motors.

Unless otherwise indicated, the rated outputs apply for continuous operation with a coolant temperature in the range -20°C to +40°C and an installation elevation up to 1000 m above MSL.

3. Structure and method of operation

The motors are self-cooled (with fans). The cooling air must flow in and out unobstructed. In case of foot-mounted motors, the feet are cast or screwed on the motor housing.

4. Installation

If the time from delivery until operational startup of the motors in case of favorable conditions (storage in dry, dust-free and vibration-free rooms) should be more than 4 years, or more than 2 years in case of unsuitable conditions, then the bearings should be renewed.

In case of motors with shaft end above or below, as well as with direct solar radiation, suitable protective measures are to be provided (e.g. protective roofing).

The terminal box upper part can be rotated by 4x 90 degrees in case of a terminal board with 6 terminals

Fastening torque for screws (terminal box, shields, flanges, feet):

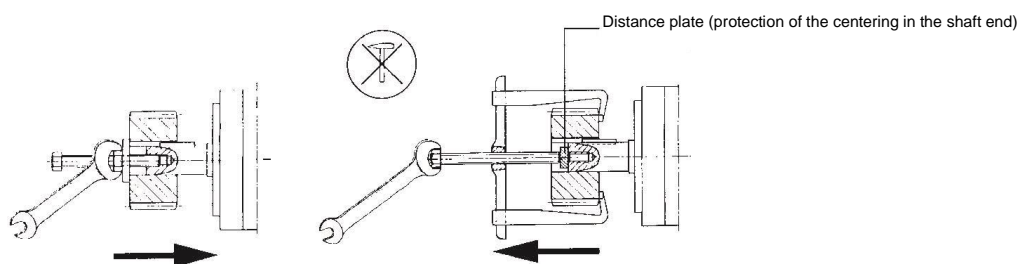
Screw thread			M4	M5	M6	M8	M10	M12	M16	M20
	Tightening torque	Nm	min	2	3,5	6	16	28	46	110
max			3	5	9	24	42	70	165	340

5. Alignment of rotor and associated power take-off elements

The rotors are dynamically counterbalanced with a half-key inserted into the shaft end.

Note the correct counterbalancing type of the power take-off element according to the counterbalancing type of the rotor! To pull the power take-off elements on and off.


For pulling on power take-off elements (coupling, gear, belt pulley etc.), use screw threads in the shaft end and (provided that it is possible) warm up power take-off elements as required. For pulling off, use suitable equipment. No impacting may be used for pulling on and off (e.g. with hammer or similar), and no radial or axial forces greater than permissible according to the catalog may be transferred to the motor bearings over the shaft end.




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6. Electrical connection

Mains voltage and mains frequency must agree with the data on the rating plate. Carry out connection and arrangement of the terminal links according to the diagram contained in the terminal box. Connect protective ground conductor to this terminal . The connection of the outer conductors is implemented by means of curved eyelet or using cable lug.

Tightening torques for screw fastenings of the electric connections / terminal board connections:

	Screw thread		M4	M5	M6	M8	M10	M12	M16	
	Tightening torque	Nm	min	0.8	1.8	2.7	5.5	9	14	27
			max	1.2	2.5	4	8	13	20	40

The above tightening torques apply unless other values are indicated. All nuts (upper and lower) on the terminal studs are to be checked for secure seating!

7. Installation test

Before first operational startup, as well as after longer storage or standstill time, the insulation resistance of the windings to ground with direct voltage must be determined.

Limit values at rated voltage U_N	$U_N \leq 1 \text{ kV}$
Measured voltage (direct voltage)	500 DC
Minimum insulation resistance with new, cleaned or repaired windings	10 MOhm
Specific, critical insulation resistance after longer operating time	0.5 MOhm/kV

At and immediately after the measurement, the terminals can have dangerous voltages and may not be touched.

In case of the measurement, it must be waited until the end value of the resistance is reached. The limit values for the minimum insulation resistance and the critical insulation resistance (for measurements with a winding temperature of 25°C), as well as the measuring voltage, are indicated in Fig. 5.

During the operating time, the insulation resistance of the windings can reduce as a result of environmental and operational influences. The critical value of the insulation resistance with a winding temperature of 25°C, according to rated voltage, can be calculated by multiplication of the rated voltage (kV) by the specific critical resistance value, according to Fig. 5 (MOhm/kV); e.g. critical resistance for U_N 690 V:

$$0.69 \text{ kV} \times 0.5 \text{ MOhm/kV} = 0.345 \text{ MOhm}$$

If, during operating time, the measured value of the insulation resistance is above the calculated critical insulation resistance, the machine is capable of being operated further. On reaching or falling below the critical insulation resistance, the windings must be dried and, in case of removed rotor, thoroughly cleaned and dried. If the measured value is near the critical value, the insulation resistance should be checked in the following time at correspondingly short intervals, or the winding cleaned.

8. Maintenance

Please consider the notes in the maintenance instructions

Bearing sizes of the standard motors

Construction size	Pole number	7AA/9AA - 7JB/7JE - 14BG/16BG		1T29	
		AS bearing	BS bearing	AS bearing	BS bearing
63	2, 4, 6, 8	6201 2ZC3	6201 2ZC3	6201 2Z C3	6201 2Z C3
71	2, 4, 6, 8	6202 2ZC3	6202 2ZC3	6202 2Z C3	6202 2Z C3
80	2, 4, 6, 8	6204 2ZC3	6204 2ZC3	6204 2Z C3	6004 2Z C3
90 S, L	2, 4, 6, 8	6205 2ZC3	6205 2ZC3	6205 2Z C3	6004 2Z C3
100 L	2, 4, 6, 8	6206 2ZC3	6206 2ZC3	6306 2Z C3	6306 2Z C3
112 M	2, 4, 6, 8	6306 2ZC3	6306 2ZC3	6306 2Z C3	6306 2Z C3
132 S, M	2, 4, 6, 8	6308 2ZC3	6308 2ZC3	6308 2Z C3	6308 2Z C3
160 M, L	2, 4, 6, 8	6309 2ZC3	6309 2ZC3	6309 2Z C3	6309 2Z C3
180 M, L	2, 4, 6, 8	6310 ZC3	6310 ZC3	6310 Z C3	6310 Z C3
200 L	2, 4, 6, 8	6312ZC3	6312 ZC3	6312 Z C3	6312 Z C3
225 S, M	2, 4, 6, 8	6313 ZC3	6313 ZC3	6313 Z C3	6313 Z C3
250 M	2, 4, 6, 8	6315 ZC3	6315 ZC3	6315 Z C3	6315 Z C3
280 S, M	2	6217 C3	6217 C3	6315 C3	6315 C3
280 S, M	4, 6, 8	6317 C3	6317 C3	6317 C3	6317 C3
315 S, M, L	2	6219 C3	6219 C3	6316 C3	6316 C3
315 S, M, L	4, 6, 8	6319 C3	6319 C3	6319 C3	6319 C3

Special bearing, further motor types on request

Standardized parts can be acquired on the market according to dimension, material and surface!

Spare parts on request!