Power Transmissions

TRAMTRADE

Chain Drives

- Roller Chains
- Roller Chain Attachments
- Double Pitch Chains
- Leaf Chains
- Timber Chains
- Agricultural Chain Attachments
- Conveyor Chains
- Conveyor Chain Attachments

Sprockets

- Taper Bore Sprockets
- Pilot Bore Sprockets
- Plate Wheels
- Double Simplex Sprockets
- Idler Sprockets
- Welded Hubs and Sprockets

Belts

- Challenge V and Wedge Belts
- Classical V-Belts
- Classical CRE V-Belts
- Wedge Belts
- Classical Timing Belts
- Curved Tooth Timing Belts

Pulleys

V-Pulleys

- SPZ
- SPA
- SPB
- SPC
- Vaiable Speed Pulleys
- Mi-Lock

Synchronous Pulleys

- Timing Taper Bore
- HTD ® Taper Bore
- Metric Timing Pilot Bore
- Timing Pilot Bore
- HTD ® Pilot Bore

Electric Motors

General Information

CHALLENGE series three phase asynchronous AC electric motors, Are totally enclosed fan cooled **(IC-411)** squirrel caged type, With **IP55** enclosure protection, Class F insulation and **SI** continuous Duty/Rating.

The motors are manufactured from high grade die cast aluminium alloy and come with multi-mount detachable feet as standard, which allows for various mounting positions to be achieved.

The temperature ratings are -15° C to +40° degrees C to a maximum altitude of 1000 metres above sea level.

CHALLENGE motors have voltage ratings of 380v / 400v / 415v.

Also they have a rated frequency of 50Hz and 60Hz. Connection is **STAR** up to and including 3kW and from 4kW and above the connection is **DELTA,** allowing for **STAR/DELTA** starting.

Designation

Motor Identification Symbol

CML-801-2

- Number of poles
- Core Length
- Frame size
- Challenge motor identification symbol

Cooling Method

IC-411

- Totally enclosed fan cooling type
- International cooling symbol

Protection Class

IP-5-5

- Protection against water projected by a nozzle from any direction
- Protecting against dust
- International protection symbol

Standards and Regulations

CE

CE Marking

Our three phase induction motors comply with the requirements of the following international standard:

IEC 60034

as well as with the Low Voltage Directive 73/23 (1973), modified by the Directive 93/68 (1993) and the EMC-Directive 89/336.

The above named products comply with the requirements of the EC Directive Machines 89/392. In accordance with this Directive induction motors are components intended solely for integration into other machines. Commissioning is forbidden until conformity of the end product with this Directive is proved!

The CE symbol was applied for the first time in 1995.

EFF 1

EFF 2

CEMEP Voluntary Agreement

Motors covered by this agreement are defined as totally enclosed fan cooled (normally IP 54 or IP 55), three phase AC squirrel cage induction motors 1.1 kW to 90 kW, with 2 or 4 poles, rated for 400 V-line, 50 Hz, duty class S1. (Standard design can be interpreted as design N according to EN 60034-12 and HD 231). They are divided in three classes of efficiency levels, defined by two values of full load efficiency per output, designated effl, eff2.

All motors with standard rating included in this catalogue comply with efficiency class eff2 and bear the corresponding label on the rating plate.

Mechanical Design

Degrees of protection

Degrees of protection for mechanical machines are designated in accordance with IEC 60034-5 by the letters **IP** and two characteristic numerals.

First numeral: Protection against contact and ingress of foreign bodies	
IP	**Description**
0	No special protection
1	Protection against solid foreign bodies larger than 50 mm (Example: inadvertent contact with the hand)
2	Protection against solid foreign bodies larger than 12 mm (Example: inadvertent contact with the fingers)
3	Protection against solid foreign bodies larger than 2.5 mm (Example: Wires, tools)
4	Protection against solid foreign bodies larger than 1 mm (Example: Wires, bands)
5	Protection against dust (harmful deposits of dust)
6	Complete protection against dust. Is not described for electrical machines to IEC 34-5.

Second numeral: Protection against ingress of water	
IP	**Description**
0	No special protection
1	Protection against vertically falling water drops (condensation)
2	Protection against dropping water when inclined by up to 15°
3	Protection against waterspray at up to 60° from vertical
4	Protection against water splashed from any direction
5	Protection against water projected by a nozzle from any direction
6	Protection against heavy seas or water projected in powerful jets
7	Protection when submerged between 0.15 m and 1 m
8	Protection when continuously submerged in water at conditions agreed between the manufacturer and the user

Challenge motors conform to protection IP 55 / IEC 60034-5.

The standard design for horizontal mounting is suitable for indoor and protected outdoor installation, climate group temperature ratings -15° C to +40° C.

For unprotected outdoor installation or severe climatic conditions (moisture category wet, climate group WORLDWIDE, extremely dusty site conditions, aggressive industrial atmosphere, danger of storm rain and coastal climate, danger of attack by termites, etc.), as well as vertical mounting, special protective measures are recommended, such as:

- Protective cowl (for vertical *shaft-down* motors)
- For vertical *shaft-up* motors additional bearing seal and flange drainage
- Special paint finish
- Treatment of winding with protective moisture-proof varnish
- Anti-condensation heating
- Condensation drain holes

The special measures to be applied have to be agreed with the factory once the conditions of installation have been settled.

The corresponding conditions of installation have to be clearly indicated in the order.

Conditions of Installation

Challenge motors are designed for operation at altitudes < 1000m above sea level and at ambient temperatures of up to 40°C. Exceptions are indicated on the rating plate.

Permissible temperature rises to various standards

Standard/Regulation	Temperature of coolant	Permissible temperature rise in K (measured by resistance method) Temperature class		
	°C	B	F	H
VDE 0530 part 1	40	80	105	125
International IEC 34-1	40	80	105	125
Britain BS 2613	40	80	105	
Canada CSA	40	80	105	
USA NEMA and ANSI	40	80	105	
Italy CEI	40	80	105	
Sweden SEN	40	80	105	
Norway NEK	40	80	105	
Belgium NBN	40	80	105	
France NF	40	80	105	on request
Switzerland SEV	40	80	105	
India IS	40	80	-	
Germanischer Lloyd [1]	45	75	90	
American Bureau of Shipping [1]	50	70	95	
Bureau Veritas [1]	45	70	100	
Norske Veritas [1]	45	70	90 [2]	
Lloyds Register [1]	45	70	90	
Registro Italiano Navale [1]	45	70	90	
Korean Register [1]	50	70	90	
China Classification Society [1]	45	75	95	

[1] Classification societies for marine motors

[2] Only with special approval

Standards and Regulations

The motors comply with the relevant standards and regulations

Title Electrical	IEC	EU CENELEC	D DIN/VDE	I CEI/UNEL	GB BS	F NFC	E UNE
General stipulations for electrical machines	60034-1	EN 60034-1	DIN EN 60034-1	CEI EN 60034-1	4999-1 4999-69	51-200 51-111	UNE EN 60034-1
Rotating electrical machines: methods for determining losses and efficiency using tests	60034-2	HD 53 2	DIN EN 60034-2	CEI EN 60034-2	4999-34	51-112	UNE EN 60034-2
Terminal markings and direction of rotation of rotating electrical machines	60034-8	HD 53 8 S4	DIN VDE 0530-8	CEI 2-8	4999-3	51-118	20113-8-96
Starting performance	60034-12	EN 60034-12	DIN EN 6034-12	CEI EN 60034-12	4999-112		UNE EN 60034-12
Standard voltages	60038	HD 472 S1	DIN IEC 60038	CEI 8-6			
Insulating materials	60085		DIN IEC 60085	CEI 15-26			
Mechanical							
Dimensions and output ratings	60072		DIN EN 50347	UNEL 13113			
Mounting dimensions and relationship frame sizes-output ratings, IM B3	60072	HD 231	DIN 42673-1	UNEL 13113	499-10 51-110	51-105 51-104	20106-1/26 1980
Mounting dimensions and relationship frame sizes-output ratings, IM B5	60072	HD 231	DIN 42677-1	UNEL 13117		20106-2-74	
Mounting dimensions and relationship frame sizes-output ratings, IM B14	60072	HD 231	DIN 42677-1	UNEL 13118	499-10 51-110	51-105 51-104	20106-2-IC-80
Cylindrical shaft ends for electric motors	60072	HD 231	DIN 748-3	UNEL 13502	4999-10	51-111	
Degrees of protection	60034-5	EN 60034-5	DIN IE60034-5	CEI IE60034-5	4999-20	EN 60034-5	20111-5
Methods of cooling	60034-6	EN 60034-6	DIN EN60034-6	CEI EN60034-6	4999-21		EN 60034-6
Mounting arrangements	60034-7	EN 60034-7	DIN EN60034-7	CEI EN60034-7	4999-22	51-117	EN 60034-7
Noise limits	60034-9	EN 60034-9	DIN EN60034-9	CEI EN60034-9	4999-51	51-119	EN 60034-9
Mechanical vibration	60034-14	EN 60034-14	DIN EN60034-14	CEI EN60034-14	4999-50	51-111	EN 60034-14
Mounting flanges			DIN 42948	UNEL 13501			
Tolerances of mounting and shaft extensions			DIN 42955	UNEL 13501/ 13502			
Classification of environmental conditions	600721-2-1		DIN IEC 60721-2-1	CEI 75-1			
Mechanical vibration; balancing	ISO 8821		DIN ISO 8821				

Starting Options

Connection

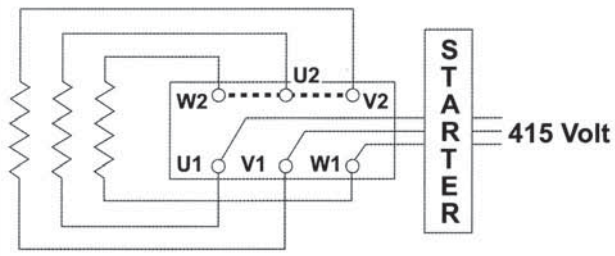
A motor's rated voltage must agree with the power supply line-to-line voltage. Care must therefore be taken to ensure the correct connection to the motor terminals.

Internal connections, Voltages and VF drive selection.

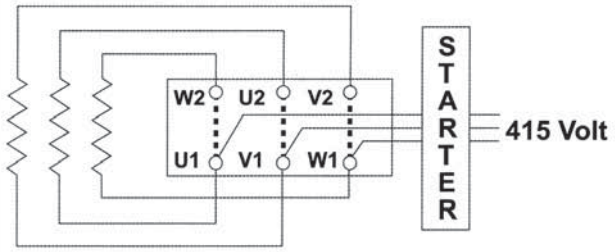
Standard terminal connections for motors 3.0 kW and below is 230 volt delta / 400 volt star. These motors are designed for 400 volt Direct On Line (D.O.L.) starting, when connected in the star configuration. They are also suitable for operation with 230 volt three phase variable frequency drives, when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

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

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



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



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 IS. 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

Motors 4.0 kW 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 ⅓ of the D.O.L. starting current, and a corresponding starting torque also reduced to about ⅓ 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.

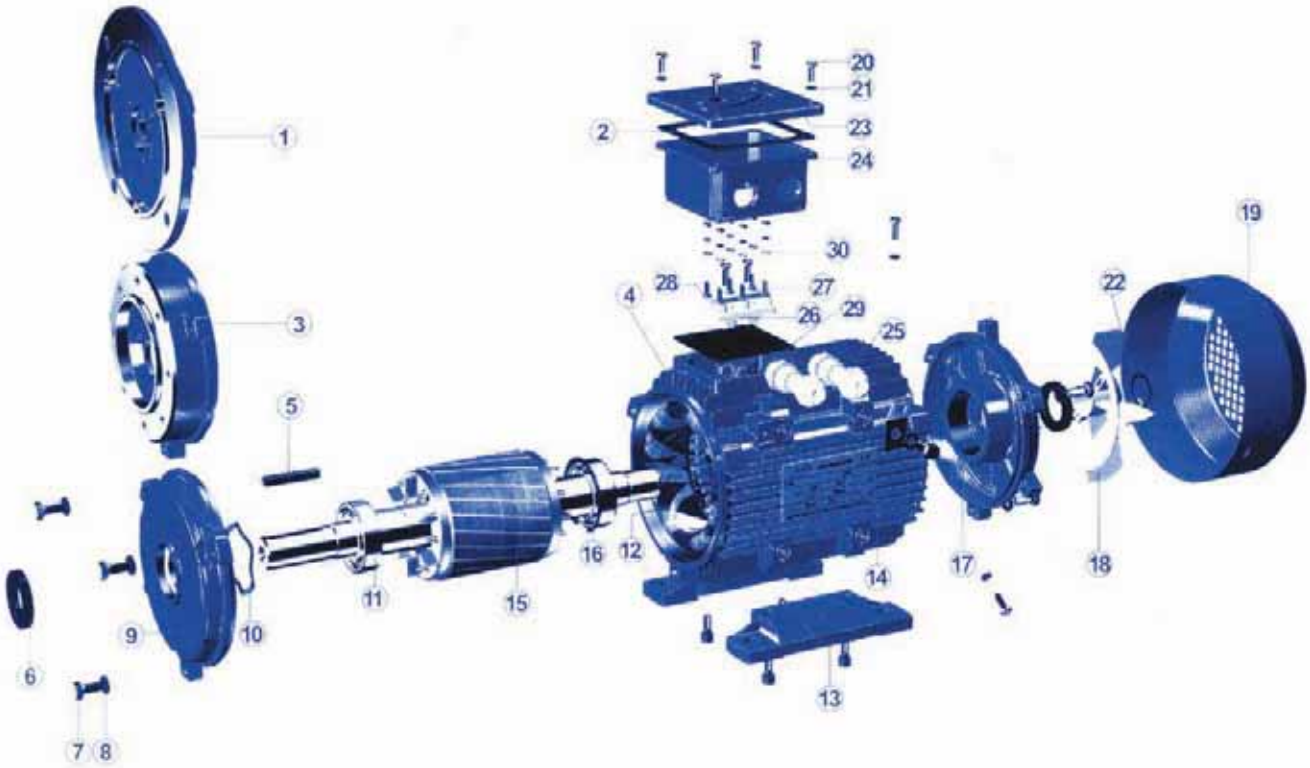
Electronic soft starters

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 and by limiting the rate of the current increase the startup time is extended. Where large heavy loads are to be started it is especially important to extend the startup time.

Variable frequency drives

Variable frequency drives are primarily recognized for their ability to manipulate power from a constant 3 phase 50 Hz power supply converting it to variable frequency power. This enables the speed of 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 VF drives. The functionally flexible VF drive is also commonly used to reduce energy consumption on fans, pumps and compressors and offer a simple and repeatable method of changing speeds or flow rates.

Components



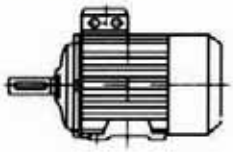
1. B5 Flange
2. Gasket
3. B14 Flange
4. Housing
5. Key
6. Oil Seal
7. Bolt
8. Spring washer
9. Front endshield
10. Wave washer
11. Bearing
12. Stator
13. Multimount Feet
14. Name plate
15. Rotor
16. Circlip
17. Rear end shield
18. Fan
19. Fan cowl
20. Screw
21. Washer
22. Fan clamp
23. Terminal box lid
24. Terminal box base
25. Cable gland
26. Terminal board
27. Brass lug
28. Brass nut
29. Earth mark
30. Brass washer

Mounting Arrangements

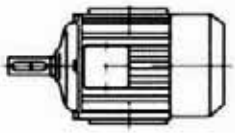
Mounting arrangements to IEC 60034-7

IM B3 = Foot mounted

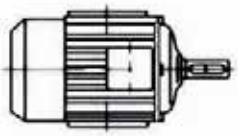
IM B3



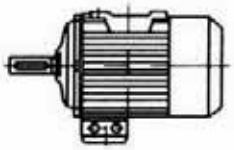
IM B6



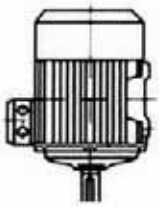
IM B7



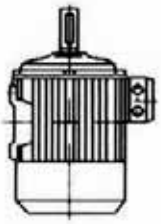
IM B8



IM V5

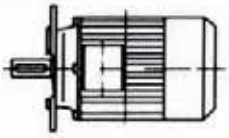


IM V6



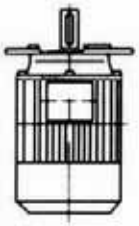
IM B5 = Flange mounted

IM B5



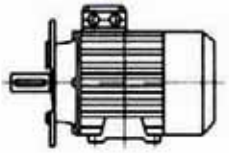
IM V1

IM V3

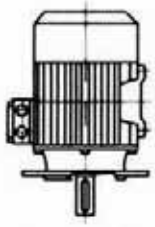


IM B35 = Foot & flange mounted

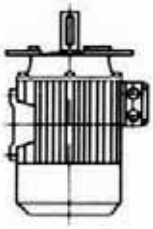
IM B35



IM V15

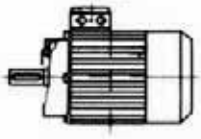


IM V36

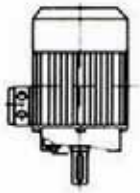


IM B14 = Reduced flange mounted

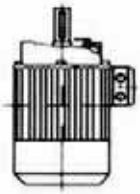
IM B14



IM V18

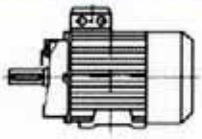


IM V19

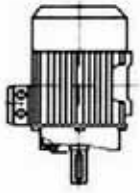


IM B34 = Foot & reduced flange mounted

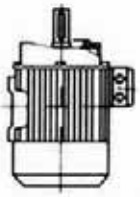
IM B34



IM V58



IM V69



Technical Data EFF 2

Speed 3000 rev/min 2-Pole 50 Hz

Type	Output		Speed rev/min	In A			Efficiency n% 100%	Power Factor Cos 10%	Tn Nm	Ts Tn	Tmax Tn	Is In	Moment (J) kgm²	Noise LwdB(A)	Weight mass/kg
	kW	hp		380V	400V	415V									
CML 561-2	0.09	0.12	2750	0.32	0.30	0.29	62.0	0.70	0.31	2.1	2.2	5.2	0.00018	57	3.6
CML 562-2	0.12	0.18	2750	0.38	0.36	0.72	67.0	0.72	0.41	2.1	2.2	5.2	0.00023	57	3.9
CML 631-2	0.18	0.25	2720	0.53	0.50	0.18	65.0	0.80	0.61	2.2	2.3	5.5	0.00031	58	4.8
CML 632-2	0.25	0.37	2720	0.69	0.66	0.63	68.0	0.81	0.96	2.2	2.3	5.5	0.00060	58	5.1
CML 711-2	0.37	0.50	2740	0.99	0.94	0.91	70.0	0.81	1.26	2.2	2.3	6.1	0.00075	61	6.0
CML 712-2	0.55	0.75	2740	1.40	1.33	1.28	73.0	0.82	1.88	2.2	2.3	6.1	0.00090	61	6.5
CML 801-2	0.75	1.0	2840	1.83	1.73	1.68	75.1	0.83	2.54	2.2	2.3	6.1	0.0012	64	8.7
CML 802-2	1.1	1.5	2840	2.58	2.45	2.37	77.0	0.84	3.72	2.2	2.3	7.0	0.0014	64	9.5
CML 90S-2	1.5	2.0	2840	3.43	3.26	3.14	79.0	0.84	5.14	2.2	2.3	7.0	0.0029	69	11.8
CML 90L-2	2.2	3.0	2840	4.85	4.61	4.44	81.1	0.85	7.40	2.2	2.3	7.0	0.0055	69	13.5
CML 100L-2	3.0	4.0	2860	6.33	6.01	5.79	82.8	0.87	9.95	2.2	2.3	7.5	0.0109	73	21.0
CML 112M-2	4.0	5.5	2880	8.18	7.77	7.49	84.4	0.88	13.22	2.2	2.3	7.5	0.0126	74	28.0
CML 132S1-2	5.5	7.5	2900	11.1	10.5	10.1	85.9	0.88	18.11	2.2	2.3	7.5	0.0377	77	39.0
CML 132S2-2	7.5	10	2900	14.9	14.1	13.6	87.2	0.88	24.70	2.2	2.3	7.5	0.0499	77	44.5
CML 160M1-2	11	15	2930	21.2	20.2	19.4	88.5	0.89	35.85	2.2	2.3	7.5	0.055	83	69.5
CML 160M2-2	15	20	2930	28.6	27.2	26.2	89.5	0.89	48.89	2.2	2.3	7.5	0.075	83	76.0
CML 160L-2	18.5	25	2930	34.6	32.9	31.7	90.2	0.90	60.30	2.2	2.3	7.5	0.124	83	88.5
CML 180M-2	22	30	2940	40.9	38.9	37.5	90.7	0.90	71.46	2.0	2.3	7.5	0.075	89	102.3
CML 200L1-2	30	40	2950	55.4	52.6	50.7	91.5	0.90	97.12	2.0	2.3	7.5	0.124	92	119
CML 200L2-2	37	50	2950	67.7	64.4	62	92.2	0.90	119.78	2.0	2.3	7.5	0.139	92	125

Speed 1500 rev/min 4-Pole 50 Hz

Type	Output		Speed rev/min	In A			Efficiency n% 100%	Power Factor Cos 10%	Tn Nm	Ts Tn	Tmax Tn	Is In	Moment (J) kgm²	Noise LwdB(A)	Weight mass/kg
	kW	hp		380V	400V	415V									
CML 561-4	0.06	0.09	1325	0.28	0.27	0.26	56.0	0.58	0.43	2	2.1	4.0	0.0003	48	3.6
CML 562-4	0.09	0.12	1325	0.39	0.37	0.35	58.0	0.61	0.64	2	2.1	4.0	0.0004	48	3.9
CML 631-4	0.12	0.18	1310	0.44	0.42	0.41	57.0	0.72	0.84	2.1	2.2	4.4	0.0005	48	4.8
CML 632-4	0.18	0.25	1310	0.62	0.59	0.57	60.0	0.73	1.26	2.1	2.2	4.4	0.0006	48	5.1
CML 711-4	0.25	0.37	1330	0.79	0.75	0.72	65.0	0.74	1.73	2.1	2.2	5.2	0.0006	53	6.0
CML 712-4	0.37	0.50	1330	1.12	1.06	1.02	67.0	0.75	2.56	2.1	2.2	5.2	0.0013	53	6.3
CML 801-4	0.55	0.75	1380	1.57	1.49	1.43	71.1	0.75	3.75	2.3	2.3	5.2	0.0018	58	9.4
CML 802-4	0.75	1.0	1390	2.05	1.95	1.88	73.1	0.76	5.11	2.3	2.3	6.0	0.0021	58	10.8
CML 90S-4	1.1	1.5	1390	2.84	2.70	2.60	76.3	0.77	7.50	2.3	2.3	6.0	0.0023	59	12.0
CML 90L-4	1.5	2.0	1390	3.67	3.49	3.36	78.6	0.79	10.23	2.3	2.3	6.0	0.0027	59	13.8
CML 100L1-4	2.2	3.0	1410	5.08	4.83	4.65	81.2	0.81	14.8	2.3	2.3	7.0	0.0054	61	20.8
CML 100L2-4	3.0	4.0	1410	6.72	6.39	6.15	82.7	0.82	20.18	2.3	2.3	7.0	0.0067	61	23.5
CML 112M-4	4.0	5.5	1435	8.79	8.35	8.05	84.3	0.82	26.53	2.3	2.3	7.0	0.0095	62	29.5
CML 132S-4	5.5	7.5	1440	11.7	11.1	10.7	85.8	0.83	36.48	2.3	2.3	7.0	0.0214	69	41.0
CML 132M-4	7.5	10	1440	15.6	14.8	14.3	87.1	0.84	0.74	2.3	2.3	7.0	0.0296	69	47.5
CML 160M-4	11	15	1460	22.5	21.4	20.6	88.5	0.84	0.74	2.3	2.3	7.0	0.0747	72	72.5
CML 160L-4	15	20	1460	30	28.5	27.4	89.5	0.85	0.75	2.3	2.3	7.0	0.0918	72	85.6
CML 180M-4	18.5	25	1470	36.3	34.5	33.2	90.1	0.86	120.19	2.2	2.3	7.5	0.1390	76	101
CML 180L-4	22	30	1470	42.9	40.8	39.3	90.6	0.86	142.93	2.2	2.3	7.5	0.1580	76	112
CML 200L-4	30	40	1470	57.9	55.0	53.0	91.5	0.86	160.96	2.2	2.3	7.2	0.2620	79	122

From frame sizes 180 to 200 the motor can be supplied in a cast iron construction (ref CMC).

Technical Data EFF 2

Speed 1000 rev/min 6-Pole 50 Hz

Type	Output		Speed rev/min	In A			Efficiency n% 100%	Power Factor Cos 10%	Tn Nm	Ts Tn	Tmax Tn	Is In	Moment (J) kgm²	Noise LwdB(A)	Weight mass/kg
	kW	hp		380V	400V	415V									
CML 631-6	0.09	0.12	840	0.52	0.49	0.47	44.0	0.60	1.60	1.8	1.9	3.5	0.00025	48	4.8
CML 632-6	0.12	0.18	850	0.63	0.60	0.58	48.0	0.60	2.25	1.8	1.9	3.5	0.0004	48	5.1
CML 711-6	0.18	0.25	850	0.74	0.70	0.68	58.0	0.66	1.91	1.9	2.0	4.0	0.0011	49	6.0
CML 712-6	0.25	0.37	850	0.95	0.90	0.87	59.0	0.68	2.65	1.9	2.0	4.0	0.0014	49	6.3
CML 801-6	0.37	0.5	885	1.30	1.23	1.19	62.0	0.70	3.93	1.9	2.0	4.7	0.0016	51	8.9
CML 802-6	0.55	0.75	885	1.78	1.69	1.63	65.0	0.72	5.84	1.9	2.1	4.7	0.0019	51	10.4
CML 90S-6	0.75	1	910	2.29	2.18	2.10	69.0	0.72	7.87	2.0	2.1	5.5	0.0029	54	12.1
CML 90L-6	1.1	1.5	910	3.18	3.02	2.91	72.1	0.73	11.54	2.0	2.1	5.5	0.0035	54	13.7
CML 100L-6	1.5	2	920	3.99	3.79	3.66	76.1	0.75	15.24	2.0	2.1	5.5	0.0069	58	23.0
CML 112M-6	2.2	3	935	5.55	5.28	5.08	79.2	0.76	22.35	2.1	2.1	6.5	0.0140	62	28.2
CML 132S-6	3	4	960	7.40	7.03	6.77	81.1	0.76	29.84	2.1	2.1	6.5	0.0286	66	40.3
CML 132M1-6	4	5.5	960	9.74	9.25	8.92	82.1	0.76	39.79	2.1	2.1	6.5	0.0357	66	43.0
CML 132M2-6	5.5	7.5	960	12.9	12.3	11.8	84.1	0.77	54.71	2.1	2.1	6.5	0.0449	66	47.2
CML 160M-6	7.5	10	970	17.2	16.3	15.7	86.1	0.77	73.84	2.1	2.1	6.5	0.0810	70	70.6
CML 160L-6	11	15	970	24.5	23.2	22.4	87.6	0.78	108.30	2.1	2.1	6.5	0.1160	70	85.0
CML 180L-6	15	20	970	31.6	30.0	28.9	89.1	0.81	147.68	2.1	2.1	7.0	0.2070	73	105
CML 200L1-6	18.5	25	980	38.5	36.6	35.3	90.1	0.81	182.14	2.1	2.0	7.0	0.3150	76	115
CML 200L2-6	22	30	980	44.7	42.5	40.9	90.1	0.83	216.60	2.1	2.0	7.0	0.3600	76	121

Speed 750 rev/min 8-Pole 50 Hz

Type	Output		Speed rev/min	In A			Efficiency n% 100%	Power Factor Cos 10%	Tn Nm	Ts Tn	Tmax Tn	Is In	Moment (J) kgm²	Noise LwdB(A)	Weight mass/kg
	kW	hp		380V	400V	415V									
CML 711-8	0.09	0.12	600	0.60	0.57	0.55	40.0	0.57	1.95	1.8	1.9	2.8	0.0008	48	6.0
CML 712-8	0.12	0.18	600	0.71	0.70	0.65	45.0	0.57	2.16	1.8	1.9	2.8	0.0010	48	6.3
CML 801-8	0.18	0.25	645	0.88	0.84	0.80	51.0	0.61	2.5	1.8	1.9	3.3	0.0025	48	8.9
CML 802-8	0.25	0.37	645	1.15	1.10	1.06	54.0	0.61	3.5	1.8	1.9	3.3	0.0030	48	10.4
CML 90S-8	0.37	0.5	670	1.49	1.41	1.36	62.0	0.61	5.1	1.8	1.9	4.0	0.0051	53	12.1
CML 90L-8	0.55	0.75	670	2.17	2.07	1.99	63.0	0.61	7.6	1.8	2.0	4.0	0.0065	53	13.7
CML 100L1-8	0.75	1	680	2.40	2.28	2.19	71.0	0.67	10.2	1.8	2.0	4.0	0.0095	56	23.0
CML 100L2-8	1.1	1.5	680	3.32	3.15	3.04	73.0	0.69	15.0	1.8	2.0	5.0	0.0110	56	25.1
CML 112M-8	1.5	2	690	4.40	4.18	4.03	75.0	0.69	20.5	1.8	2.0	5.0	0.0245	59	28.2
CML 132S-8	2.2	3	705	6.04	5.73	5.53	78.0	0.71	19.6	1.8	2.0	6.0	0.0314	61	40.3
CML 132M-8	3	4	705	7.90	7.51	7.24	79.0	0.73	40.4	1.8	2.0	6.0	0.0395	61	45.0
CML 160M1-8	4	5.5	720	10.30	9.76	9.41	81.0	0.73	53.1	1.9	2.0	6.0	0.0753	65	68.5
CML 160M2-8	5.5	7.5	720	13.60	12.90	12.50	83.0	0.74	72.6	2.0	2.0	6.0	0.0931	65	76.0
CML 160L-8	7.5	10	720	17.80	16.90	16.30	85.5	0.75	99.5	2.0	2.0	6.0	0.1260	65	86.2
CML 180L-8	11	15	730	25.10	23.9	23.00	87.5	0.76	143.90	2.0	2.0	6.0	0.2030	70	101
CML 200L-8	15	20	730	34.10	32.4	31.20	88.0	0.76	196.23	2.0	2.0	6.6	0.3990	73	120

From frame sizes 180 to 200 the motor can be supplied in a cast iron construction (ref CMC).

Cable Entry and Bearing Sales

Cable Entry

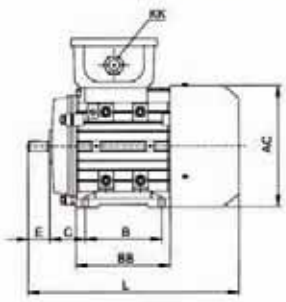
Classified number	Frame size	Max .fl.amps	Entry size
1	63-80	2.6	1 x M20x1.5
2	90-100	6.8	1 x M20x1.5
3	112-132	15.4	2 x M32x1 .5
4	160-180	42.5	2 x M40x1.5
5	200	84.2	2 x M50x1.5

Bearing Size

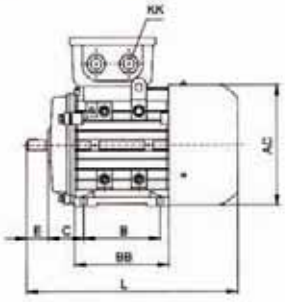
Frame size	Poles	Drive End	Non-Drive End
56	2 to 4	6201 2RS-C3 (6201 ZZ-C3)	6201 2RS-C3 (6201 ZZ-C3)
63	2 to 6	6201 2RS-C3 (6201 ZZ-C3)	6201 2RS-C3 (6201 ZZ-C3)
71	2 to 8	6202 2RS-C3 (6202 ZZ-C3)	6202 2RS-C3 (6202 ZZ-C3)
80	2 to 8	6204 2RS-C3 (6204 ZZ-C3)	6204 2RS-C3 (6204 ZZ-C3)
90	2 to 8	6205 2RS-C3 (6205 ZZ-C3)	6205 2RS-C3 (6205 ZZ-C3)
100	2 to 8	6206 2RS-C3 (6206 ZZ-C3)	6206 2RS-C3 (6206 ZZ-C3)
112	2 to 8	6206 2RS-C3 (6206 ZZ-C3)	6206 2RS-C3 (6206 ZZ-C3)
132	2 to 8	6208 2RS-C3 (6208 ZZ-C3)	6208 2RS-C3 (6208 ZZ-C3)
160	2 to 8	6309 2RS-C3 (6309 ZZ-C3)	6309 2RS-C3 (6309 ZZ-C3)
180	2 to 8	6311 ZZ-C3	6311 ZZC3
200	2 to 8	6312 ZZ-C3	6312 ZZC3

Mounting and Overall Dimensions

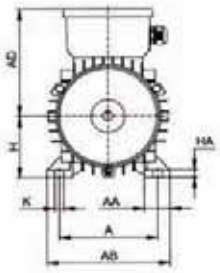
IM B3 Foot mounted frame size 56 to 200



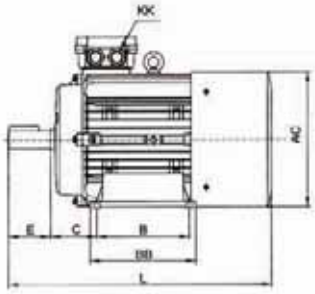
56-90



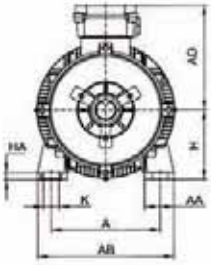
100-160



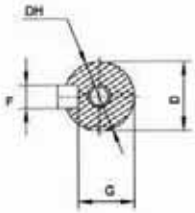
56-160



180-200



180-200

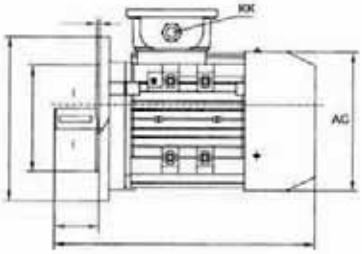


Frame Size	Mounting Dimensions																	Overall Dimensions
	A	AA	AB	BB	HA	AC	AD	B	C	D	DH	E	F	G	H	K	KK	L
																	Metric / PG	
56	90	23	115	88	7	110	100	71	36	9	M4x12	20	3	7.2	56	5.8	1-M20X1.5 / 1-PG11	199
63	100	24	135	100	7	130	111	80	40	11	M4x12	23	4	8.5	63	7.0	1-M20X1.5 / 1-PG11	217
71	112	26	150	110	8	145	118	90	45	14	M5x12	30	5	11	71	7.0	1-M20X1.5 / 1-PG11	245
80	125	35	165	125	9	175	134	100	50	19	M6x16	40	6	15.5	80	10.0	1-M25X1.5 / 1-PG16	287
90S	140	37	180	125	10	195	140	100	56	24	M8x19	50	8	20.0	90	10.0	1-M25X1.5 / 1-PG16	315
90L	140	37	180	150	10	195	140	125	56	24	M8x19	50	8	20.0	90	10.0	1-M25X1.5 / 1-PG16	340
100L	160	40	205	172	11	215	160	140	63	28	M10x22	60	8	24.0	100	12.0	1-M32X1.5 / 1-PG21	385
112M	190	41	230	181	12	240	178	140	70	28	M10x22	60	8	24.0	112	12.0	2-M32X1.5 / 2-PG21	400
132S	216	51	270	186	15	275	206	140	89	38	M12x28	80	10	33.0	132	12.0	2-M32X1.5 / 2-PG21	483
132M	216	51	270	224	15	275	206	178	89	38	M12x28	80	10	33.0	132	12.0	2-M32X1.5 / 2-PG21	510
160M	254	55	320	260	18	330	255	210	108	42	M16x36	110	12	37.0	160	15.0	2-M40X1.5 / 2-PG29	615
160L	254	55	320	304	18	330	255	254	108	42	M16x36	110	12	37.0	160	16.0	2-M40X1.5 / 2-PG29	670
180M	279	75	350	315	18	355	272	241	121	48	M16x36	110	14	42.5	180	15	2-M32x1.5 / 2-PG29	765
180L	279	75	350	315	18	355	272	279	121	48	M16x36	110	14	42.5	180	15	2-M32x1.5 / 2-PG29	765
200L	318	100	398	355	24	355	272	305	133	55	M20x42	110	16	49	200	19	2-M32x1.5 / 2-PG36	790

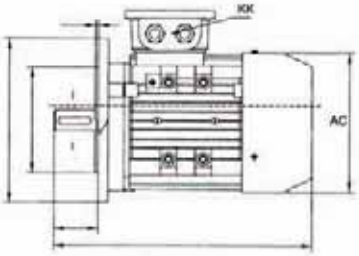
All dimensions in millimetres unless otherwise stated.

Mounting and Overall Dimensions

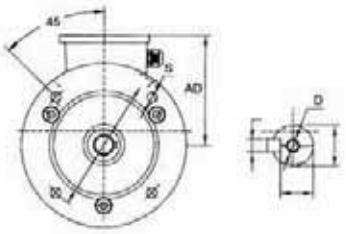
IM B5 Flange mounted frame size 56 to 200



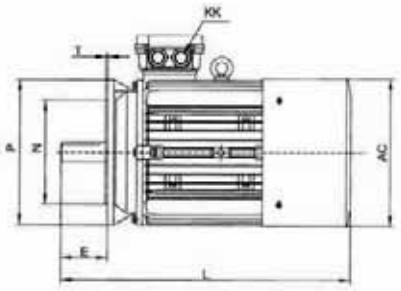
56-90



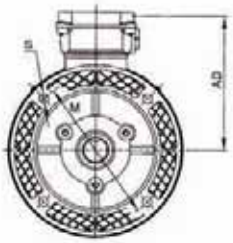
100-160

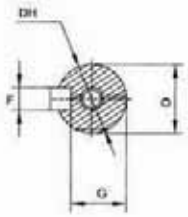


56-160



180-200





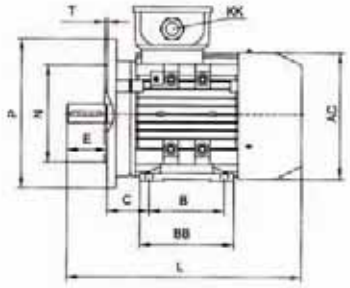
180-200

Frame Size	Mounting Dimensions														Overall Dimensions					
	HA	AC	AD	B	C	D	DH	E	F	G	H	K	KK		L	M	N	P	S	T
													Metric	PG						
56	7	110	100	71	36	9	M4x12	20	3	7.2	56	5.8	1-M20x1.5	1-PG11	199	100	80	120	7	3.0
63	7	130	111	80	40	11	M4x12	23	4	8.5	63	7.0	1-M20x1.5	1-PG11	217	115	95	140	10	3.0
71	8	145	118	90	45	14	M5x12	30	5	11	71	7.0	1-M20x1.5	1-PG11	245	130	110	160	12	3.5
80	9	175	134	100	50	19	M6x16	40	6	15.5	80	10.0	1-M25x1.5	1-PG16	287	165	130	200	12	3.5
90S	10	195	140	100	56	24	M8x19	50	8	20.0	90	10.0	1-M25x1.5	1-PG16	315	165	130	200	12	3.5
90L	10	195	140	125	56	24	M8x19	50	8	20.0	90	10.0	1-M25x1.5	1-PG16	340	165	130	200	12	3.5
100L	11	215	160	140	63	28	M10x22	60	8	24.0	100	12.0	1-M32x1.5	1-PG21	385	215	180	250	15	4.0
112M	12	240	178	140	70	28	M10x22	60	8	24.0	112	12.0	2-M32x1.5	2-PG21	400	215	180	250	15	4.0
132S	15	275	206	140	89	38	M12x28	80	10	33.0	132	12.0	2-M32x1.5	2-PG21	483	265	230	300	15	4.0
132M	15	275	206	178	89	38	M12x28	80	10	33.0	132	12.0	2-M32x1.5	2-PG21	510	265	230	300	15	4.0
160M	18	330	255	210	108	42	M16x36	110	12	37.0	160	15.0	2-M40x1.5	2-PG29	615	300	250	350	19	5.0
160L	18	330	255	254	108	42	M16x36	110	12	37.0	160	16.0	2-M40x1.5	2-PG29	670	300	250	350	19	5.0
180M	18	355	272	241	121	48	M 16x36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765	300	250	350	19	5.0
180L	18	355	272	279	121	48	M16x36	110	14	42.5	180	15	2-M32x1.5	2-PG?	765	300	250	350	19	5.0
200L	24	355	272	305	133	55	M20x42	110	16	49	200	19	2-M32x1.5	2-PG36	790	350	300	400	19	5.0

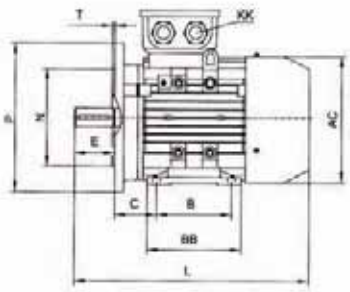
All dimensions in millimetres unless otherwise stated.

Mounting and Overall Dimensions

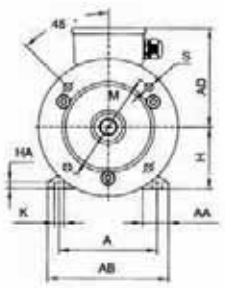
IM B35 Foot and flange mounted frame size 56 to 200



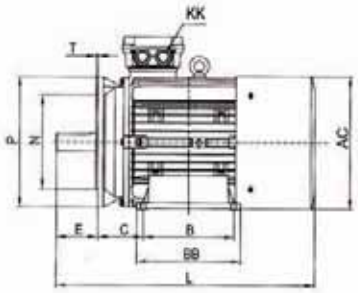
56-90



100-160

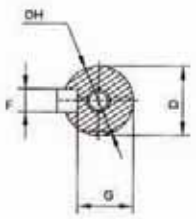


56-160



180-200

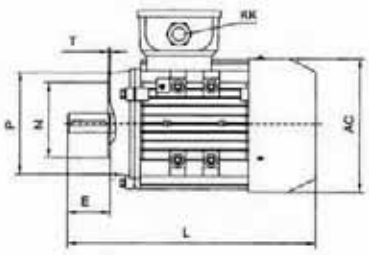
180-200



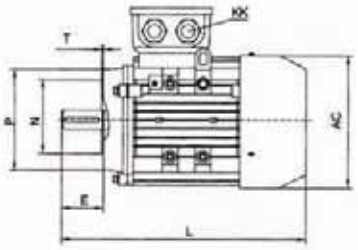
Frame Size	Mounting Dimensions																	Overall Dimensions					
	A	AA	AB	BB	HA	AC	AD	B	C	D	DH	E	F	G	H	K	KK		L	M	N	P	S	T
																	Metric	PG						
56	90	23	115	88	7	110	100	71	36	9	M4X12	20	3	7.2	56	5.8	1-M20X1.5	1-PG11	199	100	80	120	7	3.0
63	100	24	135	100	7	130	111	80	40	11	M4X12	23	4	8.5	63	7.0	1-M20X1.5	1-PG11	217	115	95	140	10	3.0
71	112	26	150	110	8	145	118	90	45	14	M5X12	30	5	11	71	7.0	1-M20X1.5	1-PG11	245	130	110	160	12	3.5
80	125	35	165	125	9	175	134	100	50	19	M6X16	40	6	15.5	80	10.0	1-M25X1.5	1-PG16	287	165	130	200	12	3.5
90S	140	37	180	125	10	195	140	100	56	24	M8X19	50	8	20.0	90	10.0	1-M25X1.5	1-PG16	315	165	130	200	12	3.5
90L	140	37	180	150	10	195	140	125	56	24	M8X19	50	8	20.0	90	10.0	1-M25X1.5	1-PG16	340	165	130	200	12	3.5
100L	160	40	205	172	11	215	160	140	63	28	M10X22	60	8	24.0	100	12.0	1-M32X1.5	1-PG21	385	215	180	250	15	4.0
112M	190	41	230	181	12	240	178	140	70	28	M10X22	60	8	24.0	112	12.0	2-M32X1.5	2-PG21	400	215	180	250	15	4.0
132S	216	51	270	186	15	275	206	140	89	38	M12X28	80	10	33.0	132	12.0	2-M32X1.5	2-PG21	483	265	230	300	15	4.0
132M	216	51	270	224	15	275	206	178	89	38	M12X28	80	10	33.0	132	12.0	2-M32X1.5	2-PG21	510	265	230	300	15	4.0
160M	254	55	320	260	18	330	255	210	108	42	M16X36	110	12	37.0	160	15.0	2-M40X1.5	2-PG29	615	300	250	350	19	5.0
160L	254	55	320	304	18	330	255	254	108	42	M16X36	110	12	37.0	160	16.0	2-M40X1.5	2-PG29	670	300	250	350	19	5.0
180M	279	75	350	315	18	355	272	241	121	48	M16X36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765	300	250	350	19	5.0
180L	279	75	350	315	18	355	272	279	121	48	M16X36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765	300	250	350	19	5.0
200L	318	100	398	355	24	355	272	305	133	55	M20X42	110	16	49	200	19	2-M32X1.5	2-PG36	790	350	300	400	19	5.0

Mounting and Overall Dimensions

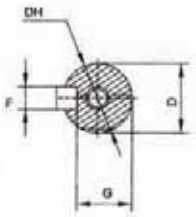
IM B14A Reduced flange mounted frame size 56 to 160

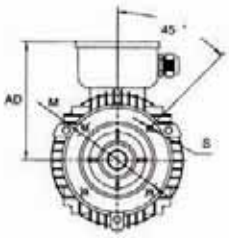


56-90



100-160





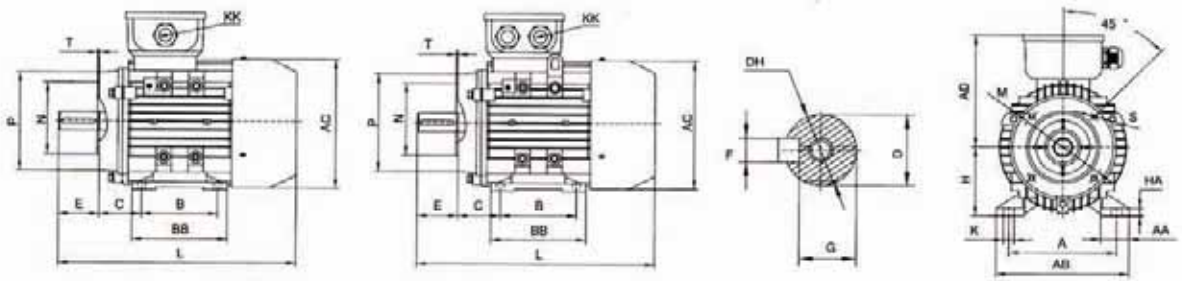
56-160

Frame Size	Mounting Dimensions									Overall Dimensions					
	AC	AD	D	DH	E	F	G	KK		L	M	N	P	S	T
								Metric	PG						
56	110	100	9	M4x12	20	3	7.2	1-M20x1.5	1-PG11	199	65	50	80	M5	2.5
63	130	111	11	M4x12	23	4	8.5	1-M20x1.5	1-PG11	217	75	60	90	M5	2.5
71	145	118	14	M5x12	30	5	11.0	1-M20x1.5	1-PG11	245	85	70	105	M6	2.5
80	175	134	19	M6x16	40	6	15.5	1-M25x1.5	1-PG16	297	100	80	120	M6	3.0
90S	195	140	24	M8x19	50	8	20.0	1-M25x1.5	1-PG16	315	115	95	140	M8	3.0
90L	195	140	24	M8x19	50	8	20.0	1-M25x1.5	1-PG16	340	115	95	140	M8	3.0
100L	215	160	28	M10x22	60	8	24.0	1-M32x1.5	1-PG21	385	130	110	160	M8	3.5
112M	240	178	28	M10x22	60	8	24.0	2-M32x1.5	2-PG21	400	130	110	160	M8	3.5
132S	275	206	38	M12x28	80	10	33.0	2-M32x1.5	2-PG21	483	165	130	200	M10	3.5
132M	275	206	38	M12x28	80	10	33.0	2-M32x1.5	2-PG21	510	165	130	200	M10	3.5
160M	330	255	42	M16x36	110	12	37.0	2-M40x1.5	2-PG29	615	215	180	250	M12	4.0
160L	330	255	42	M16x36	110	12	37.0	2-M40x1.5	2-PG29	670	215	180	250	M12	4.0

All dimensions in millimetres unless otherwise stated.

Mounting and Overall Dimensions

IM B3 B14A Reduced flange and foot mounted frame size 56 to 160



56-90 **90-160** **56-160**

Frame Size	Mounting Dimensions									Overall Dimensions					
	AC	AD	D	DH	E	F	G	KK		L	M	N	P	S	T
								Metric	PG						
56	110	100	9	M4x12	20	3	7.2	1-M20x1.5	1-PG11	199	65	50	80	M5	2.5
63	130	111	11	M4x12	23	4	8.5	1-M20x1.5	1-PG11	217	75	60	90	M5	2.5
71	145	118	14	M5x12	30	5	11.0	1-M20x1.5	1-PG11	245	85	70	105	M6	2.5
80	175	134	19	M6x16	40	6	15.5	1-M25x1.5	1-PG16	297	100	80	120	M6	3.0
90S	195	140	24	M8x19	50	8	20.0	1-M25x1.5	1-PG16	315	115	95	140	M8	3.0
90L	195	140	24	M8x19	50	8	20.0	1-M25x1.5	1-PG16	340	115	95	140	M8	3.0
100L	215	160	28	M10x22	60	8	24.0	1-M32x1.5	1-PG21	385	130	110	160	M8	3.5
112M	240	178	28	M10x22	60	8	24.0	2-M32x1.5	2-PG21	400	130	110	160	M8	3.5
132S	275	206	38	M12x28	80	10	33.0	2-M32x1.5	2-PG21	483	165	130	200	M10	3.5
132M	275	206	38	M12x28	80	10	33.0	2-M32x1.5	2-PG21	510	165	130	200	M10	3.5
160M	330	255	42	M16x36	110	12	37.0	2-M40x1.5	2-PG29	615	215	180	250	M12	4.0
160L	330	255	42	M16x36	110	12	37.0	2-M40x1.5	2-PG29	670	215	180	250	M12	4.0

Single Phase General Information

CHALLENGE series single phase AC electric motors, Are totally enclosed fan cooled **(IC-411)** squirrel caged type, With **IP55** enclosure protection, Class F insulation and **SI** continuous Duty/ Rating.

The motors are manufactured from high grade die cast aluminium alloy with a terminal box constructed of engineering grade plastic and come with multi-mount detachable feet as standard, which allows for various mounting positions to be achieved.

The temperature ratings are -15° C to +40° degrees C to a maximum altitude of 1000 metres above sea level.

CHALLENGE motors have voltage ratings of:
110v / 220v / 230v / 240v.
Also they have a rated frequency of 50Hz and 60Hz.

Designation

Motor Identification Symbol

CMLL CMLY 801-2

- 2 — Number of poles
- 801 — Core length
- Y — Frame size
- M — Permanent capacitor
- CL — Capacitor Start / Capacitor run

Cooling Method

IC-411

- 1 — Totally enclosed fan cooling type
- IC — International cooling symbol

Protection Class

IP-5-5

- 5 — Protection against water projected by a nozzle from any direction
- 5 — Protecting against dust
- IP — International protection symbol

Standards and Regulations

CE

CE Marking

Our single phase induction motors comply with the requirements of the following international standard:

IEC 60034

as well as with the Low Voltage Directive 73/23 (1973), modified by the Directive 93/68 (1993) and the EMC-Directive 89/336.

The above named products comply with the requirements of the EC Directive Machines 89/392. In accordance with this Directive induction motors are components intended solely for integration into other machines. Commissioning is forbidden until conformity of the end product with this Directive is proved!

The CE symbol was applied for the first time in 1995.

Technical Data Single Phase

CMLY Single phase motors with permanent capacitors

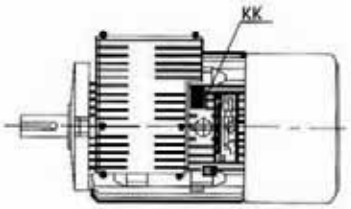
Type	Output		Current (A)	Speed rev/min	Efficiency n% 100%	Power Factor Cos 10%	Ts Tn	Tmax Tn	Is In	Capacity (UF)	Moment (J) kgm²	Weight mass/kg
	kW	hp										
CMLY561-2	0.09	0.12	0.7	2720	55	0.90	0.60	1.7	3.6	10	0.00010	3.4
CMLY562-2	0.12	0.18	1.0	2720	55	0.90	0.60	1.7	3.6	14	0.00012	3.7
CMLY631-2	0.18	0.25	1.47	2760	60	0.92	0.66	1.7	3.7	10	0.000150	4.1
CMLY632-2	0.25	0.37	1.91	2760	60	0.92	0.66	1.7	3.7	10	0.000163	4.5
CMLY711-2	0.37	0.5	3.12	2800	65	0.92	0.71	1.7	3.7	16	0.000350	6.4
CMLY712-2	0.55	0.75	3.63	2800	65	0.92	0.74	1.7	3.9	20	0.000460	6.6
CMLY801-2	0.75	1	5.50	2810	67	0.92	0.75	1.7	3.9	25	0.000970	8.3
CMLY802-2	1.1	1.5	7.52	2820	67	0.95	0.77	1.7	4.3	30	0.001090	9.1
CMLY90S-2	1.5	2	10.75	2840	72	0.95	0.78	1.7	4.8	40	0.002690	13.5
CMLY90L-2	2.2	3	13.10	2840	73	0.95	0.80	1.7	4.8	50	0.003080	15.6
CMLY100L-2	3	4	16.8	2900	79	0.99	0.80	1.9	4.8	60	0.01260	20.0
CMLY561-4	0.06	0.08	0.65	1360	55	0.90	0.61	1.7	3.1	5	0.00030	3.4
CMLY562-4	0.09	0.12	0.85	1360	55	0.90	0.61	1.7	3.1	6.3	0.00040	3.6
CMLY63M	0.12	0.18	1.40	1340	60	0.9	0.68	1.7	3.2	8	0.000170	4.1
CMLY632-4	0.18	0.25	1.52	1340	60	0.9	0.68	1.7	3.3	10	0.000230	4.6
CMLY711-4	0.25	0.37	2.2	1370	62	0.92	0.73	1.7	3.4	12.5	0.000400	6.3
CMLY712-4	0.37	0.5	2.80	1370	62	0.92	0.75	1.7	3.4	12.5	0.000570	7.3
CMLY801-4	0.55	0.75	4.51	1400	63	0.92	0.78	1.7	3.5	20	0.001400	9.8
CMLY802-4	0.75	1	5.2	1400	65	0.92	0.78	1.7	3.7	25	0.001600	10.5
CMLY90S-4	1.1	1.5	8.85	1410	70	0.95	0.80	1.7	4	30	0.002830	13.6
CMLY90L-4	1.5	2	9.51	1410	71	0.95	0.80	1.7	4.6	40	0.003590	16.8
CMLY100L1-4	2.2	3	14.0	1420	79	0.85	0.82	1.9	4.8	50	0.00540	20.0
CMLY100L2-4	3	4	16.7	1420	79	0.98	0.83	1.9	4.8	60	0.00670	21.5

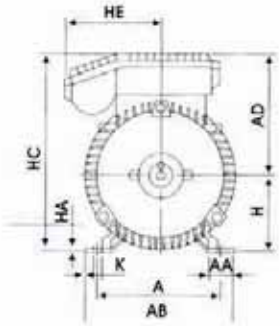
CMLL Single phase motors with capacitor start - capacitor run

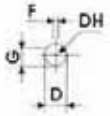
Type	Output		Current (A)	Speed rev/min	Efficiency n% 100%	Power Factor Cos 10%	Ts Tn	Tmax Tn	Is In	Moment (J) kgm²	Weight mass/kg
	kW	hp									
CMLL711-2	0.37	0.50	2.73	2760	69	0.92	1.8	1.8	5.8	0.000610	6.5
CMLL712-2	0.55	0.75	3.88	2780	72	0.92	1.8	1.8	5.4	0.000720	7.2
CMLL801-2	0.75	1	5.15	2800	75	0.92	1.8	1.7	5.7	0.000970	8.5
CMLL802-2	1.1	1.5	7.02	2800	78	0.95	1.8	1.7	5.6	0.001100	9.5
CMLL90S-2	1.5	2	9.40	2800	78	0.95	1.7	1.7	6.0	0.002960	13.2
CMLL90L-2	2.2	3	13.70	2800	82	0.95	1.7	1.7	6.2	0.003240	14.5
CMLL100L1-2	3.0	4	18.40	2820	83	0.95	1.7	1.7	6.4	0.003930	21.0
CMLL711-4	0.25	0.37	1.99	1360	65	0.92	1.8	1.8	6.0	0.000910	6.7
CMLL712-4	0.37	0.55	2.81	1370	67	0.92	1.8	1.8	5.7	0.000100	7.4
CMLL801-4	0.55	0.75	4.00	1400	70	0.92	1.8	1.7	5.4	0.001700	8.8
CMLL802-4	0.75	1.0	5.30	1400	71	0.92	1.8	1.7	5.5	0.001960	10.0
CMLL90S-4	1.1	1.5	7.20	1400	76	0.95	1.7	1.7	5.7	0.003050	13.5
CMLL90L-4	1.5	2	9.57	1400	78	0.95	1.7	1.7	6.0	0.003890	16.6
CMLL100L1-4	2.2	3	13.85	1410	80	0.95	1.7	1.7	6.1	0.005100	24.0
CMLL100L1-4	3	4	18.17	1420	83	0.95	1.7	1.7	6.4	0.006300	28.2

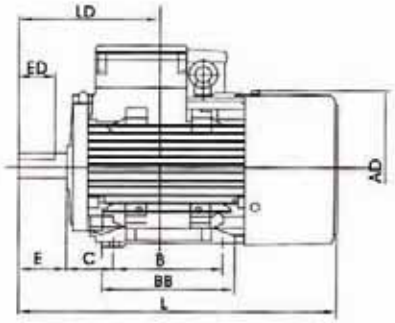
Mounting and Overall Dimensions

IM B3 frame size 56 to 100

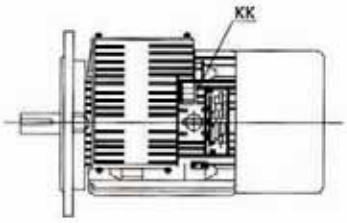


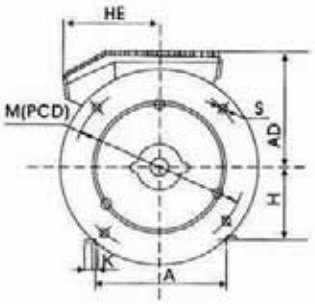


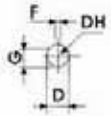


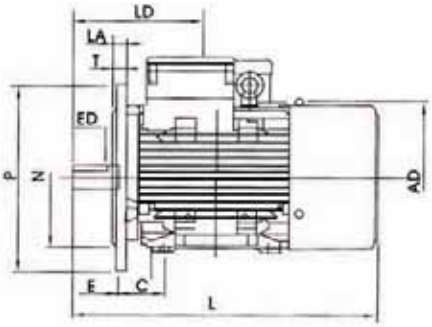


IM B5/V1 frame size 56 to 100







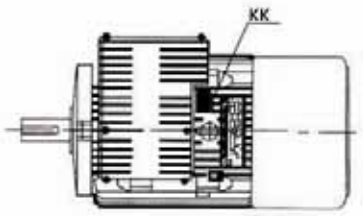


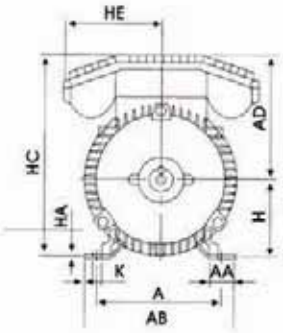
CMLY Single phase motors with permanent capacitors

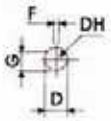
Frame	A	AA	AB	AC	AD	B	BB	C	D	DH	E	F	G	H	K	KK	L	M	N	P	S	T
56 63	100	24	135	130	115	80	115	40	11	M4 X 12	23	4	8.5	63	7	1-M20 X 1.5	217	115	95	140	10	3.0
71	112	26	150	145	120	90	125	45	14	M5 X 12	30	5	11.0	71	7	1-M20 X 1.5	245	130	130	160	10	3.5
80	125	35	165	175	145	100	135	50	19	M6 X 16	40	6	15.5	80	10	1-M25 X 1.5	300	165	165	200	12	3.5
90S	140	37	180	195	155	100	140	56	24	M8 X 19	50	8	20.0	90	10	1-M25 X 1.5	320	165	165	200	12	3.5
90L	140	37	180	195	155	125	165	56	24	M8 X 19	50	8	20.0	90	10	1-M25 X 1.5	350	165	165	200	12	3.5
100L	160	40	205	215	180	140	185	63	28	M10 X 22	60	8	24.0	100	12	1-M25 X 1.5	385	215	215	250	15	4.0

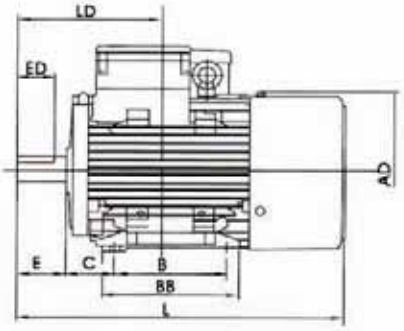
Mounting and Overall Dimensions

IM B3 frame size 71 to 100

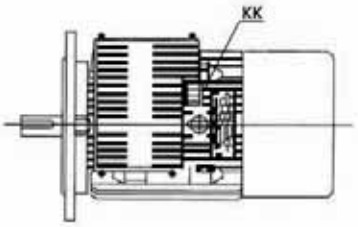


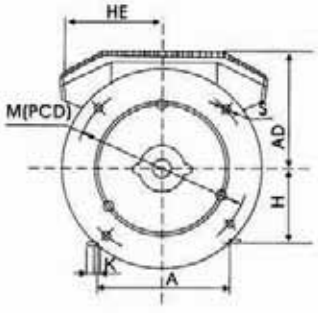


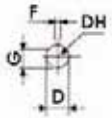


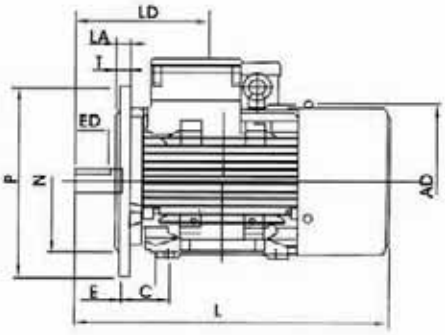


IM B5/V1 frame size 71 to 100









CMLL Single phase motors with capacitor start - capacitor run

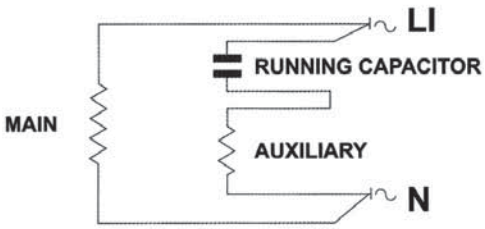
Frame	A	AA	AB	AC	AD	B	BB	C	D	DH	E	F	G	H	K	KK	L	M	N	P	S	T
71	112	26	150	145	120	90	125	45	14	M5 X 12	30	5	11.0	71	7	1-M20 X 1.5	245	130	110	160	10	3.5
80	125	35	165	175	145	100	135	50	19	M6 X 16	40	6	15.5	80	10	1-M25 X 1.5	300	165	130	200	12	3.5
90S	140	37	180	195	155	100	140	56	24	M8 X 19	50	8	20.0	90	10	1-M25 X 1.5	320	165	130	200	12	3.5
90L	140	37	180	195	155	125	165	56	24	M8 X 19	50	8	20.0	90	10	1-M25 X 1.5	350	165	130	200	12	3.5
100	160	40	205	215	180	140	185	63	28	M10 X 22	60	8	24.0	100	12	1-M25 X 1.5	385	215	160	250	15	4.0

Single Phase Connections

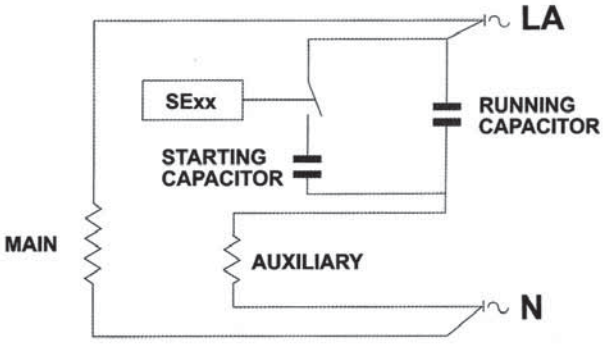
Connection

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.

CMLY Series



CMLL Series



SExx: electronic device for connection of starting capacitor

Shaft Mounted Speed Reducers

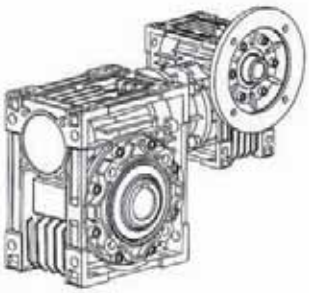
Features

- Includes complete torque arm assembly.
- Fully interchangeable with other manufacturers.
- Production line manufacturing guarantees tolerances and consistant quality.
- Gears produced on German manufactured hobbing centres to achieve the highest quality helical gear components.
  - Pinions; 8620 steel
  - Gears; 20MnCr5 steel
- All gears are ground.
- Final heat treatment includes gas carburising to a depth of 1mm then grinding to DIN class 6.
- Casting crack tested.
- All units test run for 30 minutes prior to final quality control checks.
- Full traceability guaranteed with unique Challenge serial number.
- Backstops also available.
- Held ex-stock in most Challenge warehouse locations.

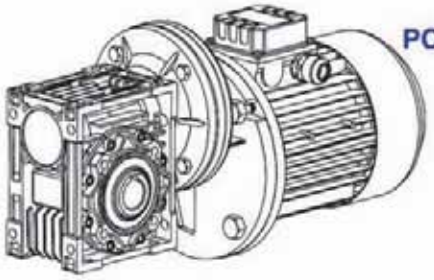
Worm Gear Units

Versions

CMRV 025-150



CMRV-CMRV...



PC-CMRV...

CRV 030-150

CRV-CMRV...

The service factor (f.s.) depends on the operating conditions the reduction unit is subjected to.
The parameters that need to be taken into consideration to select the most adequate service factor correctly comprise:

- type of load of the operated machine : A - B - C
- length of daily operating time: hours/day (Δ)
- start-up frequency: starts/hour (*)

TYPE OF LOAD:		
	A - uniform	fa ≤ 0.3
	B - moderate shocks	fa ≤ 3
	C - heavy shocks	fa ≤ 10

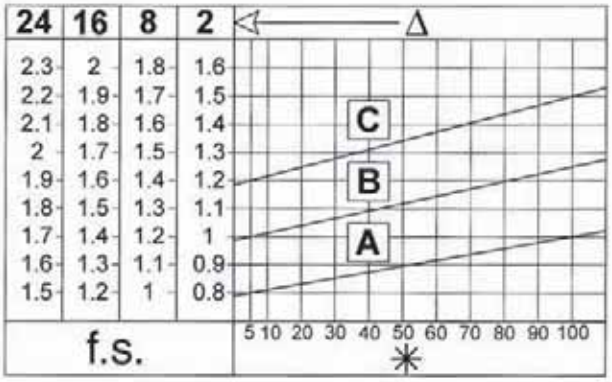
fa = Je/Jm

- Je (kgm2) moment of reduced external inertia at the drive-shaft
- Jm (kgm2) moment of inertia of motor If fa > 10 call our Technical Service.

A - Screw feeders for light materials, fans, assembly lines, conveyor belts for light materials, small mixers, lifts, cleaning machines, fillers, control machines.

B - Winding devices, woodworking machine feeders, goods lifts, balancers, threading machines, medium mixers, conveyor belts for heavy materials, winches, sliding doors, fertilizer scrapers, packing machines, concrete mixers, crane mechanisms, milling cutters, folding machines, gear pumps.

C - Mixers for heavy materials, shears, presses, centrifuges, rotating supports, winches and lifts for heavy materials, grinding lathes, stone mills, bucket elevators, drilling machines, hammer mills, cam presses, folding machines, turntables, tumbling barrels, vibrators, shredders.



Direction of Rotation

The helix is right-handed

Critical Applications

The performance given in the catalogue correspond to mounting position B3 or similar, ie. when the first stage is not entirely immersed in oil. For other mounting positions and/or particular input speeds, refer to the tables that highlight different critical situations for each size of reduction unit.

It is also necessary to take due consideration of and carefully assess the following applications by calling our Technical Service:

- As a speed increasing.
- Use in services that could be hazardous for people if the reduction unit fails.
- Applications with especially high inertia.
- Use as a lifting winch.
- Applications with high dynamic strain on the case of the reduction unit.
- In places with T° under -5°C or over 40°C.
- Use in chemically aggressive environments.
- Use in a salty environment.
- Mounting positions not envisaged in the catalogue.
- Use in radioactive environments.
- Use in environments pressures other than atmospheric pressure.

Avoid applications where even partial immersion of the reduction unit is required.

The maximum torque (*) that the gear reducer can support must not exceed two times the nominal torque (f.s.=1) stated in the performance tables.

(*) intended for momentary overloads due to starting at full load, braking, shocks or other causes, particularly those that are dynamic.

CRMV	025	030	040	050	063	075	090	110	130	150
V5: 1500 < n1 < 3000	-	-	-	-	-	B	B	B	B	B
n1 > 3000	B	B	B	B	B	A	A	A	A	A
V6	B	B	B	B	B	B	B	B	B	B

A = Application not recomended

B = Check the application or call technical department

Installation and Lubrication

To install the reduction unit it is necessary to note the following recommendations:

- The mounting on the machine must be stable to avoid any vibration.
- Check the correct direction of rotation of the reduction unit output shaft before fitting the unit to the machine.
- In the case of particularly lengthy periods of storage (4/6 months), if the oil seal is not immersed in the lubricant inside the unit, it is recommended to change it since the rubber could stick to the shaft or may even have lost the elasticity it needs to function properly.
- Whenever possible, protect the reduction unit against solar radiation and bad weather.
- Ensure the motor cools correctly by assuring good passage of air from the fan side.
- In the case of ambient temperatures < -5°C or > +40°C call the Technical Service.
- The various parts (pulleys, gear wheels, couplings, shafts, etc.) must be mounted on the solid or hollow shafts using special threaded holes or other systems that anyhow ensure correct operation without risking damage to the bearings or external parts of the units. Lubricate the surfaces in contact to avoid seizure or oxidation.
- Painting must definitely not go over rubber parts and the holes on the breather plugs, if any.
- For units equipped with oil plugs, replace the closed plug used for shipping with the special breather plug.
- Check the correct level of the lubricant through the indicator, if there is one.
- Starting must take place gradually, without immediately applying the maximum load.
- When there are parts, objects or materials under the motor drive that can be damaged by even limited spillage of oil, special protection should be fitted.
- The reduction units size 025-030-040-050-063-075-090 are supplied complete with lubricant for life, synthetic oil, and can therefore be mounted in any position envisaged in the catalogue. The only exceptions are CMRV090- and CRV075-090- in position. V5/V6 for which you should call our Technical Service to assess the conditions of use.
- The reduction units size 110, 130 and 150 are supplied complete with lubricant, mineral oil.
- For sizes 110, 130 and 150 it is necessary to specify the position, otherwise the reduction units are supplied with the quantity of oil relating to position B3, (breather supplied).
- Only reduction units 110, 130 and 150 are fitted with breather, level and oil drainage plugs. It is necessary, after installation, to replace the closed plug used for transportation with the breather plug supplied with the unit.
- The pre-stage helical modules are supplied complete with life-long lubricant, synthetic oil and can therefore be mounted in all the positions. Lubrication is separated from that of the worm reduction unit.

Lubrication

In cases of ambient temperatures not envisaged in the table, call our Technical Service.

In the case of temperatures under -30°C or over 60°C it is necessary to use oil seals with special properties.

For operating ranges with temperatures under 0°C it is necessary to consider the following:

1- The motors need to be suitable for operation at the envisaged ambient temperature.

2- The power of the electric motor needs to be adequate for exceeding the higher starting torques required.

3- In the case of reduction units with a cast-iron case, pay attention to impact loads since cast iron may have problems of fragility at temperatures under -15°C.

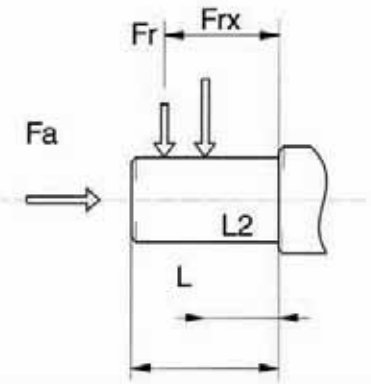
4- During the early stages of service, problems of lubrication may arise due to the high level of viscosity taken on by the oil and so it is wise to have a few minutes of rotation under no load.

The oil needs to be changed after approximately 10,000 hours. This period depends on the type of service and the environment where the reduction unit works.

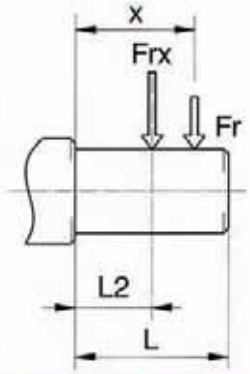
	T°C - ISO...	AGIP	SHELL	ESSO	MOBIL	CASTROL	BP
CMRV025-090 PC063-090 (synthetic oil)	-25) - (+50) ISO VG320	Telium VSF320	Tivela oil S320	S220	Glygoyle 30	Alphasyn PG32	Energol SG-XP320
CMRV110-150 (mineral oil)	-5) - (+40) ISO VG460	Blasia 460	Omala oil 460	Spartan EP460	Mobilgear 634	Alphamax 460	Energol GR-XP460
	-15) - (+25) ISO VG220	Blasia 220	Omala oil 220	Spartan EP220	Mobilgear 630	Alphamax 220	Energol GR-XP220

CMRV	025	030	040	050	063	075	090	110	130	150	PC	063	071	080	090
B3								3	4.5	7					
B8								2.2	3.3	5.1					
B6-B7	0.02	0.04	0.08	0.15	0.3	0.55	1	2.5	3.5	5.4		0.05	0.07	0.15	0.16
V5								3	4.5	7					
V6								2.2	3.3	5.1					

Radial Loads



CRMV	025	030	040	050	063	075	090	110	130	150
a	50	65	84	101	120	131	162	176	188	215
b	38	50	64	76	95	101	122	136	148	174
Fr2 max	1350	1830	3490	4840	6270	7380	8180	12000	13500	18000



CRMV	030	040	050	063	075	090	110	130	150
a	86	106	129	159	192	227	266	314	350
b	76	94,5	114	139	176	202	236	274	310
Fr2 max	210	350	490	700	980	1270	1700	2100	2800

The radial load on the shaft is calculated with the following formula:

Fre (N) Resulting radial load

M (Nm) Torque on the shaft

D (mm) Diameter of the transmission member mounted on the shaft

Fr (N) Value of the maximum permitted radial load (see relative tables)

fz = 1.1 gear pinion

1.4 chain wheel

1.7 v-pulley

2.5 flat pulley

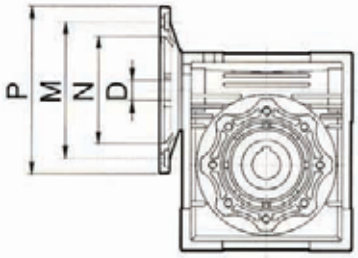
When the resulting radial load is not applied on the centre line of the shaft it is necessary to calculate the effective load with the following formula:

a , b , x = (see relative tables)

$$Fre = \frac{2000 \times M \times fz}{D} \leq Fr1 \text{ to } Fr2$$

$$Fre \leq \frac{Fr \times a}{(b + x)} \leq Fr1max \text{ to } Fr2max$$

Possible Motor Flanges



CMRV	PAM IEC	N	M	P	D											
					5	7,5	10	15	20	25	30	40	50	60	80	100
025	56B14	50	65	80	9	9	9	9	9	-	9	9	9	9	-	-
030	63B5	95	115	140	11	11	11	11	11	11	11	11	11	-	-	-
	63B14	60	75	90												
	56B5	80	100	120	9	9	9	9	9	9	9	9	9	9	9	-
	56B14	50	65	80												
040	71B5	110	130	160	14	14	14	14	14	14	14	14	-	-	-	-
	71B14	70	85	105												
	63B5	95	115	140	11	11	11	11	11	11	11	11	11	11	11	11
	63B14	60	75	90												
	56B5	80	100	120	-	-	-	-	-	-	-	-	9	9	9	9
050	80B5	130	165	200	19	19	19	19	19	19	19	-	-	-	-	-
	80B14	80	100	120												
	71B5	110	130	160	14	14	14	14	14	14	14	14	14	14	14	-
	71B14	70	85	105												
	63B5	95	115	140	-	-	-	-	-	-	-	11	11	11	11	11
063	90B5	130	165	200	-	24	24	24	24	24	24	-	-	-	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	19	19	19	19	19	19	19	19	19	-	-
	80B14	80	100	120												
	71B5	110	130	160	-	-	-	-	-	-	-	14	14	14	14	14
	71B14	70	85	105												
075	100/112B5	180	215	250	-	28	28	28	-	-	-	-	-	-	-	-
	100/112B14	110	130	160												
	90B5	130	165	200	-	24	24	24	24	24	24	24	-	-	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	-	-	-	19	19	19	19	19	19	19	19
	80B14	80	100	120												
	71B5	110	130	160	-	-	-	-	-	-	-	-	14	14	14	14
090	100/112B5	180	215	250	-	28	28	28	28	28	28	-	-	-	-	-
	100/112B14	110	130	160												
	90B5	130	165	200	-	24	24	24	24	24	24	24	24	24	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	-	-	-	-	-	-	19	19	19	19	19
	80B14	80	100	120												
110	132B5	230	265	300	-	38*	38*	38*	38*	-	-	-	-	-	-	-
	100/112B5	180	215	250	-	28	28	28	28	28	28	28	28	28	-	-
	90B5	130	165	200	-	-	-	-	-	24	24	24	24	24	24	24
	80B5	130	165	200	-	-	-	-	-	-	-	-	-	-	19	19
130	132B5	230	265	300	-	38*	38*	38*	38*	38*	38*	38*	-	-	-	-
	100/112B5	180	215	250	-	-	-	-	-	28	28	28	28	28	28	28
	90B5	130	165	200	-	-	-	-	-	-	-	-	-	-	24	24
150	160B5	250	300	350	-	42	42	42	42	42	-	-	-	-	-	-
	132B5	230	265	300	-	-	-	-	38	38	38	38	38	38	-	-
	100/112B5	180	215	250	-	-	-	-	-	-	-	-	28	28	28	28

* Low profile key supplied by Challenge

PC & CMRV Combinations

.CMRV	i	PC 063		PC 071		PC 080			PC 090		
		105 / 11 i = 3	105 / 14 i = 3	120 / 14 i = 3	120 / 19 i = 3	160 / 19 i = 3	160 / 24 i = 3	160 / 28 i = 3	160 / 19 i = 2,42	160 / 24 i = 2,42	160 / 28 i = 2,42
040	25										
	30										
	40										
	50										
	60										
	80										
	100										
050	25										
	30										
	40										
	50										
	60										
	80										
	100										
063	25										
	30										
	40										
	50										
	60										
	80										
	100										
075	25										
	30										
	40										
	50										
	60										
	80										
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090	25										
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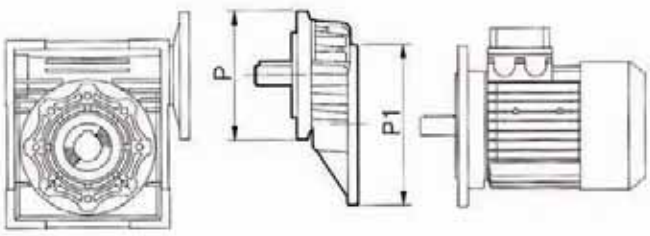
	30										
	40										
	50										
	60										
	80										
	100										



	P1	P	(P)
PC 063	63B5-140 /11		
PC 071	71B5-160 /14	120 / 14	(120 / 19)
PC 080	80B5-200 /19	160 / 14	(160 / 24) (160 / 28)
PC 090	90B5-200 /24	160 / 24	(160 / 19) (160 / 128)

(..) Only on request

Efficiency

Efficiency

Efficiency is a parameter which has a major influence on the sizing of certain applications, and basically depends on gear pair design elements.
The mesh data table on page 321 shows dynamic efficiency (n1=1400 rev/min) and static efficiency values. Remember that these values are only achieved after the unit has been run in.

Dynamic Irreversibility

Dynamic irreversibility is achieved when the output shaft stops instantly when drive is no longer transmitted through the worm shaft. This condition requires a dynamic efficiency of $\eta d < 0.5$.

Static Irreversibility

Static irreversibility is achieved when, with the gear reducer at a standstill, the application of a load to the output shaft does not set in motion the worm shaft. This condition requires a static efficiency of $\eta s < 0.5$.

The table shows approximate irreversibility classes.
Vibrations and shocks can affect a gear reducer's irreversibility.
For the irreversibility conditions of a combined geared unit one must consider that the efficiency of the group is given by the product of the efficiencies of each single reducer.
i.e.: $\eta tot = \eta 1 x \eta 2$

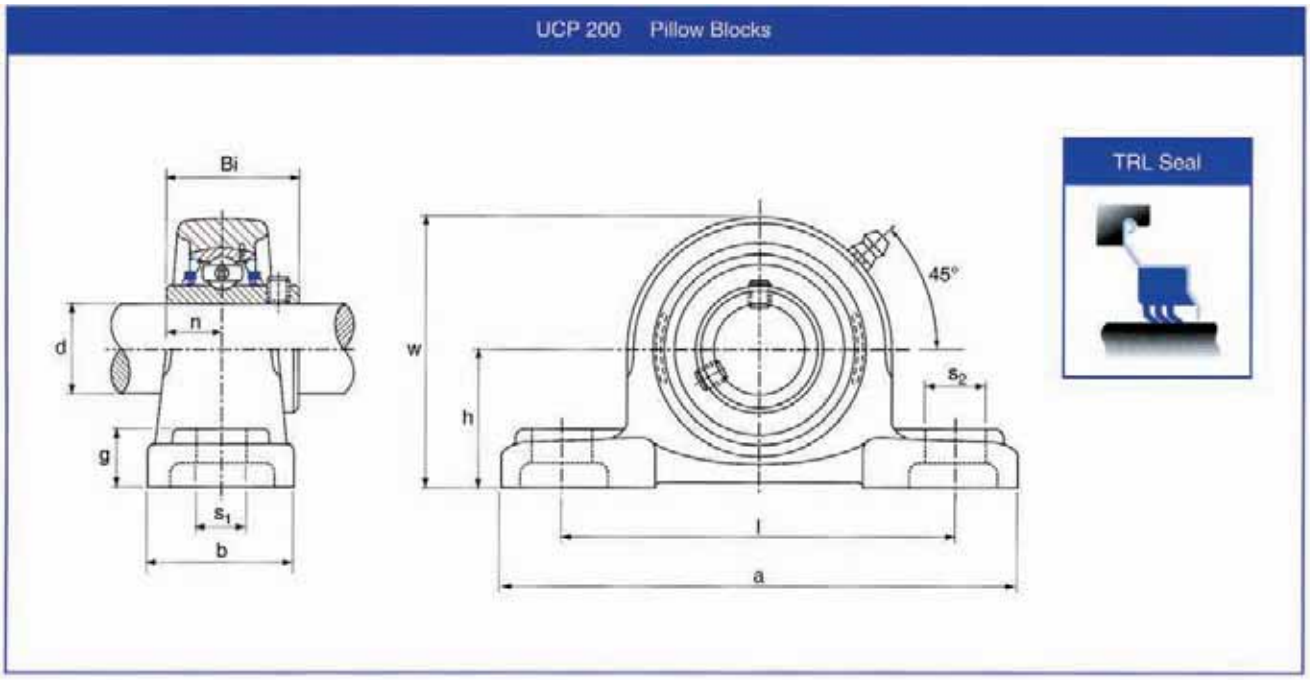
ηd	DYNAMIC IRREVERSIBILITY
> 0.6	Dynamic reversibility
0.5 to 0.6	Low dynamic reversibility
0.4 to 0.5	Good dynamic irreversibility
< 0.4	Dynamic irreversibility

ηs	STATIC IRREVERSIBILITY
> 0.55	Static reversibility
0.5 to 0.55	Low static reversibility
< 0.5	Static irreversibility

Bearing Units

Pillow Blocks

UCP 200 Pillow Blocks

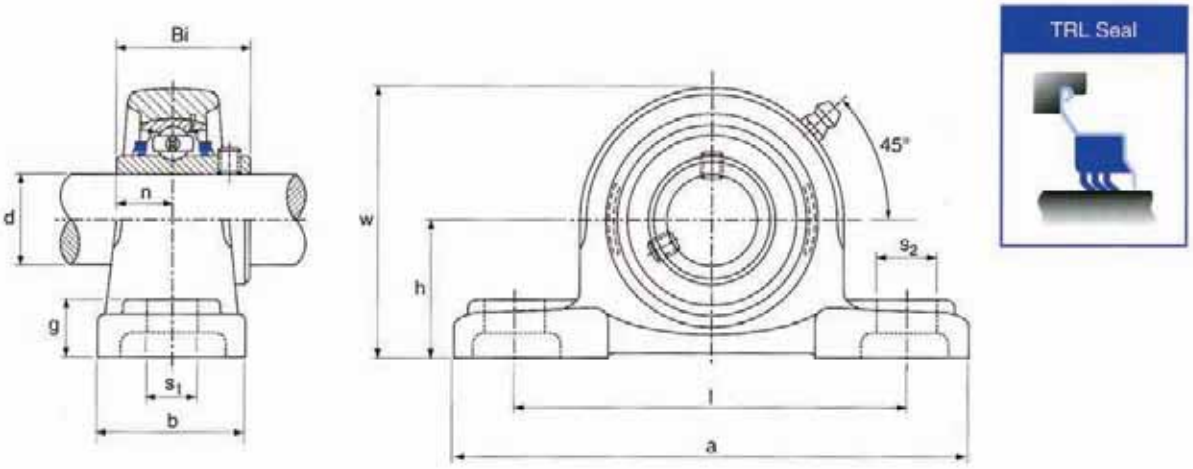


UCP 200 Pillow Blocks (Normal Duty)

Bearing Unit	Shaft Dia. d inch	d mm	h	a	l	b	s_2	s_1	g	w	Bi	n	Bolt Size inch	mm	Insert No.	Housing No.	Mass kg
UCP 204 UCP 204-12	3/4"	20	33.3	127	96	38	19	13	15	65	31.0	12.7	3/8	M10	UC 204 UC 204-12	P204	0.65
UCP 205 UCP 205-16	1"	25	36.5	140	105	38	19	13	16	70	34.0	14.3	3/8	M10	UC 205 UC 205-16	P205	0.79
UCP 206 UCP 206-18	1.1/8"	30	42.9	165	121	48	21	17	18	83	38.1	15.9	1/2	M14	UC 206 UC 206-18	P206	0.79
UCP 207 UCP 207-20 UCP 207-22	1.1/4" 1.3/8"	35	47.6	167	126	48	21	17	19	92	42.9	17.5	1/2	M14	UC 207 UC 207-20 UC 207-22	P207	1.60
UCP 208 UCP 208-24	1.1/2"	40	49.2	184	136	54	21	17	19	98	49.2	19.0	1/2	M14	UC 208 UC 208-24	P208	2.00
UCP 209 UCP 209-28	1.3/4"	45	54.0	190	146	54	21	17	20	106	49.2	19.0	1/2	M14	UC 209 UC 209-28	P209	2.20
UCP 210 UCP 210-32	2"	50	57.2	206	159	60	25	20	22	112	51.6	19.0	5/8	M16	UC 210 UC 210-32	P210	2.80
UCP 211 UCP 211-32	2"	55	63.5	219	171	60	25	20	22	126	55.6	22.2	5/8	M16	UC 211 UC 211-32	P211	3.40
UCP 212 UCP 212-36	2.1/4"	60	69.8	241	184	70	25	20	25	137	65.1	25.4	5/8	M16	UC 212 UC 212-36	P212	4.80
UCP 213 UCP 213-40	2.1/2"	65	76.2	265	203	70	29	25	27	150	65.1	25.4	3/4	M20	UC 213 UC 213-40	P213	5.70
UCP 214 UCP 214-44	2.3/4"	70	79.4	266	210	72	31	25	27	156	74.6	30.2	3/4	M20	UC 214 UC 214-44	P214	7.00
UCP 215 UCP 215-48	3"	75	82.6	275	217	74	31	25	28	163	77.8	33.3	3/4	M20	UC 215 UC 215-48	P215	7.60
UCP 216		80	88.9	292	232	78	31	25	30	175	82.6	33.3		M20	UC 216	P216	9.00

Pillow Blocks

UCPX 00 Pillow Blocks

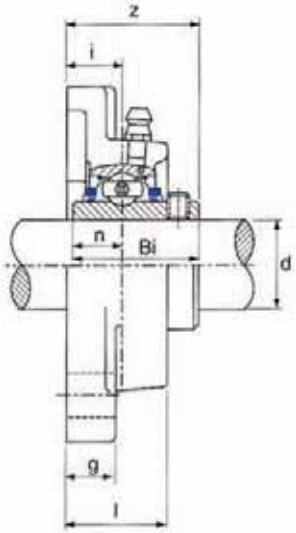


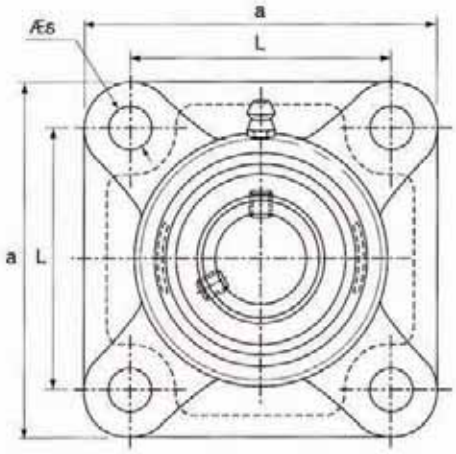
UCPX 00 Pillow Block (Medium Duty)

Bearing Unit	Shaft Dia. d inch	d mm	h	a	l	b	s_2	s_1	g	w	Bi	n	Bolt Size inch	mm	Insert No.	Housing No.	Mass kg
UCPX 05 UCPX 05-16	1"	25	44.4	159	119	51	25	17	18	85	38.1	15.9	1/2"	M14	UCX 05 UCX 05-16	PX 05	1.50
UCPX 06 UCPX 06-20	1.1/4"	30	47.6	175	127	57	25	17	20	94	42.9	17.5	1/2"	M14	UCX 06 UCX 06-20	PX 06	2.00
UCPX 07 UCPX 07-20 UCPX 07-22	1.1/4" 1.3/8"	35	54.0	203	144	57	30	17	22	105	49.2	19.0	1/2"	M14	UCX 07 UCX 07-20 UCX 07-22	PX 07	2.70
UCPX 08 UCPX 08-24	1.1/2"	40	58.7	222	156	67	32	20	26	113	49.2	19.0	5/8"	M16	UCX 08 UCX 08-24	PX 08	3.50
UCPX 09 UCPX 09-28	1.3/4"	45	58.7	222	156	67	33	20	26	116	51.6	19.0	5/8"	M16	UCX 09 UCX 09-28	PX 09	3.60
UCPX 10 UCPX 10-32	2"	50	63.5	241	171	73	36	20	27	126	55.6	22.2	5/8"	M16	UCX 10 UCX 10-32	PX 10	4.40
UCPX 11 UCPX 11-36	2.1/4"	55	69.8	260	184	79	36	25	30	139	65.1	25.4	3/4"	M20	UCX 11 UCX 11-36	PX 11	6.30
UCPX 12 UCPX 12-36	2.1/4"	60	76.2	286	203	83	41	25	32	152	65.1	25.4	3/4"	M20	UCX 12 UCX 12-36	PX 12	7.40
UCPX 13 UCPX 13-40	2.1/2"	65	76.2	286	203	83	41	25	32	154	74.6	30.2	3/4"	M20	UCX 13 UCX 13-40	PX 13	7.70
UCPX 14 UCPX 14-44	2.3/4"	70	88.9	330	229	89	51	27	35	171	77.8	33.3	7/8"	M22	UCX 14 UCX 14-44	PX 14	10.60
UCPX 15 UCPX 15-48	3"	75	88.9	330	229	89	51	27	35	175	82.6	33.3	7/8"	M22	UCX 15 UCX 15-48	PX 15	11.10
UCPX 16		80	101.6	381	283	102	59	27	42	195	85.7	34.1		M22	UCX 16	PX 16	16.20

Flange Units

UCF 200 4 Hole Flange Units



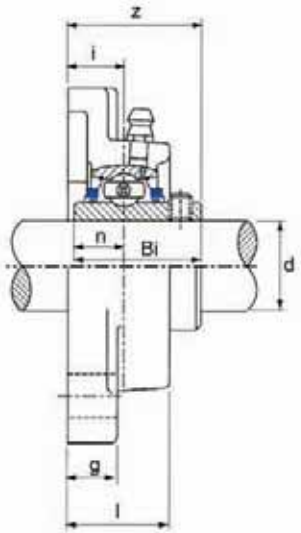


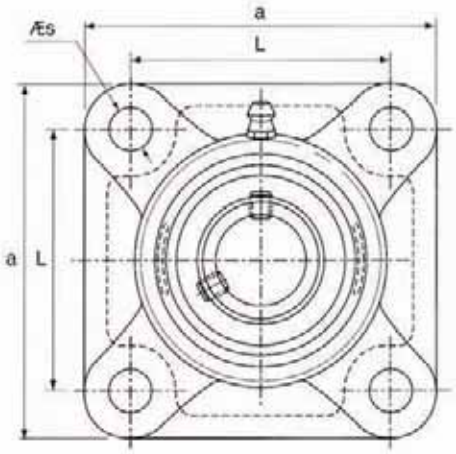
UCF 200 4 Hole Flange Units (Normal Duty)

Bearing Unit	Shaft Dia. d inch	d mm	a	L	i	g	l	Øs	z	Bi	n	Bolt Size inch	mm	Insert No.	Housing No.	Mass kg
UCF 204 UCF 204-12	3/4"	20	86	64	15	12	25.5	12	33.3	31.0	12.7	3/8"	M10	UC 204 UC 204-12	F 204	0.6
UCF 205 UCF 205-16	1"	25	95	70	16	14	27	12	35.7	34.0	14.3	3/8"	M10	UC 205 UC 205-16	F 205	0.8
UCF 206 UCF 206-18	1.1/8"	30	108	83	18	14	31	12	40.2	38.1	15.9	3/8"	M10	UC 206 UC 206-18	F 206	1.1
UCF 207 UCF 207-20 UCF 207-22	1.1/4" 1.3/8"	35	117	92	19	16	34	14	44.4	42.9	17.5	7/16"	M12	UC 207 UC 207-20 UC 207-22	F 207	1.5
UCF 208 UCF 208-24	1.1/2"	40	130	102	21	16	36	16	51.2	49.2	19.0	1/2"	M14	UC 208 UC 208-24	F 208	1.9
UCF 209 UCF 209-28	1.3/4"	45	137	105	22	18	38	16	52.2	49.2	19.0	1/2"	M14	UC 209 UC 209-28	F 209	2.3
UCF 210 UCF 210-32	2"	50	143	111	22	18	40	16	54.6	51.6	19.0	1/2"	M14	UC 210 UC 210-32	F 210	2.5
UCF 211 UCF 211-32	2"	55	162	130	25	20	43	19	58.4	55.6	22.2	5/8"	M16	UC 211 UC 211-32	F 211	3.4
UCF 212 UCF 212-36	2.1/4"	60	175	143	29	20	48	19	68.7	65.1	25.4	5/8"	M16	UC 212 UC 212-36	F 212	4.4
UCF 213 UCF 213-40	2.1/2"	65	187	149	30	20	50	19	69.7	65.1	25.4	5/8"	M16	UC 213 UC 213-40	F 213	5.3
UCF 214 UCF 214-44	2.3/4"	70	193	152	31	24	54	19	75.4	74.6	30.2	5/8"	M16	UC 214 UC 214-44	F 214	6.0
UCF 215 UCF 215-48	3"	75	200 208	159 165	35 35	24 24	57 59	19 23	79.5 84.3	77.8 82.6	33.3 33.3	5/8"	M16	UC 215 UC 215-48	F 215 F 216	6.6 7.5
UCF 216		80											M20	UC 216		

Flange Units

UCFX 00 4 Hole Flange Units



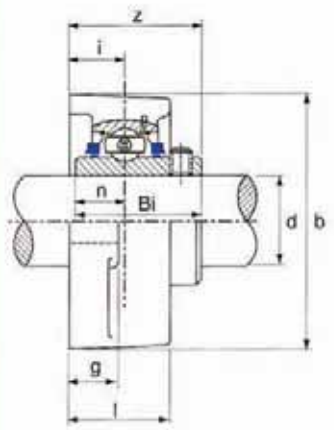


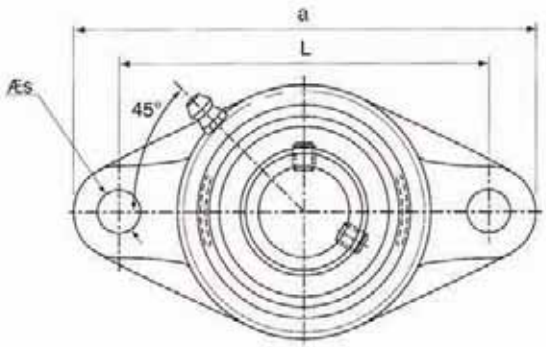
UCFX 00 4 Hole Flange Units (Medium Duty)

Bearing Unit	Shaft Dia. d inch	d mm	a	L	i	g	l	Øs	z	Bi	n	Bolt Size inch	mm	Insert No.	Housing No.	Mass kg
UCFX 05 UCFX 05-16	1"	25	108	83	18	13	30	12	40.2	38.1	15.9	3/8"	M10	UCX 05 UCX 05-16	FX 05	1.1
UCFX 06 UCFX 06-20	1.1/4"	30	117	92	19	14	34	16	44.4	42.9	17.5	1/2"	M14	UCX 06 UCX 06-20	FX 06	1.4
UCFX 07 UCFX 07-20 UCFX 07-22	1.1/4" 1.3/8"	35	130	102	21	14	38	16	51.2	49.2	19.0	1/2"	M14	UCX 07 UCX 07-20 UCX 07-22	FX 07	1.9
UCFX 08 UCFX 08-24	1.1/2"	40	137	105	22	14	40	19	52.2	49.2	19.0	5/8"	M16	UCX 08 UCX 08-24	FX 08	2.1
UCFX 09 UCFX 09-28	1.3/4"	45	143	111	23	14	40	19	55.6	51.6	19.0	5/8"	M16	UCX 09 UCX 09-28	FX 09	2.5
UCFX 10 UCFX 10-32	2"	50	162	130	26	20	44	19	59.4	55.6	22.2	5/8"	M16	UCX 10 UCX 10-32	FX 10	3.6
UCFX 11 UCFX 11-36	2.1/4"	55	175	143	29	20	49	19	68.7	65.1	25.4	5/8"	M16	UCX 11 UCX 11-36	FX 11	4.7
UCFX 12 UCFX 12-36	2.1/4"	60	187	149	34	21	59	19	73.7	65.1	25.4	5/8"	M16	UCX 12 UCX 12-36	FX 12	5.5
UCFX 13 UCFX 13-40	2.1/2"	65	187	149	34	21	59	19	78.4	74.6	30.2	5/8"	M16	UCX 13 UCX 13-40	FX 13	5.9
UCFX 14 UCFX 14-44	2.3/4"	70	197	152	37	24	60	23	81.5	77.8	33.3	3/4"	M20	UCX 14 UCX 14-44	FX 14	7.3
UCFX 15 UCFX 15-48	3"	75	197	152	40	24	68	23	89.3	82.6	33.3	3/4"	M20	UCX 15 UCX 15-48	FX 15	8.0
UCFX 16		80	214	171	40	24	70	23	91.6	85.7	34.1		M20	UCX 16	FX 16	9.8

Flange Units

UCFL 200 2 Hole Flange Units



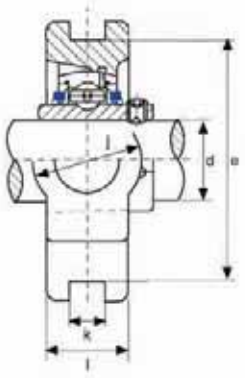


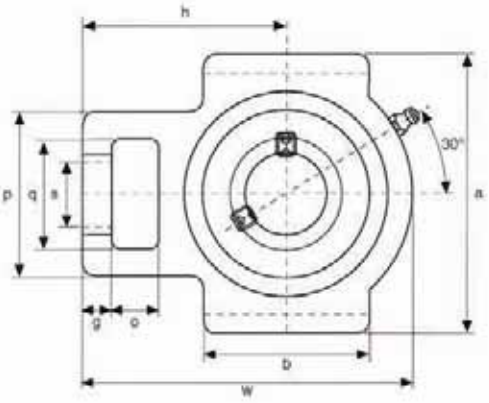
UCFL 200 2 Hole Flange Units (Normal Duty)

Bearing Unit	Shaft Dia. d inch	d mm	a	L	i	g	l	Øs	b	z	Bi	n	Bolt Size inch	mm	Insert No.	Housing No.	Mass kg
UCFL 204 UCFL 204-12	3/4"	20	113	90	15	11	26	12	60	33.3	31.0	12.7	3/8"	M10	UC 204 UC 204-12	FL 204	0.5
UCFL 205 UCFL 205-16	1"	25	130	99	16	13	27	16	68	35.7	34.0	14.3	1/2"	M14	UC 205 UC 205-16	FL 205	0.6
UCFL 206 UCFL 206-20	1.1/4"	30	148	117	18	13	31	16	80	40.2	38.1	15.9	1/2"	M14	UC 206 UC 206-20	FL 206	0.9
UCFL 207 UCFL 207-20 UCFL 207-22	1.1/4" 1.3/8"	35	161	130	19	14	34	16	90	44.4	42.9	17.5	1/2"	M14	UC 207 UC 207-20 UC 207-22	FL 207	1.2
UCFL 208 UCFL 208-24	1.1/2"	40	175	144	21	14	36	16	100	51.2	49.2	19.0	1/2"	M14	UC 208 UC 208-24	FL 208	1.6
UCFL 209 UCFL 209-28	1.3/4"	45	188	148	22	15	38	19	108	52.2	49.2	19.0	5/8"	M16	UC 209 UC 209-28	FL 209	1.9
UCFL 210 UCFL 210-32	2"	50	197	157	22	15	40	19	115	54.6	51.6	19.0	5/8"	M16	UC 210 UC 210-32	FL 210	2.2
UCFL 211 UCFL 211-32	2"	55	224	184	25	18	43	19	130	58.4	55.6	22.2	5/8"	M16	UC 211 UC 211-32	FL 211	3.2
UCFL 212 UCFL 212-36	2.1/4"	60	250	202	29	18	48	23	140	68.7	65.1	25.4	3/4"	M20	UC 212 UC 212-36	FL 212	4.1
UCFL 213 UCFL 213-40	2.1/2"	65	258	210	30	20	50	23	155	69.7	65.1	25.4	3/4"	M20	UC 213 UC 213-40	FL 213	5.1
UCFL 214 UCFL 214-44	2.3/4"	70	265	216	31	20	54	23	160	75.4	74.6	30.2	3/4"	M20	UC 214 UC 214-44	FL 214	5.9
UCFL 215 UCFL 215-48	3"	75	275	225	35	20	57	23	165	79.5	77.8	33.3	3/4"	M20	UC 215 UC 215-48	FL 215	6.4

Take-Up Units

UCT 200E Take-Up Units



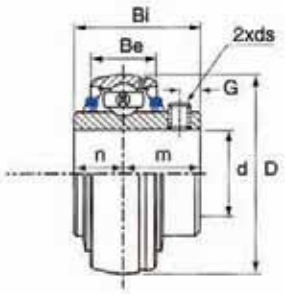


UCT 200 Take-Up Units (Normal Duty)

Bearing Unit	Shaft Dia. d inch	d	o	g	p	q	Øs	b	k	e	a	w	j	l	h	Insert No.	Housing No.	Mass kg
UCT204 UCT204-12	3/4"	20	16	10	51	32	19	51	12	76	89	94	32	21	61	UC 204 UC 204-12	T204	0.74
UCT205 UCT205-16	1"	25	16	10	51	32	19	51	12	76	89	97	32	24	62	UC205 UC 205-16	T205	0.80
UCT206 UCT206-20	1.1/4"	30	16	10	56	37	22	57	12	89	102	113	37	28	70	UC 206 UC 206-20	T206	1.16
UCT207 UCT207-20 UCT207-22	1.1/4" 1.3/8"	35	16	13	64	37	22	64	12	89	102	129	37	30	78	UC 207 UC 207-20 UC 207-22	T207	1.56
UCT208 UCT208-24	1.1/2"	40	19	16	83	49	29	83	16	102	114	144	49	33	89	UC 208 UC 208-24	T208	2.32
UCT209 UCT209-28	1.3/4"	45	19	16	83	49	29	83	16	102	117	144	49	35	87	UC 209 UC 209-28	T209	2.28
UCT210 UCT210-32	2"	50	19	16	83	49	29	86	16	102	117	149	49	37	90	UC 210 UC 210-32	T210	2.44
UCT211 UCT211-32 UCT211-34	2" 2.1/8"	55	25	19	102	64	35	95	22	130	146	171	64	38	106	UC 211 UC 211-32 UC 211-34	T211	3.78
UCT212 UCT212-36	2.1/4"	60	32	19	102	64	35	102	22	130	146	194	64	42	119	UC 212 UC 212-36	T212	4.72

Inserts

UC 200 Inserts



UC 200 Inserts with Set Screws (Normal Duty)

Bearing Unit	Shaft Dia. d inch	Shaft Dia. d mm	D	Bi	Be	n	m	G	ds inch	ds mm	Load Rating (kg) Dynamic	Load Rating (kg) Static	Mass kg
UC 204		20	47	31.0	17	12.7	18.3	4.8		M6X1.0	1000	630	0.16
UC 204-12	3/4"								1/4"-28UNF				0.16
UC 205		25	52	34.0	17	14.3	19.7	5.5		M6X1.0	1100	710	0.20
UC 205-16	1"								1/4"-28UNF				0.20
UC 206		30	62	38.1	19	15.9	22.2	6.0		M6X1.0	1520	1020	0.32
UC 206-20	1.1/4"								1/4"-28UNF				0.32
UC 207		35	72	42.9	20	17.5	25.4	6.5		M8X1.0	2010	1390	0.48
UC 207-20	1.1/4"								5/16"-24UNF				0.54
UC 207-22	1.3/8"								5/16"-24UNF				0.48
UC 208		40	80	49.2	21	19.0	30.2	8.0		M8X1.0	2560	1810	0.64
UC 208-24	1.1/2"								5/16"-24UNF				0.68
UC 209		45	85	49.2	22	19.0	30.2	8.0		M8X1.0	2560	1810	0.68
UC 209-28	1.3/4"								5/16"-24UNF				0.70
UC 210		50	90	51.6	24	19.0	32.6	10.0		M10X1.0	2750	2020	0.82
UC 210-32	2"								3/8"-24UNF				0.80
UC 211		55	100	55.6	25	22.2	33.4	10.0		M10X1.0	3400	2550	1.11
UC 211-32	2"								3/8"-24UNF				1.26
UC 212		60	110	65.1	27	25.4	39.7	10.0		M10X1.0	4100	3150	1.54
UC 212-36	2.1/4"								3/8"-24UNF				1.67
UC 213		65	120	65.1	28	25.4	39.7	10.0		M10X1.0	4480	3470	1.86
UC 213-40	2.1/2"								3/8"-24UNF				1.94
UC 214		70	125	74.6	30	30.2	44.4	12.0		M12X1.5	4870	3810	2.05
UC 214-44	2.3/4"								7/16"-20UNF				2.06
UC 215		75	130	77.8	30	33.3	44.5	12.0		M12X1.5	5190	4190	2.12
UC 215-48	3"								7/16"-20UNF				2.21
UC 216		80	140	82.6	33	33.3	49.3	14.0		M12X1.5	5700	4550	2.79
UC 218-56	3.1/2"		160	96.0	37	39.7	56.3	14.0	1/2"-20UNF		7500	6170	4.46

Bearing Speeds

The maximum rotational speed of a grease lubricated ball bearing is related to the fit between shaft and bearing.

Under normal operating conditions the fit between the bearing and shaft should be h7. The maximum permissible bearing speeds are shown on the right.

A looser fit, allowing lower speeds is recommended for lighter loads and a tighter fit allowing higher speeds is recommended for heavier loads

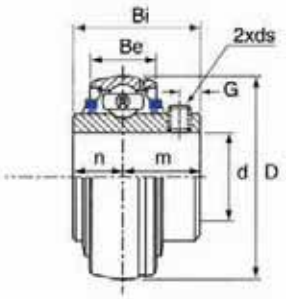
Bearing No.	Max Speed rev/min	Bearing No.	Max Speed rev/min
201	4500	210	1800
202	4500	211	1600
203	4500	212	1500
204	4000	213	1400
205	3400	214	1300
206	2800	215	1200
207	2400	216	1100
208	2200	217	1000
209	1900	218	950

- Working temperatures -30°C to +120°C
- Grease nipple thread sizes:

201 - 209	M6
210 - 215	M8
216 - 218	M10

Inserts

UCX 00 Inserts



UCX 00 Inserts with Set Screws (Medium Duty)

Bearing Unit	Shaft Dia. d inch	d mm	D	Bi	Be	n	m	G	ds inch	ds mm	Load Rating (kg) Dynamic	Static	Mass kg
UCX05		25	62	38.1	19	15.9	22.2	6	1/4"-28UNF	M6X1.0	1520	1020	0.39
UCX05-16	1"												0.38
UCX06		30	72	42.9	20	17.5	25.4	6.5	5/16"-24UNF	M8X1.0	2010	1390	0.58
UCX06-20	1.1/4"												0.55
UCX07		35	80	49.2	21	19.0	30.2	8.0	5/16"-24UNF	M8X1.0	2560	1810	0.72
UCX07-20	1.1/4"								5/16"-24UNF				0.75
UCX07-22	1.3/8"								5/16"-24UNF				0.72
UCX08		40	85	49.2	22	19.0	30.2	8.0	5/16"-24UNF	M8X1.0	2650	1910	0.83
UCX08-24	1.1/2"												0.87
UCX09		45	90	51.6	24	19.0	32.6	10.0	3/8"-24UNF	M10X1.0	2750	2020	0.95
UCX09-28	1.3/4"												0.97
UCX10		50	100	55.6	25	22.2	33.4	10.0	3/8"-24UNF	M10X1.0	3400	2550	1.29
UCX10-32	2"												1.26
UCX11		55	110	65.1	27	25.4	39.7	10.0	3/8"-24UNF	M10X1.0	4100	3150	1.80
UCX11-36	2.1/4"												1.70
UCX12		60	120	65.1	28	25.4	39.7	10.0	3/8"-24UNF	M10X1.0	4480	3470	2.05
UCX12-38	2.3/8"												2.03
UCX13		65	125	74.6	30	30.2	44.4	12.0	7/16"-20UNF	M12X1.5	4870	3810	2.52
UCX13-40	2.1/2"												2.61
UCX14		70	130	77.8	30	33.3	44.5	12.0	7/16"-20UNF	M12X1.5	5190	4190	2.74
UCX14-44	2.3/4"												2.75
UCX15		75	140	82.6	32	33.3	49.3	14.0	7/16"-20UNF	M12X1.5	5700	4550	3.41
UCX15-48	3"												3.32

Bearing Speeds

The maximum rotational speed of a grease lubricated ball bearing is related to the fit between shaft and bearing.

Under normal operating conditions the fit between the bearing and shaft should be h7. The maximum permissible bearing speeds are shown on the right.

A looser fit, allowing lower speeds is recommended for lighter loads and a tighter fit allowing higher speeds is recommended for heavier loads

Bearing No.	Max Speed rev/min	Bearing No.	Max Speed rev/min
201	4500	210	1800
202	4500	211	1600
203	4500	212	1500
204	4000	213	1400
205	3400	214	1300
206	2800	215	1200
207	2400	216	1100
208	2200	217	1000
209	1900	218	950

Bearings

- 6000 Series
- 6200 Series
- 6300 & 6800 Series
- 6900 & 1600 Series
- R Series
- Metric Taper Bearings
- Imperial Taper Bearings