Low Voltage
General Purpose Motors

LV Single phase motor section

Making you more competitive

ABB's General purpose motor is designed for use in general industry, meeting the demands of standard applications for OEM's. Motors are readily available from central stock locations and distributors around the world. The motors have high build quality, are available with all the features needed by the OEM market and can be modified to meet most specifications.

ABB is a global leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 107,000 people.

Low Voltage General Purpose Motors

Sizes 56 to 400, from 0.055 to 630 kW

Contents

ABB reserves the right to change the design, technical specification and dimensions without prior notice.

General information

Standards

ABB motors are of the totally enclosed and open drip proof, single or three phase squirrel cage type, built to comply with international IEC and EN standards. Motors conforming to other national and international specifications are also available on request.

All production units are certified to ISO 9001 international quality standard as well ISO 14000 environmental standard and confirm to all applicable EU Directives.

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IEC / EN

Electrical	Mechanical
IEC/EN 60034-1	IEC 60072
IEC/EN 60034-2	IEC/EN 60034-5
IEC 60034-8	IEC/EN 60034-6
IEC 60034-12	IEC/EN 60034-7
	IEC/EN 60034-9
	IEC 60034-14

M000001

M000002

M000003

M000329

Motors for EU motor efficiency levels

A Europe-wide agreement will ensure that the efficiency levels of electric motors manufactured in Europe are clearly displayed. In contrast to the American legislation on motor efficiency the European agreement does not establish mandatory efficiency levels.

It basically establishes three classes giving motor manufacturers an incentive to qualify for a higher class.

ABB is one of only a handful of leading motor manufacturers in Europe to have a motor range to meet or exceed the minimum efficiencies stated in the highest level of the EU agreement of LV motors.

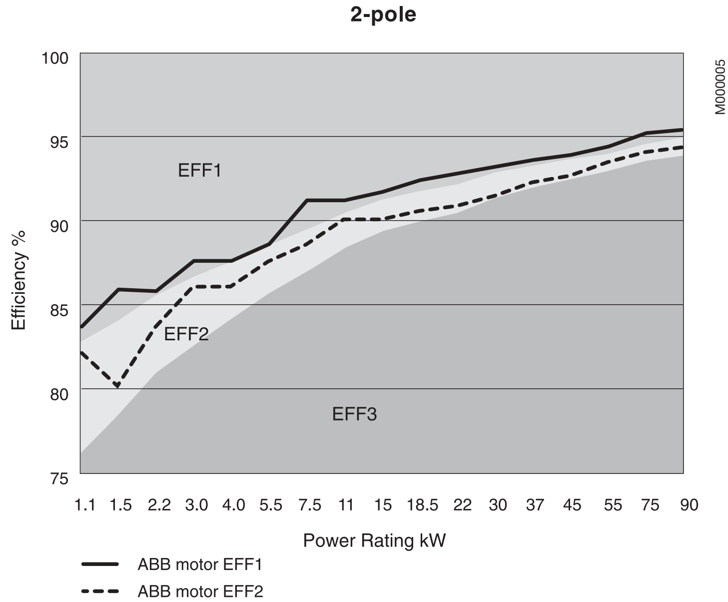
These efficiency levels apply to 2- and 4-pole, three phase squirrel cage induction motors rated for 400V, 50Hz with S1 duty class with the output 1.1 to 90 kW, which account for the largest volume on the market.

The efficiency of motors from different manufacturers are collated in a database, EURODEEM, published by the European Commission. It is accessible over the Internet at http://iamest.jrc.it/projects/eem/eurodeem.htm.

EU efficiency classes for 2-pole motors

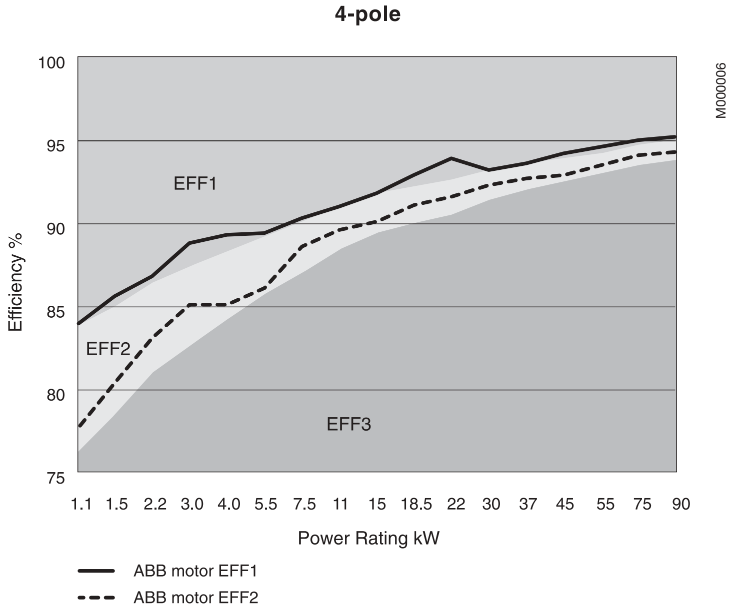
Output kW	2-pole Boarderline EFF2/EFF3	EFF1/EFF2
1.1	76.2	82.8
1.5	78.5	84.1
2.2	81.0	85.6
3	82.6	86.7
4	84.2	87.6
5.5	85.7	88.6
7.5	87.0	89.5
11	88.4	90.5
15	89.4	91.3
18.5	90.0	91.8
22	90.5	92.2
30	91.4	92.9
37	92.0	93.3
45	92.5	93.7
55	93.0	94.0
75	93.6	94.6
90	93.9	95.0

ABB Three phase induction motors, 400 V 50 Hz - EU motor efficiency levels



EU efficiency classes for 4-pole motors

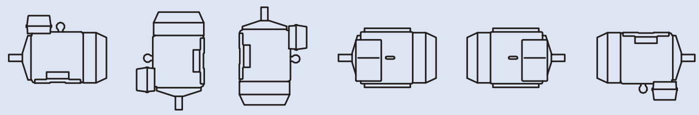
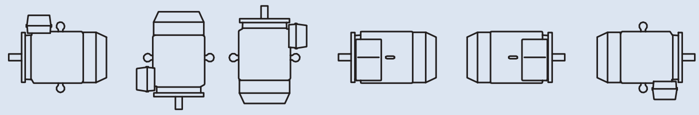
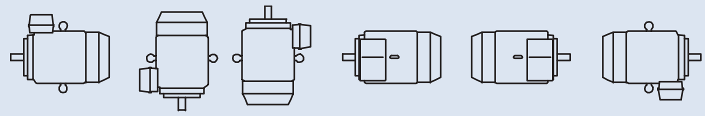
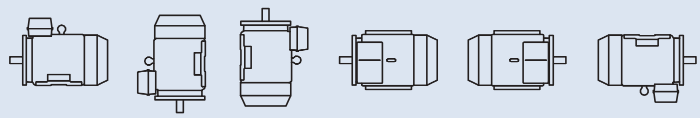
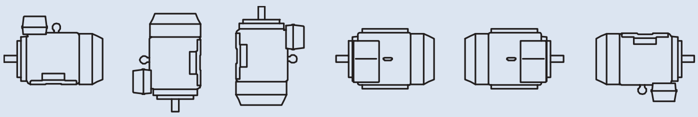
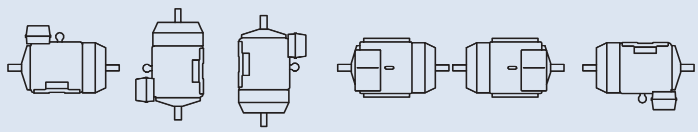
Output kW	4-pole Boarderline EFF2/EFF3	EFF1/EFF2
1.1	76.2	83.8
1.5	78.5	85.0
2.2	81.0	86.4
3	82.6	87.4
4	84.2	88.3
5.5	85.7	89.2
7.5	87.0	90.1
11	88.4	91.0
15	89.4	91.8
18.5	90.0	92.2
22	90.5	92.6
30	91.4	93.2
37	92.0	93.6
45	92.5	93.9
55	93.0	94.2
75	93.6	94.7
90	93.9	95.0



General technical specification

Mechanical and electrical design

Mounting arrangements

	Codel/Codell						Product code pos. 12
Foot-mounted motor.	IM B3 IM 1001	IM V5 IM 1011	IM V6 IM 1031	IM B6 IM 1051	IM B7 IM 1061	IM B8 IM 1071	A = foot-mounted, term.box top R = foot-mounted, term.box RHS L = foot-mounted, term.box LHS
M000007							
Flange-mounted motor, large flange	IM B5 IM 3001	IM V1 IM 3011	IM V3 IM 3031	*) IM 3051	*) IM 3061	*) IM 3071	B = flange mounted, large flange
M000008							
Flange-mounted motor, small flange	IM B14 IM 3601	IM V18 IM 3611	IM V19 IM 3631	*) IM 3651	*) IM 3661	*) IM 3671	C = flange mounted, small flange
M000009							
Foot- and flange-mounted motor with feet, large flange	IM B35 IM 2001	IM V15 IM 2011	IM V36 IM 2031	*) IM 2051	*) IM 2061	*) IM 2071	H = foot/flange-mounted, term.box top S = foot/flange-mounted, term.box RHS T = foot/flange-mounted, term.box LHS
M000010							
Foot- and flange-mounted motor with feet, small flange	IM B34 IM 2101	IM V17 IM 2111	IM 2131	IM 2151	IM 2161	IM 2171	J = foot/flange-mounted, small flange
M000011							
Foot-mounted motor, shaft with free extensions	IM 1002	IM 1012	IM 1032	IM 1052	IM 1062	IM 1072	
M000012							

*) Not stated in IEC 60034-7.

Cooling

Designation system concerning methods of cooling refers to standard IEC 60034-6.

Example

IC 4 (A) 1 (A) 6

International Cooling — IC

Circuit arrangement — 4
0: Free circulation (open circuit)
4: Frame surface cooled

Primary coolant — (A)
A for air (omitted for simplified designation)

Method of movement of primary coolant — 1
0: Free convection
1: Self-circulation
6: Machine-mounted independent component

Secondary coolant — (A)
A for air (omitted for simplified designation)
W for water

Method of movement of secondary coolant — 6
0: Free convection
1: Self-circulation
6: Machine-mounted independent component
8: Relative displacement

Degrees of protection: IP code/IK code

Classification of degrees of protection provided by enclosures of rotating machines are refers to:
- Standard IEC 60034-5 or EN 60529 for IP code
- Standard EN 50102 for IK code

IP protection:
Protection of persons against getting in contact with (or approaching) live parts and against contact with moving parts inside the enclosure. Also protection of the machine against ingress of solid foreign objects. Protection of machines against the harmful effects due to the ingress of water

IP 5 5

Characteristic letter — IP

Degree of protection to persons and to parts of the motors inside the enclosure — 5
2: Motors protected against solid objects greater than 12 mm
4: Motors protected against solid objects greater than 1 mm
5: Dust-protected motors

Degree of protection provided by the enclosure with respect to harmful effects due to ingress of water — 5

3: Motors protected against spraying water
4: Motors protected against splashing water
5: Motors protected against water jets
6: Motors protected against heavy seas

IK code :
Classification of degrees of protection provided by enclosure for motors against external mechanical impacts.

IK 08

International mechanical protection — IK

Characteristic group — 08

Relation between IK code and impact energy:

IK cod	IK 0	IK 01	IK 02	IK 03	IK 04	IK 05	IK 06	IK 07	IK 08	IK 09	IK 10
Impact energy Joule	*	0.15	0.2	0.35	0.5	0.7	1	2	5 ABB Standard	10	20

** not protected according to EN 50102*

Insulation

ABB uses class F insulation systems, which, with temperature rise B, is the most common requirement among industry today.

The use of Class F insulation with Class B temperature rise gives ABB products a 25° C safety margin. This can be used to increase the loading by up to 12 per cent for limited periods, to operate at higher ambient temperatures or altitudes, or with greater voltage and frequency tolerances. It can also be used to extend insulation life. For instance, a 10 K temperature reduction will extend the insulation life.

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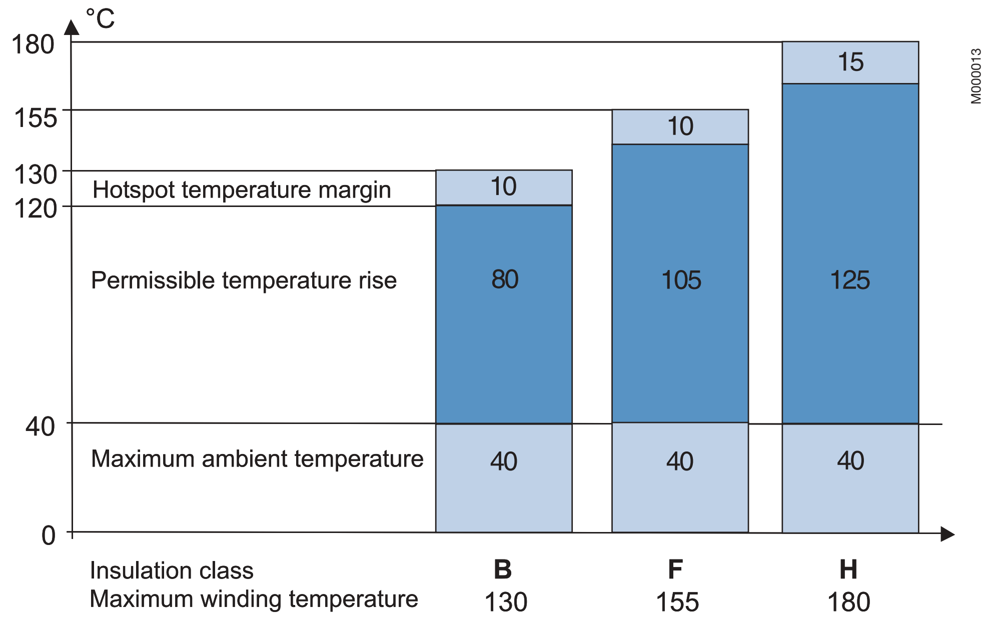
Class F insulation system
- Max ambient temperature 40° C
- Max permissible temperature rise 105 K
- Hotspot temperature margin + 10 K

Class B rise
- Max ambient temperature 40° C
- Max permissible temperature rise 80 K
- Hotspot temperature margin + 10 K

Insulation system temperature class
- Class F 155° C
- Class B 130° C
- Class H 180° C



Safety margins per insulation class

Frequency converter drives

Squirrel cage induction motors offer excellent availability, reliability and efficiency. With a frequency converter – a variable speed drive (VSD) – the motor will deliver even better value. A variable speed drive motor can be started softly with low starting current, and the speed can be controlled and adjusted to suit the application demand without steps over a wide range. Also the use of a frequency converter together with a squirrel cage motor usually leads to remarkable energy and environmental savings.

However, all motors are not suitable for variable speed drive. There are several points that have to be taken into account in the design and selection of the motor, if it is intended for variable speed operation.

Within the General purpose motor range ABB offers motors designed for both Direct On Line (DOL) and variable speed applications.

For more demanding applications the use of ABB Process performance motors is recommended.

When selecting general purpose motors to variable speed drives, following points shall be taken into consideration:

1. Dimensioning

The voltage (or current) fed by the frequency converter is not purely sinusoidal. This may increase the losses, vibration, and noise of the motor. Furthermore, a change in the distribution of the losses may affect to the temperature rise of the motor. In each case, the motor must be correctly sized according to the instructions supplied with the selected frequency converter.

When using ABB converters, please use ABB's DriveSize dimensioning programme or the loadability curves of the corresponding converter type for sizing the motors. The loadability curve for applicable General purpose motors used with ABB's ACS 800- frequency converters with DTC-control can be found in figure 3.

2. Speed range

In a frequency converter drive, the actual operating speed of the motor may deviate considerably from its nominal speed (i.e. the speed stamped on the rating plate).

For higher speeds, ensure that the highest permissible rotational speed of the motor or the critical speed of the entire equipment is not exceeded. When high speed operation exceeds the nominal speed of the motor, the following points should be checked:

– Maximum torque of the motor
– Bearing construction
– Lubrication
– Balancing
– Critical speeds
– Shaft seals
– Ventilation
– Fan noise

Guideline values of maximum speeds for General purpose aluminum motors described in figure 1. Exact values are available on request.

Figure 1. Guideline values of maximum speeds for General purpose motor in aluminum frame:

Motor size	Speed r/min	
	2-pole	4-pole
63-80	6000	4500
90-100	6000	6000
112-200	4500	4500
225-280	3600	3600

At low speed operation the cooling capacity of the fan decreases, which may cause higher temperature rises in the motor. A separate constant speed fan can be used to increase cooling capacity and loadability at low speed. It is also important to check the performance of the grease at low speeds.

3. Lubrication

Variable speed operation affects on the bearing temperature, which must be taken into account when selecting the lubrication method and grease type. For example the life time of sealed bearings can be remarkably shorter than in direct on line operation.

4. Insulation protection

Frequency converter supply causes higher voltage stresses at the windings of the motor than the sinusoidal supply. Thus, the insulation system and possible filters must be selected according to the used voltage and converter type. For selection of insulation system and filters, see figure 2.

5. Bearing currents

Bearing voltages and currents must be avoided in all motors. For reliability issues, insulated bearings and/or properly dimensioned filters at the converter output must be used according to the instructions in figure 2. When ordering, clearly state which alternative will be used.

For more information about bearing currents and voltages, please contact ABB.

6. Cabling, grounding and EMC

The use of a frequency converter puts higher demands on the cabling and grounding of the drive system. The motor must be cabled by using shielded symmetrical cables and cable glands providing 360° bonding (also called EMC-glands). For motors up to 30 kW unsymmetrical cables can be used, but shielded cables are always recommended.

More information about grounding and cabling of a variable speed drive can be found from the manual "Grounding and cabling of the drive system" (Code: 3AFY 61201998 R0125 REV B) and the ABB's Low Voltage Motors Manual.

For fulfilling the EMC requirements, special EMC cable(s) must be used in addition to the correct cable gland mounting, with special, extra earthing pieces. Please refer to the manuals of the frequency converter.

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Validity of figure 2

Measures mentioned in Figure 2 apply to the applicable motors within the General motors range (not high-output versions) with ACS 800 and ACS 550 drives with uncontrolled DC-voltage. For other alternatives and converter types, please contact ABB.

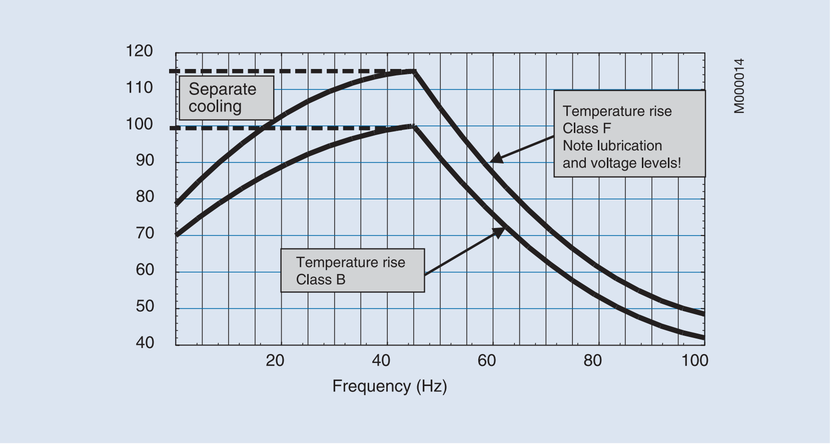
Figure 2. Selection rules for insulation and filtering in variable speed drives

	Motor nominal power P_N or frame size		
	P_N < 100 kW	$P_N \geq$ 100 kW or IEC 315 $\leq$ Frame size $\leq$ IEC 355	$P_N \geq$ 350 kW or IEC 400
$U_N \leq$ 500 V	Standard motor	Standard motor + Insulated N-bearing	Standard motor + Insulated N-bearing + Common mode filter
$U_N \leq$ 600 V	Standard motor + dU/dt-filter (reactor) **OR** Reinforced insulation	Standard motor + dU/dt-filter (reactor) + Insulated N-bearing **OR** Reinforced insulation + Insulated N-bearing	Standard motor + Insulated N-bearing + dU/dt-filter (reactor) + Common mode filter **OR** Reinforced insulation + Insulated N-bearing + Common mode filter
$U_N \leq$ 690 V	Reinforced insulation + dU/dt-filter (reactor)	Reinforced insulation + dU/dt-filter (reactor) + Insulated N-bearing	Reinforced insulation + Insulated N-bearing + dU/dt-filter (reactor) + Common mode filter

dU/dt filter (reactor)
Series reactor. DU/dt -filter decreases the changing rate of the phase and main voltages and thus reduces voltage stresses in the windings. DU/dt -filters also decrease so-called common mode currents and the risk of bearing currents.
Common mode
Common mode filters reduce so-called common mode currents in VSD applications and thus decrease the risk of bearing currents. Common mode filters do not significantly affect the phase or main voltages on the motor terminals.

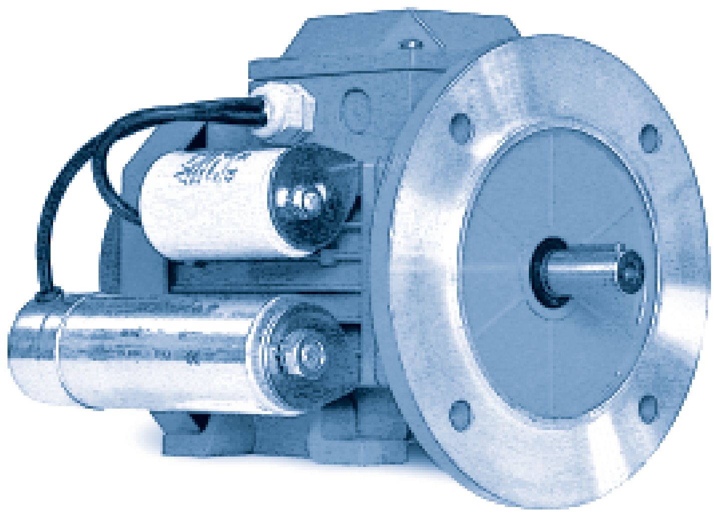
Insulated Bearings
Bearings with insulated inner or outer races are used as the standard solution. So-called hybrid bearings, i.e. bearings with non-conductive ceramic balls, can also be used in special applications. More information for spare part selection is available on request.

Figure 3. Motor loadability with ACS 800, Field weakening point 50 Hz.



Single Phase Motors

Totally enclosed squirrel cage single phase low voltage motors, Sizes 56 - 100, 0.065 to 2.2 kW



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> Motors
> Low voltage motors
> General purpose motors

In many respects single phase motors have the same properties as three phase motors, and mechanically they meet the same standards. There are several types of single phase motors (CSR, PSC and PSC-reg.).

Each type has its benefits and limitations, as described in the section below.
Single phase motors are used in many industries and for many purposes.

Description and application

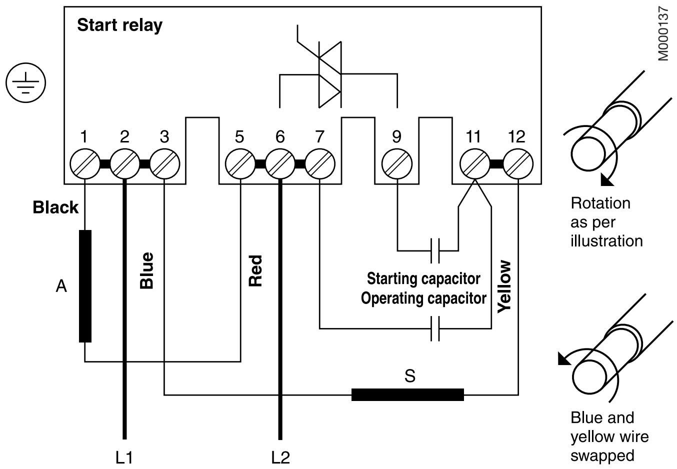
CSR

Starting and run capacitor

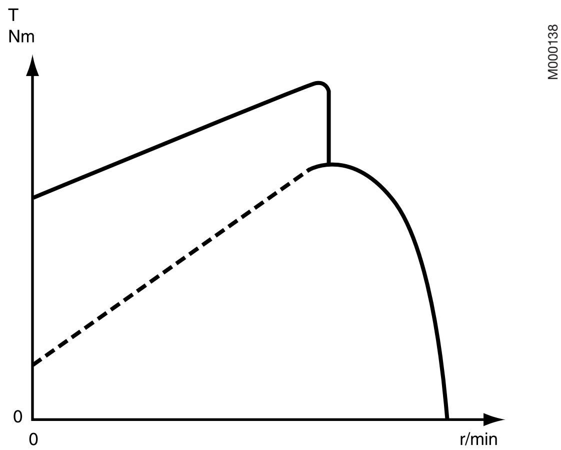
Single phase motor with attached run capacitor, starting capacitor and electronic start relay mounted in the terminal box.

The electronic start relay connects the starting capacitor instantly when the motor starts, and cuts out when the motor has reached its break-down torque. The connec-tion time is limited to max. 2 sec., after which the starting capacitor is disconnected, regardless of whether the motor has reached its breakdown torque. The starter relay cannot reconnect until the mains voltage to the motor has been disconnected; this protects the starting capacitor and ensures that the motor can be protected with a thermal motor line circuit breaker.

The CSR motor with a starting torque of 140 - 160% is suitable for applications that require a high starting torque, such as compressors, hydraulic pumps that start with back pressure and centrifugal pumps where the shaft seal requires a high breakaway torque.



CSR model with electronic start relay.

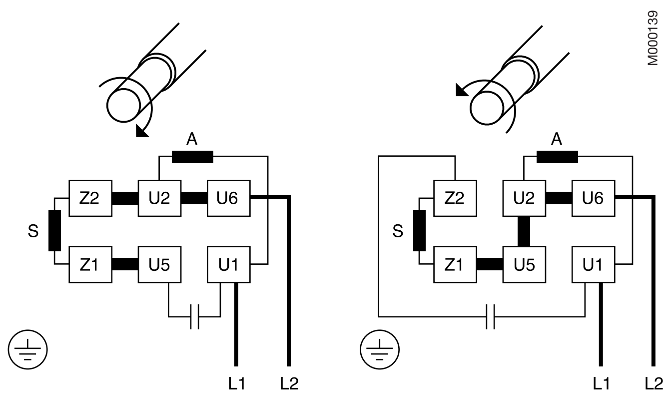


Torque curve for CSR motor.

PSC

Run capacitor

Single-phase motor with attached run capacitor. The starting torque is 30 - 70%, which makes this motor particularly suitable for applications with low starting torque requirements, such as fans, circular saws, polishing machines and centrifugal pumps where the shaft seal does not require a high breakaway torque.



Basic PSC model.

PSC

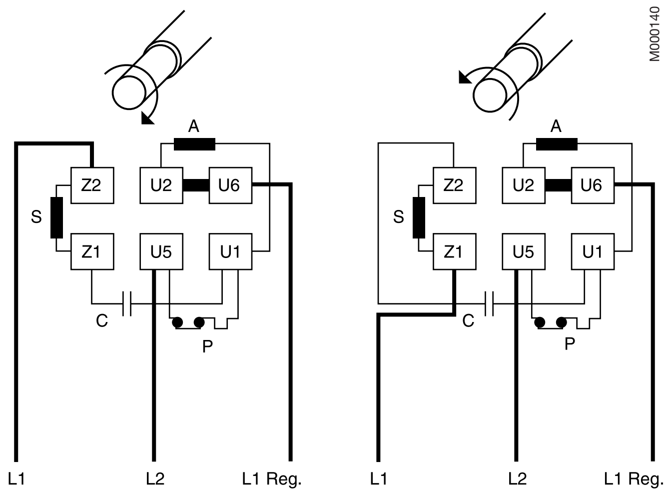
for speed regulation

The motor's speed can be regulated by changing the voltage to the motor (twin-cable regulation) or by only changing the voltage to the circuit winding (three-cable regulation). The best regulation and the minimum loss in the motor is achieved only by changing the voltage to the circuit winding.

The voltage can be regulated using a tranformer or a Triac control. The Triac control provides a greater loss in the motor and can contribute to noise in the motor.

To achieve good speed regulation it is important that the motor is suitable for the load. If the motor is too large for the load the regulation range will be small; at full speed the motor should not be loaded with less than 80% of its full load. With correct dimensioning it is possible to regulate speed down to approx. 30% of nominal speed.

Speed regulation is suitable for the following applications: fans where blades are mounted directly on the motor shaft and centrifugal pumps where the shaft seal does not require a high breakaway torque.

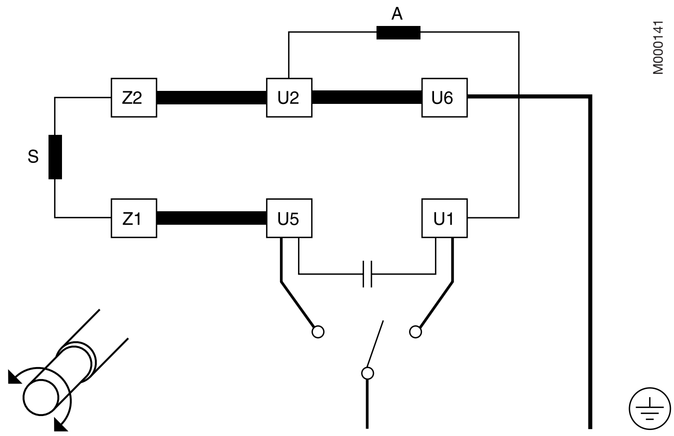


PSC model. Regulation of number of revolutions using electronic device (TRIAC).

Reversing

As a rule a single phase motor can only reverse when it stops completely before the rotational direction is changed. In CSR motors it is also important that the capacitor is discharged before the voltage is reconnected, as otherwise the starter relay will not connect the starter capacitor.

It is possible to design a PSC motor that is suitable for reversing. The motor has a joint start and circuit winding, which provides for very simple switching.



No load

Standard single phase motors cannot run idle for a long period. The losses are greater when running idle than at full load. If the motor is to run idle for a long period, specially designed windings must be produced.

8

Mechanical design

Stator

Stator framework, bearing shields and feet are made of aluminum alloy with low copper content.

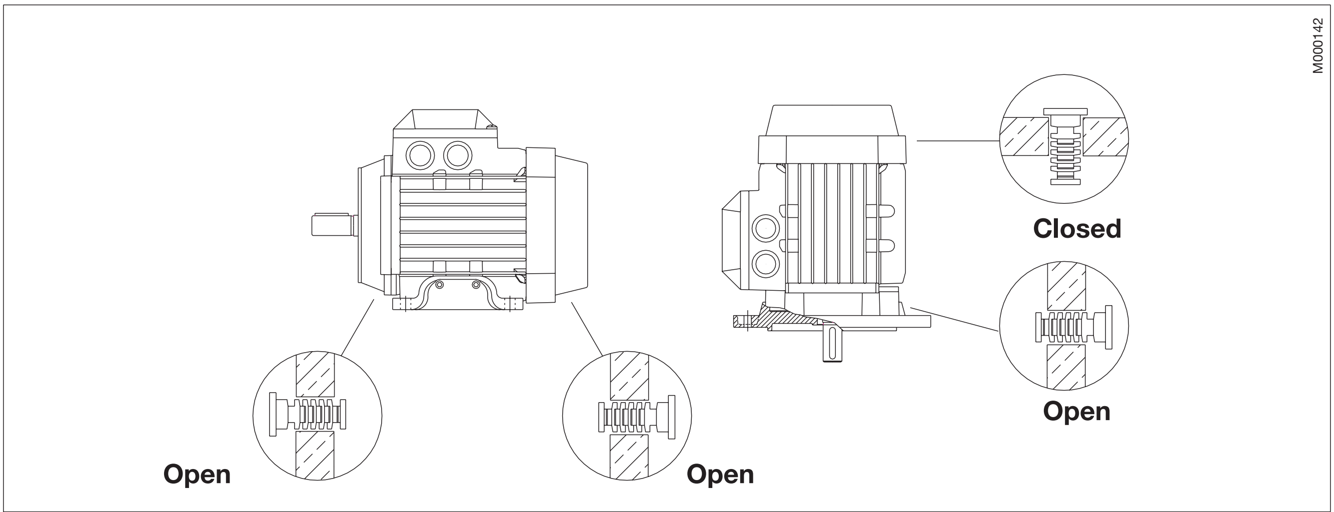
Drain holes

Motors that will be operated in very humid or wet environments, and especially under intermittent duty, should be provided with drain holes. The appropriate IM designation, such as IM 3031, is specified on the basis of the method of mounting the motor.

In the basic design motors are supplied with drain holes as standard (see diagram below) on both D-end and N-end.

When mounting the motors, it should be ensured that the drain hole faces downwards. In the case of vertical mounting, the upper plug must be hammered home. In very dusty environments both plugs should be hammered home.

See variant codes 065 and 066 under the heading "Drain holes".



8

Terminal box and connections

Terminal box for sizes 56 to 63
The terminal box is made of aluminum and is located on top of the stator as standard. It is provided with two knockout openings (one Pg and one metric) and can be turned 4x90°.

Cable glands are not included. The size of the box is the same in size 56 and 63.

Terminal box for sizes 71 to 100
The terminal box is made of aluminum and is located either on the top of the motor, or on either side of the motor. The lower part of the box is integrated with the stator and allows cable entries from both sides.

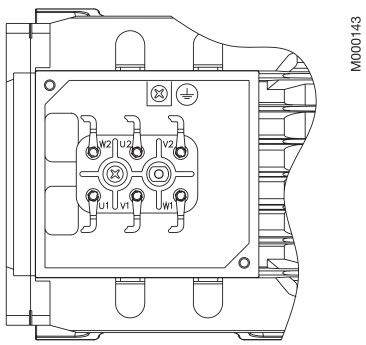
It is provided with two knockout openings on each side. Cable glands are not included.

Degree of protection of standard terminal box is IP 55.

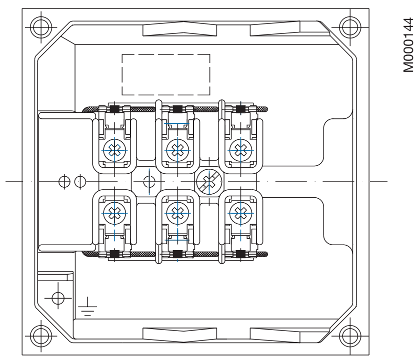
Position of terminal box

Motor size	Terminal box on top	right side	left side
56-63	standard	–	–
71-100	standard	on request	on request

Terminal box examples



Motor sizes 56-80.



Motor sizes 90-100.

Connections

The terminal block is provided with 6 terminals for connecting Cu-cable. The terminals are marked in accordance with IEC 60034-8.

Connection openings

Motor size	Opening	Metric cable entry	Cable diameter, mm, min-max	Terminal bolt size 6 x	Maximum connectable Cu-cable area, mm2
56-63	Knock-out opening	**1 x M16 x 1.5; 1 x Pg 11**	5-12	M4	2.5
71-80	Knock-out opening	**2 x M20 x 1.5; 1 x Pg 16**	8-15	M4	4
90-100	Knock-out opening	**2 x (M25 + M20) x 1.5**	11-16	M4	2.5 (for PCS) or 1.5 (for CSR)

8

Bearings

The motors are provided with bearings, according to the tables on the right.

Motor size	Standard bearing type D-end	N-end
56	6201-2Z/C3	6201-2Z/C3
63	6202-2Z/C3	6201-2Z/C3
71	6203-2Z/C3	6202-2Z/C3
80	6204-2Z/C3	6203-2Z/C3
90	6205-2Z/C3	6204-2Z/C3
100	6306-2Z/C3	6205-2Z/C3

Axially-locked bearings

The table on the right shows which of the motor's bearings is axially locked in the bearing seat. In motor sizes 56 to 80 the locking is done by an inner bearing circlip, in motor sizes 90 and 100 by an inner bearing cover.

Motor size	Foot-mounted motors	Flange-mounted motors	
		Large flange	Small flange
56-63	On request	On request	On request
71-80	On request	D-end	On request
90-100	D-end [1]	D-end [1]	D-end [1]

[1] A spring washer at N-end presses the rotor towards D-end.

Lifetime of bearing/grease

The motors are supplied with bearings that are lubricated for life with a bearing grease for use at normal temperatures in dry or humid environments.

The grease's operating temperature is between -40 and +160°C. See also variant code 039 under the heading "Bearings and Lubrication".

The life time of the grease L10 is defined as the number of operating hours after which 90% of the bearings are sufficently well lubricated. 50% of the bearings can achieve a grease life time that is twice as long.

The maximum life time of the grease should, however, be considered to be 40,000 hours, equivalent to around 5 years.

Motor size	No. of poles	Hours
56-80	2-6	40.000
90	2	30.000
90	4-6	40.000
100	2	28.000
100	4-6	40.000

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Pulley diameter

When the desired bearing life has been determined, the minimum permissible pulley diameter can be calculated with FR, according to the formula:

$$D = \frac{1.9 \cdot 10^7 \cdot K \cdot P}{n \cdot FR}$$

Where:

D = diameter of pulley, mm

P = power requirement, kW

n = motor speed, r /min

K = belt tension factor, dependent on belt type and type of duty. A common value for V belts is K= 2.5

FR = permissible radial force

Permissible loading on shaft

The table below shows the permitted radial force in Newtons at zero axial force.

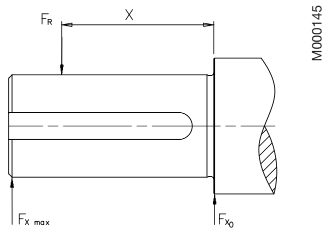
The permitted load of combined radial and axial force is available on request.

The bearing's life time, L_{10}, is calculated according to SKF's new theory on the life time of bearings, L_{10aah}, which also takes into account the purity of the grease.

If the radial force is applied between points X_0 and X_{max}, the permissible force F_R can be calculated from the following formula:

$$F_R = F_{X0} - \frac{X}{E}\left(F_{X0} - F_{Xmax}\right)$$

E = length of shaft extension in basic version



Permissible radial forces

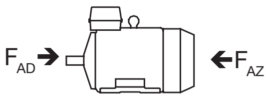
			Ball bearings			
		Length of shaft	Basic design with deep groove ball bearings			
Motor	No. of	extension	**25,000 hours**		**40,000 hours**	
size	poles	E (mm)	FX_0 (N)	FX_{max}(N)	FX_0 (N)	FX_{max}(N)
56	2	20	240	200	260	200
56	4	20	300	200	280	200
56	6-8	20	340	280	340	280
63	2-4	30	490	400	490	400
71	2-6	30	680	570	680	570
80	2-6	40	930	750	930	750
90	2-6	50	1010	810	1010	810
100	2-6	60	2280	1800	2280	1800

Permissible axial forces

The following tables give the permissible axial forces in Newton, assuming zero radial force.

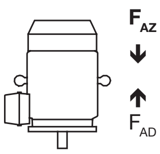
The permitted load of combined radial and axial force is available on request.

Mounting arrangement IM B3



	25,000 hours						**40,000 hours**					
	2-pole		4-pole		6-pole		2-pole		4-pole		6-pole	
Motor	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}
size	N	N	N	N	N	N	N	N	N	N	N	N
56	470	230	520	280	540	300	430	190	470	230	480	240
63	790	390	865	465			720	320	780	380		
71	985	485	1070	570	1135	635	900	400	970	470	1020	520
80	1305	705	1420	820	1505	905	1185	585	1285	685	1350	750
90	1360	930	1490	1070	1590	1165	1225	800	1335	915	1415	990
100	2805	1945	3075	2215	3260	2400	2540	1680	2760	1900	2910	2050

Mounting arrangement IM V1



	25,000 hours						**40,000 hours**					
	2-pole		4-pole		6-pole		2-pole		4-pole		6-pole	
Motor	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}
size	N	N	N	N	N	N	N	N	N	N	N	N
56	470	230	520	270	540	290	430	190	470	230	480	240
63	790	380	875	455			725	310	790	370		
71	998	470	1085	555	1150	620	910	385	985	455	1035	505
80	1320	685	1445	790	1530	880	1200	565	1310	655	1375	725
90	1390	900	1525	1035	1625	1130	1225	770	1370	880	1450	955
100	2855	1890	3135	2155	3320	2340	2590	1625	2820	1840	2970	1990

8

Ordering information

Sample order

When placing an order, please state the following minimum data in the order, as in the example.

The product code of the motor is composed in accordance with the following example.

Motor type	M3VD 80C
Pole number	2
Mounting arrangement (IM-code)	IM B3 (IM 1001)
Rated output	1.4 kW
Product code	3GVD 081003-ASB
Variant codes if needed	

A B C D, E, F G

M3VD 80 C 3GVD 081 003 - ASB, 122, 053, etc.

1 2 3 4 5-6 7 8-10 11 12 13 14...

A Motor type
B Motor size
C Product code
D Mounting arrangement code
E Voltage/frequency code
F Generation code
G Variant codes

Explanation of the product code

Positions 1 and 2
3G = Business area LV Motors

Position 3 and 4
Enclosure and stator frame material
A, V = Totally enclosed motor with aluminum stator frame

Position 4
Motor type
D = Single-phase motor - CSR
E = Single-phase motor - PSC

Positions 5 and 6
IEC size
05 = 56
06 = 63
07 = 71
08 = 80
09 = 90
10 = 100

Position 7
Speed (pole pairs)
1 = 2 poles
2 = 4 poles
3 = 6 poles

Positions 8 to10
Serial number

Position 11
- (dash)

Position 12
Mounting arrangement
A = Foot-mounted motor.
B = Flange-mounted motor. Large flange with clearance holes.
C = Flange-mounted motor. Small flange with threaded holes.
H = Foot- and flange-mounted motor. Large flange with clearance holes.
J = Foot- and flange-mounted motor. Small flange with threaded holes.
N = Flange-mounted (CI ring flange FF).
P = Foot- and flange-mounted motor. (CI ring flange FF).
V = Flange-mounted motor. Special flange.

Position 13
Voltage/frequency code
S = 230-240 V 50 Hz.
X = Other rated voltage, connection or frequency.

Position 14
B, E = Generation code

The product code must be, if needed, followed by variant codes.

General purpose single phase motors

CSR motors, starting torque approx. 140-160 %

IP 55 – IC 411 – Insulation class F, temperature rise class B

Output kW	Type designation	Product code	Speed r/min	Efficiency %	Power factor cos φ	Current I_N A	Current I_S/I_N	Torque T_N Nm	Torque T_S/T_N	Torque T_{max}/T_N	Capasitor Start µF	Capasitor Run µF	Moment of inertia J=1/4 GD^2 kgm^2	Weight kg
3000 r/min = 2 poles			**230 V 50 Hz**											
0.18	**M3VD 63 A**	3GVD 061001-••B	2820	56.5	0.92	1.6	3.3	0.61	2.0	2.0	16	8	0.00016	5
0.25	**M3VD 63 B**	3GVD 061002-••B	2820	60.5	0.94	1.95	3.6	0.85	2.0	2.1	20	10	0.00036	5.5
0.37	**M3VD 71 A**	3GVD 071001-••B	2855	71.5	0.99	2.3	4.8	1.25	1.7	1.8	40	10	0.0004	6
0.55	**M3VD 71 B**	3GVD 071002-••B	2860	72.5	0.99	3.4	4.8	1.85	1.7	1.8	60	16	0.00045	7
0.75	**M3VD 71 C**	3GVD 071003-••B	2860	74.5	0.99	4.4	4.9	2.5	1.7	1.8	60	20	0.0005	7.5
0.75	**M3VD 80 A**	3GVD 081001-••B	2860	73.0	0.99	4.4	4.6	2	1.8	2.2	80	20	0.00072	9.5
1.1	**M3VD 80 B**	3GVD 081002-••B	2860	74.5	0.99	6.5	4.6	3.7	1.7	2.1	100	25	0.00076	11.5
1.4 [1)]	**M3VD 80 C**	3GVD 081003-••B	2860	75.5	0.99	8.2	4.8	4.7	1.7	2.0	100	30	0.00109	12
1.5	**M3AD 90 L**	3GAD 091202-••E	2910	80.0	0.99	8.2	4.6	5	1.4	1.9	130	40	0.0019	13
1500 r/min = 4 poles			**230 V 50 Hz**											
0.12	**M3VD 63 A**	3GVD 062001-••B	1350	49.5	0.95	1.2	3.0	0.85	1.6	1.5	16	4	0.00026	5
0.18	**M3VD 63 B**	3GVD 062002-••B	1360	55.0	0.97	1.5	3.0	1.25	1.6	1.5	20	6	0.0003	5.5
0.25	**M3VD 71 A**	3GVD 072001-••B	1410	64.0	0.99	1.75	4.3	1.7	1.7	1.6	40	6	0.00066	6
0.37	**M3VD 71 B**	3GVD 072002-••B	1410	67.5	0.98	2.45	4.5	2.5	1.7	1.6	60	8	0.00089	7
0.5	**M3VD 71 C**	3GVD 072003-••B	1410	68.5	0.98	3.2	4.5	3.4	1.7	1.6	60	12	0.0011	7.5
0.55	**M3VD 80 A**	3GVD 082001-••B	1410	70.5	0.93	3.7	4.0	3.7	1.9	1.8	60	16	0.00125	9.5
0.75	**M3VD 80 B**	3GVD 082002-••B	1410	72.0	0.93	4.9	4.1	5.1	2.0	1.8	80	20	0.00156	11
0.95	**M3VD 80 C**	3GVD 082003-••B	1410	73.0	0.93	6.1	4.1	6.1	1.8	1.8	80	16	0.00194	11.5
1.1	**M3AD 90 S**	3GAD 092201-••E	1420	76.0	0.99	6.3	4.0	7.35	1.6	1.5	100	30	0.0032	13
1.5	**M3AD 90 L**	3GAD 092202-••E	1430	79.5	0.99	8.3	4.3	10	1.9	1.7	130	40	0.0043	16
1.7	**M3AD 90 LB**	3GAD 092203-••E	1430	79.5	0.99	9.4	3.4	11.5	1.3	1.6	130	60	0.0048	17
1.85	**M3AD 100 LA**	3GAD 102201-••E	1390	76.5	0.99	10.6	3.0	12.7	1.3	1.4	100	50	0.0069	21
2.2	**M3AD 100 LB**	3GAD 102202-••E	1400	79.5	0.99	12	3.2	15	1.2	1.5	80	50	0.00682	24
1000 r/min = 6 poles			**230 V 50 Hz**											
0.18	**M3VD 71 A**	3GVD 073001-••B	880	52.0	0.99	1.5	2.8	1.95	1.5	1.3	20	10	0.00063	6
0.25	**M3VD 71 B**	3GVD 073002-••B	880	59.0	0.99	1.9	3.0	2.7	1.5	1.3	40	12	0.00081	7
0.32	**M3VD 71 C**	3GVD 073003-••B	880	61.0	0.99	2.3	3.0	3.5	1.5	1.3	40	16	0.0011	7.5
0.37	**M3VD 80 A**	3GVD 083001-••B	900	65.0	0.97	2.6	3.0	3.9	1.8	1.5	40	12	0.00184	9.5
0.55	**M3VD 80 B**	3GVD 083002-••B	900	66.0	0.97	3.8	3.1	5.8	1.8	1.5	40	20	0.00217	10.5
0.65 [1)]	**M3VD 80 C**	3GVD 083003-••B	900	67.5	0.97	4.3	3.2	6.9	1.8	1.5	60	25	0.00257	11.5
0.85	**M3AD 90 L**	3GAD 093202-••E	930	71.0	0.96	5.4	3.9	8.65	1.7	1.4	80	25	0.0043	16

[1)] Temperature rise class F.

The bullets in the product code indicate choice of mounting arrangement, voltage and frequency, generation code (see ordering information page).

General purpose single phase motors

PSC motors, starting torque 30-70 %

IP 55 – IC 411 – Insulation class F, temperature rise class B

Output kW	Type designation	Product code	Speed r/min	Efficiency %	Power factor cos φ	Current I_N A	Current I_S/I_N	Torque T_N Nm	Torque T_S/T_N	Torque T_{max}/T_N	Capasitor Run µF	Moment of inertia J=1/4 GD² kgm²	Weight kg
3000 r/min = 2 poles			**230 V 50 Hz**										
0.065	**M3VE 56 A**	3GVE 051 001-••B	2830	39.0	0.86	0.87	2.5	0.22	0.4	1.9	4	0.00011	3.5
0.09	**M3VE 56 B**	3GVE 051 002-••B	2820	43.0	0.84	1.15	2.6	0.31	0.4	1.8	4	0.00012	4
0.12	**M3VE 56 BB**	3GVE 051 003-••B	2800	48.0	0.95	1.15	2.5	0.41	0.4	1.3	6	0.00012	4
0.18	**M3VE 63 A**	3GVE 061 001-••B	2820	55.0	0.90	1.6	2.9	0.61	0.5	1.9	8	0.00016	5
0.25	**M3VE 63 B**	3GVE 061 002-••B	2810	59.5	0.94	1.95	3.0	0.85	0.6	1.8	10	0.00036	5.5
0.37	**M3VE 71 A**	3GVE 071 001-••B	2750	65.5	0.97	2.6	3.0	1.3	0.6	1.7	12	0.0004	6
0.55	**M3VE 71 B**	3GVE 071 002-••B	2750	67.5	0.97	3.7	3.0	1.95	0.6	1.7	16	0.00045	7
0.65 1)	**M3VE 71 C**	3GVE 071 003-••B	2750	68.5	0.97	4.3	3.2	2.25	0.6	1.7	20	0.0005	7.5
0.75	**M3VE 80 A**	3GVE 081 001-••B	2760	68.5	0.96	5	3.5	2.6	0.4	1.6	20	0.00072	9.5
0.9	**M3VE 80 B**	3GVE 081 002-••B	2775	70.5	0.96	5.8	3.7	3.1	0.5	1.6	25	0.00076	11.5
1.1 1)	**M3VE 80 C**	3GVE 081 003-••B	2800	72.0	0.97	7.4	3.9	3.75	0.4	1.7	30	0.00109	12
1.5	**M3AE 90 L**	3GAE 091 102-••E	2850	76.5	0.99	8.7	4.2	5.1	0.4	2.0	40	0.0024	16
1500 r/min = 4 poles			**230 V 50 Hz**										
0.065	**M3VE 56 A**	3GVE 052 001-••B	1360	38.0	0.87	0.9	2.0	0.46	1.1	1.6	4	0.00018	4
0.09	**M3VE 56 B**	3GVE 052 002-••B	1340	39.0	0.95	1.1	1.8	0.64	1.0	1.5	6	0.00018	4
0.12	**M3VE 63 A**	3GVE 062 001-••B	1350	48.5	0.92	1.2	1.9	0.85	0.7	1.5	6	0.00026	5
0.18	**M3VE 63 B**	3GVE 062 002-••B	1360	55.0	0.95	1.5	1.9	1.25	0.6	1.5	8	0.0003	5.5
0.25	**M3VE 71 A**	3GVE 072 001-••B	1350	57.5	0.95	2	2.6	1.8	0.6	1.5	12	0.00066	6
0.3	**M3VE 71 B**	3GVE 072 002-••B	1360	62.0	0.95	2.2	2.7	2.1	0.7	1.5	16	0.00089	7
0.37	**M3VE 71 C**	3GVE 072 003-••B	1370	64.0	0.95	2.7	3.1	2.6	0.7	1.6	20	0.0011	7.5
0.55	**M3VE 80 A**	3GVE 082 001-••B	1340	64.0	0.91	4.1	3.3	3.85	0.6	1.6	16	0.00125	9.5
0.65	**M3VE 80 B**	3GVE 082 002-••B	1360	67.0	0.91	4.7	3.3	4.6	0.6	1.6	20	0.00156	11
1.3	**M3AE 90 L**	3GAE 092 102-••E	1330	72.0	0.99	7.9	2.3	9.3	0.4	1.3	30	0.0043	16
1.5	**M3AE 90 LB**	3GAE 092 103-••E	1340	73.0	0.99	9	2.3	10.6	0.4	1.3	40	0.0048	17
1.85	**M3AE 100 LA**	3GAE 102 101-••E	1380	75.5	0.99	10.7	2.6	12.8	0.3	1.3	50	0.0069	21
2.2	**M3AE 100 LB**	3GAE 102 102-••E	1400	78.5	0.99	12.2	3.1	14.9	0.3	1.6	50	0.0082	24
1000 r/min = 6 poles			**230 V 50 Hz**										
0.12	**M3VE 71 A**	3GVE 073 001-••B	850	45.0	0.96	1.25	1.8	1.35	0.8	1.3	8	0.00063	6
0.18	**M3VE 71 B**	3GVE 073 002-••B	860	48.0	0.96	1.7	1.9	2.1	0.8	1.4	10	0.00081	7
0.25	**M3VE 71 C**	3GVE 073 003-••B	860	51.5	0.96	2.2	1.9	2.8	0.8	1.4	12	0.0011	7.5
0.3	**M3VE 80 A**	3GVE 083 001-••B	900	56.5	0.91	2.5	2.5	3.2	0.7	1.5	12	0.00184	9.5
0.37	**M3VE 80 B**	3GVE 083 002-••B	900	58.5	0.92	3	2.5	3.9	0.7	1.5	12	0.00217	10.5
0.55 1)	**M3VE 80 C**	3GVE 083 003-••B	880	59.5	0.90	4.5	2.5	6	0.7	1.4	16	0.00257	11.5

1) Temperature rise class F.

The bullets in the product code indicate choice of mounting arrangement, voltage and frequency, generation code (see ordering information page).

General purpose single phase motors

PSC motors for speed regulation

IP 55 – IC 411 – Insulation class F, temperature rise class B

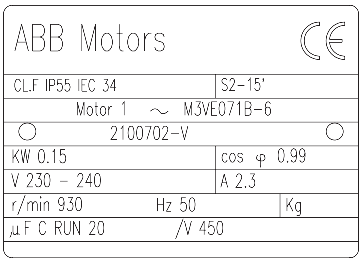
Output kW	**Type designation**	Product code	Speed r/min	Efficiency %	Power factor cos φ	Current I_N A	Current I_S/I_N	Torque T_N Nm	Torque T_S/T_N	Capasitor Run µF	Moment of inertia J=1/4 GD^2 kgm^2	Weight kg
1500 r/min = 4 poles			**230 V 50 Hz**									
0.7	**M3AE 90 S**	3GAE 092 201-••E	1360	71.00	0.99	4.4	2.3	4.9	0.5	25	0.0032	13
0.9	**M3AE 90 L**	3GAE 092 202-••E	1370	73.50	0.99	5.4	2.3	6.3	0.4	30	0.0043	16
1000 r/min = 6 poles			**230 V 50 Hz**									
0.75	**M3AE 90 L**	3GAE 093 202-••E	850	64.50	0.99	5.1	1.8	8.35	0.5	30	0.0043	16

The bullets in the product code indicate choice of mounting arrangement, voltage and frequency, generation code (see ordering information page).

Rating plate

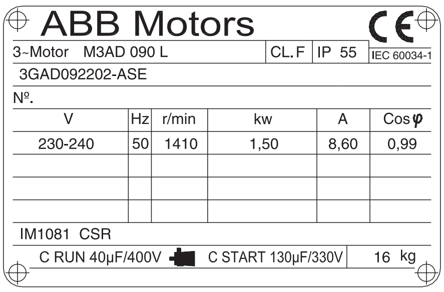
The standard rating plates is in aluminum. Rating plate is available in stainless steel, see variant code 098.

Motor sizes 56 to 71



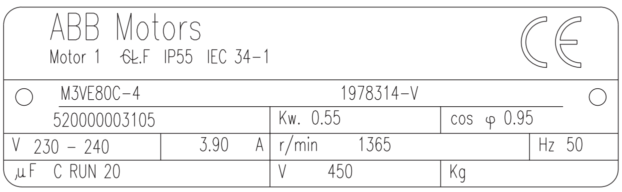
M000146

Motor sizes 90 to 100



M000147

Motor size 80



M000148

8

General purpose single phase motors – Variant codes

Code [1]	Variant	Motor size 56-63	71-80	90-100
	Balancing			
052	Vibration acc. to grade A (IEC 60034-14).	P	P	P
423	Balancing without key.	P	P	P
424	Balancing with full key.	P	P	P
	Bearings and lubrication			
036	Transport lock for bearings.	NA	NA	M
037	Roller bearinig at D-end. Transport lock included.	NA	NA	M
039	Cold resistant grease. For bearing temperatures -55...+100°C.	M	M	M
040	Heat resistant grease. For bearing temperatures -25...+150°C. Mandatory for ambient temperatures > 50°C.	M	M	M
041	Bearings regreasable via grease nipples.	NA	NA	M
042	Internal bearing cover, locked at D-end.	NA	M	M
057	2RS bearings at both ends. Grease for bearing temperatures -20...+110°C.	M	M	M
058	Angular contact ball bearing at D-end, shaft force away from bearing. Transport lock included.	NA	NA	M
059	Angular contact ball bearing at D-end, shaft force away towards bearing. Transport lock included.	NA	NA	M
188	63-series bearings.	NA	NA	M
	Branch standard design			
079	Silumin-alloy rotor cage.	NA	P	P
178	Stainless steel/acid proof bolts	M	M	M
209	Non-standard voltage or frequency (special winding)	P	P	P
425	Corrosion protected stator and rotor core.	P	P	M
	Cooling system			
068	Metal fan.	NA	M	M
075	Cooling method IC 418 (without fan).	P	P	P
183	Separate motor cooling (fan axial, N-end).	NA	M	R
	Dimension drawing			
141	Binding dimension drawing.	M	M	M
	Drain holes			
066	Modified drain hole position.	M	M	M
	Earthing bolt			
067	External earthing bolt. Earthing screw for connection of external protective earth.	M	M	M
	Heating elements			
	Motor size / Element capacity			
	56-71 / 8 W			
	80-100 / 25 W			
450	Heating element 100-120 V.	M	M	M
451	Heating element 200-240 V.	M	M	M

[1] Certain variant codes cannot be used simultaneously.

S = Included as standard.
M = On modification of a stocked motor, or on new manufacture, the number per order may be limited.

P = New manufacture only.
R = On request.
NA = Not applicable.

8

Code [1)]	Variant	Motor size 56-63	71-80	90-100
	Insulation systems			
014	Winding insulation class H (PSC-motors only).	P	P	P
	Mounting arrangements			
008	IM 2101 foot/flange mounted, from IM 1001 (B34 from B3).	M	M	M
009	IM 2001 foot/flange mounted, from IM 1001 (B35 from B3).	M	M	M
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	M	M	M
048	IM 3001 flange mounted, IEC flange, from IM 3601 (B5 from B14).	M	M	M
078	IM 3601 flange-mounted, DIN C flange. Large flange with tapped holes. Larger flange than standard version.	NA	P	NA
080	IM 3001 flange-mounted, DIN A flange. Large flange with clearance holes. Larger flange than standard version.	NA	P	NA
200	Flange ring holder.	NA	P	M
217	Cast iron D-end shield.	NA	NA	M
218	Flange ring FT 85.	NA	P	M (only 90)
219	Flange ring FT 100.	NA	P	M (only 90)
220	Flange ring FF 100.	NA	P	M (only 90)
223	Flange ring FT 115.	NA	P	M (only 90)
224	Flange ring FF 115.	NA	P	M (only 90)
226	Flange ring FT 135.	NA	P	M
227	Flange ring FF 135.	NA	P	M
233	Flange ring FT 165.	NA	P	M
234	Flange ring FF 165.	NA	P	M
243	Flange ring FT 215.	NA	NA	M (only 100)
244	Flange ring FF 215.	NA	NA	M (only 100)
	Painting			
114	Special paint colour, standard grade	M	M	M
179	Special paint specification.	NA	NA	R
	Protection			
005	Protective roof, vertical motor, shaft down.	M	M	M
072	Radial seal at D-end.	P	P	M
073	Sealed against oil at D-end.	P	P	NA
158	Degree of protection IP 65.	M	M	P
211	Weather protected, IP xx W.	NA	NA	P
403	Degree of protection IP 56. Water from waves which splash over must not enter in serious quantities.	P	P	P
	Rating & instruction plates			
002	Restamping voltage, frequency and output, continuous duty.	M	M	M
003	Individual serial number.	P	P	M
098	Stainless rating plate.	M	M	M
138	Mounting of additional identification plate.	M	M	M
139	Additional identification plate delivered loose.	M	M	M
161	Additional rating plate delivered loose.	M	M	M

[1)] Certain variant codes cannot be used simultaneously.

S = Included as standard.
M = On modification of a stocked motor, or on new manufacture, the number per order may be limited.

P = New manufacture only.
R = On request.
NA = Not applicable.

8

Code [1)]	Variant	Motor size 56-63	71-80	90-100
	Shaft and rotor			
069	Two shaft extensions as per basic catalogue. Standard shaft material.	P	P	P
070	One or two special shaft extensions, standard shaft material.	P	P	P
165	Shaft extension with open key-way.	P	P	P
410	Stainless/acid-proof steel shaft, standard or non-standard design. One or two shaft extensions.	P	P	P
	Standards and regulations			
010	Fulfilling CSA Safety Certificate.	P	P	P
029	Fulfilling Underwriters Laboratory (UL) requirements.	NA	NA	P
	Stator winding temperature sensors			
121	Bimetal detectors, break type (NCC), (3 in series), 130°C, in stator winding.	M	M	R
122	Bimetal detectors, break type (NCC), (3 in series), 150°C, in stator winding.	M	M	M
435	PTC-thermistors (3 in series), 130°C in stator winding.	M	M	M
436	PTC-thermistors (3 in series), 150°C in stator winding.	M	M	M
437	PTC-thermistors (3 in series), 170°C in stator winding.	M	M	M
	Terminal box			
021	Terminal box LHS (seen from D-end).	NA	M	M
136	Extended cable connection, standard terminal box.	P	P	M
137	Extended cable connection, low terminal box.	P	P	P
180	Terminal box RHS (seen from D-end).	NA	M	M
230	Standard cable gland.	M	M	M
731	Two standard cable glands.	NA	M	M
	Testing			
146	Type test with report for motor from specific delivery batch.	P	P	P
147	Type test with report for motor from specific delivery batch, customer witnessed.	P	P	P
148	Routine test report.	P	P	R
149	Test according to separate test specification.	NA	NA	R
221	Type test and multi-point load test with report for motor from specific delivery batch.	R	R	P
222	Torque/speed curve, type test and multi-point load test with report from specific delivery batch.	R	R	P
760	Vibration level test.	P	P	R
762	Noise level test.	P	P	P

8

[1)] Certain variant codes cannot be used simultaneously.

[1)] Certain variant codes cannot be used simultaneously.

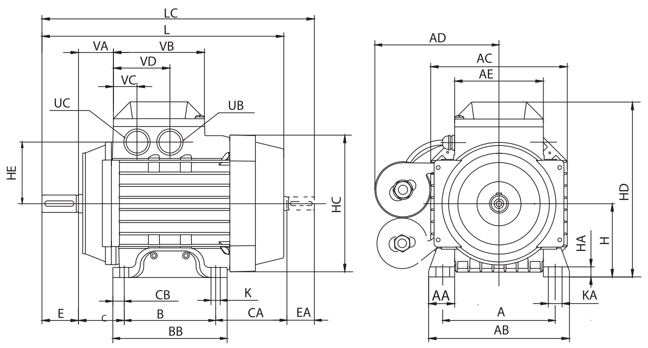
S = Included as standard.
M = On modification of a stocked motor, or on new manufacture, the number per order may be limited.

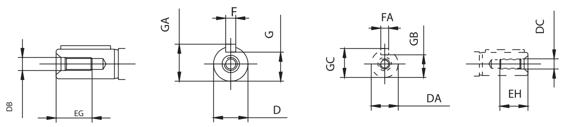
P = New manufacture only.
R = On request.
NA = Not applicable.

General purpose single phase motors

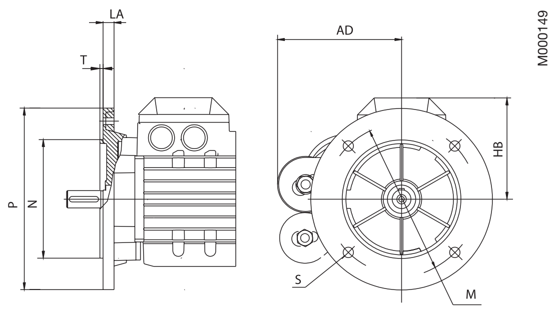
Dimension drawings

Foot-mounted motor IM B3 (IM 1001)

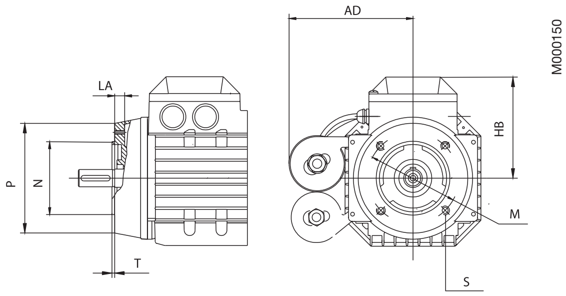




Flange-mounted motor IM B5 (IM 3001), large flange



IM B14 (IM 3601), small flange



IM B3 (IM 1001)

Motor size	A	AA	AB	AC	AD	AE	B	BB	C	CA	CB	D	DA	DB	DC	E	EA	EG	EH	F	FA
56	90	18	108	110	110	72	71	85	36	78	7	9	9	M3	M3	20	20	9	9	3	3
63	100	26	120	120	110	72	80	96	40	71	8	11	11	M4	M4	23	23	10	10	4	4
71	112	24	136	130	125	85	90	110	45	78	10	14	11	M5	M4	30	23	13	10	5	4
80	125	28	154	150	130	97	100	125	50	80	12.5	19	14	M6	M5	40	30	16	13	6	5
90 S	140	27	170	177	140	110	100	125	56	81	12.5	24	14	M8	M5	50	30	19	12.5	8	5
90 L	140	27	170	177	135	110	125	150	56	81	12.5	24	14	M8	M5	50	30	19	12.5	8	5
100 L	160	32	197	197	155	110	140	172	63	91	16	28	19	M10	M6	60	40	22	19	8	6

Motor size	G	GA	GB	GC	H	HA	HC	HD	HE	K	KA	L	LC	UB	UC	VA	VB	VC	VD
56	7.2	10.2	7.2	10.2	56	8	110	159	71	5.8	9	197	225	Pg11	M16x1.5	30	72	26	53
63	8.5	12.5	8.5	12.5	63	10	120	171	76	7	11	205	237	Pg11	M16x1.5	36	72	26	53
71	11	16	8.5	12.5	71	9	130	176	63	7	10	238	266	Pg16	M20x1.5	35	92	22	57
80	15.5	21.5	11	16	80	10	150	190	67	10	15	265	300	Pg16	M20x1.5	37	100	26	61
90 S	20	27	11	16	90	10	177	217	82.5	10	14	282	317	M20x1.5	M25x1.5	43.5	110	33	67
90 L	20	27	11	16	90	10	177	217	82.5	10	14	307	342	M20x1.5	M25x1.5	43.5	110	33	67
100 L	24	31	15.5	21.5	100	12	197	237	92.5	12	15	349	394	M20x1.5	M25x1.5	47	110	33	67

IM B5 (IM 3001)

Motor size	HB	LA	M	N	P	S	T
56	103	10	100	80	120	7	3
63	108	10	115	95	140	10	3
71	105	10	130	110	160	10	3.5
80	110	12	165	130	200	12	3.5
90 S	127	10	165	130	200	12	3.5
90 L	127	10	165	130	200	12	3.5
100 L	137	11	215	180	200	15	4

IM B14 (IM 3601)

Motor size	HB	LA	M	N	P	S	T
56	103	10	65	50	80	M5	2.5
63	108	10	75	60	90	M5	2.5
71	105	10	85	70	105	M6	2.5
80	110	10	100	80	120	M6	3
90 S	127	13	115	95	140	M8	3
90 L	127	13	115	95	140	M8	3
100 L	137	14	130	110	160	M8	3.5

Tolerances

A, B	ISO js 14	F	ISO h9
C	± 0.8	H	+0 –0.5
D, DA	ISO j6	N	ISO j6

Above table gives the main dimensions in mm.
For detailed drawings please see our web-site 'www.abb.com/motors&drives' or contact us.

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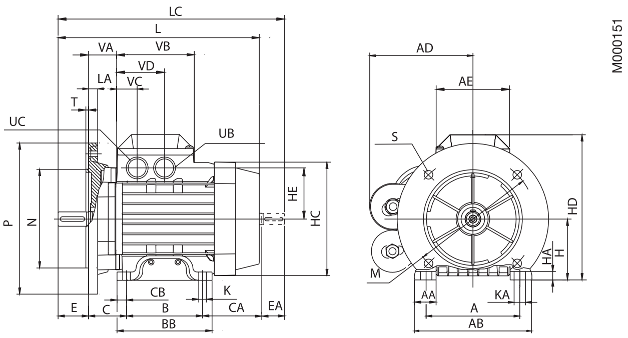
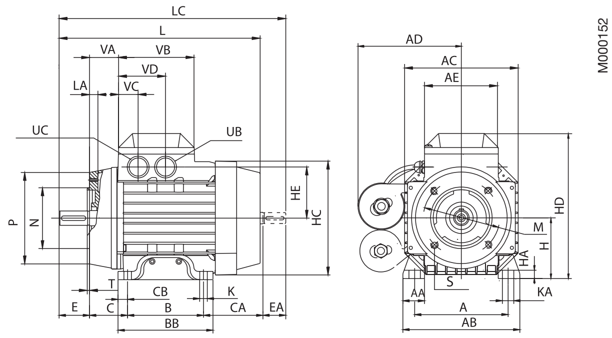
General purpose single phase motors

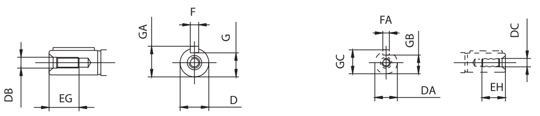
Dimension drawings

Foot- and flange-mounted motor, large flange IM B35 (IM 2001)



Foot- and flange-mounted motor, small flange IM B34 (IM 2101)





IM B35 (IM 2001); IM B34 (IM 2101)

Motor size	A	AA	AB	AC	AD	AE	B	BB	C	CA	CB	D	DA	DB	DC	E	EA	EG	EH	F	FA
56	90	18	108	110	110	72	71	85	36	78	7	9	9	M3	M3	20	20	9	9	3	3
63	100	26	120	120	110	72	80	96	40	71	8	11	11	M4	M4	23	23	10	10	4	4
71	112	24	136	130	125	85	90	110	45	78	10	14	11	M5	M4	30	23	13	10	5	4
80	125	28	154	150	130	97	100	125	50	80	12.5	19	14	M6	M5	40	30	16	13	6	5
90 S	140	27	170	177	140	110	100	125	56	81	12.5	24	14	M8	M5	50	30	19	12.5	8	5
90 L	140	27	170	177	135	110	125	150	56	81	12.5	24	14	M8	M5	50	30	19	12.5	8	5
100 L	160	32	197	197	155	110	140	172	63	91	16	28	19	M10	M6	60	40	22	19	8	6

Motor size	G	GA	GB	GC	H	HA	HC	HD	HE	K	KA	L	LC	UB	UC	VA	VB	VC	VD
56	7.2	10.2	7.2	10.2	56	8	110	159	71	5.8	9	197	225	Pg11	M16x1.5	30	72	26	53
63	8.5	12.5	8.5	12.5	63	10	120	171	76	7	11	205	237	Pg11	M16x1.5	36	72	26	53
71	11	16	8.5	12.5	71	9	130	176	63	7	10	238	266	Pg16	M20x1.5	35	92	22	57
80	15.5	21.5	11	16	80	10	150	190	67	10	15	265	300	Pg16	M20x1.5	37	100	26	61
90 S	20	27	11	16	90	10	177	217	82.5	10	14	282	317	M20x1.5	M25x1.5	43.5	110	33	67
90 L	20	27	11	16	90	10	177	217	82.5	10	14	307	342	M20x1.5	M25x1.5	43.5	110	33	67
100 L	24	31	15.5	21.5	100	12	197	237	82.5	12	15	349	394	M20x1.5	M25x1.5	47	110	33	67

IM 2001, IM B35

Motor size	HB	LA	M	N	P	S	T
56	103	10	100	80	120	7	3
63	108	10	115	95	140	10	3
71	105	10	130	110	160	10	3.5
80	110	12	165	130	200	12	3.5
90 S	127	10	165	130	200	12	3.5
90 L	127	10	165	130	200	12	3.5
100 L	137	11	215	180	250	15	4

IM 2101, IM B34

Motor size	HB	LA	M	N	P	S	T
56	103	10	65	50	80	M5	2.5
63	108	10	75	60	90	M5	2.5
71	105	10	85	70	105	M6	2.5
80	110	10	100	80	120	M6	3
90 S	127	13	115	95	140	M8	3
90 L	127	13	115	95	140	M8	3
100 L	137	14	130	110	160	M8	3.5

Tolerances

A, B	ISO js 14	F	ISO h9
C	± 0.8	H	+0 –0.5
D, DA	ISO j6	N	ISO j6

Above table gives the main dimensions in mm. For detailed drawings please see our web-site 'www.abb.com/motors&drives' or contact us.

General purpose single phase motors in brief, basic design

Motor size		56	63	71	80	90	100
Stator and feet	Material	Die-cast aluminum alloy. Feet integrated with stator in sizes 63; loose feet in sizes 56 and 71-100.					
	Surface treatment	One-component modified polyester powder paint. Munsell blue 8B 4.5/3.25 / NCS 4822 BO5G, ≥ 30 µm. / RAL 5014					
Bearing end shields	Material	Die-cast aluminum alloy.					
	Surface treatment	One-component modified polyester powder paint. Munsell blue 8B 4.5/3.25 / NCS 4822 BO5G, ≥ 30 µm. / RAL 5014					
Bearings	D-end	6201-2Z/C3	6202-2Z/C3	6203-2Z/C3	6304-2Z/C3	6205-2Z/C3	6306-2Z/C3
	N-end	6201-2Z/C3	6201-2Z/C3	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3
Axially locked bearings	Internal bearing cap	[1]	[1]	[1]	[1]	D-end	D-end
		[1] By foot-mounted motors and motors with small flange: A spring washer in N-end presses the rotor against D-end.					
Bearing seals	D-end	V ring.					
	N-end	Labyrinth seal.					
Lubrication		Permanently lubricated bearings. Grease temperature (-30…+150°C).					
Terminal box	Material	Die-cast aluminum alloy.					
	Surface treatment	Similar to stator.					
	Srews	Steel 5 G, galvanised and yellow chromated.					
Connections	Connection openings	4 x M16		4 x M20		2 x (M25 + M20)	
	Terminal box	Screw terminal, 6 terminals.					
	Max Cu range, mm^2	PSC = 2.5. CSR = 1.5.					
Fan	Material	Polypropylene. Reinforced with 20% glass fibre.					
Fan hood	Material	Metal.					
Stator winding	Material	Copper.					
	Impregnation	Polyester coating. Tropicalized.					
	Insulation class	Insulation class F.					
Rotor winding	Material	Die-cast aluminum.					
Balancing method		Half key balancing.					
Key ways		Closed key way.					
Heating elements	On request	8 W			25 W		
Drain holes		Standard.					
Enclosure		IP 55.					
Cooling method		IC 411.					

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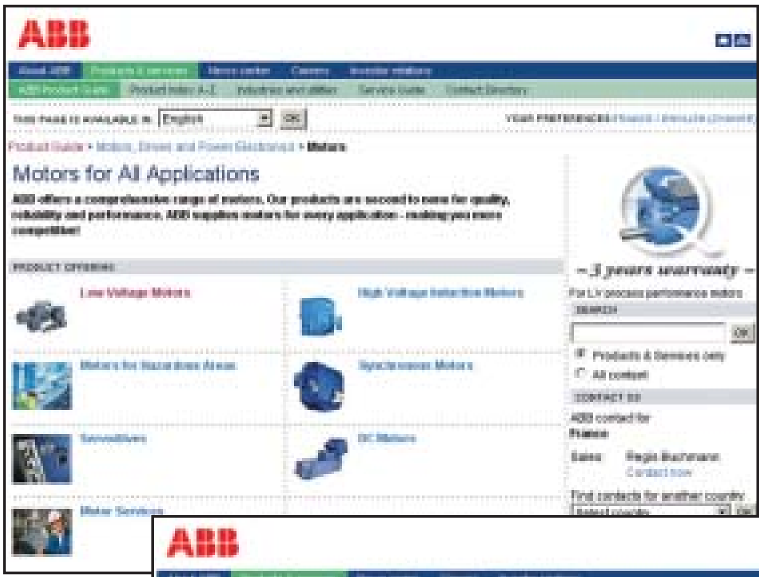

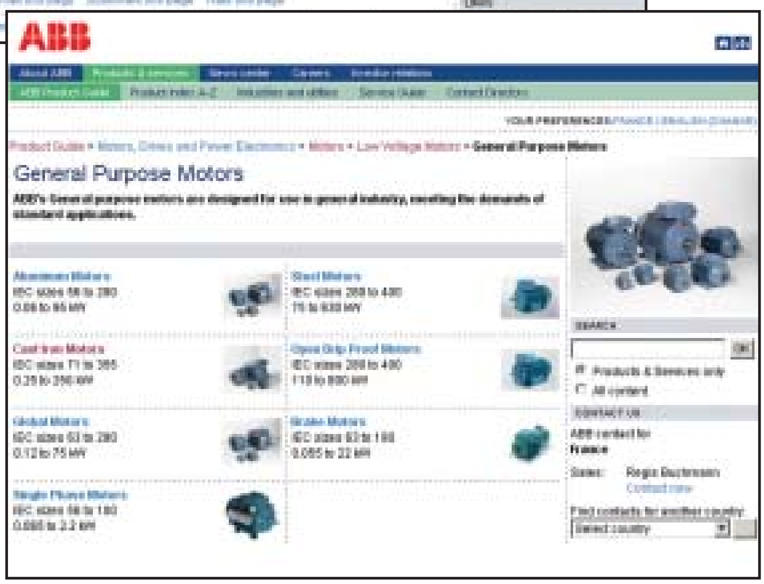

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