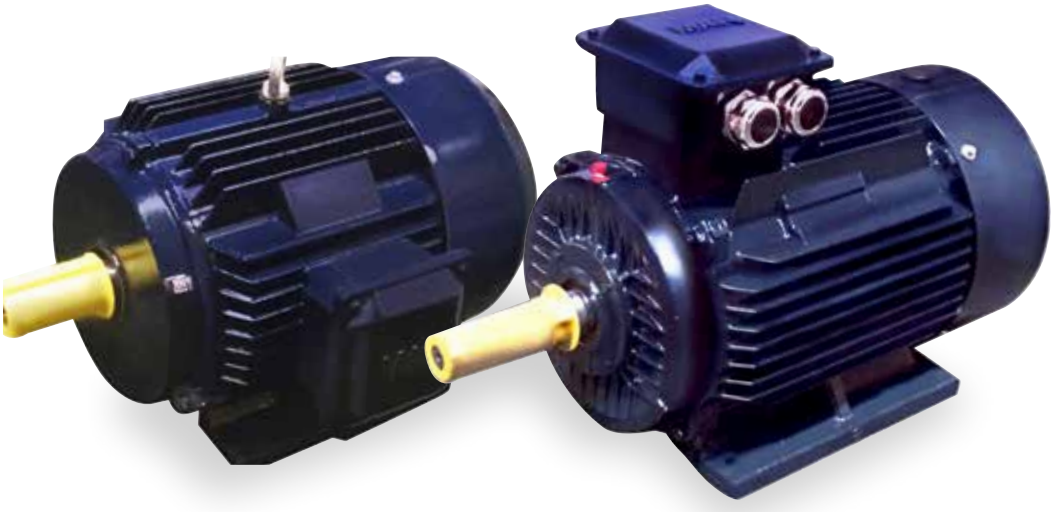
marathon®
Motors

PRODUCT CATALOG

INDUSTRIAL CDA SERIES MOTOR

IE3 EFFICIENCY GENERAL PURPOSE CAST IRON MOTORS

JANUARY 2024 | Australia and New Zealand



RegalRexnord™

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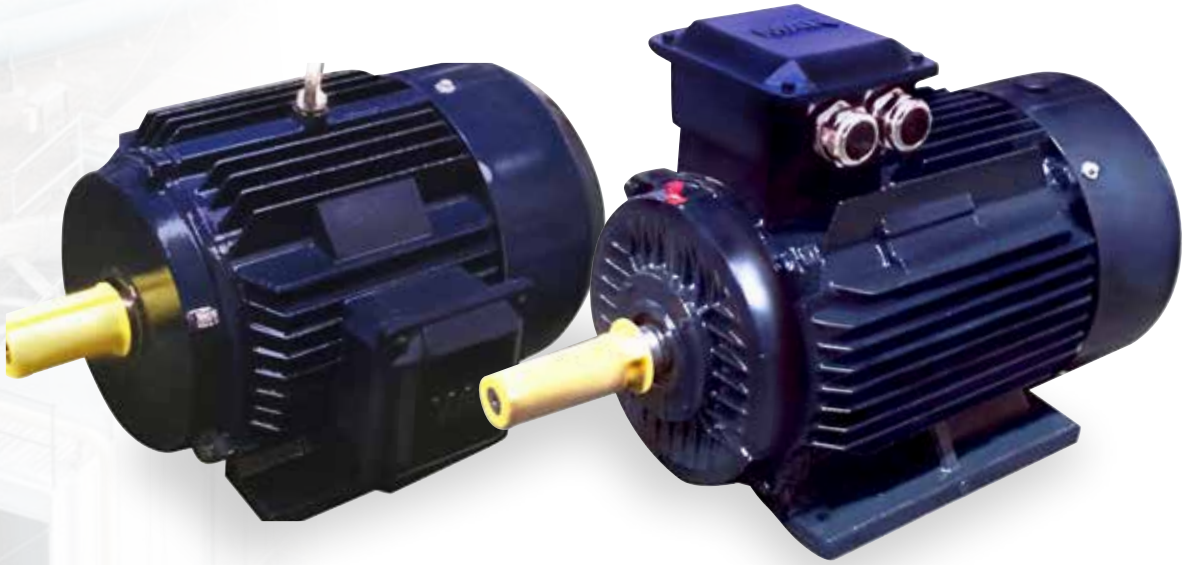
MARATHON® CDA SERIES

IE3 EFFICIENCY GENERAL PURPOSE CAST IRON MOTORS



The CDA series is a range of totally enclosed fan cooled (TEFC) cast iron construction motors built for general industry application with IEC®* frame sizes from 80 to 315 CENELEC frame allocation as standard.

The simple design and robust construction of the motors make them suitable to meet the tough and demanding applications in various industries.

The standard design includes single speed 2,4,6 and 8 pole enclosed to IP66.

All units are supplied with F Class insulation, with temperature rise being limited to less than 80K (unless otherwise marked). This provides the end user with a wide safety margin under general operating conditions.

Additional protection is provided by installation of thermistors in all units from 160 frame upward to continuously protect the winding.

The conservative rating of Marathon® CDA motors provides additional operational safeguards, ensures long unit life, and renders this series inherently suitable for most arduous mining, industrial or agricultural applications.

STANDARDS AND SPECIFICATIONS B

The main dimensions and rated outputs of Marathon CDA motors generally conform to International Standards IEC60034, IEC60072.

EFFICIENCY

The CDA motor range meets the requirements of IE3 efficiency limits of IEC60034-30-1.

*IEC is a trademark of International Electrotechnical Commission and is not owned by or under the control of Regal Rexnord Corporation.

PART NUMBER LOGIC

When placing an order the motor product code should be specified. The product code of the motor is composed in accordance with the following example:

C	D	A	5	P	5	2	A	1	1	1	1	G	A	A	1	1	1	S	K
1	2	3	4	5	6	7		9	10	11	12	For Internal Use							

POSITION 1
C = Cast iron

POSITION 2
Efficiency level
D = IE3

POSITION 3
A = Industry duty. General purpose

POSITION 4 TO 6
Rated power output

POSITION 7
Number of poles
1 = 2 poles
2 = 4 poles
3 = 6 poles
4 = 8 poles

POSITION 9
Voltage
1 = 400V
8 = 440V
C = 480V
D = 460V
F = 380V
*Please contact Regal Rexnord for other voltages.

POSITIONS 10
Frequency
1 = 50Hz
2 = 60Hz

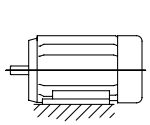
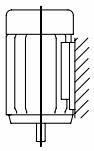
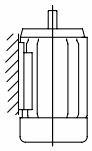
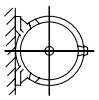
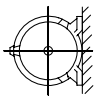
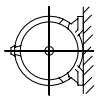
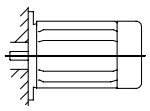
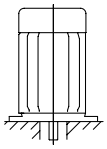
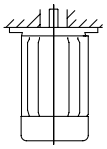
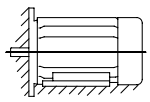
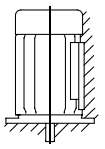
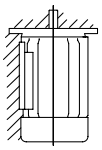
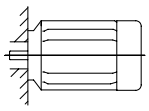
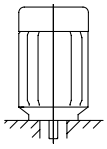
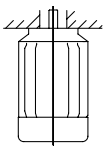
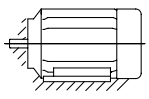
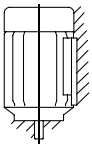
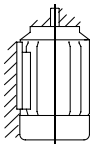
POSITIONS 11
Mounting arrangements
1 = B3
2 = B5
3 = B35
4 = V1
5 = B34A
6 = B14B
7 = B14A

POSITIONS 12
Terminal box
1 = Top
2 = Left
3 = Right

Note: Bearing arrangement may require review for vertical shaft mounting. Please inform manufacturer if motor requires vertical mounting.

MOUNTINGS

Marathon® CDA motors are available in the mounting arrangements listed in the table below:

FOOT MOUNT		
		
B3 (IM1001) [80 - 315]	V5 (IM1011) [80 - 160]	V6 (IM1031) [80 - 160]
		
B6 (IM1051) [80 - 160]	B7 (IM1061) [80 - 160]	B8 (IM1071) [80 - 160]
LARGE FLANGE		
		
B5 (IM3001) [80 - 280]	V1 (IM3011) [80 - 315]	V3 (IM3031) [80 - 160]
LARGE FLANGE AND FEET		
		
B3/B5 (IM2001) [80 - 315]	V1/V5 (IM2011) [80 - 160]	V3/V6 (IM2031) [80 - 160]
SMALL FLANGE (FACE)		
		
B14 (IM3601) [80 - 132]	V18 (IM3611) [80 - 132]	V19 (IM3631) [80 - 132]
SMALL FLANGE (FACE) AND FEET		
		
B3/B14 (IM2101) [80 - 132]	V5/V18 (IM2011) [80 - 132]	V6/V19 (IM2031) [80 - 132]

PROTECTION

FOR VERTICALLY MOUNTED MOTORS

Motors to be mounted with the shaft vertically down must be provided with a suitable cover (available on request) to ensure foreign bodies are prevented from entering the motor.

Special care is necessary in fitting protective covers to ensure air flow is not impeded (refer to Cooling section on page 5).

To maintain IP rating, special additional measures may be required to protect the motor against the ingress of water or foreign bodies. Please contact Regal for further information.

AGAINST SOLAR RADIATION

High solar radiation will result in undue temperature rise. In these circumstances motors should be screened from solar radiation by placement of adequate sunshades which do not inhibit air flow.

DEGREE OF PROTECTION

Standard levels of enclosure protection for all CDA frame sizes for both motor and terminal box is IP66.

Enclosure designations comply with IEC®* or AS60529. The enclosure protection required will depend upon the environmental and operational conditions within which the motor is to operate.

IP STANDARDS EXPLANATION

IP	6	6
1-2	3	4

POSITIONS 1 AND 2

International protection rating prefix

POSITION 3

First characteristic numeral

Degree of protection of persons against approach to live parts or contact with live or moving parts (other than smooth rotating shafts and the like) inside the enclosure, and degree of protection of equipment within the enclosure against the ingress of solid foreign bodies.

4 = *Protected against solid object greater than 1.0 mm:* Wires or strips of thickness greater than 1.0 mm, solid objects exceeding 1.0 mm

5 = *Dust protected:* Ingress of dust is not totally prevented but it does not enter in sufficient quantity to interfere with satisfactory operation of the equipment.

6 = *Dust tight:* No ingress of dust.

POSITION 4

Second characteristic numeral

4 = *Protected against splashing water:* Water splashed against the enclosure from any direction shall have no harmful effect.

5 = *Protected against water jets:* Water projected by a nozzle against the enclosure from any direction shall have no harmful effect.

6 = *Protected against heavy seas:* Water from heavy seas or water projected in powerful jets (larger nozzle and higher pressure than second numeral 5) shall not enter the enclosure in harmful quantities

MATERIALS AND CONSTRUCTION

Element	Motor frame size
	80-315
Frame	Cast iron
Endshields	Cast iron
Terminal box	Cast iron
Fan	Plastic
Fan cowl	Sheet steel
Fasteners	Corrosion protected

SHAFT

CDA motors have standard shaft extension lengths and are provided with standard key, and drilled and tapped hole. Non standard shaft extensions are available upon special order, with shaft design outlined on a detailed drawing.

Shaft extension run out, concentricity and perpendicularity to face of standard flange mount motors, comply with normal grade tolerance as specified in IEC 60072-1. Precision grade tolerance is available upon special order.

FINISH

Standard CDA motor color is RAL 5011 Steel Blue. Other colors are also available. All castings and steel parts are provided with a prime coat of rust-resistant paint.

The finishing coat of enamel paint is sufficient for normal conditions, however special paint systems can be provided to accommodate stringent requirements for motors in corrosive environments. Special coatings are needed to resist such substances as acid, salt water and extreme climatic conditions.

Different colors and paint systems apply for varieties as described later in this catalogue.

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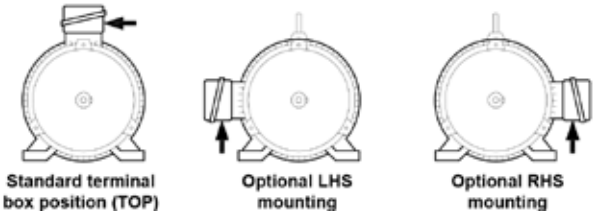
TERMINAL BOX

CDA motors have a cast iron terminal box with a one piece nitrile rubber barrier gasket between terminal box and motor, and a flat gasket under the terminal box lid. The earthing arrangement is available within the terminal box.

As standard, the terminal box is mounted on the top or the side of the motor.



Conduit entries for motors are provided tapped, with thread details set out below.

Motor frame	Entry/pitch	Number of entries
80 - 100	M20 x 1.5	2
112 - 132	M25 x 1.5	2
160	M32 x 1.5	2
180	M40 x 1.5	2
200 - 255	M50 x 1.5	2
250 - 280	M50 x 1.5	2
315	M63 x 1.5	2

Motors can be fitted with optional extended leads.

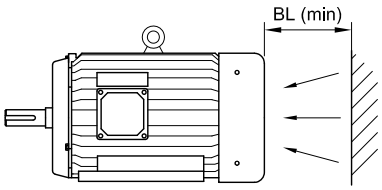
The terminal box can be rotated through 4 positions, 90° apart. Terminal boxes are fitted with conduit entries with entry from bottom (standard), top, NDE or DE (if not hindered by the mounting flange)..

COOLING

CDA motors are totally enclosed fan cooled (TEFC) over an externally ribbed frame, with free movement of internal air by rotation of rotor blades, which is in accordance with IC411 of IEC®* 60034-6.

Cooling air flows from the non-drive-end to the drive end. The fan is independent of the direction of rotation of the motor.

When the motor is installed care should be taken not to impede the air flow into the motor cowl. As a guide, the following minimum dimension BL should be adopted.



Motor frame	Dimension BL [mm]
80-100	15
112-132	30
160-180	40
200-280	50
315	65

BEARINGS

As standard, frame sizes 80 to 132 have high quality deep groove ball bearings with full contact seals. Bearings are prepacked with grease which, under normal operating conditions, provide a high degree of operational reliability. Frame sizes 160 to 315 have high quality bearings with facilities to enable replenishment of the lubricant during operation. Grease nipples are fitted to endshields with the grease relief chute blanked off by a removable plate.

Greater axial forces can be tolerated if the motors are provided with angular contact ball bearings. Note that in such cases, the axial force must operate in one direction

Motor frame	Drive end	Non-drive end
80	6204-2Z	6204-2Z
90	6205-2Z	6205-2Z
100	6206-2Z	6206-2Z
112	6206-2Z	6206-2Z
132	6208-2Z	6208-2Z
160	6309	6309
180	6311	6311
200	6312	6312
225-2	6312	6312
225-4,6,8	6313	6312
250	6314	6313
280-2	6314	6314
280-4,6,8	6317	6314
315-2	6317	6317
315-4,6,8	6319	6319

HIGH CAPACITY BEARINGS

For frame sizes 160 to 315 in applications with increased radial force, cylindrical roller bearings can be substituted for ball bearings at the drive end. When a roller bearing is fitted to the D-end, the N-end ball bearing is locked with a circlip to prevent axial movement. Note that the use of roller bearings is not recommended for 2 pole motors.

LUBRICATION

CDA motors standard bearings are lubricated with lithium based rolling contact bearing grease suitable for operation within the cooling air temperature range of -20°C to +55°C. For operation outside this temperature range special lubricants are required.

Special lubricants or additional maintenance may be required in the case of motors exposed to comparatively high degrees of pollution, high humidity, increased or changed bearings loads, or prolonged continuous operation.

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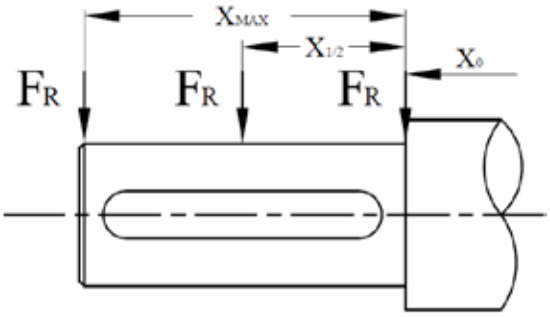
STANDARD BALL BEARING MAXIMUM RADIAL FORCES FR [kN]

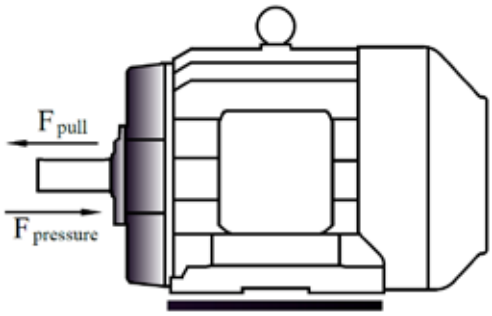


Radial Force (50Hz L10h 20000H)			
Frame	Pole	Horizontal	
		Xo	X1/2
80	2	0.64	0.58
	4	0.72	0.65
	6	0.84	0.76
	8	0.98	0.79
90	2	0.66	0.6
	4	0.76	0.69
	6	0.9	0.81
	8	1.03	0.94
100	2	0.94	0.85
	4	1.03	0.93
	6	1.22	1.1
	8	1.4	1.26
112	2	1.66	1.5
	4	1.96	1.72
	6	2.24	1.76
	8	2.58	1.8
132	2	1.94	1.75
	4	2.25	2.03
	6	2.58	2.33
	8	2.88	2.6
160	2	2.5	2.25
	4	2.87	2.58
	6	3.2	2.65
	8	3.81	2.76
180	2	4.27	3.87
	4	3.98	3.61
	6	4.7	4.15
	8	5.06	4.1
200	2	4.01	3.67
	4	4.57	4.19
	6	5.19	4.75
	8	5.81	5.31
225	2	5.23	4.81
	4	5.92	5.33
	6	6.67	6.01
	8	7.54	6.18

Radial Force (50Hz L10h 20000H)			
Frame	Pole	Horizontal	
		Xo	X1/2
250	2	5.12	4.66
	4	5.52	5.03
	6	6.48	5.91
	8	7.15	6.51
280	2	4.92	4.54
	4	6.41	5.91
	6	7.37	6.79
	8	7.57	6.98
315	2	5.49	5.46
	4	6.24	5.94
	6	7.59	7.12
	8	8.37	7.42

The table above shows the Permissible Radial Forces in (kN), assuming zero axial force and standard ball bearing. The values are based on normal conditions at 50Hz and calculated at 20K working hours. Reduce the values by 10% for 60Hz speeds

STANDARD BALL BEARING AT DE / NDE MAXIMUM AXIAL FORCES [kN]



Axial Force (50Hz L10h 20000H)			
Frame	Pole	Horizontal	
		Push	Pull
80	2	0.26	0.42
	4	0.35	0.56
	6	0.45	0.7
	8	0.55	0.83
90	2	0.37	0.43
	4	0.51	0.59
	6	0.63	0.71
	8	0.76	0.86
100	2	0.37	0.59
	4	0.5	0.81
	6	0.65	1.02
	8	0.78	1.19
112	2	0.5	1.1
	4	0.68	1.47
	6	0.96	1.94
	8	1.07	2.15

Axial Force (50Hz L10h 20000H)			
Frame	Pole	Horizontal	
		Push	Pull
132	2	0.72	1.32
	4	0.99	1.81
	6	1.22	2.2
	8	1.37	2.45
160	2	2.4	1.69
	4	2.95	2.25
	6	3.4	2.7
	8	3.85	3.15
180	2	3.2	2.3
	4	3.9	3
	6	4.65	3.75
	8	5.2	4.35
200	2	3.55	2.55
	4	4.45	3.45
	6	5.2	4.2
	8	6	5
225	2	3.85	2.75
	4	5.2	4.3
	6	6.4	5.6
	8	6.4	5.6
250	2	4.3	3.5
	4	5.3	4.45
	6	6.4	5.6
	8	7.3	6.5
280	2	4.15	3.35
	4	6.8	5
	6	7.6	6.8
	8	8.6	7.6
315	2	4.76	3.24
	4	6.44	5.72
	6	7.82	7.01
	8	8.70	7.70

The table shows the Permissible Axial Forces in (kN), assuming zero radial force and standard ball bearing. The values are based on normal conditions at 50Hz and calculated at 20K working hours. Reduce the values by 10% for 60Hz speeds.

VIBRATION

CDA motors fall within the limits of vibration severity set out in standard IEC®* 60034-14 which are listed below. As specified in the standard, these values relate to rotating machinery measured in soft suspension.

VIBRATION SEVERITY LIMIT, LEVEL N

Motor frame	Maximum RMS vibration velocity [mm/s]
71	1.6
80	1.6
90	1.6
100	1.6
112	1.6
132	1.6
160	2.2
180	2.2
200	2.2
225	2.2
250	2.2
280	2.2
315	2.8

BALANCING

Rotors have been dynamically balanced with a half key. Pulleys or couplings used with motors must also be appropriately balanced.

NOISE

Noise levels for CDA motors comply with limits set by IEC 60034.9. CDA sound pressure levels at 1 metre (data relates to motors tested at no load) are as set out in the table below.

Motor frame	Sound pressure level dB(A) at 1m.			
	2 Pole	4 Pole	6 Pole	8 Pole
80	67	58	-	-
90	78	66	63	-
100	82	70	64	59
112	83	72	70	63
132	85	75	73	63
160	87	77	73	65
180	88	80	77	66
200	90	83	80	66
225	92	84	80	67
250	92	85	82	74
280	94	88	85	77
315	98	94	89	82

*IEC is a trademark of International Electrotechnical Commission and is not owned by or under the control of Regal Rexnord Corporation.

ELECTRICAL DESIGN

As standard, CDA motors have the following design and operating parameters. Performance data is based on this standard. Any deviation should be examined and performance values altered in accordance with the information provided in this section.

Three phase, 400V, 50Hz
Ambient cooling air temperature, 40°C

Altitude	1000m
Duty cycle	S1 (continuous)
Rotation	Clockwise viewed from drive end
Connection	230 volt Delta/400 volt Star (3kW and below)
	400 volt Delta/690 volt Star (4kW and above)

VOLTAGE AND FREQUENCY

Standard CDA motors are designed for a power supply of three phase 400V, 50Hz. Motors can be manufactured for any supply between 100V and 1100V and frequencies other than 50Hz. Standard CDA motors wound for a certain voltage at 50Hz can also operate at other voltages at 50Hz and 60Hz without modification, subject to the changes in their data (see table below).

Motor wound for 50Hz at rated voltage -	Connected to		Data [1] in percentage of values at 50Hz and rated voltage						
			Output	r/min	I_N	I_L/I_N	T_N	T_L/T_N	T_B/T_N
380V	400V	50Hz	100	100	95	110	100	110	110
	380V	60Hz	100	120	98	83	83	70	85
	400V	60Hz	105	120	98	90	87	80	90
	415V	60Hz	110	120	98	95	91	85	93
	440V	60Hz	115	120	100	100	96	95	98
	460V	60Hz	120	120	100	105	100	100	103
400V	380V	50Hz	100	100	105	91	100	90	90
	415V	50Hz	100	100	96	108	100	108	108
	400V	60Hz	100	120	98	83	83	70	85
	415V	60Hz	104	120	98	89	86	75	88
	440V	60Hz	110	120	98	95	91	85	93
	460V	60Hz	115	120	100	100	96	93	98
	480V	60Hz	120	120	100	105	100	100	103

Note: Not applicable for motors with F class temperature rise. This table is not applicable for hazardous area motors.

[1] I_N = Full load current
I_L/I_N = Locked rotor current/ full load current
T_B/T_N = Breakdown torque/ full load torque
T_N = Full load torque
T_L/T_N = Locked rotor torque/ full load torque

Standard torque values for alternative supplies are obtainable only with special. For these purpose-built motors the performance data is the same as for 400V motors except for the currents which are calculated with the accompanying formula:

$$I_X = \frac{400 \times I_N}{U_X}$$

Where:
I_X = Current
I_N = Full load current at 415 volt
U_X = Design voltage

TEMPERATURE AND ALTITUDE

Rated power specified in the performance data tables apply for standard ambient conditions of 40°C at 1000m above sea level. Where temperature or altitude differ from the standard, multiplication factors in the table below should be used.

Ambient temp.	Temp. factor	Altitude above sea level	Altitude factor
30°C	1.06	1000m	1.00
35°C	1.03	1500m	0.98
40°C	1.00	2000m	0.94
45°C	0.97	2500m	0.91
50°C	0.93	3000m	0.87
55°C	0.88	3500m	0.82
60°C	0.82	4000m	0.77

Effective Power = Rated Power x Temp. Factor x Altitude Factor

Example 1
Effective Power required = 15kW
Air temperature = 50°C (factor 0.93)
Altitude = 2500 metres (factor 0.91)

$$\text{Rated power required} = \frac{15}{0.93 \times 0.91} = 17.7\text{kW}$$

The appropriate motor is one with a rated power above the required, being 18.5kW.

Example 2
Rated power = 11kW
Air temperature = 50°C (factor 0.93)
Altitude = 1500 metres (factor 0.98)

$$\text{Effective Power} = 11 \times 0.93 \times 0.98 = 10.0\text{kW}$$

ROTATION

For clockwise rotation, viewed from drive end, standard three phase CDA motor terminal markings coincide with the sequence of the phase line conductors.

For counter clockwise rotation, viewed from drive end, two of the line conductors have to be reversed. This is made clear in the accompanying table.

Terminal box location (viewed from drive end)	Sequential connection of L1, L2 and L3	Direction of rotation
Right or Top	U1 V1 W1 V1 U1 W1	Clockwise Counter-clockwise
Left	V1 U1 W1 U1 V1 W1	Clockwise Counter-clockwise

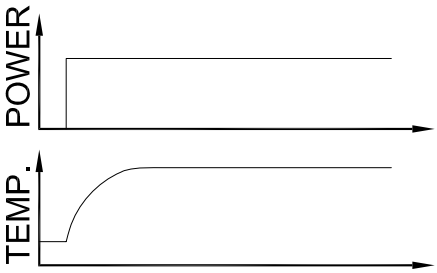
DUTY

CDA motors are supplied suitable for S1 operation (continuous operation under rated load).

DUTY CYCLES

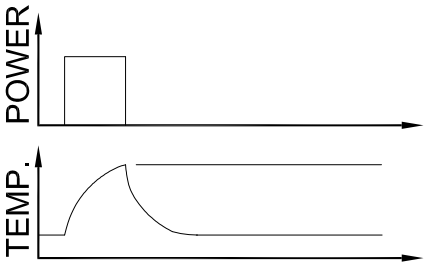
S1 Continuous duty

Operation at constant load of sufficient duration for thermal equilibrium to be reached.



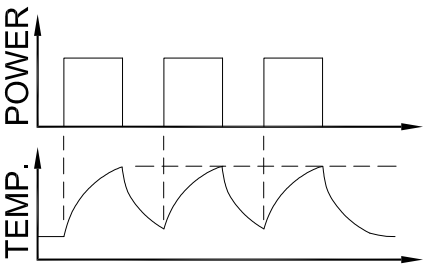
S2 Short - time duty

Operation at constant load during a given time, less than that required to reach thermal equilibrium, followed by a rest (de-energised) period of sufficient duration to allow machine temperatures to reduce to within 2K of the rated inlet coolant temperature.



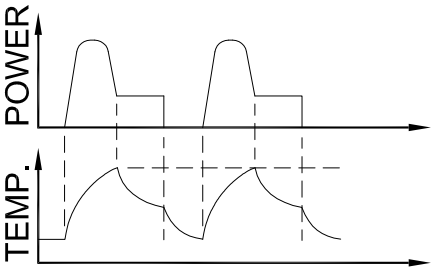
S3 Intermittent periodic duty with insignificant starting time

A sequence of identical duty cycles where each consists of a period of operating at constant load and a period at rest. The cycle is such that the starting current does not significantly affect the temperature rise.



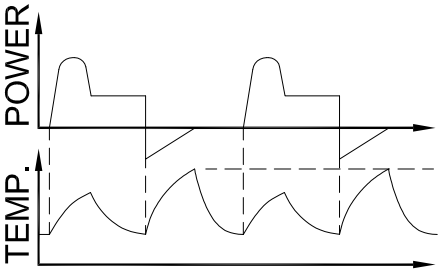
S4 Intermittent periodic duty with significant starting time

Sequence of identical duty cycles where each cycle consists of a significant period of starting, a period of operation at full load and a period of rest.



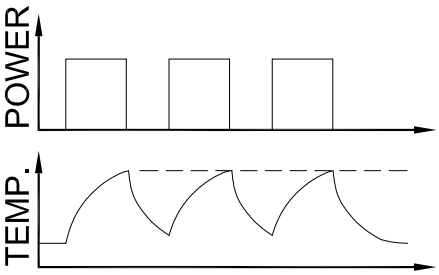
S5 Intermittent periodic duty with influence of running up period and electric braking

As S4, but with each cycle including a period of rapid electric braking.



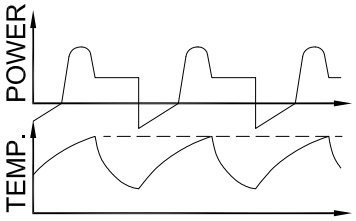
S6 Continuous periodic duty

A sequence of identical duty cycles, each cycle consisting of a period of operation at no-load. There is no rest or de-energised period.



S7 Continuous periodic duty with starting and electric braking

As S6, with each cycle including a period of starting and a period of electric braking.



CONNECTION

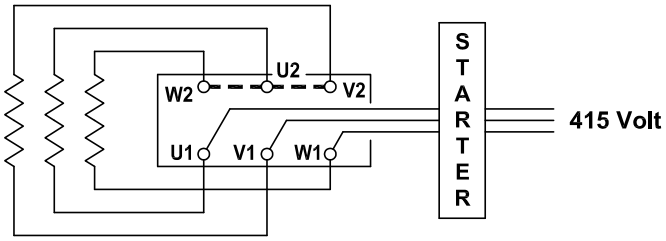
A motor's rated voltage must agree with the power supply line-to-line voltage. Care must therefore be taken to ensure the correct connection to the motor terminals.

INTERNAL CONNECTIONS, VOLTAGES AND VF DRIVE SELECTION

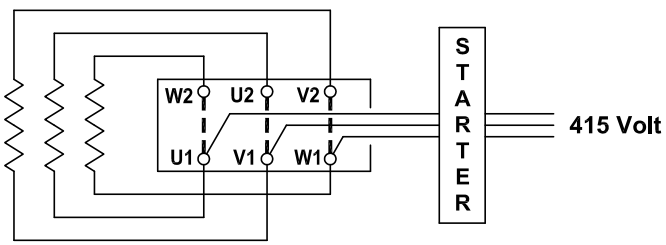
Standard terminal connections for motors 3.0kW and below is 230V delta / 400V star. These motors are designed for 400V Direct On Line (D.O.L.) starting, when connected in the star configuration. They are also suitable for operation with 230V three phase variable frequency drives, when connected in the delta configuration.

Standard terminal connections for motors 4.0kW and above is 400V delta / 690V star. These motors are designed for 400V D.O.L. starting, when connected in the delta configuration. They are also suitable for operation with 400V three phase variable frequency drives. Alternatively, they can be operated D.O.L. in the star configuration from a 690V supply or with a 690V variable frequency drive. In this case the drive must be supplied with an output sine wave filter to protect the winding insulation. These size motors are also suitable for 400V star-delta starting as described below.

Motor connected for D.O.L. starting with bridges in place for star connection (3.0kW and below)



Motor connected for D.O.L. starting with bridges in place for delta connection (4.0kW and above).



STARTING

All of the following starter options are available and are best supplied together with the motor.

D.O.L. STARTERS

When an electric motor is started by direct connection to the power supply "D.O.L.", it draws a high current, called the "starting current," which is approximately equal in magnitude to the locked rotor current I_L. As listed in the performance data, locked rotor current can be up to 8 times the rated current I_N of the motor. In circumstances where the motor starts under no load or where high starting torque is not required, it is preferable to reduce the starting current by one of the following means.

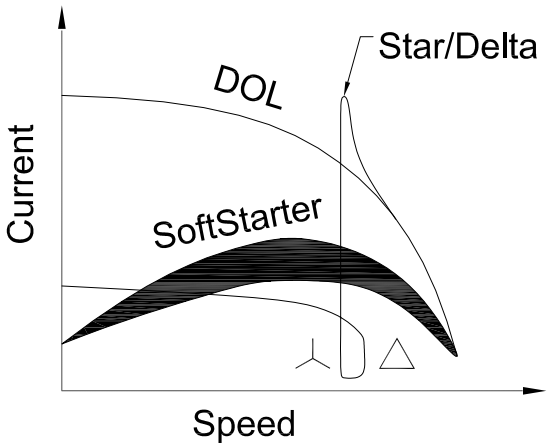
STAR - DELTA STARTING

CDA motors 4.0kW and above are suitable for the star-delta starting method. Through the use of a star-delta starter, the motor terminals are connected in the star configuration during starting, and reconnected to the delta configuration when running.

The benefits of this starting method are a significantly lower starting current, to a value about 1/3 of the "D.O.L." starting current, and a corresponding starting torque also reduced to about 1/3 of its "D.O.L." value. It should be noted that a second current surge occurs on changeover to the delta connection. The level of this surge will depend on the speed the motor has reached at the moment of changeover.

ELECTRONIC SOFT STARTERS

Through the use of an electronic soft starter, which controls such parameters as current and voltage, the starting sequence can be totally controlled. The starter can be programmed to limit the amount of starting current. By limiting the rate of the current increase the startup time is extended. This starting method is particularly suitable for centrifugal loads (fans and pumps).



VVVF DRIVES

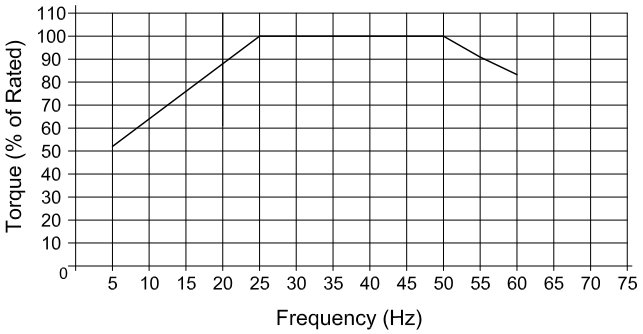
The CDA motor performs excellently without cogging at low speed when operating in conjunction with a Variable Voltage Variable Frequency (VVVF) drive. VVVF drives are primarily recognized for their ability to manipulate power from a constant 3 phase 50/60Hz supply converting it to variable voltage and variable frequency power. This enables the speed of the motor to be matched to its load in a flexible and energy efficient manner. The only way of producing starting torque equal to full load torque with full load current is by using VVVF drives. The functionally flexible VVVF drive is also commonly used to reduce energy consumption on fans, pumps and compressors and offers a simple and repeatable method of changing speeds or flow rates.

For operation below 25Hz, motor cooling fan efficiency drops significantly. Hence, in constant torque applications, a separately driven cooling fan should be fitted to provide sufficient cooling of the motor.

For operation between 25Hz and 50Hz speed range, the motor is capable of delivering full rated torque with its standard fan.

For operation above 50Hz, all CDA motors are capable of delivering constant rated power up to 60Hz. However, most of these motors are suitable to run and deliver constant power at much higher frequencies than 60Hz to a maximum of 100Hz. In the case of applications between 60Hz and 100Hz, please contact Regal Rexnord for advice on suitability.

The CDA range of motors will operate without modification on VVVF drives; however, under certain conditions, additional features should be considered (see EDM Concerns). The graph below shows the CDA motors' loadability with a frequency converter:



EDM CONCERNS

Capacitive voltages in the rotor can be generated due to an effect caused by harmonics in the waveform, causing voltage discharge to earth through the bearings. This discharge results in etching of the bearing running surfaces. This effect is known as Electrical Discharge Machining (EDM). It can be controlled with the fitment of appropriate filters to the drive.

To further reduce the effect of EDM, an insulated non drive bearing can be used. Regal Rexnord recommends the use of insulated bearings for all motors 315 frame and above.

INSULATION

Standard CDA series motors are wound with F class insulation and winding designs limit the temperature rise to 80K (unless otherwise noted) for which B Class insulation would normally be sufficient. The use of F class insulation provides an additional safety margin of 25K, as shown in the accompanying table, together with an extended operating life.

	Insulation class		
	B	F	H
Max. permissible winding temp. (°C)	130	155	180
Less ambient temp. (°C)	-40	-40	-40
Less hotspot allowance (K)	-10	-10	-15
Equals max. permissible temp.rise (K)	80	105	125
Less max. design temperature rise (K)	-80	-80	-80
Equals min. safety margin (K)	-	25	45

Due to their conservative design, many sizes in the CDA range of motors have temperature rises considerably less than 80K and therefore provide even greater safety margins.

THERMAL PROTECTION

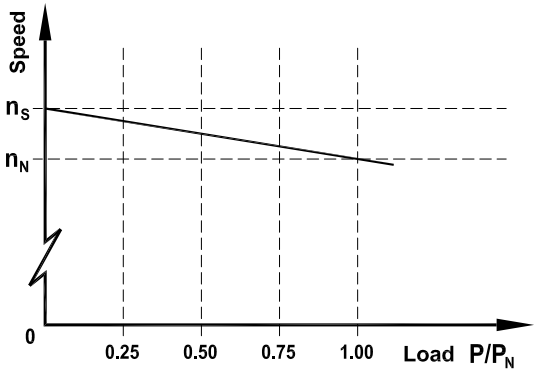
Motors can be protected against excessive temperature rise by inserting, at various positions within the windings, thermal probes which can either give a warning signal or cut off the supply to the motor in the event of a temperature abnormality.

The units fitted to CDA motors, frame sizes 160 and above, are PTC thermistors. These thermovariable resistors, with positive temperature co-efficient, are fitted one per phase, series connected and are terminated in a terminal strip located in the terminal box. Trip temperature is 150°C. Additional 130°C thermistors can be fitted as an option for alarm connection.

SPEED AT PARTIAL LOADS

The relationship between motor speed and degree of loading on an CDA motor is approximately linear up to the rated load. This is expressed graphically in the accompanying drawing.

Where:



n_N = full load speed
n_S = synchronous speed
P/P_N = partial load factor

CURRENT AT PARTIAL LOADS

Current at partial loads can be calculated using the following formula:

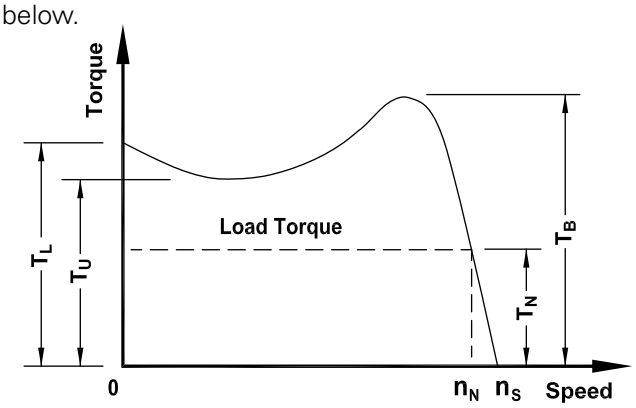
$$I_x = \frac{Pout_x}{\sqrt{3} \times U_N \times \cos\varphi_x \times \eta_x} \times 10^5$$

Where:

I_x = partial load current (amps)
$Pout_x$ = partial load (kW)
U_N = rated voltage
$\cos\varphi_x$ = partial load power factor
φ_x = partial load efficiency (%)

TORQUE CHARACTERISTICS

Typical characteristics of torque behaviour relative to speed are shown in the torque speed curve example below.



Where:

T_N = full load torque
T_L = locked rotor torque
T_U = pull-up torque
T_B = break down torque
n_N = full load speed
n_S = synchronous speed

CDA motors all exceed the minimum starting torque requirements for Design N (Normal torque) as specified in IEC®*60034-12, and in most cases meet the requirements of Design H (High torque).

Rated torque can be calculated with the following formula:

$$T_N = \frac{9550 \times P_N}{n_N}$$

Where:

T_N = full load torque (Nm)
P_N = full load output power (kW)
n_N = full load speed (r/min)

INSTALLATION, OPERATION & MAINTENANCE

For a copy of the Installation, Operation & Maintenance manual, please contact Regal Rexnord or download from our website at www.regalaustralia.com.au

The Marathon® CDA series motors are designed and manufactured to be robust and reliable with minimal maintenance. The following items should be taken into consideration to ensure a trouble free installation and reliable running throughout the motor's life.

INSPECTION

Marathon® motors are delivered through safe and reliable transport in appropriate packing as to remain in as manufactured condition during transit. On receipt of the motor, thoroughly inspect the unit for any transit damage, if need be in the presence of an insurance surveyor. Any equipment damage or shortfall should be immediately advised to the nearest Regal Rexnord.

Check the following:

- Rating plate details and enclosure are as ordered.
- Shaft turns freely (in absence of shaft locking clamp).
- Condensation drain holes are in the correct position for the motor mounting application (they should be located at the lowest point of the motor when it is in its operating position).
- If the winding is Insulation Resistance (IR) tested to earth, ensure that the thermal protectors are not inadvertently damaged. (The thermistor leads should be shorted together whilst IR testing takes place).

*IEC is a trademark of International Electrotechnical Commission and is not owned by or under the control of Regal Rexnord Corporation.

STORAGE

When the motor is not for immediate use store as follows:

- Clean and dry location.
- Free from vibration (vibration can damage bearings).
- Shaft locking clamps, where supplied, are fitted securely.
- Remove shaft locking clamps and turn rotor by one full rotation at least once a fortnight and replace shaft locking clamps.
- Anti-condensation heaters, where fitted, should be energised if the environment is likely to be damp.

INSTALLATION

The following items should be considered on installation to ensure reliable operation of the motor:

SURROUNDINGS

- Ensure that the motor is properly protected against ingress of oil, water or dust especially if construction work is in progress around the motor.
- Ensure air intake is not obstructed. Refer to dimension BL in the catalogue.
- When installing hazardous location motors, make sure that the zone and gas group or dust and temperature classification on motor nameplate are complied with.

MOUNTING

- Bed plates or slide rails should be firmly fixed to a solid, level foundation to ensure the motor remains rigid and vibration free.
- Shims or packers (if required) must be of adequate size and placed adjacent to and between base fixing screws.
- Protective transport coatings on shafts and/or flanges must be removed prior to connection to the driven load.
- A light coating of grease to shafts and/or flanges will inhibit corrosion during service and assist removal of pulleys or couplings.

OPERATION

- Before running the motor make sure that the terminal box lid is closed and secured with appropriate clearance to live parts.
- Make sure that appropriate earthing is done.
- Make sure that the coupling and/or transmission is adequately guarded for safety.
- Check the mounting bolts and/or flanges are firmly secured.
- Make sure of no loose objects around that may be sucked by the cooling fan on the motor.
- Make sure that the load applied is within the nameplate specification.
- Make sure that the ambient temperature is inside 40°C or nameplate specification.
- Avoid frequent starting of motor. Refer to motor catalogue or nearest Regal Rexnord for recommendation on frequency and duration of starts.
- Check that the running current on no load and full load are reasonably balanced within 10% of the average and record the figures in the log book for future reference. Note that the current imbalance can be higher, typically 10 times the voltage imbalance if there is an imbalance in supply voltage.

NUMBER OF STARTS PER HOUR

The number of starts per hour is dependant on the inertia of the driven load and the load torque demand. When high inertia load is applied (flywheel, heavy fan etc) please refer to your nearest Regal Rexnord for advice. A guide to generally acceptable starts per hour would be as per table.

For greater number of starts per hour, please contact your nearest Regal Rexnord for advice.

Starts per Hour				
Frame	**2 Pole**	**4 Pole**	**6 Pole**	**8 Pole**
80*	20	40	40	40
90	16	30	40	40
100	16	30	40	40
112	16	30	40	40
132	10	20	25	25
160	10	20	25	25
180	8	15	20	20
200	6	12	12	12
225	5	10	10	10
250	4	8	8	8
280	3	6	6	6
315	3	4	4	4

PERMITTED STARTING TIME

In respect to the temperature rise of the motor, starting time (i.e., from rest to operational speed) should not exceed the time indicated in the following table. Motor must be allowed to cool prior to each start.

Frame	**Starting method**	**Maximum starting time [sec]**			
		2 pole	**4 pole**	**6 pole**	**6 pole**
80	D.O.L	15	26	40	40
90	D.O.L.	10	15	25	25
100	D.O.L.	12	13	18	18
112	D.O.L.	10	10	18	18
132	D.O.L.	14	12	12	12
160-315	D.O.L.	15	15	20	20
160-315	Star-delta	45	45	60	60

SEALED BEARINGS

The required replacement interval for sealed bearings is generally determined by the grease life which is dependant on operating temperature, operating speed, the limiting speed of the bearing and the type of grease. Under normal operating conditions the following relationship applies:-

$$\log t = 6.54 - 2.6\frac{n}{N} - (0.025 - 0.012\frac{n}{N})T$$

Where:

t = Average grease life (hours)
n = Speed (RPM)
N = Bearing limiting speed with grease lubrication (RPM)
T = Operating temperature (°C)

For further information, please contact your nearest Regal Rexnord for advice.

OPEN (REGREASABLE) BEARINGS

It should be noted that, for motors fitted with ball and roller bearings, the lubrication intervals for both bearings should be based on the roller bearing data.

The re-lubrication intervals recommended are calculated on the basis of normal working conditions.

NOTE: Under arduous conditions please contact Regal Rexnord or the bearing manufacturers catalogue. Air operated grease guns should not be used.

Replenishment of grease media should be by means of a hand held grease gun whilst motor is running with relief plate removed.

MAINTENANCE

Reliable, trouble free operation of a motor needs regular maintenance. Exact maintenance needs vary based on the site conditions. To obtain reliable service from the motor, the following maintenance schedule may be used as a guide.

A. Ensure air intake space is unobstructed.
B. On a weekly basis use an air hose to ensure all air ways are clear and free of dust.
C. Once every month, check motor for condensation. Replace drain plugs before starting if they are blocked or found missing.
D. Do not wash the motor down unless it is IP66 rated.
E. On a quarterly basis-
   (i) Check the motor terminals for tightness and proper contact,
   (ii) If terminal lug/s are discoloured, re-terminate with fresh lugs,
   (iii) Check operation of starting equipment, ensuring all terminations are tight.
   (iv) Check mechanical operation of thermal overload relays, if any,
   (v) Check mechanical operation of thermistor relays, if fitted,
   (vi) Check operation of anti-condensation heaters, if fitted.
F. On a six monthly basis, in addition to the items in 'E' -
   (i) Check winding resistance between supply terminals and compare to original value and enter in log book.
   (ii) Check supply voltage at motor terminals and record in log book.
   (iii) Check bearings for abnormal noise/ overheating.
G. On an annual basis, in addition to the items in 'E' and 'F' -
   (i) Re-grease the bearings as recommended in the following table. Frames 71-132 use sealed bearings. Frames 160-280 use open re-greasable bearings. When re-greasing bearings ensure that the correct type of grease is used. If in doubt about the existing grease type, clean out the old grease thoroughly from bearings and bearing housings, prior to regreasing.

   NOTICE: NEVER MIX GREASE OF DIFFERENT TYPES. Use lithium based grease such as Shell®* Alvania®* R3 or equivalent grease unless otherwise specified.

   (ii) Completely disassemble stator, rotor apart and clean thoroughly.
   (iii) Check bearings for wear/damage – replace as necessary.
   (iv) Check all bolts and nuts for cracks or damage – replace as necessary.
   (v) Check all holding down bolts for signs of fatigue or damage – replace as necessary.
   (vi) After re-assembly, check and record in the log book-
   Insulation resistance by megger
   No load current and voltages
   Full load current and voltages
   Ensure that these figures compare well with the original records in the log book.
   (vii) Check and ensure that the cooling fan is operational.

*Alvania and Shell are believed to be the trademarks of Shell Brands International AG and are not owned or controlled by Regal Rexnord Corporation.

PERFORMANCE DATA

CDA SERIES THREE PHASE IP66 F CLASS INSULATION B CLASS TEMPERATURE RISE

Type	Rated Output		Efficiency[%] at % F.L.				Power factor at % F.L.				Current		Torque			Weight (kg)
	kW	RPM	125	100	75	50	125	100	75	50	FL [A]	IL /IN	FL [Nm]	TL /TN	TB /TN	
2 POLE MOTORS																
CDA-80M1-2	0.75	2880	79.2	80.7	81.5	80.7	0.89	0.82	0.79	0.74	1.63	6.2	2.5	2.4	2.9	18
CDA-80M2-2	1.1	2870	79.7	83.1	84.3	81.2	0.82	0.78	0.73	0.55	2.5	6.0	3.7	2.3	2.6	20
CDA-90S-2	1.5	2885	82.2	84.3	85.6	86.0	0.86	0.83	0.79	0.72	3.1	7.4	5	2.7	2.9	24
CDA-90L-2	2.2	2915	85.7	86.4	86.5	86.7	0.86	0.83	0.82	0.80	4.5	8.8	7.2	3.5	4.2	27
CDA-100L-2	3	2880	86.8	87.4	87.4	85.8	0.88	0.86	0.82	0.72	5.8	7.5	9.9	2.6	3.3	35
CDA-112M-2	4	2915	87.0	87.8	88.3	88.5	0.88	0.88	0.87	0.84	7.5	8.8	13.1	2.8	3.1	42
CDA-132S1-2	5.5	2930	88.7	89.2	89.3	89.1	0.91	0.89	0.88	0.85	10	8.6	17.9	3.0	3.4	64
CDA-132S2-2	7.5	2915	88.3	89.7	90.2	89.6	0.92	0.92	0.91	0.85	13.2	8.1	24	2.5	2.9	70
CDA-160M1-2	11	2950	91.4	91.7	91.9	92.1	0.90	0.90	0.89	0.88	19.3	8.0	36	2.7	3.2	140
CDA-160M2-2	15	2950	92.0	92.3	92.6	92.6	0.89	0.89	0.88	0.87	26.4	8.5	49	2.9	3.2	154
CDA-160L2-2	18.5	2945	91.9	92.4	92.6	92.9	0.91	0.91	0.90	0.90	32	8.2	60	3.0	3.0	162
CDA-180M-2	22	2960	93.5	93.6	93.6	93.5	0.91	0.90	0.89	0.88	37.7	9.8	71.2	3.4	4.1	198
CDA-200L1-2	30	2965	93.3	93.3	93.3	93.3	0.87	0.86	0.85	0.83	53.9	8.1	96.6	2.8	3.5	260
CDA-200L2-2	37	2960	93.4	93.9	94.1	93.3	0.91	0.92	0.91	0.85	62.2	7.9	119	2.6	3.3	280
CDA-225M-2	45	2970	94.6	94.7	94.8	94.9	0.90	0.90	0.89	0.88	76.3	9.1	145	2.8	3.6	330
CDA-250M-2	55	2975	94.2	94.3	94.4	94.4	0.90	0.89	0.88	0.87	94.4	9.6	177	2.6	3.4	390
CDA-280S-2	75	2985	94.7	94.8	94.8	94.7	0.88	0.88	0.87	0.86	130.1	8.7	240	2.7	3.4	498
CDA-280M-2	90	2980	95.0	95.1	95.1	95.1	0.89	0.89	0.88	0.87	154.4	9.2	289	3.2	3.5	680
CDA-315S-2	110	2980	95.0	95.2	95.1	92.8	0.91	0.90	0.89	0.85	185	7.1	352	1.8	2.3	890
CDA315M-2	132	2980	95.2	95.4	95.3	93.1	0.91	0.90	0.89	0.85	222	7.1	422	1.8	2.3	964
CDA-315L1-2	160	2980	95.4	95.6	95.5	93.3	0.91	0.91	0.90	0.87	265	7.2	593	1.8	2.3	1027
CDA-315L2-2	200	2985	95.6	95.8	95.7	93.6	0.91	0.91	0.90	0.87	331	7.2	640	1.8	2.3	1097
4 POLE MOTORS																
CDA-80M2-4	0.75	1450	82.9	83.0	81.8	77.7	0.75	0.68	0.59	0.46	1.91	5.5	4.9	2.3	2.7	18
CDA-90S-4	1.1	1430	81.8	84.0	85.4	84.7	0.78	0.75	0.69	0.57	2.6	5.5	7.3	2.1	2.5	25
CDA-90L-4	1.5	1445	83.1	85.3	86.3	84.4	0.79	0.75	0.69	0.54	3.4	6.8	10	2.3	2.8	27
CDA-100L1-4	2.2	1445	86.4	87.1	87.0	85.1	0.88	0.80	0.73	0.61	4.6	7.9	14.5	3	3.5	34
CDA-100L2-4	3	1460	86.0	87.6	88.2	87.7	0.83	0.78	0.71	0.62	6.4	6.6	19.9	2.4	2.5	39
CDA-112M-4	4	1455	87.8	88.9	89.3	87.9	0.83	0.81	0.79	0.68	8	8.7	26.3	2.9	3.3	45
CDA-132S-4	5.5	1460	87.6	89.1	89.9	89.3	0.86	0.85	0.80	0.68	10.6	7.9	35.9	2.4	2.8	70
CDA-132M-4	7.5	1460	89.2	90.6	91.5	90.3	0.83	0.80	0.74	0.56	14.9	6.1	48.9	2.2	2.4	80
CDA-160M-4	11	1470	91.0	91.3	91.4	91.5	0.84	0.83	0.81	0.79	21.1	7.9	71.5	2.1	2.9	130
CDA-160L-4	15	1470	91.9	92.1	92.3	92.3	0.84	0.83	0.81	0.78	28.4	8.6	97.4	2.4	3	150
CDA-180M-4	18.5	1465	91.5	92.4	92.8	91.3	0.86	0.84	0.78	0.61	34.4	6.6	120	2.5	2.6	190
CDA-180L-4	22	1475	93.0	93.7	94.1	93.8	0.88	0.86	0.82	0.72	39.7	7.2	143	2.1	2.7	210
CDA-200L-4	30	1475	93.9	94.4	94.7	94.2	0.87	0.85	0.82	0.72	53.8	7.8	194	2.8	2.9	280
CDA-225S-4	37	1480	93.6	94.2	94.5	94.0	0.86	0.84	0.80	0.71	67.8	6.9	239	2.3	3.4	320
CDA-225M-4	45	1475	93.6	94.3	94.8	94.6	0.87	0.85	0.82	0.74	80.5	7.5	290	2.5	2.7	350
CDA-250M-4	55	1485	95.2	95.6	95.8	95.8	0.85	0.83	0.82	0.79	100.4	8.2	354	2.9	3.1	450
CDA-280S-4	75	1485	95.8	96.1	96.4	96.6	0.87	0.87	0.86	0.85	130.1	7.4	481	2.4	3.1	590
CDA280M-4	90	1485	95.0	95.1	95.2	95.2	0.88	0.87	0.87	0.85	156.7	7.6	577	2.6	3.3	670
CDA-315S-4	110	1485	95.2	95.4	95.3	94.7	0.90	0.89	0.85	0.78	187	7.0	707	2.00	2.2	878
CDA-315M-4	132	1485	95.4	95.6	95.5	94.7	0.90	0.89	0.86	0.77	224	7.1	849	2.0	2.2	978
CDA-315L1-4	160	1485	95.8	95.8	95.8	95.0	0.90	0.89	0.86	0.76	271	7.1	1029	2.0	2.2	1073
CDA-315L2-4	200	1485	95.9	96.0	96.0	95.2	0.91	0.90	0.87	0.81	334	7.1	1286	2.0	2.2	1178

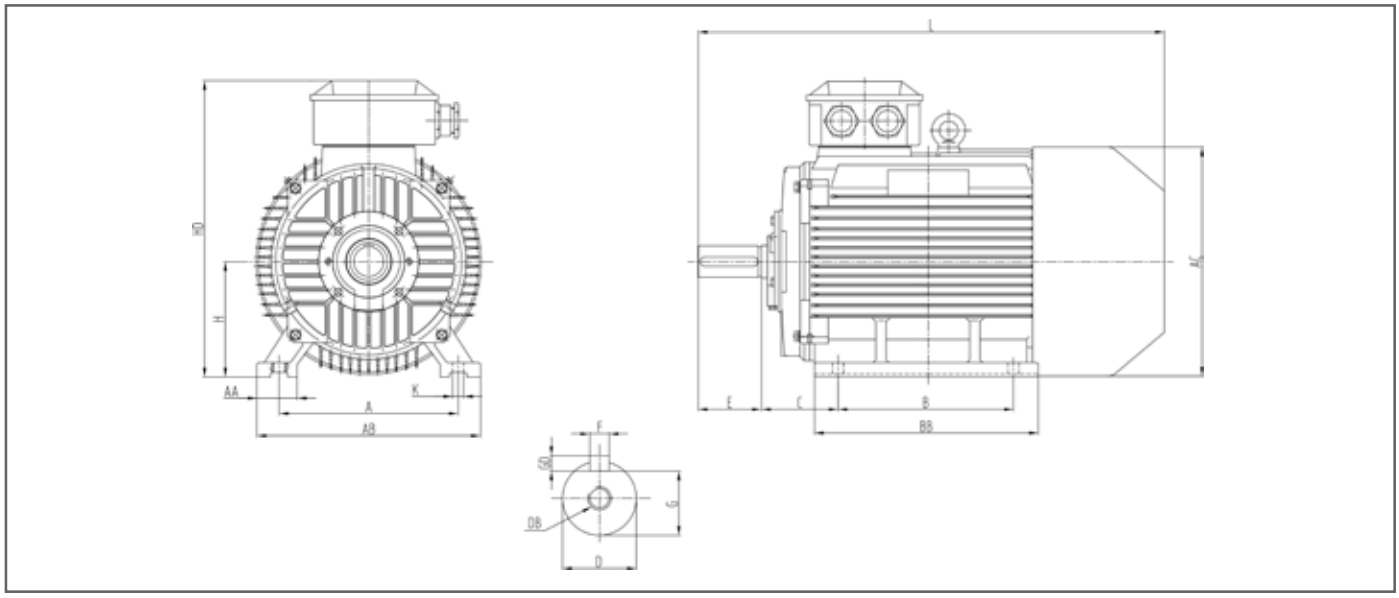
PERFORMANCE DATA

CDA SERIES THREE PHASE IP66 F CLASS INSULATION B CLASS TEMPERATURE RISE

Type	Rated Output		Efficiency[%] at % F.L.				Power factor at % F.L.				Current		Torque			Weight (kg)
	kW	RPM	125	100	75	50	125	100	75	50	FL [A]	IL /IN	FL [Nm]	TL /TN	TB /TN	
6 POLE MOTORS																
CDA-90S-6	0.75	950	77.9	79.2	79.1	76.0	0.76	0.69	0.60	0.47	1.97	4.7	7.6	1.8	2.1	26
CDA-90L-6	1.1	950	79.4	82.1	82.3	80.1	0.72	0.72	0.62	0.49	2.7	5.7	11.1	2.6	2.9	28
CDA-100L-6	1.5	950	81.0	83.5	85.2	84.2	0.75	0.72	0.67	0.55	3.6	5.2	15.1	2.3	2.4	36
CDA-112M-6	2.2	975	84.3	85.5	85.8	84.2	0.77	0.72	0.63	0.50	5.2	7.2	21.8	2.4	3	42
CDA-132S-6	3	975	85.1	86.0	85.9	83.8	0.78	0.73	0.64	0.51	7	7.2	29.4	2.3	2.7	60
CDA-132M1-6	4	975	85.3	87.1	86.8	84.5	0.73	0.74	0.64	0.50	9	4.9	39.2	2.4	2.7	72
CDA-132M2-6	5.5	975	86.2	87.6	88.3	87.6	0.81	0.77	0.71	0.59	11.8	7.6	53.9	2.4	2.7	79
CDA-160M-6	7.5	980	87.7	89.1	89.0	87.0	0.78	0.77	0.71	0.58	15.7	6.5	73.1	2.2	2.6	125
CDA-160L-6	11	980	87.6	89.5	90.4	89.3	0.84	0.83	0.79	0.63	21.3	5.9	107	2.3	2.4	155
CDA-180L-6	15	980	90.4	91.4	91.8	91.2	0.84	0.82	0.77	0.66	28.9	8.0	146	2.2	2.5	185
CDA-200L1-6	18.5	980	90.3	91.3	91.7	91.1	0.84	0.83	0.78	0.69	35.5	6.6	179	2.1	2.6	240
CDA-200L2-6	22	985	90.9	92.3	92.6	91.7	0.82	0.81	0.76	0.64	42.5	6.8	213	2.4	2.7	250
CDA-225M-6	30	985	92.0	93.1	93.8	93.2	0.87	0.83	0.84	0.76	56.2	6.0	291	2.3	2.5	300
CDA-250M-6	37	985	93.5	93.6	93.8	93.7	0.84	0.83	0.81	0.79	69.1	7.8	359	2.4	3.3	384
CDA-280S-6	45	990	93.4	93.6	93.7	93.7	0.85	0.84	0.83	0.81	82.6	7.4	434	2.3	3	419
CDA-280M-6	55	990	94.0	94.1	94.2	94.2	0.85	0.84	0.83	0.81	100.6	8.1	531	2.5	3.3	600
CDA-315S-6	75	990	94.4	94.6	94.5	93.5	0.85	0.84	0.81	0.73	136	6.6	723	2	2	860
CDA-315M-6	90	990	94.6	94.9	94.8	93.9	0.86	0.85	0.82	0.74	161	6.7	868	2	2	940
CDA-315L1-6	110	990	94.8	95.1	95.0	94.1	0.86	0.85	0.82	0.75	196	6.7	1061	2	2	1043
CDA-315L2-6	132	990	95.1	95.4	95.3	94.5	0.87	0.86	0.84	0.77	232	6.8	1273	2	2	1133
8 POLE MOTORS																
CDA-100L1-8	0.75	700	73.0	75.0	74.9	70.0	0.73	0.67	0.58	0.45	2.15	4.0	10.2	1.8	2.0	35
CDA-100L2-8	1.1	690	75.5	77.7	77.6	75.8	0.74	0.69	0.61	0.48	2.96	5.0	15.2	1.8	2.0	42
CDA-112M-8	1.5	700	78.0	79.7	79.6	76.8	0.75	0.69	0.60	0.46	3.94	6.0	20.5	1.8	2.0	55
CDA-132S-8	2.2	710	80.4	81.9	81.8	79.5	0.76	0.71	0.64	0.49	5.46	6.0	29.6	1.8	2.0	70
CDA-132M-8	3	710	81.9	83.5	83.4	82.5	0.78	0.73	0.66	0.53	7.1	6.0	40.4	1.8	2.0	87
CDA-160M1-8	4	730	84.2	84.8	84.7	83.1	0.77	0.73	0.65	0.53	9.33	6.0	52.3	1.9	2.0	112
CDA-160M2-8	5.5	725	85.0	86.2	86.1	84.8	0.78	0.74	0.66	0.54	12.4	6.0	72.5	2.0	2.0	120
CDA-160L-8	7.5	720	85.8	87.3	87.2	86.6	0.79	0.75	0.68	0.56	16.5	6.0	99.5	2.0	2.0	40
CDA-180L-8	11	725	86.6	88.6	88.5	87.7	0.79	0.76	0.71	0.58	23.6	6.6	144	2.0	2.0	185
CDA-200L-8	15	730	88.6	89.6	89.5	89.0	0.79	0.76	0.70	0.65	31.8	6.6	196	2.0	2.0	225
CDA-225S-8	18.5	730	89.0	90.1	90.0	89.8	0.76	0.76	0.71	0.64	39	6.6	242	1.9	2.0	276
CDA-225M-8	22	730	89.6	90.8	91.7	91.3	0.77	0.77	0.75	0.64	45.5	5.8	288	2.0	2.4	312
CDA-250M-8	30	730	90.8	91.3	91.2	91.0	0.81	0.79	0.74	0.63	60	6.6	392	1.9	2.0	400
CDA-280S-8	37	735	91.0	91.8	91.7	91.3	0.82	0.79	0.73	0.62	73.6	6.6	480	1.9	2.0	560
CDA-280M-8	45	735	91.4	92.2	92.1	91.9	0.81	0.79	0.74	0.62	89.2	6.6	584	1.9	2.0	665
CDA-315S-8	55	740	92.0	92.5	92.4	91.3	0.83	0.81	0.77	0.67	106	6.6	709	1.8	2.0	940
CDA-315M-8	75	740	92.7	93.1	93.0	0.9	0.83	0.81	0.77	0.67	144	6.6	967	1.8	2.0	1050
CDA-315L1-8	90	740	93.0	93.4	93.3	92.4	0.83	0.82	0.77	0.67	170	6.6	1161	1.8	2.0	1070
CDA-315L2-8	110	740	93.3	93.7	93.6	92.8	0.83	0.82	0.78	0.69	207	6.4	1419	1.8	2.0	1090

DIMENSIONAL DRAWINGS

CDA SERIES THREE PHASE IP66 F CLASS INSULATION B CLASS TEMPERATURE RISE



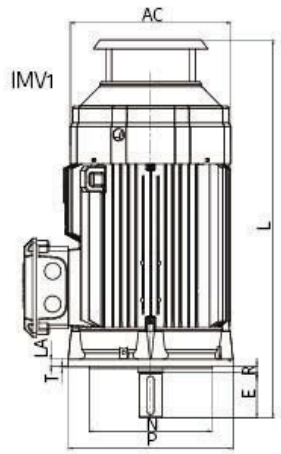
SMALL FLANGE MOUNTING DIMENSIONS FOR INSTALLATION B14A

Motor Frame	Mounting Dimensions (mm)																		
	A	AA	AB	AC	B	B2	BB	C	D	DB	E	F	G	GD	H	HA	HD	K	L
80	125	34	160	175	100	-	165	50	19	M6	40	6	16	6	80	10	230	4x10	320
90S	140	36	175	195	100	-	180	56	24	M8	50	8	20	7	90	12	245	4x10	350
90L	140	36	175	195	125	-	208	56	24	M8	50	8	20	7	90	12	245	4x10	380
100L	160	40	200	215	140	-	232	63	28	M10	60	8	24	7	100	14	270	4x12	440
112M	190	45	226	240	140	-	248	70	28	M10	60	8	24	7	112	15	300	4x12	465
132M	216	55	262	275	178	-	260	89	38	M12	80	10	33	8	132	18	345	4x12	550
132S	216	55	262	275	140	-	224	89	38	M12	80	10	33	8	132	18	345	4x12	505
160M	254	65	314	330	210	-	304	108	42	M16	110	12	37	8	160	20	430	4x14.5	665
160L	254	65	314	330	254	-	335	108	42	M16	110	12	37	8	160	20	430	4x14.5	700
180M	279	70	349	380	241	-	349	121	48	M16	110	14	43	9	180	22	465	4x14.5	720
180L	279	70	349	380	279	-	381	121	48	M16	110	14	43	9	180	22	465	4x14.5	760
200L	318	70	388	420	305	-	389	133	55	M20	110	16	49	10	200	25	520	4x18.5	815
225SM*	356	75	431	470	286	311	393	149	55	M20	110	16	49	10	225	28	570	4x18.5	825
225SM	356	75	431	470	286	311	393	149	60	M20	140	18	53	11	225	28	570	4x18.5	855
250SM*	406	80	484	510	311	349	445	168	60	M20	140	18	53	11	250	30	635	6x24	915
250SM	406	80	484	510	311	349	445	168	65	M20	140	18	58	11	250	30	635	6x24	915
280SM*	457	85	542	580	368	419	536	190	65	M20	140	18	58	11	280	35	695	6x24	1025
280SM	457	85	542	580	368	419	536	190	75	M20	140	20	68	12	280	35	695	6x24	1035
315S*	508	120	628	645	406	-	570	216	65	M20	140	18	58	11	315	45	843	4x28	1168
315S	508	120	628	645	406	-	570	216	80	M20	170	22	71	14	315	45	843	4x28	1238
315ML*	508	120	628	645	457	508	680	216	65	M20	140	18	58	11	315	45	843	6x28	1278
315ML	508	120	628	645	457	508	680	216	80	M20	170	22	71	14	315	45	843	6x28	1348

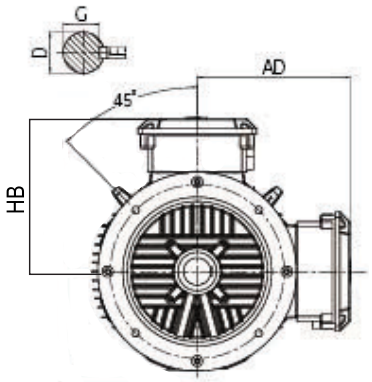
* 2 pole motor.

DIMENSIONAL DRAWINGS

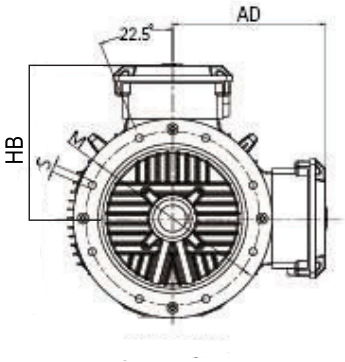
CDA SERIES THREE PHASE IP66 F CLASS INSULATION B CLASS TEMPERATURE RISE



H80-280



H80-200



H225-280

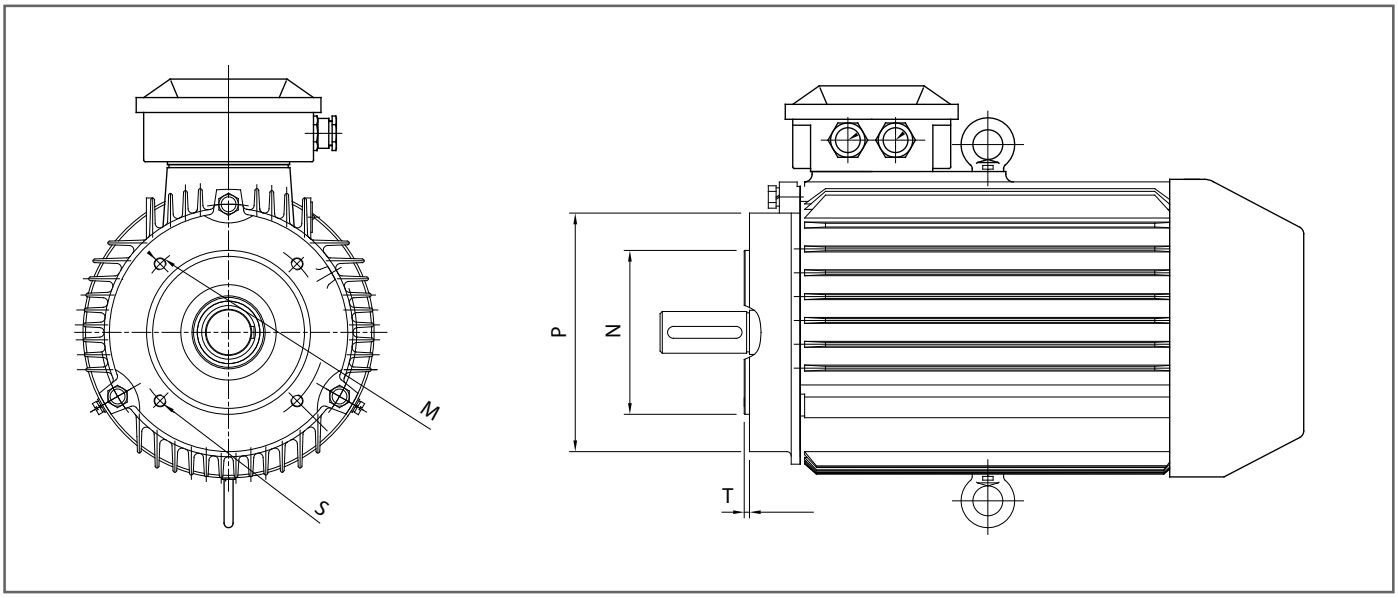
LARGE FLANGE MOUNTING DIMENSIONS FOR INSTALLATION B5

Motor frame	Flange Mounting Dimensions (mm)						
	HB	M	P	LA	N	T	S
80	150	165	200	12	130	3.5	4x12
90S	155	165	200	12	130	3.5	4x12
90L	155	165	200	12	130	3.5	4x12
100L	170	215	250	13	180	4	4x14.5
112M	188	215	250	14	180	4	4x14.5
132M	213	265	300	14	230	4	4x14.5
132S	213	265	300	14	230	4	4x14.5
160M	270	300	350	16	250	5	4x18.5
160L	270	300	350	16	250	5	4x18.5
180M	285	300	350	15	250	5	4x18.5
180L	285	300	350	15	250	5	4x18.5
200L	320	350	400	17	300	5	4x18.5
225SM*	345	400	450	20	350	5	8x18.5
225SM	345	400	450	20	350	5	8x18.5
250SM*	385	500	550	22	450	5	8x18.5
250SM	385	500	550	22	450	5	8x18.5
280SM*	415	500	550	22	450	5	8x18.5
280SM	415	500	550	22	450	5	8x18.5
315S*	530	600	660	22	550	6	8x24
315S	530	600	660	22	550	6	8x24
315ML*	530	600	660	22	550	6	8x24
315ML	530	600	660	22	550	6	8x24

* 2 pole motor.

DIMENSIONAL DRAWINGS

SMALL FLANGE (FACE) MOUNT B14 (IM3601)



SMALL FLANGE MOUNTING DIMENSIONS FOR INSTALLATION B14A

Motor Frame		Mounting Dimensions (mm)				
		M	N	P	S	T
80	-19	100	80	120	M6	3.0
90	-24	115	95	140	M8	3.0
100	-28	130	110	160	M8	3.5
112	-28	130	110	160	M8	3.5
132	-38	165	130	200	M10	3.5

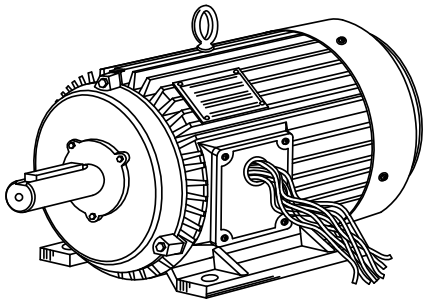
No eye bolt frame 80 & 90.
For motor frame and shaft dimensions please refer to large flange mount B5 dimensional drawings (previous page).

MODIFICATIONS, VARIATIONS AND OPTIONAL EXTRAS

Regal Rexnord offers an extensive range of variations and modifications. Some are detailed below. For other requirements please contact Regal Rexnord.

TERMINAL BOX

Removed terminal box (fitted with a blanking plate and threaded conduit entry. Extended leads, including earth connector).



Extended leads: 1.5m
No. of power leads: 3+1 for up to 3kW, 6+1 for 4kW and above

Motor frame	Conduit size
80-100	M25 x 1.5
112-132	M32 x 1.5
160-180	M40 x 1.5
200-225	M50 x 1.5
250-280	M63 x 1.5
315	M63 x 1.5

BEARINGS

Regal Rexnord can address applications where bearings need special consideration. Attention may need to be given to the following:

- Bearing monitors
- Alternative bearing types
- Low/high temperature bearing grease
- Oil seals
- Non contact labyrinth seals
- Insulated bearings

SHAFTS

CDA motors come standard with a single output shaft to standard dimensions. The following alternatives are available:

- Double shaft extension
- Special shaft extension
- Stainless steel shaft material type
- Reduced shafts for geared motors

ENVIRONMENTAL CONSIDERATIONS

Where environmental factors need special consideration Regal Rexnord can provide the following modifications:

- Winding temperature monitors and thermistors
- Anti-condensation heaters
- Separately powered cooling fans
- Tropic proofing
- Special paint finish
- High ambient temperature motors – with H class insulation class insulation

SPECIAL PERFORMANCE

Regal Rexnord has the ability to provide CDA motors with special windings. These may include:

- Windings for alternative operating voltages and frequencies.
- Windings designed for increased outputs and short time ratings.

VVVF DRIVES

Two types of VVVF drives kit are available for the CDA range to assist in maintaining satisfactory operation.

VVVF DRIVE KIT A - SEPARATELY DRIVEN COOLING FAN (240 & 415V)

This fan should be used when the motor speed is required to be reduced below 25Hz in constant torque mode. For centrifugal fan or pump, no separate cooling fan is required. For all other loads refer to the loadability curve in the section on VVVF Drives, refer page 11.

VVVF DRIVE KIT B - STANDARD MOTOR (EDM)

This kit incorporates a single insulated bearing, normally at the non-drive end, designed to remove the effect of electrical discharge through the bearings.

TESTING SERVICES

Regal Rexnord can provide both type test certificates and individual motor test reports on any CDA motor.

Type test reports and outline drawings of standard motors are available at **www.regalaustralia.com**

marathon® Motors

Industrial Systems
Regal Rexnord

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The proper selection and application of products and components, including assuring that the product is safe for its intended use, are the responsibility of the customer. To view our Application Considerations, please visit https://www.regalrexnord.com/Application-Considerations.

To view our Standard Terms and Conditions of Sale, please visit https://www.regalrexnord.com/Terms-and-Conditions-of-Sale (which may redirect to other website locations based on product family).

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